# Protected Species Monitoring and Mitigation Plan Haines Borough Lutak Dock Replacement Project Lutak Inlet, Haines Borough, Alaska Revised October 2023 and November 2023

Prepared for: U.S. Department of Transportation Maritime Administration and

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## CONTENTS

1   2 F 3 S	NTRO PROJE SPECIE	DUCTION CT DESCRIPTION S COVERED UNDER THE IHA	.1 .2 .5						
4 N	MONITORING6								
4.1	4.1 Monitoring Zones								
4.2		Shutdown Zones	. 8						
5 N	MITIG	ATION MEASURES	14						
5.1		General Conditions and Requirements	14						
5.2		Observer Qualifications and Requirements	15						
5.3		Data Collection	16						
5	5.3.1	Environmental Conditions and Construction Activities	16						
5	5.3.2	Sightings	17						
5.4		Equipment	17						
5.5		Number and Location of PSOs	18						
5.6		Strike Avoidance	21						
5.7		Marine Mammal Monitoring Techniques	21						
5	5.7.1	Pre-Activity Monitoring	21						
5	5.7.2	Soft Start Procedures	21						
5	5.7.3	During Activity Monitoring	22						
5	5.7.4	Inclement Weather	22						
5	5.7.5	Shutdowns	22						
5	5.7.6	Breaks in Work	22						
5	5.7.7	Post Activity Monitoring	23						
5.8		Sunflower Sea Star Monitoring Techniques	23						
6 F	REPOF	RTING	24						
6.1		Notification of Intent to Commence Construction	24						
6.2		Weekly Sighting Counts	24						
6.3		Interim Monthly Reports	24						
6.4		Final Report	24						
6.5		Reporting Injured or Dead Marine Mammals or Illegal Harassment	25						

# **FIGURES**

Figure 1. Lutak Dock Replacement Project Location and Action Area	. 4
Figure 2. Lutak Dock Replacement Project Level B Harassment Zones	. 7
Figure 3. Lutak Dock Replacement Project Level A Shutdown Zones for Low-Frequency	
Cetaceans	. 9
Figure 4. Lutak Dock Replacement Project Level A Shutdown Zones for Mid-Frequency	
Cetaceans	10

Figure 5. Lutak Dock Replacement Project Level A Shutdown Zones for High-Frequency
Cetaceans11
Figure 6. Lutak Dock Replacement Project Level A Shutdown Zones for Phocid Pinnipeds 12
Figure 7. Lutak Dock Replacement Project Level A Shutdown Zones for Otariid Pinnipeds 13
Figure 8. Lutak Dock Replacement Project PSO Locations
TABLES
Table 1. Lutak Dock Replacement Project Pile Size, Quantity, and Installation and Removal
Method5
Table 2. Lutak Dock Replacement Project Fill Summary5
Table 3. Species Known to Occur in Lutak Dock Project Area and Requested Level A and Level B
Take (may be updated following issuance of IHA and Biological Opinion)
Table 4. Lutak Dock Replacement Project Harassment Zones 5
APPENDICES
Appendix A: List of Species with Ranges in the Project Action Area
Appendix B: Construction Activity and Communication Log
Appendix C: Marine Mammal Sighting Forms

Appendix D: Grid Maps

# ACRONYMS AND ABBREVIATIONS

AML	Alaska Marine Lines
BA	Biological Assessment
dB	decibel
DPS	distinct population segment
EDPS	eastern distinct population segment
ESA	Endangered Species Act
IHA	Incidental Harassment Authorization
MMPA	Marine Mammal Protection Act
NMFS	National Marine Fisheries Service
PR1	NMFS Office of Protected Resources
PRD	NMFS Alaska Region, Protected Resources Division
PSMMP	protected species monitoring and mitigation plan
PSO	protected species observer
rms	root mean square
ROV	remotely operated vehicle
RoRo	Roll-on/Roll-off
SPL	sound pressure level
USACE	U.S. Army Corps of Engineers
USFWS	U.S. Fish and Wildlife Service
WDPS	western distinct population segment

# **1 INTRODUCTION**

The Haines Borough proposes the following Protected Species Monitoring and Mitigation Plan (PSMMP) for use during pile installation/removal during construction of the Lutak Dock Replacement Project in Haines, Alaska (Figure 1). The project is in waters of the U.S., within the ranges of marine mammals listed in the Endangered Species Act (ESA) and the Marine Mammal Protection Act (MMPA), and has the potential to generate noise that could exceed Level A and B harassment thresholds established by the National Marine Fisheries Service (NMFS) and U.S. Fish and Wildlife Service (USFWS). This PSMMP supports the Biological Assessment (BA) in accordance with the ESA, and the Incidental Harassment Authorization (IHA) application, in accordance with the MMPA (Section 101(a)(5)(D) permitting). Monitoring and shutdown zones will be implemented to minimize Level A and Level B harassment of marine mammals.

The sunflower sea star (*Pycnopodia helianthoides*) was proposed to be listed as threatened under the ESA on March 16, 2023 (88 FR 16212). The sunflower sea star is included in this PSMMP as a proposed listed species because it may occur in the project area. If the species is listed under the ESA prior or during the construction period, mitigation measures prescribed here will be completed.

The goal of this PSMMP is to ensure compliance with the ESA and the MMPA when implemented by the protected species observers (PSOs) at the project site. The project will comply with the terms and conditions outlined in the following requested permits and authorizations:

- U.S. Army Corps of Engineers (USACE), Lutak Inlet for activities in waters of the U.S. (requested)
- NMFS Office of Protected Resources (PR1) IHA (requested)
- NMFS Alaska Region Protected Resources Division (PRD), ESA Section 7(a)(2) Biological Opinion (requested)

# **2 PROJECT DESCRIPTION**

The Haines Borough proposes to repair and replace the Lutak Dock on the south shore of Lutak Inlet, approximately 5.5 kilometers northwest of downtown Haines, Alaska.

The proposed project involves construction of a new 705-foot-long combi wall to form a new bulkhead dock directly in front of the existing dock. The combi wall would be constructed of a series of interlocking steel pipe piles joined together by steel connectors using a ball-and-socket joint. The ball-and-socket joints are welded directly onto the piles before installation and would not require a separate installation process. The combi wall would extend down the west side of the dock for 77 feet and along southeast side for 90 feet to completely enclose the existing dock, which would remain in place. Gravel fill would be placed in between the new combi wall and the existing dock, and gravel surface course would be overlain on top. New riprap shore protection would be added on the east and west ends of the combi wall to tie into existing shore protection. A concrete cap would be added to the top of the combi wall and new fenders and mooring bollards would be added to the front of the dock. The Alaska Marine Lines (AML) Roll-on/Roll-off (RoRo) ramp would be rotated 2.5 degrees to accommodate the extension to the front of the dock in order to continue receiving barge traffic safely without damage to structures or front fendering. Four mooring dolphins, and one guide dolphin to the west of the dock would be removed.

Pile driving may result in auditory injury (Level A harassment) and behavioral harassment (Level B harassment) of select marine mammal species. Construction would begin in fall/winter 2023 and continue through fall/winter 2024. All pile installation activities (both above and below HTL) are expected to occur for a total of approximately 1,462 hours over 295 days (not necessarily consecutive days). The project would occur within waters of the U.S. No blasting is proposed as part of this project. Table 1 and Table 2 and provide a more detailed overview of the project components.





	In-Water Work (Below HTL)						In-Air Work (Above HTL)		
			Temp.	Temp.					
	Guide Pile	Dolphin	Pile	Pile	Perm. Pile	Sheet Pile	Sheet Pile	Batter Pile	
	Removal	Removal	Install	Removal	Installation	Installation	Installation	Installation	
Diameter of Steel Pile (inches)	24	16	36	36	42	55.5	55.5	42	
Number of Piles	1	24	42	42	180	40	40	23	
			Vibratory P	ile Driving					
Total Quantity 1 24 42 42 180 40 40 23									
Max # Piles Vibrated per Day	1	4	4	4	4	6	6	2	
Vibratory Time per Pile (minutes)	45	45	15	15	45	30	30	60	
Vibratory Time per Day (minutes)	45	180	60	60	180	180	180	120	
Number of Days	1	6	11	11	45	7	7	12	
Vibratory Time Total (hours)	1	18	11	11	135	20	20	23	
			Impact Pil	e Driving					
Total Quantity			42		180	40	40	23	
Max # Piles Impacted per Day			4		4	6	6	2	
Number of strikes per Pile			900		1,500	900	900	2,700	
Impact Time per Pile (minutes)			30		45	30	30	90	
Impact Time per Day (minutes)			120		180	180	180	180	
Number of Days			11		45	7	7	12	
Impact Time Total (hours)			21		135	20	20	35	
		[	Down-The-H	Iole Drilling					
Total Quantity					180			23	
Max # Piles Installed per Day					2			1	
# Strikes Per Pile					324,000			259,200	
# Strikes Per Second					18			18	
Drilling Time Per Pile (minutes)					300			240	
Time per Day (minutes)					600			240	
Number of Days					90			23	
DTH Drilling Time Total (hours)					900			92	

## Table 1. Lutak Dock Replacement Project Pile Size, Quantity, and Installation and Removal Method

	Surface Area	Volume (cubic							
	(square feet)	yards)	Time (hours)	Days					
		Fill above HTL							
Gravel	85,000	00 2,000 160							
Type C Fill	17,500	4,055	327	11					
Riprap Total	ap Total 9,655 127		10	8					
Total:	112,155	6,182	497	39					
	Fill in Intertidal Waters (Between MHW and HTL)								
Type C Fill	17,500	4,255	343	11					
Riprap Total	9,655	275	22	3					
Total:	27,155	4,530	365	14					
	Fill in N	larine Waters (below	v MHW)						
Type C Fill	16,500	14,000	1,130	38					
Riprap Total	9,655	3,136	248	31					
Total:	26,155	17,136	1,378	69					
Grand Total	165,465	27,848	2,240	122					

Table 2. Lutak Dock Replacement Project Fill Summary

# **3 SPECIES COVERED UNDER THE IHA**

There are 9 marine mammal species under NMFS jurisdiction and 1 marine mammal species under USFWS jurisdiction that have ranges that extend into the project area. Take has been requested for the ESA-listed and MMPA-listed species known to frequent the area, broken down by stock or distinct population segment (DPS; Table 3).

There are several marine mammal species with habitat ranges that overlap with the ensonified area of the project; however, these species have not been observed or are rare in the project area. No Level A or B take is requested for the following species: minke whales, Pacific white-sided dolphins, and northern sea otters. For additional information about species with ranges in the project action area, see Appendix A.

The shutdown of work following Level B thresholds will occur if any other marine mammal enters the project action area (Table 4).

ESA candidate species sunflower sea stars are also included in this PSMMP because they may occur in the project area. If they are listed at the time of construction, sunflower sea stars monitoring and mitigation measures described in this PSMMP will be implemented.

Species	Stock/DPS	Hearing Group	Level A	Level B
Humpback Whale	Hawaii DPS	Low-Frequency	0	25
(Megaptera novaeangliae)	Mexico DPS	(LF) Cetacean	0	1
	Eastern North Pacific Alaska Resident	Mid Freeword	0	103
Killer Whale (Orcinus orca)	West Coast Transient	(ME) Cotacoan	0	19
	Eastern North Pacific Northern Resident	(MF) Cetacean	0	16
Dall's Porpoise (Phocoenoides dalli)	Southeast Inland Waters	High-Frequency	0	31
Harbor Porpoise ( <i>Phocoena phocoena</i> )	Northern Southeast Alaska	(HF) Cetacean	13	16
Harbor Seal ( <i>Phoca vitulina</i> )	Lynn Canal/Stephens Passage Stock	Phocid Pinniped (PW)	79	827
Steller Sea Lion	Eastern DPS (EDPS)	Otariid Pinniped	288	2,319
(Eumetopias jubatus)	Western DPS (WDPS)	(OW)	4	33
Sunflower Sea Star (Pycnopodia helianthoides)	N/A	N/A	TE	3D

Table 3. Species Known to Occur in Lutak Dock Project Area and Requested Level A and LevelB Take (may be updated following issuance of IHA and Biological Opinion)

# 4 MONITORING

PSOs will observe for, document, and track marine mammals and monitor for the presence of sunflower sea stars. The harassment zones will be monitored throughout the permitted in-water construction activity to minimize potential impacts to marine mammals. The following mitigation measures will be applied based on species, in-water activity, and distance of the species from the project location:

- If a permitted marine mammal enters a Level B monitoring zone during permitted activities, a Level B take will be recorded and animal behaviors documented. Permitted construction activities would continue without cessation unless the animal approaches or enters the shutdown zone.
- If a marine mammal approaches or appears in a Level A shutdown zone, all permitted construction activities will immediately halt until the marine mammal has left the shutdown zone on its own accord or has not been sighted for 15 minutes (pinnipeds and small cetaceans) or 30 minutes (large cetaceans and sea otters).
- If a non-permitted marine mammal approaches or appears in a Level B zone, all permitted construction activities will immediately halt until the animal has left the Level B zone or has not been sighted for 15 minutes (pinnipeds, small cetaceans, and otters) or 30 minutes (large cetaceans and sea otters).

Takes, in the form of Level A or Level B harassment, of marine mammals other than permitted species are not authorized and will be avoided by shutting down construction activities before these species enter the Level B monitoring zone.

Because species are impacted differently by noise, species-specific monitoring and shutdown zones have been calculated for this project. These monitoring and shutdown zones are shown in Figure 2.

As the piles are removed from the water, a PSO will be responsible for monitoring pile removals for the presence of sunflower sea stars attached to piles. Prior to the placement of fill each day, surveys will be conducted to check for the presence of sunflower sea stars. In addition, as safe and feasible, bi-weekly surveys will occur across the front of the dock where pipe pile would be placed.

#### 4.1 Monitoring Zones

Level B monitoring zones for marine mammals have been determined based on in-water activity type. For NMFS species, Level B monitoring zones represent areas where the sound pressure levels (SPLs) generated from pile driving activities meet or exceed 120 decibels (dB) root mean square (rms) during vibratory pile driving and 160 dB rms during impact pile driving.

These monitoring zones serve as an area within which instances of permitted marine mammal harassment (Level B take) will be documented, if in-water work is actively occurring. Alternatively, for non-permitted marine mammals, it acts as an area in which in-water work should cease if they approach or appear likely to enter. These Level B zones also allow PSOs to be aware of the presence of permitted marine mammals as they near the shutdown zone and prepare for shutdowns if required.

Level B monitoring/shutdown zones for marine mammals are presented in Table 4 and Figure 2 below. For certain species and certain pile driving activities, the Level A shutdown zones are larger than the Level B monitoring zones due to differences in calculation methods used by NMFS. For those activities, the Level B monitoring zones shown in the following tables and figures also represent the Level A shutdown zone for this activity.

A PSO will visually inspect all pile removals. In addition, surveys will occur prior to construction and bi-weekly within a grid in pile removal and pipe pile placement areas. In areas where fill is planned along the sides of the dock, surveys for sunflower sea stars will occur within a 24-hour window prior to when fill is to be placed along transects within the specific area to be filled.

# Table 4. Lutak Dock Replacement Project Harassment Zones

Source		Level B							
	LF	MF	HF	Phocid	Otariid	All Marine			
	Cetaceans	Cetaceans	Cetaceans	Pinnipeds	Pinnipeds	Mammals			
In-water	Activities	-			-				
Barge movements, pile positioning, etc. <sup>a</sup>	10	10	10	10	10	10			
Vibratory Pile Driving/Removal									
24-inch pile removal (1 pile; 45 minutes per day; on 1 day)	10	10	10	10	10	5,425			
16-inch pile removal (24 piles; 180 minutes per day; on 6 days)	15	10	30	10	10	5,425			
36-inch temporary pile installation (42 piles; 60 minutes per day on 11 days)	15	10	30	10	10	11,660 <sup>b</sup>			
36-inch temporary pile removal (42 piles; 60 minutes per day; on 11 days)	15	10	30	10	10	11,660 <sup>b</sup>			
42-inch permanent pile installation (180 piles; 180 minutes per day; on 45 days)	60	10	85	35	10	21,544 <sup>b</sup>			
55.5-inch sheet permanent pile installation; (40 piles; 180 minutes per day; on 7 days)	20	10	25	10	10	6,310			
55.5-inch sheet permanent pile installation; in-air (40 piles; 180 minutes per day; on 7 days)						70 (PW); 25 (OW) <sup>c</sup>			
42-inch permanent batter pile installation; in-air (23 piles; 120 minutes per day; on 12 days)						70 (PW); 25 (OW) <sup>c</sup>			
Impact Pi	le Driving								
36-inch temporary pile installation (42 piles; 120 minutes per day; on 11 days)	2,735 <sup>d</sup>	110	3,260 <sup>2</sup> (200) <sup>e</sup>	1,500 (200) <sup>e</sup>	110	1,500 <sup>d</sup>			
42-inch permanent pile installation (180 piles; 180 minutes per day; on 45 days)	3,845 <sup>d</sup>	150	4,580 <sup>d</sup> (200) <sup>e</sup>	2,060 <sup>d</sup> (200) <sup>e</sup>	150	1,500			
55.5-inch sheet permanent pile installation (40 piles; 180 minutes per day; on 7 days)	1,940 <sup>d</sup>	70	2,310 <sup>d</sup> (200) <sup>e</sup>	1,040 <sup>d</sup> (200) <sup>e</sup>	80	1,000			
55.5-inch sheet permanent pile installation; in-air (40 piles; 180 minutes per day; on 7 days)						100 (PW); 30 (OW) <sup>c</sup>			
42-inch permanent batter pile installation; in-air (23 piles; 180 minutes per day; on 12 days)						100 (PW); 30 (OW) <sup>c</sup>			
DTH C	Drilling								
42-inch pile installation (180 piles; 600 minutes per day; on 90 days)	4,050	145	4,825 (200) <sup>e</sup>	2,170 (200) <sup>e</sup>	160	39,815 <sup>b</sup>			

Shutdown zone distances refer to the maximum radius of the zone and are rounded.

<sup>a</sup> Although acoustic injury is not the primary concern with these activities, shutdowns will be implemented to avoid impacts to species.

<sup>b</sup> These sound zones are blocked by landforms at 7,000 meters.

<sup>c</sup> In-air distances apply to marine mammals that spend significant amounts of time hauled out (Steller sea lions and harbor seals).

<sup>d</sup> For certain species and certain pile driving activities, the Level A harassment zones should be used in place of the Level B monitoring zones during monitoring.

<sup>e</sup> According to NMFS, the Level A shutdown zones for HF cetaceans and phocid pinnipeds during impact pile driving and DTH drilling are too large for PSOs to accurately identify these species and shut down construction before Level A take occurs. NMFS recommended that in these circumstances, a minimum Level A shutdown zone of 200 meters be implemented.



Figure 2. Lutak Dock Replacement Project Level B Harassment Zones

\*Indicates Level A zone. Where Level A zone radii are larger than the corresponding Level B radii, the Level A zone is shown.

## 4.2 Shutdown Zones

Shutdown zones are defined as areas where SPLs meet or exceed the level that would cause auditory injury to ESA-listed marine mammals. Shutdown zones are intended to protect marine mammals from auditory injury. In-water activities would be halted upon the sighting of a marine mammal that is in (or anticipated to enter) the shutdown zone. Shutdown zones for USFWS species apply to northern sea otters and were established using the USFWS *Observer Protocols for Pile Driving, Dredging, and Placement of Fill* and the distance at which SPLs meet or exceed 160 dB rms.

Further, there will be a nominal 10-meter shutdown zone for construction activity where acoustic injury is not the primary concern. This type of work could include (but is not limited to) the following activities: movement of the barge to the pile location; positioning of the pile on the substrate via a crane (i.e., stabbing the pile); and removal of the pile from the water column/substrate via a crane (i.e., deadpull). For these activities, monitoring would take place starting 15 minutes before initiation and ending when the action is complete. This can be monitored by the vessel operator or personnel on the barge when a PSO is not present. Radial distances to Level A shutdown zone boundaries are defined in Table 4 and shown in Figure 3 through Figure 7.

A 200-meter minimum shutdown zone has been established inside the calculated Level A isopleth for HF cetaceans and phocid pinnipeds during impact pile driving and DTH drilling. NMFS stated that the Level A shutdown zones during impact pile driving and DTH drilling were too large for PSOs to accurately identify these species at the calculated distances. For HF cetaceans and phocid pinnipeds identified outside of the 200-meter minimum shutdown zone but within the calculated Level A harassment zones, Level A take will be recorded for those species for which take is authorized. For HF cetaceans and phocid pinnipeds seen entering or appear likely to enter the 200-meter zone, construction activities will be shut down and take recorded.

During vibrocompaction of the dock fill, in-air shutdown zones for otariid (10 meters) and phocid pinnipeds (25 meters) will be monitored (Figure 2).











Figure 5. Lutak Dock Replacement Project Level A Shutdown Zones for High-Frequency Cetaceans



Figure 6. Lutak Dock Replacement Project Level A Shutdown Zones for Phocid Pinnipeds





# **5 MITIGATION MEASURES**

The following mitigation measures will be implemented during in-water activities to limit impacts to marine mammals and sunflower sea stars.

## 5.1 General Conditions and Requirements

- The contractor will attempt to minimize the use of an impact hammer to the extent possible by utilizing a vibratory hammer to advance the piling as deep as possible prior to switching to impact driving.
- The contractor will also employ pile caps (pile softening material), used to minimize noise during impact pile driving. Much of the noise generated during pile installation comes from contact between the pile and the steel template used to stabilize the pile. The contractor will use high-density polyethylene or ultra-high-molecular-weight polyethylene softening material on all templates to eliminate steel-on-steel noise.
- The contractor is required to conduct briefings for construction supervisors and crews and the monitoring team prior to the start of all pile driving activity, and upon hiring new personnel, to explain responsibilities, communication procedures, the monitoring protocols, and operational procedures.
- The contractor is required to employ PSOs during all in-water construction activities.
- Marine mammal monitoring must take place starting 30 minutes prior to initiation of inwater work and ending 30 minutes after completion of in-water work. In-water work may commence when observers have declared the appropriate zones clear of marine mammals. In the event of a delay or shutdown of activity resulting from marine mammal species in the shutdown zone, their behavior must be monitored and documented until they leave of their own volition, at which point the activity may begin or resume.
- In-water work must be halted or delayed if a marine mammal is observed entering or within an established shutdown zone (Table 4). Pile driving may not commence or resume until either: the animal has voluntarily left and has been visually confirmed beyond the shutdown zone; 15 minutes have passed without subsequent observations of small cetaceans and pinnipeds; or 30 minutes have passed without subsequent observations of large cetaceans.
- The contractor must use soft start techniques when impact pile driving.
- In-water work must be delayed or halted immediately if a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the monitoring zones (Table 4). Activities must not start or resume until the animal has been confirmed to have left the area or the observation time period, as indicated in the conditions above, has elapsed.
- In-water activities will take place only:
  - between civil dawn and civil dusk when PSOs can effectively monitor for the presence of marine mammals;
  - o during conditions with a Beaufort Sea State of 4 or less;

- when the entire shutdown zone and adjacent waters are visible (e.g., monitoring effectiveness is not reduced due to rain, fog, snow, volcanic ash, etc.).
- Should light or environmental conditions deteriorate such that marine mammals within the entire largest Level A shutdown zone would not be visible (e.g., fog, heavy rain), pile driving and removal must be delayed until the PSOs are confident marine mammals within the shutdown zone could be detected.
- When doing so will not compromise human safety, in-water work will be conducted when the fewest individuals of listed species are expected to be in the area (e.g., during the low-tide cycle).
- PSOs will work in shifts lasting no longer than 4 hours with at least a 1-hour break between shifts, and will not perform PSO duties for more than 12 hours in a 24-hour period (to reduce PSO fatigue).
- Project-associated staff will cut all materials that form closed loops (e.g., plastic packing bands, rubber bands, and all other loops) prior to proper disposal in a closed and secured trash bin. Trash bins will be properly secured with locked or secured lids that cannot blow open, preventing trash from entering into the environment, thus reducing the risk of entanglement in the event that waste enters marine waters. Trash bins will be emptied on a regular schedule to ensure they do not overflow (making covers ineffective and causing debris to enter the environment).
- Project-associated staff will properly secure all ropes, nets, and other materials that could blow or wash overboard.
- Underwater surveys and removed piles visual inspections will be conducted for sunflower sea stars.

## 5.2 **Observer Qualifications and Requirements**

- Visual acuity in both eyes (correction is permissible) sufficient to discern moving targets at the water's surface and ability to estimate target size and distance. Use of binoculars and/or spotting scope may be necessary to correctly identify the target.
- Advanced education in biological science, wildlife management, mammalogy or related fields (Bachelor's degree or higher is preferred), or equivalent Alaska Native traditional knowledge. PSOs may substitute education or training for experience.
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
- Experience or training in field identification of marine mammals and sunflower sea stars.
- Training, knowledge of or experience with vessel operation and pile driving operations sufficient to provide personal safety during observations.
- Writing skills sufficient to prepare a report of observations. Reports should include: the number, type, and location of marine mammals observed; the behavior of marine mammals in the area of potential sound effects during construction; dates and times when observations and in-water construction activities were conducted; dates and times when in-water construction activities were suspended because of marine mammals; etc.
- Ability to communicate orally as needed, by radio or in person, with project personnel to provide real time information about marine mammals observed in the area.

- PSOs must be independent (i.e., not construction personnel) and have no other assigned tasks during monitoring periods.
- A lead observer or monitoring coordinator must be designated if a team of three or more PSOs are required. The lead observer must have prior experience working as a marine mammal observer during construction.
- The contractor must submit PSO resumes for approval by NMFS prior to the onset of pile driving.

## 5.3 Data Collection

## 5.3.1 Environmental Conditions and Construction Activities

PSOs will use the construction activities log and marine mammal observation record to document the following (Appendices B and C):

- Environmental Conditions:
  - Environmental conditions will be recorded at the beginning and end of every monitoring period and as conditions change.
  - Recordings will include PSO 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).
- Construction Activities:
  - PSOs will record the time that observations begin and end as well as the durations of shutdowns.
  - PSOs will document the reason for stopping work, time of shutdown, and type of pile installation or other in-water work taking place.
  - PSOs will document other, non-project-related activities that could disturb marine mammals in the area, such as the presence of large and small vessels.
- If possible, observations of humpback whales will be transmitted to

## <u>AKR.section7@noaa.gov</u> , including:

- a. photographs (especially flukes) and video obtained.
- b. geographic coordinates for the observed animals, with the position recorded using the most precise coordinates practicable (coordinates will be recorded in decimal degrees, or a similar standard, or extrapolated from grid map).
- c. Number of animals per observation event; and number of adults/juveniles/calves per observation event (if determinable).
- d. Environmental conditions as they existed during each observation event, including sea conditions, weather conditions, visibility, lighting conditions, and percent ice cover.
- If possible, observations of North Pacific right whales will be transmitted to <u>AKR.section7@noaa.gov</u>, including:
  - e. photographs (especially flukes) and video obtained.
  - f. geographic coordinates for the observed animals, with the position recorded using the most precise coordinates practicable (coordinates will be recorded in decimal degrees, or a similar standard, or extrapolated from grid map).

- g. Number of animals per observation event; and number of adults/juveniles/calves per observation event (if determinable).
- h. Environmental conditions as they existed during each observation event, including sea conditions, weather conditions, visibility, lighting conditions, and percent ice cover.

PSOs will record all communications with the construction crew. The environmental conditions and construction activities log will be checked for quality assurance and quality control (QA/QC) by the lead PSO for submission at the end of every monitoring day. Upon request, the data will be submitted to NMFS along with the final report.

#### 5.3.2 Sightings

Observers will use an approved marine mammal sighting form and GPS grid maps (Appendices C and D) which will be completed by each observer for each survey day and location. Sighting forms will be used by observers to record the following:

- Date and time that permitted construction activity begins or ends;
- Weather parameters (e.g., percent glare, visibility) and sea state (determined by the Beaufort Wind Force Scale);
- Species, numbers, and, if possible, sex and age class of observed marine mammals;
- Construction activities occurring during each sighting;
- Behavioral patterns observed, including bearing and direction of travel;
- Behavioral reactions just prior to, or during, soft-start and shutdown procedures;
- The marine mammal's location, distance from the observer, and distance from pile driving or removal activities;
- Whether mitigation measures, including shutdown procedures, were required by an observation, including the duration of each shutdown;
- Observer rotations including the time of rotation and the initials of the incoming observer.

The observation record forms will be checked for quality assurance and quality control (QA/QC) by the lead PSO for submission at the end of every monitoring day. Upon request, the data will be submitted to NMFS along with the final report.

Observations of sunflower sea stars will be documented. Signs of sea star wasting syndrome and associated screen-captures or photos will be reported to NMFS AKR within two business days of the sighting. Sunflower sea star removals and relocations from a pile by the lead PSO or a crew delegate during pile removal operations will be documented in the final or annual report.

## 5.4 Equipment

The following equipment will be required to conduct observations for this project:

- Appropriate personal protective equipment;
- Portable VHF radios for the observers to communicate with other observers and the pile driving supervisor;
- Cellular phone as backup for radio communication;

- Contact information for the other observers, the pile driving supervisor, and the NMFS point of contact;
- Daily tide tables for the project area;
- Binoculars (quality 7 x 50 or better) and a rangefinder;
- Hand-held GPS unit, or grid map along with map and stand-alone compass or clinometer to record locations of marine mammals;
- Copies of the PSMMP, IHA, and other relevant permit requirement specifications in a sealed, clear, plastic cover;
- Notebook with pre-standardized monitoring observation record forms and grid maps (Appendices B and C).

Specific to sunflower sea star surveys, a remotely operated vehicle (ROV) may be used to survey deeper waters. The ROV must be capable of:

- Live video transmittal to surface observers,
- Monitoring videos or still images to include in reports to NMFS, and Being deployed in low light conditions using on-board lighting as needed.

Note: Each PSO is equipped with a rangefinder, binoculars, and typically identifies objects or points at a known distance prior to the start of in-water work. The grid map is an additional tool to aid in tracking an individual through the action area, communicate where the next PSO can expect to sight the individual, and as a visual log of sightings over the course of the project. PSOs ultimately use the rangefinder to determine if mitigation measures are needed (shutdown or delay) and note whether an individual was present in the Level B or Level A zone during construction activities.

# 5.5 Number and Location of PSOs

The number of locations of PSOs are determined to ensure that there is full coverage of the action area during all in-water activities. Locations are chosen based on site accessibility and field of vision.

One to four PSOs will be onsite during in-water activities associated with the Lutak Dock Replacement Project, stationed in the following locations (Figure 8):

- Station 1: stationed at the project site.
- Station 2: stationed off Lutak Road at a beach across from Takshanuk Mountain trail.
- Station 3: stationed along the shoreline at Tanani Point along Lutak Road.
- Station 4: stationed on a boat triangulating an area outside of the mouth of Lutak Inlet between Low Point and Taiya Point.

The number and locations of monitors will be based on the following in-water work scenarios:

- Scenario #1: In-water construction not involving pile driving; barge movements, etc. and vibracompaction.
  - One location: Station 1
- Scenario #2: Impact hammer, vibratory hammer, and DTH drill installation of all pile sizes.
  - Three locations: Stations 1 3

- Scenario #3: Vibratory hammer and DTH drill installation of all piles, impact installation of all piles except sheet piles.
  - One location: Station 4



Figure 8. Lutak Dock Replacement Project PSO Locations

## 5.6 Strike Avoidance

Vessels will adhere to the Alaska Humpback Whale Approach Regulations when transiting to and from the project site (see 50 CFR §§ 216.18, 223.214, and 224.103(b)). These regulations require that all vessels:

- Do not approach, or cause a vessel or object to approach, within 100 yards of a humpback whale;
- Do not obstruct the path of oncoming humpback whales causing them to surface within 100 yards of the vessel;
- Do not disrupt the normal behavior or prior activity of a whale; and
- Operate at a slow, safe speed when near a humpback whale (safe speed is defined in regulation 33 CFR § 83.06).

Vessels will follow the NMFS Marine Mammal Code of Conduct for other species of marine mammals, which recommend: maintaining a minimum distance of 100 yards; not encircling or trapping marine mammals between boats, or between boats and the shore; and putting engines in neutral if approached by a whale or other marine mammal to allow the animals to pass.

# 5.7 Marine Mammal Monitoring Techniques

## 5.7.1 Pre-Activity Monitoring

The following monitoring methods will be implemented before permitted construction begins:

- The lead PSO and Contractor Superintendent will meet at the start of each day to discuss planned construction activities for the day and to conduct a radio/phone check.
- Prior to the start of permitted activities, observers will conduct a 30-minute pre-watch of the shutdown and monitoring zones. They will ensure that no marine mammals are present within the shutdown zone before permitted activities begin.
- The shutdown zone will be cleared when marine mammals have not been observed within the zone for the 30-minute pre-watch period. If a marine mammal is observed within the shutdown zone, a soft-start cannot proceed until the animal has left the zone or has not been observed for 15 minutes (for pinnipeds) or 30 minutes (for cetaceans and sea otters).
- When all applicable exclusion zones are clear, the observers will radio the pile driving supervisor. Permitted activities will not commence until the pile driving supervisor receives verbal confirmation that the zones are clear.
- If permitted species are present within the monitoring zone, work will not be delayed, but observers will monitor and document the behavior of individuals that remain in the monitoring zone.
- In case of fog or reduced visibility, observers must be able to see all of the shutdown zones before permitted activities can begin.

## 5.7.2 Soft Start Procedures

Soft start procedures will be used prior to periods of impact driving to allow marine mammals to leave the area prior to exposure to maximum noise levels. Soft start procedures for vibratory pile driving will not be implemented and are not required.

- The contractor will initiate approximately three strikes at a reduced energy level, followed by a 30-second waiting period. This procedure would be repeated twice more.
- If work ceases for more than 30 minutes, soft start procedures must be used prior to continuing work.

### 5.7.3 During Activity Monitoring

If permitted species are observed within the monitoring zone during permitted activities, a Level B take will be recorded and behaviors will be documented. Work will not stop unless an animal enters or appears likely to enter the shutdown zone.

#### 5.7.4 Inclement Weather

If inclement weather, limited visibility, or increased sea state restricts the observers' ability to make observations, in-water activities will not be initiated or continued until the largest Level A shutdown zone for the activity is visible.

If visibility is diminished, but the parameters for initiating or continuing work (referenced above) are met, the following should occur:

- All appropriate PSO locations for the planned in-water activities should be occupied for the entirety of the monitoring period regardless of visibility.
- All PSO locations should collectively determine what percentage of the Level B zone is visible for use in calculating extrapolations. The lead PSO should document this with time stamps as conditions change and this percentage should be adopted by all PSO locations.
- Extrapolate takes for each species with authorized take using the equation below.

Number of individuals sighted in the visible portion of the Level B zone ÷ percentage of visible Level B zone = extrapolated takes for species

## 5.7.5 Shutdowns

If a marine mammal enters or appears likely to enter its respective shutdown zone:

- The observers will immediately alert the pile driving supervisor.
- All permitted activities will immediately halt.
- In the event of a shutdown, permitted pile installation or removal activities may resume only when the animal(s) within or approaching the shutdown zone has been visually confirmed beyond or heading away from the shutdown zone, or 15 minutes (for pinnipeds) or 30 minutes (for cetaceans and sea otters) have passed without observation of the animal. Observers will contact the pile driving supervisor and inform them that activities can re-commence.

#### 5.7.6 Breaks in Work

Shutdown and monitoring zones will continue to be monitored during an in-water construction delay. No exposures will be recorded for permitted species in the monitoring zone if there are no concurrent permitted construction activities.

If permitted activities cease for more than 30 minutes and monitoring has not continued, preactivity monitoring and soft start procedures must recommence. This includes breaks due to scheduled or unforeseen construction practices or breaks due to permit-required shutdown. Work can begin following the 30-minute pre-watch monitoring protocols. Work cannot begin if an animal is within the shutdown zone or if visibility is not clear throughout the Level A shutdown zones.

#### 5.7.7 Post Activity Monitoring

Monitoring of the shutdown and monitoring zones will continue for 30 minutes following completion of in-water activities. PSOs will continue to record observations during this postwatch period, with a focus on observing and reporting unusual or abnormal behaviors.

If construction were to resume during the post-watch period, PSOs will follow pre-watch protocols to ensure that that the shutdown and monitoring zones are clear prior to work resuming.

## 5.8 Sunflower Sea Star Monitoring Techniques

- Prior to, but no more than 24 hours prior to, beginning in-water construction, a preconstruction survey of the project area and its immediate vicinity will be conducted using an ROV, snorkelers, divers, or other equally effective methods.
  - Sunflower sea star presence will be recorded, and if present may require more frequent (once a week) surveys to prevent direct placement of piles or fill materials on sea stars.
- If no sunflower sea stars are documented during the pre-construction survey, additional surveys will be completed bi-weekly (every other week) for the duration of in-water work.
- As feasible, the Contractor may elect to monitor the placement of each pile with a video system or ROV in lieu of the preconstruction or biweekly surveys.
- Removed piles will be surveyed for the presences of sunflower sea stars. If a sunflower sea star is attached to a pile being removed from the water, the sunflower sea star will be gently removed from the pile by the Lead PSO, or a crew delegate due to possible safety concerns, and immediately released into an intertidal location nearby. The sea star will not be placed in a container nor transported any significant distance away from the project location. The number of sunflower sea stars moved will be recorded, noting the diameter of each individual, and reported to NMFS.
- Each day prior to fill operations below MHW along the sides of the dock, sunflower sea star surveyors will systematically examine all intertidal and subtidal areas that may be impacted by fill operations during that day.
  - Survey transects will run roughly parallel to shore, with two-meter separation between each transect line, until the area that will be covered with fill that day is surveyed (see example transect diagrams, Appendix D). Surveys may be done on foot at low tide or by snorkelers in areas where the substrate is not visible by foot during low tide. During surveys, bathymetry must be sufficiently visible so that surveyors can accurately assess for the presence of sunflower sea stars of all size classes. In areas that are not visible to snorkelers, surveys may be done by a diver or ROV equipped with a camera.

- As feasible and safe, sunflower sea stars that are found in fill areas will be gently moved into a container of water collected at the site, and taken to a location at least 100 meters away from the project area and gently released onto the substrate. The number and approximate diameter of sunflower sea stars moved will be recorded and reported to NMFS.
- If it appears that a sunflower sea star has sea star wasting syndrome or if any dead sunflower sea stars are observed, pictures of the individuals will be taken and infected individuals will be counted. The infected sunflower sea stars will not be touched or moved. All sunflower sea star findings will be reported to NMFS, including latitude/longitude and transect line, at <u>akr.section7@noaa.gov</u> (see fact sheet, Appendix D).

# 6 **REPORTING**

## 6.1 Notification of Intent to Commence Construction

The contractor will inform NMFS PR1 and NMFS PRD one week prior to commencing construction activities.

## 6.2 Weekly Sighting Counts

A summary of the following will be submitted to the construction project manager at the conclusion of each week of construction activity (Friday evening):

- Completed monitoring forms for the week
- Completed environmental conditions and construction activity logs for the week
- Preliminary counts of sightings (including sunflower sea stars) and takes per species

## 6.3 Interim Monthly Reports

The contractor will submit brief, monthly reports to the NMFS PRD summarizing PSO observations and recorded takes during construction. Monthly reporting will allow NMFS to track takes (including extrapolated takes) and reinitiate consultation in a timely manner, if necessary. Monthly reports will be submitted by email to <u>akr.section7@noaa.gov</u>.

The reporting period for each monthly PSO report will be the entire calendar month, and reports will be submitted by the end of business hours on the tenth day of the month following the end of the reporting period (e.g., the monthly report covering September 1–30, 2023, would be submitted to the NMFS by close of business on October 10, 2023).

# 6.4 Final Report

The contractor will submit a draft final report by email to <u>akr.section7@noaa.gov</u> no later than 90 days following the end of construction activities. The contractor will provide a final report within 30 days following resolution of NMFS's comments on the draft report. If no comments are received from the agency within 30 days, the draft final report will be considered the final report.

The final reports will contain, at minimum, the following information:

• A summary of construction activities, including start and end dates.

- A description of any deviation from the initially proposed pile numbers, pile types, average driving times, etc.
- A table summarizing all marine mammal sightings during the construction period, including:
  - dates, times, species, numbers, locations, and behaviors of any observed ESAlisted marine mammals, including all observed humpback whales and Steller sea lions;
  - daily average number of individuals of each species (differentiated by month as appropriate) detected within the Level A and Level B zones, and whether estimated as taken, if appropriate; and
  - the number of shut-downs throughout all monitoring activities.
- Details of all sunflower sea star surveys, including the presence of sunflower sea stars, distance from project site, date/time, and evidence of sea star wasting syndrome.
- Description of sunflower sea star removal from piles and fill areas.
- A brief description of any impediments to obtaining reliable observations during construction period.
- A description of any impediments to complying with these mitigation measures.
- Appendices containing all PSO daily logs and marine mammal sighting forms.

# 6.5 Reporting Injured or Dead Marine Mammals or Illegal Harassment

If it is clear that project activity has caused the take of a marine mammal in a manner prohibited by the (requested) IHA, such as unauthorized Level A harassment, serious injury, or mortality, the contractor shall immediately cease the specified activities and report the incident to NMFS PR1, NMFS PRD, and the NMFS statewide 24-hour Stranding Hotline (877) 925-7773.

If a sea otter, report to the USFWS Marine Mammal Management Office at (800) 362–5148, or the Alaska SeaLife Center in Seward (888) 774–7325, or both. The report must include the following:

- 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 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 available).

Activities will not resume until NMFS or USFWS is able to review the circumstances of the unauthorized take. NMFS or USFWS would work with the contractor to determine what measures are necessary to minimize the likelihood of further unauthorized take and ensure ESA and MMPA compliance. The contractor may not resume their activities until notified by NMFS or USFWS.

In the event that the contractor discovers an injured or dead marine mammal within the action area, 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), the contractor will immediately report the incident to the USFWS or NMFS PR1, and the NMFS Alaska Regional Stranding Coordinator or Hotline.

The report must include the same information identified in the paragraph above. Activities may continue while NMFS or USFWS reviews the circumstances of the incident. NMFS or USFWS will work with the contractor to determine whether additional mitigation measures or modifications to the activities are appropriate.

In the event that the contractor 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), the contractor must report the incident to the NMFS PR1 and the NMFS Alaska Regional Stranding Coordinator or Hotline within 24 hours of the discovery. If a sea otter, it must be reported to USFWS within 24 hours of the discovery to either the USFWS Marine Mammal Management Office at (800) 362–5148 (business hours), or the Alaska SeaLife Center in Seward (888) 774–7325 (24 hours a day), or both. The contractor will provide photographs, video footage (if available), or other documentation of the stranded animal sighting to NMFS or USFWS.

If PSOs observe marine mammals being disturbed, harassed, harmed, injured, or killed (e.g., feeding or unauthorized harassment), these activities will be reported to NMFS Office of Law Enforcement at (1-800-853-1964).

# Appendix A: List of Species with Ranges in the Project Action Area

Species	Status Listing	Jurisdiction	Occurrence	Link to Species Profile
Minke Whale (Balaenoptera acutorostrata)	MMPA	NMFS	Rare	https://www.fisheries.noaa.gov/species/minke-whale
Humpback Whale (Megaptera novaeangliae)	Hawaii DPS: Not listed Mexico DPS: Threatened	NMFS	Hawaii DPS: Infrequent; Mexico DPS: Rare	https://www.fisheries.noaa.gov/species/humpback- whale
Killer Whale (Orcinus orca)	MMPA	NMFS	Infrequent	https://www.fisheries.noaa.gov/species/killer-whale
Dall's Porpoise (Phocoenoides dalli)	MMPA	NMFS	Infrequent	https://www.fisheries.noaa.gov/species/dalls- porpoise
Harbor Porpoise (Phocoena phocoena)	MMPA	NMFS	Frequent to Infrequent	https://www.fisheries.noaa.gov/species/harbor- porpoise
<b>Pacific White-Sided Dolphin</b> (Lagenorhynchus obliquidens)	MMPA	NMFS	Rare	https://www.fisheries.noaa.gov/species/pacific- white-sided-dolphin
Harbor Seal (Phoca vitulina)	MMPA	NMFS	Common	https://www.fisheries.noaa.gov/species/harbor-seal
<b>Steller Sea Lion</b> (Eumetopias jubatus)	WDPS: ESA Endangered; EDPS: not listed	NMFS	WDPS: rare; EDPS: frequent to common	https://www.fisheries.noaa.gov/species/steller-sea- lion
Northern Sea Otter (Enhydra lutris kenyoni)	ESA	USFWS	Rare	https://www.fws.gov/alaska/pages/endangered- species/northern-sea-otter
<b>Sunflower Sea Star</b> (Pycnopodia helianthoides)	Proposed	NMFS	Unknown	https://www.fisheries.noaa.gov/species/sunflower- sea-star

# Species and their Status Listed by the NMFS Mapper and USFWS IPaC Mapper that May Occur in the Project Vicinity

# Appendix B: Construction Activity and Communication Log

Page \_\_\_\_\_ of \_\_\_\_\_

# Construction Activity and Communication Log

Project:			Location:			s): Date:
Time	Pile Size	Pile Type	Construction Type	Obs.	Construction Personnel	Communication/Comments

Filling Out Construction Activity and Communication Logs									
Data Columns	Definition and How to Record								
	General Information (top of form)								
Project	Time that monitoring by MMOs/PSOs began and ended, without								
	interruption (military time)								
Project Name	Lutak Dock Replacement Project								
Monitoring Location	See PSMMP								
Observer	Names of Observers at each location								
Date	MM/DD/YYYY								
	Construction and Communication Activities								
Time of event	Time that construction activities and all communications between								
	MMOs/PSOs and construction crews take place								
Type of construction	Type of construction activity occurring, including ramp up, startup,								
activity	shutdown, type of pile installation technique, pile size, and pile type								
	(permanent or temporary)								
Communication	Information communicated between MMOs/PSOs and construction								
	crew								

# **Appendix C: Marine Mammal Sighting Form**

MARINE MAMMAL	Time	Visibility (distance)	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
<b>OBSERVATION RECORD</b>	:		%	S - PC - L - R - F - OC - SN - HR	Lt/Mod/Hvy		NSEW	NSEW
Project Name:	•		%	S - PC - L - R - F - OC - SN - HR	Lt/Mod/Hvy		NSEW	NSEW
Monitoring Location:	:		%	S - PC - L - R - F - OC - SN - HR	Lt/Mod/Hvy		NSEW	NSEW
Date:	:		%	S - PC - L - R - F - OC - SN - HR	Lt/Mod/Hvy		NSEW	NSEW
Time Effort Initiated:	:		%	S - PC - L - R - F - OC - SN - HR	Lt/Mod/Hvy		NSEW	NSEW
Time Effort Completed:	•		%	S - PC - L - R - F - OC - SN - HR	Lt/Mod/Hvy		NSEW	NSEW
1 age 01								

Event Code	Sight # (1 or 1.1 if re- sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Distance from Pile	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DR I V OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DR I V OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DR I V OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DR I V OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DR I V OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DR I V OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DR I V OWC NOWC NONE	DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		DR I V OWC NOWC NONE	DE SD None		

#### Marine Mammal Observation Record - Sighting Codes

#### **Behavior Codes**

Code	Behavior	Definition				
BR	Breaching	Leaps clear of water				
CD	Change Direction	Suddenly changes direction of travel				
CH	Chuff	Makes loud, forceful exhalation of air at surface				
DI	Dive	Forward dives below surface				
DE	Dead	Shows decomposition or is confirmed as dead by investigation				
DS	Disorientation	An individual displaying multiple behaviors that have no clear direction or purpose				
FI	Fight	Agonistic interactions between two or more individuals				
FO	Foraging	Confirmed by food seen in mouth				
MI	Milling	Moving slowly at surface, changing direction often, not moving in any particular direction				
PL	Play	Behavior that does not seem to be directed towards a particular goal; may involve one, two or more individuals				
PO	Porpoising	Moving rapidly with body breaking surface of water				
SL	Slap	Vigorously slaps surface of water with body, flippers, tail etc.				
SP	Spyhopping	Rises vertically in the water to "look" above the water				
SW	Swimming	General progress in a direction. Note general direction of travel when last seen [Example: "SW (N)" for swimming north]				
TR	Traveling	Traveling in an obvious direction. Note direction of travel when last seen [Example: "TR (N)" for traveling north]				
UN	Unknown	Behavior of animal undetermined, does not fit into another behavior				
AWA	Approach Work					
LWA	Leave Work Area					
		Pinniped only				
EW	Enter Water (from haul out )	Enters water from a haul-out for no obvious reason				
FL	Flush (from haul out)	Enters water in response to disturbance				
НО	Haul out (from water)	Hauls out on land				
RE	Resting	Resting onshore or on surface of water				
LO	Look	Is upright in water "looking" in several directions or at a single focus				
SI	Sink	Sinks out of sight below surface without obvious effort (usually from an upright position)				
VO	Vocalizing	Animal emits barks, squeals, etc.				
	Cetacean only					
LG	Logging	Resting on surface of water with no obvious signs of movement				

**Sea State and Wave Height:** Use Beaufort Sea State Scale for Sea State. This refers to the surface layer and whether it is glassy in appearance or full of white caps. In the open ocean, it also considers the wave height or swell, but in inland waters the wave height (swells) may never reach the levels that correspond to the correct surface white cap number. Therefore, include wave height for clarity.

**Glare**: Percent glare should be the total glare of observers' area of responsibility. Determine if observer coverage is covering 90 degrees or 180 degrees and document daily. Then assess total glare for that area. This will provide needed information on what percentage of the field of view was poor due to glare.

**Swell Direction:** Swell direction should be where the swell is coming from (S for coming from the south). If possible, record direction relative to fixed location (pier). Choose this location at beginning of monitoring project. **Wind Direction:** Wind direction should also be where the wind is coming from.

#### Event

Code	Activity Type
E ON	Effort On
E OFF	Effort Off
PRE	Pre-Construction Watch
POST	Post-Construction Watch
CON	Construction (see types)
S	Sighting
М	Mitigation
OR	Observer Rotation

# Sighting Cues

Code	Distance Visible
BL	Blow
BO	Body
BR	Breach
DF	Dorsal Fin
SA	Surface Activity
OTHR	Other

## **Marine Mammal Species**

Code	Marine Mammal Species
STSL	Steller Sea Lion
НРВК	Humpback Whale
HAPO	Harbor Porpoise
DAPO	Dall's Porpoise
PSWD	Pacific white-sided dolphin
SO	Sea Otter
HSEA	Harbor Seal
MINKE	Minke Whale
ORCA	Killer Whale

### **Construction Type**

Code	Activity Type
OWC	Over-Water Construction
NOWC	No Over-Water Construction
V	Vibratory Hammer
I	Impact Hammer
DR	Drilling
NONE	No Construction

# **Mitigation Codes**

Code	Activity Type
DE	Delay onset of In-Water Work
SD	Shutdown In-Water Work

## Weather Conditions

Code	Weather Condition
S	Sunny
PC	Partly Cloudy
L	Light Rain
R	Steady Rain
F	FOG
OC	Overcast
SN	Snow
HR	Heavy Rain

## Wave Height

Code	Wave Height
Light	0-3 ft
Moderate	4-6 ft
Heavy	>6 ft

Filling Out Sighting Forms					
Data Columns Definition and How to Record Data					
Genera	Information (Top of Form)				
Project Name	Lutak Dock Replacement Project				
Monitoring Location	See 4MP				
Date	MM/DD/YYYY				
Time effort initiated and completed	Time started pre-watch and time post-watch ended				
	(military time). If there is more than one monitoring				
	period in a day, start a new form for each period.				
Env	ironmental Conditions				
Environmental Conditions	Record at the start of monitoring period, when				
	changes, and at the end of monitoring period.				
Visibility	B-bad, P-poor, M-moderate, G-good, and E-excellent				
Glare	Amount of water obstructed by glare (0–100%) and				
	direction of glare (from south, north, or another				
	direction)				
Weather conditions	Dominant weather conditions: sunny (S), partly cloudy				
	(PC), light rain (LR), steady rain (R), fog (F), overcast				
	(OC), light snow (LS), snow (SN)				
Wave Height	Lt-light, Mod-moderate, Hvy-heavy				
Wind and Swell direction	From the north (N), northeast (NE), east (E), southeast				
	(SE), south (S), southwest (SW), west (W), northwest				
	(NW)				
Beaufort Sea State	Scale 1-12. See BSS sheet.				
Sightings					
Event Code	Indicates what events are happening at the time of the				
	sighting, what events may have occurred due to the				
	sighting, and observer rotations.				
Time/Duration	Time first sighted and time of last sighting (military				
	time).				
Sighting Number	Chronological (1,2,3, etc.)				
	If the same marine mammal is resignted at a distance				
	greater than 25 meters from the original sighting				
	location record as a resignt				
	(EX. 1.1- same marine mammal as signting 1, but				
	Signted for a second time in different location)				
waypoint (wP)/Grid #/DIR of Travel	Grid number that marine mammal was signted in and				
	direction of travel. Format should be grid map letter-				
	gria (Example: If a marine mammal is sighted in grid <b>2B</b>				
	on <b>Grid Map B</b> this should be denoted by <b>B-2B</b> ).				
Distance from Pile	Distance from pile driving site to the sighted marine				
	mammal.				

Observer (Obs.)	Initials of the Observer who sighted the marine
	mammal or who is coming on shift during a rotation
Sighting Cue	How was the marine mammal sighted
Species	Appropriate species abbreviation from code sheet
Group Size	Record the minimum and maximum number of
	individuals that were sighted. Then determine and
	record the best number of individuals.
Behavior	Behaviors observed using appropriate abbreviations
	from code sheet
Construction Type	Circle construction type that is actively occurring at the
	time and for the duration of the sighting.
Mitigation Type	Circle mitigation type, if any. Based upon monitoring
	and shutdown zones does a delay of work (pre-watch
	and post-watch) or a shutdown (monitoring period)
	need to occur.
Exposure	If a marine mammal enters its Level A or Level B
	distance and work is actively occurring it will be an
	exposure indicate yes (Y). If no work is actively
	occurring indicate no (N)

	Estimating Wind Speed and Sea State with Visual Clues							
Beaufort number	Wind Description	Wind Speed	Wave Height	Visual Clues				
0	Calm	0 knots	0 feet	Sea is like a mirror. Smoke rises vertically.				
1	Light Air	1-3 kts	< 1/2	Ripples with the appearance of scales are formed, but without foam crests. Smoke drifts from funnel.				
2	Light breeze	4-6 kts	1/2 ft (max 1)	Small wavelets, still short but more pronounced, crests have glassy appearance and do not break. Wind felt on face. Smoke rises at about 80 degrees.				
3	Gentle Breeze	7-10 kts	2 ft (max 3)	Large wavelets, crests begin to break. Foam of glassy appearance. Perhaps scattered white horses (white caps). Wind extends light flag and pennants. Smoke rises at about 70 deg.				
4	Moderate Breeze	11-16 kts	3 ft (max 5)	Small waves, becoming longer. Fairly frequent white horses (white caps). Wind raises dust and loose paper on deck. Smoke rises at about 50 deg. No noticeable sound in the rigging. Slack halyards curve and sway. Heavy flag flaps limply.				
5	Fresh Breeze	17-21kts	6 ft (max 8)	Moderate waves, taking more pronounced long form. Many white horses (white caps) are formed (chance of some spray). Wind felt strongly on face. Smoke rises at about 30 deg. Slack halyards whip while bending continuously to leeward. Taut halyards maintain slightly bent position. Low whistle in the rigging. Heavy flag doesn't extended but flaps				
				Large waves begin to form. White foam crests are more extensive				
6	Strong Breeze	22-27 kts	9 ft (max 12)	everywhere (probably some spray). Wind stings face in temperatures below 35 deg F (2C). Slight effort in maintaining balance against wind. Smoke rises at about 15 deg. Both slack and taut halyards whip slightly in bent position. Low moaning, rather than whistle, in the rigging. Heavy flag extends and flaps more vigorous.				
7	Near Gale	28-33 kts	13 ft (max 19)	Sea heaps up and white foam from breaking waves begins to be blown in streaks along the direction of wind. Necessary to lean slightly into the wind to maintain balance. Smoke rises at about 5 to 10 deg. Higher pitched moaning and whistling heard from rigging. Halyards still whip slightly. Heavy flag extends fully and flaps only at the end. Oilskins and loose clothing inflate and pull against the body.				
8	Gale	34-40 kts	18 ft (max 25)	Moderately high waves of greater length. Edges of crests begin to break into the spindrift. The foam is blown in well-marked streaks along the direction of the wind. Head pushed back by the force of the wind if allowed to relax. Oilskins and loose clothing inflate and pull strongly. Halyards rigidly bent. Loud whistle from rigging. Heavy flag straight out and whipping.				
9	Strong Gale	41-47 kts	23 ft (max 32)	High waves. Dense streaks of foam along direction of wind. Crests of waves begin to topple, tumble and roll over. Spray may affect visibility.				
10	Storm	48-55 kts	29 ft (max 41)	Very high waves with long overhanging crests. The resulting foam, in great patches is blown in dense streaks along the direction of the wind. On the whole, the sea takes on a whitish appearance. Tumbling of the sea becomes heavy and shock-like. Visibility affected.				
11	Violent Storm	56-63 kts	37 ft (max 52)	Exceptionally high waves (small and medium-sized ships might be for time lost to view behind the waves). The sea is completely covered with long white patches of foam lying along the direction of the wind. Everywhere, the edges of the wave crests are blown into froth. Visibility greatly affected.				
12	Hurricane	64+ kts	45+ ft	The air is filled with foam and spray. The sea is completely white with driving spray. Visibility is seriously affected.				

# **Appendix D: Grid Map**

