

**O'Connell Bridge Lightering Float Pile Replacement
Project
Protected Species Final Report
June 2019**

Prepared For:

NMFS Protected Resources Division
P.O. Box 21668
709 West 9th Street
Juneau, AK 99802

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Attachments

- Attachment A: Marine Mammal Sighting Data**
- Attachment B: Marine Mammal Observation Record Forms**

Introduction

The City and Borough of Sitka (CBS) replaced six 16-inch diameter piles that support the existing lightering float on the east side of the O'Connell Bridge in Crescent Bay near Sitka, Alaska. The new piles were socketed deeper to better accommodate large vessels. Work began on June 9, 2019 and ended on June 12, 2019.

CBS was granted an Incidental Harassment Authorization (IHA) for the project by the National Marine Fisheries Service (NMFS) on May 23, 2019. The IHA is valid from June 1, 2019 to May 31, 2020. NMFS granted Level A and B harassment of a small number of humpback whales (*Megaptera novaeangliae*), minke whales (*Balaenoptera acutorostrata*), killer whales (*Orcinus orca*), harbor porpoises (*Phocoena phocoena*), Steller sea lions (*Eumetopias jubatus*), and harbor seals (*Phoca vitulina*) (Table 1). The 'takes' granted for this project were generated based upon stock assessments completed by NMFS, direct consultation with NMFS, and observations from previous projects completed in the area. Action areas specified in the IHA are based on consultation with NMFS, various literary sources, and the 2018 *Revision to Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing* (NMFS 2018, Denes *et al.* 2016, and Austin 2016). Mitigation included NMFS-approved Protected Species Observers (PSOs) monitoring the level A and level B take areas, recording species, and shutting down pile driving if the abovementioned species or any other marine mammal species approaches or appears likely to enter any designated shutdown areas.

Table 1. Authorized Takes of Marine Mammals

Species	Authorized Take	
	Level A	Level B
Humpback whale	0	15
Minke whale	0	3
Killer whale	0	24
Harbor Porpoise	0	15
Harbor seal	30	39
Steller sea lion	0	33

(Source: NMFS 2019)

This document's purpose is to meet the final monitoring and reporting requirements required by NMFS in the IHA issued to CBS under the authority of Section 101 (a)(5)(D) of the Marine Mammal Protection Act (MMPA). The following report details protected species monitoring and mitigation during in-water work throughout the entire project.

Project Overview and Location

The project was conducted in Sitka, Alaska within Crescent Bay at approximately Latitude 57.047558 and Longitude -135.338246 (Figure 1).

Figure 1. O'Connell Bridge Lightering Float Pile Replacement Location



Table 2. Level A and Level B Monitoring Zones

Noise Source	Shutdown Zones in meters ¹				
	Low-Frequency Cetaceans (humpback whale and minke whale)	Mid-Frequency Cetaceans (killer whale)	High-Frequency Cetaceans (harbor porpoise)	Phocid (harbor seal)	Otariid (sea lion)
In-Water Construction Activities ²					
Barge movements, pile positioning, deadpulling, sound attenuation placement ^{2,3}	10	10	10	10	10
Vibratory Pile Driving/Removal					
16-inch steel removal and installation	10	10	15	10	10
Socketing Pile Installation					
16-inch steel installation (6 piles) (6 hours per day on 2 days) (~15 minutes per day on 6 days)	55	10	75	10	10
Impact Pile Driving					
16-inch steel installation (6 piles) (~3 minutes on 1 day)	10	10	15	10	10

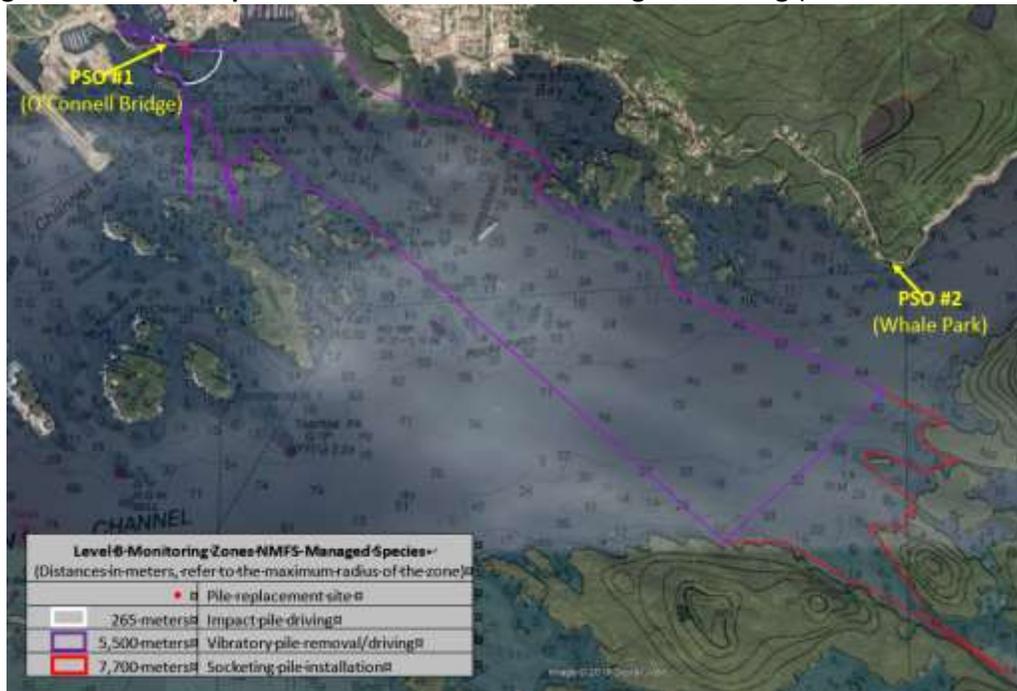
Monitoring and Mitigation Methods

The PSOs monitoring guidelines followed the mitigation measures detailed in the IHA granted by NMFS. The monitoring and mitigation protocols were established in order to minimize impacts to marine mammals in the vicinity of the dock replacement project. Visual observations allowed for the adherence of the shutdown areas and collection of data for use in future activities. All data collected by PSOs are located in Attachment A and Attachment B.

Visual Monitoring Methodology

Two on-site PSOs scanned for marine mammals, recorded and reported sightings, and implemented mitigation actions (shut downs) in accordance with the IHA throughout the project. A 30-minute watch prior to the start of and at the conclusion of any in-water work, soft start procedures, and a consistent watch during all in water work occurred. The PSOs were located with a clear view of the action areas (Figure 2). The second monitoring location was changed from Islander Drive (private property) to Whale Park (public park). Additionally, Whale Park provided a better view of Eastern Channel and the extended action area.

Figure 2. Protected Species Observers Locations During Monitoring (Source: NMFS 2019).



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.
- Environmental conditions (i.e. sea state, weather conditions, 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 were determined, when possible, 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 was being resighted. If an individual was resighted, a note was made on the sighting form to ensure that additional takes or sightings were not counted. If it could not be positively determined whether it was the same individual, the individual was counted as a new sighting and an additional take, if appropriate.

Results

Work Completed

A total of four days of in-water work occurred between June 9, 2019 and June 12, 2019. During that time six 16-inch existing steel pipe piles were removed using a vibratory hammer and the deadpull method. The removed piles were replaced by six 16-inch permanent steel pipe piles that were installed using a drill (socketing) and vibratory hammer (Table 2). Each of these methods require varying monitoring zones and Level A and Level B shutdown zones (Table 3).

Table 3. Summary of Pile Driving Activities in June 2019

Date	Pile Type	# of Piles	Removed/Installed	Method
9-June	16-inch	2	2 Removed	Deadpull removal
10-June	16-inch	6	4 removed 2 installed	Deadpull removal Vibratory Hammer and Drilling (socketing)
11-June	16-inch	3	3 installed	Vibratory Hammer and Drilling (socketing)
12-June	16-inch	1	1 installed	Vibratory Hammer and Drilling (socketing)

Environmental Conditions

Environmental conditions were recorded at the start of each monitoring period and when conditions changed. The sea state, visibility, glare, and weather conditions were generally the same, but could vary slightly between monitoring locations. Conditions were generally favorable throughout the duration of the project with visibility only being limited to approximately 3,800 meters on two days of in-water work in June. The table below provides a general overview of conditions during in-water work and a full log of conditions per day is located in Attachment A.

Table 4. Environmental Conditions Per Day

Date	Temperature		Visibility	Beaufort Sea State (range)	Average Wind Speed (mph)
	High	Low			
9-June	57	44	Good	2	4.2
10-June	57	51	Excellent	0	5.0
11-June	55	50	Moderate	1	10.6
12-June	56	50	Excellent	0	6.0

(source: NOAA 2019)

Monitoring and Detection Results

A summary of take is included below. Takes only occurred if the sighting happened during periods of pile driving. Two of the six requested species were sighted during the project. Due to the distances of marine mammals from the work no mitigation measures were taken (shutdowns, delays, etc.). A detailed log of sighting data per day is available in Attachment A and all observation forms are in Attachment B. The total number of sightings and Level B takes per species is in Table 5.

Table 5. Total Number of Sightings and Level B Takes per species During the O'Connell Lightering Float Replacement Project

Species	Total Number of Sightings	Number of Level B Takes	Extrapolated Level B Takes	Total Number of Level B Takes
Humpback Whale	0	0	0	
Minke Whale	0	0	0	
Killer Whale	0	0	0	
Harbor Porpoise	0	0	0	
Harbor Seal	1	1	0	1
Steller Sea Lion	0	19	0	19

Harbor seals

Harbor seals were sighted on 1 day (June 10) of in-water work. Only one individual was sighted and resulted in a Level B take and no Level A takes occurred. The individual was identified as traveling. The sex and age was unable to be determined.

Steller sea lions

A total of 42 individual Steller sea lions were sighted on 3 separate days (June 9, 10, and 11) during the project. Nineteen sightings were recorded as Level B takes and no Level A takes occurred. All sightings were recorded. Sightings were of single individuals and up to groups of 3. They were identified at swimming, traveling, foraging, and milling. The sex and age of the individuals was not able to be positively determined. No calves were sighted.

Conclusions

Table 6 summarizes the total number of take that occurred during construction during the O'Connell Lightering Float Replacement Project. The project is complete and did not exceed the number of authorized take under the IHA.

Table 6. Total Level B Takes Per Species During the O'Connell Bridge Lightering Float Pile Replacement In-Water Construction (no level A take occurred)

Species	Level B Authorized	Level B Exposures to Date	Remaining Level B takes allowed
Humpback Whale	15	0	15
Minke Whale	3	0	3
Killer Whale	24	0	24
Harbor Porpoise	15	0	15
Harbor Seal	39	1	38
Steller Sea Lion	33	19	14

References

- Austin, M., S. Denes, J. MacDonnell, and G. Warner. 2016. Hydroacoustic Monitoring Plan: Anchorage Port Modernization Project Test Pile Program. JASCO Applied Sciences (Alaska) Inc. report to Kiewit Infrastructure West Co. 131 pp + appendices.
- Denes, S. L., G.J. Warner, M.E. Austin, and A.O. MacGillivray. 2016. Hydroacoustic Pile Driving Noise Study – Comprehensive Report. Document 001285, Version 2.0. Technical report by JASCO Applied Sciences for Alaska Department of Transportation & Public Facilities.
- National Marine Fisheries Service (NMFS). 2019. O'Connell Bridge Lightering Float Pile Replacement Incidental Harassment Authorization. Accessed from <https://www.fisheries.noaa.gov/action/incidental-take-authorization-oconnell-bridge-lightering-float-pile-replacement-project> on June 9, 2019.
- NMFS. 2018. 2018 Revision to Technical Guidance for Assessing the Effects of Anthropogenic Sound on Marine Mammal Hearing. NMFS, NOAA, U.S. Dept. of Commerce. NOAA Technical Memorandum NMFS-OPR-59. Accessed from <https://www.fisheries.noaa.gov/webdam/download/75962998> on March 29, 2019
- National Oceanic and Atmospheric Administration (NOAA). 2019. National Weather Service: Sitka, Alaska. Accessed from <https://w2.weather.gov/climate/getclimate.php?wfo=pajk>

Attachment A

Date	Monitoring Period		Construction Type	Pile Type	Pile ID	# of Pile	Environmental Conditions					Marine Mammal Sightings							
	Start Time	End Time					Visibility	Glare	Weather	BSS	Wind/Swell Direction	Monitoring Location	Construction at Time of Sighting	Species	Group Size	Behavior	Distance from Work	Take?	Mitigation
6/9/2019	13:45	17:45	Deadpull Barge Move	16-inch existing	N/A	2	G	0%	R/OC	2	East	O'Connell Bridge	NO SIGHTINGS						
												Whale Park	NONE	STSL	1	TR	5,000m	N	None
6/10/2019	7:00	18:40	Vibratory Hammer Drilling (socketing) Deadpull	16-Inch Permanent and 16-inch existing	#3, #4	4	E	40%	OC	0	Southeast	O'Connell Bridge	NONE	STSL	1	FO	0.5miles	N	None
													NONE	STSL	1	FO	0.5 miles	N	None
													Vibratory Hammer	STSL	3	FO/TR	50m-300m	Y	None
													NONE	STSL	3	TR	300m	N	None
													NONE	STSL	1	TR	70m	N	None
													NONE	STSL	1	TR	300m	N	None
													NONE	STSL	1	TR	50m	N	None
													NONE	STSL	1	FO	300m	N	None
													NONE	STSL	1	FO	300m	N	None
													NONE	STSL	1	FO	150m	N	None
													NONE	STSL	2	FO/PL	200m	N	None
													Drilling (socketing)	STSL	1	TR	150m	Y	None
													Drilling (socketing)	STSL	1	TR	400m	Y	None
													Drilling (socketing)	STSL	2	TR	500m	Y	None
													Drilling (socketing)	STSL	1	MI	600m	Y	None
													Drilling (socketing)	STSL	1	TR	75m	Y	None
												Drilling (socketing)	STSL	3	TR	100m-1,000m	Y	None	
												Drilling (socketing)	STSL	1	TR	150m	Y	None	
												NONE	STSL	1	FO	400m	N	None	
												Whale Park	NONE	STSL	1	TR	Out of Zone	N	None
Vibratory Hammer	STSL	1	TR	3,000m	Y	None													
Drilling (socketing)	HSEA	1	TR	3,500m	Y	None													
Drilling (socketing)	STSL	1	TR	4,000m	Y	None													
Drilling (socketing)	STSL	1	TR	3,700m	Y	None													
6/11/2019	7:30	19:02	Vibratory Hammer Drilling (socketing)	16-Inch Permanent	#2, #5, #6	5	M	0%	OC/R	1	Southwest	O'Connell Bridge	NONE	STSL	2	FO	500m	N	None
													NONE	STSL	2	TR	600m	N	None
													Drilling (socketing)	STSL	1	TR	600m	Y	None
													Drilling (socketing)	STSL	1	TR	200m-400m	Y	None
													Drilling (socketing)	STSL	1	MI/SW	150m	Y	None
													NONE	STSL	1	TR	1,000m	N	None
													NONE	STSL	1	FO	500m	N	None
												NONE	STSL	1	TR	400m	N	None	
Whale Park	NONE	STSL	1	TR	5,000m	N	None												
6/12/2019	7:00	9:08	Vibratory Hammer Drilling (socketing)	16-Inch Permanent	#1	1	E	20%	OC	0	Southwest	O'Connell Bridge	NO SIGHTINGS						
												Whale Park	NO SIGHTINGS						

Attachment B

MARINE MAMMAL OBSERVATION RECORD

Project Name: O'CONNELL
 Monitoring Location: Bridge
 Date: 6/9/19
 Time Effort Initiated: 13:45 | 15:45
 Time Effort Completed: 16:45 | 16:39
 Page 1 of 1

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
13:45	B-P-M-G-E	0%	S-PC-L-R-F-OC-SN-HR	0/Mod/Hvy	2	NSEW	NSEW
17:45	B-P-M-G-E	0%	S-PC-L-R-F-OC-SN-HR	0/Mod/Hvy	2	NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW

Event Code	Sight # (1 or L1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact Pile #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		

MARINE MAMMAL OBSERVATION RECORD

Project Name: O'Connell Bridge
 Monitoring Location: Whale Park
 Date: 9 June 2019
 Time Effort Initiated: 1:45pm
 Time Effort Completed: 4:15pm / 17:45
 Page 1 of 18:30

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
13:45	B-P-M-G-E	0%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy	2	NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW

Event Code	Sight # (1 or 1.1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact File #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON S M OR E OFF	1	4:00 4:13	Grid N or S W or E	5,000	Matt G.	BL BO BR DF SA OTHER	STSE	Min: Max: Best: 1	TR SE	SSV SSI V DR I DP ST OWC NOWC NONE	SS/BC DE SD None	N	Travelling along edge of zone
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF		:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		

MARINE MAMMAL OBSERVATION RECORD

Project Name: _____
 Monitoring Location: O'Connell Bridge
 Date: 6/10/2019
 Time Effort Initiated: 0700
 Time Effort Completed: 1840
 Page 1 of 3

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
07:00	B-P-M-G-E	40%	S-PC-L-R-F-OC-SN-HR	2/Mod/Hvy	0	NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW

NO swell

Event Code	Sight # (1 or L1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact Pile #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON S M OR E OFF	1	07:21 07:26	STSL4 Grid N or S W or E	0.5 miles	EH	BL BO BR DF OTHER	STSL	Min: 1 Max: 2 Best: 1	FO	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD None	N	
E ON PRE/POST CON M OR E OFF	2	07:36 07:43	STSL2 Grid N or S W or E	0.5 m	EH	BL BO BR DF OTHER	STSL	Min: 1 Max: 2 Best: 1	FO	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD None	N	
E ON PRE/POST CON M OR E OFF	3	07:53	Grid N or S W or E	50m	EH	BL BO BR DF OTHER	STSL	Min: 1 Max: 2 Best: 2	FO/TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD None	N	
E ON PRE/POST CON M OR E OFF	3.1	08:20	Grid N or S W or E	70m	EA	BL BO BR DF OTHER	STSL	Min: 2 Max: 4 Best: 3	FO/TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD None	N	
E ON PRE/POST CON S M OR E OFF	3.2	08:30 08:42	Grid N or S W or E	300m	EH	BL BO BR DF OTHER	STSL	Min: 2 Max: 4 Best: 3	TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD None	Y	Started following fish boat East towards silver bay
E ON PRE/POST CON M OR E OFF	4	09:22	Grid N or S W or E	300m	EA	BL BO BR DF OTHER	STSL	Min: 2 Max: 4 Best: 3	TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD None	N	
E ON PRE/POST CON M OR E OFF	5	09:25 09:27	Grid N or S W or E	70m	EH	BL BO BR DF OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD None	N	Traveled west out of zone
E ON PRE/POST CON M OR E OFF	6	09:32	Grid N or S W or E	300m	EH	BL BO BR DF OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD None	N	Travelling South out of zone

MARINE MAMMAL OBSERVATION RECORD

Project Name: _____
 Monitoring Location: O'Connell Bridge
 Date: 6/10/2019
 Time Effort Initiated: 0700
 Time Effort Completed: 1840
 Page 2 of 3

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW

Event Code	Sight # (1 or 1.1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact Pile #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON <input checked="" type="checkbox"/> M OR E OFF	7	10:17	Grid N or S W or E	50m	PA	BL BO BR DF OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD <u>None</u>	N	Traveling away from work
E ON PRE/POST CON <input checked="" type="checkbox"/> M OR E OFF	8	11:50	Grid N or S W or E	300m	LK	BL BO BR DF OTHER	STSL	Min: 1 Max: 1 Best: 1	FO	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD <u>None</u>	N	moving out
E ON PRE/POST CON <input checked="" type="checkbox"/> M OR E OFF	9	12:20	Grid N or S W or E	300m	LK	BL BO BR DF OTHER	STSL	Min: 1 Max: 1 Best: 1	FO	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD <u>None</u>	N	
E ON PRE/POST CON <input checked="" type="checkbox"/> M OR E OFF	10	13:10	Grid N or S W or E	150m	LK	BL BO BR DF OTHER	STSL	Min: 1 Max: 1 Best: 1	FO	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD <u>None</u>	N	Charter boats coming & going in all directions. Tour boats, lots of boat traffic
E ON PRE/POST CON <input checked="" type="checkbox"/> M OR E OFF	11	13:10	Grid N or S W or E	200m	LK	BL BO BR DF OTHER	STSL	Min: 2 Max: 2 Best: 2	FO, PL	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD <u>None</u>	N	
E ON PRE/POST CON <input checked="" type="checkbox"/> S M OR E OFF	12	14:06	Grid N or S W or E	150m	LK	BL BO BR DF OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD <u>None</u>	Y	
E ON PRE/POST CON <input checked="" type="checkbox"/> S M OR E OFF	13	14:34	Grid N or S W or E	400m	LK	BL BO BR DF OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD <u>None</u>	Y	
E ON PRE/POST CON <input checked="" type="checkbox"/> S M OR E OFF	13.1	14:44	Grid N or S W or E	400m	LK	BL BO BR DF OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD <u>None</u>	Y	

MARINE MAMMAL OBSERVATION RECORD

Project Name: _____
 Monitoring Location: O'Connell Bridge
 Date: 6/10/19
 Time Effort Initiated: 0700
 Time Effort Completed: 18:40
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Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW

Event Code	Sight # (1 or L1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact Pile #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/ Comments/ Human Activity/ Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST <input checked="" type="radio"/> S M OR E OFF	14	15:32	Grid N or S W or E	500m	EH	BL BO BR DF <input checked="" type="radio"/> SA OTHER	STSL	Min: 2 Max: 2 Best: 2	TR- MI	SSV SSI V <input checked="" type="radio"/> DR I DP ST OWC NOWC/ NONE	SS/BC DE SD <input checked="" type="radio"/> None	Y	
E ON PRE/POST <input checked="" type="radio"/> S M OR E OFF	15	15:42	Grid N or S W or E	600m	EH	BL BO BR DF <input checked="" type="radio"/> SA OTHER	STSL	Min: 1 Max: 1 Best: 1	MI	SSV SSI V <input checked="" type="radio"/> DR I DP ST OWC NOWC/ NONE	SS/BC DE SD <input checked="" type="radio"/> None	Y	
E ON PRE/POST <input checked="" type="radio"/> S M OR E OFF	16	16:02	Grid N or S W or E	75m	EH	BL BO BR DF <input checked="" type="radio"/> SA OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V <input checked="" type="radio"/> DR I DP ST OWC NOWC/ NONE	SS/BC DE SD <input checked="" type="radio"/> None	Y	heading SE
E ON PRE/POST <input checked="" type="radio"/> S M OR E OFF	17	16:05	Grid N or S W or E	100m	EH	BL BO BR DF <input checked="" type="radio"/> SA OTHER	STSL	Min: 2 Max: 2 Best: 2	TR	SSV SSI V <input checked="" type="radio"/> DR I DP ST OWC NOWC/ NONE	SS/BC DE SD <input checked="" type="radio"/> None	Y	
E ON PRE/POST <input checked="" type="radio"/> S M OR E OFF	17.1	16:10	Grid N or S W or E	1000m	EH	BL BO BR DF <input checked="" type="radio"/> SA OTHER	STSL	Min: 3 Max: 3 Best: 3	TR	SSV SSI V <input checked="" type="radio"/> DR I DP ST OWC NOWC/ NONE	SS/BC DE SD <input checked="" type="radio"/> None	Y	
E ON PRE/POST <input checked="" type="radio"/> S M OR E OFF	18	16:18	Grid N or S W or E	150m	EH	BL BO BR DF <input checked="" type="radio"/> SA OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V <input checked="" type="radio"/> DR I DP ST OWC NOWC/ NONE	SS/BC DE SD <input checked="" type="radio"/> None	Y	traveling East through
E ON PRE/POST <input checked="" type="radio"/> S M OR E OFF	19	18:44	Grid N or S W or E	400m	EH	BL BO BR DF <input checked="" type="radio"/> SA OTHER	STSL	Min: 1 Max: 1 Best: 1	FO	SSV SSI V DR I DP ST OWC NOWC/ <input checked="" type="radio"/> NONE	SS/BC DE SD None	N	
E ON PRE/POST <input checked="" type="radio"/> S M OR E OFF	:	:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD None		

MARINE MAMMAL OBSERVATION RECORD

Project Name: O'Connell Bridge
 Monitoring Location: Whale Park
 Date: 16 June 2019
 Time Effort Initiated: 2 am 3 pm
 Time Effort Completed: 11 am 9:10 pm
 Page _____ of _____

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW

Event Code	Sight # (1 or L1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact Pile #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON S M OR E OFF	1	7:37 1:00	Grid N or S W or E	Outside Murchison zone	MH Goff	BL BO BR DP SA OTHER	STSE	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None	N	Mouth of Silver Bay margin of monitoring zone
E ON PRE/POST CON S M OR E OFF	2	10:00 10:05	Grid N or S W or E	3,000	MH Goff	BL BO BR DP SA OTHER	STSE	Min: 1 Max: 1 Best: 1	TR W	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None	Y	Moving from S.B. out through East Channel
E ON PRE/POST CON S M OR E OFF	3	4:07 4:08	Grid N or S W or E	3,500	MH Goff	BL BO BR DP SA OTHER	HSEA	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None	Y	on margin, moved out towards S.B.
E ON PRE/POST CON S M OR E OFF	4	4:35 4:40	Grid N or S W or E	4,000	MH Goff	BL BO BR DP SA OTHER	STSE	Min: 1 Max: 1 Best: 1	TR SW	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None	Y	Moving across zone towards town
E ON PRE/POST CON S M OR E OFF	5	4:50	Grid N or S W or E	3,700	MH Goff	BL BO BR DP SA OTHER	STSE	Min: 1 Max: 1 Best: 1	TR W	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None	Y	moving through zone through towards sound
E ON PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DP SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DP SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DP SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		

← Prob. not in monitoring zone

Drilling

Drilling

Drilling

MARINE MAMMAL OBSERVATION RECORD

Project Name: Lightering float pile replace.
 Monitoring Location: O'Connell Bridge
 Date: 6/11/2019
 Time Effort Initiated: 0730
 Time Effort Completed: 1902
 Page 1 of 1

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
07:30	B-P-G-E	0%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy	1	NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW

Event Code	Sight # (1 or L1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact Pile #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON M OR E OFF	1	08:06	Grid N or S W or E	500m	LK	BL BO BR DP OTHER	STSL	Min: 1 Max: 3 Best: 2	FO	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD	N	Near totem park
E ON PRE/POST CON M OR E OFF	2	08:30	Grid N or S W or E	600m	LK	BL BO BR DP OTHER	STSL	Min: 1 Max: 2 Best: 2	TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD	N	
E ON PRE/POST CON M OR E OFF	3	09:35	Grid N or S W or E	600m	LK	BL BO BR DP OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD	Y	
E ON PRE/POST CON M OR E OFF	4	11:10	Grid N or S W or E	200m 400m	LK	BL BO BR DP OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD	Y	
E ON PRE/POST CON M OR E OFF	5	11:44 12:40	Grid N or S W or E	150m	EH	BL BO BR DP OTHER	STSL	Min: 1 Max: 1 Best: 1	MI/SW TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD	Y	
E ON PRE/POST CON M OR E OFF	6	14:04	Grid N or S W or E	1,000m	EH	BL BO BR DP OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD	N	Traveling south
E ON PRE/POST CON M OR E OFF	7	15:30	Grid N or S W or E	500m	EH	BL BO BR DP OTHER	STSL	Min: 1 Max: 1 Best: 1	FO	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD	N	
E ON PRE/POST CON M OR E OFF	8	17:50	Grid N or S W or E	400m	LK	BL BO BR DP OTHER	STSL	Min: 1 Max: 1 Best: 1	TR	SSV SSI V DR I DP ST OWC NOWC/ NONE	SS/BC DE SD	N	moved barge during sighting MM out of 10m monitoring zone for activity

MARINE MAMMAL OBSERVATION RECORD

Project Name: O'Connell Bridge
 Monitoring Location: Whale Park
 Date: 11 June 2019
 Time Effort Initiated: 7:30am 3:50pm
 Time Effort Completed: 11:30am 2:00pm
 Page _____ of _____

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		N S E W	N S E W
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		N S E W	N S E W
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		N S E W	N S E W
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		N S E W	N S E W
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		N S E W	N S E W
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		N S E W	N S E W

Event Code	Sight # (1 or L1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact Pile #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (Y/N)	Behavior Change/ Response to Activity/Comments/Human Activity/Vessel Hull # or Name/ Visibility Notes
PRE/POST CON S M OR E OFF	1	7:44	Grid N or S W or E	5,000	M.H. Goff	BL BO BR DF SA OTHER	STSE	Min: 1 Max: 1 Best: 1	TR W	SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None	N	
PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
PRE/POST CON S M OR E OFF			Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		

MARINE MAMMAL OBSERVATION RECORD

Project Name: O'Connell Bridge Lightering Float
 Monitoring Location: O'Connell Bridge
 Date: 6/12/2019
 Time Effort Initiated: 0700
 Time Effort Completed: 0908
 Page 1 of 1

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
07:00	B-P-M-G-E	20%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy	0	NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
:	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW

NO SWELL

Event Code	Sight # (1 or L1 if re-sight)	Time/Dur (Start/End time if cont.)	WP/ Grid #/ DIR of travel	Zone/ Radius/ Impact Pile #?	Obs.	Sighting Cue	Species	Group Size	Behavior Code (see code sheet)	Construction Type	Mitigation Type	Exposure (V/N)	Behavior Change/ Response to Activity/ Comments/ Human Activity/ Vessel Hull # or Name/ Visibility Notes
E ON PRE/POST CON S M OR E OFF	:	:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF	:	:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF	:	:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF	:	:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF	:	:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF	:	:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF	:	:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		
E ON PRE/POST CON S M OR E OFF	:	:	Grid N or S W or E			BL BO BR DF SA OTHER		Min: Max: Best:		SSV SSI V DR I DP ST OWC NOWC / NONE	SS/BC DE SD None		

MARINE MAMMAL OBSERVATION RECORD

Project Name: _____
 Monitoring Location: Whale Park
 Date: 6/12/2019
 Time Effort Initiated: 0700
 Time Effort Completed: 0908
 Page 1 of 1

Time	Visibility	Glare	Weather Condition	Wave Height	BSS	Wind	Swell
07:00	B-P-M-G-E	0%	S-PC-L-R-F-OC-SN-HR	0/Mod/Hvy	0	N ⁰ E ⁰	N ⁰ E ⁰
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW
1	B-P-M-G-E	%	S-PC-L-R-F-OC-SN-HR	Lt/Mod/Hvy		NSEW	NSEW

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