South Fork Wind

Marine Mammal and Sea Turtle Monitoring During Windfarm Construction

September 2022 – August 2023

BOEM Lease OCS-A 0517

South Fork Windfarm Construction Project

Submitted to BOEM, BSEE, and NMFS
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1. Report Background and Overview

This Final Protected Species Monitoring Report (Final Report) is submitted in accordance with numerous South Fork Wind, LLC (SFW) windfarm construction regulatory conditions. Specifically, final reports are stipulated in the SFW *Conditions of Construction and Operations Plan (COP) Approval* issued by the Bureau of Ocean Energy Management (BOEM) on January 18, 2022, and the SFW *Incidental Harassment Authorization (IHA)* issued by the National Marine Fisheries Service (NMFS) on December 21, 2021. This report meets all final reporting requirements outlined in the BOEM COP approval, NMFS IHA, and related SFW permits, authorizations, and agreements (Table 1).

SFW conducted two separate pile installation projects during the reporting period, each with a dedicated monitoring and mitigation program executed by NMFS-approved Protected Species Observers (PSOs). The first of these projects involved pile (including pile casing) installation and removal at the SFW horizontal directional drilling (HDD) punchout site on the south side of Long Island, New York (Figure 1) during November–December 2022. The second SFW piling project consisted of offshore substation (OSS) and wind turbine generator (WTG) foundation monopile installations (Foundations) within the BOEM OCS-A 0517 Lease Area (Lease Area; Figure 1) during June–August 2023. These two piling project sites, an export cable route (ECR) connecting the two locations, and immediately adjacent state and federal waters transited by SFW Project vessels are referred to collectively herein as the Project Area (Figure 1).

The Final Report plus appendices includes summaries of SFW offshore construction and vessel operations (Project) beginning with commencement of boulder relocation activities on September 28, 2022, through all foundation monopile installation and associated monitoring on August 11, 2023 (reporting period). All monitoring, mitigation, and detections of marine mammals and sea turtles (referred to as *protected species* herein) made by Trained Lookouts during vessel transits, and by PSOs and Passive Acoustic Monitoring (PAM) Operators are presented in detail.

Table 1: Permits and agreements associated with protected species monitoring and mitigation conducted for SFW construction-related activities, September 28, 2022 – August 11, 2023.

Document Title	Issuing Organization	Issue / Revision Date	Acronym Used	URL Link
Incidental Harassment Authorization (87 FR 806)	NMFS-OPR	15 Nov 2022	IHA	https://www.fisheries.noaa.gov/action/incidental-take-authorization-south-fork-wind-llc-construction-south-fork-offshore-wind
Endangered Species Act Section 7 Consultation Biological Opinion	NMFS-GARFO	1 Oct 2021	BiOp	https://media.fisheries.noaa.gov/2021-12/SFW_BiOp_OPR1.pdf
South Fork Wind Farm and South Fork Export Cable Project Final Environmental Impact Statement	BOEM	Aug 2021	FEIS	https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/SFWF%20FEIS.pdf
South Fork Construction and Operations Plan and Appendices	SFW	May 2021	COP	https://www.boem.gov/sites/default/files/documents/renewable-energy/South-Fork-Construction-Operations-Plan.pdf and https://www.boem.gov/renewable-energy/state-activities/volume-ii-appendices
South Fork Wind Farm and South Fork Export Cable – Development and Operation Biological Assessment	BOEM for USFWS	Jan 2021	BA-USFWS	https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/SFWF-BA-USFWS-Final.pdf
South Fork Wind Farm and South Fork Export Cable – Development and Operation Biological Assessment	BOEM for NMFS-GARFO	Jan 2021	BA-NMFS	https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/SFWF-BA-NMFS.pdf
eNGO Agreement	N/A	16 Jun 2022	eNGO	https://orstedcdn.azureedge.net/-/media/www/docs/corp/us/south-fork-wind/south-fork-wind-right-whale-agreement.ashx?la=en&rev=97a14aa3402a4abdbdac180a9dcdc28b&hash=8FB0F361FBFD3FE1799407C6E98261F1
Record of Decision	BOEM	24 Nov 2021	ROD	https://www.boem.gov/sites/default/files/documents/renewable-energy/state-activities/Record%20of%20Decision%20South%20Fork_0.pdf
South Fork Wind Farm and South Fork Export Cable – COP Approval	BOEM	18 Jan 2022	COP Approval	Conditions of Construction and Operations Plan Approval Lease Number OCS-A 0517 (boem.gov)
Project Design Criteria and Best Management Practices for Protected Species Associated with Offshore Wind Data Collection	BOEM	22 Nov 2021	PDC	https://www.boem.gov/sites/default/files/documents//PDCs%20and%20BMPs%20for%20Atlantic%20Data%20Collection%2011222021.pdf

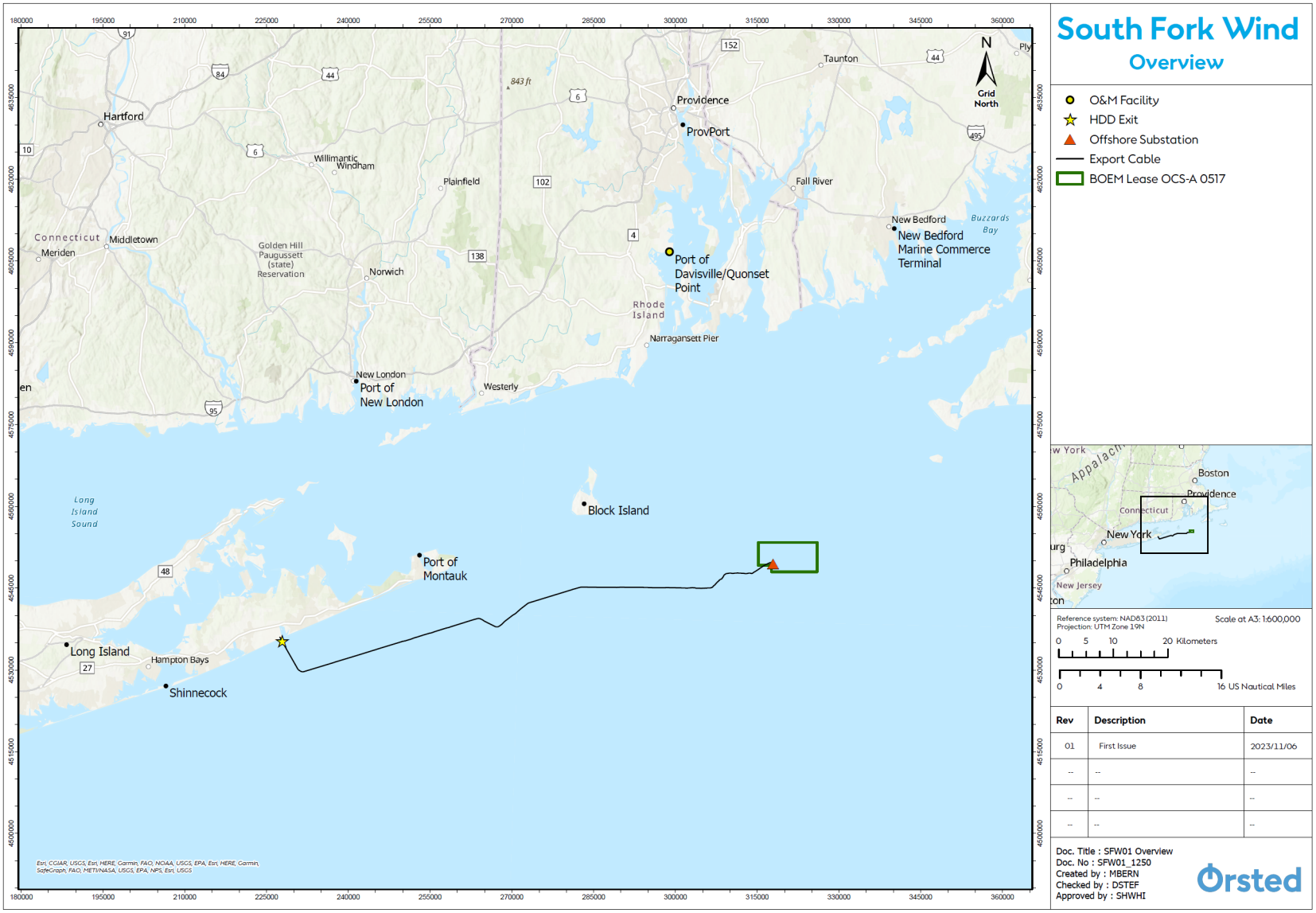

Figure 1: SFW Project Area where windfarm construction-related activities were conducted during the study period, September 28, 2022 – August 11, 2023.

2. Offshore Operations Summary

2.1. Vessel Transits

All SFW Project vessel transits were monitored by dedicated Trained Lookouts with no other concurrent responsibilities than to facilitate strike avoidance mitigation in collaboration with vessel operators. A vessel *transit* herein is defined as a one-way trip from port to the windfarm location, or a one-way trip from the windfarm location to port, for all vessels supporting SFW offshore construction activities. The SFW "windfarm location" is defined as any of the following: the nearshore SFW horizontal directional drilling (HDD) punchout site on the south side of Long Island, New York; the offshore windfarm site within the BOEM OCS-A 0517 Lease Area and foundation installations operational area; or any location between or directly adjacent to the HDD site or Lease Area (e.g., export cable corridor).

A total of 47 SFW Project vessels operated during windfarm construction activities during the report period of September 28, 2022 – August 11, 2023. This reporting period dates coincides with commencement of boulder relocation operations through completion of PSO data collection associated with foundation monopile installations. The 47 Project vessels completed a total of 502 one-way transits during the report period (Appendix Table A1). One-third of all transits were made by the Windserve Odyssey for personnel transfers to and from larger Project vessels. Over half of SFW Project vessels made five or fewer transits while supporting the Project, and only three vessels made 20 or more transits. Additional transit details for each SFW construction-related Project vessel, including route information, are presented in Appendix Table A1.

2.2. Non-PSO Construction-Related Operations

SFW conducted numerous construction-related activities across the reporting period that did not require dedicated monitoring by NMFS-approved PSOs. These operations included boulder clearance and relocation from the export cable corridor (i.e., ECR) and SFW Lease Area, cable installation and burial, and topside (i.e., above water) installation of the SFW offshore substation (OSS) in the Lease Area (Figure 1). All vessel movements associated with non-PSO activities were monitored and mitigated by dedicated Trained Lookouts aboard each Project vessel who facilitated strike avoidance measures to maximize distance between vessels and protected species.

Boulder clearance and relocation began shortly after the vessel Shelia Bordelon departed Providence, Rhode Island for the cable corridor on September 28, 2022. Boulder clearance activities continued intermittently across the reporting period before being completed in May 2023, prior to installation of foundation monopiles. Cable installation activities were initiated by the vessel Living Stone in March 2023. Living Stone and several support vessels continued cable installation operations through the end of the reporting period into early September 2023. OSS installation occurred in July following successful installation of the associated foundation monopile in late June 2023.

2.3. Pile Driving and Installation

Pile driving operations were conducted by SFW in two separate installation programs: HDD, and foundation monopiles (Foundations). The HDD installation program was conducted at the SFW punchout site immediately south of Long Island, NY (Figure 1) from November 15 – December 20, 2022. The HDD installation period is defined by the commencement and completion of all required PSO monitoring, mitigation, and associated data collection. The Foundations installation program, also defined by the period of associated PSO data collection, was conducted in the BOEM OCS-A 0517 Lease Area (Figure 1) from June 8 – August 11, 2023.

The majority of each SFW pile installation program and associated protected species monitoring and mitigation consisted of standby periods, pile preparation, equipment calibration, data analysis, etc. interspersed with infrequent, short periods of active pile driving. The following sections present details for each SFW pile installation program, including installation dates, pile specifications, durations of vibratory piling, and hammer energies associated with impact piling.

2.4. HDD Pile Installation

HDD pile installation consisted of four, 48-inch (1.23-m) diameter steel piles, including casing pipe, configured in two pairs of "goal posts" to facilitate connection of cable conduit from offshore and onshore sites (Table 2). No sheet pile installation was required. Installation of each HDD steel pile began with vibratory piling, followed by impact hammering of steel casing pipe to reach necessary penetration depth. The final HDD piling operation involved a brief period of vibratory hammering to facilitate removal of each pile and casing.

A total of 3 hours 31 minutes of active pile driving was conducted during HDD installations across six days from November 18 – December 20, 2022 (Table 2). The 3.5 hours of total HDD pile driving duration included 68 minutes of vibratory piling, and a combined 143 minutes of impact piling and "soft start" piling sequences with minimum hammer energy at the beginning of impact pile driving. All HDD active pile driving operations were conducted during daylight hours at least one hour after civil twilight began (i.e., dawn). The total duration of HDD pile driving was significantly less than the assumptions used for sound exposure modeling for the NMFS IHA application, which assumed 24 hours of continuous vibratory pile driving of sheet piles.

2.5. Foundation Monopile Installation

Wind turbine generator (WTG) and offshore substation (OSS) foundation installation consisted of 13, 8 to 10-m diameter steel monopiles in the SFW Lease Area (Table 3). A single monopile was installed for the OSS, and each of the remaining 12 monopile installations corresponded to the 12 respective WTG sites.

Each SFW monopile was custom engineered based on the specific geological attributes of its installation location. Monopiles were tapered because a larger diameter was necessary at the base for stability but not necessary for the upper portions of the pile. Tapering the pile also minimized the amount of steel necessary to construct the pile. Hammer energies applied during each monopile installation were limited to only the necessary amount of energy required to advance the pile at an acceptable penetration rate. Excess hammer energy can result in unnecessary

fatigue of the pile. In general, denser soils required higher hammer energies to drive the monopile.

A total of 39 hours 32 minutes of active impact pile driving, including minimum 20-minute Soft Start periods at reduced hammer energies and strike rates at the commencement of impact piling, was conducted across installation of the 13 monopiles on 15 different days. Two of 13 monopile installations spanned two consecutive calendar days due to pauses for mechanical assessments and daylight constraints; active pile driving was suspended during overnight periods of darkness for each of these two multi-day monopile installations. Each of the remaining 11 monopiles were installed over the course of several hours in a single day (Table 3). Additional monopile details are shown in Table 3, including pile sizes and the hammer energies applied during each installation.

2.6. HRG Surveys

No high-resolution geophysical (HRG) surveys were conducted by SFW during the reporting period of September 28, 2022 – August 11, 2023.

Table 2: SFW HDD vibratory and impact pile driving summary for four, 48-in (1.23-m) diameter steel piles and casing pipes, respectively, during the HDD installation program, November 15 – December 20, 2022.

Pile Identifier	Installation Dates	Removal Date	Pile Diameter (m)	Pile Length (m)	Maximum Vibratory Piling Energy (kJ)	Total Vibratory Piling Duration (mm:ss)	Total Impact Piling Duration (mm:ss)
HDD 1	18, 28 Nov, 17 Dec 2023	19 Dec 2022	1.23	33.5	895	21:30	40:18
HDD 2	18, 28 Nov, 17 Dec 2023	19 Dec 2022	1.23	33.5	895	18:51	20:40
HDD 3	20, 28 Nov, 17 Dec 2023	19 Dec 2022	1.23	33.5	895	12:39	33:40
HDD 4	20, 28 Nov, 17 Dec 2023	20 Dec 2022	1.23	33.5	895	15:02	49:03

Table 3: Monopile and impact pile driving summary for the Foundations installation program, June 8 – August 11, 2023. Total Pile Installation Duration is the duration from the first to last impact hammer strike for each pile, including pauses.

Monopile Identifier	Installation Date	Pile Diameter (m)	Pile Length (m)	Maximum Hammer Energy (kJ)	Average Hammer Energy (kJ)	Active Pile Driving Duration (h:mm:ss)	Total Pile Installation Duration (h:mm:ss)
Z01*	19-20 Jun 2023	10	89	3,580	2,402	4:02:45	19:51:59
A12	2 Jul 2023	9.5	99	3,168	2,363	2:47:48	4:24:32
A08	6 Jul 2023	8	96	3,254	2,361	2:20:24	2:51:24
A10*	8-9 Jul 2023	9.5	95	2,356	1,883	3:13:50	16:21:45
A03	12 Jul 2023	9.5	95	2,253	1,455	3:01:11	3:01:11
A14	21 Jul 2023	9.5	95	3,185	1,893	3:18:18	3:38:50
A11	23 Jul 2023	9.5	97	3,652	2,658	3:14:25	4:30:24
A02	31 Jul 2023	9.5	98	3,206	2,075	3:08:48	3:08:48
A15	1 Aug 2023	9.5	94	3,138	1,980	2:22:36	2:22:36
A13	3 Aug 2023	10	98	4,118	2,366	2:31:14	2:51:14
A01	4 Aug 2023	10	94	3,639	2,328	3:17:40	3:17:40
A07	5 Aug 2023	9.5	97	3,695	2,599	3:10:59	3:10:59
A04	7 Aug 2023	10	104	3,684	2,345	3:02:25	3:02:25

*Monopiles Z01 and A10 each were installed over the course of two consecutive days; however, active impact pile driving occurred only during daylight periods (i.e., piling was paused for the entirety of overnight periods in darkness).

3. Protected Species Monitoring Methods and Effort

SFW protected species monitoring was conducted in accordance with all NMFS IHA, NMFS BiOp, and BOEM COP approval conditions. Two separate pile driving monitoring plans (PDMPs), one each for the HDD and Foundation installation programs, were submitted to the NMFS Office of Protected Species (OPR), NMFS Greater Atlantic Fisheries Regional Office (GARFO), BOEM, and BSEE. Each PDMP included a visual monitoring plan, low visibility visual monitoring plan, passive acoustic monitoring (PAM) plan (Foundation program only), vessel strike avoidance plan, communication plan, and sound field measurement plan (Foundation program only); all of which outlined specific equipment, personnel, methodologies, mitigation, and reporting actions required to meet the IHA stipulations and COP conditions of approval. The final PDMPs were approved by all agencies listed above prior to the start of pile driving.

Monitoring conducted during offshore construction-related activities from September 28, 2022 – August 11, 2023, was fulfilled by Trained Lookouts and professional observers (PSOs and PAM Operators) depending on the activity and permit requirements. Vessel strike avoidance monitoring was conducted by Trained Lookouts during all vessel transits except for the construction vessels that carried professional PSOs, in which case vessel strike monitoring was carried out by the PSO team. Dedicated visual and acoustic monitoring and mitigation of all pile driving activities was carried out by teams of PSOs and, for the Foundations program, also by PAM Operators.

The following sections present methods for all dedicated marine mammal and sea turtle monitoring and mitigation, along with the amounts of visual and acoustic monitoring conducted across the reporting period. Pre-deployment training of all monitoring personnel is also summarized below.

3.1. Pile Driving Mitigation Zones and Monitoring Definitions

SFW PSO teams aboard LB Jill (HDD installation vessel), and aboard Bokalift 2 (foundation monopile installation vessel) and four dedicated PSO monitoring vessels supporting the Foundations installation program, monitored a suite of zones to minimize potential effects of pile driving activities to protected species (Table 4). Pile driving monitoring and mitigation zones, and the associated monitoring protocols, are defined below:

- ***Clearance Zone*** – the area surrounding a pile site that must be visually and/or acoustically "clear" of protected species prior to commencement of pile driving; Clearance Zones are also implemented following a Shutdown of active pile driving, and must be "clear" of protected species before piling can be resumed.
- ***Minimum Visibility Zone*** – for large whales, the area around a foundation monopile site that must be visible to PSOs prior to commencement of active pile driving;
- ***Shutdown Zone*** – the area surrounding an active pile site for which PSOs must request a Shutdown of pile driving if a protected species is detected within.

- ***Clearance Monitoring*** – dedicated monitoring of Clearance Zones by PSOs and PAM Operators (Foundations only) prior to commencement of active pile driving; minimum 60-minute period, and piling may begin only when visual Clearance Zones are fully visible (e.g., not obscured by darkness, rain, fog, etc.) and deemed clear of protected species for at least 30 minutes immediately prior to commencement of piling.
- ***Soft Start*** – specific to commencement of impact pile driving after PSOs and PAM Operators have deemed Clearance Zones to be clear of protected species, per the NMFS IHA: "*Soft Start must include a minimum of 20 minutes of 4-6 strikes/min at 10-20 percent of the maximum hammer energy,*" and, "*Soft Start is required at the beginning of driving a new pile and at any time following the cessation of impact pile driving for 30 minutes or longer."*
- ***Shutdown*** – if a protected species is detected in or about to enter a Shutdown Zone, PSOs must request a Shutdown of pile driving; if the Offshore Construction Manager (OCM) determines a Shutdown is not practicable due to safety concerns or to maintain installation feasibility, then the lowest functional hammer energy required to safely drive the pile must be implemented (i.e., a Powerdown).
- ***Level-A*** and ***Level-B Harassment Zones*** – specific to marine mammals; the areas surrounding an active pile site where potential Level-A and/or Level-B incidental harassment to animals may occur; PSOs and PAM Operators monitored these zones for awareness and to fulfill data collection requirements, however, IHA-stipulated mitigation measures (e.g., Shutdown) were based on Clearance and Shutdown Zones; see *Potential Level-B and Level-A Incidental Exposures* below for additional details.

All visual and acoustic zones monitored by PSOs and PAM Operators immediately prior to and during active pile driving operations are shown in Table 4. The IHA-stipulated zones were based on modeling applications using conservative assumptions for the total amount, duration, and intensity of all anticipated pile driving activity.

Soundfield verification (SFV) measurements of monopile installations were conducted to allow for comparison of field measurements with modeled values. SFW implemented an enhanced monitoring and mitigation protocol beginning with the second monopile installation on July 2 through installation of the fifth monopile on July 12 to ensure mitigation zone sizes were sufficient to cover Level-A and Level-B threshold ranges, as confirmed by SFV measurements on four representative monopile installations during this period (Table 4).

Table 4: Radial distances in meters to PSO and PAM Clearance, Shutdown, and related zones by fauna group during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively.

Zone and Species Group	HDD	Foundations IHA	Foundations Enhanced[1]
Visual Clearance Zones			
NARW Clearance	Any Distance	Any Distance	Any Distance
NARW Minimum Visibility	1,500	2,200	4,000
Large Whales (Non-NARW)	1,500	2,200	4,000
Delphinids	100	100	1,500
Harbor Porpoise	100	450	1,500
Seals	150	150	1,500
Sea Turtles	500	500	500
Visual Shutdown Zones			
NARW	1,500	Any Distance	Any Distance
Large Whales (Non-NARW)	1,500	2,000	3,500
Delphinids	50	50	1,200
Harbor Porpoise	100	450	1,200
Seals	125	150	1,200
Sea Turtles	500	500	500
PAM NARW Zones			
Clearance Zone	N/A	5,000	5,000
Shutdown Zone	N/A	2,000	2,000
Monitoring Zone	N/A	10,000	10,000

[1]SFW implemented an enhanced monitoring and mitigation protocol beginning with the second monopoile installation on July 2 through installation of the fifth monopile on July 12 to ensure mitigation zone sizes were sufficiently conservative, as confirmed repeatedly by SFV measurements on four consecutive monopile installations during this period.

3.2. Horizontal Directional Drilling (HDD) Pile Installation Monitoring and Effort

A team of four NMFS-approved PSOs were provided by A.I.S., Inc. for monitoring aboard the vessel, M/V LB Jill (LB Jill) during pile driving operations at the HDD site. All PSOs attended a dedicated SFW PSO Compliance Training course on November 11, 2022, prior to deployment offshore on November 14, 2022. SFW PSO Compliance Training involved a detailed review of all relevant SFW protected species compliance, data collection, and reporting conditions. PSO Compliance Training materials were also available aboard LB Jill in electronic and hard copy format for review and reference by PSOs in the field.

Monitoring and mitigation were conducted in accordance with IHA stipulation 4(b) with PSOs aboard LB Jill stationed in locations with the best unobstructed view of surrounding waters.

Table 5 presents the height above water and the corresponding distance to the horizon for all monitoring devices based on their location aboard the vessel. The distance to the horizon for each monitoring location aboard LB Jill was autocalculated by Mysticetus PSO software as a function of vessel deck height above the water plus the average PSO eye height of ~1.7 m (or the device height above the deck for vessel-mounted optics, e.g., Big Eye binoculars, infrared camera systems). Ranges of monitoring distances shown in Table 5 reflect different heights above the sea surface for when LB Jill was floating in the water and "jacked-up" (i.e., elevated) above the water to conduct pile installation. LB Jill PSOs were equipped with the following visual monitoring equipment:

- Hooway & Bushnell 7X50 Marine Reticle Binoculars
- 25 and 40X150 "Big Eye" Binoculars
- NVTS Reliant 640 Vessel-mounted HD Video & Infrared Camera System
- AN/PVS-14 Night Vision Monocular

Table 5: PSO visual monitoring equipment and method, height above sea level in meters (m) and, distance to horizon in kilometers (km) for LB Jill bridge and upper deck locations during the SFW HDD installation program. Please note, observation heights and distances to the horizon are provided as ranges to reflect LB Jill position at sea level and while jacked-up at maximum operational height above the water surface.

Equipment and Monitoring Method	LB Jill – Bridge		LB Jill – Upper Deck	
	Height above Water (m)	Distance to Horizon (km)	Height above Water (m)	Distance to Horizon (km)
Naked Eye; and Handheld Reticle Binoculars, FLIR, and NVDs	18.3 – 29.0	15.3 – 18.7	22.8 – 33.5	17.1 – 20.2
Big Eye Binoculars	N/A	N/A	22.8 – 33.5	17.1 – 20.2
IR Camera System	N/A	N/A	26.2 – 36.9	17.8 – 21.3

HDD PSOs aboard LB Jill conducted a total of ~271 hours of visual monitoring effort from November 15 – December 20, 2022, all of which occurred during daylight hours between civil twilight periods (i.e., between dawn and dusk; Table 6). Over 259 of these total PSO watch hours occurred during non-piling and standby periods. The remaining 11 hours of HDD PSO watch periods involved minimum 60-minute Clearance and minimum 30-minute Post-piling watches immediately before and after active piling, respectively, and approximately 3.5 hours of monitoring during active piling operations. PSOs conducted watch during non-piling activities to maintain operational readiness and a detailed awareness of the relative distribution of marine mammal species in the immediate area of HDD operations. A detailed summary of all HDD PSO watch periods, including start and end times for all PSO monitoring, is shown in Appendix Table A2.

Table 6: PSO monitoring effort (hh:mm) from non-piling and active pile driving periods during the SFW HDD installation program, November 15 – December 20, 2023.

Non-piling Periods			Active Pile Driving Periods		
Standby	**Clearance**	**Post-piling**	**Soft Start**	**Impact Piling**	**Vibratory Piling**
259:40	4:33	3:01	0:43	1:40	1:08

3.3. Foundation Monopile Installation Monitoring and Effort

Monitoring and mitigation were conducted in accordance with IHA stipulation 4(a) with teams of four NMFS-approved PSOs provided by Gardline aboard Bokalift 2 and each of four dedicated PSO monitoring vessels noted above in *Section 2, Offshore Operations Summary*, across the entire monopile foundations installation period. A team of two PAM Operators also was provided by Gardline aboard Bokalift 2 for acoustic monitoring before, during and immediately after all active pile driving operations. Foundations PSO and PAM teams mobilized in early June and began deploying offshore on June 8, 2023. Table 7 summarizes PSO and PAM personnel, and associated monitoring equipment for each Foundations PSO vessel.

All PSOs and PAM Operators attended a dedicated SFW PSO and PAM Compliance Training course prior to deployment, as determined by vessel mobilization and crew change schedules. SFW PSO and PAM Compliance Training involved a detailed review of all relevant SFW protected species compliance, data collection, and reporting conditions associated with vessel operations and pile driving of monopiles. PSO and PAM Compliance Training materials were also available aboard each vessel in electronic and hard copy format for review and reference by PSOs and PAM Operators in the field.

Several senior Lead PSOs and PAM Operators also attended an all-day workshop in April with representatives from pile installation teams, onshore and offshore Project managers, the SFW regulatory compliance team, and other relevant Project personnel. The workshop consisted of a series of Project orientations, team discussions, and interactive tabletop drills. Emphasis was placed on roles and responsibilities, communications protocols, and implementation of pile driving mitigation across a wide range of operational scenarios and associated protected species detections.

Table 7: PSO and PAM equipment and personnel employed during the SFW Foundations installation program, June 8 – August 11, 2023.

Vessel Name		**Bokalift 2**	**Rana Miller**	**Go Freedom**	**Berto Miller**	**Josephine Miller**
Vessel Role		**Piling**	**PSO**	**PSO**	**PSO + PAM deployment**	**PSO + SFV deployment**
Personnel						
Visual PSOs		4	4	4	4	4
PAM Operators		2	0	0	0	0
Acoustic Reporting Scientist		0	0	0	0	1
Number PSOs on active watch		2	2	2	2	2
Number of PAM Operators on duty		1	0	0	0	0
Deployment / Acoustic support personnel on duty		0	0	0	2	2
Equipment	Model					
Vessel-mounted Thermal Cameras	Current Corp Cooled – NN 3050 Uncooled - NN 3025	2 (1 cooled, 1 uncooled)	1 uncooled	1 uncooled	1 uncooled	1 uncooled
25 x Binoculars	Fujinon 25 x 150 MT-SX	2	2	2	2	2
PAM Buoys	RSA-ORCA 750-a1	0	0	0	4	0
Binoculars (reticule)	Varied	2	2	2	2	2
Marine Binoculars	Varied	2	2	2	2	2
Digital cameras	Varied	2	2	2	2	2
PAM Hydrophone Moorings	TR-FLOAT	0	0	0	4	0
Mysticetus System	Mysticetus Advanced	1	1	1	1	1

PSOs on each vessel were stationed in locations with the best unobstructed view of surrounding waters. Table 8 presents PSO visual monitoring equipment, height above water, and the corresponding distance to the horizon for all dedicated monitoring vessels and associated visual monitoring equipment. The distance to the horizon for each monitoring vessel and associated monitoring locations were autocalculated by Mysticetus PSO software as a function of vessel deck height above the water plus the average PSO eye height of ~1.7 m (or the device height above the deck for vessel-mounted optics, e.g., Big Eye binoculars, infrared camera systems).

Table 8: PSO visual monitoring equipment and method, height above sea level in meters (m) and, distance to horizon in kilometers (km) for Bokalift 2 and the four PSO support vessels during the SFW Foundations installation program, June 8 – August 11, 2023.

Vessel	Naked Eye, Handheld Binoculars, and Big Eye Binoculars		Infrared (IR) Camera System	
	Height above Water (m)	Distance to Horizon (km)	Height above Water (m)	Distance to Horizon (km)
Bokalift 2 (Piling Platform)	25.8	18.3	27.3	18.8
Berto Miller	5.8	5.8	8.3	10.4
Go Freedom	7.6	9.9	10.3	11.6
Josephine Miller	5.7	8.5	8.7	10.6
Rana Miller	6.0	8.8	8.3	10.4

The positions of PSO teams and PAM hydrophones were designed to accommodate the sizes of the Clearance and Shutdown Zones (Table 4). The primary arrangement of PSO monitoring vessels and PAM hydrophone locations based on IHA-stipulated mitigation zones is shown in Figure 2.

A minimum visibility range of 2,200 m (Figure 2) was required for PSOs to conduct a minimum 60-minute clearance watch to ensure Clearance Zones were free of marine mammals and sea turtles prior to commencement of impact pile driving. No pile initiations, including positioning or setting piles, were conducted if this minimum visibility was not met. PSOs monitored all Shutdown and Clearance Zones as stipulated in the IHA as well as all surrounding water within the visual extent of the PSOs. Additionally, Foundations PSO and PAM teams monitored an expanded set of mitigation radii beginning with second monopile installation on July 2 through installation of the fifth monopile on July 12 to ensure Level-A and Level-B Harassment Zones were fully monitored (Table 4). SFW resumed implementation of the IHA-stipulated mitigation zones on July 18 after consecutive soundfield verification measurements of the previous four monopile installations confirmed IHA zone sizes were sufficient to cover the anticipated threshold ranges.

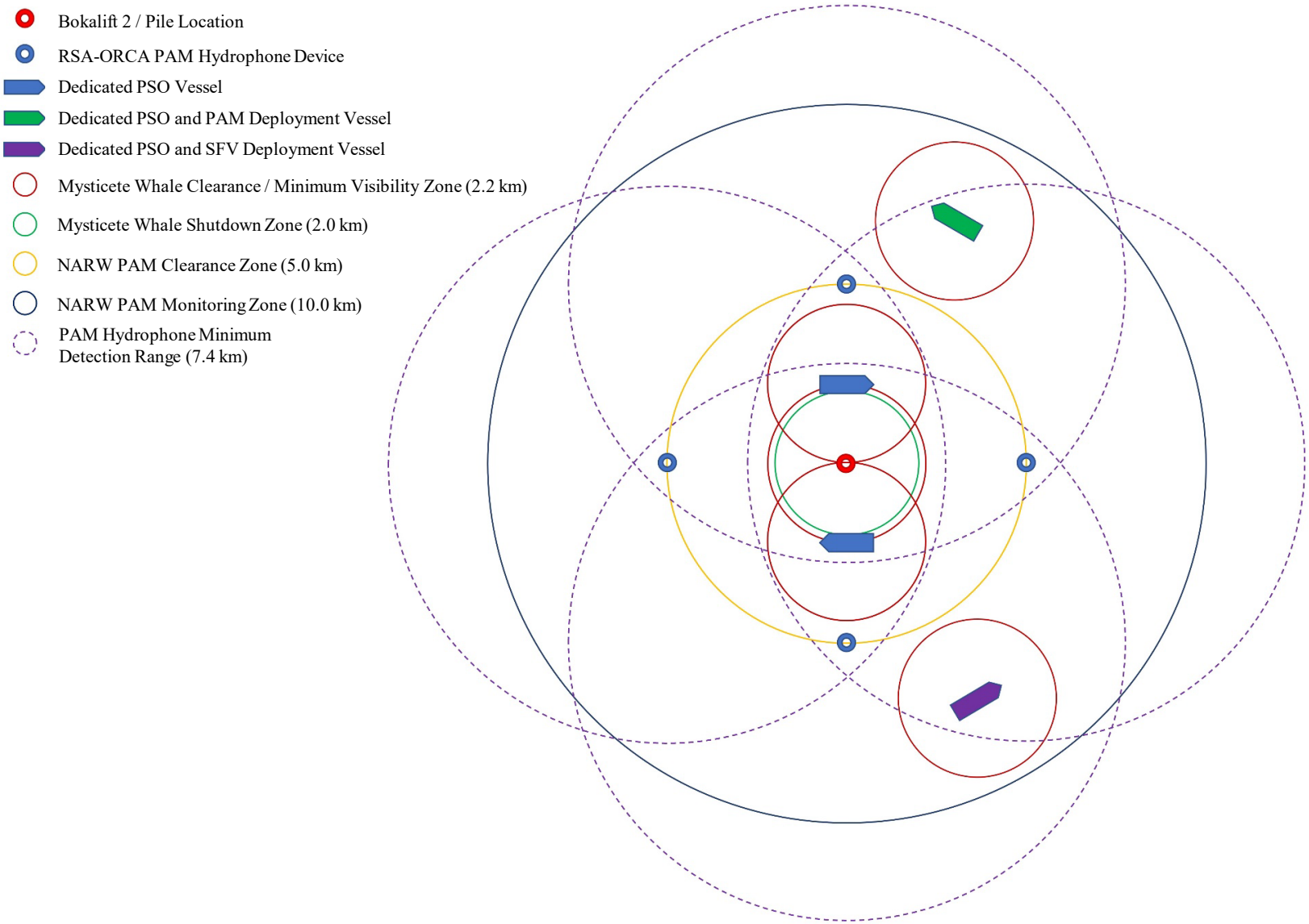

Figure 2: Locations of dedicated PSO and PAM monitoring platforms relative to IHA-stipulated large whale monitoring and mitigation zones during the SFW Foundations installation program, June 8 – August 11, 2023.

PAM monitoring was configured to achieve a minimum 7.4-km detection range for North Atlantic right whales (NARW) which allowed acoustic monitoring of the 5-km NARW PAM Clearance Zone and 2-km NARW PAM Shutdown Zone (Figure 2). A dedicated PSO-PAM monitoring vessel was used for deployment, recovery, and maintenance of four PAM hydrophone systems associated with each Foundations monopile installation. The 4-hydrophone mitigation PAM system was deployed and tested repeatedly prior to each monopile installation to ensure PAM monitoring was occurring at least 60 minutes prior to active piling, during all active pile driving, and for a minimum of 30 minutes following cessation of active piling. A dedicated PAM vessel recovered all four hydrophones after each monopile installation to replace battery systems, calibrate and confirm functionality, and prepare for deployment ahead of the next monopile installation.

PSO teams aboard the Bokalift 2 and each of the four dedicated PSO monitoring vessels stood watch for approximately 20 hours each 24-hour period from 08:30–04:30 (04:30–00:30 EDT) whenever vessels were offshore, except for weather standby periods when no pile driving activity was conducted (Appendix Table A3). Bokalift 2 PSO and PAM teams remained offshore at the SFW windfarm location for the entirety of the Foundations monopile installation period, whereas PSO teams aboard the four dedicated monitoring vessels spent numerous non-piling periods in port for crew changes, resupply operations, and vessel maintenance. There were no periods when PSO monitoring was required to support pile driving when Bokalift 2 PSOs were on watch but PSOs on adjacent monitoring vessels were not. The only instances when PSOs aboard Bokalift 2 and adjacent monitoring vessels were not on watch concurrently were during non-piling periods with inclement weather, when PSO monitoring was not required.

At a minimum, PSO and PAM watches aboard each dedicated monitoring vessel present in the SFW Lease Area for each monopile installation spanned the period of 60 minutes before, during, and 30 minutes following cessation of all impact pile driving activity. The majority of PSO watch effort, however, was conducted during non-piling periods to test and calibrate monitoring equipment, establish PSO communication channels, and establish and maintain a baseline understanding of the general distribution of marine mammals and sea turtles in the SFW Project Area.

Bokalift 2 and dedicated monitoring vessel PSO teams conducted a combined total of ~3,650 hours of visual monitoring effort (sum of PSO watch hours across five vessels) from June 8 – August 11, 2023 (Figure 3). PAM Operators aboard Bokalift 2 conducted nearly 140 hours of acoustic monitoring during the same period (Figure 3). The most PSO visual watch effort occurred aboard Bokalift 2 (908 hours), and PSO effort from the four dedicated monitoring vessels ranged from 426 to 757 hours (Figure 3). The differences in total PSO watch durations among vessels resulted from differing amounts of total time spent offshore in the SFW Project Area by each vessel, all of which made periodic port calls of varying durations during the Foundations program except for Bokalift 2. Table 9 summarizes the composition of dedicated PSO and PAM monitoring platforms utilized for each of the 13 monopile installations.

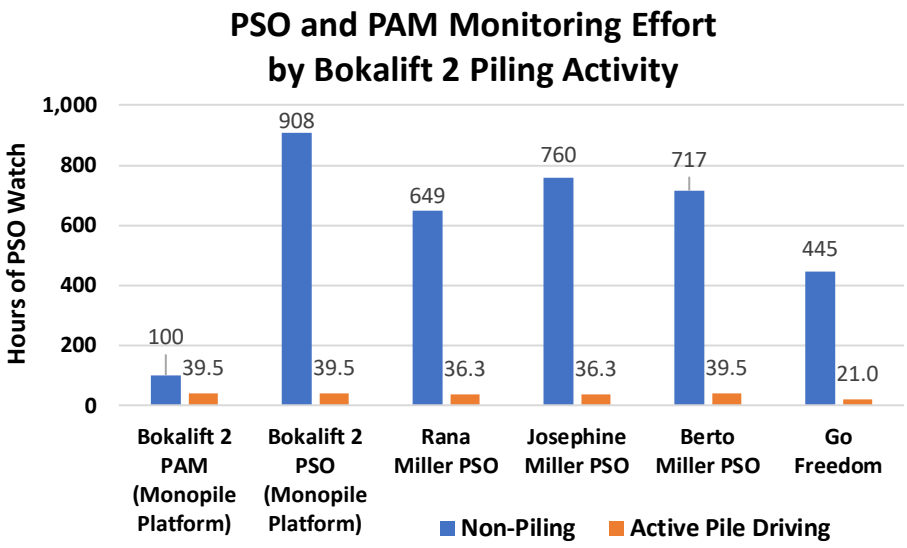

Figure 3: PSO and PAM monitoring effort in hours by Bokalift 2 pile driving activity during the SFW Foundations installation program, June 8 – August 11, 2023.

Table 9: Dedicated PSO monitoring platforms for each monopile installation during the SFW Foundations installation program, June 8 – August 11, 2023. Dedicated PAM monitoring was conducted by a PAM team aboard Bokalift 2 for each of the 13 monopile installations.

Visual PSO Platforms	Monopile Identifier	Installation Date
Bokalift 2 Berto Miller Go Freedom Josephine Miller Rana Miller	Z01	19-20 Jun 2023
	A12	2 Jul 2023
	A08	6 Jul 2023
	A10	8-9 Jul 2023
	A03	12 Jul 2023
Bokalift 2, Berto Miller, Go Freedom, Rana Miller	A14	21 Jul 2023
Bokalift 2, Berto Miller, Go Freedom, Josephine Miller	A11	23 Jul 2023
Bokalift 2 Berto Miller Josephine Miller Rana Miller	A02	31 Jul 2023
	A15	1 Aug 2023
	A13	3 Aug 2023
	A01	4 Aug 2023
	A07	5 Aug 2023
	A04	7 Aug 2023

The vast majority of all PSO and PAM monitoring aboard Bokalift 2 during the Foundation monopile installation program occurred during non-piling and standby periods (Table 10). Considerably more visual monitoring was conducted overall compared to PAM (Figure 3, Table 10) due to the logistics required for PAM hydrophone and buoy deployment, retrieval, and maintenance (e.g., battery swaps) to ensure each of four units was operational and in alignment with all periods immediately before, during, and after active piling. Appendix Table A3 outlines PSO watch periods and associated pile driving activities across the entire Foundations installation program.

Visual and acoustic monitoring aboard Bokalift 2 was conducted immediately before, during, and after all ~39.5 hours of active pile driving operations (Table 10). Nearly 6 hours of the total active piling duration was coded by PSOs as *Soft Start*. Active pile driving periods were coded by PSOs as either the IHA-stipulated minimum 20-minute *Soft Start* with minimal impact hammer energies (10–20 % of 4,000 kJ maximum allowed) and reduced strike rates of 4–6 strikes per minute at the commencement of piling, or as *Impact Pile Driving* for all other periods of active piling. It should be noted PSOs coded periods as *Impact Pile Driving* based on increased hammer strike rates, regardless of whether hammer energies had risen above low-energy Soft Start thresholds. Hammer energies remained at relatively low levels following the required 20-minute Soft Start period for approximately the first half of each monopile installation, before greater energy was required to reach deeper penetration of piles. Hammer energies for monopile installations are discussed in more detail below under *Potential Level-B and Level-A Incidental Exposures.*

PSO and PAM teams also conducted concurrent, dedicated monitoring of a minimum 60-minute Clearance period and a minimum 30-minute Post-piling period immediately before and after completion of active piling, respectively. Clearance and Post-piling watches were conducted on each of 15 days when active impact piling of monopiles occurred. Clearance monitoring totaled nearly 52 hours (Table 10), an average of nearly 3.5 hours on each of 15 active-piling day and significantly greater than the minimum 60-minute per-pile IHA Clearance requirement. This resulted from PSOs and PAM Operators proactively commencing Clearance monitoring well in advance of scheduled piling to assess distribution of marine mammals and sea turtles at the site and in adjacent waters, and also to ensure operational readiness while piles were being prepared and moved into position. Post-piling watch periods totaled ~7.5 hours, which reflects a dedicated ~30-minute watch following completion of active piling on 15 separate days (Table 10). PSO and PAM teams routinely continued monitoring well beyond the required 30-minute Post-piling watch, but this effort was coded as *non-piling* to maintain data consistency and standardization.

All foundation monopile Clearance, Soft Start, and impact piling periods occurred during daylight hours except for ~33 minutes of impact piling on July 23, 2023. Soft Start and impact piling of foundation monopile A11 commenced in good visibility during daylight hours on the afternoon of July 23. Monopile installation was nearing completion as civil twilight approached. The offshore construction manager (OCM) determined a Shutdown was not practicable at the late installation stage to maintain pile integrity and operational safety as it approached final penetration depth. Acoustic and visual monitoring, including use of vessel-mounted IR camera

systems aboard Bokalift 2 and three adjacent, dedicated PSO monitoring vessels (Berto Miller, Josephine Miller, and Go Freedom), were continuous throughout the period. A single non-NARW unidentified Mysticete whale was observed at a distance of ~6,500 m from the active pile at sunset, and there were no other PSO or PAM detections of protected species during the final 3 hours of daylight or the ~33 minutes of piling activity after civil twilight on July 23.

Table 10: PSO and PAM monitoring effort (hh:mm) aboard Bokalift 2 from non-piling and active pile driving periods during the SFW Foundations installation program, June 8 – August 11, 2023.

Monitoring Method	Non-piling Periods			Active Pile Driving Periods	
	Standby	Clearance	Post-piling	Soft Start	Impact Piling
PSO	840:34	51:48	7:32	5:42	33:50
PAM	40:39	51:48	7:32	5:42	33:50

3.4. Vessel Transit Monitoring

All 502 SFW Project vessel transits during the reporting period were monitored by dedicated Trained Lookouts (or PSOs serving as Trained Lookouts aboard PSO vessels) with no other concurrent responsibilities to facilitate strike avoidance mitigation in collaboration with vessel operators. SFW provided dedicated Trained Lookout training to 449 people in 52 separate classes during the reporting period. All classes were live, virtual sessions and the curriculum highlighted all SFW strike avoidance conditions, including minimum separation distances, vessel speed restrictions and NARW Slow Zones, required mitigation for each species group, documenting and reporting of sightings, and a daily situational awareness brief outlining the current distribution of protected species within the Project Area. Each class concluded with a question-and-answer period. Training materials were provided to each vessel for printing as hard copy reference materials by Trained Lookouts, including a customized protected species identification guide.

Trained Lookouts worked with vessel operators to visually detect marine mammals and sea turtles whenever vessels were underway, to maintain all stipulated minimum separation distances to the maximum extent practicable, and to facilitate implementation of all required strike avoidance mitigation measures. A handheld night vision or infrared (IR) device was provided to Trained Lookouts on all SFW Project vessels for use during nighttime transits and other periods with reduced visibility.

4. Protected Species Monitoring and Mitigation Results

The following sections present detailed results of all protected species monitoring and mitigation for all SFW vessel transits and pile driving activities from September 28, 2022 (boulder clearance commencement) – August 11, 2023 (end of foundation monopile monitoring and associated data collection). Results include all visual and acoustic detections of marine mammals by PSOs, PAM Operators, and Trained Lookouts, and all visual detections of sea turtles by PSOs and Trained Lookouts.

4.1. HDD and Foundations Monitoring and Mitigation Results

SFW PSO and PAM teams recorded all detections of marine mammals and sea turtles during active watch periods, including vessel transit and standby operations outside of pile driving operations. Foundations PSO teams aboard Bokalift 2 and each of four dedicated monitoring vessels maintained continuous communication to coordinate details for each detection.

All possible efforts were made to distinguish unique individuals and minimize duplicative detections from multiple PSO teams; however, all sightings from each PSO team are reported independently herein as a conservative measure. The LB Jill and Bokalift 2 were stationary for the majority of HDD and monopile foundations installation programs, respectively; therefore, duplicative sightings from these vessels are likely lower than moving vessels because animals could be tracked with a reasonable level of reliability. However, duplicative sightings, particularly of large whales, are apparent in the data. This assumption is based on the total number of individuals seen and the percent population or stock, which is not a realistic value or realistic biological expectation for these species. As part of the agreed-upon PSO reporting process, if there was any question regarding whether an individual animal or group of animals had already been recorded on a given day, PSOs entered a new, independent detection record to ensure all protected species observations were documented. In post analysis of these detections, no detections were removed unless PSOs noted that a detection was duplicative with another sighting. This potential duplication of detections on a daily basis also likely occurred across days. PSOs and PAM Operators assumed all detections on a given day were independent from detections documented on previous days; however, it is likely that some individuals were present, detected, and documented in the Project Area on multiple days.

Therefore, the combined total numbers of animals documented in SFW PSO and PAM data, and reported in this report, almost certainly reflect an overestimation of the actual numbers of individual protected species present in the Project Area during the reporting period. The following sections present results from all visual PSO and PAM detections during HDD and monopile foundation installations and associated vessel transits, all associated mitigation, and estimates of the numbers of individual protected species potentially exposed to noise levels at or above Level-B and Level-A thresholds.

4.1.1. Species Composition and Detection Summary

HDD PSOs aboard LB Jill, and foundation PSO and PAM personnel aboard Bokalift 2 and each of the four dedicated monitoring vessels, documented a combined total of 688 protected species groups consisting of an estimated 3,807 individual animals (Table 11, Appendix Tables A4 and A5). Over 65% of all detections were mysticete whales; however, large whales accounted for only 19% of the individual animals (n =770 of 3,807; Table 11) detected by PSOs and PAM teams during the reporting period. Approximately 80% of the individual protected species detected during SFW's pile installation programs were dolphins (n=3,037 of 3,807; Table 11). The relatively high numbers of mysticete whale detections by PSOs reflect unusually high, localized densities of humpback whales in nearshore areas (e.g., the SFW HDD site) during fall 2022 and large numbers of mysticete whales in the SFW Lease Area during summer 2023 by comparison to expected maximum densities used in animal exposure modeling for the SFW IHA application (e.g., Roberts et al. 2016; Roberts 2018, 2020).

There were relatively few detections of seals and sea turtles by PSO teams during the Project. Nearly all seal detections occurred during the nearshore HDD installation program in late autumn 2022, whereas all 13 sea turtle detections occurred during the offshore Foundations installation program in summer 2023. These sea turtle and seal detection results reflect expected seasonal and regional distributions.

No PAM detections of low-frequency cetacean species were made during the Project. PAM was not employed during HDD activities. The lack of PAM detections during foundation installation may be a result of the relatively small proportion of PAM effort that was conducted compared to visual monitoring. Acoustic monitoring was conducted primarily during periods immediately prior to, during, and after active pile driving of monopiles. Visual monitoring, by comparison, was conducted daily by PSO teams aboard five different vessels for approximately 20 hours per day across the entire Foundations program from June 8 – August 11, 2023, except for port calls and inclement weather. Additionally, during the pile driving period, operational noise may have masked low-frequency baleen whale calls.

4.1.1.1. HDD Visual PSO Detection Summary

PSOs aboard LB Jill documented a combined total of 164 marine mammal groups consisting of an estimated 530 individual animals during the SFW HDD installation program (Table 12, Appendix Tables A4 and A5). There were no sea turtle detections during HDD operations, and there was no dedicated acoustic monitoring associated with the HDD program.

Nearly two-thirds of all marine mammal sightings by HDD PSOs were of humpback and unidentified mysticete whales (Table 12). There were considerably fewer detections of dolphins during HDD operations, but dolphins accounted for over half of all individual marine mammals observed by HDD PSOs due to large group sizes. The most unique cetacean sighting from the HDD monitoring program was a single pod of an estimated 16 white-beaked dolphins, which is an uncommon species in the Project Area. Gray seal was the most commonly identified seal species during the HDD installation program, with smaller numbers of harbor and unidentified seals recorded by PSOs. See Appendix Tables A4 and A5 for details of each detection. No North Atlantic Right Whales (NARW) were detected during the SFW HDD installation program.

Table 11. Combined visual PSO and PAM detections by fauna group during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively. See Appendix Tables A4 and A5 for details of each detection.

Scope and Species	Detections/Groups	Individuals
HDD		
Mysticete Whales	102	166
Odontocetes	27	329
Seals	35	35
Sea Turtles	0	0
HDD Totals	***164***	***530***
Foundations		
Mysticete Whales	348	552
Odontocetes	159	2,708
Seals	4	4
Sea Turtles	13	13
Foundations Totals	***524***	***3,277***
Grand Totals	***688***	***3,807***

Table 12: All visual PSO and PAM detections of protected species during the SFW Foundations installation program, June 8 – August 11, 2023.

Species by Group	Detections/Groups	Individuals
Mysticete Whales		
Humpback Whale	48	89
Minke Whale	6	6
Unidentified Mysticete Whale	48	71
Mysticete Totals	***102***	***166***
Odontocetes		
Short-beaked Common Dolphin	3	186
White-beaked Dolphin	1	16
Unidentified Dolphin	9	111
Harbor Porpoise	3	4
Odontocete Totals	***16***	***317***
Seals		
Gray Seal	29	29
Harbor Seal	6	6
Unidentified Pinniped	11	12
Seal Totals	***46***	***47***
HDD Grand Totals	***164***	***530***

4.1.1.2. Foundations Visual PSO and PAM Detection Summary

PSO and PAM teams aboard Bokalift 2 and each of the four dedicated monitoring vessels documented a combined total of 524 protected species groups consisting of an estimated 3,277 individual animals during the SFW Foundations installation program (Table 13, Appendix Tables A4 and A5). No mysticete whale calls were detected; however, 31 acoustic detections of odontocetes comprised 100% of dolphins (family Delphinidae) were made during PAM monitoring periods. Three acoustic detections of dolphins were confirmed visually as short-beaked common dolphins by PSOs aboard nearby monitoring vessels.

Similar to HDD monitoring results, the majority of protected species detections made by PSO teams were mysticete whales, and the majority of associated individual animals were dolphins in larger groups (Table 13). Humpback and fin whales were locally common in the SFW Lease Area for most of the foundation installation period with smaller numbers of sei and minke whales. PSOs used the *non-NARW unidentified mysticete whale* code for a mysticete whale confirmed to be a species other than NARW (e.g., presence of dorsal fin) but for which an identification to species could not be determined.

Bokalift 2 PSOs observed a group of three individual North Atlantic right whales (NARW; Table 13) while monitoring with 25 X 150 “Big Eye” binoculars on June 10, 2023, nine days prior to

commencement of active pile driving for the Foundations installation program. The Bokalift 2 was stationary throughout the NARW sighting, and the group of whales was approximately 8,000 meters (m) from the vessel at its closest approach. There were no other detections of NARW during the SFW Foundations installation program.

PSOs recorded only 13 sea turtles and four seals across the entire Foundations installation program from June 8 – August 11, 2023 (Table 13). The 13 turtle sightings consisted of leatherback, loggerhead, green, and unidentified sea turtles, and gray seal was the only seal species identified. These results suggest relatively low densities of turtle and seal species in the SFW Lease Area and surrounding waters during monopile installation activities during summer 2023. See Appendix Tables A4 and A5 for details of each detection.

4.1.1.2.1. Visual PSO Detections During Darkness

Most Foundations PSO monitoring occurred during daylight hours from dawn to dusk, which aligned with daytime-only active pile driving operations. There were relatively short periods on most days, however, when PSOs aboard Bokalift 2 and dedicated monitoring vessels monitored opportunistically in darkness to maintain situational awareness. PSO monitoring during periods of darkness was conducted using two different models of vessel-mounted infrared (IR) camera systems (Table 7). Nighttime monitoring effort bins across camera types, vessel activities (e.g., stationary, transit), platform height, etc. were small and precluded robust analysis of associated detections; however, nighttime detection results are useful at a high level for demonstrating the relative efficacy of alternative monitoring technologies.

PSOs detected a total of 19 marine mammal groups opportunistically during darkness when pile driving was not occurring, including eight groups of mysticete whales and 11 dolphin pods. Eight of the 19 total nighttime detections were made by PSOs aboard Bokalift 2 (6 whale groups and 2 dolphin pods), and the remaining 11 (2 whale groups and 9 dolphin pods) were detected from dedicated PSO monitoring vessels. Nighttime detection distances for the eight whale groups ranged from 600 to 7,500 m, and dolphins were detected in darkness at distances between 50 and 5,500 meters. These nighttime visual detection results indicate PSOs using alternative technologies can detect protected species in darkness at distances sufficient to conduct required monitoring and mitigation measures.

Table 13: All visual PSO and PAM detections of protected species during the SFW Foundations installation program, June 8 – August 11, 2023.

Method and Species by Group	Detections/Groups	Individuals
Visual Monitoring		
Mysticetes		
Fin Whale	58	84
Humpback Whale	111	223
Minke Whale	6	6
North Atlantic Right Whale	1	3
Sei Whale	13	20
Non-NARW Unidentified Mysticete Whale	128	182
Unidentified Mysticete Whale	31	34
Mysticete Totals	**348**	**552**
Odontocetes		
Sperm Whale	1	1
Bottlenose Dolphin	12	235
Short-beaked Common Dolphin	81	2,023
Unidentified Dolphin	34	418
Odontocete Totals	**128**	**2,677**
Seals		
Gray Seal	**3**	**3**
Unidentified Pinniped	1	1
Seal Totals	**4**	**4**
Sea Turtles		
Green Sea Turtle	1	1
Leatherback Sea Turtle	3	3
Loggerhead Sea Turtle	4	4
Unidentified Sea Turtle	5	5
Sea Turtle Totals	**13**	**13**
Visual Monitoring Totals	***493***	***3,246***
PAM		
Short-beaked Common Dolphin	3	3
Unidentified Dolphin	28	28
PAM Totals	***31***	***31***
Foundations Grand Totals	***524***	***3,277***

4.1.2. PSO and PAM Detections by Pile Driving Period

PSOs and PAM Operators recorded the start and end times for each protected species detection, reflecting the precise times at which an animal or group of animals was first and last detected, respectively. These start and end time stamps were used to assign a *detection period* (i.e., duration) for each PSO and PAM Detection ID. Detection periods for each PSO and PAM Detection ID were used to bin detections into the corresponding operational activity periods of *non-piling* or *active pile driving*.

Detection periods from a combined total of 50 protected species groups (i.e., Detection IDs) consisting of an estimated 197 individual animals were at least partially concurrent, or overlapping, with periods of active pile driving during HDD (vibratory and impact piling) and Foundations (impact piling only) installations, including Soft Start periods when impact hammer energies were less than 20% of the maximum permitted energy (Table 14, Appendix Table A4). The small proportion of sightings concurrent with active piling represented approximately 7% of all 688 detections, and 5% of the estimated 3,807 total individual marine mammals and sea turtles. The smaller number of detections during active piling may be the result of several factors:

- Periods of active pile driving and associated monitoring effort were restricted to relatively short, isolated periods by comparison to the overall amount of monitoring effort, including prolonged durations of non-piling and vessel standby periods (Figure 3, Tables 6 and 10);
- Pile driving mitigation is designed to minimize active piling when protected species are present in the immediate vicinity of the pile location. PSO and PAM Clearance watches stipulated in the NMFS IHA are conducted for a minimum of 60 minutes prior to commencement of active pile driving to ensure no marine mammals or sea turtles are present within their respective Clearance Zones prior to commencement of piling;
- Marine mammals and sea turtles may have exhibited localized avoidance of active pile driving operations. This possibility, although not appropriate to analyze with statistical rigor based on limited data from a single short-term project, is explored in general terms below under *Potential Level-B and Level-A Incidental Exposures*.

A total of 72 detections were documented by PSOs and PAM Operators during Clearance watch periods immediately prior to commencement of active pile driving (n=59 visual and 13 PAM; Table 15, Appendix Table A4). There were 48 detections of an estimated 65 individual mysticete whales during PSO Clearance, all of which occurred during the Foundations program except for a single humpback whale at the HDD site. Several of these mysticete Clearance sightings, along with a harbor seal, resulted in delays of active pile driving until PSOs were able to confirm no further detections of these individuals within applicable Clearance Zones for a minimum of 30 continuous minutes immediately prior to piling. Operational delays due to detection of a protected species were coded as "detection delays." These operational delays for protected species are discussed in detail below under *PSO and PAM Mitigation Summary.*

Five mysticete whale sightings (7 individuals) and 10 combined visual and acoustic dolphin detections (268 individuals) occurred during dedicated 30-minute Post-piling watch periods (Table 15, Appendix Table A4). The relatively low number of marine mammal detections immediately following cessation of active pile driving may have been the result of low monitoring effort and how data were coded by observers. The total visual and acoustic monitoring effort during Post-piling periods – as formally coded and restricted to 30 minutes by PSOs and PAM Operators for data standardization – accounted for a very small portion the total PSO and PAM effort across all operations (Tables 6 and 10). Additionally, it is possible some animals moved away from active piling operations and would not have been present at the site when piling stopped; however, this possibility is difficult to assess statistically due to low sample sizes.

Table 14: All visual PSO and PAM detections of marine mammals and sea turtles by pile driving activity periods during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively. PSO detections from active HDD pile driving periods include detections during both vibratory and impact piling, and all pile driving activity for Foundations installations was impact piling.

Scope and Species	Non-Piling		Active Pile Driving*		*Grand Totals*	
	Detections	& Individuals	Detections	& Individuals*	*Detections*	*& Individuals*
HDD						
Mysticete Whales	96	151	6	15	***102***	***166***
Odontocetes	16	317	0	0	***16***	***317***
Seals	46	47	0	0	***46***	***47***
HDD Totals	***158***	***515***	***6***	***15***	***164***	***530***
Foundations PSO						
Mysticete Whales	319	501	29	51	***348***	***552***
Odontocetes	121	2,554	7	123	***128***	***2,677***
Seals	4	4	0	0	***4***	***4***
Sea Turtles	12	12	1	1	***13***	***13***
Foundations PSO Totals	***456***	***3,071***	***37***	***175***	***493***	***3,246***
Foundations PAM						
Odontocetes	24	24	7	7	***31***	***31***
Foundations PAM Totals	***24***	***24***	***7***	***7***	***31***	***31***
Foundations Totals	***480***	***3,095***	***44***	***182***	***524***	***3,277***
Grand Totals	***638***	***3,610***	***50***	***197***	***688***	***3,807***

**Individuals* reflect all animals recorded for a detection event, including individuals present and last detected *before* commencement of piling.

Table 15: All visual PSO and PAM detections of protected species concurrent with Clearance, active pile driving, or 30-minute Post-piling periods during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively. PSO detections from active HDD pile driving periods include detections during vibratory and impact piling, and pile driving activity for Foundations was exclusively impact piling. See Appendix Table A4 for details of each detection.

Scope and Species	Pre-Clearance Detections (Ind)	Active Pile Driving* Detections (Ind*)	30-min Post-Piling Detections (Ind)	Grand Totals Detections (Ind)
HDD (Visual PSO Only)				
Mysticetes				
Humpback Whale	1 (1)	3 (11)	1 (1)	***5 (13)***
Unidentified Mysticete Whale	0	3 (4)	1 (3)	***4 (7)***
Mysticete Totals	***1 (1)***	***6 (15)***	***2 (4)***	***9 (20)***
Seals				
Harbor Seal	1 (1)	0	0	***1 (1)***
Unidentified Pinniped	1 (1)	0	0	***1 (1)***
Seal Totals	***2 (2)***	***0***	***0***	***2 (2)***
HDD Totals	***3 (3)***	***6 (15)***	***2 (4)***	***11 (22)***
Foundations PSO				
Mysticetes				
Fin Whale	13 (20)	5 (12)	0	***18 (32)***
Humpback Whale	8 (11)	5 (13)	0	***13 (24)***
Minke Whale	1 (1)	0	0	***1 (1)***
Sei Whale	1 (1)	1 (3)	0	***2 (4)***
Non-NARW Unidentified Mysticete Whale	22 (29)	18 (23)	2 (2)	***42 (54)***
Unidentified Mysticete Whale	2 (2)	0	1 (1)	***3 (3)***
Mysticete Totals	***47 (64)***	***29 (51)***	***3 (3)***	***79 (118)***
Odontocetes				
Bottlenose Dolphin	2 (35)	1 (15)	0	***3 (50)***
Short-beaked Common Dolphin	3 (80)	6 (108)	9 (256)	***18 (444)***
Unidentified Dolphin	2 (25)	0	1 (10)	***3 (35)***
Odontocete Totals	***7 (140)***	***7 (123)***	***10 (266)***	***24 (529)***
Sea Turtles				
Green Sea Turtle	0	1 (1)	0	***1 (1)***
Leatherback Sea Turtle	1 (1)	0	0	***1 (1)***
Loggerhead Sea Turtle	1 (1)	0	0	***1 (1)***
Sea Turtle Totals	***2 (2)***	***1 (1)***	***0***	***3 (3)***
Foundations PSO Totals	***56 (206)***	***37 (175)***	***13 (269)***	***106 (650)***
Foundations PAM				
Odontocetes				
Short-beaked Common Dolphin	2 (2)	0	0	***2 (2)***
Unidentified Dolphin	11 (11)	7 (7)	2 (2)	***20 (20)***
Odontocete Totals	***13 (13)***	***7 (7)***	***2 (2)***	***22 (22)***
Foundations PAM Totals	***13 (13)***	***7 (7)***	***2 (2)***	***22 (22)***
Foundations Totals	***69 (219)***	***44 (182)***	***15 (271)***	***128 (672)***
Grand Totals	***72 (222)***	***50 (197)***	***17 (275)***	***139 (694)***

**Individuals* reflect all animals recorded for a detection event, including individuals present and last detected *before* commencement of active piling.

Table 16 summarizes the 50 detections at least partially concurrent with active piling (i.e., some portion of the detection duration overlapped with active pile driving) by the type of piling activity. Eight visual and one PAM detection were concurrent only with Soft Start periods at the commencement of impact piling when hammer energies were less than 20% of the maximum permitted 4,000 kJ. Thirty-seven detections overlapped with periods of active impact pile driving, consisting of 41 mysticete whales, 99 dolphins, and single sea turtle (Table 16). Four detections of 10 individual whales were made by HDD PSOs while vibratory piling was occurring, an activity exclusive to the HDD installation program.

Table 16: All PSO and PAM detections of protected species at least partially concurrent (i.e., overlapping) with periods of active pile driving during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively.

Scope and Species	Soft Start	Impact Piling	Vibratory Piling	Grand Totals
	Detections (Ind)	Detections (Ind)	Detections (Ind)	Detections (Ind)
HDD (Visual PSO Only)				
Mysticetes	1 (1)	1 (1)	4 (10)	***6 (12)***
HDD Totals	***1 (1)***	***1 (1)***	***4 (10)***	***6 (12)***
Foundations PSO				
Mysticetes	6 (8)	23 (40)	N/A	***29 (48)***
Odontocetes	1 (30)	6 (93)	N/A	***7 (123)***
Sea Turtles	0	1 (1)	N/A	***1 (1)***
Foundations PSO Totals	***7 (38)***	***30 (134)***	***N/A***	***37 (172)***
Foundations PAM				
Odontocetes	1 (1)	6 (6)	N/A	***7 (7)***
Foundations PAM Totals	***1 (1)***	***6 (6)***	***N/A***	***7 (7)***
Foundations Totals	***8 (39)***	***36 (140)***	***N/A***	***44 (179)***
Grand Totals	***9 (40)***	***37 (141)***	***4 (10)***	***50 (191)***

4.2. PSO and PAM Mitigation Summary

PSO teams facilitated mitigation for 107 of the 688 total detections of protected species during the SFW HDD and Foundations programs (Table 17). Twenty of the 106 PSO mitigation events involved a delay to the commencement of pile driving (i.e., "detection delay) or a reduction of impact hammer energy during periods of active pile driving. The remaining 87 PSO mitigations involved facilitation of vessel strike avoidance measures in collaboration with vessel operators while vessels were underway.

Table 17: Summary and types of mitigation facilitated by PSO teams for protected species detections during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively.

Scope and Species Group	Pile Driving	Vessel Strike Avoidance*	*Grand Totals*
HDD			
Mysticete Whales	6	N/A	***6***
Odontocetes	0	N/A	***0***
Seals	2	N/A	***2***
Sea Turtles	0	N/A	***0***
HDD Totals	***8***	***N/A***	***8***
Foundations			
Mysticete Whales	12	54	***66***
Odontocetes	0	26	***26***
Seals	0	3	***3***
Sea Turtles	0	4	***4***
Foundations Totals	***12***	***87***	***99***
Grand Totals	***20***	***87***	***107***

*PSOs aboard the LB Jill during the HDD program were stationary and, therefore, strike avoidance mitigation was not applicable to the HDD PSO team. PSO teams aboard dedicated monitoring vessels for the Foundations program routinely implemented vessel strike avoidance mitigation while vessels were underway.

4.3. HDD Mitigation Summary

All eight HDD pile driving mitigations involved a delay of vibratory or impact pile driving due to PSO visual detections of marine mammals in the applicable Clearance Zone or in areas slightly beyond (Tables A4 and A5; *Detection IDs* Jill V19, V23, V101, V136, V155, V157, V162, and V163). These eight HDD pile driving delays involved 14 individual humpback whales, a single harbor seal, and one unidentified pinniped. All individual marine mammals associated with HDD detection delays were confirmed by PSOs to have not been detected for at least 30 minutes immediately prior to commencement of active piling. Delays to commencement of HDD pile driving due to these detections ranged from approximately 30 minutes to several hours.

Detection delays occurred prior to commencement of HDD active piling on five of the six days when HDD pile driving occurred (November 18, 20, 28, and December 17, 19, 2023; Table 2 and Appendix Table A4). There were no protected species observed in applicable Shutdown Zones by HDD PSOs at any time during active piling operations. There also were no delays of HDD piling operations due to fog or other periods of reduced visibility that precluded visibility of the entirety of all Clearance and Shutdown Zones. Additionally, PSO monitoring and mitigation of HDD operations was conducted aboard LB Jill while stationary at the HDD site. Therefore, vessel strike avoidance mitigation was not applicable to the HDD PSO team (Table 17).

4.4. Foundations Mitigation Summary

Foundations PSO teams aboard Bokalift 2 and four dedicated PSO monitoring vessels collaborated extensively to coordinate monitoring and mitigation of monopile installation activities, including real-time sharing of all sightings across PSO teams via VHF radio. All 12 Foundations pile driving mitigation events were facilitated by Bokalift 2 PSOs and involved groups of mysticete whales (Table 17). Tables A4 and A5 present details for the 12 mysticete whale groups that resulted in pile driving mitigation, including several whale sightings observed by PSO teams aboard nearby monitoring vessels (*Detection IDs* BL2 V70, BL2 V79, BL2 V84, BL2 V85, BL2 V102, BL2 V112, BL2 V113, BL2 V114, BM V61, GF V178, GF V185, and RM V41).

Ten of these Foundations mitigation events involved a delay to the commencement of active impact pile driving due to mysticete whales (i.e., a "detection delay") in the vicinity of the monopile site. The other two Foundations mitigation events consisted of a complete pile driving Shutdown and one instance when hammer energy was reduced to the maximum safe level, although neither of these two cases involved animals in the Shutdown Zone. Details are discussed below.

The 10 Foundations piling delays for protected species involved eight individual fin whales, one minke whale, one sei whale, three non-NARW unidentified mysticetes, and a single unidentified baleen whale. PSOs used the *non-NARW unidentified mysticete whale* code for a mysticete whale confirmed to be a species other than NARW (e.g., presence of dorsal fin) but for which an identification to species could not be determined. Detection delays occurred not only for whales within the applicable Clearance Zone (2,200 – 4,000 m), but also for numerous animals within the larger Level-B Harassment Zone (4,684 – 7,800 m). Precautionary delays of Soft Starts for whales well outside the Clearance Zone – but within approximately 5,000 m of the pile site – were implemented to reduce the probability for acoustic exposures to baleen whales at or above the Level-B threshold of 160 dB (rms).

Delays of impact pile driving for large whale detections during Foundations installations occurred on five different days (June 19, 20, and July 6, 8, 12). All individual whales associated with these operational delays were confirmed by PSOs to have not been detected for at least 30 minutes immediately prior to commencement of active piling. Delays to commencement of impact pile driving due to these detections ranged from approximately 30 minutes to several hours.

A complete Shutdown of the impact hammer was facilitated by Bokalift 2 PSOs shortly after commencement of Soft Start on June 20, 2023, during installation of the first SFW monopile (Z01). Bokalift PSOs observed a single humpback whale ~3,300 m from the pile five minutes into a Soft Start and immediately requested a Shutdown of piling. The Shutdown request was deemed feasible by the OCM and implemented immediately. Although this whale was over 1,000 m beyond the 2,000-m Shutdown Zone in effect at the time, SFW elected to shut down in this case to minimize the potential for Level-B exposures due to the numerous baleen whales confirmed in the region by PSOs in previous days. Several mysticete whales lingered in the

operational area following the Shutdown. A subsequent Soft Start was delayed and did not commence until ~2.5 hours after the Shutdown until all Clearance measures had once again been met.

A second proactive Shutdown request by Foundations PSOs occurred on July 6, 2023. Berto Miller PSOs radioed the Bokalift 2 to report an unidentified mysticete whale well outside the Shutdown Zone at a distance of more than 10,000 m from the pile. The Bokalift 2 Lead PSO requested a Shutdown, however, the OCM determined a complete Shutdown of piling was not practicable given the late stage of installation. A Shutdown near the end of installation risked the monopile becoming stuck in the soil substrate or would have required the use of significantly-more hammer energy to drive the pile to final depth, potentially resulting in unacceptable pile fatigue. Instead, the impact hammer energy was reduced to the minimum level necessary to maintain installation integrity for ~6 minutes until the "non-NARW" determination could be made. PSOs confirmed the whale was not a NARW after observing a dorsal fin, and impact hammer energy was then increased to levels necessary to complete the pile installation. Berto Miller PSOs continued to monitoring the whale and it was not observed closer than 9,000 m from the active pile.

In addition to the above pile driving mitigation for protected species detections, there were numerous cases when PSOs could not effectively monitor the entirety of mitigation zones and pile driving ultimately was delayed. Late June and early July 2023 in the SFW Lease Area were characterized by prolonged periods of dense fog with intermittent breaks. Pile driving was not scheduled on all days during this period, but active piling was postponed or shut down until the following day on 5 different days within a 9-day period. Specifically, Foundations PSOs were unable to monitor the entirety of the 4,000-m Minimum Visibility Zone adopted in the SFW Enhanced Mitigation Protocol on June 30 and July 4, 5, and 7, 2023. Additionally, PSOs requested a Shutdown of impact pile driving of monopile A10 on July 8 after determining they were unable to effectively monitor the entirety of the 3,500-m large whale Shutdown Zone per the Enhanced Mitigation Protocol in effect at that time. The OCM approved the request, and pile driving was shut down until the following day when visibility improved to between 8 and 10 km.

4.5. Trained Lookout Transit Sightings and Mitigation

All SFW vessel transits in support of offshore construction-related activities during the reporting period without onboard PSOs were monitored for protected species by dedicated Trained Lookouts to facilitate vessel strike avoidance measures, as required by numerous SFW regulatory conditions. SFW Trained Lookouts documented 243 total sightings of marine mammals and sea turtles consisting of an estimated 1,368 individuals during the reporting period (Table 18, Appendix Table A6). The majority of detections made by Trained Lookouts were of mysticete whales followed by slightly fewer detections of dolphins groups. Humpback whale was the most commonly identified species by Trained Lookouts followed by short-beaked common dolphins. Thirteen seals and a single leatherback sea turtle were also observed by Trained Lookouts during the reporting period (Table 18).

Notably, SFW Trained Lookouts confirmed two separate sightings of individual NARW, each of which was observed opportunistically during non-transit periods when vessels were not underway. The first of these NARW sightings occurred on February 25, 2023, from the cable installation vessel Living Stone at a distance of 750 m while the vessel was stationary. The second NARW observation by a Trained Lookout was made on May 19, 2023, from the boulder relocation vessel Northstar Commander at a distance of 250 m while the vessel was drifting. The NARW sighting from the Northstar commander was made during darkness with a night vision device, and the Trained Lookout was able to confirm diagnostic NARW features including callosities, a V-shaped blow, and lack of a dorsal fin.

Trained Lookouts facilitated strike avoidance mitigation measures for 32 sightings consisting of an estimated 58 large whales, five unidentified dolphins, a single unidentified seal, and one leatherback sea turtle. Strike avoidance measures consisted of *altering course*, *reducing speed*, *shifting the engine to neutral*, *stopping the vessel*, and various combinations of these measures.

It is also worth noting 120 of the total 243 Trained Lookout sightings were made while vessels were stationary, drifting, or underway at speeds of 3 knots or less. These sightings, many of which were opportunistic and outside of transit periods, demonstrate the significant amounts of time Project vessels were not underway or were transiting at very low speeds within the Project Area.

4.1. Observed Marine Mammal Behaviors

The primary responsibility for SFW PSOs was to monitor for protected species and facilitate implementation of required mitigation measures, per compliance conditions outlined in numerous project permits and authorizations (e.g., NMFS IHA). PSOs were also tasked with collecting a suite of supporting data fields for each detection, including observations of marine mammal behavior and potential reactions by animals to project operations.

Determination of marine mammal behavior and potential reactions by animals to human activities is inherently difficult for vessel-based observers. This challenge for PSOs, combined with their primary responsibility to facilitate mitigation and accurately document these efforts in PSO effort and detection data, makes it difficult to conduct rigorous analyses of marine mammal behavior data and draw definitive conclusions on results. Additionally, small sample sizes in numerous data bins limit the ability to make meaningful comparisons of behaviors across vessel activity states (e.g., n = 0 seal detections during active pile driving periods; nearly 4,000 combined PSO hours of monitoring during non-piling periods versus fewer than 45 hours of monitoring during active piling). Lastly, the required SFW PSO monitoring, mitigation, and data collection methods (e.g., the experimental design) differ considerably from those applied to more traditional scientific studies through systematic random sampling and hypothesis testing.

There are, however, meaningful insights found in these SFW PSO behavioral data that can be inferred through general summaries and interpretation of results, including the prevalence of feeding whales in the Project Area. It is also worth noting behaviors and reactions that were *not* observed by PSOs for any of the 657 total marine mammal groups documented by PSOs. Most

notably, there were no observations of marine mammal behaviors associated with distress, alarm, or other potentially adverse reactions to project activities.

Table 18: All protected species sightings documented by dedicated Trained Lookouts aboard non-PSO vessels during SFW offshore construction-related activities, September 28, 2022 – August 11, 2023.

Species by Group	Detections/Groups	Individuals
Mysticete Whales		
Fin Whale	15	29
Humpback Whale	63	141
Minke Whale	9	13
North Atlantic Right Whale	2	2
Non-NARW Unidentified Whale	2	4
Unidentified Large Whale	39	53
Mysticete Totals	***130***	***242***
Odontocetes		
Pilot Whale species	1	150
Atlantic Spotted Dolphin	2	37
Atlantic White-sided Dolphin	3	50
Bottlenose Dolphin	11	193
Short-beaked Common Dolphin	43	352
Unidentified Dolphin	34	255
Unidentified Dolphin or Porpoise	4	72
Harbor Porpoise	1	3
Odontocete Totals	***99***	***1,112***
Seals		
Gray Seal	8	8
Harbor Seal	1	1
Unidentified Seal	4	4
Seal Totals	***13***	***13***
Sea Turtles		
Leatherback Sea Turtle	1	1
Sea Turtle Totals	***1***	***1***
Grand Totals	***243***	***1,368***

4.2. Mysticete Whale Feeding Groups

PSOs documented nearly 50 groups of feeding mysticete whales consisting of an estimated 116 individuals across the report period (Table 19). The majority of these observations consisted of feeding humpback whales in June 2023 during the Foundations installation program within and immediately adjacent to the SFW BOEM Lease Area (Table 19 and Figure 1). Smaller numbers of feeding fin, minke, and sei whales were also observed by Foundations PSOs in June – August 2023. SFW HDD PSOs documented feeding by three individual humpback whales in nearshore areas adjacent to Long Island in November 2022 (Table 19 and Figure 1). The most common mysticete whale feeding behavior noted by PSOs was *lunge feeding* by humpback whale groups.

As noted above, distinguishing specific marine mammal behaviors from a vessel is challenging. In addition to the 47 groups of mysticete whales for which PSOs were able to document evidence of feeding behavior, many other groups of whales were suspected to be feeding based on prolonged observations of milling in the same general area. Although many whale groups could not be confirmed by PSOs as feeding, it is likely at least some of these animals were engaged in feeding based on the relatively high abundance of mysticetes observed during both HDD and Foundations installation programs.

All observations of feeding mysticete whales by SFW PSOs occurred during periods when pile driving was not occurring except for one group of two individual non-NARW unidentified mysticete whales. This result, however, should be interpreted with caution given the combined PSO monitoring effort across six different vessels during non-piling periods was nearly 4,000 hours by comparison to fewer than 45 hours of total pile driving activity conducted during all SFW windfarm construction activities. Additionally, PSOs were able to spend more time assessing whale behavior during non-piling periods compared to observations made during active piling operations when their primary focus was assessment and facilitation of required mitigation measures.

4.2.1. Observed Marine Mammal Potential Reaction

In addition to recording general marine mammal behavior, PSOs also assessed observations of marine mammals for potential reactions to project activities including active pile driving operations. Determining that an observed marine mammal behavior is the direct result of, or a reaction to, a specific project activity is uniquely challenging, especially from a vessel-based platform. For this reason and others noted above under *Observed Marine Mammal Behavior*, interpretation of marine mammal reaction data should be interpreted with caution.

PSOs observed no discernable reaction to offshore project activities for all but 15 of the 644 total marine mammal visual sightings (Table 20). Marine mammal reactions documented by SFW PSOs included *changing direction of travel*, *diving*, *looking*, and an individual minke whale that appeared to be *surfing* behind the vessel in its wake (Table 20). Fourteen of the 15 total marine mammal reactions noted by PSOs occurred during non-piling periods when vessel activities consisted of *transiting*, *standing by*, or *station keeping* (i.e., maintaining a stationary position).

Table 19: PSO observations of feeding mysticete whale species during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively.

Scope and Species	Detections/Groups	Individuals
HDD		
Humpback Whale	2	3
HDD Totals	***2***	***3***
Foundations		
Fin Whale	4	7
Humpback Whale	37	100
Minke Whale	1	1
Sei Whale	1	1
Non-NARW Unidentified Whale	2	4
Foundations Totals	***45***	***113***
Grand Totals	***47***	***116***

PSOs observed what they concluded was a behavioral reaction during active pile driving for only one of the 43 total marine mammal sightings documented while active piling was occurring. (Table 20). This sighting consisted of a group of an estimated 12 short-beaked common dolphins while the Bokalift 2 was conducting impact pile driving operations. The reaction behavior was a *change in the direction of travel* by the dolphin pod when they were approximately 2,500 meters from the active monopile site (Table 20).

Although PSOs documented potential reactions of 15 marine mammal groups to project activities, it is difficult to conclude the observed behaviors were in fact direct reactions to vessel activity, vessel presence, or something else unrelated to human activities. There were no observations of marine mammal behaviors associated with distress, alarm, or other potentially adverse reactions to project activities for any of the 644 total marine mammal groups recorded by PSOs across the project period.

Table 20: PSO observations of marine mammal potential reactions to project activities by pile driving status during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively. Please note 10 observations of bowriding by dolphins were recorded as marine mammal behaviors and are not included in the following summary of reactions.

Activity Type and Species Group	No Reaction	Change Direction	Dive	Look	Other[1]	*Grand Totals*
Non-Piling Activities[2]						
Mysticete Whales	412	0	1	0	1	*414*
Odontocetes	130	5	1	1	0	*137*
Seals	45	1	0	4	0	*50*
Non-Piling Totals	***587***	***6***	***2***	***5***	***1***	***601***
Active Pile Driving						
Mysticete Whales	36	0	0	0	0	*36*
Odontocetes	6	1	0	0	0	*7*
Pile Driving Totals	***42***	***1***	***0***	***0***	***0***	***43***
Grand Totals	***629***	***7***	***2***	***5***	***1***	***644***

[1] One observation of *Other* behavior documented by PSO involved an individual minke whale that appeared to *Surf* behind the vessel in its wake.

[2] *Non-piling Activities* included *Vessel Transit, Station Keeping* (i.e., stationary), and *Transit.*

5. Potential Level-B and Level-A Incidental Exposures

SFW conducted a thorough analysis of all detections documented by PSOs and PAM Operators during periods of active pile driving to identify all individual animals that may have been exposed to sounds at or above regulatory thresholds for Level-A and Level-B Harassment, incidental to piling operations. This was done by cross-referencing a suite of data for each detection that was at least partially concurrent with active pile driving periods with the best available estimate of Level-A and Level-B Harassment radii for each respective pile, and other important contextual information. Data variables used in this analysis included:

- *Species* – lowest possible taxonomic determination by a PSO or PAM Operator; if an observer was not *certain* of a given species determination, then the detection was coded as unidentified (e.g., *Non-NARW Unidentified Mysticete Whale*, *Unidentified Dolphin*);
- *Number of Individuals Present* – best estimate of the number of individuals associated with each protected species detection/group, concurrent with active piling;
- *Closest Point of Approach to the Active Pile (CPA to Pile)* – best estimate of the smallest distance between any animal in a group and the *active* pile;
- *Piling Activity during Sighting* – most advanced stage of active pile driving operation/sequence that was concurrent with detection duration, defined/binned as:
    - *Soft Start Only* – detection event concurrent with portion of 20-minute Soft Start period but last detected *before* conclusion of Soft Start;
    - *Impact Pile Driving* – detection concurrent with any impact piling activity following completion of Soft Start;
    - *Vibratory Pile Driving* – detection concurrent with any period involving use of the vibratory hammer (HDD only);
    - *30-minute Post-piling* – initial detection of an animal within 30 minutes of piling completion;
- *Level-B Radius* – specific to marine mammals, the best available estimate of the Level-B Harassment isopleth for each pile; these were post-Project modeled values for HDD piles (SFV was not conducted during HDD piling), and pile-specific SFV measurements conducted during each foundation monopile installation;
- *Level-A Radius* – specific to marine mammals, the modeled exposure ranges for species-specific Level-A Harassment radii; a function of various operational assumptions, duration and intensity of pile driving, and differences in predicted animal movement and hearing sensitivities among species;
- *Maximum Hammer Energy during Detection* – the maximum hammer energy (kJ) applied to a pile at any point during a given detection duration;

- *Maximum Hammer Energy during Pile Installation* – the maximum hammer energy (kJ) applied to each pile at any point during its respective installation;
- *% Pile Maximum Energy during Detection* – a relative measure of the maximum hammer energy applied during a detection event, expressed as a percentage of the maximum energy applied at any point during the respective pile installation (for example: max energy during pile installation is 3,000 kJ, max energy during detection is 1,000 kJ, percent of pile max energy during detection = 33%).

Table 21 presents a summary of all combined marine mammal detections (n=21), and associated numbers of individuals (n=106), determined by SFW to have been within the Level-B Harassment Zone identified for active pile driving periods during each respective HDD and foundation pile installation. The following assessment is intended to provide important context for detections in Table 21 to better inform whether noise levels from active piling within Level-B Zones may have been above or below the Level-B acoustic thresholds of 160 and 120 dB rms for impact and vibratory piling, respectively.

5.1. Assessment of Acoustic Exposure Risk during HDD Activities

At the time that acoustic modeling was done for the IHA, the final HDD pile sizes, types, and active piling durations were unknown; therefore, a maximum design envelope was used to estimate the ranges to thresholds, which resulted in a 36,700-m Level-B radius and nominal Level-A ranges for vibratory piling. Level-A and B ranges for 48-inch piles and casing pipe "goal post" installation were not modeled prior to the project, and monitoring was based upon the maximum design envelope of 36,700-m Level-B threshold range.

Because no sheet piles were installed, ranges to Level-A and Level-B acoustic thresholds were re-analyzed post-project based upon available data from other modeling reports and pile driving calculators in order to estimate a more representative number of potential exposures based on the actual activity conducted during HDD installation. No sound field measurements were conducted during HDD activities; therefore, post-analysis used modeling in similar locations and proxy data from Illingworth and Rodkin (2017). In the post-analysis, a revised estimate of the Level-A and Level-B ranges produced during actual HDD pile driving activities were developed using two sources: 1) modeled ranges for impact driving of a 48-in steel casing pipe installed for Sunrise Wind Project offshore Long Island New York (similar geo-environmental parameters as South Fork HDD installation site); and 2) calculated vibratory ranges for the proxy source level of a 48-inch steel shell pile (Illingworth and Rodkin, 2017) in the NMFS Southeast Regional Office (SERO) Multi-Species Pile Driving Calculator, and transmission loss calculation assuming a transmission loss constant of 15 as recommended by the SERO calculator tool. The Level-A ranges are based upon a 24-hour exposure period.

The modified Level-A and Level-B acoustic ranges (i.e., estimated ranges that do not include animal movement modeling) for vibratory and impact hammer installation during HDD activities are provided in Table 22. HDD PSOs did not detect any marine mammals in Level-A Zones. For this reason, SFW concludes there were no incidental Level-A exposures to any individual marine

mammals during the HDD installation program and the following discussion is focused solely on potential Level-B exposures to individual marine mammals, incidental to HDD pile driving activities.

5.2. Assessment of Acoustic Exposure Risk during Monopile Installation

Soundfield verification (SFV) measurements of the first seven foundation monopile installations involved multiple hydrophones at distances ranging from 750 to 10,000 m from the pile site. These multi-hydrophone measurements allowed for analysis of sound transmission loss and an associated estimate of the Level-B Harassment radius for each monopile installation. By comparison, SFV measurements of the last six monopile installations involved only a single hydrophone at 750 m, which precluded analysis of transmission loss and estimates of pile-specific Level-B radii for these monopile installations. For the final six SFVs, received sound levels at the single 750-m hydrophone were compared with levels measured at the 750-m hydrophone from earlier, multi-hydrophone SFVs with associated Level-B radii estimates. This general comparison was used to estimate whether the Level-B radius was less than or greater than the modeled IHA Level-B radius of 4,684-m for the last six monopile installations, for the purpose of estimating potential Level-B exposures. Table 23 presents the Level-B Harassment radii for each of 13 monopile SFV measurements from the SFW Foundations installation program.

Species-specific Level-A Harassment radii from pre-project modeling in the SFW IHA, Table 5, were used for this analysis. PSOs and PAM Operators monitoring during Foundations operations, however, did not detect any marine mammals within the Level-A Zone during monopile installations except for a single humpback whale observed 3,300 m from the pile at the beginning of a Soft Start. PSOs facilitated an immediate Shutdown of piling for this individual humpback whale. For these reasons, SFW concludes there were no incidental Level-A exposures to any individual marine mammals during the Foundations installation program. Therefore, the following discussion is focused solely on potential Level-B exposures to individual marine mammals, incidental to Foundations pile driving activities.

As discussed above, estimates of the numbers of individual protected species documented by SFW PSOs and PAM Operators are likely biased upwards for several reasons. These reasons include duplicative documentation of individuals recorded by PSO teams aboard different vessels, and also by PSO teams on subsequent days for individuals that may have remained in the Project Area for multiple days. This likely overestimation of the actual numbers of individual animals documented by SFW PSOs may have been substantial for mysticete whales, which in some cases were documented to be feeding in the area for extended periods (see *Mysticete Whale Feeding Groups* above). The same may have been true for large dolphin pods that became more numerous in the SFW Lease Area in late July and August 2023. Nonetheless, analysis of the numbers of protected species present and potentially exposed to sounds from active pile driving operations at or above the Level-B acoustic threshold of 160 dB (rms) assumes all PSO and PAM detections aboard all PSO platforms were independent of each other.

5.3. Potential Marine Mammal Exposures (Foundations and HDD)

A total of 21 detections of an estimated 106 individual marine mammals were determined by SFW to have been within the measured Level-B Harassment radii for foundation monopile installations or the calculated Level-B ranges during HDD pile driving activities (Table 21). Three groups of humpback whales totaling seven individuals were detected by HDD PSOs in the Level-B Harassment Zone, and the remaining 18 marine mammal groups (99 individuals) detected within Level-B radii occurred during the Foundations monopile installation program (Table 21).

This analysis of individual marine mammals potentially exposed to sound levels at or above Level-B thresholds is based on several assumptions that fail to account for important context specific to each unique detection event. One such assumption is that all animals were present when noise levels were at their greatest for each respective pile installation. The following narrative provides important context regarding the relative amount of hammer energy being applied to a pile *at the time of each detection*, and the associated distance of each detection from the pile relative to the Level-B radius.

Ten of the 21 marine mammal detections (48 of 106 individuals) within Level-B radii were detected exclusively during Soft Start periods when hammer energies were minimal, or during periods when hammer energies were only marginally greater than those applied on Soft Starts (<35% of max hammer energy used on pile; Table 21). Furthermore, all marine mammal detections concurrent with active piling of foundation monopiles and within Level-B radii were detected exclusively during the earlier stages of each respective pile installation when hammer energies were relatively low by comparison to greater hammer energies employed in the latter stages of installation. In fact, all individual marine mammals detected by Foundations PSOs and PAM Operators at the piling site were detected during periods when hammer energies were less than 50% of the maximum energy applied to the respective pile, except for three mysticete whales (Table 21). These three mysticete whales (one each humpback, sei, and non-NARW unidentified mysticete) were present when hammer energy reached ~62% of the maximum 3,580 kJ applied to Monopile Z01 after each of these animals was last detected. No marine mammals were detected by PSOs or PAM Operators at the foundation monopiling site during periods when the impact hammer energy was greater than 2,233 kJ of the maximum permitted 4,000 kJ (Table 21).

This analysis also broadly included any marine mammal detection within the Level-B radius for each pile installation. Many detections, however, were at or near the edge of Level-B radii as opposed to areas closer to the pile where sound levels would have been greater. Except for two non-NARW unidentified mysticete whales observed at a distance of ~2,000 m from an active pile installation during a Soft Start, no mysticete whales were observed closer than ~2,400 meters from active pile sites, and 13 of the 23 mysticete whales included in this analysis were not detected closer than ~3,000 meters from an active pile. Dolphin CPAs to active piles ranged from 2,300 to 5,000 meters. Additional *CPA to active pile* distances are presented in Table 21 and Appendix Table A4.

In summary, SFW concludes the numbers of individual marine mammals that may have been exposed to Level-A or Level-B acoustic harassment, incidental to pile driving activities, were well below the numbers authorized in the NMFS IHA for all species. This conclusion is based on results from extensive marine mammal monitoring, mitigation, detection data and analyses, and the best available acoustic measurements and modeling context. Furthermore, there were no incidents of unauthorized marine mammal harassment, take, or otherwise at any time during SFW operations.

5.4. Potential Sea Turtle Exposures

One sea turtle was detected by SFW PSOs during periods of active pile driving. PSOs aboard the dedicated monitoring vessel Rana Miller observed a green sea turtle on July 2, 2023, while the second SFW foundation monopile was being installed. The turtle was observed briefly at ~3,000 m from the active pile site before diving.

The SFW NMFS BiOp established a radial distance of 1,716 m from the pile for assessment of potential behavioral responses by sea turtles to pile driving noise at or above 175 dB (rms). It is unlikely the single sea turtle observed during active piling periods was exposed to levels above this behavioral threshold given it was ~1,300 m beyond the 1,716-m range.

Similarly, the BiOp estimated ranges to potential onset of temporary and permanent impacts to sea turtle hearing sensitivity (BiOp Table 7.1.24). These estimated TTS and PTS ranges, however, were based on a “difficult” monopile installation requiring 8,000 impact hammer strikes across 4 hours. In reality, the green sea turtle observed aboard Rana Miller occurred during a monopile installation requiring only 4,300 hammer strikes across 4 hours 24 minutes, including a 1.5-hour pause for mechanical adjustments. Additionally, the hammer energy at the time of the turtle detection was ~3,000 kJ, which is 1,000 kJ less than the maximum energy of 4,000 kJ assumed to be necessary for “difficult” monopile installations. For all these reasons, it is unlikely this sea turtle was affected behaviorally or otherwise from SFW pile driving activities.

Table 21: Details for all marine mammal detections within applicable Level-B Harassment radii from periods of active pile driving during SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively. There were no marine mammals observed within Level-A radii.

Vessel and Detection ID[1]	Date	Pile ID	Species	No. Individuals Present during Piling	Piling Activity during Detection	Level-B Radius (m)[2]	CPA to Active Pile (m)	Foundation Monopile Hammer Data		
								Max Hammer Energy (kJ) during Detection	Max Hammer Energy (kJ) during Pile Installation	% Max Pile Energy (kJ) during Detection
Jill V19	18-Nov-22	HDD1	Humpback Whale	2	Vibratory Pile Driving	3,981	2,600	N/A	N/A	N/A
Jill V155	19-Dec-22	HDD1	Humpback Whale	5	Vibratory Pile Driving	3,981	2,869	N/A	N/A	N/A
Jill V158	19-Dec-22	HDD2	Humpback Whale	1	Vibratory Pile Driving	3,981	3,000	N/A	N/A	N/A
BL2 V70	19-Jun-23	Z01	Sei Whale	1	Impact Pile Driving	7,800	4,941	2,233	3,580	62.4%
BL2 V77	19-Jun-23	Z01	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	7,800	7,643	829	3,580	23.2%
JM V54	19-Jun-23	Z01	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	7,800	5,327	811	3,580	22.7%
JM V55	19-Jun-23	Z01	Humpback Whale	1	Impact Pile Driving	7,800	5,665	2,233	3,580	62.4%
GF V157	19-Jun-23	Z01	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	7,800	4,700	2,233	3,580	62.4%

Vessel and Detection ID[1]	Date	Pile ID	Species	No. Individuals Present during Piling	Piling Activity during Detection	Level-B Radius (m)[2]	CPA to Active Pile (m)	Foundation Monopile Hammer Data		
								Max Hammer Energy (kJ) during Detection	Max Hammer Energy (kJ) during Pile Installation	% Max Pile Energy (kJ) during Detection
BL2 V78	19-Jun-23	Z01	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	7,800	7,637	971	3,580	27.1%
BL2 V79	19-Jun-23	Z01	Non-NARW Unidentified Mysticete Whale	1	Soft Start Only	7,800	2,389	758	3,580	21.2%
BL2 V82	20-Jun-23	Z01	Non-NARW Unidentified Mysticete Whale	2	Soft Start Only	7,800	5,000	N/A	3,580	N/A
JM V56	20-Jun-23	Z01	Non-NARW Unidentified Mysticete Whale	2	Soft Start Only	7,800	1,927	N/A	3,580	N/A
BL2 V84	20-Jun-23	Z01	Humpback Whale	1	Soft Start Only	7,800	3,300	N/A	3,580	N/A
BL2 V85	20-Jun-23	Z01	Non-NARW Unidentified Mysticete Whale	1	Soft Start Only	7,800	5,000	630	3,580	17.6%
BL2 V144	1-Aug-23	A15	Short-beaked Common Dolphin	30	Soft Start Only	<4,684	2,300	463	3,138	14.8%
JM V101	3-Aug-23	A13	Short-beaked Common Dolphin	8	Impact Pile Driving	<4,684	3,800	1,319	4,118	32.0%
BL2 V170	7-Aug-23	A04	Non-NARW Unidentified Mysticete Whale	2	Impact Pile Driving	>4,684	5,000	1,810	3,684	49.1%

Vessel and Detection ID[1]	Date	Pile ID	Species	No. Individuals Present during Piling	Piling Activity during Detection	Level-B Radius (m)[2]	CPA to Active Pile (m)	Foundation Monopile Hammer Data		
								Max Hammer Energy (kJ) during Detection	Max Hammer Energy (kJ) during Pile Installation	% Max Pile Energy (kJ) during Detection
BL2 V171	7-Aug-23	A04	Short-beaked Common Dolphin	20	Impact Pile Driving	>4,684	5,000	1,810	3,684	49.1%
RM V57	7-Aug-23	A04	Short-beaked Common Dolphin	12	Impact Pile Driving	>4,684	2,600	1,379	3,684	37.4%
BL2 V173	7-Aug-23	A04	Short-beaked Common Dolphin	12	Impact Pile Driving	>4,684	2,500	1,810	3,684	49.1%
BL2 P34	7-Aug-23	A04	Unidentified Dolphin	1	Impact Pile Driving	>4,684	5,000	1,810	3,684	49.1%

[1]*Vessel and Detection ID* coded as: Jill (LB Jill, HDD); Foundations: Bokalift 2 (BL2); Berto Miller (BM); Go Freedom (GF); Josephine Miller (JM); Rana Miller (RM); Visual (V); PAM (P)

[2]*Level-B Radius (m)*: The range to the 160-dB (rms) or 120-dB (rms) Level-B Harassment radius for each pile installation based on modeling / calculator tools (HDD piles) or sound field verification (SFV, foundation monopiles) measurements. These ranges were used to assess potential Level-B exposures to individual marine mammals detected during active pile driving periods. The SFV measurement of a 7,800-m Level-B radius for Foundation Monopile Z01 resulted from a fault in the bubble curtain during one measurement, and was not reflective of measurement results after bubble curtain adjustment. Therefore, it is likely the Level-B radius during the majority of the Monopile Z01 installation was less than the conservative 7,800-m used here for estimating potential exposures.

Table 22. Estimated acoustic ranges in meters to Level-A and Level-B Harassment radii for installation of 48-inch steel piles and casing pipe during the SFW HDD installation program, November 14 – December 20, 2022. No marine mammals were observed within Level-A Harassment Zones during HDD operations.

Marine Mammal Hearing Group	Impact Pile Driving		Vibratory Pile Driving[1]	
	Level-A (PTS)[2]	Level-B (160 dB re 1 µPa)	Level-A (PTS)[2]	Level-B (120 dB re 1 µPa)
Low Frequency Cetaceans	3,870 m	920 m	<10 m	3,981 m
Mid Frequency Cetaceans	230 m	920 m	<10 m	3,981 m
High Frequency Cetaceans	3,950 m	920 m	<10 m	3,981 m
Phocids	1,290 m	920 m	<10 m	3,981 m

[1]-Vibratory Level-A ranges were estimated using the SERO calculator tool with a source level of 159 dB re 1 µPa @ 10m; 1 pile installed per day; 60 minutes of piling per day; no attenuation; and practical spreading loss.
[2]- Level-A ranges are based upon a 24-hour exposure period which was not applicable to the actual piling durations of less than 1.5 hours per pile..

Table 23. Estimated acoustic ranges in meters to the Level-B Harassment radii from soundfield verification (SFV) measurements during the SFW Foundation monopile installation program, June 8 – August 11, 2023. Species-specific Level-A Harassment radii from pre-project modeling in the SFW IHA, Table 5, were used for this analysis; however, no marine mammals were detected in a relevant Level-A Harassment Zone during full impact pile driving.

Pile Identifier	Level-B Radius (160 dB re 1 µPa)*
Z01	7,800 m
A12	1,840 m
A08	2,200 m
A10	2,860 m
A03	3,250
A14	2,255 m
A11	2,865 m
A02	<4,684 m
A15	<4,684 m
A13	<4,684 m
A01	<4,684 m
A07	<4,684 m
A04	>4,684 m

*SFVs for the first seven monopile installations used multiple hydrophones at a range of distances ranging from 750 to 10,000 m from the pile site; this allowed for analysis of sound transmission loss and an associated estimate of the Level-B Harassment radius for each monopile

installation. By comparison, SFVs of the last six monopile installations involved only a single hydrophone at 750 m, which precluded analysis of transmission loss and estimates of pile-specific Level-B radii. For the final six SFVs, received sound levels at the single 750-m hydrophone were compared with levels measured at the 750-m hydrophone from earlier, multi-hydrophone SFVs with associated Level-B radii estimates. This general comparison was used to estimate whether the Level-B radius was less than or greater than the modeled IHA Level-B radius of 4,684-m for the purpose of estimating potential Level-B exposures.

6. Literature Cited

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Appendices To: Marine Mammal and Sea Turtle Monitoring During Windfarm Construction

September 2022 – August 2023

BOEM Lease OCS-A 0517

South Fork Windfarm Construction Project

Submitted to BOEM, BSEE, and NMFS
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Appendix A : Protected Species Observer Project Data

Appendix Table A1: Project vessel and transit details for SFW construction-related activities, September 28, 2022 – August 11, 2023.

Vessel Name	Vessel Type	Number of Transits	Vessel Routes (Port Locations)
Amelia Anne	Fishing Vessel (Dedicated Fisheries Surveys)	5	Point Judith and Providence (ProvPort), RI
Barbara Anne	Fishing (General Support)	16	Point Judith and Quonset Point, RI, and Montauk, NY
Bear	Fire Fighting Vessel (Noise Mitigation System)	4	Providence (ProvPort), RI, and Northern Europe
Berto Miller	Offshore Supply (Cable Installation Support)	28	Providence (ProvPort), RI, and New London, CT
Bokalift 2	Crane Vessel (Monopile Installation)	2	Newport, RI, and Northern Europe
Buckley Mac	Tugboat	2	Quonset Point, RI
Cailyn & Maren	Fishing (Benthic Sampling)	2	Sakonnet Harbor, Ri
C-Fighter	Offshore Supply Ship (Monopile Support)	9	Providence (ProvPort), RI
Charles James	Tugboat / General Support	3	Bridgeport, CT
Clarence Moore	Offshore Supply Ship (Monopile Support)	16	Providence (ProvPort), RI
Commander	Fishing Vessel (General Support)	2	Fall River, RI
C-Pioneer	Offshore Supply Ship (Monopile Support)	2	Providence (ProvPort), RI
C-Rambler	Offshore Supply Ship (Monopile Support)	4	Providence (ProvPort), RI
Dolphin	Research Vessel (Water Sampling)	11	Shinnecock, NY
Fleet King	Fishing (General Support)	19	Fairhaven and New Bedford, MA, and New London, CT
Gabrielle Elizabeth	Fishing (General Support)	14	Montauk, NY, and New London, CT
Gaines Miller	Port Tender / General Support	3	Shinnecock, NY
Gaspee	Tugboat	2	Quonset Point, RI
Go Freedom	Multipurpose Support (PSO and PAM)	4	Providence (ProvPort), RI
Harvest Moon	Fishing Vessel (General Support)	2	Point Judith, RI
Jacob Miller	Tugboat / General Support	9	Shinnecock, NY
Jo-Ann V	Fishing Vessel (General Support)	10	Montauk, NY

Vessel Name	Vessel Type	Number of Transits	Vessel Routes (Port Locations)
John Joseph	Tugboat / General Support	5	Bridgeport, CT, and Brooklyn, NY
Joseph E Pearce	Offshore Supply (Wave Buoy Recovery)	2	New Bedford, MA
Josephine Miller	Multipurpose Support (PSO and PAM)	7	New Bedford, MA, and Providence (ProvPort), RI
Laney Chouest	Offshore Supply (Boulder Plough and Relocation)	6	Providence (ProvPort), RI
LB Jill	Lift Boat (General Support)	2	Bridgeport, CT
Living Stone	Multipurpose Cable Installation Ship	9	Providence (ProvPort), RI, Charleston, SC, and Europe
Matthew Mac	Tugboat	2	Quonset Point, RI
Megan Miller	Utility Vessel	4	Bridgeport, CT
Mister G	Fishing Vessel (General Support)	2	Point Judith, RI
Mister Marco	Fishing Vessel (General Support)	10	Point Judith, RI
New Horizon	Fishing (General Support)	20	New London, CT, and Montauk, NY
Nicobar	Tug and Offshore Supply Vessel (Monopile Support)	13	Providence (ProvPort), RI, and Northern Europe
Northstar Commander	Multipurpose Offshore Support Vessel	16	Quonset Point, Fall River, and Providence (ProvPort), RI
Ocean Sun	Towing Vessel (OSS Transport)	3	Corpus Christi, TX, and Providence (ProvPort), RI
Provider	Fishing (General Support)	13	New London, CT, Montauk, NY, and Quonset Point, RI
Ram XV	Liftboat (Cable Installation Support)	2	Bridgeport, CT, and Millville, NJ
Rana Miller	Multipurpose Support (PSO and PAM)	10	Providence (ProvPort), RI
Rowan Mac	Tugboat	2	Quonset Point, RI
Seacor Brave	Platform Supply Vessel	12	Bridgeport, CT
Shelia Bordelon	Ultra-Light Intervention	18	Providence (ProvPort), RI
Sovereign	Cable Ship (Cable Support)	5	Quonset Point, RI, and Northern Europe
Tioga	Cable Ship (Cable Support)	2	Providence (ProvPort), RI
Triumph	Heavy Lift Vessel (Cable and Piling Support)	2	No U.S. port calls, Germany
Trustee	Offshore Supply Ship (Monopile Support)	2	Providence (ProvPort), RI, and Germany
WindServe Odyssey	Crew Transfer	164	Quonset Point and Providence (ProvPort), RI, and Montauk and Shinnecock, NY

Appendix Table A2: Daily timeline of HDD PSO watch periods and pile driving activity at the SFW HDD punchout site, November 15 – December 20, 2022.

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
15-Nov	12:19:53	START Daily PSO Watch	N/A
15-Nov	21:30:06	STOP Daily PSO Watch	N/A
16-Nov	11:24:40	START Daily PSO Watch	N/A
16-Nov	12:56:14	PAUSE PSO Watch	N/A
16-Nov	13:34:10	RESUME PSO Watch	N/A
16-Nov	17:54:21	PAUSE PSO Watch	N/A
16-Nov	18:56:57	RESUME PSO Watch	N/A
16-Nov	21:29:54	STOP Daily PSO Watch	N/A
17-Nov	11:21:05	START Daily PSO Watch	N/A
17-Nov	21:29:33	STOP Daily PSO Watch	N/A
18-Nov	11:15:50	START Daily PSO Watch	N/A
18-Nov	19:25:45	START Vibratory Pile Driving	HDD Pile 1
18-Nov	19:37:33	PAUSE Vibratory Pile Driving	Switching piles
18-Nov	19:47:10	RESUME Vibratory Pile Driving	HDD Pile 2
18-Nov	19:55:05	STOP Vibratory Pile Driving	Piling complete for day
18-Nov	21:27:15	STOP Daily PSO Watch	N/A
19-Nov	11:15:37	START Daily PSO Watch	N/A
19-Nov	21:28:10	STOP Daily PSO Watch	N/A
20-Nov	11:15:00	START Daily PSO Watch	N/A
20-Nov	17:56:47	START Vibratory Pile Driving	HDD Pile 3
20-Nov	18:04:58	PAUSE Vibratory Pile Driving	Switching piles
20-Nov	18:13:24	RESUME Vibratory Pile Driving	HDD Pile 4
20-Nov	18:21:42	STOP Vibratory Pile Driving	Piling complete for day
20-Nov	21:53:24	STOP Daily PSO Watch	N/A
21-Nov	11:15:38	START Daily PSO Watch	N/A
21-Nov	21:54:07	STOP Daily PSO Watch	N/A
22-Nov	11:15:05	START Daily PSO Watch	N/A
22-Nov	21:26:56	STOP Daily PSO Watch	N/A
23-Nov	11:16:38	START Daily PSO Watch	N/A
23-Nov	21:27:25	STOP Daily PSO Watch	N/A
24-Nov	11:15:33	START Daily PSO Watch	N/A
24-Nov	21:27:49	STOP Daily PSO Watch	N/A
25-Nov	11:25:23	START Daily PSO Watch	N/A
25-Nov	21:27:12	STOP Daily PSO Watch	N/A
26-Nov	11:21:44	START Daily PSO Watch	N/A
26-Nov	21:26:47	STOP Daily PSO Watch	N/A
27-Nov	11:20:00	START Daily PSO Watch	N/A
27-Nov	21:29:10	STOP Daily PSO Watch	N/A
28-Nov	11:20:00	START Daily PSO Watch	N/A
28-Nov	15:17:21	START Soft Start	HDD pile casing
28-Nov	15:38:35	START Impact Pile Driving	N/A

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
28-Nov	15:57:39	PAUSE Impact Pile Driving	Mechanical assessment
28-Nov	16:01:20	RESUME Impact Pile Driving	N/A
28-Nov	16:22:00	PAUSE Impact Pile Driving	N/A
28-Nov	16:36:00	RESUME Impact Pile Driving	N/A
28-Nov	17:09:40	STOP Impact Pile Driving	Piling of casing complete for day
28-Nov	21:26:49	STOP Daily PSO Watch	N/A
29-Nov	11:22:04	START Daily PSO Watch	N/A
29-Nov	21:26:37	STOP Daily PSO Watch	N/A
30-Nov	11:26:46	START Daily PSO Watch	N/A
30-Nov	21:22:29	STOP Daily PSO Watch	N/A
1-Dec	11:43:24	START Daily PSO Watch	N/A
1-Dec	21:24:19	STOP Daily PSO Watch	N/A
2-Dec	11:38:26	START Daily PSO Watch	N/A
2-Dec	21:24:23	STOP Daily PSO Watch	N/A
3-Dec	11:38:45	START Daily PSO Watch	N/A
3-Dec	21:27:25	STOP Daily PSO Watch	N/A
4-Dec	11:20:00	START Daily PSO Watch	N/A
4-Dec	21:29:10	STOP Daily PSO Watch	N/A
5-Dec	11:20:00	START Daily PSO Watch	N/A
5-Dec	15:17:21	STOP Daily PSO Watch	N/A
6–12 Dec	N/A	PSO Team Temporarily Demobilized	N/A
13-Dec	11:48:26	START Daily PSO Watch	N/A
13-Dec	21:24:34	STOP Daily PSO Watch	N/A
14-Dec	11:45:10	START Daily PSO Watch	N/A
14-Dec	21:25:55	STOP Daily PSO Watch	N/A
15-Dec	11:50:02	START Daily PSO Watch	N/A
15-Dec	21:23:33	STOP Daily PSO Watch	N/A
16-Dec	11:42:39	START Daily PSO Watch	N/A
16-Dec	21:25:05	STOP Daily PSO Watch	N/A
17-Dec	11:47:17	START Daily PSO Watch	N/A
17-Dec	18:13:42	START Soft Start	HDD pile casing
17-Dec	18:35:24	START Impact Pile Driving	N/A
17-Dec	18:42:42	PAUSE Impact Pile Driving	Mechanical assessment
17-Dec	19:19:09	RESUME Impact Pile Driving	N/A
17-Dec	19:30:28	PAUSE Impact Pile Driving	Mechanical assessment
17-Dec	19:37:00	RESUME Impact Pile Driving	N/A
17-Dec	19:38:00	PAUSE Impact Pile Driving	Mechanical assessment
17-Dec	19:45:00	RESUME Impact Pile Driving	N/A
17-Dec	19:46:00	PAUSE Impact Pile Driving	Mechanical assessment
17-Dec	19:48:00	RESUME Impact Pile Driving	N/A
17-Dec	19:52:00	PAUSE Impact Pile Driving	Mechanical assessment
17-Dec	20:08:20	RESUME Impact Pile Driving	N/A
17-Dec	20:08:41	PAUSE Impact Pile Driving	Mechanical assessment
17-Dec	20:10:37	RESUME Impact Pile Driving	N/A
17-Dec	20:12:00	STOP Impact Pile Driving	Piling of casing complete for day

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
17-Dec	21:25:38	STOP Daily PSO Watch	N/A
18-Dec	11:48:04	START Daily PSO Watch	N/A
18-Dec	21:24:03	STOP Daily PSO Watch	N/A
19-Dec	11:49:27	START Daily PSO Watch	N/A
19-Dec	15:36:36	START Vibratory Pile Driving	HDD Pile 1 prepared for removal
19-Dec	15:45:32	PAUSE Vibratory Pile Driving	Mechanical assessment
19-Dec	15:53:00	RESUME Vibratory Pile Driving	N/A
19-Dec	15:53:45	PAUSE Vibratory Pile Driving	HDD Pile 1 removed
19-Dec	17:04:24	RESUME Vibratory Pile Driving	HDD Pile 2 prepared for removal
19-Dec	17:15:20	PAUSE Vibratory Pile Driving	HDD Pile 2 removed
19-Dec	17:45:17	RESUME Vibratory Pile Driving	HDD Pile 3 prepared for removal
19-Dec	17:49:21	PAUSE Vibratory Pile Driving	Mechanical assessment
19-Dec	17:52:10	RESUME Vibratory Pile Driving	N/A
19-Dec	17:52:34	STOP Vibratory Pile Driving	HDD Pile 3 removed
19-Dec	21:24:04	STOP Daily PSO Watch	N/A
20-Dec	11:43:18	START Daily PSO Watch	N/A
20-Dec	13:11:24	START Vibratory Pile Driving	HDD Pile 4 prepared for removal
20-Dec	13:17:50	PAUSE Vibratory Pile Driving	Mechanical assessment
20-Dec	13:22:04	RESUME Vibratory Pile Driving	N/A
20-Dec	12:22:24	STOP Vibratory Pile Driving	HDD Pile 4 removed; end of HDD active piling operations
20-Dec	15:22:05	STOP Daily PSO Watch	End of HDD PSO monitoring/mitigation
21-Dec	N/A	PSO Team Demobilized	N/A

Appendix Table A3. Daily timeline of Foundations PSO watch periods and pile driving activity in the SFW BOEM OCS-A 0517 Lease Area, June 8 – August 11, 2023.

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
8-Jun	N/A	No PSO Activity	Vessel Mobilization
9-Jun	00:00:00	START Daily PSO watch	Transiting to site
9-Jun	05:00:00	STOP Daily PSO Watch	Arrived at site
9-Jun	08:30:00	START Daily PSO watch	N/A
10-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
10-Jun	04:30:00	STOP Daily PSO Watch	N/A
10-Jun	08:30:00	START Daily PSO watch	N/A
11-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
11-Jun	04:30:00	STOP Daily PSO Watch	N/A
11-Jun	08:30:00	START Daily PSO watch	N/A
12-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
12-Jun	04:30:00	STOP Daily PSO Watch	N/A
12-Jun	08:30:00	START Daily PSO watch	N/A
13-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
13-Jun	04:30:00	STOP Daily PSO Watch	N/A
13-Jun	08:30:00	START Daily PSO watch	N/A
14-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
14-Jun	04:30:00	STOP Daily PSO Watch	N/A
14-Jun	08:30:00	START Daily PSO watch	N/A
15-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
15-Jun	04:30:00	STOP Daily PSO Watch	N/A
15-Jun	08:30:00	START Daily PSO watch	N/A
16-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
16-Jun	04:30:00	STOP Daily PSO Watch	N/A
16-Jun	08:30:00	START Daily PSO watch	N/A
17-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby, poor weather
17-Jun	04:30:00	STOP Daily PSO Watch	N/A
17-Jun	08:30:00	START Daily PSO watch	N/A
18-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
18-Jun	04:30:00	STOP Daily PSO Watch	N/A
18-Jun	08:30:00	START Daily PSO watch	N/A
19-Jun	00:00:00	CONTINUE Daily PSO watch	N/A
19-Jun	04:30:00	STOP Daily PSO Watch	N/A
19-Jun	08:30:00	START Daily PSO watch	N/A
19-Jun	18:02:32	START Clearance	N/A
19-Jun	18:54:00	START Detection Delay	30-minute delay to start of Soft Start required from 18:54 to 19:25 due to marine mammal sighting; Delay also requested by client until animal outside Level-B take zone 4684m
19-Jun	19:25:00	END Detection Delay	Animal clear of Level-B zone
19-Jun	19:25:25	START Soft Start	Monopile Z01
19-Jun	19:45:51	START Impact pile driving (Z01)	N/A
19-Jun	21:04:00	PAUSE impact pile driving	Hammer stopped for technical checks

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
19-Jun	21:32:00	START Clearance	N/A
19-Jun	22:32:00	START Soft Start	N/A
19-Jun	22:52:00	RESUME Impact pile driving	N/A
19-Jun	22:52:01	STOP impact pile driving (Z01)	Operations stopped due to mechanical issues
20-Jun	00:00:00	CONTINUE Daily PSO watch	N/A
20-Jun	04:30:00	STOP Daily PSO Watch	N/A
20-Jun	08:30:00	START Daily PSO watch	N/A
20-Jun	08:59:45	START Clearance	Restart with a full Clearance after break in piling
20-Jun	10:42:07	START Soft Start	Resume Monopile Z01
20-Jun	10:47:06	SHUTDOWN Impact pile driving	Shutdown for sighting V84 - whale sighted within the Level-A take zone
20-Jun	10:57:53	START Clearance	Restart with a full Clearance after break in piling
20-Jun	13:18:00	START Soft Start	Sighting BL2V84 outside the Level-B zone
20-Jun	13:38:03	START Impact pile driving (Z01)	N/A
20-Jun	15:18:07	STOP impact pile driving (Z01)	Monopile Z01 complete
20-Jun	15:18:07	START Post-clearance	N/A
20-Jun	15:48:12	RESUME Daily PSO watch	N/A
21-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
21-Jun	04:30:00	STOP Daily PSO Watch	N/A
21-Jun	08:30:00	START Daily PSO watch	N/A
22-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby, poor weather
22-Jun	04:30:00	STOP Daily PSO Watch	N/A
22-Jun	08:30:00	START Daily PSO watch	N/A
23-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby, poor weather
23-Jun	04:30:00	STOP Daily PSO Watch	N/A
23-Jun	08:30:00	START Daily PSO watch	N/A
24-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby, poor weather
24-Jun	04:30:00	STOP Daily PSO Watch	N/A
24-Jun	08:30:00	START Daily PSO watch	N/A
25-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby, poor weather
25-Jun	04:30:00	STOP Daily PSO Watch	N/A
25-Jun	08:30:00	START Daily PSO watch	N/A
25-Jun	15:30:00	PAUSE Daily PSO Watch	PSOs partaking in a muster drill
25-Jun	16:04:00	RESUME Daily PSO watch	Drill complete, resume watch
26-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby, poor weather
26-Jun	04:30:00	STOP Daily PSO Watch	N/A
26-Jun	08:30:00	START Daily PSO watch	N/A
27-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby, poor weather
27-Jun	04:30:00	STOP Daily PSO Watch	N/A
27-Jun	08:30:00	START Daily PSO watch	N/A
28-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby
28-Jun	04:30:00	STOP Daily PSO Watch	N/A
28-Jun	08:30:00	START Daily PSO watch	N/A
29-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel on standby, poor weather

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
29-Jun	04:30:00	STOP Daily PSO Watch	N/A
29-Jun	08:30:00	START Daily PSO watch	N/A
30-Jun	00:00:00	CONTINUE Daily PSO watch	Vessel transferring monopile
30-Jun	04:30:00	STOP Daily PSO Watch	N/A
30-Jun	08:30:00	START Daily PSO watch	N/A
1-Jul	00:00:00	CONTINUE Daily PSO watch	N/A
1-Jul	04:30:00	STOP Daily PSO Watch	N/A
1-Jul	08:30:00	START Daily PSO watch	Fog causing poor visibility, vessel on standby
2-Jul	00:00:00	CONTINUE Daily PSO watch	Standby, waiting on weather
2-Jul	04:30:00	STOP Daily PSO Watch	Standby, waiting on weather
2-Jul	08:30:00	START Daily PSO watch	Standby, waiting on weather
2-Jul	11:04:00	START Clearance	Fog cleared, begin Clearance
2-Jul	11:55:00	SUSPEND Clearance	Loss of visibility due to fog
2-Jul	14:40:00	START Clearance	Visibility recovers
2-Jul	17:04:00	START Soft Start	Monopile A12
2-Jul	17:24:00	START Impact pile driving (A12)	N/A
2-Jul	18:17:00	SHUTDOWN Impact pile driving	Loss of signal from PAM buoys
2-Jul	18:55:00	START Clearance	Restart with a full Clearance after break in piling
2-Jul	19:55:00	START Soft Start	N/A
2-Jul	20:16:00	START Impact pile driving (A12)	N/A
2-Jul	21:30:00	STOP Impact pile driving (A12)	Monopile A12 complete
2-Jul	21:30:00	START Post-watch	30-minute post-clearance
2-Jul	22:00:00	STOP Post-watch	N/A
2-Jul	22:00:00	RESUME Daily PSO watch	N/A
2-Jul	23:59:59	STOP Daily PSO Watch	No vessel activity, vessel stationary
3-Jul	00:00:00	No vessel activity, vessel stationary	No PSO watch
4-Jul	00:00:00	No vessel activity	N/A
4-Jul	09:59:00	START Daily PSO watch	Standby, waiting on weather
4-Jul	22:00:00	STOP Daily PSO Watch	Standby, waiting on weather
5-Jul	00:00:00	No vessel activity	N/A
5-Jul	09:32:00	START Daily PSO watch	Standby, waiting on weather
5-Jul	19:33:40	START Clearance	Begin Clearance
5-Jul	20:39:00	STOP Clearance	Not enough time to begin piling before sunset; Suspend operations until next day
5-Jul	20:39:00	RESUME Daily PSO watch	Standby
5-Jul	22:42:49	STOP Daily PSO watch	No vessel activity, vessel stationary
6-Jul	08:45:20	START Daily PSO watch	Standby, waiting for buoys
6-Jul	13:31:00	START Clearance	Buoys connected
6-Jul	15:20:00	START Soft Start	Monopile A08
6-Jul	16:02:00	START Impact pile driving (A08)	N/A

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
6-Jul	16:06:00	PAUSE Impact pile driving	Pause not due to sighting, continue monitoring during the break
6-Jul	16:26:00	RESUME Impact pile driving	N/A
6-Jul	16:26:15	PAUSE Impact pile driving	Pause not due to sighting, continue monitoring during the break
6-Jul	16:35:00	RESUME Impact pile driving	N/A
6-Jul	16:51:00	REDUCED POWER Impact pile driving	Berto Miller reported an unidentified Mysticete 12-13 km from the Bokalift; A Shutdown was requested but the surveyors said that the pile was too far in to stop, so they reduced the hammer power while the Rana Miller determined the species
6-Jul	16:56:00	RESUME FULL POWER Impact pile driving	At 16:54 the Rana confirmed that it was not a North Atlantic Right Whale, full power was resumed two minutes later
6-Jul	18:14:00	STOP Impact pile driving (A08)	Monopile A08 complete
6-Jul	18:14:00	START Post-watch	N/A
6-Jul	18:44:31	STOP Post-watch	N/A
6-Jul	18:44:32	STOP Daily PSO Watch	No vessel activity, vessel stationary
7-Jul	09:59:48	START Daily PSO watch	N/A
7-Jul	18:45:00	START Clearance	N/A
7-Jul	19:45:00	STOP Clearance	End Clearance due to helicopter operations
7-Jul	19:45:01	RESUME Daily PSO watch	Continue to monitor during helicopter operations
7-Jul	20:30:00	START Clearance	Clearance restarted when helicopter operations were complete
7-Jul	23:22:00	STOP Clearance	Not enough time to begin piling before sunset; Suspend operations until next day
7-Jul	23:53:36	STOP Daily PSO watch	No vessel activity, vessel stationary
8-Jul	08:42:05	START Daily PSO watch	Standby for fog to clear
8-Jul	17:33:00	START Clearance	Fog cleared, begin Clearance
8-Jul	18:32:00	START Detection Delay	Unidentified mysticete spotted by the Go Freedom, 30-minute detection delay
8-Jul	19:02:00	END Detection Delay	30-minute detection delay complete
8-Jul	19:02:00	START Soft Start	Monopile A10
8-Jul	19:22:00	START Impact pile driving	N/A
8-Jul	20:00:00	PAUSE Impact pile driving	Loss of visibility due to fog
8-Jul	20:20:00	RESUME Impact pile driving	Visibility recovers
8-Jul	20:30:00	SHUTDOWN Impact pile driving	Loss of visibility due to fog again; piling postponed until following day
8-Jul	20:30:01	RESUME Daily PSO watch	N/A
8-Jul	23:32:29	STOP Daily PSO Watch	No vessel activity, vessel stationary
9-Jul	08:30:47	START Daily PSO Watch	N/A
9-Jul	09:00:00	START Clearance	N/A
9-Jul	10:02:00	START Soft Start	Resume Monopile A10
9-Jul	10:23:35	START Impact pile driving	N/A
9-Jul	11:25:10	STOP Impact pile driving	Monopile A10 complete
9-Jul	11:25:10	START Post-clearance	N/A

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
9-Jul	12:23:46	STOP Post-clearance	N/A
9-Jul	12:23:46	RESUME Daily PSO Watch	N/A
9-Jul	22:00:46	STOP Daily PSO Watch	No vessel activity, vessel stationary
10-Jul	10:00:16	START Daily PSO Watch	No piling operations, waiting on weather
10-Jul	16:13:29	STOP Daily PSO Watch	No vessel activity, vessel stationary
11-Jul	00:00:00	START Daily PSO Watch	No piling operations, waiting on weather
11-Jul	04:30:00	STOP Daily PSO Watch	N/A
11-Jul	09:56:00	START Daily PSO Watch	N/A
11-Jul	21:57:47	STOP Daily PSO Watch	No vessel activity, vessel stationary
12-Jul	09:57:35	START Daily PSO Watch	N/A
12-Jul	13:32:09	START Clearance	N/A
12-Jul	14:01:00	START Detection Delay 1 (Sighting BL2 V112)	Animals were within the 4km CZ of the Bokalift 2 starting at 14:01UTC; At 16:04UTC as confirmed by Go Freedom at 5.8km from Bokalift 2
12-Jul	16:01:00	START Detection Delay 2 (Sighting GF185)	At 16:01 UTC during Clearance, a blow was observed at about 1500 meters from the vessel; It was seen for a final time at 16:04 in about the same position; This sighting caused a detection delay as had a CPA to Bokalift of 3000m
12-Jul	16:22:00	START Detection Delay 3 (Sighting BL2V113)	At 16:22UTC two Fin whales were observed at the 0+7:00 position of the Bokalift 2 at a range of 2000m; At 17:51UTC the animal was confirmed by the Go Freedom at 4200m from the Bokalift
12-Jul	16:29:00	START Detection Delay 4 (Sighting BL2V114)	At approximately 16:28 UTC a single Minke Whale was spotted at approximately 400 meters off the port beam of the Bokalift 2; The animal was last sighted at approximately 16:34 UTC when it once again surfaced approximately 750 meters off the bow of the Bokalift 2
12-Jul	17:51:00	END Detection Delays	Sightings V113 and V112 out of Clearance Zone and sightings GF185 and V114 >30 minutes since last sighting
12-Jul	18:04:38	RESTART Clearance	Temporary loss of PAM systems; Restart Clearance now all systems are functional
12-Jul	19:06:45	START Soft Start	Monopile A03
12-Jul	19:27:43	START Impact pile driving	N/A
12-Jul	21:46:58	STOP Impact pile driving	Monopile A03 complete
12-Jul	21:46:58	START Post-clearance	N/A
12-Jul	22:17:00	STOP Post-clearance	N/A
12-Jul	22:17:00	RESUME Daily PSO Watch	N/A
12-Jul	22:17:20	STOP Daily PSO Watch	No vessel activity, vessel stationary
13-Jul	10:02:22	START Daily PSO Watch	No piling operations, waiting on weather
13-Jul	22:00:54	STOP Daily PSO Watch	No vessel activity, vessel stationary
14-Jul	09:59:53	START Daily PSO Watch	No piling operations, waiting on weather
14-Jul	21:56:44	STOP Daily PSO Watch	No vessel activity, vessel stationary
15-Jul	10:06:24	START Daily PSO Watch	No piling operations, waiting on weather

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
15-Jul	22:00:00	STOP Daily PSO Watch	No vessel activity, vessel stationary
16-Jul	10:00:00	START Daily PSO Watch	No piling operations, waiting on weather
16-Jul	22:00:08	STOP Daily PSO Watch	No vessel activity, vessel stationary
17-Jul	00:00:00	START Daily PSO Watch	No piling operations, waiting on weather
17-Jul	04:27:10	STOP Daily PSO Watch	N/A
17-Jul	09:58:47	START Daily PSO Watch	N/A
17-Jul	21:00:08	STOP Daily PSO Watch	No vessel activity, vessel stationary
18-Jul	10:00:55	START Daily PSO Watch	No piling operations, waiting on weather
18-Jul	23:17:38	STOP Daily PSO Watch	No vessel activity, vessel stationary
19-Jul	10:00:17	START Daily PSO Watch	No piling operations, waiting on weather
19-Jul	22:00:02	STOP Daily PSO Watch	No vessel activity, vessel stationary
20-Jul	09:59:03	START Daily PSO Watch	No piling operations, waiting on weather
20-Jul	21:59:36	STOP Daily PSO Watch	No vessel activity, vessel stationary
21-Jul	10:30:26	START Daily PSO Watch	N/A
21-Jul	13:37:01	START Clearance	Clearance was extended due to mechanical delays
21-Jul	20:06:04	START Soft Start	Monopile A14
21-Jul	20:26:36	START Impact pile driving	N/A
21-Jul	21:17:54	PAUSE Impact pile driving	Pause for real-time micro adjustments to hammer
21-Jul	21:35:02	RESUME Impact pile driving	N/A
21-Jul	21:39:33	PAUSE Impact pile driving	Pause for real-time micro adjustments to hammer
21-Jul	21:46:22	RESUME Impact pile driving	N/A
21-Jul	21:58:46	PAUSE Impact pile driving	Pause for real-time micro adjustments to hammer
21-Jul	22:26:06	RESUME Impact pile driving	N/A
21-Jul	23:44:54	STOP Impact pile driving	Monopile A14 complete
21-Jul	23:44:54	START Post-clearance	30-minute post-clearance
22-Jul	00:14:56	STOP Post-clearance	N/A
22-Jul	00:15:00	STOP Daily PSO Watch	N/A
22-Jul	10:02:10	START Daily PSO Watch	No piling operations, standby while equipment work completed
22-Jul	22:03:20	STOP Daily PSO Watch	No vessel activity, vessel stationary
23-Jul	11:57:00	START Daily PSO Watch	Pile being prepared
23-Jul	19:44:00	START Clearance	No marine mammals detected in Clearance Zone
23-Jul	20:44:00	START Soft Start	Monopile A11
23-Jul	21:05:00	START Impact pile driving	Full power impact pile driving
23-Jul	21:11:00	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
23-Jul	21:28:39	RESUME Impact pile driving	N/A
23-Jul	21:36:52	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
23-Jul	22:21:18	START Soft Start	Resume pile driving with a full Soft Start due to the break in piling being more than 30 minutes
23-Jul	22:43:00	RESUME Impact pile driving	Full power impact pile driving

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
23-Jul	23:11:00	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
23-Jul	23:19:00	RESUME Impact pile driving	N/A
23-Jul	23:42:00	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
23-Jul	23:48:00	RESUME Impact pile driving	N/A
24-Jul	01:14:24	STOP Impact pile driving	Monopile A11 complete
24-Jul	01:14:24	START Post-clearance	30-minute post-clearance
24-Jul	01:45:19	STOP Post-clearance	N/A
24-Jul	01:45:20	STOP Daily PSO Watch	N/A
24-Jul	10:23:52	START Daily PSO Watch	N/A
24-Jul	21:57:41	STOP Daily PSO Watch	No vessel activity, vessel stationary
25-Jul	09:48:14	START Daily PSO Watch	On standby all day
25-Jul	21:59:29	STOP Daily PSO Watch	No vessel activity, vessel stationary
26-Jul	09:59:47	START Daily PSO Watch	Vessel on standby
26-Jul	15:16:36	STOP Daily PSO Watch	End watch for crew change
26-Jul	20:42:44	START Daily PSO Watch	Crew changed and back on watch
26-Jul	22:00:08	STOP Daily PSO Watch	No vessel activity, vessel stationary
27-Jul	09:50:18	START Daily PSO Watch	Standby, waiting on weather
27-Jul	21:59:04	STOP Daily PSO Watch	No vessel activity, vessel stationary
28-Jul	10:00:00	START Daily PSO Watch	Vessel on standby; Monitoring with 3050 IR Camera in IR mode
28-Jul	22:00:16	STOP Daily PSO Watch	N/A
28-Jul	23:13:17	START Daily PSO Watch	On watch for vessel strike avoidance during transit; Still monitoring with 3050 IR Camera
29-Jul	00:00:00	CONTINUE Daily PSO Watch	Transit
29-Jul	04:28:54	STOP Daily PSO Watch	Transit
29-Jul	09:59:45	START Daily PSO Watch	On standby
29-Jul	22:00:07	STOP Daily PSO Watch	No vessel activity, vessel stationary
30-Jul	10:00:00	START Daily PSO Watch	On standby
30-Jul	22:00:08	STOP Daily PSO Watch	No vessel activity, vessel stationary
31-Jul	09:07:09	START Daily PSO Watch	N/A
31-Jul	16:55:49	START Clearance	No marine mammals detected in Clearance Zone
31-Jul	19:05:42	START Soft Start	Monopile A02
31-Jul	19:26:40	START Impact pile driving	Full power impact piling driving
31-Jul	20:25:34	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
31-Jul	20:33:51	RESUME Impact pile driving	Full power impact piling driving
31-Jul	21:13:07	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
31-Jul	21:24:46	RESUME Impact pile driving	Full power impact piling driving
31-Jul	22:09:48	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
31-Jul	22:11:23	RESUME Impact pile driving	Full power impact piling driving
31-Jul	22:14:29	STOP Impact pile driving (A02)	Monopile A02 complete

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
31-Jul	22:14:29	START Post-clearance	30-minute post-clearance
31-Jul	22:45:02	STOP Post-clearance	N/A
31-Jul	23:00:55	STOP Daily PSO Watch	No vessel activity, vessel stationary
1-Aug	00:14:08	START Daily PSO Watch	Vessel Strike Avoidance, then on standby
1-Aug	01:44:30	STOP Daily PSO Watch	N/A
1-Aug	10:00:08	START Daily PSO Watch	On vessel standby
1-Aug	17:58:17	START Clearance	Extended Clearance as operations not ready
1-Aug	20:21:53	START Soft Start	Monopile A15
1-Aug	20:41:53	START Impact pile driving	Full power impact piling driving
1-Aug	21:12:20	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for gripper - monitoring for the duration of the break
1-Aug	21:17:14	RESUME Impact pile driving	Full power impact piling driving
1-Aug	21:56:50	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for mechanical survey - monitoring for the duration of the break
1-Aug	22:05:39	RESUME Impact pile driving	Full power impact piling driving
1-Aug	22:37:24	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for mechanical survey - monitoring for the duration of the break
1-Aug	22:40:58	RESUME Impact pile driving	Full power impact piling driving
1-Aug	22:44:29	STOP Impact pile driving	Monopile A15 complete
1-Aug	22:44:29	START Post-clearance	30-minute post-clearance
1-Aug	23:14:55	STOP Post-clearance	N/A
1-Aug	23:14:55	START Daily PSO Watch	N/A
2-Aug	00:00:00	CONTINUE Daily PSO Watch	Vessel Strike Avoidance, then on standby
2-Aug	04:28:25	STOP Daily PSO Watch	N/A
2-Aug	10:18:42	START Daily PSO Watch	Standing by for pile transfer
2-Aug	22:00:15	STOP Daily PSO Watch	No vessel activity, vessel stationary
3-Aug	09:11:00	START Daily PSO Watch	N/A
3-Aug	13:31:05	START Clearance	N/A
3-Aug	14:46:50	START Soft Start	Monopile A13
3-Aug	15:06:50	START Impact pile driving	Full power impact piling driving
3-Aug	15:53:06	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for gripper - monitoring for the duration of the break
3-Aug	16:03:22	RESUME Impact pile driving	Full power impact piling driving
3-Aug	16:50:22	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
3-Aug	17:00:55	RESUME Impact pile driving	Full power impact piling driving
3-Aug	17:12:53	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for gripper - monitoring for the duration of the break
3-Aug	17:16:17	RESUME Impact pile driving	Full power impact piling driving
3-Aug	17:38:04	STOP Impact pile driving	Monopile A13 complete
3-Aug	17:38:04	START Post-clearance	30-minute post-clearance
3-Aug	18:08:28	STOP Post-clearance	N/A
3-Aug	18:08:28	START Daily PSO Watch	N/A

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
4-Aug	00:00:00	CONTINUE Daily PSO Watch	N/A
4-Aug	02:00:00	STOP Daily PSO Watch	N/A
4-Aug	09:12:25	START Daily PSO Watch	N/A
4-Aug	10:04:35	START Clearance	N/A
4-Aug	15:24:26	START Soft Start	Monopile A01
4-Aug	15:44:26	START Impact pile driving	Full power impact piling driving
4-Aug	16:18:44	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for mechanical survey - monitoring for the duration of the break
4-Aug	16:31:12	RESUME Impact pile driving	Full power impact piling driving
4-Aug	16:53:07	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for gripper - monitoring for the duration of the break
4-Aug	16:57:39	RESUME Impact pile driving	Full power impact piling driving
4-Aug	16:58:45	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
4-Aug	17:01:05	RESUME Impact pile driving	Full power impact piling driving
4-Aug	17:19:32	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for gripper - monitoring for the duration of the break
4-Aug	17:26:52	RESUME Impact pile driving	Full power impact piling driving
4-Aug	17:38:41	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for mechanical survey - monitoring for the duration of the break
4-Aug	17:44:31	RESUME Impact pile driving	Full power impact piling driving
4-Aug	17:53:26	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for gripper - monitoring for the duration of the break
4-Aug	17:57:03	RESUME Impact pile driving	Full power impact piling driving
4-Aug	18:22:06	STOP Impact pile driving	Monopile A01 complete
4-Aug	18:22:06	START Post-clearance	30-minute post-clearance
4-Aug	18:52:11	STOP Post-clearance	N/A
4-Aug	18:52:11	START Daily PSO Watch	N/A
5-Aug	00:00:00	CONTINUE Daily PSO Watch	N/A
5-Aug	02:21:07	STOP Daily PSO Watch	N/A
5-Aug	10:00:13	START Daily PSO Watch	N/A
5-Aug	16:31:30	START Clearance	N/A
5-Aug	21:04:23	START Soft Start	Monopile A07
5-Aug	21:26:58	START Impact pile driving	Full power impact piling driving
5-Aug	22:21:34	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for mechanical survey - monitoring for the duration of the break
5-Aug	22:22:17	RESUME Impact pile driving	Full power impact piling driving
5-Aug	23:07:20	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for mechanical survey - monitoring for the duration of the break
5-Aug	23:15:15	RESUME Impact pile driving	Full power impact piling driving
5-Aug	23:52:48	STOP Impact pile driving	Monopile A07 complete
5-Aug	23:52:48	START Post-clearance	30-minute post-clearance

Date (UTC)	Time (UTC)	Activity	Piling Activity Notes
6-Aug	00:23:13	STOP Post-clearance	N/A
6-Aug	03:00:04	STOP Daily PSO Watch	N/A
6-Aug	10:02:56	START Daily PSO Watch	Pile Transfer, Standing by
7-Aug	00:00:00	CONTINUE Daily PSO Watch	Standing by
7-Aug	00:24:30	STOP Daily PSO Watch	N/A
7-Aug	09:00:30	START Daily PSO Watch	N/A
7-Aug	10:00:00	START Clearance	N/A
7-Aug	11:00:19	START Soft Start	Monopile A04
7-Aug	11:20:19	START Impact pile driving	Full power impact piling driving
7-Aug	12:04:19	PAUSE Impact pile driving	Not due to marine mammal sightings, pause for mechanical survey - monitoring for the duration of the break
7-Aug	12:16:10	RESUME Impact pile driving	Full power impact piling driving
7-Aug	12:46:37	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
7-Aug	12:52:48	RESUME Impact pile driving	Full power impact piling driving
7-Aug	13:04:48	PAUSE Impact pile driving	Not due to marine mammal sightings - monitoring for the duration of the break
7-Aug	13:19:10	RESUME Impact pile driving	Full power impact piling driving
7-Aug	13:42:44	STOP Impact pile driving	Monopile A04 complete
7-Aug	13:42:44	START Post-clearance	30-minute post-clearance
7-Aug	14:13:00	STOP Post-clearance	N/A
7-Aug	16:00:00	PAUSE Daily PSO Watch	BL2 PSO and PAM demobilization
7-Aug	09:15:00	CONTINUE Daily PSO Watch	PSO Monitoring Vessels
8-Aug	00:00:00	CONTINUE Daily PSO Watch	
8-Aug	04:30:00	STOP Daily PSO Watch	
9-Aug	16:00:00		
10-Aug	18:19:01	START Daily PSO Watch	Josephine Miller Post-PAM recovery transit
11-Aug	00:00:00	CONTINUE Daily PSO Watch	N/A
11-Aug	12:37:13	STOP Daily PSO Watch	All Foundations PSO monitoring complete

Appendix Table A4. All visual PSO and PAM detections of marine mammals and sea turtles concurrent with Clearance, Soft Start Only, Impact Pile Driving, and 30-Minute Post-piling monitoring periods during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively. An asterisk* after the value for *CPA to Pile* indicates the detection was at least partially concurrent with active pile driving activity. *Vessel and Detection ID* coded as: LB Jill (Jill, HDD vessel); Foundations: Bokalift 2 (BL2); Berto Miller (BM); Go Freedom (GF); Josephine Miller (JM); Rana Miller (RM); Visual (V); PAM (P).

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Piling Activity State	Initial Detection Distance from PSO (m)	CPA to Pile (m)*	Mitigation Measures
Jill V19	2022-11-18 17:26:36.6	Humpback Whale	4	Vibratory Pile Driving	1,420	2,600*	Detection Delay
Jill V101	2022-11-28 14:45:15.0	Unidentified Pinniped	1	Clearance	100	100	Detection Delay
Jill V102	2022-11-28 15:11:00.0	Unidentified Mysticete Whale	1	Soft Start Only	3,300	3,300*	None
Jill V103	2022-11-28 16:43:00.0	Unidentified Mysticete Whale	1	Impact Pile Driving	9,000	9,000*	None
Jill V136	2022-12-17 17:12:10.0	Harbor Seal	1	Clearance	290	60	Detection Delay
Jill V137	2022-12-17 20:36:27.0	Unidentified Mysticete Whale	3	Post-piling	13,820	13,820	None
Jill V155	2022-12-19 12:03:36.8	Humpback Whale	6	Vibratory Pile Driving	3,060	2,869*	Detection Delay
Jill V157	2022-12-19 16:00:00.0	Humpback Whale	1	Clearance	505	100	Detection Delay
Jill V158	2022-12-19 16:42:58.0	Humpback Whale	1	Vibratory Pile Driving	4,560	3,000*	None
Jill V161	2022-12-19 17:46:00.0	Unidentified Mysticete Whale	2	Vibratory Pile Driving	9,180	9,180*	None
Jill V162	2022-12-19 17:56:00.0	Humpback Whale	1	Post-piling	1,836	1,311	Detection Delay
BL2 V70	2023-06-19 11:05:52.1	Sei Whale	3	Impact Pile Driving	4,255	4,941*	Detection Delay
RM V31	2023-06-19 13:42:22.8	Fin Whale	3	Clearance	4,000	3,340	Reduce Speed, Alter Course, Engine Neutral
BM V48	2023-06-19 18:04:11.1	Fin Whale	1	Clearance	5,500	4,528	Alter Course, Reduce Speed, Stop Vessel

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Piling Activity State	Initial Detection Distance from PSO (m)	CPA to Pile (m)*	Mitigation Measures
BM V49	2023-06-19 18:10:40.2	Non-NARW Unidentified Mysticete Whale	1	Clearance	4,500	6,059	Reduce Speed
BM V50	2023-06-19 18:10:44.1	Non-NARW Unidentified Mysticete Whale	1	Clearance	5,000	5,506	None
JM V52	2023-06-19 18:10:54.0	Sei Whale	1	Clearance	500	3,738	Engine Neutral
JM V53	2023-06-19 18:24:58.0	Non-NARW Unidentified Mysticete Whale	1	Clearance	400	3,416	Engine Neutral
BL2 V77	2023-06-19 19:51:29.2	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	7,644	7,643*	None
JM V54	2023-06-19 20:09:25.0	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	800	5,327*	None
JM V55	2023-06-19 20:42:19.9	Humpback Whale	1	Impact Pile Driving	1,800	5,665*	None
GF V157	2023-06-19 20:51:00.0	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	2,500	4,700*	None
BL2 V78	2023-06-19 21:31:53.6	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	7,638	7,637*	None
GF V158	2023-06-19 21:50:00.0	Non-NARW Unidentified Mysticete Whale	1	Clearance	1,000	3,018	Alter Course, Engine Neutral
BL2 V79	2023-06-19 21:50:00.6	Non-NARW Unidentified Mysticete Whale	1	Soft Start Only	2,389	2,389*	Detection Delay
RM V32	2023-06-20 09:14:55.4	Non-NARW Unidentified Mysticete Whale	1	Clearance	50	2,436	Engine Neutral
BL2 V80	2023-06-20 09:30:04.8	Humpback Whale	1	Clearance	2,220	2,200	None
BL2 V81	2023-06-20 09:33:08.0	Humpback Whale	1	Clearance	7,598	7,500	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Piling Activity State	Initial Detection Distance from PSO (m)	CPA to Pile (m)*	Mitigation Measures
BM V52	2023-06-20 09:44:16.3	Non-NARW Unidentified Mysticete Whale	1	Clearance	1,500	3,336	None
GF V159	2023-06-20 09:47:55.6	Humpback Whale	1	Clearance	1,500	2,886	None
BM V53	2023-06-20 09:49:14.2	Humpback Whale	1	Clearance	1,700	3,258	None
GF V160	2023-06-20 09:50:53.3	Non-NARW Unidentified Mysticete Whale	1	Clearance	3,000	4,332	None
BL2 V82	2023-06-20 09:56:00.9	Non-NARW Unidentified Mysticete Whale	2	Soft Start Only	4,255	5,000*	None
BL2 V83	2023-06-20 10:01:00.0	Humpback Whale	3	Clearance	4,907	4,000	None
BM V54	2023-06-20 10:11:34.9	Non-NARW Unidentified Mysticete Whale	1	Clearance	4,500	7,166	None
JM V56	2023-06-20 10:25:35.2	Non-NARW Unidentified Mysticete Whale	2	Soft Start Only	1,574	1,927*	None
BL2 V84	2023-06-20 10:47:06.8	Humpback Whale	1	Soft Start Only	3,330	3,300*	Shutdown
RM V33	2023-06-20 10:48:00.0	Humpback Whale	2	Clearance	3,500	5,700	None
BM V55	2023-06-20 11:24:31.3	Humpback Whale	1	Clearance	7,500	7,150	None
BM V56	2023-06-20 11:53:58.2	Humpback Whale	1	Clearance	6,500	8,880	None
BM V57	2023-06-20 12:07:02.0	Unidentified Mysticete Whale	1	Clearance	6,000	8,403	None
BM V58	2023-06-20 12:08:44.6	Non-NARW Unidentified Mysticete Whale	1	Clearance	1,500	4,812	Alter Course
JM V57	2023-06-20 12:30:21.6	Non-NARW Unidentified Mysticete Whale	1	Clearance	2,731	3,540	None
BL2 V85	2023-06-20 12:32:17.2	Non-NARW Unidentified Mysticete Whale	1	Soft Start Only	3,368	3,368*	Detection Delay
JM V58	2023-06-20 12:34:21.2	Fin Whale	1	Clearance	934	4,295	Alter Course, Engine Neutral

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Piling Activity State	Initial Detection Distance from PSO (m)	CPA to Pile (m)*	Mitigation Measures
GF V161	2023-06-20 12:35:00.0	Non-NARW Unidentified Mysticete Whale	1	Clearance	2,000	3,322	None
GF V167	2023-07-02 11:06:33.5	Non-NARW Unidentified Mysticete Whale	1	Clearance	500	7,356	Engine Neutral
JM V63	2023-07-02 11:15:53.4	Fin Whale	2	Clearance	2,190	7,560	None
GF V168	2023-07-02 11:18:54.3	Non-NARW Unidentified Mysticete Whale	1	Clearance	600	6,995	None
GF V169	2023-07-02 15:00:00.0	Non-NARW Unidentified Mysticete Whale	1	Clearance	3,000	7,314	None
JM V64	2023-07-02 15:10:40.0	Fin Whale	2	Clearance	3,163	8,991	None
BL2 V101	2023-07-02 15:28:37.0	Fin Whale	2	Impact Pile Driving	4,000	4,000*	None
GF V170	2023-07-02 16:06:00.0	Fin Whale	2	Impact Pile Driving	3,000	7,383*	Reduced speed
JM V65	2023-07-02 19:42:13.0	Non-NARW Unidentified Mysticete Whale	1	Clearance	2,500	5,095	None
RM V36	2023-07-02 20:40:57.5	Green Sea Turtle	1	Impact Pile Driving	70	3,000*	None
JM V66	2023-07-02 21:16:04.2	Non-NARW Unidentified Mysticete Whale	2	Impact Pile Driving	1,578	8,102*	None
GF V171	2023-07-02 17:05:00.0	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	2,000	6,800*	None
BL2 V102	2023-07-06 10:34:33.7	Fin Whale	2	Impact Pile Driving	5,500	4,900*	Detection Delay
GF V174	2023-07-06 13:45:00.0	Non-NARW Unidentified Mysticete Whale	2	Clearance	2,000	5,581	None
BL2 V103	2023-07-06 14:37:07.5	Non-NARW Unidentified Mysticete Whale	2	Clearance	4,958	5,600	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Piling Activity State	Initial Detection Distance from PSO (m)	CPA to Pile (m)*	Mitigation Measures
GF V175	2023-07-06 15:47:00.0	Non-NARW Unidentified Mysticete Whale	2	Impact Pile Driving	2,000	4,959*	None
BL2 V104	2023-07-06 15:48:04.4	Non-NARW Unidentified Mysticete Whale	1	Soft Start Only	5,943	5,900*	None
RM V37	2023-07-06 16:20:24.2	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	7,000	11,000*	None
BM V61	2023-07-06 16:38:03.4	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	7,560	9000*	Power Down
BM V62	2023-07-07 18:56:39.5	Non-NARW Unidentified Mysticete Whale	2	Clearance	5,000	9,400	None
BL2 V105	2023-07-07 20:44:44.2	Non-NARW Unidentified Mysticete Whale	3	Clearance	3,748	3,700	None
BL2 V106	2023-07-07 21:14:27.8	Unidentified Dolphin	20	Clearance	3,762	3,400	None
RM V38	2023-07-07 21:50:26.0	Non-NARW Unidentified Mysticete Whale	1	Clearance	7,000	7,000	None
GF V178	2023-07-08 18:32:00.0	Unidentified Mysticete Whale	1	Clearance	1,000	4,788	Detection Delay
GF V180	2023-07-12 13:41:00.0	Bottlenose Dolphin	10	Clearance	1,000	3,060	None
BL2 V112	2023-07-12 14:01:12.0	Fin Whale	2	Clearance	2,081	1,391	Detection Delay
GF V181	2023-07-12 14:06:00.0	Fin Whale	1	Clearance	2,000	5,236	None
GF V182	2023-07-12 14:59:00.0	Fin Whale	1	Clearance	2,500	2,605	None
GF V183	2023-07-12 15:17:00.0	Fin Whale	1	Clearance	200	3,923	None
GF V184	2023-07-12 15:50:00.0	Fin Whale	1	Clearance	500	3,914	None
GF V185	2023-07-12 16:01:00.0	Non-NARW Unidentified Mysticete Whale	1	Clearance	1,500	2,185	Detection Delay
JM V75	2023-07-12 16:09:03.0	Loggerhead Sea Turtle	1	Clearance	10	1,706	Continue in Reverse

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Piling Activity State	Initial Detection Distance from PSO (m)	CPA to Pile (m)*	Mitigation Measures
BL2 V113	2023-07-12 16:22:28.9	Fin Whale	2	Clearance	1,516	1,554	Detection Delay
BL2 V114	2023-07-12 16:28:00.0	Minke Whale	1	Clearance	400	400	Detection Delay
RM V41	2023-07-12 16:35:00.0	Fin Whale	2	Clearance	3,500	955	Detection Delay
GF V186	2023-07-12 17:35:00.0	Fin Whale	1	Clearance	2,400	2,576	None
GF V187	2023-07-12 19:24:00.0	Bottlenose Dolphin	15	Impact Pile Driving	500	4,500*	None
BL2 P4	2023-07-21 13:46:32.2	Unidentified Dolphin	1	Clearance	Unknown	Unknown	None
BL2 P5	2023-07-21 15:03:23.3	Unidentified Dolphin	1	Clearance	Unknown	Unknown	None
RM V43	2023-07-21 19:02:23.2	Bottlenose Dolphin	25	Clearance	1,200	3,000	None
BL2 P6	2023-07-21 19:20:33.0	Unidentified Dolphin	1	Clearance	Unknown	Unknown	None
BL2 P7	2023-07-22 00:08:00.0	Unidentified Dolphin	1	Post-piling	Unknown	Unknown	None
BL2 V126	2023-07-23 19:23:00.0	Fin Whale	3	Impact Pile Driving	5,933	4,800*	None
JM V82	2023-07-23 19:34:46.3	Fin Whale	3	Impact Pile Driving	4,000	5,500*	None
BL2 P11	2023-07-23 20:51:04.5	Unidentified Dolphin	1	Impact Pile Driving	Unknown	Unknown*	None
BL2 V127	2023-07-23 20:56:00.0	Short-beaked Common Dolphin	26	Impact Pile Driving	4,941	4,900*	None
BL2 V128	2023-07-24 00:07:39.5	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	6,500	6,500*	None
BL2 P12	2023-07-24 01:25:00.0	Unidentified Dolphin	1	Post-piling	Unknown	Unknown	None
JM V94	2023-07-31 21:55:00.0	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	800	4,800*	None
BL2 V141	2023-07-31 22:24:07.4	Non-NARW Unidentified Mysticete Whale	1	Post-piling	3,368	2,500	None
BM V70	2023-07-31 22:28:00.0	Unidentified Mysticete Whale	1	Post-piling	7,700	8,512	None
BM V71	2023-07-31 22:35:48.6	Non-NARW Unidentified Mysticete Whale	1	Post-piling	500	2,583	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Piling Activity State	Initial Detection Distance from PSO (m)	CPA to Pile (m)*	Mitigation Measures
BL2 P13	2023-08-01 18:14:19.6	Unidentified Dolphin	1	Clearance	Unknown	Unknown	None
BL2 V142	2023-08-01 18:16:18.6	Short-beaked Common Dolphin	30	Clearance	4,255	4,061	None
JM V95	2023-08-01 18:36:00.0	Short-beaked Common Dolphin	20	Post-piling	800	3,000	None
BL2 P14	2023-08-01 19:04:33.4	Unidentified Dolphin	1	Clearance	Unknown	Unknown	None
BL2 V143	2023-08-01 19:15:58.3	Non-NARW Unidentified Mysticete Whale	3	Clearance	9,191	9,190	None
BM V72	2023-08-01 19:33:00.0	Short-beaked Common Dolphin	20	Post-piling	1,600	3,600	None
BL2 V144	2023-08-01 19:50:34.5	Short-beaked Common Dolphin	30	Soft Start Only	5,388	2,300*	None
RM V50	2023-08-01 19:56:00.0	Short-beaked Common Dolphin	20	Post-piling	1,500	1,800	None
BL2 P15	2023-08-01 20:08:06.4	Unidentified Dolphin	1	Clearance	Unknown	Unknown	None
BL2 V145	2023-08-01 20:59:00.0	Humpback Whale	1	Impact Pile Driving	4,941	4,840*	None
BL2 V146	2023-08-01 21:15:00.0	Humpback Whale	6	Impact Pile Driving	9,500	9,500*	None
BL2 V147	2023-08-01 21:17:00.0	Humpback Whale	4	Impact Pile Driving	9,500	9,500*	None
BL2 P16	2023-08-01 21:48:53.1	Unidentified Dolphin	1	Impact Pile Driving	Unknown	Unknown*	None
BL2 P17	2023-08-01 23:03:40.5	Unidentified Dolphin	1	Clearance	Unknown	Unknown	None
BL2 V155	2023-08-03 12:24:52.9	Short-beaked Common Dolphin	10	Clearance	4,225	4,900	None
BL2 P22	2023-08-03 13:45:36.4	Unidentified Dolphin	1	Soft Start Only	7,000	Unknown*	None
JM V101	2023-08-03 15:05:03.1	Short-beaked Common Dolphin	8	Impact Pile Driving	5	3,800*	Notify Nearby Vessel
BL2 P23	2023-08-04 15:10:31.3	Unidentified Dolphin	1	Clearance	4,000-6,000	Unknown	None
JM V105	2023-08-05 16:27:39.3	Short-beaked Common Dolphin	8	Post-piling	50	3,000	Maintain Heading and Speed
BL2 V161	2023-08-05 17:23:57.6	Leatherback Sea Turtle	1	Clearance	100	100	None
BL2 P26	2023-08-05 18:10:00.3	Unidentified Dolphin	1	Clearance	5,000	Unknown	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Piling Activity State	Initial Detection Distance from PSO (m)	CPA to Pile (m)*	Mitigation Measures
BL2 V162	2023-08-05 18:15:07.1	Unidentified Dolphin	5	Clearance	5,500	5,500	None
RM V53	2023-08-05 20:05:00.0	Short-beaked Common Dolphin	50	Post-piling	300	1,995	Reduce Speed, Engine Neutral
BL2 P27	2023-08-05 20:06:22.0	Short-beaked Common Dolphin	1	Clearance	3,040	Unknown	None
BL2 V163	2023-08-05 20:12:27.4	Short-beaked Common Dolphin	40	Clearance	3,040	3,000	None
JM V106	2023-08-05 21:35:30.1	Non-NARW Unidentified Mysticete Whale	1	Impact Pile Driving	2,000	5,300*	Notify Nearby Vessel
BL2 P28	2023-08-05 21:47:44.2	Unidentified Dolphin	1	Impact Pile Driving	Unknown	Unknown*	None
BL2 P29	2023-08-05 22:35:38.1	Unidentified Dolphin	1	Impact Pile Driving	Unknown	Unknown*	None
BL2 P30	2023-08-05 23:34:56.1	Unidentified Dolphin	1	Impact Pile Driving	Unknown	Unknown*	None
BL2 V164	2023-08-05 23:54:52.1	Short-beaked Common Dolphin	80	Post-piling	3,355	3,000	None
BM V80	2023-08-06 00:02:39.8	Short-beaked Common Dolphin	50	Post-piling	300	2,005	Engine Neutral
RM V54	2023-08-06 00:14:00.0	Short-beaked Common Dolphin	4	Post-piling	10	2,357	Maintain Heading and Speed
BL2 P31	2023-08-06 00:15:48.0	Short-beaked Common Dolphin	1	Clearance	2,000	Unknown	None
BL2 V165	2023-08-06 00:16:57.0	Short-beaked Common Dolphin	4	Post-piling	1,754	1,645	None
BL2 V170	2023-08-07 09:37:35.3	Non-NARW Unidentified Mysticete Whale	2	Impact Pile Driving	5,943	5,000*	None
BL2 V171	2023-08-07 09:46:01.9	Short-beaked Common Dolphin	20	Impact Pile Driving	3,748	5,000*	None
BL2 P32	2023-08-07 09:22:17.6	Unidentified Dolphin	1	Clearance	5,000	Unknown	None
BL2 V172	2023-08-07 10:24:55.9	Unidentified Dolphin	10	Post-piling	4,907	4,907	None
BL2 P33	2023-08-07 10:26:27.5	Unidentified Dolphin	1	Clearance	4,900	Unknown	None
RM V57	2023-08-07 11:40:00.0	Short-beaked Common Dolphin	12	Impact Pile Driving	400	2,600*	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Piling Activity State	Initial Detection Distance from PSO (m)	CPA to Pile (m)*	Mitigation Measures
BL2 V173	2023-08-07 11:46:54.2	Short-beaked Common Dolphin	12	Impact Pile Driving	3,040	2,500*	None
BL2 P34	2023-08-07 11:53:18.5	Unidentified Dolphin	1	Impact Pile Driving	5,000	Unknown*	None

[1]*Vessel and Detection ID* coded as: Jill (LB Jill, HDD); Foundations: Bokalift 2 (BL2); Berto Miller (BM); Go Freedom (GF); Josephine Miller (JM); Rana Miller (RM); Visual (V); PAM (P)

***** After *CPA to Pile* value indicates detection was at least partially concurrent with active pile driving activity

Appendix Table A5. All visual PSO and PAM detections of marine mammals and sea turtles from Non-Piling periods during the SFW HDD and Foundations installation programs, November 14 – December 20, 2022, and June 8 – August 11, 2023, respectively. *Vessel and Detection ID* coded as: LB Jill (Jill, HDD vessel); Foundations: Bokalift 2 (BL2); Berto Miller (BM); Go Freedom (GF); Josephine Miller (JM); Rana Miller (RM); Visual (V); PAM (P).

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
Jill V1	2022-11-15 12:39:59.0	Gray Seal	1	Non-Piling	70	50	None
Jill V2	2022-11-15 15:07:12.0	Gray Seal	1	Non-Piling	950	950	None
Jill V3	2022-11-15 16:02:30.4	Gray Seal	1	Non-Piling	700	700	None
Jill V4	2022-11-15 16:56:03.0	Unidentified Dolphin	8	Non-Piling	1,290	1,200	None
Jill V5	2022-11-15 19:06:42.0	Gray Seal	1	Non-Piling	100	100	None
Jill V6	2022-11-16 15:54:48.0	Humpback Whale	1	Non-Piling	1,780	1,780	None
Jill V7	2022-11-16 16:33:30.0	Gray Seal	1	Non-Piling	50	50	None
Jill V8	2022-11-16 17:07:40.0	Unidentified Pinniped	1	Non-Piling	350	350	None
Jill V9	2022-11-16 17:11:00.0	Unidentified Mysticete Whale	1	Non-Piling	2,500	2,600	None
Jill V10	2022-11-16 17:35:24.0	Unidentified Mysticete Whale	1	Non-Piling	5,000	5,000	None
Jill V11	2022-11-16 19:10:00.0	Humpback Whale	3	Non-Piling	2,314	805	None
Jill V12	2022-11-16 20:35:24.0	Humpback Whale	1	Non-Piling	880	880	None
Jill V13	2022-11-17 15:21:39.0	Unidentified Mysticete Whale	1	Non-Piling	8,000	8,000	None
Jill V14	2022-11-17 20:47:41.0	Humpback Whale	2	Non-Piling	9,200	9,200	None
Jill V15	2022-11-18 11:51:38.0	Short-beaked Common Dolphin	75	Non-Piling	1,200	1,200	None
Jill V16	2022-11-18 12:15:00.0	Unidentified Mysticete Whale	1	Non-Piling	4,610	4,610	None
Jill V17	2022-11-18 12:21:36.0	Unidentified Mysticete Whale	1	Non-Piling	22,800	22,800	None
Jill V18	2022-11-18 13:53:22.0	Unidentified Mysticete Whale	1	Non-Piling	22,900	22,900	None
Jill V20	2022-11-18 17:27:01.0	Unidentified Mysticete Whale	2	Non-Piling	23,000	23,000	None
Jill V21	2022-11-19 15:43:39.0	Gray Seal	1	Non-Piling	100	100	None
Jill V22	2022-11-20 15:47:06.0	Humpback Whale	1	Non-Piling	6,500	6,500	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
Jill V23	2022-11-20 17:16:51.2	Humpback Whale	1	Non-Piling	761	761	Detection Delay
Jill V24	2022-11-20 19:57:00.0	Humpback Whale	2	Non-Piling	2,952	2,469	None
Jill V25	2022-11-20 20:00:00.0	Unidentified Mysticete Whale	2	Non-Piling	8,856	8,856	None
Jill V26	2022-11-20 20:19:36.0	Humpback Whale	2	Non-Piling	7,400	7,400	None
Jill V27	2022-11-20 20:27:37.0	Gray Seal	1	Non-Piling	680	680	None
Jill V28	2022-11-21 13:10:22.0	Unidentified Mysticete Whale	1	Non-Piling	22,900	22,900	None
Jill V29	2022-11-21 13:58:00.0	Unidentified Mysticete Whale	1	Non-Piling	9,132	9,132	None
Jill V30	2022-11-21 14:10:24.0	Humpback Whale	1	Non-Piling	2,290	2,290	None
Jill V31	2022-11-21 14:19:54.0	Unidentified Mysticete Whale	1	Non-Piling	22,900	22,900	None
Jill V32	2022-11-21 14:51:43.0	Humpback Whale	1	Non-Piling	2,290	2,290	None
Jill V33	2022-11-21 15:08:09.0	Short-beaked Common Dolphin	85	Non-Piling	7,600	1,100	None
Jill V34	2022-11-21 15:44:00.0	Minke Whale	1	Non-Piling	2,700	2,500	None
Jill V35	2022-11-21 16:06:00.0	Unidentified Dolphin	10	Non-Piling	5,100	5,100	None
Jill V36	2022-11-21 16:11:00.0	Unidentified Mysticete Whale	1	Non-Piling	5,763	5,763	None
Jill V37	2022-11-21 16:36:00.0	Humpback Whale	2	Non-Piling	3,800	3,800	None
Jill V38	2022-11-21 17:51:45.0	Humpback Whale	1	Non-Piling	4,770	4,770	None
Jill V39	2022-11-21 19:12:00.0	Humpback Whale	1	Non-Piling	7,000	7,000	None
Jill V40	2022-11-21 19:58:00.0	Humpback Whale	1	Non-Piling	2,500	2,500	None
Jill V41	2022-11-22 11:49:00.0	Humpback Whale	2	Non-Piling	17,500	17,500	None
Jill V42	2022-11-22 12:06:00.0	Humpback Whale	1	Non-Piling	10,500	7,800	None
Jill V43	2022-11-22 13:10:00.0	Unidentified Mysticete Whale	2	Non-Piling	10,732	4,878	None
Jill V44	2022-11-22 14:46:10.0	Unidentified Mysticete Whale	1	Non-Piling	16,000	16,000	None
Jill V45	2022-11-22 15:16:00.0	Unidentified Mysticete Whale	1	Non-Piling	4,708	4,708	None
Jill V46	2022-11-22 15:38:00.0	Humpback Whale	1	Non-Piling	19,000	19,000	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
Jill V47	2022-11-22 17:17:28.0	Unidentified Mysticete Whale	1	Non-Piling	20,000	20,000	None
Jill V48	2022-11-22 17:38:00.0	Gray Seal	1	Non-Piling	100	25	None
Jill V49	2022-11-22 19:32:00.0	Unidentified Dolphin	20	Non-Piling	2,579	2,063	None
Jill V50	2022-11-22 19:41:00.0	Unidentified Mysticete Whale	1	Non-Piling	10,000	10,000	None
Jill V51	2022-11-22 20:06:00.0	Humpback Whale	2	Non-Piling	13,000	13,000	None
Jill V52	2022-11-22 20:44:00.0	Unidentified Mysticete Whale	1	Non-Piling	8,597	8,597	None
Jill V53	2022-11-23 12:15:00.0	Minke Whale	1	Non-Piling	900	900	None
Jill V54	2022-11-23 12:51:48.0	Humpback Whale	2	Non-Piling	11,000	11,000	None
Jill V55	2022-11-23 15:05:00.0	Humpback Whale	1	Non-Piling	6,200	6,200	None
Jill V56	2022-11-23 15:06:00.0	Unidentified Mysticete Whale	2	Non-Piling	21,000	16,000	None
Jill V57	2022-11-23 15:09:00.0	Humpback Whale	2	Non-Piling	3,700	350	None
Jill V58	2022-11-23 17:21:07.0	Humpback Whale	2	Non-Piling	4,500	550	None
Jill V59	2022-11-23 19:12:00.0	Humpback Whale	1	Non-Piling	3,000	3,000	None
Jill V60	2022-11-23 20:16:00.0	Humpback Whale	1	Non-Piling	2,200	2,200	None
Jill V61	2022-11-24 12:34:00.0	Unidentified Mysticete Whale	2	Non-Piling	5,500	5,500	None
Jill V62	2022-11-24 12:41:00.0	Unidentified Mysticete Whale	1	Non-Piling	11,000	10,000	None
Jill V63	2022-11-24 14:34:00.0	Humpback Whale	1	Non-Piling	2,194	1,250	None
Jill V64	2022-11-24 15:26:00.0	Unidentified Dolphin	8	Non-Piling	5,500	3,700	None
Jill V65	2022-11-24 15:29:00.0	Humpback Whale	1	Non-Piling	250	175	None
Jill V66	2022-11-24 16:00:04.0	Unidentified Pinniped	1	Non-Piling	650	500	None
Jill V67	2022-11-24 16:10:00.0	Unidentified Dolphin	1	Non-Piling	250	180	None
Jill V68	2022-11-24 16:46:28.0	Minke Whale	1	Non-Piling	200	200	None
Jill V69	2022-11-24 17:47:00.0	Gray Seal	1	Non-Piling	50	50	None
Jill V70	2022-11-24 18:25:52.0	Harbor Porpoise	1	Non-Piling	2,200	2,200	None
Jill V71	2022-11-24 19:00:00.0	White-beaked Dolphin	16	Non-Piling	3,400	900	None
Jill V72	2022-11-24 19:00:00.0	Humpback Whale	1	Non-Piling	2,200	1,400	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
Jill V73	2022-11-24 19:05:00.0	Short-beaked Common Dolphin	26	Non-Piling	3,000	1,400	None
Jill V74	2022-11-25 12:27:00.0	Gray Seal	1	Non-Piling	500	450	None
Jill V75	2022-11-25 15:24:00.0	Humpback Whale	1	Non-Piling	3,000	2,800	None
Jill V76	2022-11-25 15:27:00.0	Unidentified Mysticete Whale	1	Non-Piling	11,000	11,000	None
Jill V77	2022-11-25 19:19:00.0	Unidentified Mysticete Whale	2	Non-Piling	8,800	8,800	None
Jill V78	2022-11-25 19:30:00.0	Minke Whale	1	Non-Piling	450	400	None
Jill V79	2022-11-25 20:06:00.0	Unidentified Mysticete Whale	3	Non-Piling	2,200	2,200	None
Jill V80	2022-11-25 20:24:49.0	Humpback Whale	2	Non-Piling	15,000	8,500	None
Jill V81	2022-11-25 21:00:00.0	Unidentified Mysticete Whale	2	Non-Piling	4,390	4,390	None
Jill V82	2022-11-26 12:21:00.0	Gray Seal	1	Non-Piling	1,100	950	None
Jill V83	2022-11-26 12:24:00.0	Unidentified Dolphin	12	Non-Piling	550	400	None
Jill V84	2022-11-26 12:53:00.0	Minke Whale	1	Non-Piling	3,000	3,000	None
Jill V85	2022-11-26 14:39:50.0	Unidentified Mysticete Whale	1	Non-Piling	22,000	22,000	None
Jill V86	2022-11-26 15:17:00.0	Unidentified Mysticete Whale	1	Non-Piling	8,800	8,800	None
Jill V87	2022-11-26 16:02:00.0	Unidentified Mysticete Whale	1	Non-Piling	15,000	15,000	None
Jill V88	2022-11-26 16:10:26.9	Humpback Whale	2	Non-Piling	4,400	2,500	None
Jill V89	2022-11-26 17:38:00.0	Humpback Whale	4	Non-Piling	8,780	4,390	None
Jill V90	2022-11-26 19:16:00.0	Unidentified Mysticete Whale	1	Non-Piling	8,800	8,800	None
Jill V91	2022-11-26 19:56:00.0	Harbor Seal	1	Non-Piling	360	360	None
Jill V92	2022-11-26 20:01:00.0	Unidentified Dolphin	18	Non-Piling	7,300	7,300	None
Jill V93	2022-11-27 11:57:00.0	Gray Seal	1	Non-Piling	500	400	None
Jill V94	2022-11-27 12:01:00.0	Gray Seal	1	Non-Piling	40	40	None
Jill V95	2022-11-27 12:03:00.0	Gray Seal	1	Non-Piling	100	100	None
Jill V96	2022-11-27 13:01:45.5	Unidentified Pinniped	2	Non-Piling	220	220	None
Jill V97	2022-11-27 15:13:00.0	Harbor Porpoise	1	Non-Piling	2,000	2,000	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
Jill V98	2022-11-27 15:45:00.0	Minke Whale	1	Non-Piling	900	900	None
Jill V99	2022-11-28 12:09:19.0	Gray Seal	1	Non-Piling	200	200	None
Jill V100	2022-11-28 12:45:00.0	Gray Seal	1	Non-Piling	250	250	None
Jill V104	2022-11-28 18:17:00.0	Gray Seal	1	Non-Piling	100	100	None
Jill V105	2022-11-28 19:13:00.0	Gray Seal	1	Non-Piling	200	200	None
Jill V106	2022-11-29 11:32:00.0	Unidentified Dolphin	9	Non-Piling	4,800	4,000	None
Jill V107	2022-11-29 15:36:00.0	Unidentified Mysticete Whale	1	Non-Piling	22,000	22,000	None
Jill V108	2022-11-29 16:22:00.0	Harbor Porpoise	2	Non-Piling	1,800	1,800	None
Jill V109	2022-11-29 16:37:00.0	Unidentified Dolphin	25	Non-Piling	3,000	2,200	None
Jill V110	2022-11-29 16:47:00.0	Unidentified Mysticete Whale	2	Non-Piling	11,000	11,000	None
Jill V111	2022-11-29 16:49:00.0	Gray Seal	1	Non-Piling	450	450	None
Jill V112	2022-11-29 18:46:58.0	Unidentified Pinniped	1	Non-Piling	220	220	None
Jill V113	2022-11-29 18:51:50.0	Humpback Whale	1	Non-Piling	5,500	4,400	None
Jill V114	2022-11-29 20:03:00.0	Unidentified Pinniped	1	Non-Piling	2,000	2,000	None
Jill V116	2022-12-02 13:36:00.0	Gray Seal	1	Non-Piling	100	75	None
Jill V117	2022-12-02 14:27:42.0	Unidentified Pinniped	1	Non-Piling	380	380	None
Jill V118	2022-12-02 15:08:00.0	Gray Seal	1	Non-Piling	487	400	None
Jill V119	2022-12-02 19:09:10.0	Unidentified Pinniped	1	Non-Piling	250	250	None
Jill V120	2022-12-02 20:36:27.0	Unidentified Mysticete Whale	2	Non-Piling	4,390	2,700	None
Jill V121	2022-12-03 19:14:33.0	Unidentified Pinniped	1	Non-Piling	200	200	None
Jill V122	2022-12-04 18:34:00.0	Gray Seal	1	Non-Piling	75	20	None
Jill V123	2022-12-04 20:32:00.0	Harbor Seal	1	Non-Piling	365	350	None
Jill V124	2022-12-05 12:40:00.0	Unidentified Pinniped	1	Non-Piling	150	150	None
Jill V125	2022-12-05 15:00:00.0	Unidentified Pinniped	1	Non-Piling	493	450	None
Jill V126	2022-12-05 15:31:00.0	Gray Seal	1	Non-Piling	150	150	None
Jill V127	2022-12-05 15:37:00.0	Gray Seal	1	Non-Piling	500	500	None
Jill V128	2022-12-13 16:51:00.0	Harbor Seal	1	Non-Piling	457	457	None
Jill V129	2022-12-13 17:49:46.0	Harbor Seal	1	Non-Piling	310	255	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
Jill V130	2022-12-13 17:53:42.0	Gray Seal	1	Non-Piling	200	200	None
Jill V131	2022-12-13 18:18:48.0	Harbor Seal	1	Non-Piling	250	250	None
Jill V132	2022-12-14 14:06:37.0	Unidentified Mysticete Whale	4	Non-Piling	4,066	2,055	None
Jill V133	2022-12-15 15:09:09.0	Unidentified Mysticete Whale	1	Non-Piling	8,132	8,132	None
Jill V134	2022-12-15 18:14:00.0	Gray Seal	1	Non-Piling	50	50	None
Jill V135	2022-12-17 15:36:00.0	Gray Seal	1	Non-Piling	350	350	None
Jill V138	2022-12-18 12:13:00.0	Humpback Whale	6	Non-Piling	4,000	1,320	None
Jill V139	2022-12-18 12:15:55.0	Unidentified Mysticete Whale	1	Non-Piling	4,000	4,000	None
Jill V140	2022-12-18 14:02:00.0	Unidentified Mysticete Whale	2	Non-Piling	19,730	19,730	None
Jill V141	2022-12-18 15:00:00.0	Humpback Whale	2	Non-Piling	3,946	1,315	None
Jill V142	2022-12-18 15:24:00.0	Unidentified Mysticete Whale	2	Non-Piling	7,892	7,892	None
Jill V143	2022-12-18 15:38:00.0	Humpback Whale	2	Non-Piling	7,892	3,946	None
Jill V144	2022-12-18 16:08:00.0	Humpback Whale	4	Non-Piling	4,988	3,960	None
Jill V145	2022-12-18 16:12:00.0	Humpback Whale	3	Non-Piling	2,660	1,320	None
Jill V146	2022-12-18 16:18:00.0	Unidentified Mysticete Whale	2	Non-Piling	4,988	4,988	None
Jill V147	2022-12-18 17:30:24.0	Gray Seal	1	Non-Piling	70	50	None
Jill V148	2022-12-18 18:04:00.0	Humpback Whale	4	Non-Piling	1,995	1,320	None
Jill V149	2022-12-18 18:27:00.0	Gray Seal	1	Non-Piling	75	75	None
Jill V150	2022-12-18 18:45:00.0	Unidentified Mysticete Whale	2	Non-Piling	9,975	9,975	None
Jill V151	2022-12-18 19:02:30.0	Humpback Whale	2	Non-Piling	1,980	1,980	None
Jill V152	2022-12-18 19:06:43.0	Unidentified Mysticete Whale	2	Non-Piling	19,000	19,000	None
Jill V153	2022-12-18 19:12:10.0	Unidentified Mysticete Whale	2	Non-Piling	19,000	19,000	None
Jill V154	2022-12-18 19:39:00.0	Humpback Whale	1	Non-Piling	1,980	1,980	None
Jill V156	2022-12-19 12:23:23.0	Unidentified Mysticete Whale	1	Non-Piling	10,000	10,000	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
Jill V159	2022-12-19 17:35:03.0	Unidentified Mysticete Whale	1	Non-Piling	10,000	10,000	None
Jill V160	2022-12-19 17:42:00.0	Humpback Whale	1	Non-Piling	3,060	3,060	None
Jill V163	2022-12-19 18:33:00.0	Humpback Whale	1	Non-Piling	918	50	Detection Delay
Jill V164	2022-12-19 19:53:28.0	Humpback Whale	2	Non-Piling	3,000	3,000	None
Jill V165	2022-12-20 12:39:33.0	Unidentified Mysticete Whale	1	Non-Piling	12,000	12,000	None
JM V1	2023-06-08 13:44:48.5	Short-beaked Common Dolphin	12	Non-Piling	800	100	None
RM V1	2023-06-08 14:11:37.7	Unidentified Dolphin	7	Non-Piling	500	400	None
BL2 V1	2023-06-09 12:40:41.3	Unidentified Dolphin	4	Non-Piling	200	200	None
BL2 V2	2023-06-09 18:07:20.0	Humpback Whale	1	Non-Piling	1,200	1,000	None
JM V2	2023-06-09 21:40:00.2	Unidentified Dolphin	1	Non-Piling	1,077	1,077	None
BM V1	2023-06-10 00:06:30.2	Gray Seal	1	Non-Piling	20	20	Engine Neutral
BM V2	2023-06-10 12:26:40.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	8,000	8,000	None
BM V3	2023-06-10 14:12:00.0	Fin Whale	1	Non-Piling	1,200	600	None
JM V3	2023-06-10 15:17:00.0	Humpback Whale	4	Non-Piling	3,300	3,300	None
JM V4	2023-06-10 15:40:00.2	Unidentified Mysticete Whale	1	Non-Piling	2,000	2,000	None
JM V5	2023-06-10 16:10:00.3	Unidentified Mysticete Whale	2	Non-Piling	2,000	2,000	None
BM V4	2023-06-10 18:12:45.2	Humpback Whale	1	Non-Piling	1,500	1,500	None
BL2 V3	2023-06-10 18:29:03.0	Humpback Whale	1	Non-Piling	5,000	4,500	None
BM V5	2023-06-10 19:01:52.0	Humpback Whale	1	Non-Piling	5,000	5,000	None
BM V6	2023-06-10 19:46:02.0	Humpback Whale	2	Non-Piling	1,000	900	None
JM V6	2023-06-10 19:55:25.3	Humpback Whale	2	Non-Piling	1,200	1,200	None
BL2 V4	2023-06-10 21:07:59.5	North Atlantic Right Whale	3	Non-Piling	8,000	8,000	None
BL2 V5	2023-06-10 21:22:00.0	Humpback Whale	3	Non-Piling	8,000	5,000	None
BL2 V6	2023-06-11 12:47:38.6	Humpback Whale	6	Non-Piling	5,000	5,000	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
JM V7	2023-06-11 12:57:00.0	Humpback Whale	3	Non-Piling	3,000	3,000	None
BM V7	2023-06-11 14:12:00.0	Humpback Whale	2	Non-Piling	800	700	None
BM V8	2023-06-11 14:15:00.0	Humpback Whale	4	Non-Piling	800	600	None
BM V9	2023-06-11 14:23:00.0	Humpback Whale	3	Non-Piling	1,000	700	None
JM V8	2023-06-11 15:32:00.0	Humpback Whale	1	Non-Piling	2,100	2,500	None
GF V127	2023-06-11 15:34:06.5	Humpback Whale	1	Non-Piling	1,000	500	None
BL2 V7	2023-06-11 15:43:10.4	Humpback Whale	1	Non-Piling	4,500	5,000	None
BM V10	2023-06-11 16:30:16.6	Humpback Whale	2	Non-Piling	800	300	None
BM V11	2023-06-11 16:32:16.6	Humpback Whale	6	Non-Piling	700	1,400	None
BL2 V8	2023-06-11 16:47:22.9	Fin Whale	2	Non-Piling	5,000	5,000	None
BL2 V9	2023-06-11 18:00:45.8	Humpback Whale	5	Non-Piling	3,000	1,500	None
RM V2	2023-06-11 18:39:58.1	Humpback Whale	3	Non-Piling	6,500	6,500	None
BL2 V10	2023-06-11 20:30:11.0	Humpback Whale	3	Non-Piling	6,200	5,000	None
BM V12	2023-06-11 21:43:28.5	Short-beaked Common Dolphin	7	Non-Piling	600	600	None
BL2 V15	2023-06-12 01:51:57.6	Humpback Whale	5	Non-Piling	7,500	7,500	None
BM V13	2023-06-12 09:04:19.6	Humpback Whale	2	Non-Piling	6,500	6,500	None
BL2 V16	2023-06-12 09:13:38.0	Humpback Whale	6	Non-Piling	2,500	300	None
BM V14	2023-06-12 09:17:59.2	Humpback Whale	1	Non-Piling	7,000	7,000	None
GF V128	2023-06-12 09:19:08.4	Humpback Whale	2	Non-Piling	5,000	5,000	None
BM V15	2023-06-12 09:33:55.8	Humpback Whale	1	Non-Piling	1,500	1,500	None
JM V9	2023-06-12 09:41:48.2	Humpback Whale	5	Non-Piling	1,500	500	None
GF V129	2023-06-12 09:50:20.5	Humpback Whale	3	Non-Piling	1,500	1,000	None
RM V3	2023-06-12 10:26:57.7	Humpback Whale	5	Non-Piling	4,000	400	Engine Neutral
RM V4	2023-06-12 12:41:01.9	Fin Whale	1	Non-Piling	1,500	600	Engine Neutral
GF V130	2023-06-12 12:45:42.7	Fin Whale	1	Non-Piling	1,000	1,000	None
RM V5	2023-06-12 13:09:15.4	Sperm Whale	1	Non-Piling	400	400	Engine Neutral
BL2 V18	2023-06-12 13:13:55.4	Humpback Whale	2	Non-Piling	1,500	1,500	None
JM V10	2023-06-12 13:55:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,600	1,600	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
GF V131	2023-06-12 14:26:10.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,500	1,500	None
JM V11	2023-06-12 14:33:00.0	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	1,000	550	None
JM V12	2023-06-12 15:12:00.0	Humpback Whale	2	Non-Piling	2,100	800	None
BL2 V19	2023-06-12 15:15:28.8	Humpback Whale	1	Non-Piling	5,500	5,500	None
BL2 V20	2023-06-12 15:23:44.2	Humpback Whale	2	Non-Piling	1,400	1,400	None
BL2 V21	2023-06-12 17:29:52.9	Fin Whale	1	Non-Piling	2,500	2,500	None
BL2 V22	2023-06-12 18:48:22.2	Humpback Whale	4	Non-Piling	500	200	None
JM V13	2023-06-12 18:49:37.3	Humpback Whale	1	Non-Piling	3,000	3,000	None
JM V14	2023-06-12 18:50:39.1	Humpback Whale	2	Non-Piling	2,000	600	None
JM V15	2023-06-12 19:29:37.2	Humpback Whale	1	Non-Piling	1,500	1,000	None
BL2 V23	2023-06-12 19:50:10.0	Humpback Whale	1	Non-Piling	650	600	Notify Nearby Vessel
BL2 V24	2023-06-12 20:08:47.2	Humpback Whale	2	Non-Piling	750	750	None
BL2 V25	2023-06-12 20:25:46.4	Humpback Whale	1	Non-Piling	2,000	1,800	None
JM V16	2023-06-12 20:32:00.0	Humpback Whale	1	Non-Piling	100	30	Engine Neutral
JM V17	2023-06-12 20:36:00.0	Humpback Whale	1	Non-Piling	500	200	Engine Neutral
JM V18	2023-06-12 21:50:00.0	Humpback Whale	2	Non-Piling	3,500	3,500	None
JM V19	2023-06-12 22:13:00.0	Humpback Whale	2	Non-Piling	3,000	3,000	None
BL2 V26	2023-06-12 22:15:19.0	Humpback Whale	2	Non-Piling	5,500	5,000	None
BL2 V27	2023-06-12 23:18:13.5	Humpback Whale	1	Non-Piling	300	40	None
JM V20	2023-06-12 23:32:03.3	Humpback Whale	1	Non-Piling	600	600	None
JM V21	2023-06-13 00:33:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	2,000	2,000	None
BL2 V28	2023-06-13 00:35:05.2	Humpback Whale	1	Non-Piling	2,500	2,500	None
JM V22	2023-06-13 09:42:37.7	Humpback Whale	1	Non-Piling	35	35	Engine Neutral
JM V23	2023-06-13 09:57:35.4	Humpback Whale	1	Non-Piling	30	30	Engine Neutral

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
RM V6	2023-06-13 11:21:13.5	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	100	100	Engine Neutral
JM V24	2023-06-13 12:28:45.4	Humpback Whale	2	Non-Piling	500	60	Engine Neutral
JM V25	2023-06-13 14:49:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	1,600	None
RM V7	2023-06-13 15:01:32.7	Sei Whale	1	Non-Piling	220	180	Engine Neutral
BL2 V29	2023-06-13 15:17:31.4	Fin Whale	1	Non-Piling	1,500	1,100	None
JM V26	2023-06-13 15:25:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,500	1,500	None
RM V8	2023-06-13 16:06:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	200	200	Engine Neutral
RM V9	2023-06-13 17:21:00.0	Humpback Whale	1	Non-Piling	4,000	400	Engine Neutral
JM V27	2023-06-13 17:52:39.1	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	2,000	800	None
BM V16	2023-06-13 18:18:20.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,700	1,700	None
BL2 V30	2023-06-13 18:23:26.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	5,000	5,000	None
BM V17	2023-06-13 18:34:24.7	Fin Whale	1	Non-Piling	2,000	800	None
BL2 V31	2023-06-13 18:45:18.1	Humpback Whale	1	Non-Piling	2,000	2,000	None
BM V18	2023-06-13 18:49:07.2	Humpback Whale	1	Non-Piling	130	100	Reduce Speed
JM V28	2023-06-13 18:57:40.5	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	600	None
JM V29	2023-06-13 18:58:42.6	Humpback Whale	2	Non-Piling	3,000	700	None
BM V19	2023-06-13 19:00:04.6	Humpback Whale	2	Non-Piling	2,000	2,000	None
RM V10	2023-06-13 19:05:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	300	300	Engine Neutral

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
BM V20	2023-06-13 19:06:00.0	Humpback Whale	1	Non-Piling	750	150	None
BL2 V32	2023-06-13 19:25:33.5	Humpback Whale	1	Non-Piling	1,500	1,500	None
JM V30	2023-06-13 19:50:47.5	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	3,000	3,000	None
BL2 V33	2023-06-13 19:51:21.3	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	2,500	2,500	None
BM V21	2023-06-13 19:52:38.2	Fin Whale	2	Non-Piling	800	800	None
RM V11	2023-06-13 19:53:00.0	Fin Whale	1	Non-Piling	2,000	1,500	Engine Neutral
BM V22	2023-06-13 20:02:52.0	Fin Whale	1	Non-Piling	400	400	None
BL2 V34	2023-06-13 20:28:41.4	Humpback Whale	1	Non-Piling	800	765	None
RM V12	2023-06-13 20:56:00.0	Leatherback Sea Turtle	1	Non-Piling	30	30	Engine Neutral
JM V31	2023-06-13 21:08:00.0	Humpback Whale	8	Non-Piling	3,000	5	Engine Neutral
BM V23	2023-06-13 21:24:08.1	Fin Whale	2	Non-Piling	1,200	800	None
BL2 V35	2023-06-13 21:27:05.5	Humpback Whale	1	Non-Piling	4,500	4,576	None
JM V32	2023-06-13 22:30:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	3,000	None
BL2 V36	2023-06-13 22:43:04.9	Fin Whale	2	Non-Piling	3,000	3,125	None
BL2 V37	2023-06-13 23:20:45.5	Fin Whale	1	Non-Piling	3,000	3,000	None
BL2 V38	2023-06-13 23:47:51.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	6,000	6,000	None
BL2 V39	2023-06-14 00:52:13.9	Humpback Whale	1	Non-Piling	4,500	4,500	None
BL2 V40	2023-06-14 01:46:24.0	Humpback Whale	1	Non-Piling	3,500	3,500	None
BL2 V41	2023-06-14 02:37:09.5	Unidentified Mysticete Whale	1	Non-Piling	6,500	6,000	None
BL2 V42	2023-06-14 09:19:44.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	3,000	None
GF V132	2023-06-14 09:22:47.8	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	2,500	2,000	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
RM V13	2023-06-14 09:42:33.4	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	3,000	500	Reduce Speed
JM V33	2023-06-14 09:45:39.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,500	1,500	None
JM V34	2023-06-14 10:15:33.1	Humpback Whale	2	Non-Piling	1,500	1,500	None
BM V24	2023-06-14 10:39:26.1	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	8,000	2,000	None
BM V25	2023-06-14 10:48:45.9	Fin Whale	1	Non-Piling	2,500	1,500	None
BM V26	2023-06-14 11:32:46.6	Unidentified Dolphin	25	Non-Piling	600	500	None
BL2 V43	2023-06-14 12:45:07.0	Fin Whale	1	Non-Piling	5,000	5,000	None
BM V27	2023-06-14 14:05:00.0	Bottlenose Dolphin	15	Non-Piling	1,000	800	None
RM V14	2023-06-14 14:29:03.7	Sei Whale	1	Non-Piling	1,200	1,200	None
BL2 V44	2023-06-14 15:00:29.4	Sei Whale	3	Non-Piling	5,500	5,000	None
BM V28	2023-06-14 15:07:12.6	Bottlenose Dolphin	15	Non-Piling	400	150	None
JM V35	2023-06-14 15:51:00.0	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	2,500	1,500	None
JM V36	2023-06-14 16:48:38.8	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	2,000	2,000	None
RM V15	2023-06-14 17:18:00.0	Sei Whale	2	Non-Piling	4,000	200	Engine Neutral, Alter Course
GF V133	2023-06-14 17:23:17.5	Leatherback Sea Turtle	1	Non-Piling	200	200	None
BL2 V45	2023-06-14 17:40:11.7	Unidentified Mysticete Whale	1	Non-Piling	1,000	400	None
BM V29	2023-06-14 17:44:15.1	Fin Whale	1	Non-Piling	6,000	5,000	None
BL2 V46	2023-06-14 18:01:40.7	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	1,000	1,000	None
BM V30	2023-06-14 18:09:59.7	Humpback Whale	1	Non-Piling	7,000	7,000	None
BL2 V47	2023-06-14 18:52:58.5	Unidentified Mysticete Whale	1	Non-Piling	3,500	3,500	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
JM V37	2023-06-14 19:47:55.7	Fin Whale	1	Non-Piling	1,500	20	Alter Course
BM V31	2023-06-14 20:17:42.8	Gray Seal	1	Non-Piling	30	30	Engine Neutral
GF V134	2023-06-14 20:43:00.0	Humpback Whale	1	Non-Piling	700	700	None
JM V38	2023-06-14 21:54:00.0	Humpback Whale	1	Non-Piling	1,600	1,600	None
BL2 V48	2023-06-14 21:59:47.2	Humpback Whale	1	Non-Piling	3,500	3,500	None
BL2 V49	2023-06-14 22:46:55.3	Humpback Whale	1	Non-Piling	500	100	None
RM V17	2023-06-14 23:19:43.2	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	4,000	3,000	Engine Neutral
GF V135	2023-06-15 00:36:00.0	Humpback Whale	1	Non-Piling	400	400	None
JM V39	2023-06-15 01:05:00.0	Unidentified Mysticete Whale	1	Non-Piling	600	600	None
JM V40	2023-06-15 02:56:00.0	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	800	800	None
JM V41	2023-06-15 08:47:17.3	Humpback Whale	4	Non-Piling	1,200	1,200	None
BL2 V50	2023-06-15 09:22:54.9	Humpback Whale	4	Non-Piling	3,170	4,200	None
RM V18	2023-06-15 09:59:00.0	Humpback Whale	2	Non-Piling	2,000	2,000	None
BM V32	2023-06-15 10:13:43.9	Minke Whale	1	Non-Piling	80	80	Engine Neutral
BM V33	2023-06-15 12:09:33.3	Unidentified Mysticete Whale	1	Non-Piling	8,000	8,000	None
RM V19	2023-06-15 12:31:00.0	Unidentified Mysticete Whale	2	Non-Piling	1,000	1,000	None
RM V20	2023-06-15 15:24:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,500	3,000	None
BL2 V51	2023-06-15 15:28:32.3	Unidentified Mysticete Whale	1	Non-Piling	3,355	3,354	None
JM V42	2023-06-15 15:33:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	2,000	2,000	None
BL2 V52	2023-06-15 15:33:59.2	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,595	1,500	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
GF V136	2023-06-15 21:28:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	2,000	None
BL2 V53	2023-06-15 22:02:36.0	Unidentified Mysticete Whale	1	Non-Piling	5,943	6,000	None
BM V34	2023-06-15 23:54:02.2	Unidentified Pinniped	1	Non-Piling	140	140	None
GF V137	2023-06-16 11:51:04.1	Bottlenose Dolphin	11	Non-Piling	400	250	None
GF V138	2023-06-16 14:18:00.0	Bottlenose Dolphin	8	Non-Piling	50	10	None
JM V43	2023-06-16 17:44:41.5	Humpback Whale	1	Non-Piling	1,500	1,200	None
GF V139	2023-06-16 18:51:14.6	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	3,000	None
JM V44	2023-06-16 19:19:47.6	Humpback Whale	1	Non-Piling	1,000	1,000	None
BM V35	2023-06-16 19:52:23.0	Gray Seal	1	Non-Piling	35	35	Engine Neutral
JM V45	2023-06-17 09:44:43.6	Fin Whale	1	Non-Piling	300	300	None
GF V141	2023-06-17 09:49:09.8	Minke Whale	1	Non-Piling	100	30	Engine Neutral
GF V140	2023-06-17 09:49:29.1	Humpback Whale	1	Non-Piling	50	50	Engine Neutral
RM V21	2023-06-17 09:53:00.0	Humpback Whale	1	Non-Piling	300	300	Engine Neutral
BM V36	2023-06-17 10:35:25.1	Humpback Whale	1	Non-Piling	6,300	75	Engine Neutral
GF V142	2023-06-17 10:47:58.1	Minke Whale	1	Non-Piling	75	75	Engine Neutral
BL2 V54	2023-06-17 10:53:56.9	Unidentified Mysticete Whale	1	Non-Piling	700	700	None
JM V46	2023-06-17 10:57:46.2	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	3,000	1,500	None
JM V47	2023-06-17 12:44:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	2,000	2,000	None
BL2 V55	2023-06-17 13:50:32.8	Sei Whale	1	Non-Piling	1,700	1,100	None
RM V22	2023-06-17 14:02:37.2	Humpback Whale	1	Non-Piling	600	600	None
GF V143	2023-06-17 14:18:00.0	Humpback Whale	1	Non-Piling	2,000	750	None
RM V23	2023-06-17 14:57:08.3	Fin Whale	1	Non-Piling	1,300	450	Engine Neutral
RM V24	2023-06-17 15:15:41.3	Sei Whale	1	Non-Piling	350	350	Engine Neutral

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
GF V144	2023-06-17 15:45:20.0	Humpback Whale	1	Non-Piling	2,000	800	None
RM V25	2023-06-17 16:07:04.9	Short-beaked Common Dolphin	3	Non-Piling	20	30	Maintain Heading and Speed
GF V145	2023-06-17 17:55:18.2	Humpback Whale	1	Non-Piling	10	10	Engine Neutral
JM V48	2023-06-17 17:56:54.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,000	1,000	None
GF V146	2023-06-17 18:37:12.4	Humpback Whale	1	Non-Piling	2,000	1,000	None
RM V26	2023-06-17 19:50:00.0	Fin Whale	1	Non-Piling	1,000	800	None
BL2 V56	2023-06-17 20:50:25.7	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	800	800	None
GF V147	2023-06-17 20:56:00.0	Humpback Whale	3	Non-Piling	2,500	2,500	None
GF V148	2023-06-17 21:13:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,500	1,500	None
GF V149	2023-06-17 22:07:08.0	Non-NARW Unidentified Mysticete Whale	3	Non-Piling	2,000	2,000	None
BL2 V57	2023-06-18 00:53:10.6	Unidentified Mysticete Whale	1	Non-Piling	6,500	6,313	None
BL2 V58	2023-06-18 09:51:57.2	Humpback Whale	4	Non-Piling	4,907	5,172	None
BM V37	2023-06-18 09:54:36.3	Humpback Whale	2	Non-Piling	6,000	5,000	None
BM V38	2023-06-18 10:12:27.5	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	7,500	7,000	None
BL2 V59	2023-06-18 12:40:00.7	Humpback Whale	1	Non-Piling	4,936	4,300	None
BL2 V60	2023-06-18 12:52:53.5	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	9,184	9,100	None
BL2 V61	2023-06-18 12:57:24.0	Sei Whale	2	Non-Piling	1,523	1,290	None
RM V28	2023-06-18 13:06:13.5	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	800	Reduce Speed, Alter Course

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
BM V39	2023-06-18 13:41:00.0	Sei Whale	1	Non-Piling	2,000	600	None
GF V150	2023-06-18 14:01:00.0	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	1,500	800	None
BL2 V62	2023-06-18 14:20:00.2	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	2,562	2,561	None
BL2 V63	2023-06-18 14:44:31.5	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	4,251	4,250	None
RM V29	2023-06-18 14:49:29.2	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	600	Reduce Speed, Alter Course
BL2 V64	2023-06-18 16:01:02.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	5,938	5,937	None
BL2 V65	2023-06-18 16:17:53.6	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	9,184	9,183	None
BL2 V66	2023-06-18 16:51:55.3	Fin Whale	3	Non-Piling	3,748	3,747	None
BM V40	2023-06-18 17:46:12.8	Unidentified Mysticete Whale	1	Non-Piling	7,580	7,580	None
RM V30	2023-06-18 22:28:55.4	Short-beaked Common Dolphin	6	Non-Piling	300	300	None
BL2 V67	2023-06-18 23:17:14.4	Fin Whale	2	Non-Piling	4,255	4,254	None
BL2 V68	2023-06-18 23:50:13.9	Humpback Whale	1	Non-Piling	3,721	4,254	None
GF V151	2023-06-19 00:31:00.0	Unidentified Dolphin	5	Non-Piling	20	10	Engine Neutral
BL2 V69	2023-06-19 09:17:00.0	Non-NARW Unidentified Mysticete Whale	3	Non-Piling	1,285	1,285	None
BM V41	2023-06-19 10:10:00.0	Unidentified Mysticete Whale	1	Non-Piling	7,600	7,600	None
BM V42	2023-06-19 11:57:53.0	Sei Whale	1	Non-Piling	1,600	1,600	None
BM V43	2023-06-19 11:57:53.7	Non-NARW Unidentified Mysticete Whale	3	Non-Piling	900	800	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
GF V152	2023-06-19 12:56:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	2,500	2,500	None
JM V49	2023-06-19 12:56:18.3	Fin Whale	1	Non-Piling	2,731	800	None
BL2 V71	2023-06-19 13:17:52.2	Fin Whale	1	Non-Piling	5,938	5,937	None
GF V153	2023-06-19 14:12:00.0	Non-NARW Unidentified Mysticete Whale	3	Non-Piling	1,500	1,200	None
GF V154	2023-06-19 14:25:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,600	1,200	None
BL2 V72	2023-06-19 14:28:36.7	Fin Whale	2	Non-Piling	7,638	7,636	None
BM V44	2023-06-19 14:36:00.0	Fin Whale	2	Non-Piling	1,000	75	Alter Course
BL2 V73	2023-06-19 15:02:34.6	Fin Whale	2	Non-Piling	2,778	2,500	None
GF V155	2023-06-19 15:32:00.0	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	3,000	3,000	None
BL2 V74	2023-06-19 15:51:52.1	Fin Whale	2	Non-Piling	1,515	1,200	None
GF V156	2023-06-19 16:04:00.0	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	2,000	2,000	Alter Course, Engine Neutral
BM V45	2023-06-19 16:05:00.0	Fin Whale	1	Non-Piling	800	75	Alter Course
BL2 V75	2023-06-19 16:05:01.2	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	1,752	1,200	None
BM V46	2023-06-19 16:39:57.1	Fin Whale	1	Non-Piling	2,000	400	Reduce Speed
BM V47	2023-06-19 16:45:56.9	Fin Whale	1	Non-Piling	2,500	500	None
JM V50	2023-06-19 16:46:32.6	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,574	1,000	None
BL2 V76	2023-06-19 17:02:28.1	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	986	1,000	None
JM V51	2023-06-19 17:14:06.6	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,569	900	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
BM V51	2023-06-19 23:59:57.7	Unidentified Mysticete Whale	1	Non-Piling	6,500	6,500	None
BM V52	2023-06-20 00:00:00.1	Humpback Whale	1	Non-Piling	1,500	1,500	None
BM V59	2023-06-20 20:39:04.3	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	800	800	None
JM V59	2023-06-20 21:14:12.5	Bottlenose Dolphin	25	Non-Piling	275	275	None
BM V60	2023-06-20 22:13:00.0	Non-NARW Unidentified Mysticete Whale	3	Non-Piling	1,000	600	None
BL2 V86	2023-06-21 11:55:11.0	Unidentified Mysticete Whale	1	Non-Piling	3,330	3,330	None
JM V60	2023-06-23 11:37:47.0	Unidentified Dolphin	4	Non-Piling	100	100	None
RM V34	2023-06-26 18:17:03.4	Fin Whale	2	Non-Piling	3,000	1,500	Alter Course, Engine Neutral
BL2 V87	2023-06-27 16:08:41.7	Unidentified Mysticete Whale	2	Non-Piling	4,000	4,000	None
BL2 V88	2023-06-27 19:15:53.2	Non-NARW Unidentified Mysticete Whale	4	Non-Piling	3,748	3,500	None
BL2 V89	2023-06-27 20:16:02.1	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	2,781	2,500	None
BL2 V90	2023-06-27 20:54:00.0	Minke Whale	1	Non-Piling	3,748	3,747	None
BL2 V91	2023-06-27 21:59:30.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	1,754	686	None
BL2 V92	2023-06-28 14:58:39.6	Unidentified Mysticete Whale	1	Non-Piling	3,500	3,500	None
BL2 V93	2023-06-28 16:13:57.6	Unidentified Mysticete Whale	1	Non-Piling	3,748	4,700	None
BL2 V94	2023-06-28 23:02:37.8	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,748	3,700	None
BL2 V95	2023-06-28 23:48:49.2	Unidentified Mysticete Whale	1	Non-Piling	3,040	3,000	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
BL2 V96	2023-06-29 00:42:47.6	Unidentified Mysticete Whale	1	Non-Piling	6,500	6,500	None
BL2 V97	2023-06-29 02:59:35.8	Unidentified Mysticete Whale	1	Non-Piling	5,000	5,000	None
BL2 V98	2023-06-29 14:09:20.8	Non-NARW Unidentified Mysticete Whale	5	Non-Piling	4,941	3,747	None
BL2 V99	2023-06-29 21:28:00.0	Unidentified Mysticete Whale	1	Non-Piling	4,500	4,500	None
GF V162	2023-06-30 20:37:00.0	Non-NARW Unidentified Mysticete Whale	3	Non-Piling	1,500	1,500	None
JM V61	2023-06-30 20:42:41.2	Fin Whale	1	Non-Piling	400	400	Reduce Speed, Alter Course
GF V163	2023-06-30 21:52:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	500	400	None
GF V164	2023-06-30 22:02:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	5,000	5,000	None
GF V165	2023-06-30 22:18:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	3,000	None
JM V62	2023-07-01 12:10:43.4	Unidentified Dolphin	1	Non-Piling	350	350	None
GF V166	2023-07-01 16:20:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,000	3,000	None
BL2 V100	2023-07-01 16:42:55.4	Unidentified Mysticete Whale	1	Non-Piling	4,000	4,000	None
RM V35	2023-07-02 01:16:00.4	Unidentified Dolphin	4	Non-Piling	1,500	150	None
GF V172	2023-07-02 23:18:24.5	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	1,000	100	Engine Neutral
GF V173	2023-07-06 10:22:58.6	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	1,000	200	Notify Nearby Vessel

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
JM V67	2023-07-07 00:03:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	785	500	Alter Course
JM V68	2023-07-07 10:05:14.7	Unidentified Dolphin	1	Non-Piling	140	189	None
GF V176	2023-07-07 20:16:00.0	Fin Whale	1	Non-Piling	1,000	200	None
RM V39	2023-07-08 11:23:14.0	Unidentified Dolphin	1	Non-Piling	300	300	None
GF V177	2023-07-08 12:47:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	200	200	None
BL2 V107	2023-07-09 12:23:46.1	Humpback Whale	2	Non-Piling	7,644	7,600	None
BL2 V108	2023-07-09 14:35:00.2	Unidentified Dolphin	10	Non-Piling	7,644	7,600	None
RM V40	2023-07-09 15:03:00.0	Bottlenose Dolphin	30	Non-Piling	1,000	700	Maintain Heading and Speed
JM V69	2023-07-10 10:12:02.7	Humpback Whale	1	Non-Piling	920	920	None
BL2 V109	2023-07-10 13:02:08.2	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	7,000	7,000	None
JM V70	2023-07-10 18:10:17.2	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	2,000	2,000	None
JM V71	2023-07-10 21:47:58.0	Sei Whale	2	Non-Piling	920	200	None
BL2 V110	2023-07-11 04:06:07.9	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	4,500	4,500	None
BL2 V111	2023-07-11 12:22:03.0	Unidentified Mysticete Whale	1	Non-Piling	4,000	4,000	None
JM V74	2023-07-11 12:42:00.7	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	939	939	None
GF V179	2023-07-12 09:45:00.0	Bottlenose Dolphin	15	Non-Piling	200	100	None
BL2 V115	2023-07-19 14:45:00.0	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	700	700	None
BL2 V116	2023-07-20 16:49:56.3	Loggerhead Sea Turtle	1	Non-Piling	20	20	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
BL2 V117	2023-07-20 18:24:28.2	Humpback Whale	1	Non-Piling	3,747	3,700	None
RM V42	2023-07-21 10:53:00.2	Bottlenose Dolphin	6	Non-Piling	1,500	500	Alter course
GF V188	2023-07-22 13:17:00.0	Loggerhead Sea Turtle	1	Non-Piling	100	20	Maintain Course
JM V76	2023-07-23 11:15:27.6	Short-beaked Common Dolphin	25	Non-Piling	500	150	Alter Course
BL2 V118	2023-07-23 11:27:24.3	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	6,617	6,616	None
BL2 V119	2023-07-23 11:40:56.9	Short-beaked Common Dolphin	30	Non-Piling	3,000	1,800	None
BL2 V120	2023-07-23 12:16:44.1	Fin Whale	1	Non-Piling	3,721	1,800	None
BM V63	2023-07-23 12:23:45.1	Short-beaked Common Dolphin	60	Non-Piling	5,000	1,500	None
BM V64	2023-07-23 12:37:34.1	Fin Whale	1	Non-Piling	2,500	2,500	Engine Neutral
JM V77	2023-07-23 12:42:39.6	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	4,000	4,000	None
BM V65	2023-07-23 12:49:05.6	Unidentified Mysticete Whale	1	Non-Piling	7,500	8,000	None
BL2 P8	2023-07-23 12:52:58.2	Unidentified Dolphin	1	Non-Piling	Unknown	Unknown	None
BL2 V121	2023-07-23 12:53:28.5	Short-beaked Common Dolphin	15	Non-Piling	1,700	1,700	None
JM V78	2023-07-23 12:53:52.4	Fin Whale	1	Non-Piling	800	800	None
JM V79	2023-07-23 12:53:53.1	Short-beaked Common Dolphin	25	Non-Piling	600	600	None
GF V189	2023-07-23 12:56:00.0	Unidentified Sea Turtle	1	Non-Piling	20	20	None
JM V80	2023-07-23 13:06:08.2	Unidentified Dolphin	8	Non-Piling	500	500	None
BL2 V122	2023-07-23 14:39:00.0	Short-beaked Common Dolphin	12	Non-Piling	2,380	2,300	None
GF V190	2023-07-23 15:37:00.0	Short-beaked Common Dolphin	20	Non-Piling	2,000	200	Reduced speed
GF V191	2023-07-23 15:55:00.0	Short-beaked Common Dolphin	1	Non-Piling	500	300	None
BL2 V123	2023-07-23 16:22:45.4	Short-beaked Common Dolphin	5	Non-Piling	450	450	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
BL2 V124	2023-07-23 18:16:15.0	Short-beaked Common Dolphin	10	Non-Piling	618	617	None
JM V81	2023-07-23 18:31:19.1	Unidentified Dolphin	25	Non-Piling	800	800	None
BL2 P9	2023-07-23 18:38:04.3	Unidentified Dolphin	1	Non-Piling	Unknown	Unknown	None
BL2 V125	2023-07-23 18:42:25.4	Unidentified Dolphin	10	Non-Piling	4,907	4,907	None
BL2 P10	2023-07-23 19:02:09.4	Unidentified Dolphin	1	Non-Piling	Unknown	Unknown	None
JM V83	2023-07-24 11:59:55.1	Short-beaked Common Dolphin	4	Non-Piling	3	2	None
JM V84	2023-07-24 12:37:39.2	Short-beaked Common Dolphin	15	Non-Piling	600	2	Alter Course
BM V66	2023-07-26 09:43:00.0	Short-beaked Common Dolphin	35	Non-Piling	380	10	None
BL2 V129	2023-07-26 11:22:25.2	Short-beaked Common Dolphin	30	Non-Piling	500	400	None
JM V85	2023-07-26 11:38:40.6	Short-beaked Common Dolphin	25	Non-Piling	500	300	None
JM V86	2023-07-26 14:03:27.6	Short-beaked Common Dolphin	25	Non-Piling	1,500	1,500	None
JM V87	2023-07-26 15:03:00.0	Short-beaked Common Dolphin	30	Non-Piling	1,500	50	None
GF V192	2023-07-26 16:06:00.5	Loggerhead Sea Turtle	1	Non-Piling	5	5	None
BL2 V130	2023-07-28 16:03:28.9	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	4,000	4,000	None
BL2 V131	2023-07-28 18:03:37.4	Unidentified Mysticete Whale	1	Non-Piling	4,000	4,000	None
BL2 V132	2023-07-28 19:35:51.7	Non-NARW Unidentified Mysticete Whale	1	Non-Piling	3,500	2,000	None
BL2 V133	2023-07-30 10:55:30.5	Unidentified Mysticete Whale	1	Non-Piling	6,000	6,000	None
JM V88	2023-07-30 14:12:34.9	Non-NARW Unidentified Mysticete Whale	2	Non-Piling	3,000	800	None
JM V89	2023-07-30 15:36:00.0	Fin Whale	1	Non-Piling	1,500	1,500	None
BL2 V134	2023-07-30 16:34:34.0	Fin Whale	1	Non-Piling	3,748	3,500	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
RM V44	2023-07-30 19:55:00.0	Bottlenose Dolphin	60	Non-Piling	800	100	None
JM V90	2023-07-31 01:44:56.7	Unidentified Dolphin	10	Non-Piling	500	500	None
RM V45	2023-07-31 10:17:00.0	Short-beaked Common Dolphin	20	Non-Piling	200	10	Maintain Heading and Speed
BL2 V135	2023-07-31 10:25:34.6	Short-beaked Common Dolphin	40	Non-Piling	2,380	2,000	None
BL2 V136	2023-07-31 10:39:42.7	Humpback Whale	1	Non-Piling	3,355	3,300	None
RM V46	2023-07-31 10:45:00.0	Humpback Whale	1	Non-Piling	1,500	1,500	None
RM V47	2023-07-31 11:45:00.0	Short-beaked Common Dolphin	5	Non-Piling	15	10	Maintain Heading and Speed
JM V91	2023-07-31 12:52:16.1	Short-beaked Common Dolphin	12	Non-Piling	277	60	None
BL2 V137	2023-07-31 12:59:00.0	Short-beaked Common Dolphin	14	Non-Piling	4,255	4,000	None
BL2 V138	2023-07-31 13:12:32.9	Unidentified Dolphin	5	Non-Piling	5,200	5,200	None
BM V67	2023-07-31 13:49:54.5	Short-beaked Common Dolphin	21	Non-Piling	1,540	1,540	None
BL2 V139	2023-07-31 14:10:00.0	Short-beaked Common Dolphin	30	Non-Piling	4,941	4,900	None
JM V92	2023-07-31 15:09:43.1	Short-beaked Common Dolphin	8	Non-Piling	1,500	1,500	None
BL2 V140	2023-07-31 15:18:44.8	Short-beaked Common Dolphin	150	Non-Piling	2,380	1,500	None
RM V48	2023-07-31 15:20:00.0	Short-beaked Common Dolphin	25	Non-Piling	4,000	4,000	None
BM V68	2023-07-31 15:30:10.2	Unidentified Dolphin	8	Non-Piling	100	50	None
JM V93	2023-07-31 15:46:00.3	Short-beaked Common Dolphin	10	Non-Piling	800	20	None
RM V49	2023-07-31 16:23:00.0	Fin Whale	1	Non-Piling	1,000	1,000	None
BM V69	2023-07-31 16:43:58.3	Unidentified Sea Turtle	1	Non-Piling	20	20	Alter course
BL2 V148	2023-08-02 00:47:48.6	Unidentified Dolphin	150	Non-Piling	5,500	4,500	None
JM V96	2023-08-02 00:56:49.0	Unidentified Dolphin	6	Non-Piling	200	200	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
JM V97	2023-08-02 09:52:30.8	Short-beaked Common Dolphin	4	Non-Piling	100	100	None
JM V98	2023-08-02 14:22:24.1	Short-beaked Common Dolphin	6	Non-Piling	600	600	None
JM V99	2023-08-03 00:00:00.0	Sei Whale	1	Non-Piling	50	50	None
BM V73	2023-08-03 08:38:41.8	Short-beaked Common Dolphin	4	Non-Piling	300	10	Maintain Heading, Engine Neutral
BM V74	2023-08-03 09:18:28.5	Short-beaked Common Dolphin	50	Non-Piling	30	1	Maintain Heading and Speed
BL2 V149	2023-08-03 09:30:12.4	Unidentified Dolphin	5	Non-Piling	2,200	2,200	None
BL2 V150	2023-08-03 09:52:15.8	Short-beaked Common Dolphin	50	Non-Piling	3,040	3,000	None
BL2 V151	2023-08-03 10:04:15.4	Humpback Whale	2	Non-Piling	10,000	10,000	None
BL2 V152	2023-08-03 10:05:15.8	Unidentified Dolphin	20	Non-Piling	4,941	4,800	None
BL2 P18	2023-08-03 10:12:24.6	Unidentified Dolphin	1	Non-Piling	5,000	Unknown	None
BL2 P19	2023-08-03 10:48:19.6	Unidentified Dolphin	1	Non-Piling	5,000	Unknown	None
BL2 V153	2023-08-03 10:48:58.5	Short-beaked Common Dolphin	10	Non-Piling	4,941	100	None
JM V100	2023-08-03 10:50:28.9	Short-beaked Common Dolphin	20	Non-Piling	802	800	None
BL2 V154	2023-08-03 11:00:00.0	Non-NARW Unidentified Mysticete Whale	5	Non-Piling	12,000	11,000	None
BL2 P20	2023-08-03 11:13:33.2	Unidentified Dolphin	1	Non-Piling	5,000	Unknown	None
BL2 P21	2023-08-03 11:45:27.1	Unidentified Dolphin	1	Non-Piling	5,000	Unknown	None
BM V75	2023-08-03 12:12:36.9	Short-beaked Common Dolphin	6	Non-Piling	3,790	3,790	None
BL2 V156	2023-08-03 12:40:39.7	Humpback Whale	5	Non-Piling	7,644	7,000	None
BM V76	2023-08-03 12:47:35.0	Short-beaked Common Dolphin	7	Non-Piling	770	1	Maintain Heading and Speed
BM V77	2023-08-03 19:31:20.0	Short-beaked Common Dolphin	35	Non-Piling	500	3	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
JM V102	2023-08-03 19:34:57.5	Short-beaked Common Dolphin	3	Non-Piling	15	15	None
JM V103	2023-08-04 19:43:01.0	Short-beaked Common Dolphin	25	Non-Piling	362	300	None
BL2 V157	2023-08-04 20:06:17.8	Short-beaked Common Dolphin	80	Non-Piling	4,941	4,500	None
RM V51	2023-08-04 20:29:09.2	Minke Whale	1	Non-Piling	20	10	None
JM V104	2023-08-04 21:05:23.6	Short-beaked Common Dolphin	8	Non-Piling	500	500	None
BM V78	2023-08-05 00:08:00.0	Short-beaked Common Dolphin	12	Non-Piling	150	10	None
BL2 P24	2023-08-05 13:45:55.3	Unidentified Dolphin	1	Non-Piling	4,958	Unknown	None
BL2 V158	2023-08-05 13:49:03.6	Unidentified Dolphin	2	Non-Piling	4,958	4,900	None
BM V79	2023-08-05 13:51:31.9	Short-beaked Common Dolphin	52	Non-Piling	2,566	1	None
BL2 P25	2023-08-05 13:57:19.1	Short-beaked Common Dolphin	1	Non-Piling	3,500	Unknown	None
BL2 V159	2023-08-05 14:07:39.7	Short-beaked Common Dolphin	80	Non-Piling	3,500	3,500	None
BL2 V160	2023-08-05 14:10:00.0	Short-beaked Common Dolphin	12	Non-Piling	4,941	4,500	None
RM V52	2023-08-05 14:32:00.0	Short-beaked Common Dolphin	7	Non-Piling	500	20	None
RM V55	2023-08-06 01:21:00.0	Unidentified Dolphin	6	Non-Piling	100	100	None
BM V81	2023-08-06 01:57:22.4	Unidentified Sea Turtle	1	Non-Piling	10	1	None
BL2 V166	2023-08-06 02:44:29.0	Short-beaked Common Dolphin	5	Non-Piling	3,500	3,500	None
JM V107	2023-08-06 03:42:00.0	Unidentified Dolphin	2	Non-Piling	50	5	Maintain Heading and Speed
JM V108	2023-08-06 11:17:02.4	Short-beaked Common Dolphin	15	Non-Piling	1,000	800	None
BL2 V167	2023-08-06 11:21:06.3	Short-beaked Common Dolphin	100	Non-Piling	3,748	3,500	None
JM V109	2023-08-06 14:36:55.0	Unidentified Dolphin	5	Non-Piling	1,200	1,000	None

Vessel and Detection ID[1]	Initial Detection Date and Time (UTC)	Species	Number of Individuals	Vessel Activity	Initial Detection Distance (m)	CPA to Vessel (m)	Mitigation Measures
BL2 V168	2023-08-06 14:37:32.7	Short-beaked Common Dolphin	60	Non-Piling	4,941	4,900	None
BM V82	2023-08-06 14:37:37.7	Unidentified Dolphin	20	Non-Piling	1,000	800	None
BM V83	2023-08-06 14:42:08.3	Short-beaked Common Dolphin	20	Non-Piling	600	100	None
JM V110	2023-08-06 23:03:37.3	Short-beaked Common Dolphin	50	Non-Piling	1,500	5	Engine Neutral
RM V56	2023-08-06 23:20:22.0	Short-beaked Common Dolphin	18	Non-Piling	1,000	5	Engine Neutral
JM V111	2023-08-06 23:42:56.8	Short-beaked Common Dolphin	40	Non-Piling	500	5	Engine Neutral
BL2 V169	2023-08-06 23:47:19.4	Short-beaked Common Dolphin	30	Non-Piling	3,748	3,900	None
JM V112	2023-08-07 00:13:07.9	Short-beaked Common Dolphin	5	Non-Piling	500	10	Engine Neutral
JM V113	2023-08-07 01:10:00.0	Unidentified Dolphin	4	Non-Piling	500	500	None
JM V114	2023-08-07 08:48:11.0	Unidentified Dolphin	2	Non-Piling	50	10	Engine Neutral
RM V58	2023-08-07 15:02:00.0	Short-beaked Common Dolphin	15	Non-Piling	500	10	None
BM V84	2023-08-07 16:27:44.0	Unidentified Sea Turtle	1	Non-Piling	50	50	None
BM V85	2023-08-07 16:54:51.4	Unidentified Dolphin	6	Non-Piling	350	300	Alter Course
RM V59	2023-08-07 17:04:01.7	Humpback Whale	6	Non-Piling	2,000	500	Reduce Speed, Engine Neutral

[1]*Vessel and Detection ID* coded as: Jill (LB Jill, HDD); Foundations: Bokalift 2 (BL2); Berto Miller (BM); Go Freedom (GF); Josephine Miller (JM); Rana Miller (RM); Visual (V); PAM (P)

Appendix Table A6. Details for all protected species sightings documented by dedicated Trained Lookouts aboard non-PSO vessels during SFW offshore construction-related activities, September 28, 2022 – August 11, 2023. Sightings with vessel speeds >10 knots occurred during vessel transits in locations outside the 10-knot speed restriction area, including Narragansett Bay and Mid-Atlantic waters south of SFW. *Implementation of *Strike Avoidance Mitigation* was specific to an animal's position relative to the forward path of the vessel, which may or may not have been related to the *Initial Sighting Distance*.

Vessel Name	Detection ID	Sighting Time (UTC)	Sighting Location	Species	No. of Animals	Initial Sighting Distance (m)	Vessel Speed (kn)	Vessel Activity	Strike Avoidance Mitigation*
Shelia Bordelon	SB 1	2022-09-28 21:05:09.9	41.386083 N 71.408806 W	Unidentified Large Whale	1	1,250	8.4	Transit	None
Shelia Bordelon	SB 2	2022-10-01 20:53:28.28	41.5472526 N 71.3266929 W	Unidentified Large Whale	1	300	8.7	Transit	None
Shelia Bordelon	SB 3	2022-10-07 18:10:57.57	41.0308468 N 71.4141246 W	Common Dolphin	5	125	8.7	Transit	None
Shelia Bordelon	SB 4	2022-10-08 14:48:13.13	41.0506198 N 71.2782627 W	Unidentified Large Whale	1	10	0	Non-transit Operations	None
Shelia Bordelon	SB 5	2022-10-09 18:11:08.8	41.0418839 N 71.3391068 W	Unidentified Large Whale	1	2,500	0.9	Non-transit Operations	None
Shelia Bordelon	SB 6	2022-10-10 12:27:31.31	40.9744067 N 71.8129414 W	Unidentified Dolphin	50	1	9.5	Transit	None
Shelia Bordelon	SB 7	2022-10-13 12:50:02.2	41.0753519 N 71.1454323 W	Unidentified Dolphin	7	10	0.4	Non-transit Operations	None
Shelia Bordelon	SB 8	2022-10-15 04:23:16.16	41.0626190 N 71.1358383 W	Unidentified Dolphin	5	1	4.4	Transit	None
Shelia Bordelon	SB 9	2022-10-17 04:38:59.59	41.1057016 N 71.1236333 W	Unidentified Dolphin	1	5	2.9	Transit	None
Shelia Bordelon	SB 10	2022-10-23 04:11:59.59	41.0306617 N 71.4868262 W	Unidentified Dolphin	2	100	0.3	Non-transit Operations	None
Shelia Bordelon	SB 11	2022-10-23 07:08:40.40	41.0302385 N 71.5208755 W	Common Dolphin	3	5	8.3	Transit	None
Shelia Bordelon	SB 12	2022-10-23 07:22:16.16	41.0296364 N 71.5555601 W	Common Dolphin	7	1	0.3	Non-transit Operations	None
Shelia Bordelon	SB 13	2022-10-23 08:01:50.50	41.0293173 N 71.5696500 W	Unidentified Dolphin	1	1	0.3	Non-transit Operations	None
Shelia Bordelon	SB 14	2022-10-24 12:18:22.22	40.9618969 N 71.7575115 W	Common Dolphin	20	75	0.5	Non-transit Operations	None

Vessel Name	Detection ID	Sighting Time (UTC)	Sighting Location	Species	No. of Animals	Initial Sighting Distance (m)	Vessel Speed (kn)	Vessel Activity	Strike Avoidance Mitigation*
Shelia Bordelon	SB 15	2022-10-25 15:28:30.30	40.9715201 N 71.7289657 W	Common Dolphin	7	1	5.3	Transit	None
Shelia Bordelon	SB 16	2022-11-01 04:50:05.5	41.155 N 71.238 W	Short-beaked Common Dolphin	6	1	5.6	Transit	None
Shelia Bordelon	SB 17	2022-11-01 04:50:05.5	41.155 N 71.238 W	Short-beaked Common Dolphin	6	1	5.6	Transit	None
Shelia Bordelon	SB 18	2022-11-01 06:39:00.0	41.306 N 71.352 W	Unidentified Dolphin	3	10	6.4	Transit	None
Shelia Bordelon	SB 19	2022-11-01 06:39:00.0	41.306 N 71.352 W	Unidentified Dolphin	3	10	6.4	Transit	None
Brave	BR 1	2022-11-15 02:09:00.0	41.177 N 71.848 W	Unidentified Dolphin	5	15	9.8	Transit	None
Brave	BR 2	2022-11-15 02:09:00.0	41.177 N 71.848 W	Unidentified Dolphin	5	15	9.8	Transit	None
Brave	BR 3	2022-11-15 04:43:14.14	40.883 N 71.798 W	Unidentified Dolphin	2	100	9.8	Transit	None
Brave	BR 4	2022-11-15 04:43:14.14	40.883 N 71.798 W	Unidentified Dolphin	2	100	9.8	Transit	None
Brave	BR 5	2022-11-20 16:45:00.0	40.913 N 71.210 W	Unidentified Large Whale	3	50	8	Transit	Reduce Speed, Alter Course, Full Stop
Brave	BR 6	2022-11-20 16:45:00.0	40.913 N 71.210 W	Unidentified Large Whale	3	50	8	Transit	Reduce Speed, Alter Course, Full Stop
Rowan	RO 1	2022-12-12 22:56:00.0	41.1767 N 70.4435 W	Short-beaked Common Dolphin	3	100	5.1	Transit	None
Buckley	BU 1	2022-12-12 23:44:00.0	41.12929 N 71.44974 W	Short-beaked Common Dolphin	6	10	4.9	Transit	None
Matthew	MA 1	2022-12-12 23:55:00.0	41.1005 N 71.45971 W	Short-beaked Common Dolphin	4	40	5.3	Transit	None
Rowan	RO 2	2022-12-13 00:00:00.0	41.0951 N 71.4703 W	Short-beaked Common Dolphin	3	5	4.8	Transit	None
Buckley	BU 2	2022-12-13 00:01:00.0	41.09866 N 71.4663 W	Short-beaked Common Dolphin	6	10	5.3	Transit	None
Matthew	MA 2	2022-12-13 00:40:00.0	41.0606 N 71.51298 W	Short-beaked Common Dolphin	8	20	5.8	Transit	None

Vessel Name	Detection ID	Sighting Time (UTC)	Sighting Location	Species	No. of Animals	Initial Sighting Distance (m)	Vessel Speed (kn)	Vessel Activity	Strike Avoidance Mitigation*
Gaspee	GA 1	2022-12-13 01:00:00.0	41.03741 N 71.66798 W	Short-beaked Common Dolphin	3	10	4.5	Transit	None
Cailyn & Maren	CM 1	2023-02-09 15:16:00.0	40.97240 N 72.05778 W	Gray Seal	1	20	6.8	Transit	None
Dolphin	DO 1	2023-02-22 00:00:00.0	40.91357 N 72.22983 W	Unidentified Dolphin	20	300	<1	Drifting	None
Berto Miller	BM 1	2023-02-25 18:08:00.0	40.95930 N 71.68901 W	Gray Seal	1	100	5	Transit	None
Living Stone	LS 1	2023-02-25 19:00:00.0	40.96777 N 71.79398 W	North Atlantic Right Whale	1	750	0	Stationary DP	None
Living Stone	LS 2	2023-02-27 19:57:00.0	40.53909 N 70.13256 W	Common Dolphin	5	400	0	Stationary DP	None
Berto Miller	BM 2	2023-03-02 12:33:00.0	41.1038 N 72.7294 W	Gray Seal	1	75	10	Transit	None
Berto Miller	BM 3	2023-03-02 13:15:00.0	41.1283 N 72.5911 W	Gray Seal	1	250	10	Transit	None
Berto Miller	BM 4	2023-03-02 13:31:00.0	41.1427 N 72.511 W	Gray Seal	1	125	10	Transit	None
Living Stone	LS 3	2023-03-02 13:33:00.0	41.0178 N 71.570317 W	Common Dolphin	1	1	9	Transit	None
Berto Miller	BM 5	2023-03-03 11:41:00.0	40.9025 N 72.2147 W	Common Dolphin	10	400	4	Transit	None
Laney Chouest	LC 1	2023-03-06 19:00:00.0	41.72115 N 71.34931 W	Common Dolphin	5	300	5	Transit	None
Laney Chouest	LC 2	2023-03-07 12:32:00.0	41.79624 N 71.38719 W	Common Dolphin	15	750	0	Docked	None
WindServe Odyssey	WO 1	2023-03-08 22:28:00.0	40.83810 N 72.41753 W	Minke Whale	1	45	9.5	Transit	Alter Course and Reduce Speed
Laney Chouest	LC 3	2023-03-10 15:15:00.0	40.99317 N 71.3740 W	Gray Seal	1	350	0	Stationary DP	None
Laney Chouest	LC 4	2023-03-11 21:25:00.0	41.7957 N 71.3867 W	Common Dolphin	5	250	0	Docked	None
Laney Chouest	LC 5	2023-03-13 13:50:00.0	41.7957 N 71.3867 W	Common Dolphin	10	450	0	Docked	None

Vessel Name	Detection ID	Sighting Time (UTC)	Sighting Location	Species	No. of Animals	Initial Sighting Distance (m)	Vessel Speed (kn)	Vessel Activity	Strike Avoidance Mitigation*
Laney Chouest	LC 6	2023-03-13 16:07:00.0	41.7957 N 71.3867 W	Harbor Porpoise	3	350	0	Docked	None
Berto Miller	BM 6	2023-03-15 16:21:00.0	41.49940 N 71.04424 W	Unidentified Dolphin	1	50	10	Transit	None
Berto Miller	BM 7	2023-03-16 19:57:00.0	40.9256 N 72.2231 W	Unidentified Large Whale	1	300	9	Transit	None
Living Stone	LS 4	2023-03-16 20:30:00.0	40.9269957 N 71.8314615 W	Humpback Whale	1	750	9.9	Transit	Alter Course
Living Stone	LS 5	2023-03-18 10:36:00.0	40.955968 N 71.716755 W	Common Dolphin	5	50	9.2	Transit	None
Living Stone	LS 6	2023-03-18 22:41:00.0	41.0641304 N 71.2041136 W	Unidentified Large Whale	1	2,000	0.5	Surveying	None
Berto Miller	BM 8	2023-03-20 12:27:00.0	40.8658 N 72.1631 W	Unidentified Dolphin	2	75	6	Transit	None
Berto Miller	BM 9	2023-03-23 17:43:00.0	40.8634 N 72.2219 W	Unidentified Large Whale	1	250	5	Transit	Engine Neutral
Berto Miller	BM 10	2023-03-23 17:45:00.0	40.8634 N 72.2219 W	Unidentified Dolphin	5	400	4	Drifting	Engine Neutral
Berto Miller	BM 11	2023-03-23 17:51:00.0	40.8634 N 72.2219 W	Unidentified Seal	1	250	4	Drifting	Engine Neutral
Berto Miller	BM 12	2023-03-24 13:59:00.0	40.1263 N 72.205 W	Common Dolphin	3	50	10	Transit	None
Fleet King	FK 1	2023-03-24 16:40:00.0	40.91755 N 72.08588 W	Fin Whale	1	200	2	Transit	None
Berto Miller	BM 13	2023-03-25 11:47:00.0	40.5510 N 74.0187 W	Gray Seal	1	25	8	Transit	None
Living Stone	LS 7	2023-03-25 15:21:00.0	40.921690 N 71.998507 W	Unidentified Large Whale	1	2,000	0.4	Dynamic Positioning	None
Living Stone	LS 8	2023-03-25 16:30:00.0	40.9228407 N 71.9937763 W	Humpback Whale	2	2	0.3	Surveying	None
Berto Miller	BM 14	2023-03-27 12:29:00.0	40.5789 N 73.1496 W	Unidentified Dolphin	6	750	10	Transit	None
Living Stone	LS 9	2023-03-27 14:50:00.0	40.963705 N 71.779353 W	Unidentified Large Whale	1	2,000	0.6	Dynamic Positioning	None
Berto Miller	BM 15	2023-03-27 22:34:00.0	40.8998 N 72.2566 W	Unidentified Large Whale	1	25	1	Drifting	None

Vessel Name	Detection ID	Sighting Time (UTC)	Sighting Location	Species	No. of Animals	Initial Sighting Distance (m)	Vessel Speed (kn)	Vessel Activity	Strike Avoidance Mitigation*
Berto Miller	BM 16	2023-03-28 11:40:00.0	40.8592 N 72.3013 W	Minke Whale	1	500	3	Transit	None
Berto Miller	BM 17	2023-03-28 11:49:00.0	40.8554 N 72.2901 W	Unidentified Dolphin	10	750	3	Transit	None
Berto Miller	BM 18	2023-03-28 11:51:00.0	40.8548 N 72.2886 W	Humpback Whale	1	1,000	3	Transit	None
Berto Miller	BM 19	2023-03-28 15:07:00.0	40.8373 N 72.4118 W	Gray Seal	1	100	3	Transit	None
Living Stone	LS 10	2023-03-28 15:25:00.0	40.956618 N 71.78654 W	Common Dolphin	50	1,500	8.2	Transit	None
Berto Miller	BM 20	2023-03-28 15:55:00.0	40.8396 N 72.3566 W	Minke Whale	1	750	3	Transit	None
Living Stone	LS 11	2023-03-28 16:03:00.0	40.9369059 N 71.8871535 W	Unidentified Large Whale	1	1,000	9.6	Transit	Reduce Speed
Living Stone	LS 12	2023-03-28 17:04:00.0	40.8977601 N 72.0657658 W	Unidentified Large Whale	1	2,000	9	Transit	None
Living Stone	LS 13	2023-03-29 16:46:00.0	40.9207962 N 72.2293085 W	Bottlenose Dolphin	100	900	0.1	Stationary DP	None
Berto Miller	BM 21	2023-03-29 17:52:00.0	40.8879 N 72.3093 W	Common Dolphin	3	250	8	Transit	None
Berto Miller	BM 22	2023-03-29 20:45:00.0	40.8955 N 72.044 W	Unidentified Large Whale	3	400	1	Transit	Engine Neutral
Living Stone	LS 14	2023-03-30 10:52:00.0	40.883118 N 72.19931 W	Unidentified Large Whale	1	2,000	0.2	Dynamic Positioning	None
Berto Miller	BM 23	2023-03-30 11:38:00.0	40.9223 N 72.2196 W	Bottlenose Dolphin	15	300	4	Surveying	None
Living Stone	LS 15	2023-03-30 12:30:00.0	40.884023 N 72.199822W	Humpback Whale	2	800	0	Dynamic Positioning	None
Laney Chouest	LC 7	2023-03-31 10:52:00.0	41.032 N 71.367 W	Pilot Whale species	150	400	0	Stationary DP	None
Living Stone	LS 16	2023-03-31 20:15:00.0	40.8938113 N 72.1065780 W	Humpback Whale	2	2,000	0	Stationary DP	None
Living Stone	LS 17	2023-04-01 13:40:00.0	41.676797 N 71.312363 W	Unidentified Seal	1	300	10.9	Transit	None
Living Stone	LS 18	2023-04-02 15:15:00.0	41.289415 N 71.418022 W	Unidentified Large Whale	1	2,000	7.3	Transit	Reduce Speed

Vessel Name	Detection ID	Sighting Time (UTC)	Sighting Location	Species	No. of Animals	Initial Sighting Distance (m)	Vessel Speed (kn)	Vessel Activity	Strike Avoidance Mitigation*
Barbara Ann	BA 1	2023-04-02 17:52:00.0	Unknown	Atlantic White-sided Dolphin	15	35	N/A	Unknown	None
Gabrielle Elizabeth	GE 1	2023-04-02 18:20:00.0	40.914333 N 71.974000 W	Fin Whale	1	300	0.8	Drifting	None
Laney Chouest	LC 8	2023-04-02 21:18:00.0	41.1357 N 71.3167 W	Minke Whale	1	300	9	Transit	None
Living Stone	LS 19	2023-04-02 22:30:00.0	40.9052535 N 72.0639406 W	Unidentified Large Whale	1	3,000	0.1	Stationary DP	None
Laney Chouest	LC 9	2023-04-03 11:45:00.0	41.0833 N 71.1833 W	Minke Whale	1	750	0	Stationary DP	None
Living Stone	LS 20	2023-04-03 18:45:00.0	40.9223365 N 71.9988353 W	Unidentified Large Whale	2	1,500	0.2	Surveying	None
Living Stone	LS 21	2023-04-03 19:40:00.0	40.9232842 N 71.99566321 W	Humpback Whale	1	50	0.1	Surveying	None
Living Stone	LS 22	2023-04-03 19:45:00.0	40.9232959 N 71.9955610 W	Unidentified Large Whale	2	750	0	Surveying	None
WindServe Odyssey	WO 2	2023-04-04 20:18:00.0	40.862683 N 72.284317 W	Humpback Whale	2	125	9	Transit	Reduce Speed and Alter Course
Living Stone	LS 23	2023-04-04 22:43:00.0	40.9313313 N 71.9631958 W	Humpback Whale	1	800	0.1	Surveying	None
Living Stone	LS 24	2023-04-05 16:23:00.0	40.9420397 N 71.926490 W	Humpback Whale	1	500	0	Stationary DP	None
Living Stone	LS 25	2023-04-05 22:43:00.0	40.933585 N 71.975855 W	Unidentified Large Whale	1	1,000	9.9	Transit	None
WindServe Odyssey	WO 3	2023-04-07 10:45:00.0	40.868983 N 72.355333 W	Unidentified Dolphin	3	500	9.8	Transit	None
WindServe Odyssey	WO 4	2023-04-07 13:35:00.0	40.922933 N 72.230200 W	Unidentified Dolphin	3	500	0	Stationary	None
Living Stone	LS 26	2023-04-08 11:54:00.0	40.963117 N 71.844845 W	Unidentified Large Whale	1	1,000	0.4	Stationary DP	None
Living Stone	LS 27	2023-04-08 11:54:00.0	40.963117 N 71.844845 W	Unidentified Large Whale	1	1,000	0.4	Stationary DP	None
Living Stone	LS 28	2023-04-08 22:33:00.0	40.9718802 N 71.8015568 W	Unidentified Large Whale	1	1,000	0.3	Stationary DP	None

Vessel Name	Detection ID	Sighting Time (UTC)	Sighting Location	Species	No. of Animals	Initial Sighting Distance (m)	Vessel Speed (kn)	Vessel Activity	Strike Avoidance Mitigation*
Living Stone	LS 29	2023-04-08 22:33:00.0	40.9718802 N 71.8015568 W	Unidentified Large Whale	1	1,000	0.3	Stationary DP	None
Living Stone	LS 30	2023-04-11 11:00:00.0	40.969372 N 71.748892 W	Unidentified Large Whale	1	2,000	1.1	Stationary DP	None
Living Stone	LS 31	2023-04-11 11:00:00.0	40.969372 N 71.748892 W	Unidentified Large Whale	1	2,000	1.1	Stationary DP	None
Gabrielle Elizabeth	GE 2	2023-04-13 13:06:00.0	41.018950 N 71.730517 W	Humpback Whale	1	400	0.3	Drifting	None
WindServe Odyssey	WO 5	2023-04-14 13:07:00.0	40.926667 N 72.186667 W	Humpback Whale	1	500	9.2	Transit	Alter Course
Living Stone	LS 32	2023-04-14 20:45:00.0	40.252077 N 72.220425 W	Unidentified Large Whale	2	2,500	10	Transit	Alter Course
Living Stone	LS 33	2023-04-14 22:37:00.0	39.930210 N 72.439415 W	Common Dolphin	6	300	10	Transit	None
Living Stone	LS 34	2023-04-14 22:37:00.0	39.930210 N 72.439415 W	Common Dolphin	6	300	10	Transit	None
Living Stone	LS 35	2023-04-15 02:55:00.0	39.193218 N 72.948195 W	Unidentified Dolphin	5	200	10	Transit	None
Living Stone	LS 36	2023-04-15 05:23:00.0	38.742193 N 73.221213 W	Unidentified Dolphin	2	50	11.9	Transit	None
Living Stone	LS 37	2023-04-15 10:28:00.0	37.805238 N 73.848900 W	Common Dolphin	2	20	11.7	Transit	None
Living Stone	LS 38	2023-04-15 10:44:00.0	37.724960 N 73.887598 W	Common Dolphin	4	75	11.8	Transit	None
Living Stone	LS 39	2023-04-15 11:23:00.0	37.628225 N 73.928153 W	Common Dolphin	1	75	11.8	Transit	None
Living Stone	LS 40	2023-04-15 11:23:00.0	37.628225 N 73.928153 W	Unidentified Large Whale	1	2,000	11.8	Transit	Reduce Speed and Alter Course
Living Stone	LS 41	2023-04-15 12:15:00.0	37.470950 N 73.980853 W	Common Dolphin	4	60	11.8	Transit	None
Living Stone	LS 42	2023-04-15 15:05:00.0	37.137892 N 74.137483 W	Unidentified Dolphin	5	800	11.9	Transit	None
Living Stone	LS 43	2023-04-15 20:05:00.0	36.305040 N 74.497760 W	Common Dolphin	4	10	9.4	Transit	None

Vessel Name	Detection ID	Sighting Time (UTC)	Sighting Location	Species	No. of Animals	Initial Sighting Distance (m)	Vessel Speed (kn)	Vessel Activity	Strike Avoidance Mitigation*
Living Stone	LS 44	2023-04-15 20:45:00.0	36.171935 N 74.556200 W	Bottlenose Dolphin	15	10	9.6	Transit	None
Living Stone	LS 45	2023-04-17 11:00:00.0	32.730215 N 78.885223 W	Atlantic Spotted Dolphin	7	50	8.3	Transit	None
Living Stone	LS 46	2023-04-17 13:39:00.0	32.620057 N 79.227652 W	Atlantic Spotted Dolphin	30	40	7.1	Transit	None
Living Stone	LS 47	2023-04-17 14:25:00.0	32.599292 N 79.296215 W	Unidentified Dolphin	1	40	7.2	Transit	None
Living Stone	LS 48	2023-04-17 18:45:00.0	32.829212 N 79.929563 W	Bottlenose Dolphin	3	1	10.3	Transit	None
Living Stone	LS 49	2023-04-17 20:01:00.0	32.932740 N 79.936745 W	Bottlenose Dolphin	3	50	5.1	Transit	None
WindServe Odyssey	WO 6	2023-04-20 15:16:00.0	40.975750 N 72.004983 W	Humpback Whale	2	3,200	9.9	Transit	None
Living Stone	LS 50	2023-04-25 17:16:00.0	32.932135 N 79.933360 W	Unidentified Dolphin	2	50	6.4	Transit	None
Living Stone	LS 51	2023-04-25 17:38:00.0	32.900058 N 79.950112 W	Bottlenose Dolphin	4	100	8.1	Transit	None
Living Stone	LS 52	2023-04-25 18:14:00.0	32.833355 N 79.916873 W	Bottlenose Dolphin	2	350	9	Transit	None
Living Stone	LS 53	2023-04-25 19:55:00.0	32.633605 N 79.666780 W	Bottlenose Dolphin	12	400	8	Transit	None
Living Stone	LS 54	2023-04-25 21:49:00.0	32.616687 N 79.316743 W	Bottlenose Dolphin	2	550	10.2	Transit	None
Living Stone	LS 55	2023-04-26 22:00:00.0	35.385917 N 74.817033 W	Unidentified Dolphin	2	50	10.6	Transit	None
Living Stone	LS 56	2023-04-27 12:35:00.0	37.956033 N 73.424517 W	Common Dolphin	15	50	10.1	Transit	None
Living Stone	LS 57	2023-04-27 19:01:00.0	39.057417 N 72.796350 W	Humpback Whale	1	1,000	11	Transit	None
Living Stone	LS 58	2023-04-27 20:06:00.0	39.238533 N 72.704767 W	Humpback Whale	2	1,500	10	Transit	Alter Course
Living Stone	LS 59	2023-04-27 20:22:00.0	39.289967 N 72.667600 W	Common Dolphin	3	50	10.7	Transit	None
Living Stone	LS 60	2023-04-27 20:36:00.0	39.319533 N 72.654583 W	Common Dolphin	6	150	10.4	Transit	None

Vessel Name	Detection ID	Sighting Time (UTC)	Sighting Location	Species	No. of Animals	Initial Sighting Distance (m)	Vessel Speed (kn)	Vessel Activity	Strike Avoidance Mitigation*
Living Stone	LS 61	2023-04-27 21:01:00.0	39.390083 N 72.618733 W	Humpback Whale	3	600	10.3	Transit	Alter Course
Living Stone	LS 62	2023-04-27 21:35:00.0	39.476833 N 72.591467 W	Humpback Whale	2	500	10.3	Transit	Reduce Speed and Alter Course
Living Stone	LS 63	2023-04-27 21:42:00.0	39.502350 N 72.580333 W	Unidentified Large Whale	1	600	9.7	Transit	Alter Course
Living Stone	LS 64	2023-04-27 21:59:00.0	39.543283 N 72.571567 W	Humpback Whale	1	500	10.4	Transit	Alter Course
Living Stone	LS 65	2023-04-27 22:39:00.0	39.656383 N 72.533367 W	Humpback Whale	1	700	10.3	Transit	None
Living Stone	LS 66	2023-04-27 23:02:00.0	39.717417 N 72.488400 W	Common Dolphin	13	300	10.3	Transit	None
Living Stone	LS 67	2023-04-27 23:02:00.0	39.717417 N 72.488400 W	Humpback Whale	1	800	10.3	Transit	None
Kathy Marie	KM 1	2023-04-28 14:16:00.0	41.496700 N 70.915167 W	Harbor Seal	1	50	9.2	Transit	None
Gabrielle Elizabeth	GE 3	2023-05-15	41.002662 N 71.611583 W	Minke Whale	4	2,743	0.8	Drifting	None
Living Stone	LS 68	2023-05-15 09:38:00.0	41.012350 N 71.652400 W	Humpback Whale	10	6,400	0.2	Stationary DP	None
Living Stone	LS 69	2023-05-15 12:37:00.0	41.012117 N 71.651683 W	Humpback Whale	3	7,500	0.1	Stationary DP	None
Windserve Odyssey	WO 7	2023-05-15 12:38:00.0	41.090617 N 71.617333 W	Humpback Whale	1	300	9.2	Transit	Reduce Speed and Alter Course
Living Stone	LS 70	2023-05-15 13:08:00.0	41.012617 N 71.649700 W	Humpback Whale	1	2,500	0.3	Stationary DP	None
Living Stone	LS 71	2023-05-18 19:03:00.0	41.031800 N 71.360283 W	Unidentified Large Whale	1	550	0.2	Stationary DP	None
Northstar Commander	NC 1	2023-05-19 05:33:00.0	41.087778 N 71.726111 W	North Atlantic Right Whale	1	250	0	Drifting	None
Northstar Commander	NC 2	2023-05-19 16:03:00.0	41.0314 N 71.4833 W	Unidentified Large Whale	1	3,500	0	Stationary DP	None
Northstar Commander	NC 3	2023-05-19 22:39:00.0	41.0314 N 71.4833 W	Unidentified Dolphin	5	3,000	0	Stationary DP	None

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Northstar Commander	NC 4	2023-05-19 23:23:00.0	41.0313 N 71.4833 W	Common Dolphin	11	500	0	Stationary DP	None
Living Stone	LS 72	2023-05-21 15:46:00.0	41.034267 N 71.300783 W	Humpback Whale	1	300	0.1	Stationary DP	None
Northstar Commander	NC 5	2023-05-21 19:39:00.0	41.0367 N 71.4342 W	Unidentified Seal	1	15	0	Stationary DP	None
Northstar Commander	NC 6	2023-05-21 22:10:00.0	41.0321 N 71.3944 W	Unidentified Large Whale	1	4,000	0	Stationary DP	None
Living Stone	LS 73	2023-05-22 10:36:00.0	41.033350 N 71.392933 W	Humpback Whale	1	1,300	0	Stationary DP	None
Northstar Commander	NC 7	2023-05-22 10:58:00.0	41.0321 N 71.3944 W	Humpback Whale	1	1,000	0	Stationary DP	None
New Horizon	NH 1	2023-05-22 12:40:00.0	40.949500 N 71.769500 W	Humpback Whale	8	800	0.9	Drifting	None
New Horizon	NH 2	2023-05-22 18:15:00.0	40.990783 N 71.709800 W	Humpback Whale	3	100	1.8	Transit	Engine Neutral
Northstar Commander	NC 8	2023-05-23 09:57:00.0	41.0317 N 71.3925 W	Humpback Whale	1	4,000	0	Stationary DP	None
Living Stone	LS 74	2023-05-23 10:16:00.0	41.033100 N 71.394833 W	Humpback Whale	1	6,000	0	Stationary DP	None
Living Stone	LS 75	2023-05-23 10:54:00.0	41.033100 N 71.394833 W	Humpback Whale	4	6,500	0	Stationary DP	None
Living Stone	LS 76	2023-05-23 12:14:00.0	41.033100 N 71.394900 W	Humpback Whale	2	6,000	0	Stationary DP	None
Living Stone	LS 77	2023-05-23 15:55:00.0	41.032783 N 71.394233 W	Unidentified Large Whale	1	2,000	0	Stationary DP	None
Northstar Commander	NC 9	2023-05-23 16:33:00.0	41.0313 N 71.3945 W	Humpback Whale	1	2,000	0	Stationary DP	None
Living Stone	LS 78	2023-05-23 19:11:00.0	41.033133 N 71.393150 W	Humpback Whale	2	2,500	0.4	Stationary DP	None
Northstar Commander	NC 10	2023-05-23 19:30:00.0	41.0313 N 71.3945 W	Humpback Whale	4	4,500	0	Stationary DP	None
Northstar Commander	NC 11	2023-05-23 20:09:00.0	41.0313 N 71.3945 W	Humpback Whale	3	3,000	0	Stationary DP	None
Living Stone	LS 79	2023-05-23 20:35:00.0	41.032767 N 71.392883 W	Humpback Whale	2	2,000	0.1	Stationary DP	None

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Northstar Commander	NC 12	2023-05-23 21:00:00.0	41.0313 N 71.3945 W	Humpback Whale	1	1,500	0	Stationary DP	None
Living Stone	LS 80	2023-05-23 21:56:00.0	41.033300 N 71.393617 W	Humpback Whale	1	2,500	0	Stationary DP	None
Living Stone	LS 81	2023-05-23 22:23:00.0	41.033300 N 71.393617 W	Humpback Whale	3	2,000	0	Stationary DP	None
Northstar Commander	NC 13	2023-05-23 22:29:00.0	41.0313 N 71.3945 W	Humpback Whale	3	2,000	0	Stationary DP	None
Northstar Commander	NC 14	2023-05-23 23:17:00.0	41.0313 N 71.3945 W	Humpback Whale	3	3,500	0	Stationary DP	None
Northstar Commander	NC 15	2023-05-24 03:54:00.0	41.9768 N 71.3865 W	Common Dolphin	6	30	6.3	Transit	None
Living Stone	LS 82	2023-05-24 09:39:00.0	41.055367 N 71.273050 W	Humpback Whale	5	2,500	0.4	Stationary DP	None
Gabrielle Elizabeth	GE 4	2023-05-24 11:10:00.0	41.005000 N 71.692333 W	Humpback Whale	1	1,500	1	Drifting	None
Living Stone	LS 83	2023-05-24 14:49:00.0	41.057250 N 71.269800 W	Humpback Whale	3	7,000	0.4	Stationary DP	None
Ocean Sun	OS 1	2023-05-24 17:00:00.0	27.845881 N 97.227629 W	Dolphin or Porpoise	60	25	6	Transit	None
Ocean Sun	OS 2	2023-05-25 11:21:00.0	27.411667 N 95.480000 W	Unidentified Large Whale	4	125	6	Transit	Alter Course
Living Stone	LS 84	2023-05-25 13:21:00.0	41.059383 N 71.247600 W	Unidentified Large Whale	1	1,300	0.3	Stationary DP	None
Mister Marco	MM 1	2023-05-25 18:30:00.0	41.050000 N 71.283333 W	Minke Whale	1	805	0.5	Drifting	None
Mister Marco	MM 2	2023-05-25 19:00:00.0	42.066667 N 71.266667 W	Atlantic White-sided Dolphins	10	805	0.5	Drifting	None
Mister Marco	MM 3	2023-05-25 22:47:00.0	41.038833 N 71.130833 W	Unidentified Dolphin	6	75	4.5	Scouting	None
Ocean Sun	OS 3	2023-05-26 11:23:00.0	26.826667 N 93.145000 W	Unidentified Dolphin	20	25	5	Transit	None
Fleet King	FK 2	2023-05-26 12:02:00.0	41.063000 N 71.432467 W	Humpback Whale	1	300	3	Transit	None
Ocean Sun	OS 4	2023-05-26 16:00:00.0	26.746000 N 92.821333 W	Unidentified Dolphin	15	25	5	Transit	None

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Mister Marco	MM 4	2023-05-26 21:30:00.0	41.061667 N 71.174333 W	Humpback Whale	2	75	4.5	Scouting	None
Gabrielle Elizabeth	GE 5	2023-05-27	41.038267 N 71.324967 W	Humpback Whale	4	244	0.04	Drifting	None
Barbara Ann	BA 2	2023-05-27 16:00:00.0	40.992283 N 71.690367 W	Unidentified Dolphin	20	500	0	Stationary	None
Jo Ann V	JA 1	2023-05-28 00:20:00.0	41.097000 N 71.223167 W	Minke Whale	2	100	0.5	Drifting	None
Barbara Ann	BA 3	2023-05-28 23:56:00.0	41.011950 N 71.695050 W	Unidentified Whale	1	300	0	Stationary	None
Barbara Ann	BA 4	2023-05-29 10:12:00.0	41.118217 N 71.191733 W	Unidentified Whale	2	100	0	Stationary	None
Mister Marco	MM 5	2023-05-29 10:12:00.0	41.118450 N 71.189117 W	Humpback Whale	2	100	5	Scouting	None
Mister Marco	MM 6	2023-05-30 15:20:00.0	41.117833 N 71.126667 W	Humpback Whale	2	50	4.5	Scouting	None
Ocean Sun	OS 5	2023-06-05 17:10:00.0	30.331667 N 79.998333 W	Unidentified Dolphin	4	50	4	Transit	None
Ocean Sun	OS 6	2023-06-08 06:50:00.0	35.600000 N 74.485000 W	Unidentified Dolphin or Porpoise	2	50	9	Transit	None
Ocean Sun	OS 7	2023-06-08 07:23:00.0	35.673333 N 74.431667 W	Unidentified Dolphin	12	50	9	Transit	None
Ocean Sun	OS 8	2023-06-08 08:13:00.0	36.038333 N 74.168333 W	Unidentified Dolphin	20	50	8	Transit	None
Ocean Sun	OS 9	2023-06-08 10:21:00.0	36.038333 N 74.168333 W	Unidentified Dolphin or Porpoise	5	25	8	Transit	None
Ocean Sun	OS 10	2023-06-08 15:00:00.0	36.683333 N 73.745000 W	Unidentified Dolphin or Porpoise	5	25	8	Transit	None
Ocean Sun	OS 11	2023-06-09 19:29:00.0	39.843333 N 71.691667 W	Unidentified Large Whale	2	100	8	Transit	Reduce Speed and Alter Course
Living Stone	LS 85	2023-06-10 06:33:00.0	41.031983 N 71.391900 W	Fin Whale	4	4,000	0	Stationary DP	None

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Living Stone	LS 86	2023-06-10 12:45:00.0	41.032392 N 71.392837 W	Humpback Whale	1	1,500	0.3	Stationary DP	None
Windserve Odyssey	WO 8	2023-06-10 19:30:00.0	41.358767 N 71.327600 W	Humpback Whale	2	1,852	9.4	Transit	None
Barbara Ann	BA 5	2023-06-11 06:01:00.0	41.038017 N 71.291250 W	Fin Whale	2	100	0	Engine Neutral	None
Living Stone	LS 87	2023-06-11 10:10:00.0	41.059650 N 71.222150 W	Humpback Whale	2	4,000	0.2	Stationary DP	None
Living Stone	LS 88	2023-06-11 10:10:00.0	41.059650 N 71.222150 W	Non-NARW Unidentified Large Whale	3	4,000	0.2	Stationary DP	None
Gabrielle Elizabeth	GE 6	2023-06-11 11:55:00.0	41.083118 N 71.194114 W	Fin Whale	2	50	0	Drifting	None
Living Stone	LS 89	2023-06-11 12:55:00.0	41.110415 N 71.390480 W	Fin Whale	2	1,500	5.8	Transit	None
Northstar Commander	NC 16	2023-06-11 14:27:00.0	41.109350 N 71.190200 W	Humpback Whale	5	2,500	1.3	Surveying	None
Northstar Commander	NC 17	2023-06-11 17:19:00.0	41.0125 N 71.6531 W	Humpback Whale	2	2,500	1.3	Surveying	None
Northstar Commander	NC 18	2023-06-11 20:23:00.0	41.079183 N 71.190617 W	Humpback Whale	1	2,000	1.3	Surveying	None
Northstar Commander	NC 19	2023-06-12 06:24:00.0	41.109267 N 71.170167 W	Humpback Whale	5	3,500	0.4	Surveying	None
Northstar Commander	NC 20	2023-06-12 12:15:00.0	41.109267 N 71.170167 W	Humpback Whale	2	800	1.3	Surveying	Full Stop
Northstar Commander	NC 21	2023-06-12 14:10:00.0	41.079333 N 71.124667 W	Fin Whale	4	1,000	1.3	Surveying	None
Northstar Commander	NC 22	2023-06-12 16:00:00.0	41.076500 N 71.123817 W	Fin Whale	2	1,000	1.3	Surveying	Alter Course
Northstar Commander	NC 23	2023-06-12 16:35:00.0	41.083250 N 71.118600 W	Fin Whale	3	800	1.3	Surveying	Full Stop
Provider	PR 1	2023-06-13 18:15:00.0	41.091667 N 71.156667 W	Humpback Whale	7	1,000	3.8	Scouting	Engine Neutral
Northstar Commander	NC 24	2023-06-14 10:04:00.0	41.129867 N 71.2492 W	Non-NARW Unidentified Large Whale	1	3,000	8.7	Transit	None

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Northstar Commander	NC 25	2023-06-14 10:18:00.0	41.118717 N 71.2079 W	Fin Whale	2	2,500	8.3	Transit	None
Northstar Commander	NC 26	2023-06-14 10:19:00.0	41.118717 N 71.2079 W	Fin Whale	1	50	8.3	Transit	Reduce Speed and Alter Course
Northstar Commander	NC 27	2023-06-14 12:19:00.0	41.107617 N 71.171433 W	Fin Whale	2	1,000	0.1	Surveying	Full Stop
Northstar Commander	NC 28	2023-06-14 12:19:00.0	41.107617 N 71.171433 W	Humpback Whale	1	1,000	0.1	Surveying	None
Northstar Commander	NC 29	2023-06-15 05:10:00.0	41.0783 N 71.145917 W	Humpback Whale	3	3,000	0	Surveying	None
Northstar Commander	NC 30	2023-06-15 06:11:00.0	41.077533 71.144950 W	Fin Whale	1	1,000	1.4	Surveying	None
Northstar Commander	NC 31	2023-06-15 06:50:00.0	41.077117 N 71.143733 W	Fin Whale	1	1,000	1.7	Surveying	Full Stop
Northstar Commander	NC 32	2023-06-15 08:30:00.0	41.101733 N 71.138133 W	Fin Whale	1	1,000	2.4	Surveying	None
Northstar Commander	NC 33	2023-06-15 15:16:00.0	41.074600 N 71.191283 W	Unidentified Seal	1	10	1.3	Surveying	None
Living Stone	LS 90	2023-07-20 19:22	41.047702 N 71.521577 W	Minke Whale	1	800	9.9	Transit	None
Living Stone	LS 91	2023-07-21	40.941442 N 71.895905 W	Humpback Whale	1	1,500	9.5	Transit	Alter Course
Living Stone	LS 92	2023-07-21 19:45	40.905068 N 72.060687 W	Humpback Whale	1	1,000	6.8	Transit	None
Living Stone	LS 93	2023-07-23 18:55	41.083740 N 71.189303 W	Bottlenose Dolphin	25	2,000	3.3	Surveying	None
Nicole Foss	NF 1	2023-07-24 10:20	41.070333 N 71.173500 W	Atlantic White-sided Dolphin	25	450	0	Stationary DP	None
Nicole Foss	NF 2	2023-07-25 18:25	41.361667 N 71.020000 W	Bottlenose Dolphin	12	1,000	9	Transit	None
Living Stone	LS 94	2023-07-30 20:56	41.348223 N 71.262908 W	Short-beaked Common Dolphin	15	1,500	0	Anchored	None
Gabrielle Elizabeth	GE 7	2023-08-03 20:00:00.0	41.069017 N 71.194967 W	Leatherback Sea Turtle	1	100	2.5	Transit	Engine Neutral

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Living Stone	LS 95	2023-08-05 11:43:00.0	41.075010 N 71.169567 W	Short-beaked Common Dolphin	30	2,500	0	Stationary DP	None
Living Stone	LS 96	2023-08-07 09:47:00.0	41.077327 N 71.167790 W	Short-beaked Common Dolphin	12	800	0	Stationary DP	None
Living Stone	LS 97	2023-08-09 22:33:00.0	41.084372 N 71.165360 W	Short-beaked Common Dolphin	5	200	2.4	Transit	None
Living Stone	LS 98	2023-08-09 23:11:00.0	41.082505 N 71.162000 W	Short-beaked Common Dolphin	10	400	0	Stationary DP	None