Protected Species Final Report
DRAFT

Power Systems & Supplies of Alaska
Ward Cove Cruise Ship Dock Project
Ward Cove, Ketchikan, Alaska

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1 INTRODUCTION

1.1 BACKGROUND

On January 9, 2020, The National Marine Fisheries Service (NMFS) presented Power Systems & Supplies of Alaska (PSSA) with a Letter of Concurrence (LOC) following Endangered Species Act (ESA) Section 7 Informal Consultation to construct a cruise ship dock at Ward Cove in Ketchikan, Alaska. In-water work began on February 9, 2020 under mitigation measures detailed in the LOC and NMFS approved Marine Mammal Monitoring and Mitigation Plan (4MP) designed to prevent 'take' of Marine Mammal Protection Act (MMPA) and ESA-protected marine species.

PSSA's request for an Incidental Harassment Authorization (IHA) was published in the *Federal Register* on March 3, 2020; the comment period closed on April 2, 2020; and NMFS granted the IHA on May 11, 2020. The IHA is valid from May 11, 2020 to May 10, 2021.

Under the IHA, NMFS granted Level A and Level B take of a small number of Dall's porpoise (*Phocoenoides dalli*), harbor porpoise (*Phocoena phocoena*), harbor seals (*Phoca vitulina*), and Steller sea lions (*Eumpetopia jubatus*) (Table 1).

The 'takes' granted for this project were generated based upon stock assessment completed by NMFS, direct consultation with NMFS, and observations from another other projects in Tongass Narrows. Action areas were based off of consultation with NMFS and various literary sources. Mitigation included NMFS-approved Protected Species Observers (PSOs) monitoring the Level A and Level B take areas, recording species, and shutting down in-water work if the abovementioned species or any other marine mammal species approached or appeared likely to enter the any designated shutdown area (Tables 2-3).

Table 1. Marine Mammal Takes Authorized by NMFS During Ward Cove Cruise Ship Dock Construction

Species	Authorized Takes	
	Level B	Level A
Dall's porpoise (*Phocoenoides dalli*) Alaska Stock	45	15
Harbor porpoise (*Phocoena phocoena*) Southeast Alaska Stock	25	15
Harbor seal (*Phoca vitulina*) Clarence Strait Stock	950	100
Steller sea lion (*Eumpetopia jubatus*) Eastern DPS Stock	1,850	0

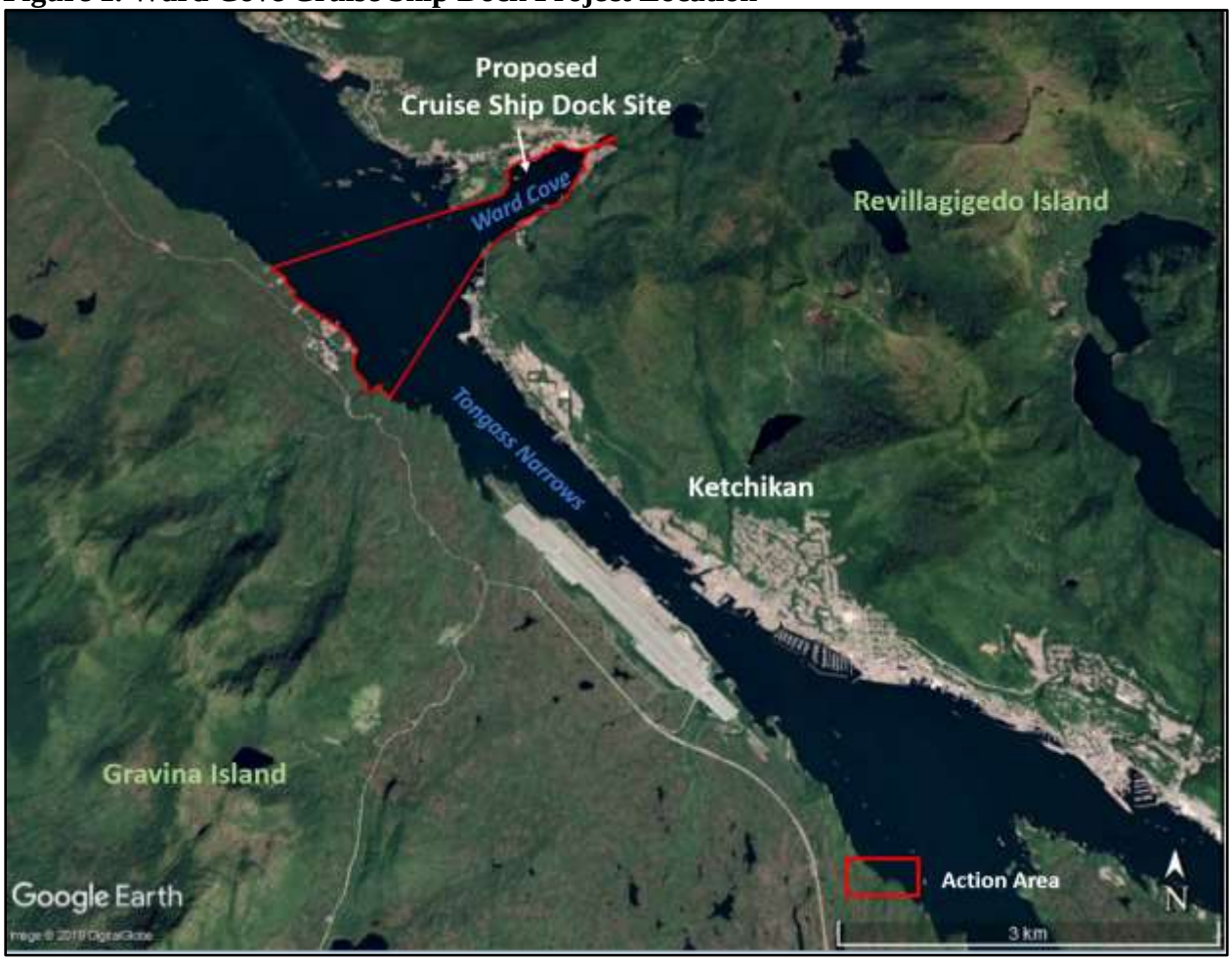
(Source: NMFS 2020)

This documents purpose is to meet the final monitoring report requirements outlined in the NMFS IHA issued to PSSA under the authority of Section 101 (a)(5)(D) of the MMPA.

1.2 PROJECT OVERVIEW AND LOCATION

The project was conducted in Ward Cove and Tongass Narrows near Ketchikan, Alaska at approximately latitude 55.4037 and longitude -131.7316 (Figure 1).

Figure 1. Ward Cove Cruise Ship Dock Project Location



For this project, piles were installed using a vibratory hammer, impact hammer, and drill (socketing and rock anchor). Each of these methods and pile sizes required varying monitoring zones, Level A shutdown zones, and Level B shutdown zones (Figure 2).

Table 2. Ward Cove Cruise Ship Dock Construction NMFS-Approved Shutdown Zones Starting May 11, 2020

Pile Size	Harbor Seal Shutdown Distance (m)	Harbor Porpoise, Dall's Porpoise Shutdown Distance (m)	Steller Sea Lion Shutdown Distance (m)	Other Marine Mammal Shutdown Distance (m)	Level B Northern Sea Otter Shutdown Zone (m)
Vibratory Pile Driving/Removal					
30-inch piles	10	10	10	3,645	35
36-inch piles	15	40	10	3,645	35
48-inch piles	15	40	10	3,645	35
Impact Pile Driving					
30-inch piles	200	200	20	3,645	3,645
36-inch piles	200	200	30	3,645	3,645
48-inch piles	200	200	30	3,645	3,645
Rock Anchoring (DTH)					
36-inch piles	200	200	30	3,645	35
48-inch piles	200	200	20	3,645	35
All Other Activities					
Any activity	10	10	10	N/A	10

**Prior to May 11, 2020, all shutdown distances were as shown under "other marine mammal."*

Table 3. for Ward Cove Cruise Ship Dock Construction NMFS-Approved Monitoring Zones Starting May 11, 2020

Pile Size	Harbor Seal Level A Monitoring Distance (m)	Harbor Porpoise, Dall's Porpoise Level A Monitoring Distance (m)	Steller Sea Lion Level A Monitoring Distance (m)	Harbor porpoise, Dall's porpoise, Steller Sea lion Level B Monitoring Zone (m)	Other Marine Mammal Monitoring Zone (m)	Northern Sea Otter Monitoring Zone (m)
Vibratory Pile Driving/Removal						
30-inch	shut down only	shut down only	shut down only	3,645	3,645	35
36-inch				3,645	3,645	35
48-inch				3,645	3,645	35
Impact Pile Driving						
30-inch	800	800	800	3,645	3,645	3,645
36-inch	800	800	800	3,645	3,645	3,645
48-inch	800	800	800	3,645	3,645	3,645
Rock Anchoring (DTH)						
36-inch	800	800	800	3,645	3,645	35
48-inch	800	800	800	3,645	3,645	35
All Other Activities						
Any activity	10	10	10	N/A	N/A	10

**Prior to May 11, 2020, take of marine mammals was not authorized and there were only shutdown zones.*

2 MARINE MAMMAL MONITORING METHODS

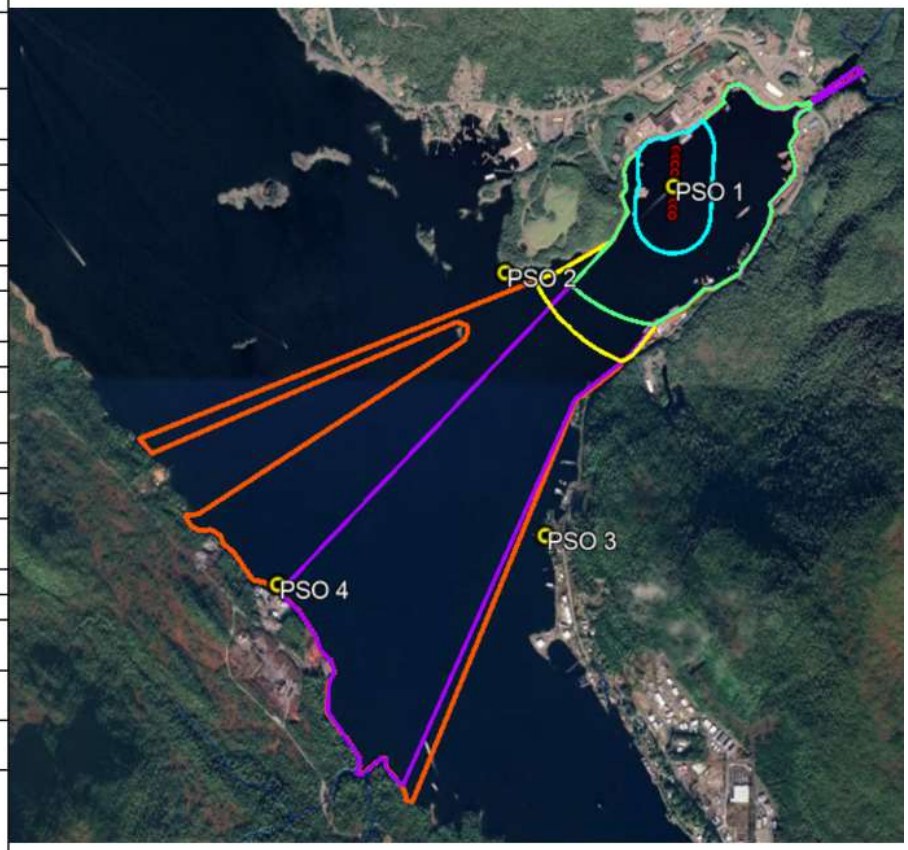
The PSO monitoring guidelines followed the mitigation measures detailed in the NMFS-authorized IHA established in order to minimize impacts to marine mammals in the vicinity of the dock installation at the PSSA Ward Cove Cruise Ship Dock Project site. Visual observations allowed for the adherence of the shutdown areas and collection of data to meet reporting requirements.

Four qualified and NMFS-accepted PSOs scanned the area for marine mammals, recorded and reported sightings, and implemented mitigation actions (shut downs) in accordance with the LOC and IHA throughout the project. The PSOs also performed a 30-minute watch prior to the start of and at the conclusion of any in water work and consistently observed the areas while all in water work occurred. The four land-based PSOs were located with a clear view of the action areas and had a full view of Ward Cove and Tongass Narrows (Figure 2).

Figure 2. Ward Cove Cruise Ship Dock Construction NMFS-Approved PSO locations, Monitoring Zones, and Shutdown Zones

Activity	Shutdown Zone (m) [a]		Species
	Trestle	Offshore	
Barge movements, pile positioning, sound attenuation placement	10		All
Vibratory 30-inch	10		Harbor Seal, Harbor Porpoise, and Dall's Porpoise
	35		Northern sea otter
Vibratory 36-inch and 48-inch	10		Steller Sea Lion
	15		Harbor Seal
	40		Harbor Porpoise and Dall's Porpoise
	35		Northern Sea Otter
Impact Hammer 30-inch	20		Steller Sea Lion
	200[b, c]		Harbor Seal, Harbor Porpoise, and Dall's Porpoise
	3,645	3,645	Northern Sea Otter
Impact Hammer 36-inch and 48-inch	30		Steller Sea Lion
	200[b, c]		Harbor Seal, Harbor Porpoise, and Dall's Porpoise
	3,645	3,645	Northern Sea Otter
Rock Anchor 36-Inch	30		Steller Sea Lion
	35		Northern Sea Otter
	200[c]		Harbor Seal, Harbor Porpoise, and Dall's Porpoise
`Rock Anchor 48-inch	20		Steller Sea Lion
	35		Northern Sea Otter
	200[c]		Harbor Seal, Harbor Porpoise, and Dall's Porpoise
Shutdown and Monitoring Zone for All Other Marine Mammals	3,645	3,645	
Level A Monitoring Zone for Impact and Rock Anchoring	800	800	

[a] 10, 15, and 40 m shutdown zones not distinguished to scale
[b] Level A harassment zone for impact driving extends to 325 meters; however, shutdown will occur at 200 meters
[c] A Level A monitoring zone is implemented for DTH and impact pile driving of 30 to 48-inch diameter piles out to the extent of the Level A harassment zone (800 m).



The PSOs were equipped with binoculars, a rangefinder, and GPS unit. The head observer also was equipped with a cell phone to communicate with the construction superintendent. Guidelines for observers to mitigate for fatigue were closely followed. If a marine mammal was sighted, the observer would identify and record the species. If the marine mammal appeared to be likely to enter a shutdown area, the superintendent was notified and in water work was halted and delayed until the marine mammal left the area or 15 minutes (pinnipeds) and 30 minutes (cetaceans) had passed after the last sighting within or near the action area.

The PSOs recorded the following information for each protected species observation:

- Species, date, and time for each sighting event.
- Number of animals per sighting event (adults/juveniles/calves).
- Primary, and if observed, secondary behaviors of the marine mammal.
- Geographic coordinates for the observed animals.
- Time of the most recent pile-driving activity or other project activity prior to sighting.
- Weather and water conditions (i.e. sea state, visibility, lighting conditions, etc.).

When a protected species was observed, distance estimates were made using a rangefinder, the naked eye, and by relating the animal's proximity to an object at a known distance. Species and sex determinations were attempted by observing anatomical features and behaviors. Identifications were confirmed and recorded.

Based upon the location, timeframe, behavior, and tracking movement, observers were able to positively determine if an individual or group was being resighted. If an individual or group was resighted, a note was made on the sighting form to ensure that additional takes or sightings were not counted again. If it could not be positively determined whether it was the same individual or group, the individual or group was counted as a new sighting and an additional take, if appropriate.

A detailed description of monitoring methods is documented in *Marine Mammal Monitoring and Mitigation Plan for the Power Systems & Supplies of Alaska Ward Cove Cruise Ship Dock Project* (Appendix A).

3 RESULTS

3.1 GENERAL MONITORING AND CONSTRUCTION ACTIVITIES

A total of ninety-eight (98) days of in-water work occurred from February 9, 2020 to September 08, 2020. During that time, thirty-eight (38) 30-inch temporary piles, ten (10) 30-inch, eighteen (18) 36-inch, and twenty (20) 48-inch permanent piles were installed using a vibratory hammer, impact hammer, and drill (socketing) (Table 4). Three land-based and one construction barge based PSOs were on duty during every day of in-water work.

Appendix B and C details the dates and times of all marine mammal monitoring. Appendix B documents constructions activities and pile information that occurred during each monitoring period.

Table 4. Number of In-Water Work/Marine Mammal Monitoring Days and Piles Driven Per Month During Dolphin Installation at the Ward Cove Cruise Ship Dock in 2020

Month	Number of Days	Number of Piles Worked On*	Pile Size	Pile Type	Pile Driving Method(s)
February	18	10	30-inch	Permanent	Drill (socketing) and Vibratory Hammer
		10	30-inch	Temporary	Drill (socketing) and Vibratory Hammer
March	16	7	48-inch	Permanent	Drill (socketing) and Impact Hammer
		8	30-inch	Temporary	Drill (socketing)
April	11	6	48-inch	Permanent	Drill (socketing)
		3	30-inch	Temporary	Drill (socketing) and Vibratory Hammer
May	13	16	36-inch	Permanent	Drill (socketing) and Impact Hammer
		6	30-inch	Temporary	Drill (socketing)
June	12	8	36-inch	Permanent	Drill (socketing) and Impact Hammer
		3	48-inch	Permanent	Drill (socketing) and Impact Hammer
July	7	2	48-inch	Permanent	Drill (socketing) and Impact Hammer
		2	30-inch	Temporary	Drill (socketing) and Vibratory Hammer
August	14	8	48-inch	Permanent	Drill (socketing), Impact Hammer, and Vibratory Hammer
		6	30-inch	Temporary	Drill (socketing)
September	7	3	48-inch	Permanent	Drill (socketing)

**Piles may have required multiple methods of installation and may have been worked on multiple times/days throughout the project to achieve design embedment.*

3.2 WEATHER PARAMETERS AND WATER CONDITIONS

Environmental conditions including weather parameters and water conditions were recorded at the start of each monitoring period and when conditions changed. The sea state, visibility, glare, and weather conditions occasionally varied on a daily basis and could sometimes vary slightly between monitoring locations. Conditions were generally favorable throughout the duration of the project with weather related shutdowns or delays only occurring on February 19, March 5, and April 8. Table 5 provides a general overview of conditions during each month of in-water work. A full log of conditions per day is located in Attachment B and C.

Table 5. Environmental Conditions During Each Month of Construction in Ward Cove, Ketchikan, Alaska

Month	**Average Temperature**	**Visibility**	**Beaufort Sea State** (range)	**Average Wind Speed** (mph)
February	36.9°F	Poor-Excellent	0-3	8.3
March	37.5°F	Poor-Excellent	0-4	8.1
April	43.0°F	Poor-Excellent	0-4	9.4
May	52.0°F	Poor-Excellent	0-4	7.6
June	54.2°F	Poor-Excellent	0-3	8.4
July	57.9°F	Poor-Excellent	0-3	8.3
August	57.3°F	Moderate-Excellent	0-2	8.3
September	56.1°F	Good-Excellent	0-2	7.2

(Source: NOAA 2020)

3.3 MARINE MAMMAL MONITORING RESULTS

3.3.1 Overview

During the 98 days of protected species observations, there were 9 days when no species were sighted. A total of 526 individuals were documented and 6 of the 10 species with ranges know to extend into the project action area were sighted. Prior to the issuance of the IHA (May 11, 2020), the unintentional/unauthorized take of Dall's porpoise (3), harbor seals (17), Steller sea lions (26), killer whales (5), harbor porpoise (14), and an unknown cetacean (1) occurred. Following the issuance of the IHA, 32 of the 2,870 allowed Level B take were used and none of the 130 allowed Level A takes were used. The Level B zone remained visible during all monitoring periods post IHA issuance, and no takes were extrapolated. Mitigation measures (shutdowns, delays, etc.) were taken during 322 of the 400 sighting events throughout the project.

Most of the sightings occurred in February. There were 130 sighting events over 18 days of observations over the month with the second most piles installed (20 piles; Table 4). During these observation periods, there were 1 humpback whale, 94 harbor seals, and 88 Steller sea lions sighted. Of the 183 individuals that were sighted in February, 9 harbor seals and 16 Steller sea lions were taken unintentionally (without authorization) . Eighty-six sightings resulted in mitigation measures to prevent take or to quickly reduce a species exposure to underwater sound when they appeared in the action area prior to being sighted.

While March saw the second most days of in-water work (16 days), only 125 individuals were sighted and eight (8) unintentional takes occurred. August had fourteen (14) days of in-water work; however, it saw far less marine mammal activity and diversity with three species and a total of twenty (20) individuals sighted.

April and May had a moderate amount of in-water work days and marine mammal sightings. April 2020, had 11 days of in-water work with a total of 69 individuals recorded and 31 unauthorized takes. May was almost identical with 13 days of in-water work and 63 individuals recorded. On May 11, 2020, the project IHA went into effect; however, prior to its issuance one (1) unauthorized take of a harbor seal occurred.

July and September saw the fewest days of in-water work with only 7 observation periods per month. Humpback whales, harbor seals, and Steller sea lions were the only species sighted. In July, 11 individuals were recorded with 2 resulting in an authorized Level B take. September, saw more sightings with 27 recorded individuals and 7 authorized Level B takes. Protected species data collected during June was very similar to September. Data in June shows one more sighting (25), but one less individual (26) than September.

Summary take information for each month per species is in Table 6. Table 7 summarizes total take over the course of the construction and the remaining take when construction ended.

Table 6. Daily and Total Take Numbers by Species During Construction of the Ward Cove Cruise Ship Dock (2020)

Species	2/1/20	2/2/20	2/3/20	2/4/20	2/5/20	2/6/20	2/7/20	2/8/20	2/9/20	2/10/20	2/11/20	2/12/20	2/13/20	2/14/20	2/15/20	2/16/20	2/17/20	2/18/20	2/19/20	2/20/20	2/21/20	2/22/20	2/23/20	2/24/20	2/25/20	2/26/20	2/27/20	2/28/20				Monthly Total
Humpback Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0
Killer Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0
Unknown Cetacean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0
Dall's Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0
Harbor Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0				0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	0	2	0	0	0	0	1	2	0	0	0	1				10
Steller Sea Lion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	0	0	1	0	1	1	0				16
Species	**3/1/20**	**3/2/20**	**3/3/20**	**3/4/20**	**3/5/20**	**3/6/20**	**3/7/20**	**3/8/20**	**3/9/20**	**3/10/20**	**3/11/20**	**3/12/20**	**3/13/20**	**3/14/20**	**3/15/20**	**3/16/20**	**3/17/20**	**3/18/20**	**3/19/20**	**3/20/20**	**3/21/20**	**3/22/20**	**3/23/20**	**3/24/20**	**3/25/20**	**3/26/20**	**3/27/20**	**3/28/20**	**3/29/20**	**3/30/20**	**3/31/20**	**Monthly Total**
Humpback Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer Whale	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5
Unknown Cetacean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dall's Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
Steller Sea Lion	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Species	**4/1/20**	**4/2/20**	**4/3/20**	**4/4/20**	**4/5/20**	**4/6/20**	**4/7/20**	**4/8/20**	**4/9/20**	**4/10/20**	**4/11/20**	**4/12/20**	**4/13/20**	**4/14/20**	**4/15/20**	**4/16/20**	**4/17/20**	**4/18/20**	**4/19/20**	**4/20/20**	**4/21/20**	**4/22/20**	**4/23/20**	**4/24/20**	**4/25/20**	**4/26/20**	**4/27/20**	**4/28/20**	**4/29/20**	**4/30/20**		**Monthly Total**
Humpback Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Killer Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Unknown Cetacean	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1
Dall's Porpoise	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		3
Harbor Porpoise	0	0	0	4	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		14
Harbor Seal	1	0	0	0	1	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		4
Steller Sea Lion	0	6	0	0	1	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		9

Table 6. Daily and Total Take Numbers by Species During Construction of the Ward Cove Cruise Ship Dock (2020)-continued

Species	5/1/20	5/2/20	5/3/20	5/4/20	5/5/20	5/6/20	5/7/20	5/8/20	5/9/20	5/10/20	5/11/20	5/12/20	5/13/20	5/14/20	5/15/20	5/16/20	5/17/20	5/18/20	5/19/20	5/20/20	5/21/20	5/22/20	5/23/20	5/24/20	5/25/20	5/26/20	5/27/20	5/28/20	5/29/20	5/30/20	5/31/20	Monthly Total
Humpback Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown Cetacean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dall's Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	5
Steller Sea Lion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Species	6/1/20	6/2/20	6/3/20	6/4/20	6/5/20	6/6/20	6/7/20	6/8/20	6/9/20	6/10/20	6/11/20	6/12/20	6/13/20	6/14/20	6/15/20	6/16/20	6/17/20	6/18/20	6/19/20	6/20/20	6/21/20	6/22/20	6/23/20	6/24/20	6/25/20	6/26/20	6/27/20	6/28/20	6/29/20	6/30/20		Monthly Total
Humpback Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Killer Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Unknown Cetacean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Dall's Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Harbor Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Harbor Seal	0	0	2	0	3	2	0	1	3	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		12
Steller Sea Lion	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		1

Species	7/1/20	7/2/20	7/3/20	7/4/20	7/5/20	7/6/20	7/7/20	7/8/20	7/9/20	7/10/20	7/11/20	7/12/20	7/13/20	7/14/20	7/15/20	7/16/20	7/17/20	7/18/20	7/19/20	7/20/20	7/21/20	7/22/20	7/23/20	7/24/20	7/25/20	7/26/20	7/27/20	7/28/20	7/29/20	7/30/20	7/31/20	Monthly Total
Humpback Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown Cetacean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dall's Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Steller Sea Lion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2

Table 6. Daily and Total Take Numbers by Species During Construction of the Ward Cove Cruise Ship Dock (2020)-continued

Species	8/1/20	8/2/20	8/3/20	8/4/20	8/5/20	8/6/20	8/7/20	8/8/20	8/9/20	8/10/20	8/11/20	8/12/20	8/13/20	8/14/20	8/15/20	8/16/20	8/17/20	8/18/20	8/19/20	8/20/20	8/21/20	8/22/20	8/23/20	8/24/20	8/25/20	8/26/20	8/27/20	8/28/20	8/29/20	8/30/20	8/31/20	Monthly Total
Humpback Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Killer Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unknown Cetacean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Dall's Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Harbor Seal	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	3	6
Steller Sea Lion	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Species	**9/1/20**	**9/2/20**	**9/3/20**	**9/4/20**	**9/5/20**	**9/6/20**	**9/7/20**	**9/8/20**	**9/9/20**	**9/10/20**	**9/11/20**	**9/12/20**	**9/13/20**	**9/14/20**	**9/15/20**	**9/16/20**	**9/17/20**	**9/18/20**	**9/19/20**	**9/20/20**	**9/21/20**	**9/22/20**	**9/23/20**	**9/24/20**	**9/25/20**	**9/26/20**	**9/27/20**	**9/28/20**	**9/29/20**	**9/30/20**		**Monthly Total**
Humpback Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Killer Whale	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Unknown Cetacean	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Dall's Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Harbor Porpoise	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		0
Harbor Seal	1	1	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		5
Steller Sea Lion	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		2

Table 7. Total Level B Takes Per Species During Construction of the Ward Cove Cruise Ship Dock (February -September 2020)

Species	Unauthorized Takes	Level B Authorized	Level B Exposures	Remaining Level B Takes
Humpback Whale	0	0	0	0
Killer Whale	5	0	0	0
Dall's Porpoise	3	45	0	45
Harbor Porpoise	14	25	0	25
Harbor Seal	16	950	27	923
Steller Sea Lion	26	1,850	5	1,845
Unknown Cetacean	1	0	0	0
Total	**66**	**2,870**	**32**	**2,838**

Note: No Level A takes occurred

3.3.2 Humpback Whales

Twenty-eight (28) sighting events occurred on eighteen (18) days of in-water work. They were observed in the action area during every month of work. A total of forty-two (42) individuals were recorded and group sizes ranged from solo whales to pods of up to six (6). The individuals and pods were observed diving, breaching, milling, foraging, travelling, swimming, and changing directions 1,500 meters to 10,000 meters from in-water work. Level A and Level B take was not requested or authorized. No takes of humpback whales occurred during in-water work and twenty-two (22) of the twenty-eight (28) sighting events required mitigation measures to prevent take. The sex and age of the individuals was unable to be determined.

Humpback whales were sighted throughout the project starting in February. Sightings seem to be tied to humpback whale migration and feeding patterns with an increase in sightings happening during summer months (Baker et al. 1985). Table 8 details sighting data per month.

Table 8. Humpback Whale Sightings and Takes Per Month During Construction of the Ward Cove Cruise Ship Dock in 2020

Month	Sighting Events	Individuals Sighted	Sightings with Mitigation Measures	Distance Range from In-water work	Level B Takes	Unauthorized Takes
February	1	1	1	3,000m-3,700m	-	-
March	1	6	1	6,000m	-	-
April	5	5	5	1,700m-12,000m	-	-
May	10	19	7	1,500m-10,000m	-	-
June	4	4	2	2,200m-8,000m	-	-
July	3	3	3	3,000m-4,000m	-	-
August	1	1	1	4,000m	-	-
September	3	3	3	2,100m-3,100m	-	-
Total	**28**	**42**	**22**	**1,500m-12,000m**	**-**	**-**

3.3.3 Killer Whales

Over the 8 months of monitoring, killer whales were only sighted on two days in March. On March 3, 2020, a pod of two (2) killer whales was identified travelling through the action area at approximately 3,000 meters from in-water work, and a shutdown of work occurred prior to the individuals entering the action area. A second pod of five (5) individuals was documented on March 8, 2020. The pod surfaced within the action area during drilling activities with no prior sightings and the construction crew quickly shutdown in-water work until the pod travelled south of the action area. During the ninety-eight days of in-water work, five (5) unintentional/unauthorized takes of killer whales occurred. The sex and age of the individuals was unable to be determined. Sighting data per month is detailed in Table 9.

Table 9. Killer Whale Sightings and Takes Per Month During Construction of the Ward Cove Cruise Ship Dock in 2020

Month	Sighting Events	Individuals Sighted	Sightings with Mitigation Measures	Distance Range from In-water work	Level B Takes	Unauthorized Takes
February	-	-	-	-	-	-
March	2	7	2	3,000m-3,500m	-	5
April	-	-	-	-	-	-
May	-	-	-	-	-	-
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
Total	**2**	**7**	**2**	**3,000-3,500m**	**-**	**5**

3.3.4 Unknown Cetacean

On April 9, 2020, a solo unknown cetacean was recorded 2,000 meters from work. The spout of the cetacean was the only indication of its presence in the shutdown zone. As a result, a positive identification could not be made. The sighting did result in the shutdown of work. The individual did result in an inadvertent take during drilling. In-water work was quickly shutdown when it was safe to do so and exposure was limited. Please see Appendix B and C for details on all sightings and accidental takes.

3.3.5 Dall's Porpoise

Dall's porpoises were positively identified on two days of in-water work. A pod of three (3) and a pod of five (5) were recorded travelling at least 3,000 meters from the construction site in April and May, respectively (Table 10). Mitigation measures were necessary during the May event when the pod of three (3) entered the shutdown zone prior to being observed. Three (3) unintentional/unauthorized takes of Dall's porpoise occurred during in-water construction at Ward Cove. No authorized Level B or Level A takes occurred. The sex and age of the individuals was unable to be determined.

Table 10. Dall's Porpoise Sightings and Takes Per Month During Construction of the Ward Cove Cruise Ship Dock in 2020

Month	Sighting Events	Individuals Sighted	Sightings with Mitigation Measures	Distance Range from In-water work	Level B Takes	Unauthorized Takes
February	-	-	-	-	-	-
March	-	-	-	-	-	-
April	1	3	1	3,000m	-	3
May	1	5	0	6,000m	0	0
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
Total	**2**	**8**	**1**	**3,000-6,000m**	**0**	**3**

3.3.6 Harbor Porpoise

Harbor porpoises were sighted on three (3) days of in-water work with three (3) sighting events and a total of fifteen (15) individuals sighted in March and April. All three sightings resulted in mitigation measures, and two sighting events in April resulted in unintentional/unauthorized take of fourteen (14) harbor porpoise. Solo individuals and pods of up to 10 were identified as swimming and travelling 2,500 meters to 2,800 meters from in-water work. The sex and age of the individuals was unable to be determined.

At the end of in-water work in September, none of the Level B takes (25) were needed. Table 11 details harbor porpoise sighting events during in-water work.

Table 11. Harbor Porpoise Sightings and Takes Per Month During Construction of the Ward Cove Cruise Ship Dock in 2020

Month	Sighting Events	Individuals Sighted	Sightings with Mitigation Measures	Distance Range from In-water work	Level B Takes	Unauthorized Takes
February	-	-	-	-	-	-
March	1	1	1	2,800m	0	0
April	2	14	2	2,500m	0	14
May	-	-	-	-	-	-
June	-	-	-	-	-	-
July	-	-	-	-	-	-
August	-	-	-	-	-	-
September	-	-	-	-	-	-
Total	**3**	**15**	**3**	**2,500m-2,800m**	**0**	**14**

3.3.7 Harbor Seals

Harbor seals were sighted during every month of construction, with most sightings in February and March and the fewest in July. There were 247 sighting events of 271 individuals. Sighting events were of solo individuals, pairs, and the occasional group of three that were identified as looking, sinking, swimming, travelling, spyhopping, milling, foraging, and diving. Sixteen (16) unintentional/unauthorized takes occurred prior to the issuance of the IHA. Following the issuance of the IHA, twenty-seven (27) out of the 950 authorized Level B takes were used and none of the 100 authorized Level A takes were needed. Mitigation measures were necessary during 123 sighting events due to each sightings distance from work. In general, the sex and age of the individuals was unable to be determined. One sighting in May and June did record a pair that consisted of one juvenile and one adult. Table 12 details sighting data per month.

Table 12. Harbor Seal Sightings and Takes Per Month During Construction of the Ward Cove Cruise Ship Dock in 2020

Month	Sighting Events	Individuals Sighted	Sightings with Mitigation Measures	Distance Range from In-water work	Level B Takes	Unauthorized Takes
February	84	94	43	50m-3,100m	-	9
March	61	66	46	150m-3,200m	-	2
April	23	23	18	300m-3,094m	-	4
May	32	38	15	400m-3,050m	4	1
June	18	19	0	500m-3,000m	12	0
July	3	3	0	3,000m-3,200m	0	0
August	13	13	0	500m-3,000m	6	0
September	14	15	0	400m-2,400m	5	0
Total	**247**	**271**	**123**	**50m-3,200m**	**27**	**16**

3.3.8 Steller Sea Lions

A total of one-hundred and eighty-one (181) Steller sea lions were sighted on forty-four separate days during all months of dock construction. Most sightings occurred in February and March and the fewest sightings were in May. All sightings were recorded, and eighty-five (85) resulted in mitigation measures due to their distances from in-water work prior to the issuance of the project IHA. Sightings were of single individuals, pairs, and herds of up to ten (10) individuals. They were identified as travelling, foraging, swimming, chuffing, milling, looking, sinking, spyhopping, and playing. The sex and age of the individuals was not able to be positively determined. No calves were sighted. Sightings and takes per month are detailed below (Table 13).

Steller sea lions are common in the project area. This is evident in the consistent sightings during each month of in-water work. Steller sea lions were observed as close as 417 meters (not taken at that time because no work was occurring) and as far as 5,000 meters from in-water work.

When in-water work was completed in September 2020, a total of 26 unauthorized takes occurred and 1,845 authorized Steller sea lion Level B takes remained. No Level A takes were authorized or needed.

Table 13. Steller Sea Lion Sightings and Takes Per Month During Construction of the Ward Cove Cruise Ship Dock in 2020

Month	Sighting Events	Individuals Sighted	Sightings with Mitigation Measures	Distance Range from In-water work	Level B Takes	Unauthorized Takes
February	45	88	41	1,120m-3,600m	0	16
March	34	45	31	417m-4,000m	-	1
April	17	24	13	1,100m-3,050m	-	9
May	1	1	-	2,400m	-	-
June	3	3	-	1,000m-1,500m	1	-
July	4	5	-	3,000m-5,000m	2	-
August	5	6	-	700m-2,400m	-	-
September	7	9	-	600m-3,000m	2	-
Total	**116**	**181**	**85**	**150m-5,000m**	**5**	**26**

4 SUMMARY

Marine mammals were sighted on 89 of the 98 days of monitoring during construction of the Ward Cove Cruise Ship Dock. There were no Level A takes during the dock construction. Although humpback whales were observed every month (February-September), no authorized takes were requested or needed, and no unauthorized takes of the species occurred. Five killer whales were observed and taken within the action area in March, but the species was not observed before or after that time. Prior to authorization of 45 Level B takes, there were 3 Dall's porpoises observed and taken in March and April, but the species was not observed or taken before or after that time. Similarly, prior to the authorization of 25 Level B takes, harbor porpoises were observed and 14 were taken in March and April. Harbor seals were observed every month of monitoring, and 16 were taken prior to the authorization of 950 Level B takes, and 27 were take after issuance of the IHA. Steller sea lions were also observed every month of monitoring, and 26 were taken prior to authorization of 1,850 Level B takes, and 5 were taken following issuance of the IHA.

5 REFERENCES

Baker, C. S., Herman, L. M., Perry, A., Lawton, W. S., Straley, J. M., & Straley, J. H. (1985). Population characteristics and migration of summer and late-season humpback whales (*Megaptera novaeangliae*) in southeastern Alaska. *Marine Mammal Science*, *1*(4), 304-323.

National Marine Fisheries Service (NMFS). 2020. Power Systems and Supplies of Alaska Ward Cove Dock Project Incidental Harassment Authorization. Issued May 11, 2020. National Oceanic and Atmospheric Administration (NOAA). 2020. National Weather Service: Ketchikan. Accessed from https://w2.weather.gov/climate/index.php?wfo=pajk

Attachment A. Marine Mammal Monitoring and Mitigation Plan

Marine Mammal Monitoring and Mitigation Plan

Power Systems & Supplies of Alaska
Ward Cove Cruise Ship Dock Project
Ward Cove, Ketchikan, Alaska

Submitted July 2019
Revised October 2019
Revised December 12, 2019
Revised December 18, 2019
Revised December 31, 2019
Revised January 22, 2020
Revised February 4, 2020

Prepared for:
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Submitted to:
National Marine Fisheries Service

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APPENDICES

Appendix A. Marine Mammal Sighting Form

ACRONYMS AND ABBREVIATIONS

4MP	Marine Mammal Monitoring and Mitigation Plan
ESA	Endangered Species Act
IHA	Incidental Harassment Authorization
MMPA	Marine Mammal Protection Act
NMFS	National Marine Fisheries Service
OPR	Office of Protected Resources (NMFS)
PSO	protected species observer
USACE	U.S. Army Corp of Engineers
USFWS	U.S. Fish and Wildlife Service

UPDATE: Protected Species Observer #1 will not be located at the head of Ward Cove as shown in some figures in the plan. Instead, the PSO would be on the construction barge with a clear view of Ward Cove.

1 INTRODUCTION

Power Systems & Supplies of Alaska proposes the following Marine Mammal Monitoring and Mitigation Plan (4MP) for use during pile installation to construct a dock in Ward Cove approximately eight kilometers (five miles) north of downtown Ketchikan, Alaska. The project is in waters of the U.S., within the range of the Endangered Species Act (ESA) listed Mexico distinct population segment of humpback whales and nine Marine Mammal Protection Act (MMPA)-listed marine mammals, and has the potential to generate noise that could exceed Level A and B harassment thresholds established by the National Marine Fisheries Service (NMFS). Monitoring and shutdown zones will be implemented to prevent Level A and Level B impacts to all marine mammals except harbor seals.

The purpose of this plan is to prevent impacts to marine mammals by prescribing how mitigation measures and construction techniques will be employed, outlining the duties of the Protected Species Observers (PSOs), and summarizing reporting requirements. The plan uses a combination of marine mammal monitoring, soft-starts, shutdowns, and species data collection and reporting to comply with the permits and authorizations required to construct this project.

Figure 1. Location of Proposed Cruise Ship Dock in Ward Cove

Figure 2. Photo of Project Site

Photo Credit: Ward Cove Group as published in Alaska Journal of Commerce June 2013.

2 PERMITS AND AUTHORIZATIONS

The project will comply with the required terms and conditions outlined in the following requested permits and authorizations:

- U.S Army of Engineers (USACE) Permit (DA Permit) POA-2019-00313, Ward Cove Cruise Ship Dock Project for activities in Waters of the U.S.;
- NMFS Alaska Region Protect Resources Division ESA Section 7 Informal Consultation;
- NMFS Office of Protected Resources (OPR) Incidental Harassment Authorization (IHA) for Level B take of harbor seals (requested).

3 EXPECTED SPECIES AND TAKE REQUESTED

The species that may occur in the project area are shown in Table 1. Shutdowns will be implemented to avoid take of all species except harbor seals.

Table 1. Species that May Occur in Project Area

Minke Whale (*Balaenoptera acutorostrata*)
Humpback Whale (*Megaptera novaeangliae*)
Gray Whale (*Eschrichtius robustus*)
Killer Whale (*Orcinus orca*)
Pacific White-Sided Dolphin (*Lagenorhynchus obliquidens*)
Dall's Porpoise (*Phocoenoides dalli*)
Harbor Porpoise (*Phocoena phocoena*)
Harbor Seal (*Phoca vitulina*)
Steller Sea Lion (*Eumatopia jubatus*)
Northern Sea Otter (*Enhydra lutris*)

4 SHUTDOWN ZONES

Because species are impacted by noise in different ways, species-specific shutdown zones have been calculated for this project employing NMFS's *2018 Revisions to: Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing* and *User Spreadsheet*. Where landforms, like the shores of Revillagigedo Island and Gravina Island, stop underwater noise transmission, shutdown zones are based on the truncated distance and are smaller than their calculated distances. Calculated distanced are described in Section 4.1 and shutdown zones are described in Section 4.2.

4.1 Calculated Distance to Shutdown Zones

The calculated distances to the Level B thresholds are shown in Table 2. For NMFS-managed species, Level B shutdown zones represent areas where received noise levels from pile driving activities meet or exceed 120 dB during vibratory pile driving and rock anchoring, and 160 dB during impact pile driving. For U.S. Fish and Wildlife Service (USFWS) managed northern sea otters, Level B shutdown zones represent areas where received noise levels from pile driving activities meet or exceed 160 dB during all pile driving activities.

Table 2. Calculated Distances to Level B Shutdown Zones

Source	Level B other NMFS-managed species (m)	Level B northern sea otter (m)
Vibratory Pile Driving/Removal		
30-inch steel installation and removal	6,213	13
36-inch and 48-inch steel installation	16,343	35
Impact Pile Driving		
30-inch, 36-inch and 48-inch steel installation	3,744	3,744
Rock Anchor Installation		
33-inch anchor for 36-inch and 48-inch steel piles	12,023	26

4.2 Shutdown Zones

Power Systems & Supplies of Alaska's contractor will monitor different shutdown zones depending on species and the type of construction activity that is occurring. Shutdown zones for this project include a 10- meter shutdown zone for all in-water activity and truncated distances to the Level B thresholds for pile installation activities. The shutdown zones for the project are presented in Table 3.

Table 3. Shutdown Zones to be Implemented under this plan

Source	Level A harbor seals (m)	Level B harbor seals [1] (m)	Level B other NMFS-managed species (m)	Level B northern sea otter (m)
In-Water Construction Activities [2]				
Barge movements, pile positioning, sound attenuation placement	10	10	10	10
Vibratory Pile Driving/Removal				
30-inch steel installation and removal	10	0	3,645	35
36-inch and 48-inch steel installation	15	0	3,645	35
Impact Pile Driving				
30-inch, 36-inch and 48-inch steel installation	200	0	3,645	3,645
Rock Anchor Installation				
33-inch anchor for 36-inch and 48-inch steel piles	40	0	3,645	35

Shutdown zones are rounded up to the nearest 5 meters.

[1] Level B take of harbor seals authorized; therefore, shutdowns within level B zone not required

[2] Although acoustic injury is not the primary concern with these activities, shutdowns will be implemented to avoid impacts to species.

5 METHODS

Power Systems & Supplies of Alaska, their contractor, and qualified PSOs will work together to implement construction mitigation methods, marine mammal monitoring and reporting, and shutdowns to prevent impacts to marine mammals.

The contractor will submit a Pre-Construction Notification to NMFS 10 days prior to initiating pile driving activities. The contractor will employ construction mitigation measures including driving all piles with a vibratory hammer to the maximum extent possible prior to using an impact hammer, and using soft-starts and pile caps for pile driving.

Four land based PSOs will be employed for marine mammal monitoring and will be present during all in-water work. PSOs will continuously scan the shutdown zones outlined in this plan and ensure shutdown zones are clear of marine mammals prior to in-water construction. PSOs will collect data including environmental conditions, marine mammal sightings and behavior, and construction activity at the time of sightings and will relay data to the contractor and Power Systems & Supplies of Alaska for reporting. If a marine mammal is observed approaching a shutdown zone, the PSOs will contact the contractor to shutdown construction activity.

Land based PSOs will be located at stations that allow them to clearly view the shutdown (and harbor seal monitoring) zones for marine mammals. These PSO stations and shutdown and monitoring zones are shown on Figures 3-7.

Figure 3. Ward Cove Cruise Ship Marine Mammal Monitoring and Shutdown Zones Locations

Activity	Shutdown Zone (m) [a]	Species
Barge movements, pile positioning, sound attenuation placement	10	All
Vibratory 30 inch	10	Harbor Seals
Vibratory 48 inch	15	Harbor Seals
Vibratory and Rock Anchor	35 [a]	Sea Otters
Rock Anchor	40	Harbor Seals
Vibratory, Impact, Rock Anchor	200 [b]	Harbor Seals
Offshore Mooring Dolphins Impact	3,645	Sea Otters
Trestle Impact	3,645	Sea Otters
Offshore Mooring Dolphins Vibratory, Impact, Rock Anchor	3,645	All Marine Mammals, Except Harbor Seals and Sea Otters
Trestle Vibratory, Impact, Rock Anchor	3,645	All Marine Mammals, Except Harbor Seals and Sea Otters
Impact	325 monitoring	Monitoring for Level A take of harbor seals

[a] 10, 15, and 40 m shutdown zones not distinguished to scale
[b] Level A harassment zone for impact driving extends to 325 meters; however, shutdown will occur at 200 meters

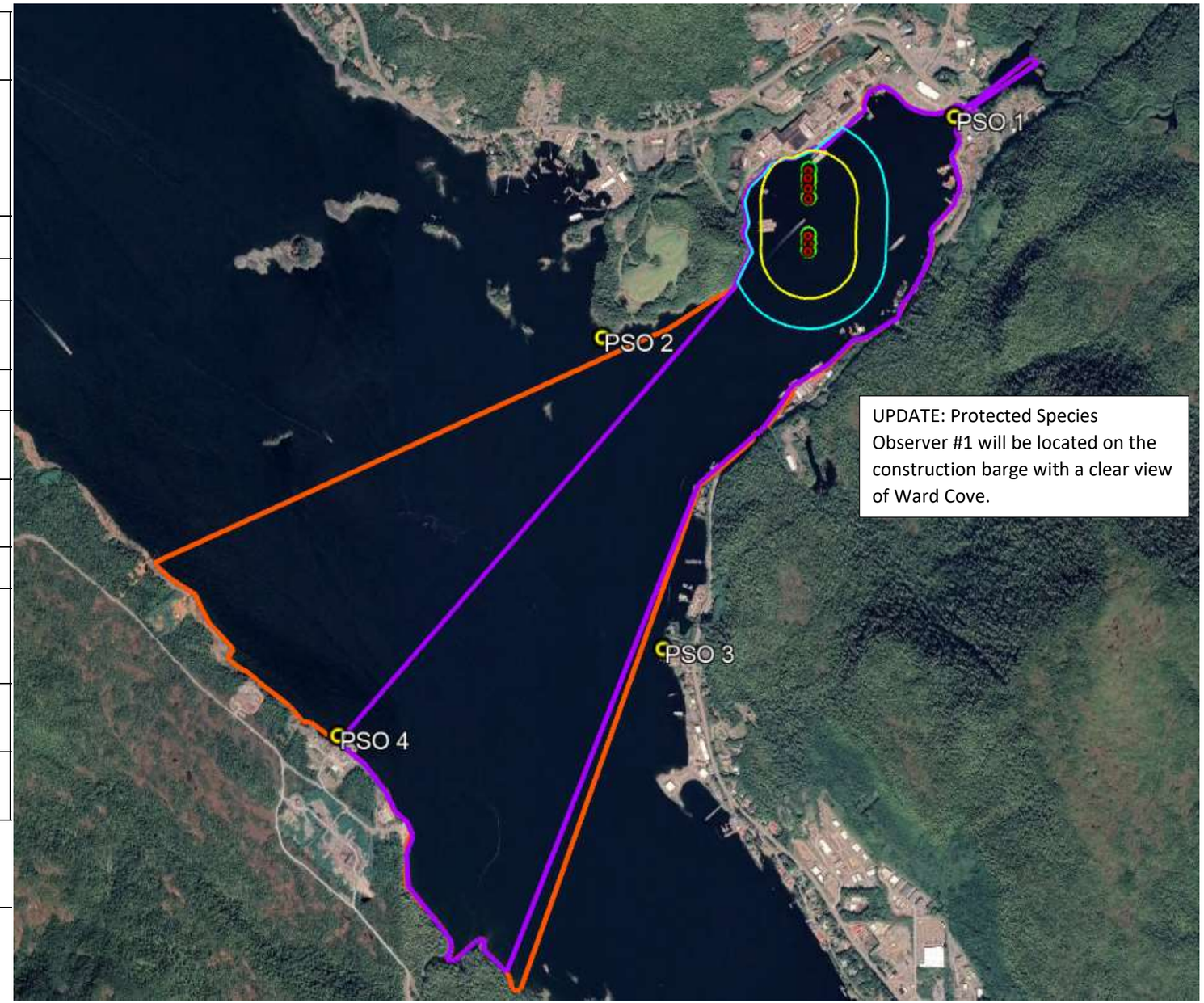


Figure 4. View of Ward Cove and Tongass Narrows from PSO Station 1

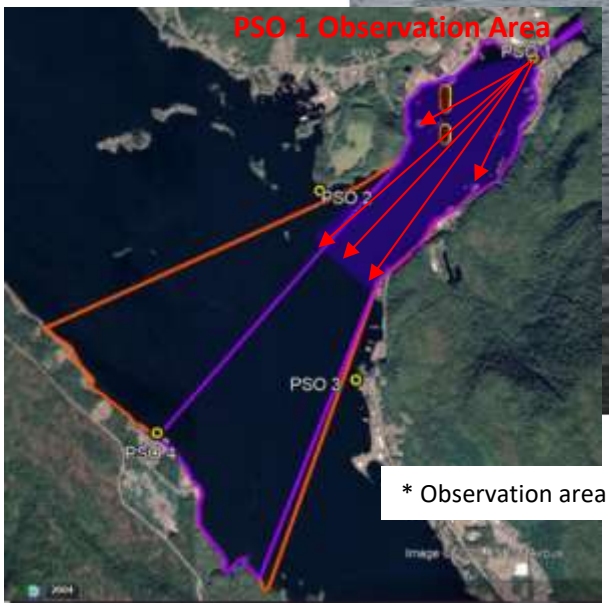


Figure 5. PSO Station 1 Observation Area (blue shaded area) *** in Relation to the Action Area** (orange and purple lines)

* Observation area defined as the area where the PSO has a clear line of sight up to 2,000 meters.

Figure 6. View of Ward Cove and Tongass Narrows from PSO Station 2 near "The Cross"

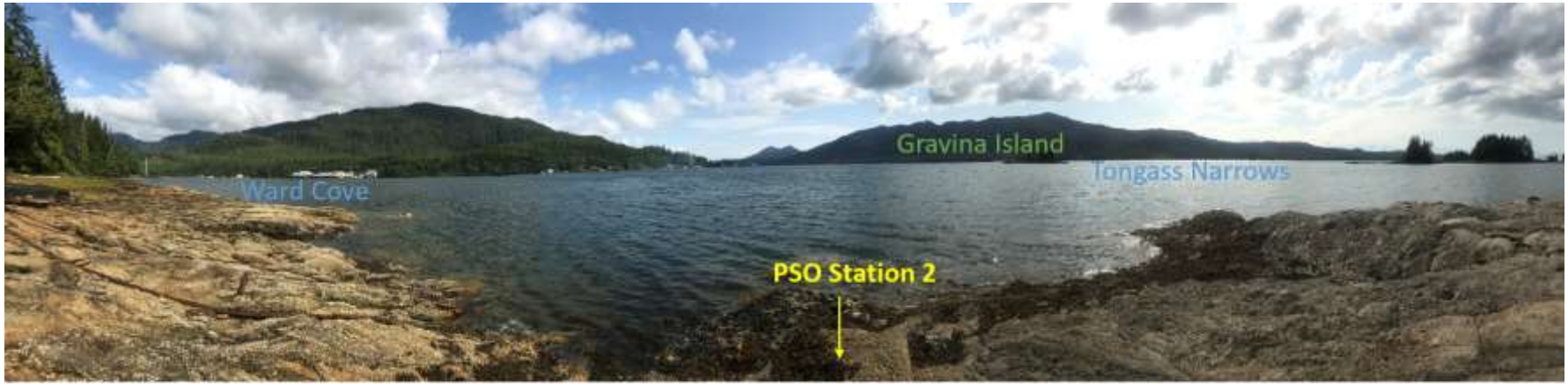
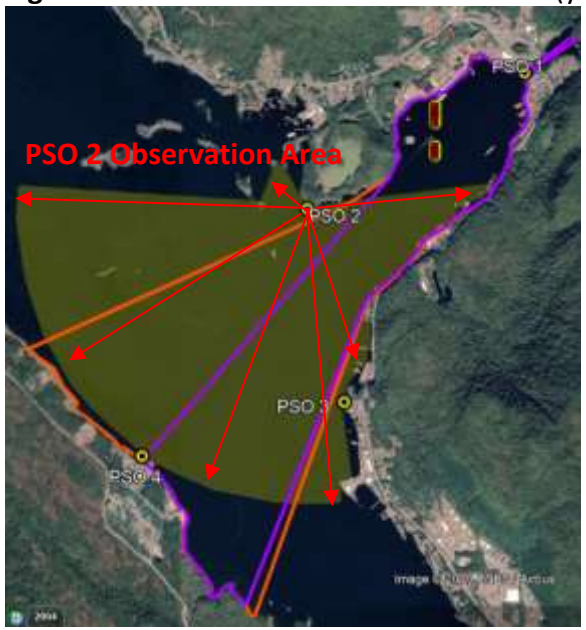


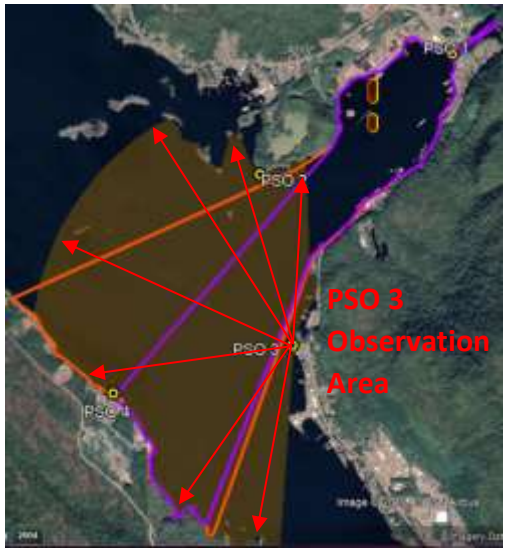
Figure 7. PSO Station 2 Observation Area (yellow shaded area)*** in Relation to the Action Area** (orange and purple lines)



* Observation area defined as the area where the PSO has a clear line of sight up to 2,000 meters.

Figure 8. View of Ward Cove and Tongass Narrows from PSO Station 3 above Murphy's Seaplane Base

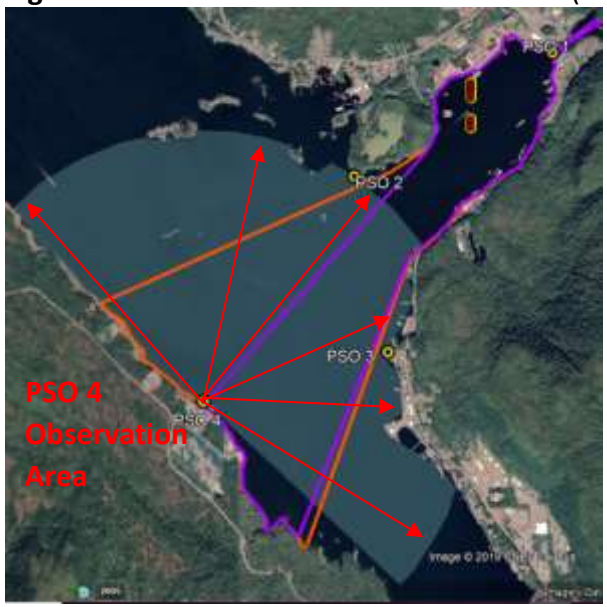
Figure 9. PSO Station 3 Observation Area (yellow shaded area)* **in Relation to the Action Area** (orange and purple lines)



* Observation area defined as the area where the PSO has a clear line of sight up to 2,000 meters.

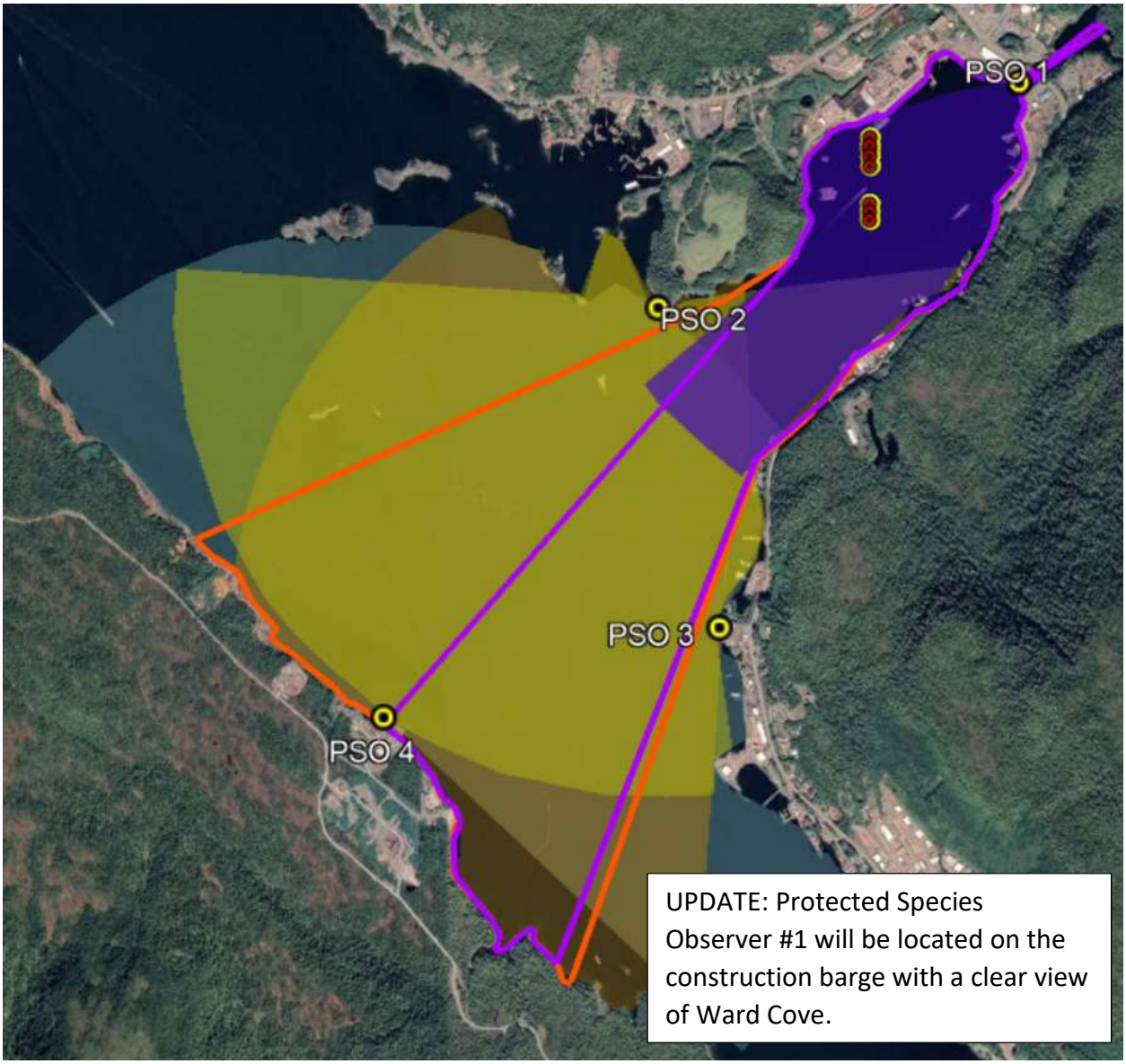
Figure 10. View of Ward Cove and Tongass Narrows showing PSO Station 4 at the Ketchikan Gateway Borough Dock on Gravina Island

Figure 11. PSO Station 4 Observation Area (blue shaded area)* **in Relation to the Action Area** (orange and purple lines)



* Observation area defined as the area where the PSO has a clear line of sight up to 2,000 meters.

Figure 12. Ward Cove Cruise Ship Protected Species Observer Stations' Observation Areas (shaded areas)* **in Relation to the Action Area** (orange and purple lines)



* Observation area defined as the area where the PSO has a clear line of sight up to 2,000 meters.

6 MITIGATION MEASURES

In order to prevent impacts to marine mammals, the contractor will implement the following mitigation measures during pile driving activities.

6.1 General Conditions

- To minimize noise during impact pile driving, pile caps (pile softening material) will be used. Much of the noise generated during pile installation comes from contact between the pile being driven and the steel template used to hold the pile in place. The contractor will use high-density polyethylene or ultra-high-molecular-weight polyethylene softening material on all templates to eliminate steel on steel noise generation.

- To minimize impact to marine mammals, a “soft start” technique will be used when impact pile driving with an initial set of three strikes from the impact hammer at 40 percent energy, followed by a one-minute waiting period, then two subsequent 3-strike sets.

6.2 Visual Monitoring by PSOs

6.2.1 General requirements – visual monitoring

- Power Systems & Supplies of Alaska’s contractor, through the use of NMFS-approved PSOs, will monitor for the presence and behavior of marine mammals prior to, during, and after all pile driving and removal.

- All work will be performed during daylight hours to allow for visual monitoring. Pile driving activities will not be conducted when weather conditions or darkness do not allow for observation of all waters within the shutdown zones.

- If an environmental factor, water conditions, or sea state restricts the observers' ability to make observations within the marine mammal shutdown zone, pile driving activities will cease. Pile driving activities will not be initiated or continue until the entire largest shutdown zone for the activity is visible.

- To aid in observing, determining the location of, and communicating the presence of protected species within the action area, PSOs will have the following supplies:
    - binoculars
    - range finder
    - GPS
    - compass
    - two-way radio communication with construction foreman/superintendent
    - log book to record all activities that may be submitted to agencies (NMFS, USACE) upon request

- Power Systems & Supplies of Alaska’s contractor will conduct briefings between construction supervisors and crews, the marine mammal monitoring team, and Power Systems & Supplies of Alaska staff prior to the start of all pile driving activities and when

new personnel join the work, in order to explain responsibilities, communication procedures, marine mammal monitoring protocol, and operational procedures.

- Each day prior to commencing pile driving activities, the lead PSO will conduct a radio check with the construction foreman or superintendent to confirm the activities and zones to be monitored that day. The construction foreman and lead PSO will maintain radio communications throughout the day so that the PSOs may be alerted to any changes in the planned construction activities and zones to be monitored.

- On-shift PSOs will have no other primary duties than to watch for and report on events related to marine mammals during monitoring periods.

- PSOs will work in shifts lasting no longer than 4 hours with at least a 1-hour break between shifts, and will not perform duties as a PSO for more than 12 hours in a 24-hour period (to reduce PSO fatigue).

- Pre-activity monitoring: PSOs will scan for the presence of marine mammals for 30 minutes before any pile driving activities take place for the day or if more than 30 minutes has elapsed in absence of pile activity.
    - If the shutdown zones have been observed to be clear of marine mammals for 30 minutes, pile driving activities may commence.
    - If any marine mammals are present within a shutdown zone, pile driving activities will not begin until the animal(s) has left the shutdown zone or has not been observed in the shutdown zone for 15 minutes.

- For all pile driving activities and in-water heavy machinery work, Power Systems & Supplies of Alaska's contractor will implement the appropriate shutdown and monitoring (Table 2) around the pile or work zone. If a marine mammal approaches the shutdown zone, such operations will cease.

- For in-water heavy machinery and construction work other than pile driving (e.g., barge movements, pile positioning, dead-pulling, and sound attenuation), a minimum 10 meter shutdown zone will be implemented. If a marine mammal comes within 10 meters of such operations, operations will cease and vessels will reduce speed to the minimum level required to maintain steerage and safe working conditions.

- After a shutdown occurs, pile driving activities will only begin after the animal is observed leaving the shutdown zone or has not been observed for 15 minutes after the commencement of the shutdown.

- If waters exceed a sea state that restricts the observers' ability to make observations within the marine mammal shutdown zones, pile driving activities will cease. Pile driving

activities will not be initiated or continue until the entire largest shutdown zone for the activity is visible.

- Throughout all pile driving activity, the PSOs will continuously scan the shutdown and harbor seal monitoring zones to monitor for marine mammal presence or approach.
    - If any marine mammals enter, or appear likely to enter, their respective shutdown zones during pile driving activities, all pile driving activities will cease immediately. Pile driving activities may resume when the animal(s) has been observed leaving the area on its own accord. If the animal(s) is not observed leaving the area, pile-driving activity may begin 15 minutes (pinnipeds) and 30 minutes (cetaceans) after the animal is last observed in the area.

- Post-construction monitoring will be conducted for 30 minutes beyond the cessation of pile driving activities at the end of the day.

6.2.2 Number and location of PSOs

Four PSOs will work from monitoring stations that have been selected to provide an unobstructed view of all water within the shutdown zones (Figure 3).

- Four (4) PSOs will be employed during all pile driving activities. One PSO will be posted at each station listed below (Figure 3):
    - PSO #1: stationed near the site of pile driving (Figure 4);
    - PSO #2: stationed at the point on the north side of Ward Cove (near “The Cross”) (Figure 5);
    - PSO #3: stationed at the pull-off of North Tongass Highway above Murphy’s Seaplane Base (Figure 6);
    - PSO #4: stationed at the Ketchikan Gateway Borough Dock on Gravina Island across Tongass Narrows from Ward Cove (Figure 7).

6.2.3 PSO Qualifications

Power Systems & Supplies of Alaska and their contractor will adhere to the following conditions when selecting PSOs:

- Independent PSOs will be used (i.e., not construction personnel).
- Power Systems & Supplies of Alaska will submit the curriculum vitae (CV) of all observers to NMFS (name to be determined) prior to the PSOs starting work.
- At least one PSO must have prior experience working as a marine mammal observer during construction activities.
- Other PSOs may substitute education (degree in biological science or related field) or training for experience.
- One observer will be designated as lead observer or monitoring coordinator. The lead observer will have prior experience working as an observer.
- Power Systems & Supplies of Alaska and their contractor will ensure that observers have the following additional qualifications:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance; use of binoculars may be necessary to correctly identify the target;
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience);
- Experience or training in the field identification of marine mammals, including the identification of behaviors;
- Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations;
- Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates and times and reasons 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; and
- Sufficient training, orientation, or experience with the construction operations to provide for personal safety during observations.

6.3 Reporting

6.3.1 Notification of intent to commence construction

Power Systems & Supplies of Alaska will inform NMFS OPR and the NMFS Alaska Region Protected Resources Division (names to be determined) 10 days prior to commencing construction activities.

6.3.2 Daily activity logs

For each day of construction activity that requires a PSO, the following information will be recorded in a log provided by Power Systems & Supplies of Alaska:

1. Date and time that each monitoring period[1] begins and ends;

2. Prevailing environmental conditions in each monitoring period (e.g., wind speed, percent cloud cover, visibility, sea state, tide state);

3. Construction activities occurring during each monitoring period, including how many and what size of piles were driven; and

4. Indication of whether marine mammals were sighted. For each marine mammal sighting, the PSO will complete a "Marine Mammal Sighting Form" as described below, and shown in Appendix A.

[1] There may be several monitoring periods within a day. If environmental conditions change throughout the day, the PSO should record a new monitoring period to reflect those changes. A new monitoring period will also begin after each break in construction activity.

6.3.3 Marine Mammal Sighting Form

Each marine mammal sighting will be recorded on a "Marine Mammal Sighting Form." The PSO will record the following information:

- Species, numbers, and, if possible, sex and age class of marine mammals;
- Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving activity;
- Location and distance from pile driving activities to marine mammals and distance from the marine mammals to the observation point;
- Time and description of most recent project activity prior to marine mammal observation;
- Environmental conditions as they existed during each sighting event, including, but not limited to: Beaufort sea state, weather conditions, visibility (km), lighting conditions;
- Description of implementation of mitigation measures, if required, within each monitoring period (e.g., shutdown or delay);
- Other human activity in the area within each monitoring period.

6.3.4 Interim monthly reports

During construction, Power Systems & Supplies of Alaska will submit brief, monthly reports to NMFS OPR (name to be determined) and NMFS Alaska Region Protected Resources Division that summarize PSO observations and recorded unauthorized takes, if they occur. The monthly reports will be submitted by email to a NMFS representative (to be named).

The reporting period for each monthly PSO report will be the entire calendar month, and reports will be submitted by close of business on the fifth working day of the month following the end of the reporting period.

6.3.5 Final report

Power Systems & Supplies of Alaska will submit a draft final report by email to NMFS OPR (name to be determined) and NMFS AKR Protected Resources Division (name to be determined) not later than 90 days following the end of construction activities. Power Systems & Supplies of Alaska will provide a final report within 30 days following resolution of NMFS's comments on the draft report. If no comments are received from NMFS within 30 days, the draft final report will be considered the final report.

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

- Summary of construction activities, including beginning and completion dates;
- Description of any deviation from initial proposal in pile numbers, pile types, average driving times, etc.;
- Table summarizing all marine mammal sightings during the construction period including:
  a. dates, times, species, number, location, and behavior of any observed marine mammals;
  b. daily average number of individuals of each species (differentiated by month as appropriate) observed and estimated as taken, if appropriate;
- Number of shut-downs throughout all monitoring activities;
- Table summarizing any incidents resulting in unauthorized take of marine mammals;

- Brief description of any impediments to obtaining reliable observations during construction period;
- Description of any impediments to complying with these mitigation measures; and
- Appendices containing all PSO daily logs and marine mammal sighting forms.

6.3.6 Reporting Injured or Dead Marine Mammals

If it is clear that project activity has caused the take of any marine mammal, Power Systems & Supplies of Alaska's contractor will immediately cease the specified activities and report the incident to NMFS AKR Protected Resources Division and the NOAA Fisheries statewide 24-hour Stranding Hotline (877) 925-7773.

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 is able to review the circumstances of the unauthorized take. NMFS would work with Power Systems & Supplies of Alaska and their contractor to determine what measures are necessary to minimize the likelihood of further unauthorized take and ensure ESA and MMPA compliance. Power Systems & Supplies of Alaska's contractor will not resume their activities until notified by NMFS.

In the event that Power Systems & Supplies of Alaska or their 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), Power Systems & Supplies of Alaska will report the incident to the NMFS AKR Protected Resources Division and the NMFS Alaska Regional Stranding Coordinator or Hotline within 24 hours of the discovery. The report will include the same information identified in the paragraph above. Activities may continue while NMFS reviews the circumstances of the incident. NMFS will work with Power Systems & Supplies of Alaska to determine whether additional mitigation measures or modifications to the activities are appropriate.

6.4 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:

- Not approach within 100 yards of a humpback whale, or cause a vessel or other object to approach within 100 yards of a humpback whale,

- Not place vessel in the path of oncoming humpback whales causing them to surface within 100 yards of vessel,
- 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 (see 33 CFR § 83.06)).

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

Attachment B: Marine Mammal Sighting Data

Date	Start Time	End Time	Construction Type	Pile Size	Pile Type	# of Pile	Visibility	Glare	Weather	Wave Height	BSS	Wind/Swell Direction	Monitoring Location	Construction at Time of Sighting	Species	Group Size	Behavior	Distance from Work	Take?	Mitigation	Notes
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	10%	OC	Light	1	SE	PSO 1	NONE	HSEA	1	TR/MI	300m-600m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	10%	OC	Light	1	SE	PSO 1	NONE	HSEA	1	TR	400m	N	NONE	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	50%	OC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,200m-1,400m	N	DE/SD	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	50%	OC	Light	1	SE	PSO 2	NONE	HSEA	1	SP/TR	2,000m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	50%	OC	Light	1	SE	PSO 2	NONE	HSEA	1	SP/TR	1,200m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	50%	OC	Light	1	SE	PSO 3	NONE	STSL	1	TR (SE)	3,500m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	50%	OC	Light	1	SE	PSO 3	NONE	HSEA	1	DI	2,100m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	50%	OC	Light	1	SE	PSO 3	NONE	HSEA	1	MI	1,500m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	20%	OC	Light	1	SE	PSO 4	NONE	HSEA	1	MI/TR	3,000m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	20%	OC	Light	1	SE	PSO 4	NONE	STSL	3	SW/TR/CH	3,050m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
9-Feb	830	1257	Vibratory Hammer	30-inch	Temporary	1	Excellent	20%	OC	Light	1	SE	PSO 4	NONE	HSEA	1	SW/SI	3,050m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
11-Feb	1235	1620	Drill	30-inch	Temporary	1	Excellent	10%	PC	Light	1	SE	PSO 1	NO SIGHTINGS							
11-Feb	1235	1620	Drill	30-inch	Temporary	1	Excellent	70%	S	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,128m	N	SD	
11-Feb	1235	1620	Drill	30-inch	Temporary	1	Excellent	70%	S	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,128m	N	SD	
11-Feb	1235	1620	Drill	30-inch	Temporary	1	Excellent	70%	S	Light	1	SE	PSO 2	Drill	HSEA	1	SP	1,128m	Y	SD	
11-Feb	1235	1620	Drill	30-inch	Temporary	1	Excellent	0-15%	S	Light	0-1	SE	PSO 3	Drill	HSEA	1	SI	2,200m-2,400m	N	NONE	Outside Zone
11-Feb	1235	1620	Drill	30-inch	Temporary	1	Excellent	30%	PC	Light	2	SE	PSO 4	NONE	HSEA	1	TR	2,800m-3,000m	N	SD	
11-Feb	1235	1620	Drill	30-inch	Temporary	1	Excellent	30%	PC	Light		SE	PSO 4	Drill	HSEA	1	TR	2,500m	Y	SD	
12-Feb	1235	1612	Drill	30-inch	Temporary	1	Moderate	0%	R/OC	Moderate	2	SE	PSO 1	NO SIGHTINGS							
12-Feb	1235	1612	Drill	30-inch	Temporary	1	Moderate	0%	R/OC/HR	Moderate	3	SE	PSO 2	NONE	HSEA	1	SP	1,128m	N	DE	
12-Feb	1235	1612	Drill	30-inch	Temporary	1	Poor-Moderate	0%	R/F	Light	3	SE	PSO 3	Vibratory Hammer	HSEA	1	MI	2,200m	N	NONE	Outside Zone
12-Feb	1235	1612	Drill	30-inch	Temporary	1	Bad	10%	HR	Heavy	3	SE	PSO 4	NO SIGHTINGS							
13-Feb	1230	1455	Vibratory Hammer	30-inch	Temporary	2	Excellent	10%	OC	Light	0	SE	PSO 1	NO SIGHTINGS							
13-Feb	1230	1455	Vibratory Hammer	30-inch	Temporary	2	Good	0%	L/OC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,200m	N	DE	
13-Feb	1230	1455	Vibratory Hammer	30-inch	Temporary	2	Good	0%	L/OC	Light	2	SE	PSO 2	NONE	HSEA	1	SP	1,128m	N	SD	
13-Feb	1230	1455	Vibratory Hammer	30-inch	Temporary	2	Good	0%	L/OC	Light	3	SE	PSO 2	NONE	HSEA	1	SP	1,488m	N	SD	
13-Feb	1230	1455	Vibratory Hammer	30-inch	Temporary	2	Moderate-Good	0%	PC/L	Light	0	SE	PSO 3	NONE	HSEA	2	MI	2,000m-2,100m	N	NONE	Outside Zone
13-Feb	1230	1455	Vibratory Hammer	30-inch	Temporary	2	Moderate	0%	PC	Light	1	SE	PSO 4	NO SIGHTINGS							
14-Feb	730	1303	Drill	30-inch	Temporary	2	Good-Excellent	10-15%	PC/L	Light	1	SE	PSO 1	NO SIGHTINGS							
14-Feb	730	1303	Drill	30-inch	Temporary	2	Excellent	10%	OC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,200m	N	SD	
14-Feb	730	1303	Drill	30-inch	Temporary	2	Moderate-Excellent	0%	PC	Light	0-1	SE	PSO 3	Drill	HSEA	1	SI/FO	2,100m	N	NONE	Outside Zone
14-Feb	730	1303	Drill	30-inch	Temporary	2	Moderate-Excellent	0%	PC	Light	0-1	SE	PSO 3	Drill	HSEA	2	MI/FO	2,100m	N	NONE	Outside Zone
14-Feb	730	1303	Drill	30-inch	Temporary	2	Good	10%	PC	Light	1	SE	PSO 4	NONE	STSL	1	TR/MI	3,000m	N	DE	
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Temporary	2	Excellent	10%	OC	Light	0	SE	PSO 1	NONE	HSEA	1	TR	350m	N	SD	
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good	10%	L/OC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,200m	N	NONE	Outside Zone
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good	10%	L/OC	Light	2	SE	PSO 2	NONE	HSEA	1	SP	1,200m	N	SD	
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good	10%	L/OC	Light	3	SE	PSO 2	NONE	HSEA	1	SP	1,180m	N	SD	
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good	10%	L/OC	Light	4	SE	PSO 2	Drill	HSEA	1	SP	1,300m	N	NONE	Outside Zone
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good	10%	L/OC	Light	4	SE	PSO 2	NONE	HSEA	1	SP	1,200m	N	NONE	
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good	10%	L/OC	Light	4	SE	PSO 2	NONE	HSEA	1	SP	1,200m	N	NONE	
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good	10%	L/OC	Light	4	SE	PSO 2	NONE	HSEA	1	MI	1,300m	N	NONE	
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good-Excellent	10%	S/L	Light	1	SE	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good-Excellent	10%	S/L	Light	1	SE	PSO 3	Vibratory Hammer	HSEA	2	MI	2,100m	N	NONE	Outside Zone
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good-Excellent	10%	S/L	Light	1	SE	PSO 3	Vibratory Hammer	HSEA	1	SW (N)	2,200m	N	NONE	Outside Zone
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good-Excellent	10%	S/L	Light	1	SE	PSO 3	Vibratory Hammer	HSEA	3	MI	2,100m	N	NONE	Outside Zone
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good-Excellent	10%	S/L	Light	1	SE	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone
15-Feb	1030	1710	Vibratory Hammer and Drill	30-inch	Permanent	1	Good-Excellent	10-15%	PC/L	Light	0-1	S	PSO 4	NO SIGHTINGS							
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Good-Excellent	10%	PC/L	Light	0-1	SE	PSO 1	NONE	HSEA	1	MI	800m	N	SD	
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	30%	OC	Light	1	SW	PSO 2	NONE	HSEA	1	SP	1,400m	N	NONE	Outside Zone
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	30%	OC	Light	1	SW	PSO 2	Drill	HSEA	1	SP	1,100m-1,130m	Y	SD	
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	30%	OC	Light	1	SW	PSO 2	NONE	HSEA	1	SP	1,200m	N	SD	
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	30%	OC	Light	1	SW	PSO 2	Drill	HSEA	1	SW (S)	1,100m	Y	SD	
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	30%	OC	Light	1	SW	PSO 2	NONE	HSEA	1	SW (W)	900m	N	NONE	
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S/PC/L	Light	0	SW	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S/PC/L	Light	0	SW	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S/PC/L	Light	0	SW	PSO 3	NONE	HSEA	2	MI	2,100m	N	NONE	Outside Zone
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S/PC/L	Light	0	SW	PSO 3	Drill	HSEA	1	MI	2,100m	N	NONE	Outside Zone
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S/PC/L	Light	0	SW	PSO 3	NONE	STSL	2	TR	2,100m	N	SD	
16-Feb	1030	1722	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	15%	OC	Light	1	S	PSO 4	NONE	STSL	4	TR	3,000m-3,600m	N	DE	
17-Feb	730	955	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	10%	PC	Light	0	SE	PSO 1	NO SIGHTINGS							
17-Feb	730	955	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	10%	OC	Light	1	SE	PSO 2	NO SIGHTINGS							
17-Feb	730	955	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	0%	PC	Light	0	SE	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone
17-Feb	730	955	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	10%	OC	Light	1	SE	PSO 4	NONE	STSL	2	TR (N)	2,900m	N	DE	
18-Feb	930	1510	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	15%	PC	Light	1	SE	PSO 1	NO SIGHTINGS							
18-Feb	930	1510	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	40%	S/PC	Light	1	SE	PSO 2	NO SIGHTINGS							
18-Feb	930	1510	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S	Light	1	SE	PSO 3	NONE	HSEA	1	MI	2,200m	N	NONE	Outside Zone
18-Feb	930	1510	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S	Light	1	SE	PSO 3	NONE	HSEA	1	SI	2,200m	N	NONE	Outside Zone
18-Feb	930	1510	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S	Light	1	SE	PSO 3	Drill	HSEA	1	MI	2,100m	N	NONE	Outside Zone
18-Feb	930	1510	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S	Light	1	SE	PSO 3	NONE	HSEA	1	MI	2,200m	N	NONE	Outside Zone
18-Feb	930	1510	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	0%	S	Light	1	SE	PSO 3	Drill	HSEA	1	MI	2,100m	N	NONE	Outside Zone
18-Feb	930	1510	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	10-20%	PC	Light-Moderate	0-1	SE	PSO 4	NONE	STSL	1	SW/TR/CH	3,050m	N	SD	
18-Feb	930	1510	Vibratory Hammer and Drill	30-inch	Permanent	2	Excellent	10-20%	PC	Light-Moderate	0-1	SE	PSO 4	Drill	HSEA	2	SW/TR	3,000m-3,100m	Y	SD	
19-Feb	1230	1520	Vibratory Hammer	30-inch	Temporary	1	Poor	10%	R	Light	1	SE	PSO 1	NO SIGHTINGS							Vibratory Hammer Installation was unsuccessful-no piles installed
19-Feb	1230	1520	Vibratory Hammer	30-inch	Temporary	1	Moderate	0%	R/OC	Light	1	SE	PSO 2	NONE	STSL	1	SW	1,500m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
19-Feb	1230	1520	Vibratory Hammer	30-inch	Temporary	1	Moderate	0%	R/OC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,100m	N	NONE	Vibratory Hammer Installation was unsuccessful-no piles installed
19-Feb	1230	1520	Vibratory Hammer	30-inch	Temporary	1	Moderate	0%	R	Light	1	SE	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone; Vibratory Hammer Installation was unsuccessful- no piles installed
19-Feb	1230	1520	Vibratory Hammer	30-inch	Temporary	1	Moderate	0%	R	Light	1	SE	PSO 3	NONE	HSEA	2	SW (S)	2,100m	N	NONE	Outside Zone; Vibratory Hammer Installation was unsuccessful- no piles installed
19-Feb	1230	1520	Vibratory Hammer	30-inch	Temporary	1	Moderate	0%	R	Light	1	SE	PSO 3	NONE	HSEA	1	SW (N)	2,000m	N	NONE	Outside Zone; Vibratory Hammer Installation was unsuccessful- no piles installed
19-Feb	1230	1520	Vibratory Hammer	30-inch	Temporary	1	Moderate	0%	R	Light	1	SE	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone; Vibratory Hammer Installation was unsuccessful- no piles installed
19-Feb	1230	1520	Vibratory Hammer	30-inch	Temporary	1	Poor	10%	HR	Moderate	2-3	SE	PSO 4	NONE	STSL	1	TR	3,000m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
19-Feb	1230	1520	Vibratory Hammer	30-inch	Temporary	1	Poor	10%	HR	Moderate	2-3	SE	PSO 4	NONE	HPBK	1	DI/MI/CD/TR	3,000m-3,700m	N	SD	Vibratory Hammer Installation was unsuccessful-no piles installed
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	10-30%	PC/OC	Light	0-1	SE	PSO 1	NONE	HSEA	3	SP/MI	750m	N	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	20%	PC	Light	1	SE	PSO 2	Drill	STSL	1	SI	1,120m-1,200m	Y	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Moderate-Excellent	10%	R/OC	Light	1-2	SE	PSO 3	NONE	STSL	1	TR	2,100m	N	NONE	Outside Zone
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	NONE	HSEA	1	SP	3,000m	N	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	NONE	STSL	1	TR (S)	3,000m	N	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	NONE	STSL	1	MI	3,100m	N	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	NONE	STSL	1	TR (S)	3,000m	N	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	NONE	STSL	3	MI	3,000m	N	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	NONE	STSL	2	MI	3,000m	N	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	NONE	STSL	2	SW (N)	3,000m	N	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	Vibratory Hammer	STSL	1	TR (E)	2,800m	Y	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	Vibratory Hammer	STSL	1	TR (S)	3,100m	Y	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	NONE	HSEA	1	SI	3,100m	N	SD	
21-Feb	930	1635	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	SE	PSO 4	Drill	STSL	10	MI	2,500m-3,500m	Y	SD	
22-Feb	730	950	Drill	30-inch	Temporary	1	Good-Excellent	10-50%	PC/OC	Light	0	SE	PSO 1	NONE	HSEA	1	MI/TR	50m	N	SD	
22-Feb	730	950	Drill	30-inch	Temporary	1	Good	0%	OC	Light	1	SE	PSO 2	NONE	HSEA	1	SP/MI	1,700m-1,800m	N	SD	
22-Feb	730	950	Drill	30-inch	Temporary	1	Good	0%	OC	Light	1	SE	PSO 2	NONE	STSL	1	SW/MI	1,500m	N	SD	
22-Feb	730	950	Drill	30-inch	Temporary	1	Excellent	10%	PC	Light	1	SE	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone
22-Feb	730	950	Drill	30-inch	Temporary	1	Excellent	10%	PC	Light	1	SE	PSO 3	NONE	STSL	1	TR	2,100m	N	SD	Same as PSO 2
22-Feb	730	950	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	SE	PSO 4	NONE	STSL	5	TR (W)	3,500m	N	NONE	Outside Zone
22-Feb	730	950	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	SE	PSO 4	Drill	STSL	9	MI	3,600m	N	NONE	Outside Zone

Date	Start Time	End Time	Construction Type	Pile Size	Pile Type	# of Pile	Visibility	Glare	Weather	Wave Height	BSS	Wind/Swell Direction	Monitoring Location	Construction at Time of Sighting	Species	Group Size	Behavior	Distance from Work	Take?	Mitigation	Notes
23-Feb	830	1445	Drill	30-inch	Temporary	1	Good	5%	OC	Light	0	SE	PSO 1	NONE	HSEA	1	MI	80m-100m	N	SD	
23-Feb	830	1445	Drill	30-inch	Temporary	1	Poor-Excellent	0%	S/OC	Light-Moderate	1-2	W	PSO 2	NONE	STSL	3	FO/SI/PL	1,300m	N	SD	
23-Feb	830	1445	Drill	30-inch	Temporary	1	Excellent	10%	OC	Light	1	N	PSO 3	NONE	STSL	1	TR	2,100m	N	NONE	Outside Zone
23-Feb	830	1445	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	NW	PSO 4	NONE	STSL	1	TR (S)	3,000m	N	SD	
23-Feb	830	1445	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	NW	PSO 4	NONE	STSL	1	MI	3,000m	N	SD	
23-Feb	830	1445	Drill	30-inch	Temporary	1	Excellent	0%	PC	Light	1	NW	PSO 4	Drill	HSEA	1	MI	3,000m	Y	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Excellent	30%	S	Light	0	NONE	PSO 1	NO SIGHTINGS							
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 2	NONE	HSEA	1	MI	1,000m	N	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 2	NONE	HSEA	1	MI	1,400m	N	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 2	NONE	STSL	3	MI/SW	1,500m	N	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 2	NONE	STSL	3	MI	1,400m	N	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 2	NONE	HSEA	1	SI	1,100m	N	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 2	Drill	HSEA	1	SW/MI	1,200m-1,700m	Y	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 4	NONE	STSL	1	MI	3,000m	N	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 4	NONE	STSL	2	MI	3,000m	N	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 4	Drill	HSEA	1	SI	3,000m	Y	SD	
24-Feb	730	1627	Drill	30-inch	Temporary	1	Poor-Excellent	0-15%	S/OC/SN	Light-Moderate	1-2	SE	PSO 4	Drill	STSL	1	TR (S)	3,100m	Y	SD	
25-Feb	730	1111	Drill	30-inch	Temporary	1	Poor	5%	HR	Light	1	SE	PSO 1	NO SIGHTINGS							
25-Feb	730	1111	Drill	30-inch	Temporary	1	Poor	0%	Hr	Moderate	2	SE	PSO 2	Drill	HSEA	1	SI	1,200m	N	NONE	Outside Zone
25-Feb	730	1111	Drill	30-inch	Temporary	1	Poor	0%	Hr	Moderate	2	SE	PSO 2	NONE	HSEA	1	SI	1,000m	N	NONE	Outside Zone
25-Feb	730	1111	Drill	30-inch	Temporary	1	Good	0%	OC	Light	1	N	PSO 3	Drill	HSEA	1	MI	2,100m	N	NONE	Outside Zone
25-Feb	730	1111	Drill	30-inch	Temporary	1	Good	0%	OC	Light	1	N	PSO 4	NONE	STSL	1	TR (S)	3,000m	N	SD	
25-Feb	730	1111	Drill	30-inch	Temporary	1	Good	0%	OC	Light	1	N	PSO 4	NONE	STSL	1	TR (S)	3,000m	N	SD	
25-Feb	730	1111	Drill	30-inch	Temporary	1	Good	0%	OC	Light	1	N	PSO 4	NONE	STSL	3	MI	3,100m	N	SD	
26-Feb	1125	1625	Vibratory Hammer and Impact Hammer	30-inch	Temporary	4	Moderate	10%	OC	Light	1-2	SE	PSO 1	NO SIGHTINGS							
26-Feb	1125	1625	Vibratory Hammer and Impact Hammer	30-inch	Temporary	4	Moderate	0%	L/OC	Light	1	SE	PSO 2	NO SIGHTINGS							
26-Feb	1125	1625	Vibratory Hammer and Impact Hammer	30-inch	Temporary	4	Poor-Moderate	0%	R/OC	Light-Moderate	1-2	SE	PSO 3	NO SIGHTINGS							
26-Feb	1125	1625	Vibratory Hammer and Impact Hammer	30-inch	Temporary	4	Good	10%	PC	Moderate	3	SE	PSO 4	NONE	STSL	2	TR (N)	3,100m	N	SD	
26-Feb	1125	1625	Vibratory Hammer and Impact Hammer	30-inch	Temporary	4	Good	10%	PC	Moderate	3	SE	PSO 4	NONE	STSL	1	TR (N)	3,100m	N	SD	
26-Feb	1125	1625	Vibratory Hammer and Impact Hammer	30-inch	Temporary	4	Good	10%	PC	Moderate	3	SE	PSO 4	Vibratory Hammer	STSL	1	TR (N)	3,000m	Y	SD	
27-Feb	830	1612	Vibratory Hammer and Drill	30-inch	Permanent	3	Moderate-Good	20%	PC/OC	Moderate	2	SE	PSO 1	NO SIGHTINGS							
27-Feb	830	1612	Vibratory Hammer and Drill	30-inch	Permanent	3	Moderate	0%	L/OC	Moderate	2	SE	PSO 2	NONE	HSEA	1	SI	1,000m	N	SD	
27-Feb	830	1612	Vibratory Hammer and Drill	30-inch	Permanent	3	Moderate	0%	L/OC	Moderate	2	SE	PSO 2	NONE	STSL	1	SI	1,500m	N	SD	
27-Feb	830	1612	Vibratory Hammer and Drill	30-inch	Permanent	3	Poor-Good	0-10%	S/L/R	Light-Moderate	1-2	SE	PSO 3	Drill	HSEA	1	MI	2,100m	N	NONE	Outside Zone
27-Feb	830	1612	Vibratory Hammer and Drill	30-inch	Permanent	3	Moderate-Excellent	0-10%	S/PC/R	Light-Moderate	1-3	SE	PSO 4	NONE	STSL	1	MI	3,100m	N	DE	
27-Feb	830	1612	Vibratory Hammer and Drill	30-inch	Permanent	3	Moderate-Excellent	0-10%	S/PC/R	Light-Moderate	1-3	SE	PSO 4	NONE	STSL	1	SW (N)	3,100m	N	SD	
27-Feb	830	1612	Vibratory Hammer and Drill	30-inch	Permanent	3	Moderate-Excellent	0-10%	S/PC/R	Light-Moderate	1-3	SE	PSO 4	NONE	STSL	1	SW (N)	3,100m	N	SD	
27-Feb	830	1612	Vibratory Hammer and Drill	30-inch	Permanent	3	Moderate-Excellent	0-10%	S/PC/R	Light-Moderate	1-3	SE	PSO 4	Drill	STSL	1	MI	2,500m	Y	SD	
28-Feb	930	1405	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	20%	S	Light	1	SE	PSO 1	NO SIGHTINGS							
28-Feb	930	1405	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	20%	PC	Light	1	SE	PSO 2	Drill	HSEA	1	SP	1,300m	Y	SD	
28-Feb	930	1405	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	20%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,300m	N	DE	
28-Feb	930	1405	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	20%	PC	Light	1	SE	PSO 2	NONE	HSEA	2	SP	1,500m	N	DE	
28-Feb	930	1405	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	20%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,100m	N	SD	
28-Feb	930	1405	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	10%	S	Light	0	SE	PSO 3	Drill	HSEA	1	MI	2,100m	N	NONE	Outside Zone
28-Feb	930	1405	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	30%	S	Light	1	SE	PSO 4	NONE	STSL	1	SP	3,100m	N	SD	
28-Feb	930	1405	Vibratory Hammer and Drill	30-inch	Permanent	1	Excellent	30%	S	Light	1	SE	PSO 4	NONE	STSL	2	SW	3,100m	N	SD	
1-Mar	1508	1758	Not Available				Moderate	10%	R/OC	Light	1	SE	PSO 1	NO SIGHTINGS							
1-Mar	1508	1758	Not Available				Moderate	0%	R/OC	Light	2	SE	PSO 2	NO SIGHTINGS							
1-Mar	1508	1758	Not Available				Moderate-Good	0%	L/R/OC/SN	Light	1	SE	PSO 3	NO SIGHTINGS							
1-Mar	1508	1758	Not Available				Moderate-Good	0%	S/L/R/OC	Light	1	SE	PSO 4	NONE	HSEA	1	MI	3,100m	N	SD	
1-Mar	1508	1758	Not Available				Moderate-Good	0%	S/L/R/OC	Light	1	SE	PSO 4	NONE	STSL	2	MI	3,000m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Good	1%	L/OC	Light	1	NW	PSO 1	NONE	HSEA	1	SP	148m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Good	1%	L/OC	Light	1	NW	PSO 1	NONE	HSEA	1	SP/MI	150m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Moderate	0%	L/OC	Light	1	NW	PSO 2	NONE	STSL	1	SP/MI	1,280m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Moderate	0%	L/OC	Light	1	NW	PSO 2	Vibratory Hammer	HSEA	2	MI/TR	1,100m	N	SD	Outside Zone
3-Mar	930	1650	NO WORK-Shutdown MM				Good-Excellent	0%	R/OC	Light	1	SE/NE	PSO 3	Stabbing	ORCA	2	TR	3,000m	N	SD	Outside Zone
3-Mar	930	1650	NO WORK-Shutdown MM				Good-Excellent	0%	R/OC	Light	1	SE/NE	PSO 3	NONE	STSL	2	TR/MI	2,100m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Good-Excellent	0%	R/OC	Light	1	SE/NE	PSO 3	NONE	STSL	1	TR	1,120m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Moderate	0%	R	Light	1	NW	PSO 4	NONE	STSL	1	MI	2,500m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Moderate	0%	R	Light	1	NW	PSO 4	NONE	STSL	2	MI	3,100m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Moderate	0%	R	Light	1	NW	PSO 4	NONE	STSL	6	MI	3,100m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Moderate	0%	R	Light	1	NW	PSO 4	NONE	HSEA	1	SP	3,200m	N	SD	
3-Mar	930	1650	NO WORK-Shutdown MM				Moderate	0%	R	Light	1	NW	PSO 4	NONE	STSL	1	TR (N)	3,200m	N	SD	
4-Mar	730	1042	NO WORK-Shutdown Visibility				Bad-Excellent	0%	F/OC/SN	Light	1	NW	PSO 1	NO SIGHTINGS							
4-Mar	730	1042	NO WORK-Shutdown Visibility				Bad-Good	0%	PC/OC/SN	Light	1	SE	PSO 2	NO SIGHTINGS							
4-Mar	730	1042	NO WORK-Shutdown Visibility				Bad-Excellent	0%	OC/SN	Light	1	SE	PSO 3	NONE	HSEA	1	LO	2,100m	N	NONE	Outside Zone
4-Mar	730	1042	NO WORK-Shutdown Visibility				Bad-Excellent	0%	PC	Light	1	SE	PSO 4	NONE	STSL	1	TR (N)	3,000m	N	SD	
4-Mar	730	1042	NO WORK-Shutdown Visibility				Bad-Excellent	0%	PC	Light	1	SE	PSO 4	NONE	STSL	1	MI	3,100m	N	SD	
4-Mar	730	1042	NO WORK-Shutdown Visibility				Bad-Excellent	0%	PC	Light	1	SE	PSO 4	NONE	HSEA	1	MI	3,000m	N	SD	
5-Mar	1135	1400	Vibratory Hammer	30-inch	Temporary	4	Poor	0%	L/OC/SN	Light	2	SE	PSO 1	NO SIGHTINGS							
5-Mar	1135	1400	Vibratory Hammer	30-inch	Temporary	4	Moderate	0%	L/OC	Moderate	4	SE	PSO 2	NO SIGHTINGS							
5-Mar	1135	1400	Vibratory Hammer	30-inch	Temporary	4	Bad-Good	0%	R/SN	Light-Moderate	1-2	SE	PSO 3	NO SIGHTINGS							
5-Mar	1135	1400	Vibratory Hammer	30-inch	Temporary	4	Moderate	0%	S/R/OC	Moderate	3	SE	PSO 4	NONE	STSL	1	TR	3,000m	N	SD	
5-Mar	1135	1400	Vibratory Hammer	30-inch	Temporary	4	Moderate	0%	S/R/OC	Moderate	3	SE	PSO 4	NONE	STSL	1	MI	3,000m	N	SD	
5-Mar	1135	1400	Vibratory Hammer	30-inch	Temporary	4	Moderate	0%	S/R/OC	Moderate	3	SE	PSO 4	NONE	STSL	1	TR	3,200m	N	SD	
6-Mar	920	1810	Drill	30-inch	Temporary	1	Excellent		S	Light		SE	PSO 1	NONE	HSEA	1	SP	320m	N	SD	
6-Mar	920	1810	Drill	30-inch	Temporary	1	Excellent		S	Light		SE	PSO 1	NONE	HSEA	2	SP	425m	N	SD	
6-Mar	920	1810	Drill	30-inch	Temporary	1	Excellent		S	Light		SE	PSO 1	NONE	STSL	1	SP	417m	N	SD	
6-Mar	920	1810	Drill	30-inch	Temporary	1	Excellent		S	Light		SE	PSO 1	NONE	HSEA	1	SP/MI	100m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	SE	PSO 2	NONE	STSL	1	MI/SW (N)	1,300m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	SE	PSO 2	NONE	STSL	1	TR/SW (N)	900m-1,300m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	SE	PSO 2	NONE	HSEA	1	MI/SW	1,000m-1,2000m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	SE	PSO 2	NONE	STSL	1	SW	1,000m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	0	SE	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	Outside Zone
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	TR (S)	3,100m	N	NONE	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	MI	3,100m	N	DE	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	TR (N)	3,200m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	MI	3,100m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	3	MI	4,000m	N	NONE	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	TR (S)	3,100m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	SW	1,500m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	TR (S)	3,000m	N	SD	

Date	Start Time	End Time	Construction Type	Pile Size	Pile Type	# of Pile	Visibility	Glare	Weather	Wave Height	BSS	Wind/Swell Direction	Monitoring Location	Construction at Time of Sighting	Species	Group Size	Behavior	Distance from Work	Take?	Mitigation	Notes
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	HSEA	1	SP	3,000m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	TR (S)	3,400m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	HSEA	1	SP	3,000m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	MI	3,000m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	MI	3,100m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	HSEA	1	MI	3,100m	N	SD	
6-Mar	930	1610	Drill	30-inch	Temporary	1	Excellent	15%	S	Light	0-1	SE	PSO 4	NONE	STSL	1	MI	3,100m	N	SD	
7-Mar	1000	1300	Drill	30-inch	Temporary	1	Excellent	10%	S	Light		NW	PSO 1	NONE	HSEA	1	MI	150m	N	SD	
7-Mar	1000	1300	Drill	30-inch	Temporary	1	Excellent	10%	S	Light		NW	PSO 1	NONE	HSEA	1	MI	600m	N	SD	
7-Mar	1000	1300	Drill	30-inch	Temporary	1	Excellent	10%	S	Light		NW	PSO 1	NONE	HSEA	1	MI	800m	N	SD	
7-Mar	1000	1335	Drill	30-inch	Temporary	1	Excellent	10%	S	Light		SE	PSO 2	NONE	HSEA	1	SW	900m (from Observer)	N	SD	
7-Mar	1000	1335	Drill	30-inch	Temporary	1	Excellent	0-10%	S	Light-Moderate	1-2	NW	PSO 3	Drill and Vibratory Hammer	HSEA	1	MI	2,100m	N	NONE	Outside Zone
7-Mar	1000	1335	Drill	30-inch	Temporary	1	Excellent	5%	S	Light	1		PSO 4	Vibratory Hammer	STSL	1	SP	3,200m	Y	SD	
7-Mar	1000	1335	Drill	30-inch	Temporary	1	Excellent	5%	S	Light	1		PSO 4	NONE	HSEA	1	SP	3,200m	N	SD	
7-Mar	1000	1335	Drill	30-inch	Temporary	1	Excellent	5%	S	Light	1		PSO 4	Drill	HSEA	1	SP	3,200m	Y	SD	
8-Mar	935	1615	Drill	30-inch	Temporary	2	Excellent	10%	S	Light		SE	PSO 1	NONE	HSEA	1	SP	170m	N	SD	
8-Mar	935	1615	Drill	30-inch	Temporary	2	Excellent	0%	S/PC	Light	1	SE	PSO 2	NONE	STSL	1	SP	1,000m	N	NONE	
8-Mar	935	1615	Drill	30-inch	Temporary	2	Excellent	0%	S/PC	Light	1		PSO 2	Not Available	HSEA	1	MI	2,600m	N	NONE	SD before entering zone
8-Mar	930	1615	Drill	30-inch	Temporary	2	Excellent	0%	S/OC	Light	1	SE	PSO 3	Drill	HPBK	6	BR/PL/MI	6,000m	N	NONE	Outside Zone
8-Mar	930	1615	Drill	30-inch	Temporary	2	Excellent	0%	S/OC	Light	1		PSO 3	Drill	ORCA	5	TR (S)	3,500m	Y	SD	
8-Mar	935	1615	Drill	30-inch	Temporary	2	Excellent	10%	S	Light	1	SE	PSO 4	NONE	HAPO	1	SW (N to S)	2,800m	N	SD	
8-Mar	935	1615	Drill	30-inch	Temporary	2	Excellent			Light	1		PSO 4	Drill	HSEA	1	MI	3,000m	Y	SD	
12-Mar	930	1410	Drill	30-inch	Temporary	2	Excellent	10%	OC/SN	Light	0	SE	PSO 1	NO SIGHTINGS							
12-Mar	930	1410	Drill	30-inch	Temporary	2	Excellent	20%	PC	Light		SE	PSO 2	NONE	HSEA	2	SW/TR	800m (from Observer)	N	SD	
12-Mar	930	1410	Drill	30-inch	Temporary	2	Excellent	0-10%	S	Light	1	NW	PSO 3	NO SIGHTINGS							
12-Mar	930	1410	Drill	30-inch	Temporary	2	Excellent		S	Light		NW	PSO 4	NO SIGHTINGS							
13-Mar	930	1340	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	NW	PSO 1	NONE	HSEA	1	MI	500m	N	SD	
13-Mar	902	1340	Drill	30-inch	Temporary	1	Excellent	10-15%	S	Light	1-2	N	PSO 2	NONE	HSEA	1	LO	1,128m	N	SD	
13-Mar	902	1340	Drill	30-inch	Temporary	1	Excellent	0%	S	Light	1-2	N	PSO 3	NO SIGHTINGS							
13-Mar	902	1340	Drill	30-inch	Temporary	1	Good	10%	S	Moderate	3	N	PSO 4	NO SIGHTINGS							
14-Mar	930	1336	Drill	30-inch	Temporary	1							PSO 1	Not Available							
14-Mar	930	1336	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	NW	PSO 2	NONE	HSEA	1	MI	1,000m	N	SD	
14-Mar	930	1336	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	NW	PSO 2	NONE	HSEA	1	MI	900m	N	SD	
14-Mar	930	1336	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	NW	PSO 2	NONE	HSEA	2	MI	1,300m-1,350m	N	SD	
14-Mar	930	1336	Drill	30-inch	Temporary	1	Excellent	10%	S	Light	1	NW	PSO 2	NONE	HSEA	1	MI	1,400m	N	NONE/SD	
14-Mar	930	1336	Drill	30-inch	Temporary	1	Excellent	0%	S	Light	1-2	NW	PSO 3	Not Available	HSEA	1	MI	2,100m	N	NONE	Outside Zone
14-Mar	930	1336	Drill	30-inch	Temporary	1	Excellent	10%	S				PSO 4	NO SIGHTINGS							
24-Mar	838	1610	Impact Hammer	48-inch	Permanent	2	Excellent	10%	S	Light	2	NE	PSO 1	NO SIGHTINGS							
24-Mar	838	1610	Impact Hammer	48-inch	Permanent	2	Excellent	10%	S	Light	3	NE	PSO 2	NONE	HSEA	1	SP	1,100m	N	DE	
24-Mar	838	1610	Impact Hammer	48-inch	Permanent	2	Excellent	10%	S	Light	3	NE	PSO 2	NONE	HSEA	1	MI	1,100m	N	SD	
24-Mar	838	1610	Impact Hammer	48-inch	Permanent	2	Excellent	10%	S	Light	3	NE	PSO 2	NONE	HSEA	1	MI	1,100m	N	SD	
24-Mar	838	1610	Impact Hammer	48-inch	Permanent	2	Excellent	10%	S	Light	3	NE	PSO 2	NONE	HSEA	1	SP	800m	N	SD	
24-Mar	838	1610	Impact Hammer	48-inch	Permanent	2	Excellent	10%	S	Light	3	NE	PSO 2	NONE	HSEA	1	SP	1,000m	N	SD	
24-Mar	838	1610	Impact Hammer	48-inch	Permanent	2	Excellent	10%	S	Light	3	NE	PSO 2	NONE	HSEA	1	MI	700m	N	SD	
24-Mar	838	1610	Impact Hammer	48-inch	Permanent	2	Excellent	15%	S	Moderate	4	NW	PSO 3	NO SIGHTINGS							
24-Mar	838	1610	Impact Hammer	48-inch	Permanent	2	Excellent						PSO 4	NONE	STSL	1	LO	3,090m	N	SD	
25-Mar	1230	1530	Impact Hammer	48-inch	Permanent	1	Excellent	10%	PC	Light	0	SW	PSO 1	NONE	HSEA	1	LO	300m	N	NONE	
25-Mar	1230	1530	Impact Hammer	48-inch	Permanent	1	Excellent	10%	S	Light	2	SW	PSO 2	NO SIGHTINGS							
25-Mar	1230	1530	Impact Hammer	48-inch	Permanent	1	Excellent	10%	PC	Light	2	SE	PSO 3	NONE	HSEA	1	MI	2,140m	N	SD	Outside Zone
25-Mar	1230	1530	Impact Hammer	48-inch	Permanent	1	Excellent	0%	PC	Light	2	SE	PSO 4	NONE	STSL	1	LO	3,090m	N	SD	
25-Mar	1230	1530	Impact Hammer	48-inch	Permanent	2	Excellent	0%	PC	Light	2	SE	PSO 4	NONE	STSL	2	LO	3,050m	N	SD	
26-Mar	1300	1815	Impact Hammer	48-inch	Permanent	2	Good		R	Light	1	SE	PSO 1	NO SIGHTINGS							
26-Mar	1300	1815	Impact Hammer	48-inch	Permanent	2	Good	0%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	MI	1,100m	N	SD	
26-Mar	1300	1815	Impact Hammer	48-inch	Permanent	2	Good	0%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	MI	1,300m	N	NONE	Outside Zone
26-Mar	1300	1815	Impact Hammer	48-inch	Permanent	2	Good	0%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	MI	1,300m	N	NONE	Outside Zone
26-Mar	1300	1815	Impact Hammer	48-inch	Permanent	2	Good	0%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,100m	N	SD	
26-Mar	1300	1815	Impact Hammer	48-inch	Permanent	2	Good	0%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	SW (N)	1,300m	N	NONE	Outside Zone
26-Mar	1300	1815	Impact Hammer	48-inch	Permanent	2		10%	PC	Light	1	SE	PSO 3	NO SIGHTINGS							
26-Mar	1300	1815	Impact Hammer	48-inch	Permanent	2	Good	0%	R	Light	1	SE	PSO 4	NONE	HSEA	1	LO/SI	3,050m	N	SD	
26-Mar	1300	1815	Impact Hammer	48-inch	Permanent	2	Good	0%	R	Light	1	SE	PSO 4	NONE	HSEA	1	LO/SI	3,000m	N	SD	
27-Mar	830	1140	Impact Hammer	48-inch	Permanent	2	Excellent	10%	L	Light	1	SE	PSO 1	NONE	HSEA	1	LO	300m	N	SD	
27-Mar	830	1140	Impact Hammer	48-inch	Permanent	2	Good	0%	PC	Light	0-1	SE	PSO 2	NONE	HSEA	1	SW (S)	900m	N	DE/SD	
27-Mar	830	1140	Impact Hammer	48-inch	Permanent	2	Good	0%	PC	Light	0-1	SE	PSO 2	NONE	HSEA	1	MI	1,300m	N	NONE	Outside Zone
27-Mar	830	1140	Impact Hammer	48-inch	Permanent	2	Good	0%	PC	Light	0-1	SE	PSO 2	NONE	HSEA	1	MI	900m	N	SD	
27-Mar	830	1140	Impact Hammer	48-inch	Permanent	2	Good	0%	PC	Light	0-1	SE	PSO 2	NONE	HSEA	1	MI	1,000m	N	NONE	
27-Mar	830	1140	Impact Hammer	48-inch	Permanent	2	Good	10%	R	Light	1	NE	PSO 3	NO SIGHTINGS							
27-Mar	830	1140	Impact Hammer	48-inch	Permanent	2	Good-Excellent	0%	L	Light	0-1	SE	PSO 4	NONE	HSEA	1	LO/SI	3,000m	N	DE	
30-Mar	930	1515	Drill	48-inch	Permanent	1	Excellent	10%	OC	Light	1	SE	PSO 1	NO SIGHTINGS							
30-Mar	930	1515	Drill	48-inch	Permanent	1	Excellent	0%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	MI	1,100m	N	SD	
30-Mar	930	1515	Drill	48-inch	Permanent	1	Excellent	0%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	MI	1,200m	N	SD	Outside Zone
30-Mar	930	1515	Drill	48-inch	Permanent	1	Excellent	0%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,100m	N	SD	
30-Mar	930	1515	Drill	48-inch	Permanent	1	Excellent	10%	OC	Light	0	SE	PSO 3	NO SIGHTINGS							
30-Mar	930	1515	Drill	48-inch	Permanent	1	Excellent	0%	PC	Light	1	SW	PSO 4	NO SIGHTINGS							
31-Mar	830	1650	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	0	NE	PSO 1	NO SIGHTINGS							
31-Mar	830	1650	Drill	48-inch	Permanent	1	Excellent	0-15%	S/PC	Light	1	SE	PSO 2	NONE	HSEA	1	MI	1,200m	N	SD	
31-Mar	830	1650	Drill	48-inch	Permanent	1	Excellent	0-15%	S/PC	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,200m	N	NONE	Outside Zone
31-Mar	830	1650	Drill	48-inch	Permanent	1	Excellent	0%	PC	Light	1	N	PSO 3	NONE	HSEA	1	MI	2,143m	N	NONE	Outside Zone
31-Mar	830	1650	Drill	48-inch	Permanent	1	Excellent	0%	PC	Light	1	N	PSO 3	NONE	HSEA	2	MI	2,143m	N	NONE	Outside Zone
31-Mar	830	1650	Drill	48-inch	Permanent	1	Excellent	0-5%	S/OC	Light	2	SW	PSO 4	NO SIGHTINGS							
1-Apr	930	1900	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	0	SE	PSO 1	NO SIGHTINGS							
1-Apr	930	1900	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 2	NONE	HSEA	1	SP/MI	1,100m-1,300m	Y	SD	
1-Apr	930	1900	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 2	NONE	HSEA	1	SP	1,000m	N	NONE	
1-Apr	930	1900	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	N	PSO 3	Drill	HSEA	1	LO	2,143m	N	NONE	Outside Zone
1-Apr	930	1900	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	2	NW	PSO 4	NO SIGHTINGS							
2-Apr	930	2005	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 1	NO SIGHTINGS							
2-Apr	930	2005	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 2	NO SIGHTINGS							
2-Apr	930	2005	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 3	NO SIGHTINGS							
2-Apr	930	2005	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	2	NW/SE	PSO 4	Drill	STSL	4	TR (S)	3,050m	Y	SD	
2-Apr	930	2005	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	2	NW/SE	PSO 4	Drill	STSL	2	TR (S)	2,400m	Y	SD	
2-Apr	930	2005	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	2	NW/SE	PSO 4	NONE	STSL	1	TR (N)	2,800m-3,000m	N	SD	
4-Apr	930	1922	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 1	NONE	HSEA	1	LO	600m	N	SD	
4-Apr	930	1922	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 2	NO SIGHTINGS							
4-Apr	930	1922	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 3	NONE	HPBK	1	SW/CD	1,700-2,450m	N	SD	Airlifting, not drilling in rock.
4-Apr	930	1922	Drill	48-inch	Permanent	1	Excellent	0-15%	S	Light	1-2	NW	PSO 4	NONE	STSL	1	TR (s)	3,050m	N	SD	
4-Apr	930	1922	Drill	48-inch	Permanent	1	Excellent	0-15%	S	Light	1-2	NW	PSO 4	Drill	HPBK	1	SW (s)	3,400m	N	SD	Outside Zone when shutdown
4-Apr	930	1922	Drill	48-inch	Permanent	1	Excellent	0-15%	S	Light	1-2	NW	PSO 4	NONE	HSEA	1	LO	3,050m	N	SD	
4-Apr	930	1922	Drill	48-inch	Permanent	1	Excellent	0-15%	S	Light	1-2	NW	PSO 4	NONE	STSL	2	SW	3,300m	N	SD	
4-Apr	930	1922	Drill	48-inch	Permanent	1	Excellent	0-15%	S	Light	1-2	NW	PSO 4	Drill	HAPO	4	SW (SE)	2,500m	Y	SD	
4-Apr	930	1922	Drill	48-inch	Permanent	1	Excellent	0-15%	S	Light	1-2	NW	PSO 4	NONE	STSL	1	SW (n)	2,500m	N	NONE	
5-Apr	830	1550	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 1	NO SIGHTINGS							
5-Apr	830	1550	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 2	NONE	STSL	1	TR	1,128m	N	SD	
5-Apr	830	1550	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 3	Drill	HSEA	1	LO	2,100m	N	NONE	Outside Zone
5-Apr	930	1550	Drill	48-inch	Permanent	1	Excellent	0-10%	S	Light	2	NW/SE	PSO 4	Drill	HSEA	1	SP	3,020m	Y	SD	
5-Apr	930	1550	Drill	48-inch	Permanent	1	Excellent	0-10%	S	Light	2	NW/SE	PSO 4	Drill	STSL	1	MI	3,000m	Y	SD	
5-Apr	930	1550	Drill	48-inch	Permanent	1	Excellent	0-10%	S	Light	2	NW/SE	PSO 4	Drill	DAPO	3	TR (S)	3,000m	Y	SD	
6-Apr	1630	2005	Not Available				Moderate-Good	0-10%	PC/SN	Moderate	2	SE	PSO 1	NO SIGHTINGS							

Date	Start Time	End Time	Construction Type	Pile Size	Pile Type	# of Pile	Visibility	Glare	Weather	Wave Height	BSS	Wind/Swell Direction	Monitoring Location	Construction at Time of Sighting	Species	Group Size	Behavior	Distance from Work	Take?	Mitigation	Notes
6-Apr	1630	2005	Not Available				Good-Excellent	0-10%	OC/SN	Moderate	2	SE	PSO 2	NO SIGHTINGS							
6-Apr	1630	2005	Not Available				Good	0-10%	PC/SN	Moderate	2	SE	PSO 3	NO SIGHTINGS							
6-Apr	1630	2005	Not Available				Moderate-Excellent	0%	S/PC/R	Light	2-3	NW/NE	PSO 4	Drill	STSL	1	LO	3,500m	N	NONE	Outside Zone
6-Apr	1630	2005	Not Available				Moderate-Excellent	0%	S/PC/R	Light	2-3	NW/NE	PSO 4	Drill	HSEA	1	LO	3,000m	Y	SD	
7-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	0-1	SE	PSO 1	NONE	HSEA	1	LO	700m	N	SD	
7-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	0-1	SE	PSO 2	NONE	HSEA	1	LO	1,000m	N	SD	
7-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	0-1	SE	PSO 2	Drill	STSL	1	TR	1,100m	Y	SD	
7-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	0-1	SE	PSO 2	NONE	STSL	1	TR	1,100m	N	SD	
7-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	0-1	SE	PSO 3	Drill	HSEA	1	LO	2,100m	N	NONE	Outside Zone
7-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	0-10%	PC	Light	1	NW	PSO 4	NONE	HSEA	1	LO/RE	3,090m	N	DE	
7-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	0-10%	PC	Light	1	NW	PSO 4	NONE	STSL	3	MI	3,000m	N	SD	
7-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	0-10%	PC	Light	1	NW	PSO 4	Drill	HAPO	10	TR (S)	2,500m	Y	SD	
7-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	0-10%	PC	Light	1	NW	PSO 4	NONE	HSEA	1	MI	3,050m	N	SD	Already SD for HAPO
8-Apr	830	1745	Drill	48-inch	Permanent	1	Poor-Good	0%	L/R	Light-Moderate	1-2	SE	PSO 1	NONE	HSEA	1	LO	600m	N	DE	
8-Apr	830	1745	Drill	48-inch	Permanent	1	Poor-Good	0%	L/R	Light-Heavy	1-3	SE	PSO 2	NO SIGHTINGS							
8-Apr	830	1745	Drill	48-inch	Permanent	1	Poor-Good	0%	L/R	Light-Heavy	1-3	SE	PSO 3	NO SIGHTINGS							
8-Apr	830	1745	Drill	48-inch	Permanent	1	Moderate	0%	R/SN/HR	Light-Moderate	3-4	SE	PSO 4	NONE	HSEA	1	LO	2,900m	N	SD	
9-Apr	1330	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	0	SE	PSO 1	NONE	HSEA	1	LO	600m	N	SD	
9-Apr	1330	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 2	Drill	STSL	1	TR	2,400m	N	NONE	Outside Zone
9-Apr	1330	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE	PSO 3	NO SIGHTINGS							
9-Apr	1330	2000	Drill	48-inch	Permanent	1	Excellent	0-10%	S	Light	1-2	NE	PSO 4	Drill	UNK Cetacean	1	SW (N)	2,000m	Y	SD	Identified by blow; could not make an ID
10-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	SE/NE	PSO 1	NO SIGHTINGS							
10-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	NE	PSO 2	Drill	STSL	1	TR (SW)	1,128m	N	NONE	Outside Zone
10-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	NE	PSO 3	NO SIGHTINGS							
10-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent	0-10%	S	Light	2	NE/NW	PSO 4	Drill	HSEA	1	SP	3,000m	Y	SD	
10-Apr	830	2000	Drill	48-inch	Permanent	1	Excellent						PSO 4	Drill	STSL	1	TR (N)	3,000m	Y	SD	
23-Apr	1130	1630	Vibratory Hammer	30-inch	Temporary	3	Excellent	0%	L/OC	Light	0-1	SE	PSO 1	NONE	HSEA	1	LO	800m	N	SD	
23-Apr	1130	1630	Vibratory Hammer	30-inch	Temporary	3	Excellent	0%	L/OC	Light	0-1	SE	PSO 1	NONE	HSEA	1	SW	400m	N	SD	
23-Apr	1130	1630	Vibratory Hammer	30-inch	Temporary	3	Good-Excellent	0-10%	L/OC	Light	1	SE	PSO 2	NO SIGHTINGS							
23-Apr	1130	1630	Vibratory Hammer	30-inch	Temporary	3	Good-Excellent	0-10%	L/OC	Light	1	SE	PSO 3	NO SIGHTINGS							
23-Apr	1130	1630	Vibratory Hammer	30-inch	Temporary	3	Good	0%	L	Light	2-3	SE	PSO 4	NONE	HPBK	1	DI/SW (NE)	2,000m-2,500m	N	SD	
23-Apr	1130	1630	Vibratory Hammer	30-inch	Temporary	3	Good	0%	L	Light	2-3	SE	PSO 4	NONE	STSL	1	SW/TR (N)	3,000m	N	SD	
23-Apr	1130	1630	Vibratory Hammer	30-inch	Temporary	3	Good	0%	L	Light	2-3	SE	PSO 4	NONE	STSL	1	SW/TR (N)	3,050m	N	SD	
24-Apr	730	1330	Drill	30-inch	Temporary	3	Good-Excellent	0%	PC/L	Light	0-1	SE	PSO 1	NONE	HSEA	1	LO	300m	N	SD	
24-Apr	730	1330	Drill	30-inch	Temporary	3	Good	0-10%	PC/L	Light	1	SE	PSO 2	NONE	HSEA	1	LO	1,200m	N	NONE	Outside Zone
24-Apr	730	1330	Drill	30-inch	Temporary	3	Good	0-10%	PC/L	Light	1	SE	PSO 2	NONE	HSEA	1	TR (n)	1,000m	N	SD	
24-Apr	730	1330	Drill	30-inch	Temporary	3	Good-Excellent	10%	PC/L	Light	0-1	SE	PSO 3	NONE	HPBK	1	TR (s)	2,143m	N	SD	Same as PSO 2 and 4
24-Apr	730	1330	Drill	30-inch	Temporary	3	Good	0-10%	PC/L	Light	1	SE	PSO 4	NONE	HSEA	1	SI/LO	3,094m	N	SD	
24-Apr	730	1330	Drill	30-inch	Temporary	3	Good	0-10%	PC/L	Light	1	SE	PSO 4	NONE	HPBK	1	SW/DI/TR (S)	12,000m	N	SD	
4-May	1130	2000	Drill	30-inch	Temporary	3	Excellent	10%	S	Light	1	SE	PSO 1	NO SIGHTINGS							
4-May	1130	2000	Drill	30-inch	Temporary	3	Excellent	10%	S	Moderate	1	S	PSO 2	NO SIGHTINGS							
4-May	1130	2000	Drill	30-inch	Temporary	3	Excellent	10%	S	Moderate	1	S	PSO 3	None	HSEA	1	LO	1,300m	N	None	Outside Zone
4-May	1130	2000	Drill	30-inch	Temporary	3	Excellent	0-10%	S/PC	Light	2-4	SE/NE	PSO 4	None	HSEA	1	LO/SP/SI	3,000m	N	SD	
5-May	1300	1840	Drill	30-inch	Temporary	3	Excellent	10%	PC	Light	0-1	S	PSO 1	None	HSEA	2	MI	400m	N	SD	
5-May	1300	1840	Drill	30-inch	Temporary	3	Excellent	10%	S/PC	Light	0-1	S	PSO 2	None	HSEA	1	SW	1,000m	N	SD	
5-May	1300	1840	Drill	30-inch	Temporary	3	Excellent	10%	S/PC	Light	1	S	PSO 3	NO SIGHTINGS							
5-May	1300	1840	Drill	30-inch	Temporary	3	Excellent	0%	PC/L	Light	1-2	SE	PSO 4	None	HSEA	1	SP	3,000m	N	SD	
5-May	1300	1840	Drill	30-inch	Temporary	3	Excellent	0%	PC/L	Light	1-2	SE	PSO 4	None	HPBK	2	MI	9,000m	N	NONE	Outside Zone
8-May	1230	2010	Impact Hammer	36-inch	Permanent	4	Excellent	10%	S	Light	0	S	PSO 1	None	HSEA	2	LO	700m	N	SD	Very calm day
8-May	1230	2010	Impact Hammer	36-inch	Permanent	4	Excellent	10%	S	Light	0-1	S	PSO 2	None	HSEA	2	TR	1,400m	N	None	Adult and Juvenile
8-May	1230	2010	Impact Hammer	36-inch	Permanent	4	Excellent	10%	S	Light	1	S	PSO 3	NO SIGHTINGS							
8-May	1230	2010	Impact Hammer	36-inch	Permanent	4	Excellent	0%	S	Light	1	NE	PSO 4	None	HSEA	1	SP	2,900m	N	DE	
8-May	1230	2010	Impact Hammer	36-inch	Permanent	4	Excellent	0%	S	Light	1	NE	PSO 4	None	HSEA	1	SP/LO/SI	3,000m	N	None	Outside of Zone
8-May	1230	2010	Impact Hammer	36-inch	Permanent	4	Excellent	0%	S	Light	1	NE	PSO 4	Impact Hammer	HSEA	1	MI	3,000m	Y	SD	Resighted just as impact hammer started-SD
8-May	1230	2010	Impact Hammer	36-inch	Permanent	4	Excellent	0%	S	Light	1	NE	PSO 4	None	HSEA	1	MI	3,000m	N	DE	
9-May	1100	1715	Impact Hammer	36-inch	Permanent	4	Excellent	10%	S	Light	0-1	SE	PSO 1	None	HSEA	2	MI	700m	N	SD	
9-May	1100	1715	Impact Hammer	36-inch	Permanent	4	Excellent	10%	S	Light	1-2	SE	PSO 2	None	HSEA	1	SW/LO	1,300m	N	None	Outside Zone
9-May	1100	1715	Impact Hammer	36-inch	Permanent	4	Excellent	10%	S	Light	1-2	SE	PSO 2	None	HSEA	1	LO	1,100m	N	DE	Dove when sighted PSO and moved out of zone
9-May	1100	1715	Impact Hammer	36-inch	Permanent	4	Excellent	10%	S	Light	1-2	SE	PSO 2	None	HSEA	1	LO/SW	1,300m	N	DE	Outside Zone
9-May	1100	1715	Impact Hammer	36-inch	Permanent	4	Excellent	10%	S	Light	1	SE	PSO 3	NO SIGHTINGS							
9-May	1100	1715	Impact Hammer	36-inch	Permanent	4	Excellent	0%	S/PC	Light	1-2	NE/SE	PSO 4	None	HSEA	1	LO/SP/SI	3,000m	N	SD	
11-May	930	1630	Drill	36-inch	Permanent	2	Excellent	10%	S	Light	0-1	E/NE	PSO 1	None	HSEA	2	MI	700m	N	DE	
11-May	930	1630	Drill	36-inch	Permanent	2	Excellent	10%	S	Light	0-1	SE	PSO 2	Drill	HSEA	1	SW	1,300m	N	None	Outside Zone
11-May	930	1630	Drill	36-inch	Permanent	2	Excellent	10%	S	Light	1	SE	PSO 3	NO SIGHTINGS							
11-May	930	1630	Drill	36-inch	Permanent	2	Excellent	15%	S	Light	1	N	PSO 4	None	HSEA	1	LO/SI	3,000m	N	DE	
11-May	930	1630	Drill	36-inch	Permanent	2	Excellent	15%	S	Light	1	N	PSO 4	Drill	HSEA	1	FO/SW/TR (N)	3,050m	Y	SD	Fish in mouth
11-May	930	1630	Drill	36-inch	Permanent	2	Excellent	15%	S	Light	1	N	PSO 4	Drill	HSEA	1	SW (S)	3,000m	Y	None	
13-May	730	1732	Drill	36-inch	Permanent	2	Excellent	10%	S	Light-Moderate	1-2	S	PSO 1	NO SIGHTINGS							
13-May	730	1732	Drill	36-inch	Permanent	2	Good	10%	S	Moderate	2-3	S	PSO 2	NO SIGHTINGS							
13-May	730	1732	Drill	36-inch	Permanent	2	Excellent	10%	S	Moderate	2	S	PSO 3	NO SIGHTINGS							
13-May	730	1735	Drill	36-inch	Permanent	2	Good-Excellent	0-20%	PC/F	Light	2	SE	PSO 4	Drill	HPBK	5	FO/TR (S)/MI	2,500-6,000m	N	SD	Outside Zone-SD was precautionary
13-May	730	1735	Drill	36-inch	Permanent	2	Good-Excellent	0-20%	PC/F	Light	2	SE	PSO 4	None	HSEA	1	LO/SP	3,000m	N	NONE	
14-May	830	1800	Drill	36-inch	Permanent	2	Excellent	10%	PC	Light	1	S	PSO 1	NO SIGHTINGS							
14-May	830	1800	Drill	36-inch	Permanent	2	Excellent	10%	PC	Light	1	S	PSO 2	NO SIGHTINGS							
14-May	830	1800	Drill	36-inch	Permanent	2	Excellent	10%	PC	Light	1	S	PSO 3	None	HSEA	1	MI	2,100m	N	None	Outside Zone
14-May	830	1800	Drill	36-inch	Permanent	2	Excellent	0%	PC	Light	2	S/SW	PSO 4	None	DAPO	5	TR (E)	6,000m	N	None	Loose estimate of # of DAPO
17-May	730	1730	Impact Hammer and Drill	36-inch	Permanent	3	Excellent	10%	S	Light	0-1	S	PSO 1	None	HSEA	2	MI	1,000m	N	None	
17-May	730	1730	Impact Hammer and Drill	36-inch	Permanent	3	Excellent	10%	S	Light-Moderate	1-2	S	PSO 2	NO SIGHTINGS							
17-May	730	1730	Impact Hammer and Drill	36-inch	Permanent	3	Excellent	10%	S	Light	1	S	PSO 3	NO SIGHTINGS							
17-May	730	1730	Impact Hammer and Drill	36-inch	Permanent	3	Excellent	0-10%	S/PC	Light	1-3	SE	PSO 4	None	HPBK	1	TR (W)	10,000m	N	None	
17-May	730	1730	Impact Hammer and Drill	36-inch	Permanent	3	Excellent	0-10%	S/PC	Light	1-3	SE	PSO 4	None	HSEA	1	LO/MI/SI	3,000m	N	None	
18-May	1430	1820	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	0	N	PSO 1	NO SIGHTINGS							
18-May	1430	1820	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	1	N	PSO 2	NO SIGHTINGS							
18-May	1430	1820	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	1	N	PSO 3	NO SIGHTINGS							
18-May	1430	1820	Drill	36-inch	Permanent	1	Excellent	0%	S	Light	1	N	PSO 4	NO SIGHTINGS							
19-May	730	1820	Drill	36-inch	Permanent	2	Good	0%	L	Light	0-1	S	PSO 1	NO SIGHTINGS							
19-May	730	1820	Drill	36-inch	Permanent	2	Moderate-Good	0%	L	Moderate	1	S	PSO 2	NO SIGHTINGS							
19-May	730	1820	Drill	36-inch	Permanent	2	Moderate-Good	0%	L	Light-Moderate	1	S	PSO 3	NO SIGHTINGS							
19-May	730	1820	Drill	36-inch	Permanent	2	Poor-Good	0%	L/R/F	Light	2-3	SE	PSO 4	Drill	HPBK	1	MI/TR (N)	1,500m-3,000m	N	SD	Outside Zone
19-May	730	1820	Drill	36-inch	Permanent	2	Poor-Good	0%	L/R/F	Light	2-3	SE	PSO 4	Drill	HSEA	1	MI	3,000m	Y	None	
19-May	730	1820	Drill	36-inch	Permanent	2	Poor-Good	0%	L/R/F	Light	2-3	SE	PSO 4	Drill	HPBK	3	BR/SW (S)	5,000m	N	None	Outside Zone
19-May	730	1820	Drill	36-inch	Permanent	2	Poor-Good	0%	L/R/F	Light	2-3	SE	PSO 4	None	HPBK	2	MI/DI/TR (S)	3,000m	N	SD	Outside Zone-travelled through action area to the south.
19-May	730	1820	Drill	36-inch	Permanent	2	Poor-Good	0%	L/R/F	Light	2-3	SE	PSO 4	None	HPBK	2	DI/MI/TR (S)	2,800m	N	SD	
25-May	1030	1800	Drill	30-inch	Temporary	1	Good-Excellent	0%	L/OC	Light	0-1	SW	PSO 1	NO SIGHTINGS							
25-May	1030	1800	Drill	30-inch	Temporary	1	Good-Excellent	0-10%	PC/L	Light	0-1	SW	PSO 2	None	HSEA	1	LO	2,300m	N	None	Outside Zone
25-May	1030	1800	Drill	30-inch	Temporary	1	Good-Excellent	0-10%	PC/L	Light	1	SW	PSO 3	NO SIGHTINGS							
25-May	1030	1800	Drill	30-inch	Temporary	1	Good-Excellent	0%	PC/L	Light	1-3	SE	PSO 4	None	HSEA	1	MI	3,000m	N	None	
25-May	1030	1800	Drill	30-inch	Temporary	1	Good-Excellent	0%	PC/L	Light	1-3	SE	PSO 4	None	HSEA	1	MI/LO/SI	3,000m	N	None	
25-May	1030	1800	Drill	30-inch	Temporary	1	Good-Excellent	0%	PC/L	Light	1-3	SE	PSO 4	None	HPBK	1	TR (N)	3,000m-5,000m	N	SD	Outside Zone
26-May	730	1410	Drill	30-inch	Temporary	3	Excellent	10%	PC	Light	0	N	PSO 1	None	HSEA	1	MI	700m	N	None	
26-May	730	1410	Drill	30-inch	Temporary	3	Excellent	10%	PC	Light	0	N	PSO 1	None	HSEA	1	LO	400m	N	None	
26-May	730	1410	Drill	30-inch	Temporary	3	Excellent	10%	PC	Light-Moderate	1	NW	PSO 2	None	HPBK	1	TR (N)/MI	2,100m-2,200m	N	DE/SD	Outside Zone. Crew advised to wait till clear.
26-May	730	1410	Drill	30-inch	Temporary	3	Excellent	10%	PC	Light	1	NW	PSO 3	NO SIGHTINGS							
26-May	730	1410	Drill	30-inch	Temporary	3	Excellent	0-15%	PC	Light	1	NE	PSO 4	None	HPBK	1	TR (N)	2,800m	N	DE/SD	Appraoched zone. Crew advised to wait till clear.
31-May	930	1300	Impact Hammer	36-inch	Permanent	6	Good	0%	R	Light	1	S	PSO 1	NO SIGHTINGS							NONE
31-May	930	1300	Impact Hammer	36-inch	Permanent	6	Good	10%	R	Light	1	SE	PSO 2	NO SIGHTINGS							

Date	Start Time	End Time	Construction Type	Pile Size	Pile Type	# of Pile	Visibility	Glare	Weather	Wave Height	BSS	Wind/Swell Direction	Monitoring Location	Construction at Time of Sighting	Species	Group Size	Behavior	Distance from Work	Take?	Mitigation	Notes
31-May	930	1300	Impact Hammer	36-inch	Permanent	6	Good	10%	R	Light	1	SE	PSO 3	NO SIGHTINGS							
31-May	930	1300	Impact Hammer	36-inch	Permanent	6	Excellent	0%	PC/L	Light	2	SE	PSO 4	Impact Hammer	HSEA	1	MI	3,000m	Y	NONE	Outside Zone
31-May	930	1300	Impact Hammer	36-inch	Permanent	6	Excellent	0%	PC/L	Light	2	SE	PSO 4	None	STSL	1	TR (S)	2,400m	N	NONE	
3-Jun	830	1900	Drill	36-inch	Permanent	2	Excellent	10%	PC	Light	0-1	S	PSO 1	NONE	HSEA	1	LO	500m	N	NONE	
3-Jun	830	1900	Drill	36-inch	Permanent	2	Excellent	10%	PC	Light	1	S	PSO 2	Drill	HSEA	2	LO	1,000m-1,100m	Y	NONE	Adult and Juvenile
3-Jun	830	1900	Drill	36-inch	Permanent	2	Excellent	10%	PC	Light	1	S	PSO 3	NO SIGHTINGS							
3-Jun	830	1900	Drill	36-inch	Permanent	2	Excellent	0-10%	PC	Light	2-3	SE	PSO 4	NO SIGHTINGS							
5-Jun	900	1700	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	0-1	N/S	PSO 1	NO SIGHTINGS							
5-Jun	900	1700	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	0-1	N/S	PSO 2	Drill	HSEA	1	LO	1,100m	Y	NONE	
5-Jun	900	1700	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	0-1	N/S	PSO 2	NONE	HSEA	1	LO	1,100m	N	NONE	
5-Jun	900	1700	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	0-1	N/S	PSO 2	NONE	STSL	1	TR (W)	1,000m	N	NONE	
5-Jun	900	1700	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	0-1	N/S	PSO 3	NO SIGHTINGS							
5-Jun	900	1700	Drill	36-inch	Permanent	1	Excellent	0%	PC	Light	1-2	N/S	PSO 4	NONE	STSL	1	TR (S)	1,500m	N	NONE	
5-Jun	900	1700	Drill	36-inch	Permanent	1	Excellent	0%	PC	Light	1-2	N/S	PSO 4	Drill	HSEA	1	MI	2,800m	Y	NONE	
5-Jun	900	1700	Drill	36-inch	Permanent	1	Excellent	0%	PC	Light	1-2	N/S	PSO 4	Drill	HSEA	1	MI	3,000m	Y	NONE	
6-Jun	900;1500	1300;1700	Drill	36-inch	Permanent	1	Excellent	10%	S/PC	Light	0	N/S	PSO 1	NO SIGHTINGS							
6-Jun	900;1500	1300;1700	Drill	36-inch	Permanent	1	Excellent	10%	S/PC	Light	1	N/S	PSO 2	Drill	HSEA	1	MI	1,100m	Y	NONE	
6-Jun	900;1500	1300;1700	Drill	36-inch	Permanent	1	Excellent	10%	S/PC	Light-Moderate	1	N/S	PSO 3	NO SIGHTINGS						NONE	
6-Jun	900;1500	1300;1700	Drill	36-inch	Permanent	1	Excellent	0%	S/PC	Light-Moderate	1-2	N/S	PSO 4	Drill	HSEA	1	MI	3,000m	Y	NONE	
8-Jun	900	1630	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	0-1	S	PSO 1	NO SIGHTINGS							
8-Jun	900	1630	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	1-2	S	PSO 2	Drill	HSEA	1	MI/LO	1,100m	Y	NONE	
8-Jun	900	1630	Drill	36-inch	Permanent	1	Excellent	10%	S	Light	1	S	PSO 3	NONE	HPBK	1	TR (S)	2,200m	N	NONE	
8-Jun	900	1630	Drill	36-inch	Permanent	1	Excellent	0-10%	S	Light	2-3	SE	PSO 4	NONE	HPBK	1	MI/TR (N)	3,000m-5,000m	N	DE/SD	Sighted outside zone and travelled through zone.
9-Jun	1130	1515	Drill	36-inch	Permanent	1	Good-Excellent	0%	L/R	Light	0-1	SE	PSO 1	NO SIGHTINGS							
9-Jun	1130	1515	Drill	36-inch	Permanent	1	Moderate-Excellent	0%	L/R	Light	1-2	S	PSO 2	NO SIGHTINGS							
9-Jun	1130	1515	Drill	36-inch	Permanent	1	Moderate-Excellent	0%	L/R	Light-Moderate	1-2	S	PSO 3	Drill	HSEA	1	MI	2,100m	Y	NONE	
9-Jun	1130	1515	Drill	36-inch	Permanent	1	Moderate-Excellent	0%	L/R	Light	1-2	SE	PSO 4	Drill	HSEA	1	MI	3,000m	Y	NONE	
9-Jun	1130	1515	Drill	36-inch	Permanent	1	Moderate-Excellent	0%	L/R	Light	1-2	SE	PSO 4	Drill	HSEA	1	MI	3,000m	Y	NONE	
12-Jun	1000;1400	1100;1945	Impact Hammer and Drill	36-inch	Permanent	1	Excellent	10%	PC	Light	0	NW	PSO 1	NO SIGHTINGS							
12-Jun	1000;1400	1100;1945	Impact Hammer and Drill	36-inch	Permanent	1	Excellent	10%	PC	Light	0-1	NW	PSO 2	NO SIGHTINGS						NONE	
12-Jun	1000;1400	1100;1945	Impact Hammer and Drill	36-inch	Permanent	1	Excellent	10%	PC	Light	0-1	NW	PSO 3	Drill	STSL	1	TR (E)	1,100m	Y	NONE	
12-Jun	1000;1400	1100;1945	Impact Hammer and Drill	36-inch	Permanent	1	Excellent	0%	PC	Light	2	NW	PSO 4	NONE	HSEA	1	MI	3,000m	N	NONE	
12-Jun	1000;1400	1100;1945	Impact Hammer and Drill	36-inch	Permanent	1	Excellent	0%	PC	Light	2	NW	PSO 4	NONE	HPBK	1	DI	8,000m	N	NONE	
12-Jun	1000;1400	1100;1945	Impact Hammer and Drill	36-inch	Permanent	1	Excellent	0%	PC	Light	2	NW	PSO 4	NONE	HSEA	1	MI	3,000m	N	NONE	
12-Jun	1000;1400	1100;1945	Impact Hammer and Drill	36-inch	Permanent	1	Excellent	0%	PC	Light	2	NW	PSO 4	NONE	HSEA	1	MI	3,000m	N	NONE	
13-Jun	1400	1845	Impact Hammer and Drill	36-inch	Permanent	1	Good	0%	L/R	Light	0	NW	PSO 1	NO SIGHTINGS							
13-Jun	1400	1845	Impact Hammer and Drill	36-inch	Permanent	1	Good	0%	PC/L	Light	1	NW	PSO 2	Drill	HSEA	1	TR (W)	1,100m	Y	NONE	
13-Jun	1400	1845	Impact Hammer and Drill	36-inch	Permanent	1	Good	0%	L/R	Light	1	NW	PSO 3	NO SIGHTINGS							
13-Jun	1400	1845	Impact Hammer and Drill	36-inch	Permanent	1	Good	0%	L	Light	1	NW	PSO 4	NO SIGHTINGS							
17-Jun	1130	1522	Impact Hammer	48-inch	Permanent	2	Excellent	0%	PC	Light	0-1	SE	PSO 1	NO SIGHTINGS							
17-Jun	1130	1522	Impact Hammer	48-inch	Permanent	2	Excellent	0%	PC	Light	1	SE	PSO 2	NO SIGHTINGS							
17-Jun	1130	1522	Impact Hammer	48-inch	Permanent	2	Excellent	0%	PC	Light	1	SE	PSO 3	NO SIGHTINGS						NONE	
17-Jun	1130	1522	Impact Hammer	48-inch	Permanent	2	Excellent	0%	PC	Light	2	SE	PSO 4	NO SIGHTINGS							
19-Jun	1500	2050	Drill	48-inch	Permanent	1	Poor-Moderate	0%	R	Light	1	S	PSO 1	NO SIGHTINGS						NONE	
19-Jun	1500	2050	Drill	48-inch	Permanent	1	Poor-Moderate	0%	R	Light-Moderate	1-2	S	PSO 2	NO SIGHTINGS							
19-Jun	1500	2050	Drill	48-inch	Permanent	1	Poor-Moderate	0%	R	Moderate	1-2	S	PSO 3	NO SIGHTINGS							
19-Jun	1500	2050	Drill	48-inch	Permanent	1	Poor-Moderate	0%	R/F	Light-Moderate	2	SE	PSO 4	NONE	HSEA	1	MI	2,500m	N	NONE	
20-Jun	1415	1840	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	0	NONE	PSO 1	NO SIGHTINGS							
20-Jun	1415	1840	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	NE	PSO 2	NONE	HSEA	1	LO	1,100m	N	NONE	
20-Jun	1415	1840	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	NE	PSO 3	NO SIGHTINGS							
20-Jun	1415	1840	Drill	48-inch	Permanent	1	Excellent	0%	PC	Light	1	NE	PSO 4	Drill	HPBK	1	SW (E)/TR (N)	5,000m-7,000m	N	SD	Outside Zone-SD was precautionary. Drilling resumed and HPBK never entered zone.
28-Jun	900	1215	Impact Hammer	48-inch	Permanent	1	Excellent	0%	S	Light	0	N	PSO 1	NO SIGHTINGS							
28-Jun	900	1215	Impact Hammer	48-inch	Permanent	1	Excellent	10%	S	Light	1	N	PSO 2	NO SIGHTINGS							
28-Jun	900	1215	Impact Hammer	48-inch	Permanent	1	Excellent	10%	S	Light	1	N	PSO 3	NO SIGHTINGS							
28-Jun	900	1215	Impact Hammer	48-inch	Permanent	1	Excellent	10%	S	Light	1	N	PSO 4	NO SIGHTINGS							
29-Jun	1330	1530	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	0	NONE	PSO 1	NO SIGHTINGS							
29-Jun	1330	1530	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	S	PSO 2	NO SIGHTINGS							
29-Jun	1330	1530	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	S	PSO 3	NO SIGHTINGS							
29-Jun	1330	1530	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	S	PSO 4	NO SIGHTINGS							
1-Jul	1645	1850	Impact Hammer	48-inch	Permanent	1	Excellent	10%	PC	Light	0	NONE	PSO 1	NO SIGHTINGS							
1-Jul	1645	1850	Impact Hammer	48-inch	Permanent	1	Excellent	0%	PC	Light	1	N	PSO 2	NO SIGHTINGS							
1-Jul	1645	1850	Impact Hammer	48-inch	Permanent	1	Excellent	10%	PC	Light	1	N	PSO 3	NO SIGHTINGS							
1-Jul	1645	1850	Impact Hammer	48-inch	Permanent	1	Excellent	0%	PC	Light	2	N	PSO 4	NONE	HSEA	1	MI	3,000m	N	NONE	
9-Jul	1300	1605	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	S	PSO 1	NO SIGHTINGS							
9-Jul	1300	1605	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	S	PSO 2	NO SIGHTINGS							
9-Jul	1300	1605	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	S	PSO 3	NO SIGHTINGS							
9-Jul	1300	1605	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	S	PSO 4	NO SIGHTINGS							
11-Jul	1030	1450	Drill	48-inch	Permanent	1	Good	0%	L	Light	1	SE	PSO 1	NO SIGHTINGS							
11-Jul	1030	1450	Drill	48-inch	Permanent	1	Good	0%	L	Moderate	1	SE	PSO 2	NO SIGHTINGS							
11-Jul	1030	1450	Drill	48-inch	Permanent	1	Good	0%	L	Moderate	1	SE	PSO 3	NO SIGHTINGS							
11-Jul	1030	1450	Drill	48-inch	Permanent	1	Good	0%	PC	Light	2	SE	PSO 4	Drill	STSL	1	MI	5,000m	N	NONE	Outside Zone
13-Jul	1530	1815	Impact Hammer	48-inch	Permanent	1	Excellent	0%	PC	Light	0	S	PSO 1	NO SIGHTINGS							
13-Jul	1530	1815	Impact Hammer	48-inch	Permanent	1	Excellent	0%	PC	Light	1	S	PSO 2	NO SIGHTINGS							
13-Jul	1530	1815	Impact Hammer	48-inch	Permanent	1	Excellent	0%	PC	Light	1	S	PSO 3	NO SIGHTINGS							
13-Jul	1530	1815	Impact Hammer	48-inch	Permanent	1	Excellent	0%	PC	Light	1	S	PSO 4	NO SIGHTINGS							
14-Jul	1600	2130	Drill	48-inch	Permanent	1	Poor-Excellent	0%	PC/L/F	Light	0-1	SE	PSO 1	NO SIGHTINGS							
14-Jul	1600	2130	Drill	48-inch	Permanent	1	Poor-Good	0%	PC/L/F	Light	1-2	SE	PSO 2	NO SIGHTINGS							
14-Jul	1600	2130	Drill	48-inch	Permanent	1	Poor-Good	0%	PC/L/F	Light	2	SE	PSO 3	NO SIGHTINGS							
14-Jul	1600	2130	Drill	48-inch	Permanent	1	Poor-Excellent	0%	PC/F	Light	2	SE	PSO 4	NONE	HPBK	1	MI	3,200m	N	DE/SD	
14-Jul	1600	2130	Drill	48-inch	Permanent	1	Poor-Excellent	0%	PC/F	Light	2	SE	PSO 4	NONE	HSEA	1	MI	3,000m	N	NONE	
14-Jul	1600	2130	Drill	48-inch	Permanent	1	Poor-Excellent	0%	PC/F	Light	2	SE	PSO 4	NONE	HSEA	1	MI	3,200m	N	NONE	
14-Jul	1600	2130	Drill	48-inch	Permanent	1	Poor-Excellent	0%	PC/F	Light	2	SE	PSO 4	NONE	HPBK	1	MI	3,000m	N	DE/SD	
15-Jul	930	1600	Drill	48-inch	Permanent	1	Moderate-Good	0%	L/F	Light	1	S	PSO 1	NO SIGHTINGS							
15-Jul	930	1600	Drill	48-inch	Permanent	1	Moderate	0%	R/F	Light-Moderate	2-3	SE	PSO 2	NO SIGHTINGS							
15-Jul	930	1600	Drill	48-inch	Permanent	1	Poor-Moderate	0%	L/R	Moderate	2-3	S	PSO 3	NO SIGHTINGS							
15-Jul	930	1600	Drill	48-inch	Permanent	1	Poor-Good	0%	R/F/HR	Moderate	3	SE	PSO 4	NONE	STSL	2	MI	3,000m	N	NONE	
15-Jul	930	1600	Drill	48-inch	Permanent	1	Poor-Good	0%	R/F/HR	Moderate	3	SE	PSO 4	Drill	STSL	1	TR (N)	3,000m	Y	NONE	
15-Jul	930	1600	Drill	48-inch	Permanent	1	Poor-Good	0%	R/F/HR	Moderate	3	SE	PSO 4	Drill	STSL	1	MI	3,000m	Y	NONE	
20-Jul	1100; 1345	1245; 1945	Vibratory Hammer and Drill	30-inch	Temporary	2	Moderate-Good	0%	L/F	Light	0	SE	PSO 1	NO SIGHTINGS							
20-Jul	1100; 1345	1245; 1945	Vibratory Hammer and Drill	30-inch	Temporary	2	Poor-Moderate	0%	PC/L/R/F	Light-Moderate	0-1	SE	PSO 2	NO SIGHTINGS							
20-Jul	1100; 1345	1245; 1945	Vibratory Hammer and Drill	30-inch	Temporary	2	Moderate	0%	L/F	Light-Moderate	1-2	SE	PSO 3	NO SIGHTINGS							
20-Jul	1100; 1345	1245; 1945	Vibratory Hammer and Drill	30-inch	Temporary	2	Moderate-Good	0%	L/F/HR	Light	2	SE	PSO 4	NONE	HPBK	1	SW (SW)	4,000m	N	DE/SD	Outside Zone-SD was precautionary
3-Aug	1000;1500	1400;1630	Drill	30-inch	Temporary	2	Good-Excellent	0-10%	PC/R	Light	0-1	SE	PSO 1	Drill	HSEA	1	FO/SW	600m	Y	NONE	
3-Aug	1000;1500	1400;1630	Drill	30-inch	Temporary	2	Good-Excellent	0-10%	PC/R	Light	1	SE	PSO 1	NONE	HSEA	1	SW/LO	700m	N	NONE	
3-Aug	1000;1500	1400;1630	Drill	30-inch	Temporary	2	Good-Excellent	0-10%	PC	Light	1	SE	PSO 2	NO SIGHTINGS							
3-Aug	1000;1500	1400;1630	Drill	30-inch	Temporary	2	Excellent	10%	PC	Light	1	SE	PSO 3	NO SIGHTINGS							
3-Aug	1000;1500	1400;1630	Drill	30-inch	Temporary	2	Excellent	10%	PC	Light	1	SE	PSO 4	NO SIGHTINGS							
6-Aug	1200	1430	Impact Hammer	48-inch	Permanent	4	Good-Excellent	10%	PC/L	Light	0-1	SE	PSO 1	NONE	HSEA	1	LO/MI	700m	N	NONE	
6-Aug	1200	1430	Impact Hammer	48-inch	Permanent	4	Excellent	10%	PC/L	Light	1	SE	PSO 2	NO SIGHTINGS							
6-Aug	1200	1430	Impact Hammer	48-inch	Permanent	4	Excellent	10%	PC/L	Light	0-1	SE	PSO 3	NONE	HSEA	1	MI	2,100m	N	NONE	
6-Aug	1200	1430	Impact Hammer	48-inch	Permanent	4	Good-Excellent	0-10%	PC/L	Light	1-2	SE	PSO 4	NO SIGHTINGS							
12-Aug	1400	1600	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	0	None	PSO 1	NO SIGHTINGS							
12-Aug	1400	1600	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	0	No wind/SE swell	PSO 2	NO SIGHTINGS							
12-Aug	1400	1600	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	0	No wind/SE swell	PSO 3	NO SIGHTINGS							
12-Aug	1400	1600	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	SE	PSO 4	NO SIGHTINGS							

Date	Start Time	End Time	Construction Type	Pile Size	Pile Type	# of Pile	Visibility	Glare	Weather	Wave Height	BSS	Wind/Swell Direction	Monitoring Location	Construction at Time of Sighting	Species	Group Size	Behavior	Distance from Work	Take?	Mitigation	Notes
13-Aug	0900; 1230	1130; 1600	Drill	48-inch	Permanent	2	Excellent	0-10%	PC/OC	Light	0-1	SE	PSO 1	Drill	HSEA	1	TR	800m	Y	NONE	Chasing Fish
13-Aug	0900; 1230	1130; 1600	Drill	48-inch	Permanent	2	Excellent	0-10%	PC/OC	Light	0-1	SE	PSO 2	NO SIGHTINGS							
13-Aug	0900; 1230	1130; 1600	Drill	48-inch	Permanent	2	Excellent	0-10%	PC/OC	Light	1	SE	PSO 3	Drill	HPBK	1	MI/TR	4,000m	N	DE/SD	Outside Zone-SD was precautionary
13-Aug	0900; 1230	1130; 1600	Drill	48-inch	Permanent	2	Excellent	0-10%	PC/OC	Light	1	SE	PSO 4	NO SIGHTINGS							
15-Aug	1200	2100	Vibratory Hammer and Drill	48-inch	Permanent	2	Moderate	0%	PC/L	Light	1	SE	PSO 1	NONE	HSEA	1	MI	800m	N	NONE	
15-Aug	1200	2100	Vibratory Hammer and Drill	48-inch	Permanent	2	Moderate-Good	0%	PC/L	Light	1	SE	PSO 2	NO SIGHTINGS							
15-Aug	1200	2100	Vibratory Hammer and Drill	48-inch	Permanent	2	Good	0%	PC/L	Light	1	SE	PSO 3	NONE	STSL	2	TR (S)	2,400m	N	NONE	Outside Zone
15-Aug	1200	2100	Vibratory Hammer and Drill	48-inch	Permanent	2	Moderate-Good	0%	PC/L	Light	1	SE	PSO 4	NO SIGHTINGS							
16-Aug	830	1000	Drill	48-inch	Permanent	1	Good	0%	L	Light	0	SE	PSO 1	NO SIGHTINGS							
16-Aug	830	1000	Drill	48-inch	Permanent	1	Good	0%	L	Light	1	SE	PSO 2	NO SIGHTINGS							
16-Aug	830	1000	Drill	48-inch	Permanent	1	Good	0%	L	Light	1	SE	PSO 3	NO SIGHTINGS							
16-Aug	830	1000	Drill	48-inch	Permanent	1	Good	0%	L	Light	1	SE	PSO 4	NO SIGHTINGS							
21-Aug	1400	1600	Vibratory Hammer (removal)	30-inch	Temporary	4	Excellent	10%	PC	Light	0	SE	PSO 1	NO SIGHTINGS							
21-Aug	1400	1600	Vibratory Hammer (removal)	30-inch	Temporary	4	Excellent	10%	PC	Light	0	SE	PSO 2	NO SIGHTINGS							
21-Aug	1400	1600	Vibratory Hammer (removal)	30-inch	Temporary	4	Excellent	10%	PC	Light	0	SE	PSO 3	NO SIGHTINGS							
21-Aug	1400	1600	Vibratory Hammer (removal)	30-inch	Temporary	4	Excellent	10%	PC	Light	1	SE	PSO 4	NO SIGHTINGS							
22-Aug	1700	1830	Drill	30-inch	Temporary	2	Moderate	0%	L	Light	0	SE	PSO 1	NO SIGHTINGS							
22-Aug	1700	1830	Drill	30-inch	Temporary	2	Moderate	0%	L	Light	1	SE	PSO 2	NO SIGHTINGS							
22-Aug	1700	1830	Drill	30-inch	Temporary	2	Moderate	0%	L	Light	1	SE	PSO 3	NO SIGHTINGS							
22-Aug	1700	1830	Drill	30-inch	Temporary	2	Poor	0%	L	Light	1	SE	PSO 4	NO SIGHTINGS							
23-Aug	930	1700	Drill	30-inch	Temporary	1	Good	0%	L	Light	0	SE	PSO 1	Drill	HSEA	1	LO	700m	Y	NONE	
23-Aug	930	1700	Drill	30-inch	Temporary	1	Good	0%	PC/L	Light	1	SE	PSO 2	NO SIGHTINGS							
23-Aug	930	1700	Drill	30-inch	Temporary	1	Good	0%	PC/L	Light	1	SE	PSO 3	NO SIGHTINGS							
23-Aug	930	1700	Drill	30-inch	Temporary	1	Good	0%	L	Light	1	SE	PSO 4	NO SIGHTINGS							
24-Aug	1300	1600	Drill	30-inch	Temporary	1	Excellent	10%	PC	Light	0	SE	PSO 1	NO SIGHTINGS							
24-Aug	1300	1600	Drill	30-inch	Temporary	1	Excellent	10%	PC	Light	1	SE	PSO 2	NONE	HSEA	1	LO	3,000m	N	NONE	Outside Zone
24-Aug	1300	1600	Drill	30-inch	Temporary	1	Excellent	10%	PC	Light	0	SE	PSO 3	NONE	STSL	1	SW/TR (N)	2,100m	N	NONE	
24-Aug	1300	1600		30-inch	Temporary	1	Excellent	10%	PC	Light	1	SE	PSO 4	NO SIGHTINGS							
25-Aug	830	1400	Drill	30-inch	Temporary	2	Moderate-Good	0%	L/R	Light	0	SE	PSO 1	NO SIGHTINGS							
25-Aug	830	1400	Drill	30-inch	Temporary	2	Moderate-Good	0%	L/R	Light	1	SE	PSO 2	NO SIGHTINGS							
25-Aug	830	1400	Drill	30-inch	Temporary	2	Moderate-Good	0%	L/R	Light	1	SE	PSO 3	NO SIGHTINGS							
25-Aug	830	1400	Drill	30-inch	Temporary	2	Moderate-Good	0%	L/R	Light	2	SE	PSO 4	NO SIGHTINGS							
29-Aug	1200	1800	Vibratory Hammer	48-inch	Permanent	4	Excellent	10%	PC	Light	0	SE	PSO 1	NONE	HSEA	1	MI	600m	N	NONE	
29-Aug	1200	1800	Vibratory Hammer	48-inch	Permanent	4	Excellent	10%	PC	Light	0	SE	PSO 2	NO SIGHTINGS							
29-Aug	1200	1800	Vibratory Hammer	48-inch	Permanent	4	Excellent	10%	PC	Light	0	SE	PSO 3	NO SIGHTINGS							
29-Aug	1200	1800	Vibratory Hammer	48-inch	Permanent	4	Excellent	10%	PC	Light	0	SE	PSO 4	NO SIGHTINGS							
30-Aug	1100	1545	Impact Hammer	48-inch	Permanent	4	Moderate-Good	0%	L/R	Light	1	SE	PSO 1	NONE	STSL	1	FO/TR	700m	N	NONE	Had a salmon and moving east towards creek
30-Aug	1100	1545	Impact Hammer	48-inch	Permanent	4	Moderate	0%	L/R	Light	1-2	SE	PSO 2	NO SIGHTINGS							
30-Aug	1100	1545	Impact Hammer	48-inch	Permanent	4	Moderate	0%	L/R	Light	1	SE	PSO 3	NO SIGHTINGS							
30-Aug	1100	1545	Impact Hammer	48-inch	Permanent	4	Moderate	0%	L/R		1-2	SE	PSO 4	NO SIGHTINGS							
31-Aug	1000	2030	Drill	48-inch	Permanent	1	Moderate-Excellent	0%	PC/L/R/OC	Light	0-1	SE	PSO 1	Drill	HSEA	1	MI	500m	Y	NONE	
31-Aug	1000	2030	Drill	48-inch	Permanent	1	Moderate-Excellent	0%	PC/L/R/OC	Light	0-1	SE	PSO 1	Drill	HSEA	1	MI/LO	600m	Y	NONE	
31-Aug	1000	2030	Drill	48-inch	Permanent	1	Moderate-Excellent	0%	PC/L/R/OC	Light	0-1	SE	PSO 1	Drill	HSEA	1	MI/LO	500m	Y	NONE	
31-Aug	1000	2030	Drill	48-inch	Permanent	1	Moderate-Excellent	0%	PC/L/R/OC	Light	0-1	SE	PSO 1	NONE	HSEA	1	MI/LO	500m	N	NONE	
31-Aug	1000	2030	Drill	48-inch	Permanent	1	Moderate-Excellent	0%	L/R/OC	Light	1-2	SE	PSO 2	NO SIGHTINGS							
31-Aug	1000	2030	Drill	48-inch	Permanent	1	Moderate-Excellent	0%	L/R/OC	Light	1-2	SE	PSO 3	Drill	STSL	1	TR (S)	2,100m	N	NONE	Outside Zone
31-Aug	1000	2030	Drill	48-inch	Permanent	1	Moderate-Excellent	0%	PC/L/R	Light	1-2	SE	PSO 4	Drill	STSL	1	TR (S)	2,400m	N	NONE	Outside Zone
1-Sep	1700	2000	Drill	48-inch	Permanent	1	Excellent	0%	OC	Light	0	SE	PSO 1	Drill	HSEA	1	FO	700m	Y	NONE	Had a salmon
1-Sep	1700	2000	Drill	48-inch	Permanent	1	Excellent	0%	OC	Light	1	SE	PSO 2	NO SIGHTINGS							
1-Sep	1700	2000	Drill	48-inch	Permanent	1	Excellent	0%	OC	Light	1	SE	PSO 3	NO SIGHTINGS							
1-Sep	1700	2000	Drill	48-inch	Permanent	1	Excellent	0%	OC	Light	1	SE	PSO 4	Drill	STSL	1	MI	2,400m	Y	NONE	
2-Sep	1000	1900	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	PC/L/OC	Light	0-1	SE	PSO 1	NONE	HSEA	2	MI	900m	N	NONE	Chasing salmon near creek
2-Sep	1000	1900	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	PC/L/OC	Light	0-1	SE	PSO 1	NONE	HSEA	1	MI/LO	500m	N	NONE	
2-Sep	1000	1900	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	PC/L/OC	Light	0-1	SE	PSO 1	Drill	HSEA	1	MI	500m	Y	NONE	
2-Sep	1000	1900	Drill	48-inch	Permanent	1	Excellent	10%	PC/OC	Light	1	SE	PSO 2	NO SIGHTINGS							
2-Sep	1000	1900	Drill	48-inch	Permanent	1	Good-Excellent	10%	L/OC	Light	1-2	SE	PSO 3	Drill	HSEA	1	LO	2,100m	N	NONE	Outside Zone
2-Sep	1000	1900	Drill	48-inch	Permanent	1	Excellent	10%	PC/OC	Light	1	SE	PSO 4	Drill	STSL	1	FO	2,600m	N	NONE	Outside Zone
2-Sep	1000	1900	Drill	48-inch	Permanent	1	Excellent	10%	PC/OC	Light	1	SE	PSO 4	Drill	STSL	3	TR (N)	2,800m	N	NONE	Outside Zone
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	L/OC	Light	0	SE	PSO 1	NONE	HSEA	1	MI	900m	N	NONE	
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	L/OC	Light	0	SE	PSO 1	Drill	HSEA	1	MI	800m	Y	NONE	
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	L/OC	Light	0	SE	PSO 1	NONE	HSEA	1	MI	700m	N	NONE	
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	L/OC	Light	0	SE	PSO 1	Drill	HSEA	1	LO	400m	Y	NONE	
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	L/OC	Light	0	SE	PSO 1	Drill	HSEA	1	LO	500m	Y	NONE	
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	10%	L	Light	1	SE	PSO 2	NONE	HPBK	1	FO	3,100m	N	SD	Outside Zone-SD was precautionary. Lunge Feeding.
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	L	Light	1	SE	PSO 3	NONE	HPBK	1	TR (S)	2,700m	N	DE/SD	
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	L	Light	1	SE	PSO 3	NONE	HPBK	1	FO/TR (S)	2,100m	N	DE/SD	
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	L	Light	1	SE	PSO 3	NONE	HSEA	1	SW (N)	2,100m	N	NONE	
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	0-10%	L	Light	1	SE	PSO 3	Drill	HSEA	1	TR (S)	2,400m	N	NONE	Outside Zone
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	10%	L/OC	Light	1	SE	PSO 4	Drill	STSL	1	TR (S)	2,700m	N	NONE	Outside Zone
4-Sep	900	2000	Drill	48-inch	Permanent	1	Good-Excellent	10%	L/OC	Light	2	SE	PSO 4	Drill	STSL	1	TR (N)	Not Available	N	NONE	Outside Zone
5-Sep	1330	1530	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	0	SE	PSO 1	NO SIGHTINGS							
5-Sep	1330	1530	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	SE	PSO 2	NO SIGHTINGS							
5-Sep	1330	1530	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	2	SE	PSO 3	NO SIGHTINGS							
5-Sep	1330	1530	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	SE	PSO 4	NO SIGHTINGS							
6-Sep	800	1730	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	0	SE	PSO 1	NONE	HSEA	1	MI/LO	700m	N	NONE	
6-Sep	800	1730	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	SE	PSO 2	NO SIGHTINGS							
6-Sep	800	1730	Drill	48-inch	Permanent	1	Excellent	10%	S/PC	Light	0-1	SE	PSO 3	NO SIGHTINGS							
6-Sep	800	1730	Drill	48-inch	Permanent	1	Excellent	10%	PC	Light	1	SE	PSO 4	Drill	STSL	1	MI	3,000m	Y	NONE	
7-Sep	1300	1630	Impact Hammer	48-inch	Permanent	1	Excellent	10%	S	Light	0	NW	PSO 1	NONE	HSEA	1	MI	500m	N	NONE	
7-Sep	1300	1630	Impact Hammer	48-inch	Permanent	1	Excellent	10%	S	Light	0	NW	PSO 1	NONE	STSL	1	TR (S)	600m	N	NONE	
7-Sep	1300	1630	Impact Hammer	48-inch	Permanent	1	Excellent	10%	S/PC	Light	1	NW	PSO 2	NO SIGHTINGS							
7-Sep	1300	1630	Impact Hammer	48-inch	Permanent	1	Excellent	10%	S/PC	Light	1	NW	PSO 3	NO SIGHTINGS							
7-Sep	1300	1630	Impact Hammer	48-inch	Permanent	1	Excellent	10%	S/PC	Light	1	NW	PSO 4	NO SIGHTINGS							
8-Sep	1200	1700	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	0	NW	PSO 1	NO SIGHTINGS							
8-Sep	1200	1700	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	NW	PSO 2	NO SIGHTINGS							
8-Sep	1200	1700	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	NW	PSO 3	NO SIGHTINGS							
8-Sep	1200	1700	Drill	48-inch	Permanent	1	Excellent	10%	S	Light	1	NW	PSO 4	NO SIGHTINGS							

Attachment C: Marine Mammal Observation Record Forms