



Appendix B
Marine Mammal Monitoring and
Mitigation Plan





PORT OF ALASKA MODERNIZATION PROGRAM

Marine Mammal Monitoring and Mitigation Plan

Cargo Terminals Replacement (CTR) Project

Rev. 01

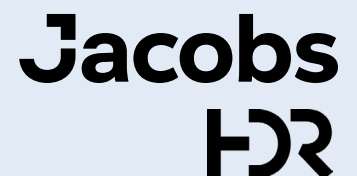


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Acronyms and Abbreviations

BA	Biological Assessment
CTR	Cargo Terminals Replacement
DPS	Distinct Population Segment
ESA	Endangered Species Act
FR	<i>Federal Register</i>
HF	High-frequency
IHA	Incidental Harassment Authorization
LF	Low-frequency
LOA	Letter of Authorization
MF	Mid-frequency
MMO	Marine Mammal Observer(s)
MMPA	Marine Mammal Protection Act
Monitoring Plan	Marine Mammal Monitoring and Mitigation Plan
NMFS	National Marine Fisheries Service
OW	Otariid in Water
PAMP	Port of Alaska Modernization Program
PCT	Petroleum and Cement Terminal
POA	Port of Alaska
POC	Point of Contact
PSO	Protected Species Observer(s)
PW	Phocid in Water
QA	Quality Assurance
QC	Quality Control
SFD	South Floating Dock
T1	Terminal 1
T2	Terminal 2

Section 1. Introduction

The Port of Alaska (POA), located on Knik Arm in upper Cook Inlet, is requesting a rulemaking and Letter of Authorization (LOA) and an Incidental Harassment Authorization (IHA) for the take of small numbers of marine mammals by Level A and Level B harassment incidental to construction of the Cargo Terminals Replacement (CTR) Project (Project) at the existing port facility in Anchorage, Alaska. The LOA is requested for a period of 5 years, from 01 April 2026 through 31 March 2031 and the IHA for a period of 1 year, from 01 April 2031 through 31 March 2032. This Marine Mammal Monitoring and Mitigation Plan (Monitoring Plan) was prepared as Appendix B to the request for incidental take authorization under the Marine Mammal Protection Act (MMPA), and in support of the Biological Assessment (BA) for formal Section 7 consultation with the National Marine Fisheries Service (NMFS) under the Endangered Species Act (ESA). This Monitoring Plan incorporates NMFS' best practices and definitions for standardizing data collection and entry for marine mammal sightings, including sightings of the Cook Inlet beluga whale (*Delphinapterus leucas*).


The CTR Project is Phase 2B of the overall reconstruction plan for the POA referred to as the Port of Alaska Modernization Program (PAMP; Figure 1-1). The Project will commence landside construction in 2025 and in-water construction in 2026. The Project includes new construction of Terminal 1 (T1) and Terminal 2 (T2), which include planned wharves and access trestles. The two new terminals will be located 140 feet seaward of the existing Terminals 1, 2, and 3. It is anticipated that the more seaward location of T1 and T2 will reduce sedimentation, improve room for handling of berthing ships, and allow construction of the new terminals while the existing terminals remain in use. The Project also includes demolition of the existing Petroleum, Oil and Lubricants Terminal 1; general cargo terminals Terminal 1 and Terminal 2; and partial demolition of Terminal 3.

Located within the Municipality of Anchorage on Knik Arm in upper Cook Inlet, the existing infrastructure and support facilities were constructed largely in the 1960s. Port facilities are substantially past their design life, have degraded to levels of marginal safety, and are in many cases functionally obsolete, especially in regard to seismic design criteria and condition. The newly-constructed T1 and T2, pile-supported wharves and trestles to the south and west of the existing terminals, will have a planned design life of 75 years.

The CTR Project is expected to produce noise levels that could meet or exceed Level A (injury) and Level B (disturbance) harassment thresholds established by NMFS for marine mammals under the MMPA (70 *Federal Register* [FR] 1871–1875). Level A harassment means any act of pursuit, torment, or annoyance that has the potential to injure a marine mammal or marine mammal stock in the wild. Level B harassment means any act of pursuit, torment, or annoyance that 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, and sheltering, but that does not have the potential to injure a marine mammal or marine mammal stock in the wild.

Seven marine mammal species may occur in or near the Project area:

- Beluga whale
- Humpback whale (*Megaptera novaeangliae*)
- Gray whale (*Eschrichtius robustus*)
- Killer whale (*Orcinus orca*)
- Steller sea lion (*Eumetopias jubatus*)
- Harbor porpoise (*Phocoena phocoena*)



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- Harbor seal (*Phoca vitulina*)

A small number of Level B takes was requested for all seven species of marine mammals, and a small number of Level A takes was also requested for harbor seals, Steller sea lions, harbor porpoises, humpback whales, and gray whales. All marine mammals are protected under the MMPA; the Cook Inlet beluga whale, the Mexico Distinct Population Segment (DPS) of humpback whales, the Western North Pacific DPS of gray whales, and the western DPS of Steller sea lions are also listed under the ESA of 1973 (35 FR 12222; 73 FR 12024).

Final authorized take numbers for each species are listed in the Project LOA and IHA (pending).

The overall goal of this Monitoring Plan is to comply with the MMPA and ESA during in-water pile installation and removal associated with the CTR Project. Please refer to the LOA and IHA application for detailed information on the CTR Project, potential effects on marine mammals, and a complete list of mitigation measures.



Figure 1-1. Port of Alaska Modernization Program Phases

Section 2. Marine Mammal Monitoring Overview

To minimize impacts of construction noise on marine mammals, Marine Mammal Observers (MMOs; sometimes called Protected Species Observers or PSOs) will be on-site during all in-water pile installation and removal associated with the CTR Project. MMOs will search for, monitor, document, and track marine mammals around and within the Level A and Level B harassment zones and the 100-meter minimum shutdown zone (Section 3.2.1).

It is anticipated that in-water CTR construction activities will begin in April 2026 and extend through 31 March 2032. These dates are estimates and may shift as contracting details, starting dates, ice-free conditions, production rates, and other factors vary. Construction dates also may change because of unexpected Project delays.

2.1 Marine Mammal Observer Qualifications and Training

All MMOs will undergo Project-specific training, which will include training in monitoring, data collection, theodolite operation, and mitigation procedures specific to the CTR Project. This training will also include site-specific health and safety procedures, communication protocols, and supplemental training in marine mammal identification and data collection. Training will include hands-on use of required field equipment to ensure that all equipment is working and MMOs know how to use it correctly.

All MMOs must be capable of spotting and identifying marine mammals and documenting applicable data during all types of weather, including rain, sleet, snow, and wind. At a minimum, all MMOs must have or meet the following qualifications:

- Ability to act as independent MMOs (i.e., not construction personnel) who have no other assigned tasks during monitoring periods.
- Ability to conduct field observations and collect data according to assigned protocols.
- Experience or training in the field identification of marine mammals, including the identification of behaviors.
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
- Ability to observe and record environmental and marine mammal sighting data, including but not limited to the number and species of marine mammals observed; dates and times when in-water Project activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior.
- 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.

A designated Lead MMO for the entire Project will always be on-site and will remain responsible for implementing the Monitoring Plan for all in-water pile installation and removal. Additionally, each monitoring team will have a designated Lead MMO specific to that station and shift.

In addition to the above required qualifications, the Lead MMO must have education and experience that demonstrate their qualifications to serve as Lead MMO, including the following minimum requirements:

- Prior experience working as an MMO during in-water construction.

- Education in wildlife observation techniques from a university, college, or other formal education program.

The POA will submit MMO curricula vitae (CVs) to NMFS for approval prior to the onset of in-water pile installation or removal. Field experience and/or training may be substituted for a biological degree. NMFS will review submitted MMO CVs and indicate approval as warranted. Approval must be granted by NMFS within 14 days; if no notice is received from NMFS, it will be considered tacit approval.

2.2 Roles and Responsibilities

The Monitoring Coordinator is the individual managing the entire marine mammal monitoring program under the Construction Contractor. A single Point of Contact (POC) will be identified by the Construction Contractor daily on both the MMO and construction crews to provide the lead authority. The single POC for the MMO crew also will be the designated Lead MMO, and for the construction crew will be identified as the Construction Contractor POC. MMOs are responsible for understanding all Project-specific MMPA and ESA requirements. When a marine mammal is sighted approaching or within a Level B or Level A harassment zone, the Lead MMO will contact the Construction Contractor POC to advise them on shutdown protocols to comply with MMPA and ESA requirements. The Construction Contractor POC will assess the in-water pile installation or removal, including safety considerations, to determine if a shutdown will occur immediately. See Section 3.2.2 for more information on shutdown procedures.

2.3 Communication Systems

A clear authorization and communication system will be in place to ensure that MMO and construction crews understand their roles and responsibilities before construction begins. The Construction Contractor POC will communicate to the Lead MMO the locations and numbers of piles that will be installed and removed on a daily basis and describe any other in-water construction activities that are planned for that day. It is important that any changes be communicated from the Construction Contractor POC to the Lead MMO, as this may influence the harassment zone sizes.

Each MMO will be trained and provided with reference materials (i.e., observation and communication protocol) to support standardized communication systems and accurate observations and data collection. MMOs will be in real-time communication with each other and with construction crews to convey information about marine mammal sightings, locations, and directions of movement as well as communicate calls for shutdowns or delays. If the POA is conducting non-CTR-related in-water work that includes MMOs, the CTR Project MMOs will be in contact with those MMOs, and both sets of MMOs will share all information regarding marine mammal sightings with each other.

2.4 Equipment

The following equipment and information will be required on-site for marine mammal monitoring:

- Portable radios for the MMOs to communicate with the Construction Contractor POC and other MMOs.
- Cellular phones and phone numbers for all MMOs, the Monitoring Coordinator, and the Construction Contractor POC.
- Daily tide tables.
- Large-aperture binoculars (25X or better) must be at each outer (northern and southern) station, as well as Ship Creek, or where MMOs feel they are most useful for detecting marine mammals (at least 3 total 25x binoculars).

- Hand-held binoculars (7X or better) with built-in rangefinder or reticles must be at each station (if binoculars do not include rangefinders or reticles, then rangefinders and compasses must be available).
- Theodolites for determining locations and tracking marine mammals must be available at all four MMO stations.
- Electronic data collection system (e.g., Toughbook, iPad, or laptop) at each MMO station and backup paper forms.

2.5 Observation Locations

It is anticipated that the marine mammal monitoring program will be essentially identical to the program implemented for the Petroleum and Cement Terminal (PCT). MMOs will be positioned at the best practical vantage points that are determined to be safe. At least one of the MMO stations will be able to observe the Level A zones. Eleven total MMOs for the CTR Project typically will be stationed between the Anchorage Downtown Viewpoint near Point Woronzof, the Anchorage Public Boat Dock at Ship Creek, the CTR Project site, and the North End of POA property (Figure 2-1). Each of the four locations will be outfitted with an elevated platform constructed on top of a shipping container or a similar base that is at least 8' 6" high and can support two to three MMOs and their equipment. Each platform must be stable enough to support use of a theodolite and must be located to optimize the MMOs' ability to observe marine mammals and the applicable harassment and shutdown zones. The additional elevation provided by the platforms will enable better viewing conditions for seeing distant marine mammals than from ground level, and the supporting structure and roof will provide the MMOs with protection from weather. Each station will also have a power source and a protected area or data shack on the platform, where MMOs can record collected data into an electronic system.

The eleven MMOs will work in two- to four-person teams at each observation station. MMOs will have no other construction-related tasks or responsibilities while conducting monitoring for marine mammals.

It is possible that two of the eleven MMOs may be stationed at Port MacKenzie or north of Cairn Point during some pile installation and removal. Areas near Cairn Point or Port MacKenzie have safety, security, and logistical issues, so they may not be feasible; their availability is not known at this time. Cairn Point proper is located on military land and has bear presence, and restricted access does not allow for the location of an observation station at this site. Tidelands along Cairn Point are accessible only during low tide conditions and have inherent safety concerns of being trapped by rising tides. Port MacKenzie is a secure port that is relatively remote, creating safety, logistical, and physical staffing limitations due to lack of nearby lodging and other facilities. The roadway travel time between port sites is approximately 2–3 hours.

An adaptive management measure may be proposed for a monitoring location north of the Project site, once the Construction Contractor has been selected and more detailed discussions can occur. Additional factors for consideration may include rate of takes incurred (high or low) once construction has commenced, or temporary staffing of Port MacKenzie or a northerly monitoring station during peak marine mammal presence time periods.



Figure 2-1. Marine Mammal Monitoring Stations for the CTR Project

Section 3. Marine Mammal Monitoring and Mitigation

The two outer observation stations will monitor the Level B zones. A station at the Anchorage Public Boat Dock at Ship Creek and a station more central to the CTR construction site will focus on monitoring the Level A and shutdown zones. The station at Ship Creek will monitor beluga whale and harbor seal activity at Ship Creek and provide a different vantage point to the CTR construction site. To provide the best view of Ship Creek and to the north, this station will be located as close to the end of the promontory at Ship Creek as possible. MMOs at the Anchorage Downtown Viewpoint station will collect observations of beluga whales at the mouth of Knik Arm and the Point MacKenzie area to determine whether beluga whales are moving into Knik Arm. MMOs at the North End (North Extension) will focus on beluga whales that may be leaving Knik Arm from the north. MMOs will document observed changes of direction or other behaviors. If possible, behaviors will be correlated with construction activities.

MMOs will work in two- to four-person teams at each observation station to increase the probability of detecting marine mammals and to confirm sightings. At least two MMOs will be on watch at each station at any given time, scanning the Level A and Level B harassment zones surrounding in-water pile installation and removal for marine mammals by using large-aperture binoculars (25X), hand-held binoculars (7X), and the naked eye. MMOs will rotate through these three active monitoring methods to reduce eye strain and increase observer alertness, and one MMO will record data on the computer in the data shack, a less-strenuous activity that will provide the opportunity for rest. MMOs will be in real-time communication with each other and with the construction crews to convey information about marine mammal sightings, locations, and directions of movement.

An MMO may observe for no more than 4 hours at a time without a break and no more than 12 hours per day. MMOs will be able to take comfort breaks as needed by each individual. Pile installation and removal is an intermittent activity, and MMOs will be able to take breaks as accommodated by the work schedule and their preferences. Given intermittent Project activity and teams of MMOs at each station, it is unlikely that an MMO would observe 4 hours continuously without a break.

3.1 Pre-activity Monitoring and Startup Procedures

Mitigation measures and startup procedures include the following, modeled after the stipulations outlined in the Final IHA for Phase 1 and Phase 2 Petroleum and Cement Terminal (PCT) construction (85 FR 19294) and South Floating Dock (SFD) construction (86 FR 50057) and listed in Section 11 of the IHA and LOA application:

- The POA will conduct briefings for construction supervisors and crews, the monitoring team, and POA staff prior to the start of all in-water pile installation and removal, and when new personnel join the work, in order to explain responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.
- Marine mammal monitoring will take place from 30 minutes prior to initiation of in-water pile installation and removal through 30 minutes post-completion of pile installation and removal.
- For beluga whales, the Level B zone for in-water pile installation and removal must be fully visible for 30 minutes before the zone can be considered clear of beluga whales. Pile installation and removal will commence when MMOs have declared the Level B zone clear of beluga whales or the mitigation measures developed specifically for beluga whales (below) are satisfied.

- For species other than beluga whales, in-water pile installation and removal will not commence until the Level A zone is clear of marine mammals for 15 minutes.
- In the event of a delay or shutdown of activity, marine mammal behavior will be monitored and documented until the marine mammals leave the shutdown zones of their own volition, at which time pile installation or removal will commence or recommence.
- All MMO observations of in-water pile installation and removal will occur between civil dawn and civil dusk.

3.2 During Activity Monitoring and Shutdown Procedures

The following activity monitoring and shutdown procedures were modeled after the stipulations outlined in the Final IHA for Phases 1 and 2 PCT construction (85 FR 19294) and SFD construction (86 FR 50057) and listed in Section 11 of the LOA application:

- For in-water construction, including heavy machinery activities other than pile installation and removal (e.g., use of barge-mounted excavators or dredging), if a marine mammal comes within 10 meters, the POA will cease operations and reduce vessel speed to the minimum level required to maintain steerage and safe working conditions.
- The POA will use soft start techniques when impact pile driving. A soft start requires contractors to provide an initial set of strikes at reduced energy, followed by a thirty-second waiting period, followed by two subsequent reduced-energy strike sets. A soft start must be implemented at the start of each day's impact pile driving, any time impact pile driving has been shut down or delayed due the presence of a marine mammal, or at any time following cessation of impact pile driving for a period of thirty minutes or longer.
- On a given day, if marine mammal monitoring ceases but in-water pile installation and removal is scheduled to resume, MMOs will follow the pre-pile driving monitoring protocol as described above, including a 30-minute clearance scan of the Level B zone for beluga whales.
- If a species other than a beluga whale is observed entering or within an established Level A zone or shutdown zone, in-water pile installation and removal will be halted or delayed; or a potential Level A exposure (take) will be documented. Pile installation or removal will continue until the species other than a beluga whale approaches the relevant shut-down zone, and will cease before the animal crosses the shutdown isopleth. In-water pile installation and removal will not commence or resume until either the animal has voluntarily left and been visually confirmed beyond the shutdown zone and on a path away from such zone, or 15 minutes have passed without subsequent detections.
- A minimum 100-meter shutdown zone will be implemented for all marine mammals, if larger than the calculated Level A zones. Larger shutdown zones will be implemented as calculated.
- If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the Level B zone, in-water pile installation and removal will shut down immediately. In-water pile installation and removal will not resume until the animal has been confirmed to have left the area or the 30 minutes have elapsed.
- In-water pile installation and removal delay and shutdown protocol for Cook Inlet beluga whales (but not other species of marine mammals) includes the following:
 - Prior to the onset of in-water pile installation and removal, should a beluga whale(s) be observed within the Level B zone, in-water pile installation or removal will be delayed. In-water pile installation and removal will not commence until the animal has voluntarily traveled at least 100

meters beyond the Level B harassment zone and is on a path away from such zone, or the beluga whale has not been re-sighted within 30 minutes.

- If in-water pile installation or removal has commenced, and a beluga whale(s) is observed within or likely to enter the Level B harassment zone, in-water pile installation or removal will be delayed. In-water pile installation and removal will not commence until the animal has voluntarily traveled at least 100 meters beyond the Level B harassment zone and is on a path away from such zone, or the beluga whale has not been re-sighted within 30 minutes.
- If, during in-water installation and removal of piles, MMOs can no longer effectively monitor the entirety of the beluga whale Level B shutdown zone due to environmental conditions (e.g., fog, rain, wind), in-water pile installation and removal will continue only until the current segment of pile is driven; no additional sections of a pile or additional piles may be installed or removed until conditions improve such that the monitoring zone can be effectively monitored. If the Level B harassment zone cannot be monitored for more than 15 minutes, the entire Level B harassment zone will be cleared again for 30 minutes prior to in-water pile installation and removal.

3.2.1 Harassment and Shutdown Zones

Distances to the harassment thresholds, as defined by sound isopleths for in-water pile installation and removal, vary by functional hearing group (Level A only), pile size, duration of installation and removal, and pile installation method. Methods used to estimate distances to the Level A and Level B harassment isopleths for the CTR Project are outlined in the IHA application. Table 3-1 provides distances to Level A and Level B harassment zones and shutdown zones that will be used for the CTR Project. Figures illustrating the corresponding Level A and Level B harassment zones in Table 3-1 can be found in Attachment A.

The Level B zone for beluga whales will be implemented as the shutdown zone (Table 3-1).

The POA will avoid and minimize Level A take by implementing a minimum 100-meter shutdown zone for all species other than beluga whales and all combinations of pile sizes and hammers. Level A take is being requested for Steller sea lions, harbor seals, harbor porpoise, gray whales, and humpback whales; however, the 100-meter minimum shutdown zone will avoid some exposure of marine mammals to sound levels that could reach the Level A threshold. Although every effort will be made to shut down before marine mammals enter the 100-meter zone, if the Level A isopleth for a species is smaller than 100 meters, potential Level A take of that species would not occur unless individuals move across their respective Level A isopleths as defined in Table 3-1.

Note that Level A take has both a location and time component. Simply crossing the Level A harassment isopleth does not cause a Level A take; the animal must be present in the Level A zone for a specified amount of time before a Level A take can occur. If a marine mammal crosses a Level A isopleth, how long the animal was present in the zone as well as the shutdown time will be documented to determine if a Level A exposure (take) may have occurred.

Section 3. Marine Mammal Monitoring and Mitigation

Table 3-1. Rounded Level A and B Harassment and Shutdown Zones based on Project Activities

Pile Size	Hammer Type	Number of Piles (Duration in Minutes or Strikes per Pile) Per Day	Minimum Shutdown and Level A Zones (m)												Level B Zone (m)
			LF		MF				HF		PW		OW		All Species Except Beluga Whale
			Humpback and Gray Whale		Beluga Whale		Killer Whale		Harbor Porpoise		Harbor Seal		Steller Sea Lion		
			Level A Take Authorized		No Take		No Level A Take		Level A Take Authorized		Level A Take Authorized		Level A Take Authorized		
Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone		
24-inch installation	Vibratory	4 (30 minutes)	100	11	2,300	2	100	2	100	16	100	7	100	1	2,300
24-inch removal	Vibratory	4 (45 minutes)	100	32	5,200	4	100	4	100	46	100	21	100	2	5,200
36-inch installation	Vibratory	4 (30 minutes)	100	22	4,520	3	100	3	100	31	100	14	100	2	4,520
36-inch removal	Vibratory	4 (45 minutes)	100	6	980	1	100	1	100	9	100	4	100	1	980
72-inch installation	Vibratory	3 (10 minutes)	100	19	9,100	3	100	3	100	27	100	12	100	2	9,100
144-inch installation	Vibratory	1 (15 minutes)	100	3	2,000	1	100	1	100	4	100	2	100	1	2,000
24-inch installation	Impact (Unattenuated)	1 (1000 strikes)	500	735	1,600	27	100	27	500	876	100	394	100	29	1,600
24-inch installation	Impact (Attenuated)	1 (1000 strikes)	100	251	550	9	100	9	100	299	100	135	100	10	550
36-inch installation	Impact (Unattenuated)	1 (1000 strikes)	500	1,165	1,590	42	100	42	500	1,387	100	624	100	46	1,590
36-inch installation	Impact (Attenuated)	1 (1000 strikes)	100	398	550	15	100	15	100	474	100	213	100	16	550
72-inch installation	Impact (Unattenuated)	1 (5,743 strikes)	500	10,936	7,360	389	400	389	500	13,026	100	5,853	100	427	7,360

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Pile Size	Hammer Type	Number of Piles (Duration in Minutes or Strikes per Pile) Per Day	Minimum Shutdown and Level A Zones (m)												Level B Zone (m)
			LF		MF				HF		PW		OW		All Species Except Beluga Whale
			Humpback and Gray Whale		Beluga Whale		Killer Whale		Harbor Porpoise		Harbor Seal		Steller Sea Lion		
			Level A Take Authorized		No Take		No Level A Take		Level A Take Authorized		Level A Take Authorized		Level A Take Authorized		
Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone	Shutdown Zone	Level A Zone		
72-inch installation	Impact (Attenuated)	1 (5,743 strikes)	500	3,734	2,520	133	140	133	500	4,448	100	1,999	100	146	2,520
72-inch installation	Impact (Attenuated)	2 (5,743 strikes)	500	5,928		211	220	211	500	7,061	100	3,173	100	231	
72-inch installation	Impact (Attenuated)	3 (5,743 strikes)	500	7,767		277	280	277	500	9,252	100	4,157	100	303	
144-inch installation	Impact (Unattenuated)	1 (5,000 strikes)	500	29,201	18,500	1,039	1,100	1,039	500	34,782	100	15,627	100	1,138	18,500
144-inch installation	Impact (Attenuated)	0.5 (5,000 strikes)	500	8,539	13,600	304	310	304	500	10,171	100	4,570	100	333	13,600
144-inch installation	Impact (Attenuated)	1 (5,000 strikes)	500	13,554		483	500	483	500	16,145	100	7,254	100	529	

Note: in = inches; HF = high-frequency; LF = low-frequency; m = meters; MF = mid-frequency; OW = otariid in water; PW = phocid in water

3.2.2 Shutdown Procedures

If a marine mammal that is not a beluga whale is traveling along a trajectory that could take it into the Level B harassment zone, the Lead MMO will notify the Construction Contractor POC, who will decide to either (1) immediately shut down all in-water pile installation and removal before the marine mammal enters the Level B harassment zone, thereby avoiding a take (shutdown will occur for all marine mammals for which Level B take was not authorized under the LOA and IHA); or (2) document the marine mammal as a take upon its entry into the Level B harassment zone. For safety and operational reasons, the immediate shutdown of in-water pile installation or removal may not be possible. The MMOs will document the reason(s) behind each shutdown or non-shutdown decision. However, if in-water pile installation or removal has commenced, and a beluga whale(s) is observed within or likely to enter the Level B harassment zone, an MMO will call for a shutdown. Pile installation or removal will shut down as soon as possible, as long as the Construction Contractor POC deems the situation safe to do so, and will not re-commence until the whale(s) is out of and on a path away from the Level B harassment zone or until no beluga whale(s) has been observed in the Level B harassment zone for 30 minutes immediately prior to resumption of in-water pile installation and removal. The Project will avoid Level B take of beluga whales to the maximum extent possible. Exceptions that may cause a nominal delay in shutting down could include concerns for human safety or imminent equipment damage. See the CTR LOA and IHA application for an explanation of anticipated safety concerns.

If the Construction Contractor POC decides to continue in-water pile installation or removal while a non-beluga marine mammal is within the Level B harassment zone, that pile segment will be completed without cessation and a potential Level B exposure or take will be recorded. The determination of Level A or Level B take will not be made in the field by the MMOs. Potential takes will be documented and reported to NMFS.

The MMOs will determine when a marine mammal(s) has left the harassment zone or has not been resighted for a period of 15 minutes (non-beluga whales) or 30 minutes (beluga whales) and will determine when in-water pile installation and removal may recommence.

In-water pile installation and removal will take place only when the Level B harassment zones can be adequately monitored. If, during in-water pile installation or removal, MMOs can no longer effectively monitor waters within the Level B harassment zone for the presence of marine mammals due to environmental conditions (e.g., fog, rain, wind), in-water pile installation and removal may continue only until the current segment of pile is driven; no additional sections of a pile or additional piles may be driven until conditions improve such that the Level B harassment zone can be effectively monitored. If pile driving ceases for more than 15 minutes, the entire Level B zone must be cleared as in the condition above.

If a marine mammal comes within 10 meters of in-water, heavy machinery, or work other than in-water pile installation or removal (e.g., standard barges, tugboats, skiffs), operations will cease, and vessels will reduce speed to the minimum level required to maintain steerage and safe working conditions. Construction crew members can enforce this shutdown zone.

The Lead MMO and the Port Construction Manager will maintain a running tally of all takes that occur for each species. If the project reaches 80 percent of its allotted take for any species, NMFS will be notified for discussion and guidance. At such time, NMFS and the POA will develop an adaptive management strategy to manage the remaining number of authorized take. If a species for which authorization of take has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the Level B zone (Table 3-1), in-water pile installation and removal will shut down immediately. In-water pile installation and removal will not resume until the animal has been confirmed to have left the area or 30 minutes have elapsed.

3.3 Post-activity Monitoring

Monitoring of the Level A and Level B harassment zones will continue during pile installation and removal. Once pile installation and removal are completed for the day, marine mammal observations will continue for 30 minutes. Data collection will indicate whether the marine mammal(s) were still present in the area when marine mammal monitoring was completed.

3.4 Data Collection

Data regarding environmental conditions, marine mammal sightings, communication with the Construction Contractor POC, and in-water Project activities will be collected electronically through a computerized software system. Hardcopy paper forms (see Attachment B for examples) will be available in case there are technical difficulties with equipment. Data entry will be checked for quality assurance and quality control by the Lead MMO daily. As previously stated, NMFS data collection best practices and definitions for standardizing data collection and entry for Cook Inlet beluga whale sightings have been incorporated into this Monitoring Plan. Because other marine mammals besides beluga whales are likely to be sighted during the CTR Project, definitions are expanded upon to include behaviors from all marine mammal species.

3.4.1 Environmental Conditions, Project Activities, and Communication

The MMOs will document monitoring efforts, environmental conditions, types of Project activities, and communications between MMOs, hydroacoustic personnel, and construction personnel. MMOs will document the start and stop times of all monitoring efforts. Environmental conditions will be documented at the beginning and end of every monitoring period and every 30 minutes, or as conditions change. Data collected will include MMO names, location of the observation station, time and date of the observation, weather conditions, air temperature, sea state, cloud cover, visibility, glare, tide, and ice coverage (if applicable). See Table 3-2 for more information on each of these attributes.

The MMOs will document Project activities, including size of pile, method of in-water pile installation and removal, whether a bubble curtain was used, and time of startup (or soft start) and shutdown. All shutdowns of in-water pile installation and removal will be documented, including the reason for each shutdown. MMOs will also document other, non-Project-related activities that could disturb marine mammals in the area, such as the presence of vessels or aircraft. The Lead MMO and the Construction Contractor POC will communicate information regarding startups, shutdowns, and marine mammal sightings.

Table 3-2. Environmental, Project Activities, and Communication Data Attributes

Data Attribute	Attribute Definition and Units Collected
Monitoring effort (start and end times)	Format 24-hour clock, which covers the entire amount of monitoring in a given day. If there is a break in the middle of the day when monitoring does not occur, the end time should be recorded. After the break, a new data sheet should be used to record the new monitoring effort start and end times
Observers' names	Provide the full names of the MMOs
Environmental Conditions (collected every 30 minutes or when conditions change)	
Overall conditions	Scale 1 to 10; 1= poor, 5 = moderate, 10 = excellent
Weather conditions	Sunny (S), partly cloudy (PC), light rain (LR), steady rain (SR), fog (F), overcast (OC), light snow (LS), snow (SN)
Light conditions	Light, twilight, dark

Table 3-2. Environmental, Project Activities, and Communication Data Attributes

Data Attribute	Attribute Definition and Units Collected
Monitoring effort (start and end times)	Format 24-hour clock, which covers the entire amount of monitoring in a given day. If there is a break in the middle of the day when monitoring does not occur, the end time should be recorded. After the break, a new datasheet should be used to record the new monitoring effort start and end times.
Observers' names	Provide the full names of the MMOs.
Environmental Conditions (collected every 30 minutes or when conditions change)	
Overall conditions	Scale 1 to 10; 1= poor, 5 = moderate, 10 = excellent
Weather conditions	Sunny (S), partly cloudy (PC), light rain (LR), steady rain (SR), fog (F), overcast (OC), light snow (LS), snow (SN)
Light conditions	Light, twilight, dark
Air temperature	Celsius
Wind speed	Knots
Wind direction	From the north (N), northeast (NE), east (E), southeast (SE), south (S), southwest (SW), west (W), northwest (NW)
Sea state	(0) Mirror-like, calm; (1) ripples (up to 4 inches) without foam crests; (2) small wavelets (up to 8 inches); (3) large wavelets (up to 2 feet), perhaps scattered white horses; (4) small waves (up to 3 feet), fairly frequent white horses; (5) moderate waves (up to 6 feet)
Cloud cover	0–100%; percentage of cloud cover
Glare	0–100%; percentage of water obstructed by glare and grid cells affected by glare or the direction of glare
Tide	Predicted hourly data information gathered from National Oceanic and Atmospheric Administration will be available on site and reported in the 90-Day Technical Report
Ice coverage	0–100%; percentage of ice cover and type of ice (no ice present, new, brash, or pancake ice and floes)
Other activity	Number, type, and general location of vessels or other sources of in-water disturbance
Project and Communication Activities	
Time of communication or project activity	Time that in-water project activities and all communications between MMOs and construction crews take place
Type of project activity and duration	Soft start, shutdown, impact pile installation, vibratory pile installation or removal, all pile work start and stop times, and sound attenuation method used. If shutdown occurs, document the reason for the shutdown.
Use of a bubble curtain and type	Type of bubble curtain; times it is turned on and off
Individuals communicating	Names of individuals involved in any communication
Communication	Information communicated between the Lead MMO and Construction Contractor POC

3.4.2 Sightings

All marine mammals observed will be documented. The data collected will include a unique group identifier specific to that day, start and end times of the sighting, species sighted, number of individuals (group size), age class, color classification (only for beluga whales), behavior and movement, distance at first observation from active pile work, location of active pile work, closest observed distance from Project activities, type of in-water Project activity at the time of sighting, and whether and when in-water pile

installation or removal was stopped in response to the sighting. The MMO will also note observed behavior changes that may be due to Project activities.

A color classification system will be used for beluga whales only. Beluga whales will be documented as white, gray, dark gray calf, or dark gray neonate. This color classification will help estimate the age class of each animal. Adults are typically white, juveniles are generally gray, and calves/neonates are dark gray; however, the age at which a beluga whale’s color matures to white is variable. The proximity of calves to the mother will also be documented. Calves, especially neonates, typically remain in direct contact with the mother. When known, sex and age classes for all other marine mammals will be documented.

The use of a surveyor’s theodolite will be the primary method to track marine mammals once they have been observed. The theodolite will be connected directly to the electronic data collection application or software system. The software system will use the data collected (horizontal and vertical angles to each individual or group of marine mammals) from the theodolite to determine the distance between the marine mammals and the Project activity, and their positions relative to the Level A and Level B harassment zones. The software system will also have the ability to determine the geographic location of a group of marine mammals by entering the reticles and bearing, to be used as a backup if the theodolite is malfunctioning. The MMOs will continue to track or focal-follow the marine mammals’ movements using the theodolite during the entire sighting period and while the marine mammals remain within the harassment zones. Locations will be measured every 5–15 minutes or when the animal’s direction of movement or behavior changes.

The MMO will also track the marine mammals’ behavior with every sighting of the group, including perceived reactions caused by CTR Project activities or other human activities in the area. Potential indicators of negative responses to noise include an individual or group approaching and then leaving, changes in swimming speed or direction, and abrupt dives or dispersal. MMOs will also record group descriptors such as spread, group spread, and formation. Other activity to which the marine mammal could be responding will also be documented when possible.

Hardcopy data forms may be used as a backup to document and track marine mammals if there are equipment difficulties. The use of a 500-meter by 500-meter grid system to track marine mammals is consistent with previous POA monitoring programs. Tracking marine mammals using the theodolite is the preferred method because it is more accurate than the grid system and eliminates manual data entry. If the grid system becomes necessary, MMOs will use binoculars, rangefinders, and landmarks to determine marine mammal locations. The MMO will use a map overlain with a 500-meter by 500-meter grid and the harassment zones for the specific location. The MMO will draw the location of the initial and last sightings, the point of closest approach, and a line to show the path of the animal(s) during the sighting to track marine mammals. The 500-meter by 500-meter grid may also be placed over theodolite tracks during data post-processing and analysis for consistency with previous monitoring programs.

When marine mammals are sighted, MMOs will delegate responsibilities so that one or more MMOs continue to scan the water to identify other marine mammals potentially entering the area, while another MMO continues to monitor and track the first sighting.

Table 3-3. Marine Mammal Observation Data Attributes

Data Attribute	Attribute Definition and Units Collected
Marine Mammal Sighting Data	
Group identification code	Each group of marine mammals will be given a unique group identification code. This group identification code is not species specific . This identifier can also be used to identify a group whose location, behaviors, and other variables have changed, requiring the use of multiple datasheets
Time of initial and last sighting	Time the group is initially sighted and last sighted

Table 3-3. Marine Mammal Observation Data Attributes

Data Attribute	Attribute Definition and Units Collected
Time animals entered and exited harassment zones	Time the group entered and exited harassment zones, if applicable
Species observed	Identify species observed: beluga whale, harbor seal, harbor porpoise, Steller sea lion, killer whale, humpback whale, or other species
Sighting cue	First observation behavior or body part: head, fluke, dorsal fin, body, splash, blow, birds feeding, porpoise, or other
Group size	Minimum and maximum number of animals counted; record the count the MMO believes to be the most accurate
Color classification	Beluga whale color classifications: White – Large, bright white to dull white Gray - Large (larger than calves), light to medium gray Dark gray: <u>Calf</u> – Dark gray, relatively small (<2/3 the total length of white belugas), almost always swimming within 1 body length of larger whale <u>Neonate</u> – Newborns (estimated to be hours to days old, based on extremely small size (~1.5 meter [5 feet]), a wrinkled appearance due to the presence of fetal folds, and uncoordinated swimming and surfacing patterns Unknown color – Any beluga not confidently identified in above categories
Sex and age, if possible	Generally, it will be difficult to make this determination; however, sometimes numbers of females with pups or calves can be determined
Initial and final heading	Cardinal direction animals are headed during initial and last sightings
General pace	Sedate, moderate, or vigorous
Tracking movement and theodolite readings	The movements and changes in locations should be documented for each sighting, including the horizontal and vertical angles used to determine location and distance from in-water project activities
Distances from marine mammal to in-water project activities and observation station	Approximate distance in meters or kilometers from a marine mammal to in-water project activities when initially sighted, at closest approach to activities, and at final sighting
In-water project activities at time of sighting	Type of project activities occurring at time of sighting; indicate shutdown times for pile installation or removal, if shutdown occurs
Other activities at time of sighting	Description of nearby activities occurring at time of sighting, such as presence, number, and activity of vessels nearby
Behavior	Indicate primary and secondary behaviors (see Table 3-4). Primary behavior is the behavior most commonly exhibited by the group; secondary behavior is the next most commonly exhibited behavior of the group
Change in behavior	Describe previous and new behavior and whether the change in behavior is correlated with project activities; record time

Table 3-3. Marine Mammal Observation Data Attributes

Data Attribute	Attribute Definition and Units Collected
Formation (for beluga whales only)	<p>The formation of the group references how the individual beluga whales are distributed within the group. Enter the formation code that best reflects the distribution pattern of the group:</p> <p>Circular (C) – arranged in a circular group while moving in one direction</p> <p>Parallel (P) – alongside each other, spread perpendicular to direction of movement</p> <p>Linear (L) – forming a line, spread along direction of movement</p> <p>Echelon (E) – Arranged diagonally, each beluga whale to the side and behind beluga ahead of it; also includes “V” formation</p> <p>No Formation (NF) – Random or un-patterned formation</p>
Group Spread	The distance in meters or kilometers between the lead whale and the last whale, measured or estimated along the direction of travel.
Spread (for beluga whales only)	The spread of the whales is defined as the mean distance between beluga whales in body lengths (e.g., a spread of 2 indicates that the whales are spaced out, on average, 2 body lengths apart). This may be hard to estimate and may change frequently; MMOs should do their best to choose a representative integer for each sighting
Number of animals taken	Indicate the number of animals potentially exposed to Level A and Level B harassment during the sighting

Table 3-4. Behavior Definitions

Activity	Code	Definition
Avoiding predation	AP	Moving with speed and/or abrupt changes in direction in response to an observed predator
Bubbling	BU	Producing many bubbles while submerged, not including normal subsurface exhalation associated with surfacing
Breach	B	Cetacean leaping or jumping clear of the water
Calving/Birthing	CS	Provide detailed comments to justify use of this code
Diving	D	Moving downward through the water column (rapidly or slowly), often showing tail fluke or hind flippers before dive
Feeding (observed)	FO	Observed with prey in mouth
Feeding (suspected)	FS	Diving, chasing, or pursuing prey or lunging, which suggest foraging; could also be suggested by proxy events (e.g., jumping fish, associating birds and/or seals, etc.)
Mating suspected	MS	Two or more cetaceans or pinnipeds swimming in ventral-to-ventral contact slowly in same direction or rolling around in one place

Table 3-4. Behavior Definitions

Activity	Code	Definition
Milling	M	Moving in a non-linear, weaving, or circular pattern within an area
Porpoising	P	A cetacean or pinniped making low, arching leaps as it travels rapidly near the surface
Resting	R	Floating at or near surface, with little or no movement for several minutes or more with no other suspected behavior
Side scanning	SS	Cetacean swimming (often very slowly) at the surface with lateral aspect (pectoral flipper, tail fluke, or side surface of body) visible, often for 30 seconds; may be followed by explosive prey pursuit
Sink	SI	Seal sinks straight back down underwater, hind flippers first, with upright posture
Snorkeling	SN	Surfacing showing a low profile, with only blowhole, melon, and small portion of dorsal just posterior to blowhole visible. Pinnipeds would have nose and head skimming the water surface
Socializing	S	Interacting with other cetaceans or pinnipeds, indicated by milling, bubbling, tail slapping, physical contact, or audible vocalizations
Spyhopping	SH	Holding body vertically with head out of water for several seconds or more
Startling	ST	Rapidly changing behavior, dispersing, or travelling that indicates a response to external event (not including avoiding predation)
Tail slapping	TS	Hitting tail fluke vigorously against water surface, producing a splash
Tail waving	TW	Holding body vertically with tail out of water for several seconds or more, often slowly waving tail but not tail slapping
Travelling	T	Moving in a linear or near-linear direction without interruption
Vocalizing	V	Snorting, whistling, or chirping
Other	O	Unclassified behavior – must provide a comment
Unknown	U	Behavior indistinguishable due to monitoring conditions and/or lack of ability to watch whale for length of time to determine – no comment is necessary

3.4.3 Quality Assurance (QA) and Quality Control (QC)

Electronic data collection or data sheets will undergo QA/QC review by the Lead MMO at the end of each monitoring day. No cells or information will be left blank. If information is not available or not applicable, the field will be indicated with an “NA” or dash. The data will also undergo QA/QC review once it is entered into the monitoring data collection system (Section 3.4.4).

3.4.4 Marine Mammal Monitoring Database

All marine mammal monitoring data collected will be stored in a database. The database will be set up and structured for easy access and management of data and will be used to develop marine mammal monitoring reports (Section 4.2).

Section 4. Reporting

4.1 Daily Reports

The Contractor Project Manager will provide a daily monitoring summary to the POA Construction Manager that will include a summary of marine mammals sighted and any Project shutdowns.

4.2 Monthly Reports

Monthly reports will be submitted to NMFS' MMPA office for each calendar month in which in-water pile installation and removal occurs. Each monthly report will contain and summarize the following information:

- Monitoring effort (date, start time, end time, duration)
- Marine mammal sightings (date; sighting start and end times; duration of sighting; species; group size; age class or color classification; and behaviors, including any observed behaviors correlated with project activities)
- Marine mammal potential exposures (takes) by species
- In-water activities before and during marine mammal sightings
- Project shutdowns (date, start time, end time, duration, and reason for shutdown)

Revisions to written monthly reports will not be made. Comments from NMFS or requested revisions to the written report will be addressed in the annual report for that year. Specific questions will be answered in email form.

4.3 Draft and Final Technical Reports

A draft report, including all electronic data collected and summarized from all monitoring locations, will be submitted to NMFS' MMPA program within 90 days of the completion of monitoring efforts each year. A final marine mammal monitoring report will be prepared and submitted to NMFS within 30 days following receipt of comments on the draft report from NMFS. The final report will include the following information:

- Monitoring effort (date, start time, end time, duration)
- Summary of environmental conditions
- Marine mammal sightings (date; sighting start and end times; duration of sighting; species; group size; age class or color classification; locations relative to pile work; and behaviors, including any observed behaviors correlated with project activities)
- Marine mammal potential exposures (takes) by species
- In-water activities before and during marine mammal sighting
- Project shutdowns (date, start time, end time, duration, and reason for shutdown)
- Number of days of observations
- Lengths of observation periods
- Locations of observation station(s) used and dates of when each location was used
- Numbers, species, dates, group sizes, and locations of marine mammals observed

- Distances to marine mammal sightings, including closest approach to construction activities
- Descriptions of any observable marine mammal behavior in the Level A and Level B harassment zones
- Times of shutdown events, including when work was stopped and resumed due to the presence of marine mammals or other reasons
- Descriptions of the type and duration of any pile installation work occurring, and soft start procedures used while marine mammals were being observed
- Details of all shutdown events, and whether they were due to presence of marine mammals, inability to clear the hazard area due to low visibility, or other reasons
- Tables, text, and maps to clarify observations

4.4 Notification of Injured or Dead Marine Mammals

In the unanticipated event that the specified activity (pile installation and removal) clearly causes the take of a marine mammal for which authorization has not been granted, such as a potential Level A take of a beluga whale, the POA will immediately cease in-water pile installation and removal and report the incident to the Office of Protected Resources (301-427-8401) and NMFS. The report will include the following information:

- Time, date, and location (latitude/longitude) of the incident
- Detailed description of the incident
- Description of vessel involved (if applicable), including the name, type of vessel, and vessel speed before and during the incident
- Status of all sound source use in the 24 hours preceding the incident
- Environmental conditions (wind speed and direction, wave height, cloud cover, and visibility)
- Description of marine mammal observations in the 24 hours preceding the incident
- Species identification, description, and fate of animal(s) involved
- Photographs or video footage of animals or equipment (if available)

In-water pile installation and removal will not resume until NMFS is able to review the circumstances of the prohibited take. NMFS will work with the POA to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. The POA may not resume in-water pile installation and removal until notified by NMFS' MMPA program via letter, email, or telephone.

If the POA discovers a stranded, injured, or dead marine mammal, regardless of the cause, the POA will immediately report the incident to the Alaska Marine Mammal Stranding Hotline (877-925-7773).

The report will include applicable information listed above. If the cause of stranding, injury, or death is unknown, activities may continue while NMFS reviews the circumstances of the incident. NMFS would work with the POA to determine whether modifications to the activities are appropriate.



Attachment A Level A and Level B Harassment Zones



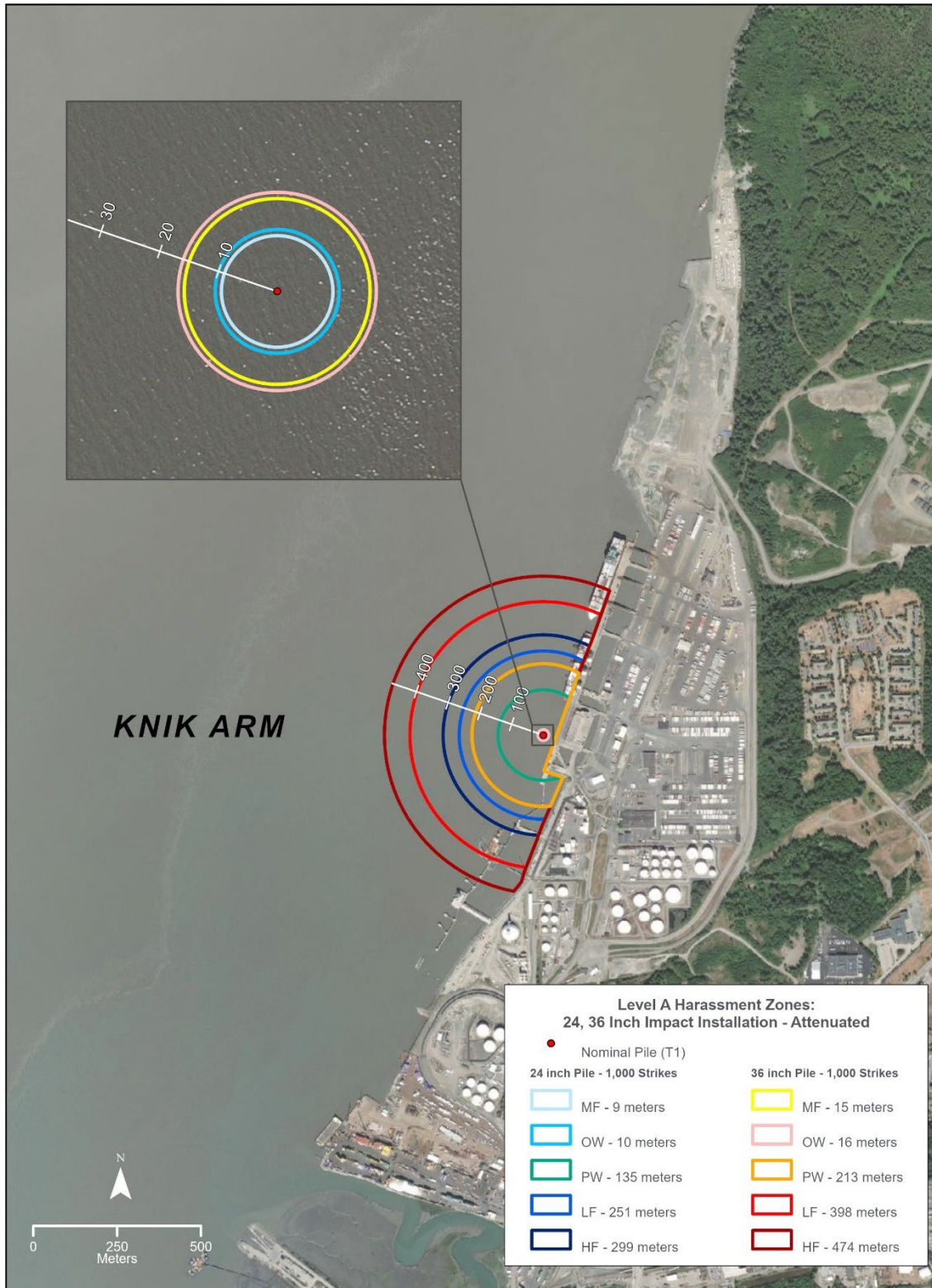


Figure A-1. Level A Harassment Isoleths for Impact Installation of 24 and 36-Inch Piles (Attenuated) for Production Rate of 1 Pile per Day

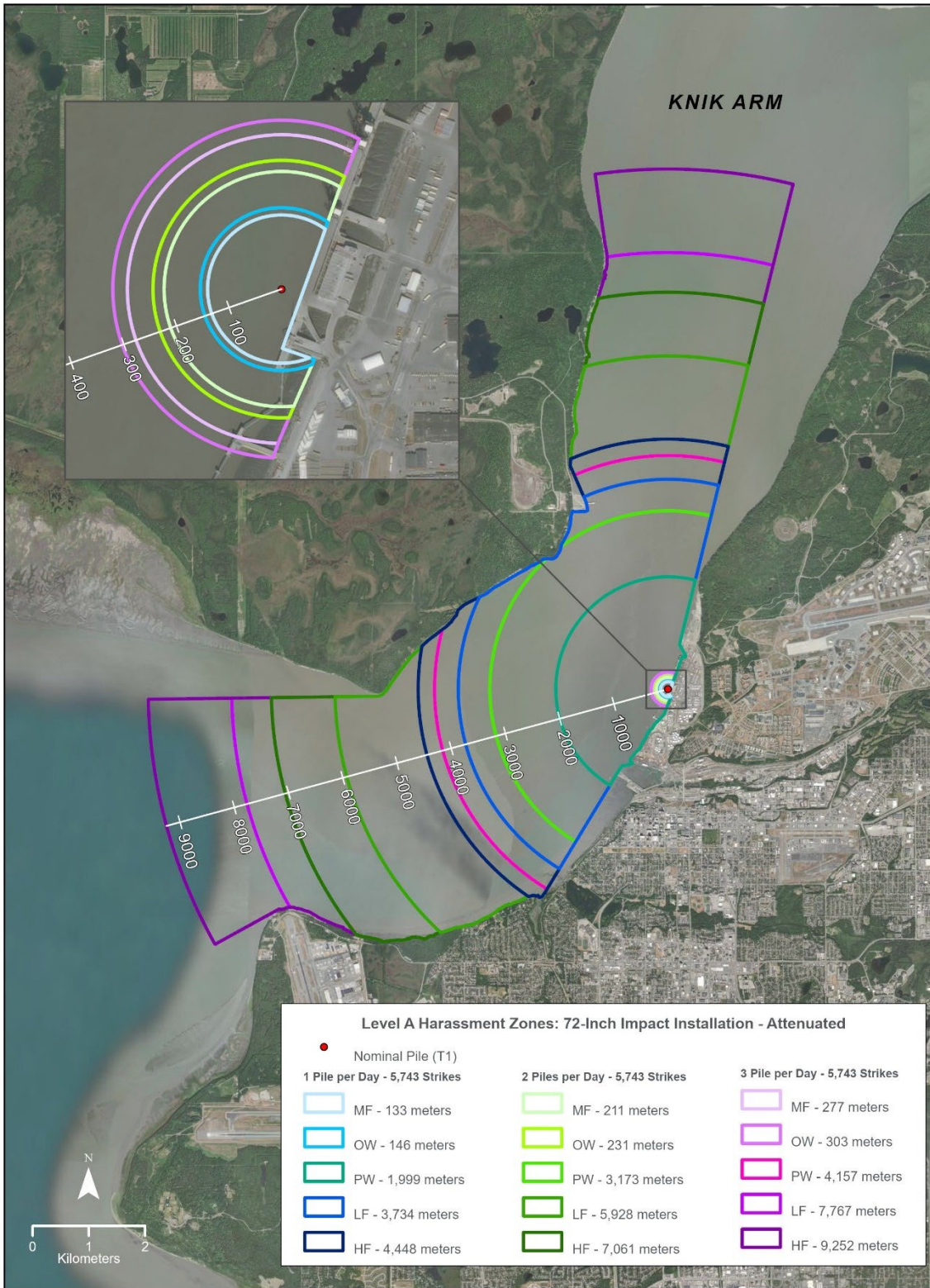


Figure A-2. Level A Harassment Isopleths for Impact Installation of 72-Inch Piles (Attenuated) for Production Rate of 1-3 Piles per Day

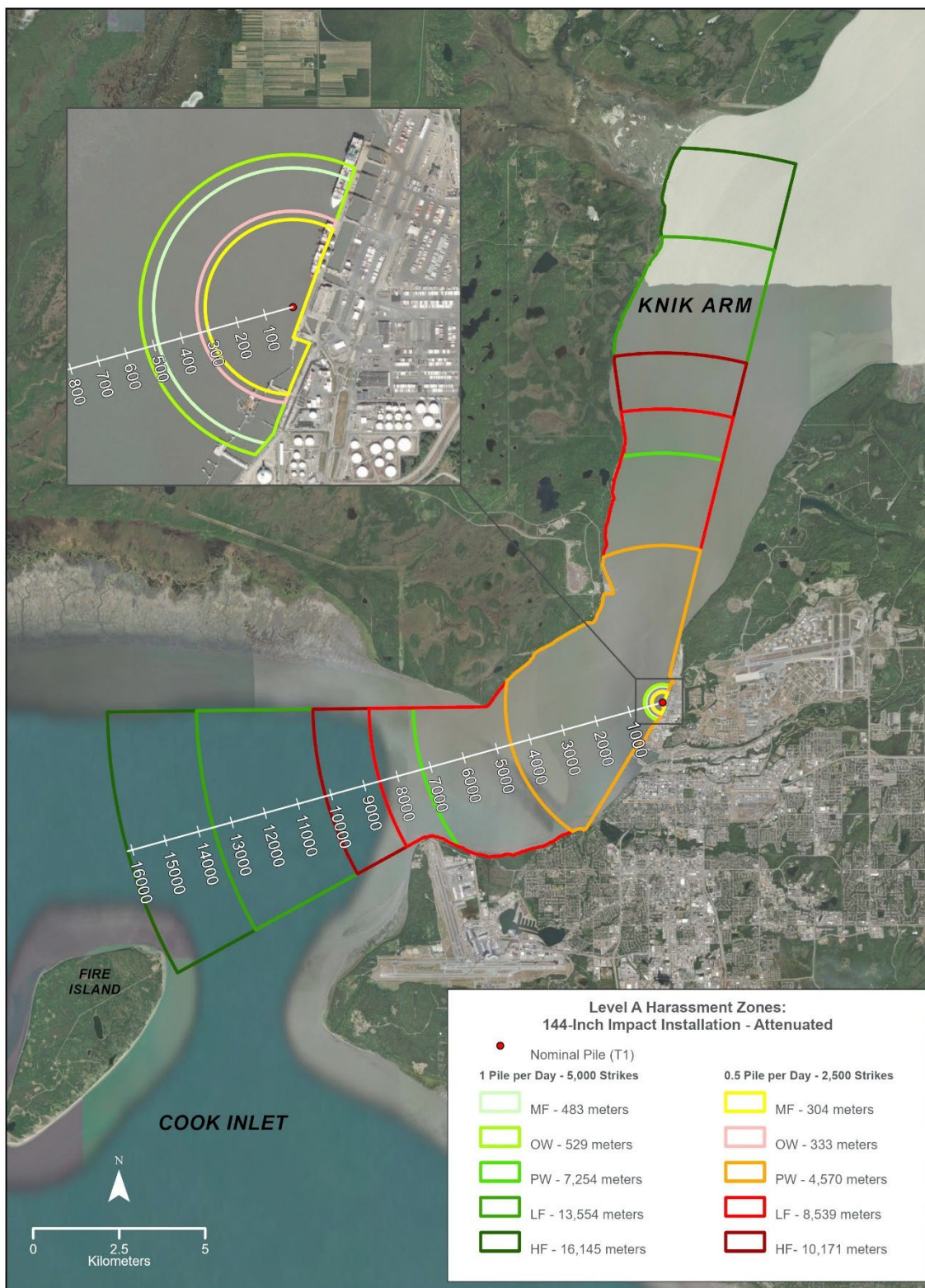


Figure A-3. Level A Harassment Isoleths for Impact Installation of 144-Inch Piles (Attenuated) for Production Rate of 0.5 or 1 Pile per Day

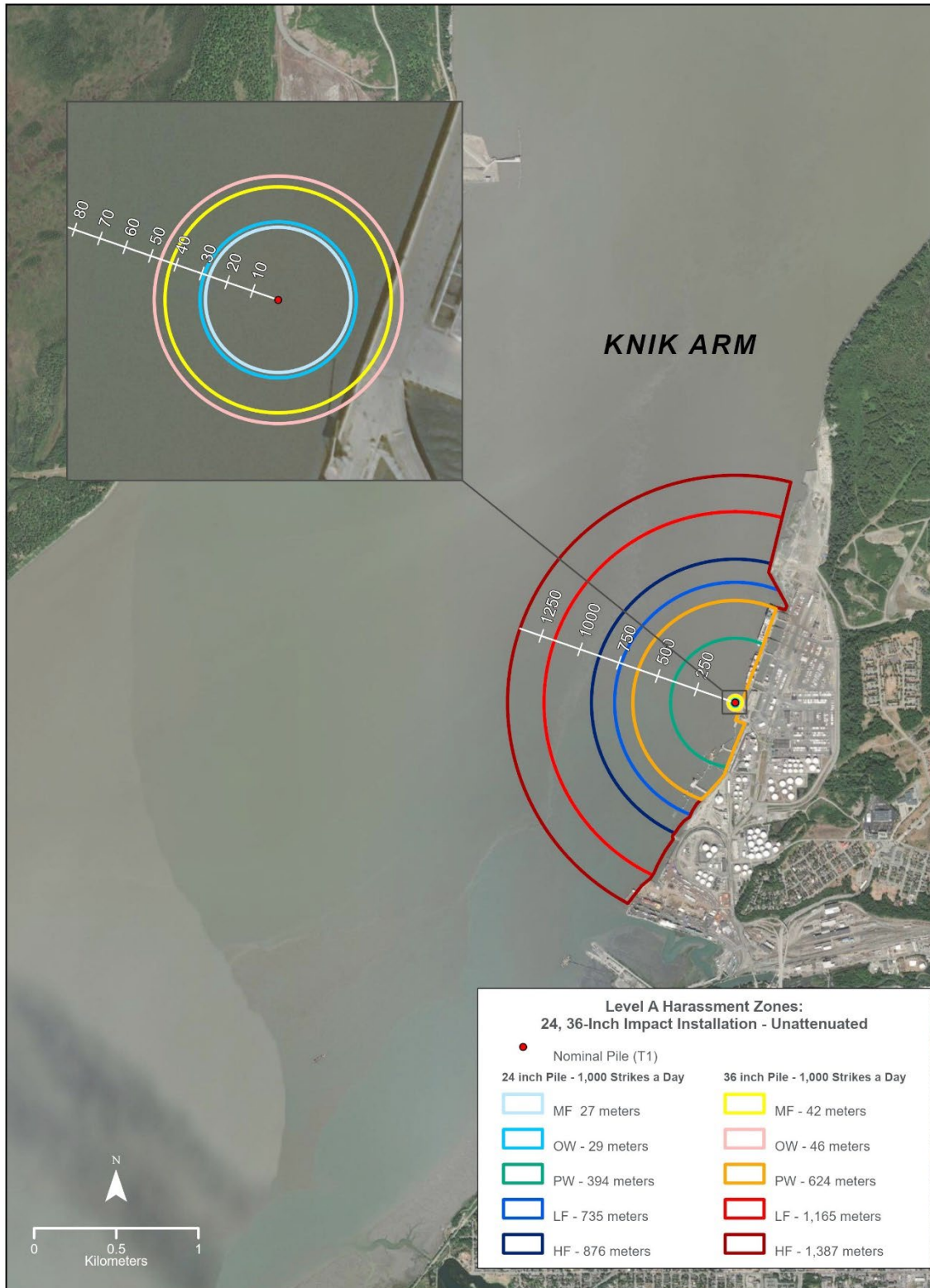


Figure A-4. Level A Harassment Isoleths for Impact Installation of 24 and 36-Inch Piles (Unattenuated) for Production Rate of 1 Pile per Day

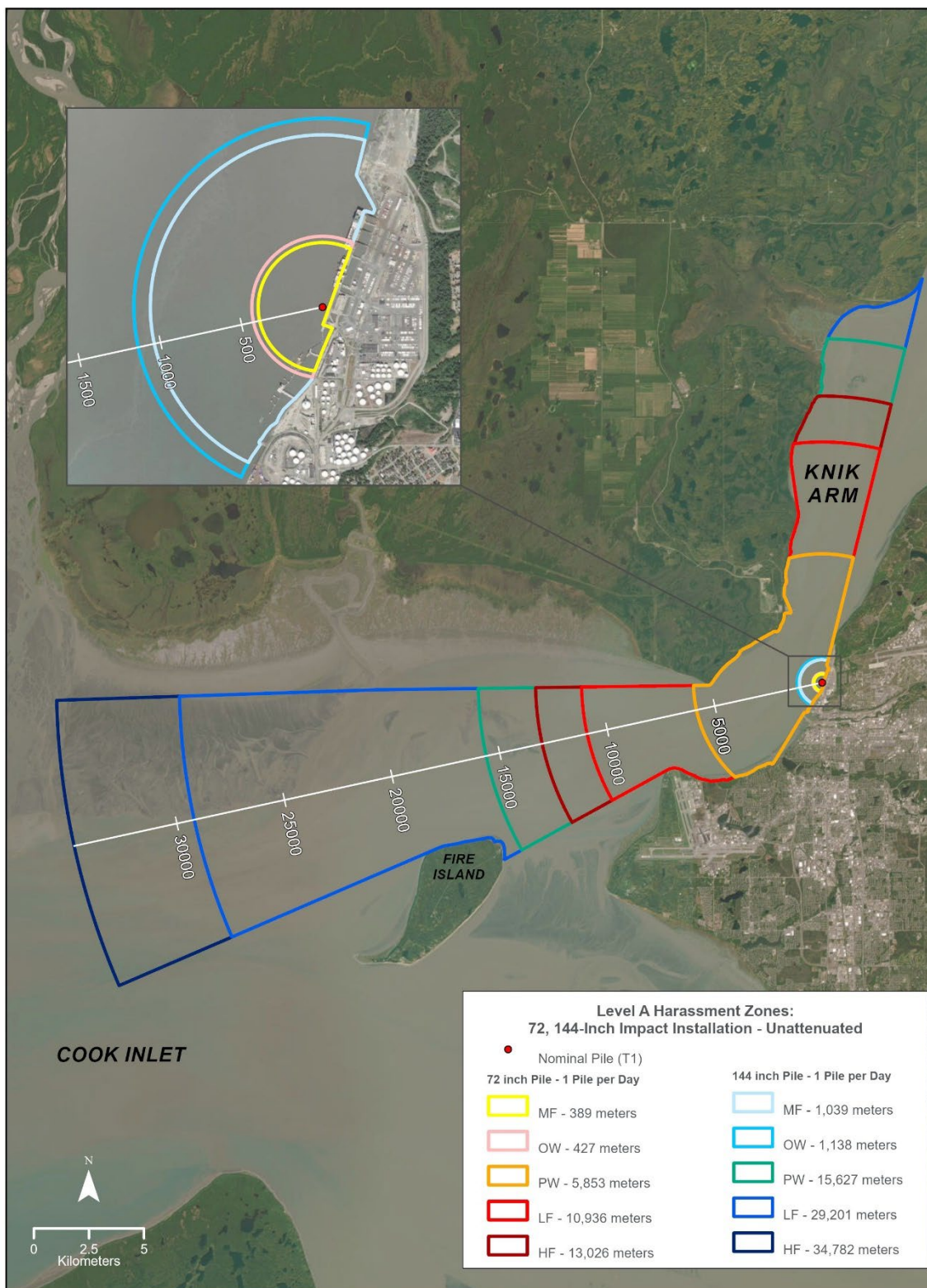


Figure A-5. Level A Harassment Isoleths for Impact Installation of 72 and 144-Inch Piles (Unattenuated) for Production Rate of 1 Pile per Day

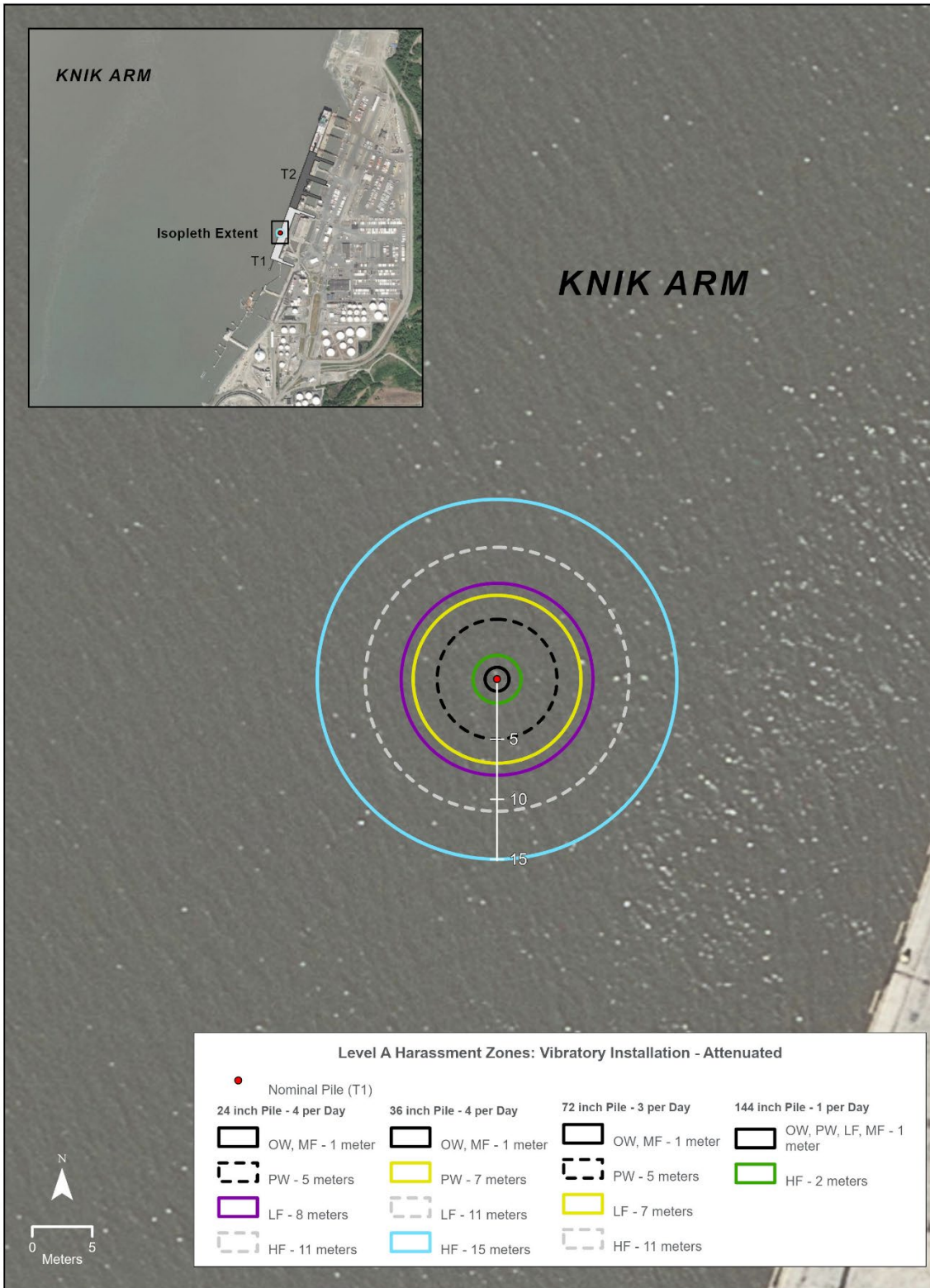


Figure A-6. Level A Harassment Isopleths for Vibratory Pile Installation (Attenuated)

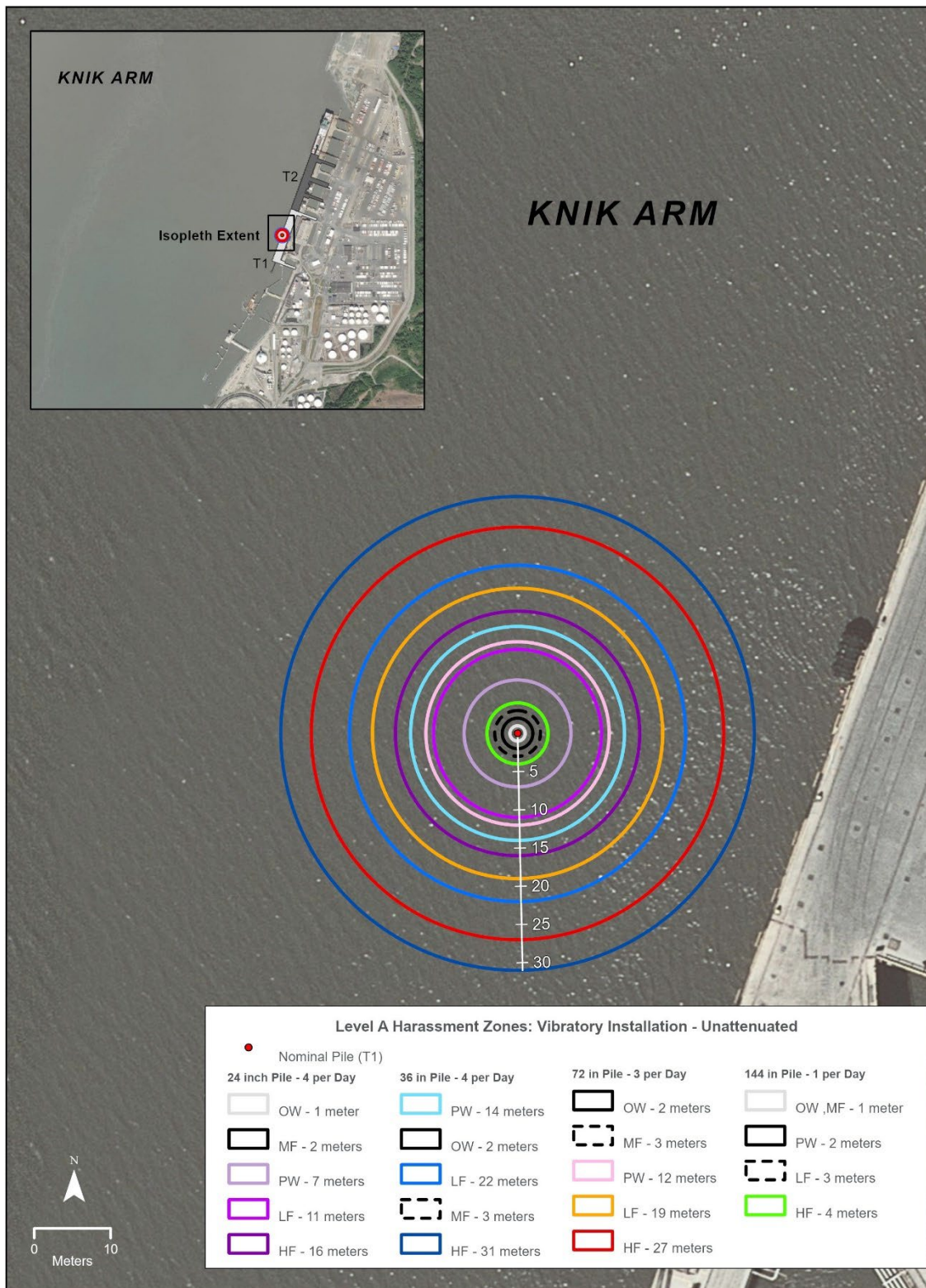


Figure A-7. Level A Harassment Isopleths for Vibratory Pile Installation (Unattenuated)

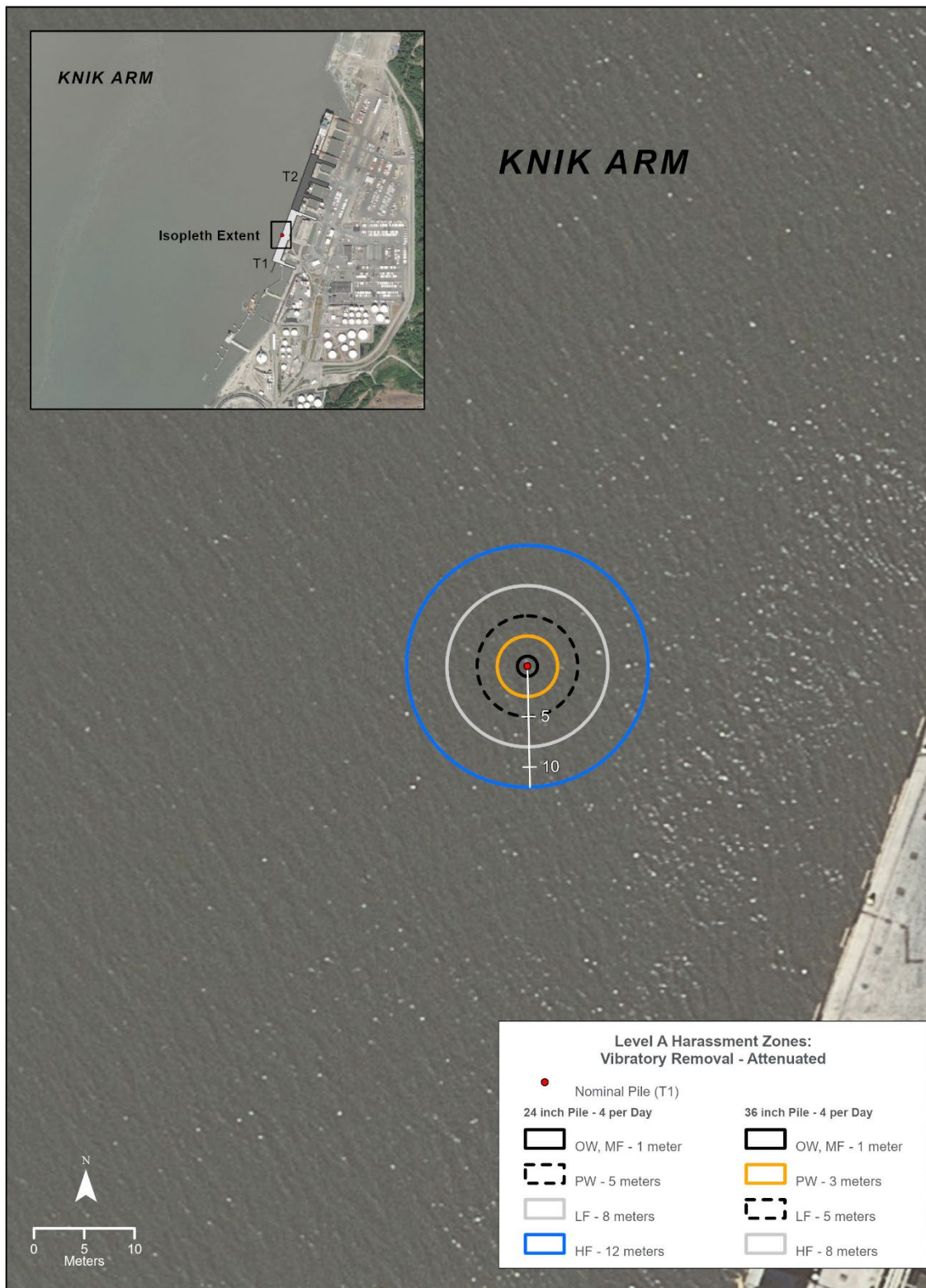


Figure A-8. Level A Harassment Isopleths for Vibratory Pile Removal (Attenuated)



Figure A-9. Level A Harassment Isopleths for Vibratory Pile Removal (Unattenuated)

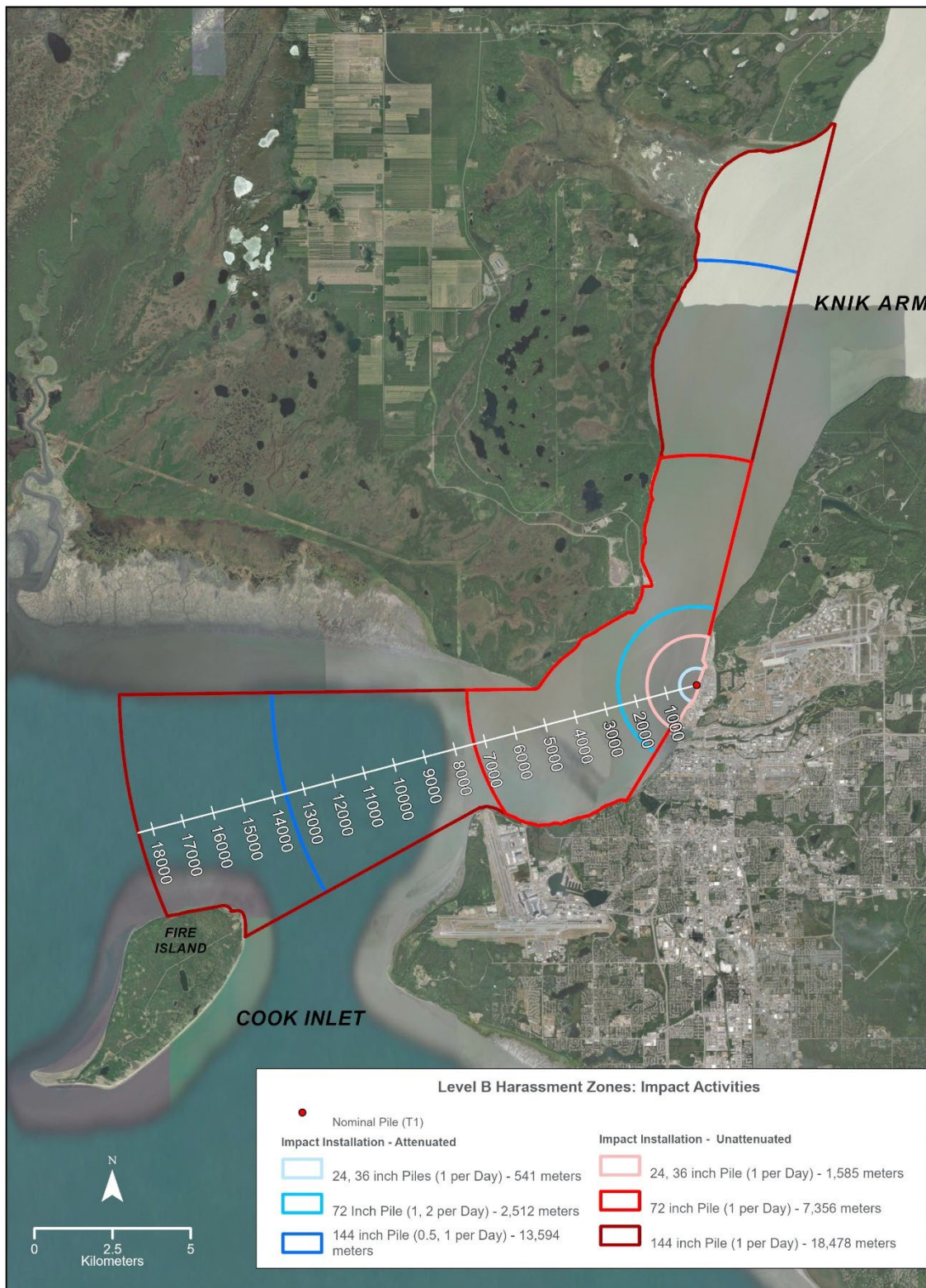


Figure A-10. Level B Harassment Isoleths for All Pile Sizes for All Impact Installation Activities (Attenuated and Unattenuated)

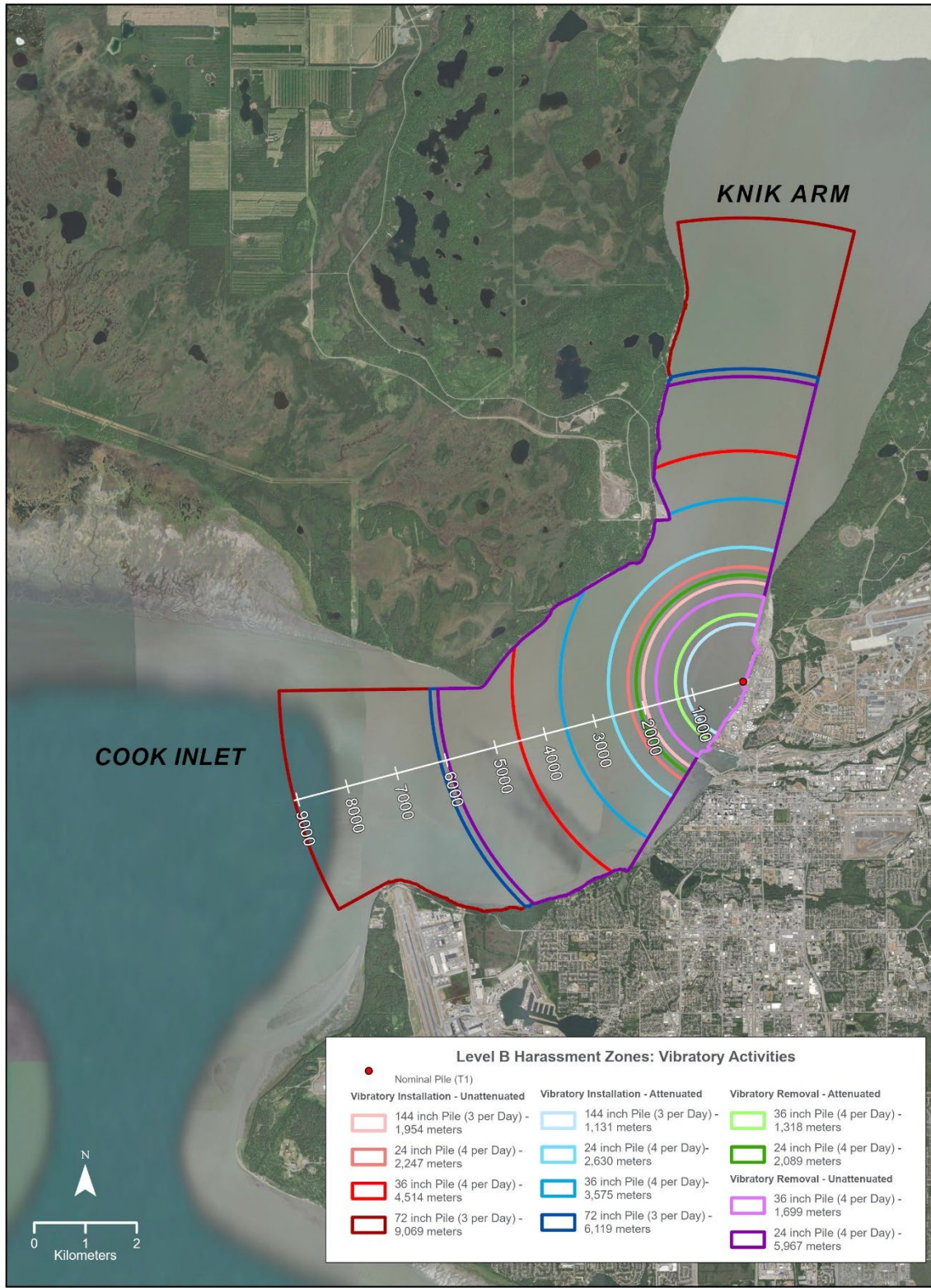


Figure A-11. Level B Harassment Isoleths for All Pile Sizes for All Vibratory Activities (Attenuated and Unattenuated)

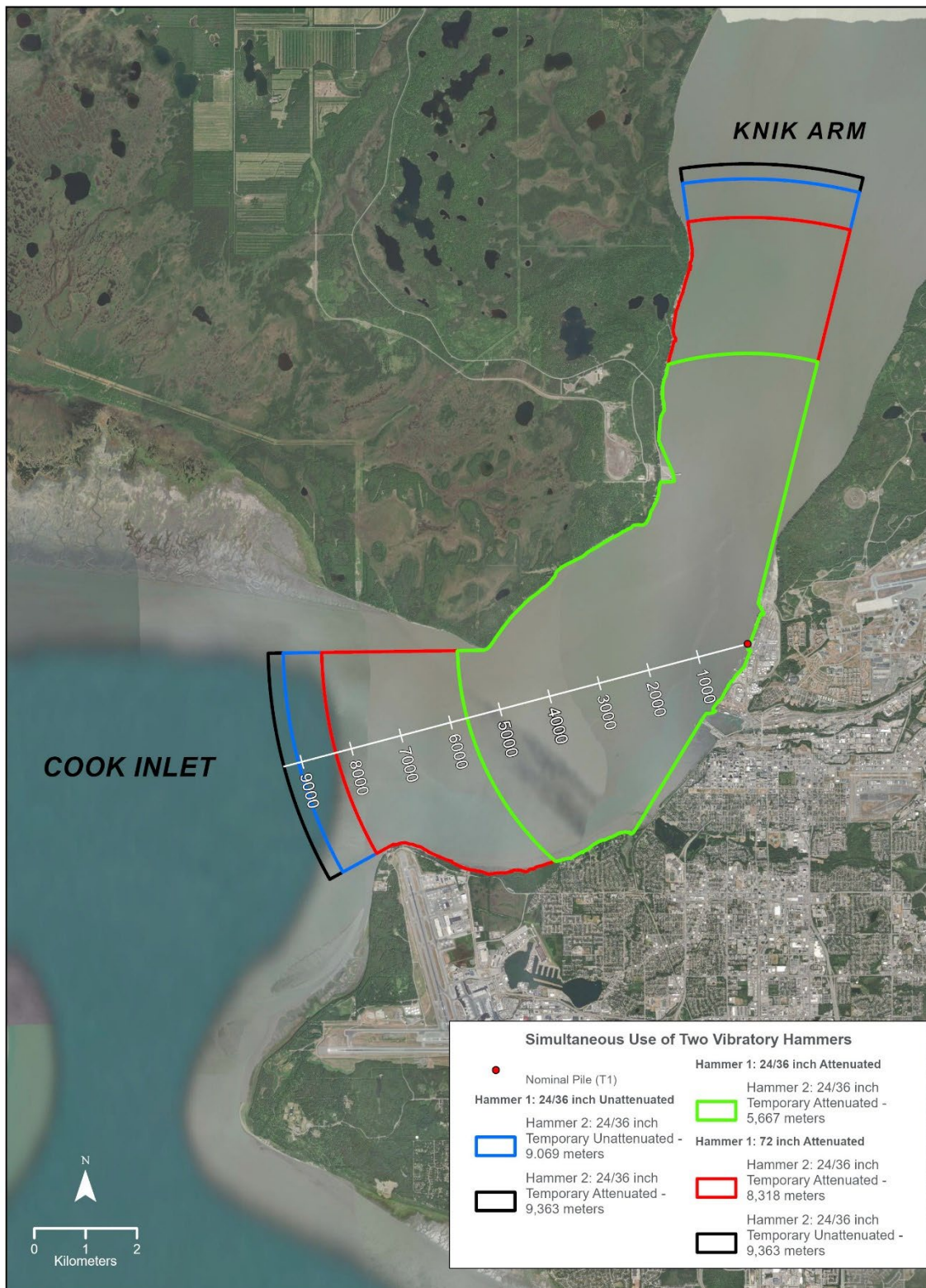


Figure A-12. Harassment Isopleths for Simultaneous Use of Two Vibratory Hammers (Attenuated and Unattenuated)



Attachment B
Environmental and Marine Mammal
Observation Datasheets



Marine Mammal Sighting Form - CTR

Date: _____ **Location:** _____ **Take Count, Level A:** _____ **Level B:** _____
(DD MMM YY, Example 06 JUN 22) *(Specific to sighting, Report immediately to Contractor POC)*

Group Letter: _____ **Observer(s):** _____ **Data Collector:** _____
(1st sighting of the day is Group A, letter is unique by day and not by species)

Time <i>(military)</i>		Species <i>(circle)</i>	Distance <i>(meters, animal to noise source)</i>	Number of Animals		Number of Animals in Each Class				
Initial Sighting Time		Beluga Whale	Initial Distance		Min Count		<i>Color classification for belugas only:</i>			
Final Sighting Time			Harbor Seal	Closest Distance		Max Count		White		Dark Gray Calf
Entered H-Zone B: Y or N		Harbor Porpoise	Final Distance		Best Count		Gray		Dark Gray Neonate	
Time Entered H-Zone B			Steller Sea Lion	Initial Heading <i>(circle)</i>		Number of Animals Entered H-Zone		<i>Classifications for other species:</i>		Unknown Color
Time Exited H-Zone B		Killer Whale	N NE NW W S SE SW E		H-Zone B		Male		Unknown Sex	
Entered H-Zone A: Y or N			other: _____	Final Heading <i>(circle)</i>		H-Zone A		Female		Calves/Pups
Time Entered H-Zone A		N NE NW W S SE SW E			Adults			Juveniles		Unkn. Age
Time Exited H-Zone A										

Behavior of Marine Mammal(s) *place a 1 next to primary, 2 next to secondary activity (etc.), indicate all behaviors observed:*
 ___(AP) Avoiding Predation ___(BU) Bubbling ___(CS) Calving ___(D) Diving ___(FO) Feeding Observed
 ___(FS) Feeding Suspected ___(MS) Mating Suspected ___(M) Milling ___(R) Resting ___(SS) Side-scanning
 ___(SN) Snorkeling ___(S) Socializing ___(SH) Spyhopping ___(ST) Startled ___(TS) Tail Slapping
 ___(TW) Tail waving ___(T) Traveling ___(V) Vocalizing ___(O) Other, describe under additional information ___(U) Unknown

Sighting & Behavior Timeline*: **Initial Sighting cue:** _____

Time	Theodolite Reading	Behavior Code	Brief Notes <i>(additional space below)</i>	Time	Theodolite Reading	Behavior Code	Brief Notes <i>(additional space below)</i>
	Y or N				Y or N		
	Y or N				Y or N		
	Y or N				Y or N		
	Y or N				Y or N		
	Y or N				Y or N		

**ALL behavioral changes caused by Project activities or other activities MUST be described under additional information.*

Initial Formation: _____ **Final Formation:** _____ **Spread (average):** _____

Project Activities **In-Water Work was occurring at initial sighting time? Y or N**
 In-Water Project Activities (circle): No in-water soft-start shutdown shearing vibratory pile removal
NO SHUT DOWN, EXPLANATION REQUIRED:
 SHUT DOWN or DELAYED from _____ to _____ (time)

Additional Information (if applicable include more detailed information on behaviors or other information):

Daily Project Activities and Communication Log - CTR

Date: _____ Monitoring Start Time: _____ End Time: _____ Observer(s): _____
(DD MMM YY, Example 06 JUN 22) *(military time)*

Location: _____

In-Water Project Activities				
Start Time (hh:mm)	Stop Time (hh:mm)	Type of Project Activity	Location	Comments (explain the reason for all shut downs)

Communication				
Time of Communication	MMO (Initials)	Cons. Crew Member	Type of Comm.	Information Communicated

Type of Project Activities: No in-water, soft-start, shutdown, vibratory pile removal, direct pull, shearing
Location: in water, in the dry
Type of Communication: Shutdown Notification, Start Up Authorization, General Communication