PORTSMOUTH NAVAL SHIPYARD
KITTERY, MAINE

PRELIMINARY MONITORING REPORT FOR NOAA FISHERIES INCIDENTAL HARASSMENT AUTHORIZATION (IHA) FOR YEAR ONE ACTIVITIES

FROM MAY 12, 2020 TO DECEMBER 9, 2020

for

MODIFICATION AND EXPANSION OF DRY DOCK 1:

Super Flood Basin (P-310)

Date: January 15, 2021

TABLE OF CONTENTS

SECTION

1. INTRODUCTION 1
2. PROJECT DESCRIPTION 1
3. PURPOSE OF MONITORING PROGRAM AND METHODS 3
4. RESULTS – MARINE MAMMAL MONITORING 7
5. RESULTS – HYDROACOUSTIC MONITORING 18
6. CONCLUSIONS 33
7. REFERENCES 34

LIST OF FIGURES:

Figure 1. Conceptual Drawing of Super-Flood Basin (P-310). 2
Figure 2. Locations of Marine Mammal Monitoring Stations 5
Figure 3. Weather Conditions by Number of Monitoring Periods 10
Figure 4. Visibility Categories by Number of Monitoring Periods 10
Figure 5. Summary of Observed Behaviors 14
Figure 6. Locations of Harbor Seal Observations 15
Figure 7. Locations of Other Marine Mammal Observations 16

LIST OF TABLES:

Table 1. Level A and B Harassment Zones for Monitoring (from issued IHA) 4
Table 2. Summary of Construction Time by Month (Days in Brackets) 7
Table 3. Summary of Monitoring Effort 9
Table 4. Summary of Marine Mammal Observations 12
Table 5. Summary of Retreat/Flushing Observations During Reporting Period. 13
Table 6. Summary of Age Classes and Sex for Species Observed[1] 17
Table 7. Observed Level B Takes by Month and Species. 17
Table 8. Hydroacoustic Results from Vibratory Installation of 30-in Pipe Piles 20
Table 9. Hydroacoustic Results from Vibratory Installation of 14-in H-Piles 21
Table 10. Hydroacoustic Results from Vibratory Installation of AZ Sheet Piles 23
Table 11. Hydroacoustic Results from Vibratory Installation of Flat Web (PS31) Sheet Piles 24
Table 12. Hydroacoustic Results from Vibratory Installation of 84-in Steel Casings 27
Table 13. Hydroacoustic Results from Vibratory Installation of 16-in Pipe Piles 30
Table 14. Summary of Marine Mammal Take During Reporting Period 33

APPENDIX A – Hydroacoustic Zones of Influence (from 2019 IHA Application)
APPENIDX B – Example Paper Datasheet
APPENDIX C – Final Hydroacoustic Monitoring Plan
APPENDIX D – Final Hydroacoustic Monitoring Reports
APPENDIX E – JESCO Hydroacoustic Monitoring Report for 16-in Pipe Piles

1. INTRODUCTION

The Portsmouth Naval Shipyard (Shipyard), under command of the United States Navy (Navy), is in the process of expanding and modifying Dry Dock 1 to accommodate the overhaul, maintenance, and repair of Los Angeles and Virginia class submarines. In its current configuration, Dry Dock 1 is unable to fit Virginia class submarines and Los Angeles class submarines can enter only with support of buoyancy assist tanks. The first phase of the Dry Dock 1 Project (Project), Super Flood Basin (P-310), began in spring 2020 and involves constructing a super flood basin by enclosing approximately 151,500 square feet (sq ft) (3.48 acres) of the Piscataqua River, channel-ward of the existing Dry Dock 1 entrance.

In November 2018, the Navy submitted an Incidental Harassment Authorization (IHA) application to the National Marine Fisheries Service (National Oceanic and Atmospheric Administration [NOAA] Fisheries) to request authorization to take marine mammals incidental to Year One activities associated with in-water construction of the Super Flood Basin (P-310). The application was deemed complete in March 2019 and NOAA Fisheries issued the IHA on May 16, 2019, for activities to occur between October 1, 2019, and September 30, 2020. As a result of Project schedule changes, a revised IHA was requested, and was re-issued on December 3, 2019, with the new effective dates of March 1, 2020, through February 28, 2021. This preliminary monitoring report is being prepared to meet the IHA's reporting conditions that the Navy provide a draft report 60 days prior to the issuance of any subsequent IHA. A Year Two IHA application for continued Super Flood Basin (P-310) in-water construction activities after February 28, 2021, was submitted to NOAA Fisheries on October 13, 2021. A revised application, based on comments received from NOAA Fisheries was submitted on December 30, 2020. This preliminary monitoring report details the results of marine mammal monitoring activities during in-water construction activities at the Super Flood Basin (P-310) beginning May 12, 2020, and through December 9, 2020. No additional in-water work occurred between December 9, 2020 and December 31, 2020.

2. PROJECT DESCRIPTION

During the initial phase of construction of the Super Flood Basin (P-310), closure walls are being constructed that extend from Berth 1 to Berth 11B (Figure 1). As described in the Navy's IHA application, the super flood basin consists of three primary components: a south closure wall, an entrance structure, and a west closure wall. Construction activities during this initial phase included: construction of the Berth 1 bulkhead, install of drilled shafts for the entrance structure, and the construction of the sheet pile cell and combi-wall for the south closure wall. More specifically the work included setting steel sheet piles to create a bulkhead outboard of the existing quay wall along Berth 1 and placing concrete within the void between the sheet piles and existing quay wall. The south closure wall work included driving of steel H-piles, Z-sheet piles and 30-inch (in) pipe piles. The entrance structure work involved the drilling of 84in steel casings needed to support the entrance structure.

2.1 IN-WATER ACTIVITIES DURING YEAR ONE IHA (REPORTING PERIOD: MAY 12, 2020 TO DECEMBER 9, 2020)

During the reporting period, the Super-Flood Basin (P-310) combi-wall and cofferdam were installed as part of the south closure wall. The combi-wall extends from Berth 1 and 2 and ends at the cofferdam comprising the corner of the south closure wall. Installation of these structures included vibratory and impact driving techniques.

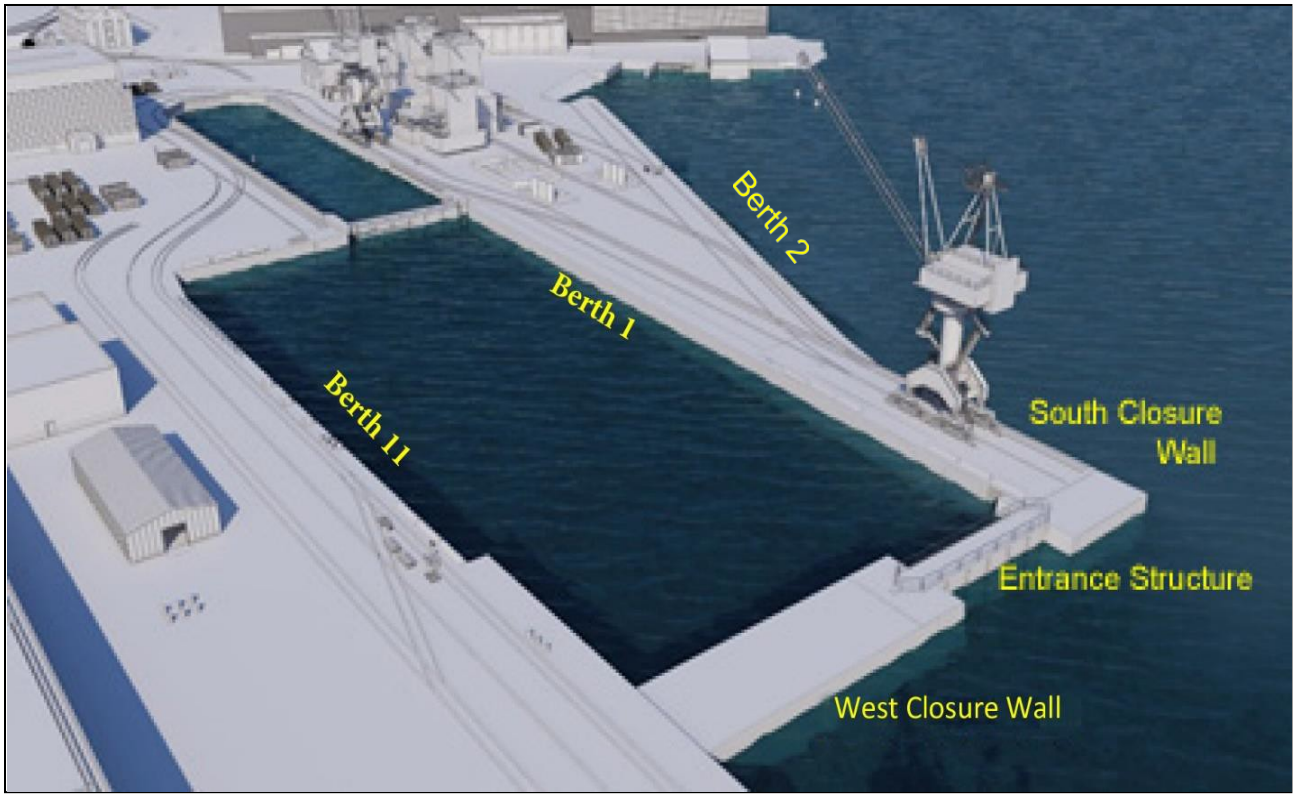


Figure 1. Conceptual Drawing of Super-Flood Basin (P-310).

The 84-inch casings installed during the reporting period were placed so the concrete entrance structure, being built offsite, will sit in its proper location. Installation of these 84-in casings involved the observed drilling in-water work during the reporting period and also involved a small amount of vibratory driving. Installation of the elevated deck occurred along Berth 2A. The installation of pipe piles for this structure were driven utilizing the vibratory hammer. Cianbro, the Super Flood Basin (P-310) contractor, installed the following number of piles and casings during the reporting period:

- 134 PS31 Flat Web Sheet Piles;
- 46 NZ14 Sheet Piles;
- 94 PZC18 Sheet Piles;
- 3 NZ19 Sheet Piles;

- 35 14-in H-Piles;
- 38 W24x176 H-Piles;
- 36 30-in Pipe Piles;
- 8 16-in Pipe Piles; and
- 8 84-in Steel Casings.

The specific pile dimensions for some of the pile materials vary from what was originally submitted in the original IHA application. This is due to variability in the exact piles selected for construction. Additionally, because of operational considerations, some substitutions were made for materials to better accommodate conditions in the field. These differences were:

- 18-in sheet piles as described in the IHA application were PS31 sheet piles with dimensions of approximately 19.7 inches.
- 24-in sheet piles as described in the IHA application were PZC18 sheet piles with a dimension of 25 inches, NZ14 sheet piles with a dimension of 27.5 inches, or NZ19 sheet piles with a dimension of 27.5 inches;
- 30-in pipe piles were used in replacement of 36-in pipe piles described in the IHA application, and;
- 84-in steel casings were used in replacement of 96-in steel casings described in the IHA application.

3. PURPOSE OF MONITORING PROGRAM AND METHODS

The marine mammal and hydroacoustic monitoring program for the Super-Flood Basin (P-310) was implemented in Year One, along with avoidance and minimization measures, to minimize impacts to marine species. Objectives and protocols for both were established in the Marine Mammal Monitoring Plan for the Project and approved by NOAA Fisheries on April 15, 2020 (Cianbro 2020). Cianbro provided NOAA Fisheries-approved Protected Species Observers (PSOs) and completed the monitoring and data collection. Stantec Consulting Services (Stantec) provided technical support, data review, and the preparation of this preliminary monitoring report. The following sections describe the marine mammal and hydroacoustic monitoring objectives and methods.

3.1 MARINE MAMMAL MONITORING

Marine mammal species authorized for taking and identified in the IHA with the potential to occur in the Piscataqua River during Super Flood Basin (P-310) activities are as follows:

- High-frequency (HF) cetaceans:
  - Harbor porpoise *(Phocoena phocoena*);
- Phocids:
  - Harbor seal *(Phoca vitulina);*
  - Gray seal *(Halichoerus grypus);*
  - Harp seal *(Pagophilus groenlandicus)*; and
  - Hooded seal *(Cystophora cristata).*

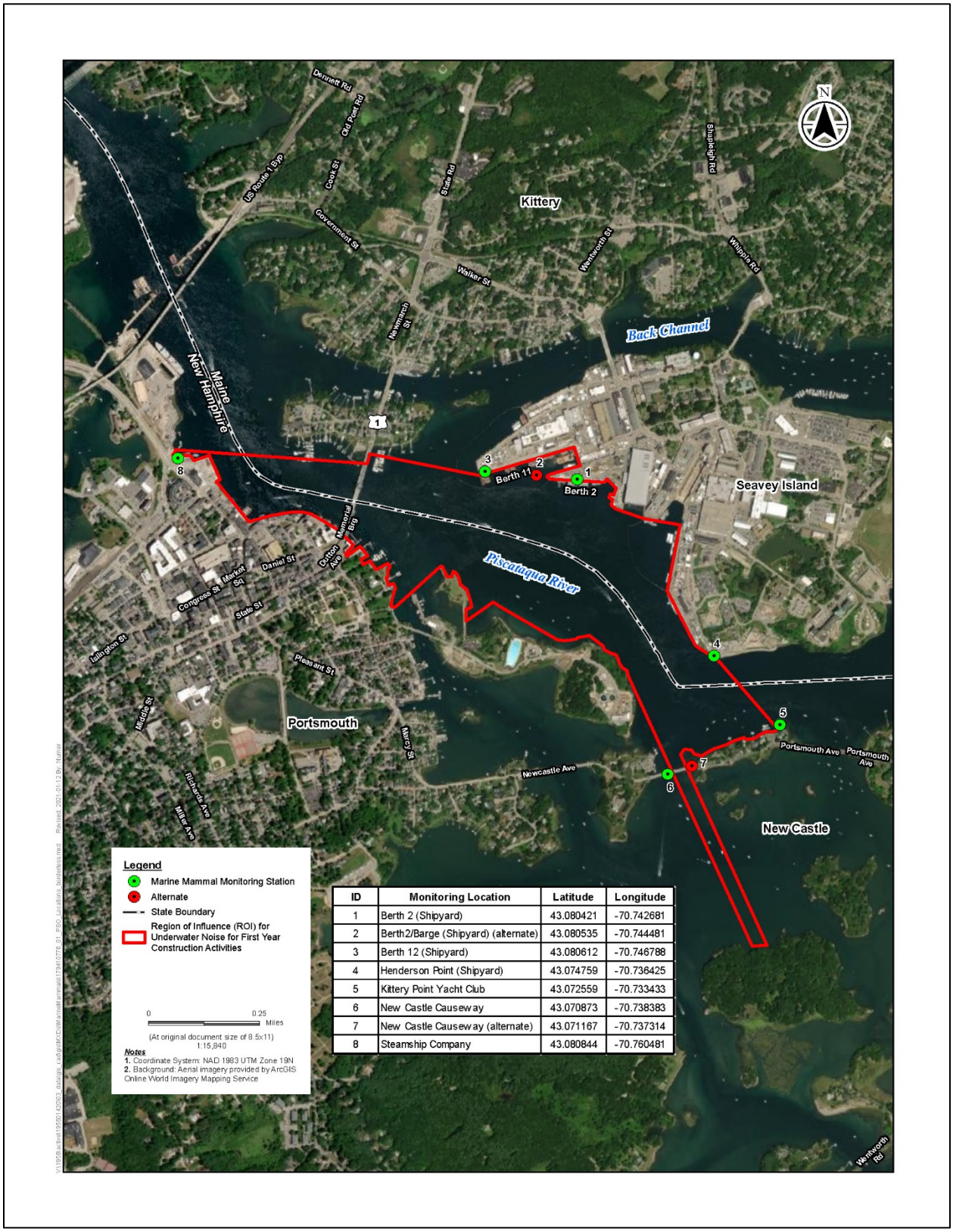
During Year One activities, up to four NOAA Fisheries-approved PSOs monitored shutdown zones and Level A and B zones of influence (ZOIs) before, during, and after activities with the potential to generate underwater sound. Appendix A provides figures from the March 2019 IHA Application showing the spatial coverage of the various ZOIs for different pile types and installation methods used during Year One activities. Table 1 below summarizes the distances to ZOIs for the marine mammal species identified above. In instances where a smaller-sized pile material was used than what was described in the IHA application, PSOs monitored the larger, or more conservative distances, consistent with the IHA. When a larger pile material was utilized (i.e., PZC18, NZ14, and NZ19 sheet piles), a revised Level A/B zone was calculated.

Table 1. Level A and B Harassment Zones for Monitoring (from issued IHA)

	Level A Harassment		Level B Harassment
	HF Cetacean	Phocid	
Pile Type, Size & Driving Method	Dist. (meter)	Dist. (meter)	Dist. (meter)
Vibratory drive 14-in H-pile (2 pile/day)	1.9	0.8	3,414.5
Impact drive 14-in H-pile (2 pile/day)	33.7	15.1	135.9
Vibratory drive 24-in sheet pile (12 pile/day)[1]	13.7	5.6	7,356.4
Impact drive 18-in & 24-in sheet pile (12 pile/day)	1763	792	1,000
Vibratory removal 14-in H-pile (8 pile/day)	4.9	2	3,414
Vibratory drive 14-in H-pile (1 pile/day)	1.2	0.5	3,414
Impact drive 14-in H-pile (1 pile/day)	21.2	9.5	135.9
Down-hole drive 96-in steel casing (0.5 pile/day)	56.5	23.2	10,000
Vibratory drive 36-in steel pipe pile (1 pile/day)	16.5	6.8	10,000
Impact drive 36-in steel pipe pile (1 pile/day)	533.1	239.5	3,414.5
Vibratory drive 16-in steel pipe pile (1 pile/day)	2.2	0.9	6,310
Impact drive 16-in steel pipe pile (1 pile/day)	11.5	5.2	15.8

[1]During Year One activities, PZC18 (25-in), NZ14 (27.5-in), and NZ19 (27.5-in) sheet piles were used. Use of the largest dimension resulted in an increased modeled distance to the Level A zone of 25.4m for HF Cetaceans and 10.4m for Phocids. The revised Level B zone modeled distance increased to 13,594m.

While monitoring, PSOs were located at positions approved by NOAA Fisheries (Figure 2). Monitoring of the ZOIs began 30 minutes prior to the anticipated start of in-water work, continued throughout the day, and concluded 30 minutes after notification that in-water work was complete for the day. Use of Kittery Point Yacht Club was rescinded by the property owner during Year One, causing PSOs to shift back to New Castle Causeway. An alternative location at New Castle Causeway was subsequently selected, which provided a complete view of the ZOI but provided better safety from traffic for the PSO. Additionally, during the course of Year One, the presence of active construction equipment reduced the PSO's ability to fully monitor the ZOIs from Berth 2. As a result, the Berth 2 location was shifted to a barge (Berth 2/Barge) location to allow for complete monitoring.



ID	Monitoring Location	Latitude	Longitude
1	Berth 2 (Shipyard)	43.080421	-70.742681
2	Berth2/Barge (Shipyard) (alternate)	43.080535	-70.744481
3	Berth 12 (Shipyard)	43.080612	-70.746788
4	Henderson Point (Shipyard)	43.074759	-70.736425
5	Kittery Point Yacht Club	43.072559	-70.733433
6	New Castle Causeway	43.070873	-70.738383
7	New Castle Causeway (alternate)	43.071167	-70.737314
8	Steamship Company	43.080844	-70.760481

Figure 2. Locations of Marine Mammal Monitoring Stations

If a marine mammal was observed entering the Level B zone, the activity would be completed without cessation and a take recorded, unless the animal entered or approached the shutdown zone, at which point activities would be halted. If an animal was observed within the shutdown zone during active work, then activity would cease as soon as it was safe. In-water work could not continue until the animal had voluntarily left and been visually confirmed beyond the shutdown zone or after 15 minutes (seals) or 30 minutes (porpoises) had passed without redetection of the animal. While monitoring, PSOs were assigned no other tasks and were responsible for using a combination of binoculars and naked eye to search for marine mammals. Distances to sightings were measured using range finders and bearings were taken using a compass. In addition, PSOs recorded information on:

- Weather parameters (e.g., wind, humidity, temperature, cloud cover);
- Visibility;
- Tidal state and sea state conditions;
- Behaviors of any sighted marine mammals, including bearing from construction and the direction of travel, and;
- Other human activity in the area (e.g., boat traffic).

A lead PSO, positioned near active construction, was responsible for recording the start and stop times of construction activities and coordinating communications with other PSOs. Data was recorded electronically on the Project specific monitoring Application (App), which was deployed onto cellular-enabled iPads, as discussed in the approved monitoring plan. Paper datasheets (Appendix B) were used as a backup in case of cellular connectivity issues. When paper datasheets were used, data was manually entered into the monitoring App or Project website by either the PSO or a Stantec biologist. These data were typically entered within 24-48 hours of the original observation.

3.2 HYDROACOUSTIC MONITORING

The NOAA Fisheries IHA requires hydroacoustic monitoring of the sound field during in-water activities for a portion of the pile types and installation methods used during Year One activities. Specific monitoring requirements from the IHA included:

- Ten AZ sheet piles[1] and 10 flat web sheet piles under impact and vibratory pile driving;
- Four 16-in steel piles for impact and vibratory pile driving;
- Five 36-in steel piles for impact and vibratory pile driving[2];
- Five 14-in H-piles for impact and vibratory driving, and;
- Four 8-foot diameter shafts for down-the-hole drilling[3].

During Year One activities, the only pile material requiring impact driving was NZ14 sheet piles. During hydroacoustic monitoring, Cianbro deployed Cetacean Research CR3 omnidirectional piezoelectric element hydrophones roughly mid-depth in the water column at a near-field distance (between 10-20 meters [m]) and also at a far-field distance (between 70-192 m) from the noise

[1] In Year One, NZ14 and PZC18 piles were installed. Both are Z-shaped sheet piles similar to AZ sheet piles.
[2] Note that 30-in pipe piles were installed for 36-in pipe piles and were monitored.
[3] Note that 7-foot (84in) diameter shafts were substituted for 8-foot (96in) diameter shafts and were monitored.

source. Hydrophones were weighted with an anchor and depth was confirmed with weighted tape measure and/or depth sounder. Calibration of both the hydrophones and data acquisition system was performed at the start of each day to verify performance. Information captured from the hydrophone was transmitted to a data acquisition system and recorded onto a 2-terabyte external LaCie hard drive. Sound measurements, including root mean square (RMS) sound pressure level (SPL), peak SPL, frequency content, and cumulative sound exposure level (cSEL) computed from the hydrophone data were displayed in real time, monitored, and also inspected frequently during measurements. Cianbro's final Hydroacoustic Monitoring Plan is provided in Appendix C.

4. RESULTS – MARINE MAMMAL MONITORING

4.1 CONSTRUCTION ACTIVITIES

Between May 12 and December 9, 2020, in-water pile driving and drilling activities occurred over a total of 339 hours and 37 minutes. Total in-water work time was highest during August and September. Over Year One, drilling was the most common installation method (with a total time of 204 hours and 36 minutes), followed by vibratory methods (132 hours and 30 minutes), with limited use of impact driving (2 hours and 31 minutes). Table 2 provides a monthly breakdown of construction methods by total time. Construction tracking data are provided to NOAA Fisheries in an electronic format (i.e., Excel) with this report.

Table 2. Summary of Construction Time by Month (Days in Brackets)

Month	Total In-Water Construction Time (hh:mm)	Vibratory Driving (hh:mm)	Impact Driving (hh:mm)	Drilling (hh:mm)
May	54:32	54:32 [10]	0:00	0:00
June	6:36	6:36 [14]	0:00	0:00
July	37:30	15:03 [21]	0:00	22:27 [13]
August	84:54	17:46 [16]	1:02 [1]	66:06 [21]
September	60:34	13:36 [14]	0:45 [3]	46:13 [15]
October	41:37	18:20 [9]	0:44 [2]	22:33 [10]
November	50:14	2:57 [7]	0:00	47:17 [13]
December	3:40	3:40 [3]	0:00	0:00
TOTAL	**339:37**	**132:30**	**2:31**	**204:36**

4.2 MONITORING EFFORT

Between May 12, 2020, and December 9, 2020, up to four PSOs a day monitored the Project's activities and associated ZOIs over 150 days for a total of 5,366 hours and 26 minutes (Table 3). Monitoring activities (measured as total number of hours) were at their highest during the months of August and October. Active in-water activities with potential to generate underwater noise occurred during roughly 6% of the total time spent monitoring. Monitoring of the shutdown and Level A zones by at least two PSOs occurred during 100% of activities. The larger Level B zone was monitored by the other two PSOs for a total of 4,411 hours and 37 minutes (or roughly 82% of the total monitoring time) over the course of Year One. During active in-water work, the full

Level B zone was monitored for 236 hours and 43 minutes (69.7% of the total in-water work time). Daily monitoring log data are provided to NOAA Fisheries in an electronic format (i.e., Excel) with this report. Monitoring will be ongoing through the remainder of Year One work.

Overall weather conditions while monitoring were generally fair to partly cloudy with occasional occurrence of rain and/or fog. Visibility during monitoring periods was predominately fair to good with PSOs completing daily weather assessments twice a day (once in the morning and once in the afternoon). Out of a total of 987 monitoring periods, poor visibility conditions were reported during 32 periods (or roughly 3%). During poor conditions, PSOs still had a complete view of the Level A zones. Figures 2 and 3 provide a summary of visibility and weather conditions, respectively, by monitoring hour. Weather records are provided to NOAA Fisheries in an electronic format (i.e., Excel) with this report.

Table 3. Summary of Monitoring Effort

Month	Total Days	Total Time Monitoring (hh:mm)	Total Time In-Water Work (hh:mm)	Percent In-Water Work During Total Monitoring Time (%)	Total Time with Only Level A Monitoring (hh:mm)	Percent of Total Time with Only Level A Monitoring (%)	In-Water Work Time with Complete Level A & B Monitoring (hh:mm)	Percent of Total In-Water Work Time with Complete Level A & B Monitoring (%)
May	10	342:40	54:32	15.9	0:00	0	54:32	100.0%
June	14	316:27	6:36	2.1	80:08	25.3	4:11	63.4%
July	22	755:25	37:30	5.0	181:50	24.07	29:47	79.4%
August	26	1000:38	84:54	8.5	165:36	16.55	53:03	62.5%
September	22	691:06	60:34	8.8	180:18	26.09	25:33	42.2%
October	26	1118:13	41:37	3.7	187:03	16.73	31:38	76.0%
November	23	944:12	50:14	5.3	130:32	13.82	34:24	68.5%
December	7	197:45	3:40	1.9	29:22	14.85	3:35	97.7%
TOTAL	**150**	**5366:26**	**339:37**	**6.4 (average)**	**954:49**	**17.18 (average)**	**236:43**	**69.7%**

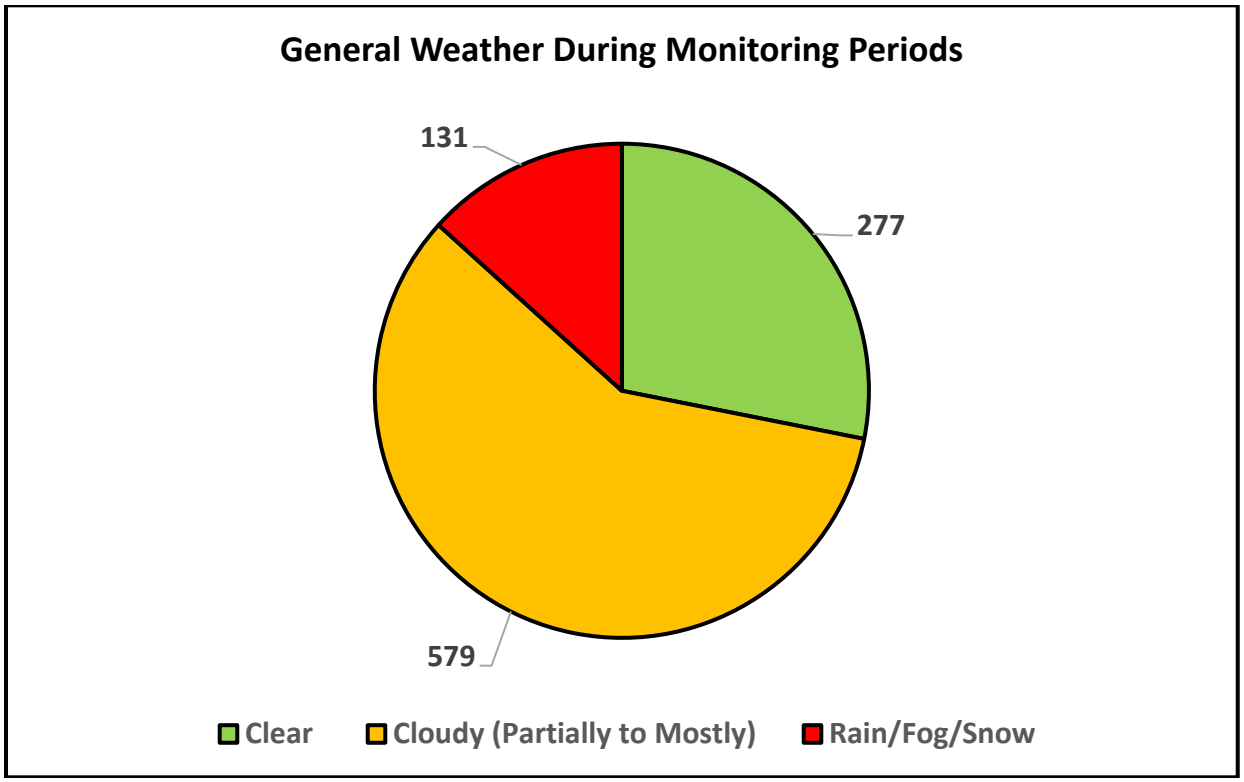


Figure 3. Weather Conditions by Number of Monitoring Periods

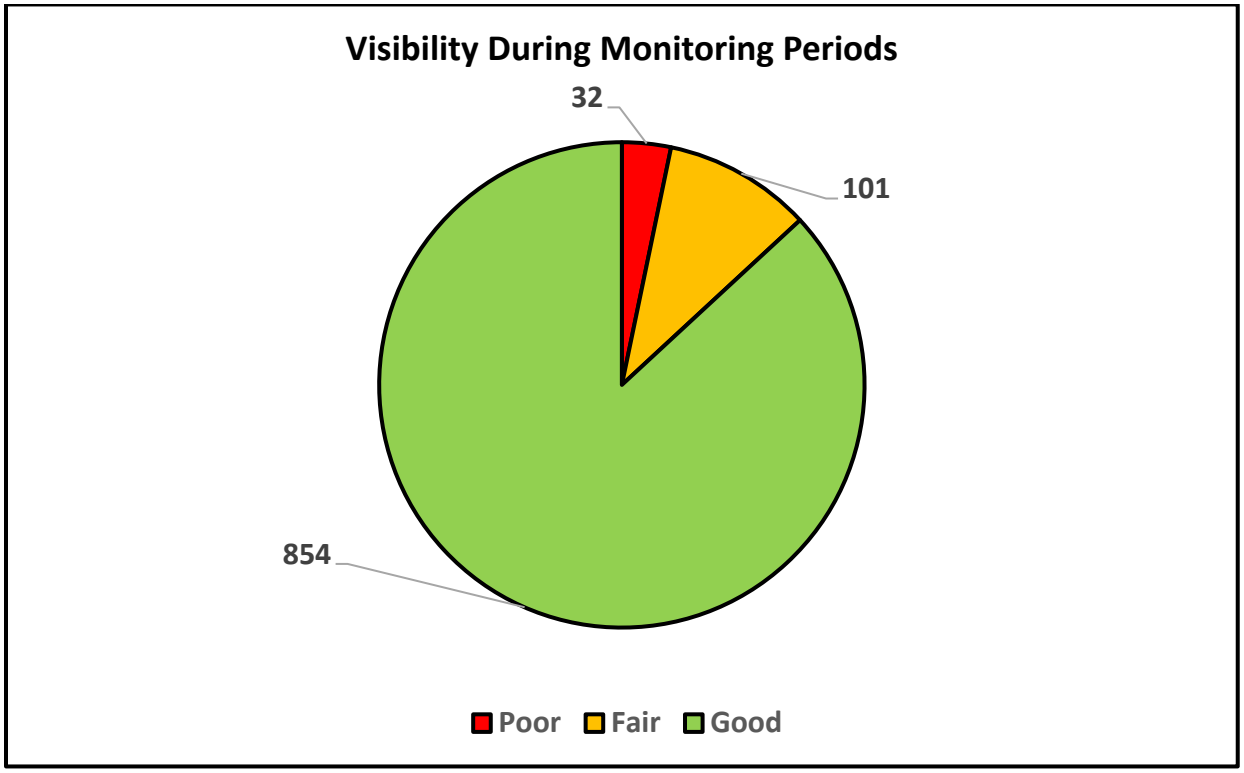


Figure 4. Visibility Categories by Number of Monitoring Periods

4.3 MARINE MAMMAL OBSERVATIONS

During the reporting period, there were a total of 772 observations (including re-sightings) of 696 identified marine mammals, including one unknown seal species. Re-sightings accounted for 10.8% (n=76) of observations and were recorded when the PSO could confidently conclude the same animal was being seen after being previously counted. Species observed were harbor porpoise, harbor seal, gray seal, and harp seal. There was one sighting of an unidentified seal species; no hooded seals were observed. Harbor seals were the most commonly observed species and comprised 91.2% (n=704) of observations (n=772) and 94.5% (n=658) of individuals (n=696). Each marine mammal was observed in water; there were no observations of individuals hauled out on buoys, barges, or docks. Table 4 summarizes the species and individuals observed during the reporting period. Roughly 68% (n=528) of the 772 total observations occurred when construction was not occurring; either during pre- or post-construction periods or on days when no in-water work occurred. Figures 5 and 6 show the spatial distribution of harbor seal and other species observations. Marine mammal observational data is provided to NOAA Fisheries in an electronic format (i.e., Excel) with this report.

Table 4. Summary of Marine Mammal Observations (Obs)

Month	Total Obs	Harbor Seal Obs	# of Unique Harbor Seals	# of Repeat Harbor Seals	Gray Seal Obs	# of Unique Gray Seals	# of Repeat Gray Seals	Harp Seal Obs	# of Unique Harp Seals	# of Repeat Harp Seals	Harbor Porpoise Obs	Unknown Species Obs
May	50	45	19	26	2	2	0	2	2	0	1	0
June	0	0	0	0	0	0	0	0	0	0	0	0
July	6	6	6	0	0	0	0	0	0	0	0	0
August	27	25	25	0	2	1	1	0	0	0	0	0
September	151	144	130	14	6	6	0	0	0	0	0	1 (Phocid)
October	309	280	259	21	29	17	12	0	0	0	0	0
November	201	196	195	1	5	5	0	0	0	0	0	0
December	28	25	24	1	3	3	0	0	0	0	0	0
TOTAL	**772**	**721**	**658**	**63**	**47**	**34**	**13**	**2**	**2**	**0**	**1**	**1**

During marine mammal observations, the most noted behavior was no response, followed by head alert. These behaviors were observed regardless of whether active construction was underway at the time. PSOs recorded eight instances where the marine mammal was observed retreating or flushing (presumably in response to some stimulus) and are described further in Table 5. Figure 4 provides a visual summary of the behaviors recorded during the reporting period.

Table 5. Summary of Retreat/Flushing Observations During Reporting Period.

Species	Date/Time	Distance from Source (kilometer)	Construction Period	Material Type & Method	Take Occurred?
Harbor seal	5/15/2020 – 16:01	0.962	Post-Construction	N/A	No
Harbor seal	5/20/2020 – 8:17	0.936	Pre-Construction	N/A	No
Harbor seal	5/20/2020 – 10:08	0.986	Pre-Construction	N/A	No
Harbor seal	5/20/2020 – 10:36	0.885	Active Construction	PS31 (Vibratory)	Yes – Level B
Harbor seal	8/27/2020 – 13:33	0.075	Active Construction	PZC18 (Vibratory)	Yes – Level B
Harbor seal	9/11/2020 – 13:18	1.114	Post-Construction	N/A	N/A
Harbor seal	9/11/2020 – 13:55	0.944	Post-Construction	N/A	N/A
Harbor seal	10/29/2020 – 9:29	0.870	Active Construction	84” Casing (Drilling)	Yes – Level B

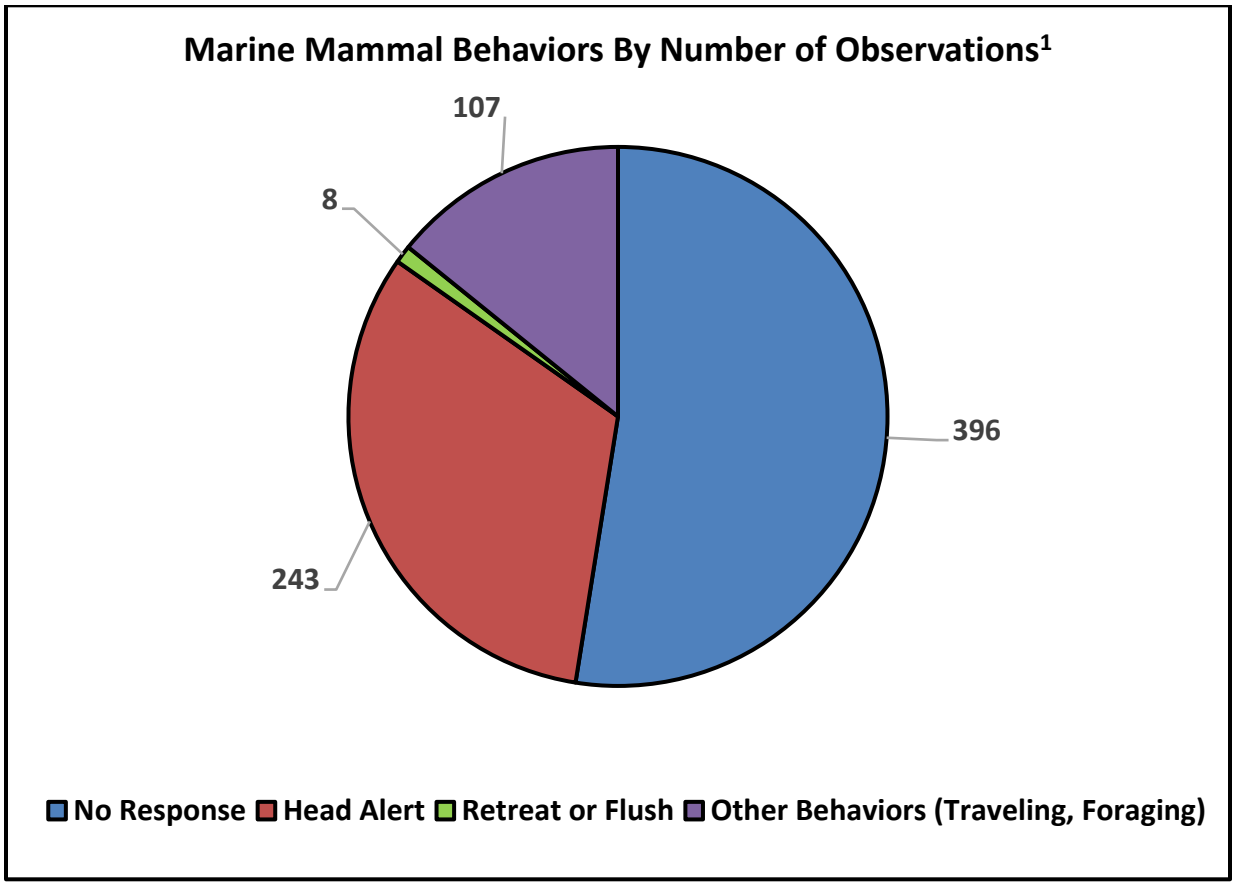


Figure 5. Summary of Observed Behaviors

[1] Number of behaviors add up to 754 versus 772 total observations because some observations were of multiple individuals and PSOs documented the same behaviors for all individuals observed.

Table 6 summarizes the age classes and sex (if known) for the four species of marine mammals observed during the reporting period. Generally, most individuals could be identified by age with adult individuals making up most of the observations. The determination of sex was often difficult or not possible unless the species had clear morphology (i.e., larger size) or behavior (i.e., nursing of young) that make it possible to determine sex.

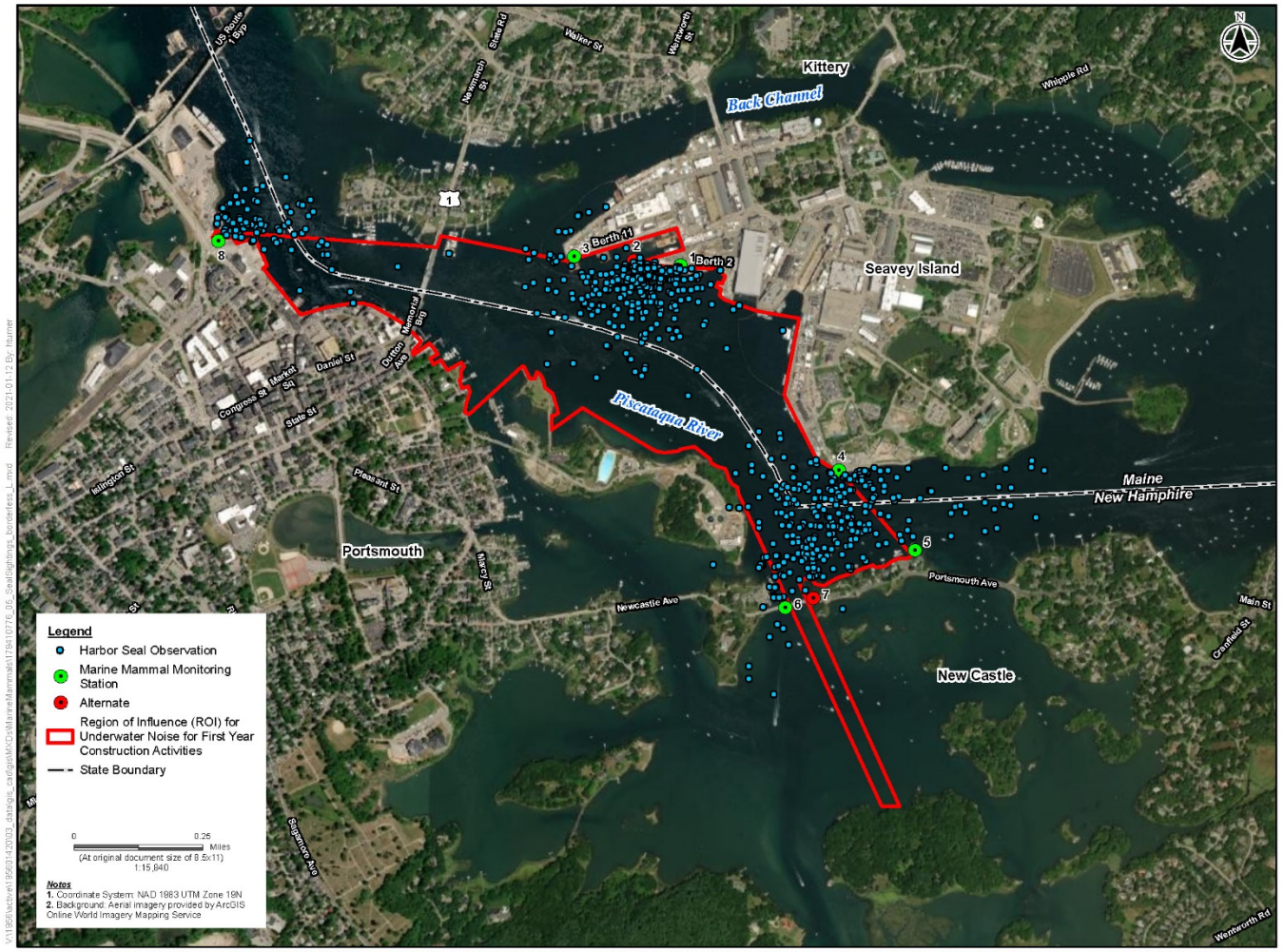


Figure 6. Locations of Harbor Seal Observations

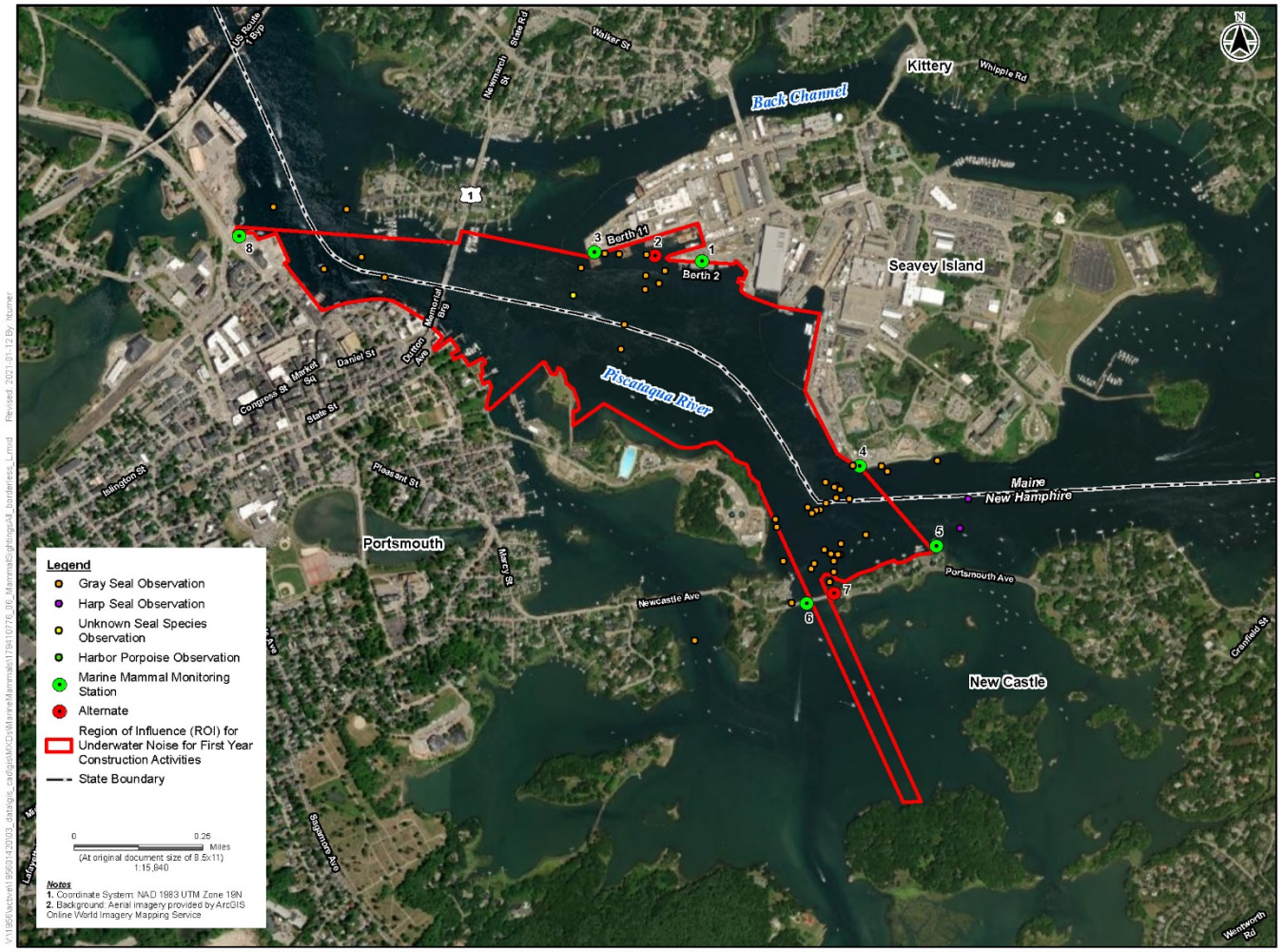


Figure 7. Locations of Other Marine Mammal Observations

Table 6. Summary of Age Classes and Sex for Species Observed[1]

Species	# Adults	# Juveniles	# Unknown Age	# Females	# Males	# Unknown Sex
Harbor Seal	530	13	115	0	2	656
Gray Seal	34	0	0	2	7	25
Harp Seal	2	0	0	0	0	2
Harbor Porpoise	0	0	1	0	0	1
Unknown Phocid	0	0	1	0	0	1

[1] Observations add up to 696 (number of unique individuals) rather than the 772 total observations during the reporting period.

4.4 ESTIMATES OF LEVEL A AND LEVEL B TAKES

Observed take during the reporting period was exclusively based on the number of marine mammals observed by PSOs within the ensonified area previously determined in the Project's IHA and if the observation occurred during active pile driving or drilling operations. PSOs positioned at auxiliary locations monitoring Level B zones without clear line-of-sight to construction activities received updates from the Lead PSO on activities. If PSOs were unsure whether in-water work was occurring or not, they recorded observations under the conservative assumption that work was occurring. These observations and evaluation of potential take was either compared with the Lead PSO's daily construction log at the end of the workday or verified by the Stantec biologist during subsequent QA/QC of the data by comparing against the daily construction log.

During the reporting period, there were no instances where Level A take was observed. There was an observed total of 185 Level B takes to marine mammals during the reporting period. Harbor seals made up the majority of Level B takes (n=176), followed by gray seals (n=8) and the unknown seal species (n=1). Table 7 summarizes monthly Level B takes during the reporting period. Besides the observed takes, the IHA requires that projects try to estimate any additional take that may have occurred. The Project's Level B zone was fully monitored for approximately 70% of the total in-water work time. Under the assumption that the observed Level B take provides a reasonable estimate of the Project's overall take, the numbers above for harbor seals and gray seals may have missed an additional 30% of take. This results in Level B take to an additional 75.43 harbor seals for a total of 252 individuals (251.43). For gray seals, this results in Level B take to an additional 3.43 individuals for a total of 12 individuals (11.43).

Table 7. Observed Level B Takes by Month and Species.

Species	Total Level B Takes	May	June	July	Aug	Sept	Oct	Nov	Dec
Harbor Seal	176	7	0	3	8	45	56	51	6
Gray Seal	8	0	0	0	0	3	2	1	2
Unknown Seal	1	0	0	0	0	1	0	0	0
TOTAL	**185**	**7**	**0**	**3**	**8**	**49**	**58**	**52**	**8**

4.5 CONSTRUCTION DELAYS/SHUTDOWNS AND MITIGATION MEASURES

There were no construction delays or shutdowns required during the reporting period. When impact driving to NZ14 piles occurred, the Lead PSO noted in their construction tracking data whether or not soft-starts were followed per IHA requirements. During the six total days (two hours and 31 minutes) of impact driving over the reporting period, soft-starts were noted in each situation.

4.6 OBSERVATIONS OF INJURED OR DEAD MARINE MAMMALS

PSOs reported no injured or dead marine mammals during their time monitoring the Project's ZOIs. To the Navy's knowledge, there were no external observations or reports of any injured or dead marine mammals during Year One activities within the Project's ZOIs or in close proximity to the Shipyard.

5. RESULTS – HYDROACOUSTIC MONITORING

As noted in Section 3.2, the only impact driving required during the reporting period was for the installation of NZ14 sheet piles. No other pile materials required impact driving during the reporting period and were therefore not monitored for impact driving related underwater noise. While monitoring of the impact driving of NZ14 sheet piles was not monitored during the reporting period covered in this report, additional NZ piles will be impact driven between January and February 2021, before the expiration of the current IHA. These activities will be monitored following the hydroacoustic methods previously described in Section 3.2. Results will be provided to NOAA Fisheries in the final IHA report. In summary, Cianbro monitored the following pile types during the reporting period per IHA conditions;

- Ten instances of vibratory installation of 30-in pipe piles [IHA requires five][4];
- Fourteen instances of vibratory installation of 14-in H-piles [IHA requires five];
- Seven instances (14 total piles driven in pairs) of vibratory installation of AZ sheet piles [IHA requires 10][5];
- Thirty-three instances of vibratory installation of Flat Web (PS31) sheet piles, [IHA requires 10] and;
- Thirty-one instances of drilling of 84-in steel casings [IHA requires 4][6].

Tables 8 through 12 summarize hydroacoustic results of vibratory driving and drilling by the pile type monitored and Appendix D provides copies of the final hydroacoustic reports completed by Cianbro. Vibratory driving of additional AZ sheet piles (NZ14 or PZC18) is planned for January and February 2021, before expiration of the current IHA. Cianbro will monitor these activities to meet the IHA requirement of monitoring ten instances of this pile material. Results from this additional monitoring will be provided to NOAA Fisheries in the final IHA report.

[4] As previously noted, 30-in pipe piles were installed for 36-in pipe piles.
[5] As previously noted, NZ14 or PZC18 piles (Z-sheet piles) were installed.
[6] As previously noted, 84-in diameter shafts were installed for 96-in diameter shafts.

Hydroacoustic monitoring of the vibratory installation of 16-in pipe piles did not occur as Cianbro's field engineer was out due to COVID-19 on the single date of installation. JESCO, a separate subcontractor completing hydroacoustic monitoring for other purposes not related to this project or issued IHA, was onsite during this day. JESCO recorded hydroacoustic data during the installation of these 16-in pipe piles. This information is presented in Table 13 and JESCO's full report is provided as Appendix E. Additionally, during drilling of the 84-in steel casings, Cianbro completed additional post-processing of the data using components of an impulsive source based on communications with NOAA Fisheries on April 16, 2020 (Benjamin Laws, pers. comm). In these instances, an estimated RMS 90% SPL was also calculated.

Table 8. Hydroacoustic Results from Vibratory Installation of 30-in Pipe Piles

Date	Record Start Time	Record Stop Time	Active Duration (Seconds)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)
May 13, 2020	10:19	10:20	90	10	153.8	156.15	173.76	151.71	168.23
				94	141.1	151.03	163.75	147.88	158.18
May 13, 2020	10:31	10:33	29	10	165.2	161.36	180.57	153.37	177.24
				100	161.8	150.82	169.71	140.93	168.2
May 28, 2020	13:13	13:17	216	80	145.3	147.28	156.96	136.38	161.44
May 28, 2020	13:23	13:26	147	90	143.9	147.09	163.48	135.4	160.15
May 28, 2020	13:29	13:34	326	90	141.3	144.21	167.4	136.24	160.19
June 10, 2020	10:06	10:06	12	20	171.3	186.98	194.29	164.66	180.27
				192	153.3	170.34	173.15	167.67	164.17
June 10, 2020	10:08	10:09	80	20	169.7	186.47	192.95	156.81	189.17
				192	154.6	170.58	175.8	159.08	175.76
June 10, 2020	10:10	10:11	71	20	174.4	191.91	202.09	179.2	193.53
				192	158.8	173.4	180.47	166.11	177.58
June 10, 2020	11:14	11:17	144	20	170.3	187.01	202.07	169.9	193.97
June 18, 2020	9:19	9:23	229	20	175.4	176.24	178.42	131.55	190.73
				106	165.8	166.21	167.03	141.80	184.18

[1] All dB units except cSEL are presented as dB re 1 µPa. cSEL is presented as dB re 1 $\mu Pa^2 \cdot s$.

Table 9. Hydroacoustic Results from Vibratory Installation of 14-in H-Piles

Date	Record Start Time	Record Stop Time	Active Duration (Sec)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)
May 14, 2020	11:33	11:37	295	10	143.5	155.6	173.32	152.2	170.84
				140	132.8	141.38	152.32	135.87	156.64
May 14, 2020	14:26	14:30	215	10	145.1	157.23	171.56	152.63	169.85
				71	134.6	144.12	158.31	134.57	157.77
May 14, 2020	15:57	16:00	234	10	150.9	147.95	160.38	150.14	171.42
				71	140.2	158.92	167.02	134.78	160.1
May 15, 2020	10:30	10:30	13	10	159	169.84	191.02	152.59	176.94
				140	151.9	164.86	168.02	147.74	162.81
May 15, 2020	11:07	11:07	12	10	158.8	172.13	187.13	151.06	175.44
				140	150.4	164.2	167.2	150.94	161.66
May 15, 2020	14:47	14:52	119	10	161.8	159.85	174.64	148.74	174.95
				140	139.8	146.85	166.85	138.18	158.84
May 20, 2020	14:43	14:44	68	10	159.7	158.24	175.33	151.3	164.91
				140	138.1	147.82	166.36	142.88	155.62
May 20, 2020	14:45	14:46	63	10	160.4	158.55	163.87	150.96	165.69
				140	135.8	152.03	158.86	146.4	158.8
May 20, 2020	14:51	14:53	240	10	162.6	164.75	182.26	151.65	175.53
				140	139.8	153.39	171.44	144.8	164.61
May 20, 2020	14:58	15:00	160	10	160.4	168.15	187.89	155.49	176.16
				140	142.3	156.21	167.28	136.66	165.79
May 20, 2020	15:05	15:07	96	10	158.6	165.4	179.05	153.71	178.24
				140	144.1	158.32	165.29	152.34	164.05
May 21, 2020	11:30	11:32	41	10	158.3	175.4	184.7	170.44	176.15

Date	Record Start Time	Record Stop Time	Active Duration (Sec)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)
May 21, 2020	11:35	11:39	219	10	161.7	170.17	180.65	162.41	180.49
May 21, 2020	11:48	11:48	6	10	164.2	175.85	178.54	165.05	170.96

[1] All dB units except cSEL are presented as dB re 1 µPa. cSEL is presented as dB re 1 $\mu Pa^2 \cdot s$.

Table 10. Hydroacoustic Results from Vibratory Installation of AZ Sheet Piles

Date	Record Start Time	Record Stop Time	Active Duration (sec)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)
May 21, 2020	11:49	11:56	257	10	162.8	179.2	188.32	156.25	188.93
May 21, 2020	14:34	14:34	9	10	165.03	172.45	174.66	155.4	167.48
				140	150.6	165.24	168.74	152.92	162.52
May 21, 2020	14:51	14:55	221	10	162.5	175.91	180.4	164.88	180.01
				140	153.5	167.84	172.57	162.92	177.98
May 21, 2020	15:39	15:40	80	10	163.9	171.26	182.46	159.64	181.46
				140	152.5	165.81	170.9	156.97	171.77
May 21, 2020	15:56	15:56	19	10	164.7	172.54	180.55	164.52	178.94
				140	153.8	166.37	170.1	163.64	166.02
May 21, 2020	16:02	16:03	30	10	168.4	171.86	179.24	161.3	177.26
				140	153.1	166.62	169.95	163.49	168.30
May 21, 2020	16:54	16:58	250	10	175.6	189.51	194.81	154.71	199.31
				140	152.9	165.64	172.48	151.11	176.42

[1] All dB units except cSEL are presented as dB re 1 µPa. cSEL is presented as dB re 1 $\mu Pa^2 \cdot s$.

Table 11. Hydroacoustic Results from Vibratory Installation of Flat Web (PS31) Sheet Piles

Date	Record Start Time	Record Stop Time	Active Duration (sec)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)
June 11, 2020	13:58	14:00	19	20	135.7	158.73	167.99	149.38	165.26
				106	133.2	147.27	164.88	142.46	150.21
June 11, 2020	14:11	14:13	66	20	141.7	151.82	170.08	149.23	158.89
				106	138.5	144.45	157.16	137.79	155.61
June 11, 2020	14:15	14:16	26	20	151.3	157.32	167.58	149.33	161.01
				106	134.6	148.69	165.66	139.49	150.57
June 11, 2020	14:18	14:18	15	20	146.2	156.52	165.26	148.49	158.58
				106	133	147.13	150.13	137.23	146.4
June 11, 2020	14:23	14:23	20	20	153.9	161.89	167.63	155.24	165.04
				106	140.1	153.97	146.94	157.23	153.27
June 11, 2020	14:29	14:29	19	20	154.2	165.45	170.53	151.23	166.83
				106	142.6	157.39	160.84	152.3	156.61
June 11, 2020	14:57	14:58	59	20	158.6	166.5	177.96	161.01	173.27
				106	148.9	156.77	167.37	151.79	162.83
June 11, 2020	15:15	15:15	41	20	157.3	167.73	170.82	160.33	175.91
				106	145.7	158.43	161.33	136.31	172.58
June 11, 2020	15:22	15:24	84	20	147.1	161.25	167.56	149.45	167.62
				106	134.4	152.01	158.71	144.86	162.89
June 11, 2020	15:45	15:45	23	20	160	169.26	174.56	150.22	173.32
				106	147.1	159.18	161.22	143.39	160.96
June 11, 2020	15:47	15:48	35	20	148	158.73	162.08	150.08	162.66
				106	134.5	147.68	151.33	141.02	150.31
June 11, 2020	15:56	15:56	39	20	150.4	160.58	165.54	151.89	165.39
				106	140.4	151.41	156.26	136.12	155.2

Date	Record Start Time	Record Stop Time	Active Duration (sec)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)
June 11, 2020	15:58	15:59	30	20	149.2	160.63	166.38	154.71	164.16
				106	138.1	150.88	153.96	143.51	153.48
June 26, 2020	10:07	10:07	18	10	141.1	142.91	156.18	129.17	173.02
				106	132.0	131.53	145.82	120.82	162.97
June 26, 2020	10:20	10:22	75	10	146.8	151.66	155.53	129.99	170.61
				106	133.4	142.83	147.65	118.35	161.82
June 26, 2020	10:29	10:30	23	10	169.3	167.24	170.28	156.22	178.22
				106	157.8	159.88	162.01	144.51	167.56
June 26, 2020	10:41	10:44	192	10	173.7	170.28	173.02	142.82	189.37
				106	160.5	160.61	165.96	133.63	181.65
June 26, 2020	10:50	10:52	135	10	154.3	148.38	156.82	144.52	175.48
				106	140.4	140.41	145.30	132.15	162.14
June 26, 2020	11:03	11:03	39	10	145.7	145.95	154.25	134.27	164.49
				106	136.0	137.29	143.99	123.61	153.63
June 26, 2020	11:04	11:05	58	10	151.9	148.37	158.23	145.95	170.88
				106	140.7	140.62	150.69	134.86	158.31
June 26, 2020	11:08	11:09	51	10	152.8	154.27	161.48	149.50	175.22
				106	144.9	145.37	152.76	138.94	163.02
June 26, 2020	11:12	11:15	125	10	158.1	152.91	157.29	136.29	179.43
				106	143.9	144.50	149.37	125.81	166.90
June 26, 2020	11:21	11:24	213	10	150.0	149.73	156.96	135.62	178.56
				106	139.0	140.08	146.94	124.56	162.06
June 26, 2020	11:28	11:28	25	10	142.6	143.64	144.62	133.93	158.27
				106	130.2	132.11	135.25	122.56	145.99
June 26, 2020	11:29	11:30	32	10	151.9	149.57	156.21	148.23	164.89
				106	140.8	141.41	144.92	136.37	155.32

Date	Record Start Time	Record Stop Time	Active Duration (sec)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)
June 26, 2020	11:31	11:33	73	10	154.9	151.62	156.24	132.88	172.64
				106	142.1	142.56	145.86	119.76	161.80
July 7, 2020	10:45	10:46	57	20	142.2	158.06	164.25	149.68	165.02
				106	134.9	149.13	155.84	140.24	160.52
July 7, 2020	10:47	10:48	78	20	143.1	157.37	166.43	149.82	164.66
				106	135.5	149.63	158.47	142.92	159.87
July 7, 2020	10:50	10:51	35	20	147.4	159.67	164.78	155.04	168.53
				106	132.5	153.09	157.22	144.76	163.19
July 7, 2020	10:57	10:59	102	20	150.5	162.48	166.07	156.88	170.51
				106	140.0	153.52	157.26	146.74	161.37
July 7, 2020	11:09	11:10	85	20	147.8	160.27	167.28	151.90	167.50
				106	133.7	154.86	160.13	141.72	162.42
July 7, 2020	11:18	11:19	85	20	149.3	160.61	167.28	150.91	167.54
				106	136.5	151.86	159.46	140.25	161.97
July 7, 2020	11:22	11:25	224	20	157.4	164.82	172.32	153.38	176.98
				106	143.2	158.43	165.59	143.85	172.11

[1] All dB units except cSEL are presented as dB re 1 µPa. cSEL is presented as dB re 1 $\mu Pa^2 \cdot s$.

Table 12. Hydroacoustic Results from Vibratory Installation of 84-in Steel Casings

Date	Record Start Time	Record Stop Time	Active Duration (sec)	Hammer Type (No. Strikes)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)	RMS SPL 90% (dB)
July 7, 2020	11:26	11:30	227	Digging Bucket (N/A)	10	150.1	160.36	176.07	154.03	171.37	x
					106	143.2	152.43	164.82	145.91	162.79	x
July 7, 2020	11:30	11:32	85	Digging Bucket (N/A)	10	148.4	157.8	171.7	149.67	166.6	x
					106	141.1	148.62	160.89	140.28	158.81	x
July 7, 2020	11:33	11:36	170	Digging Bucket (N/A)	10	154.7	155.88	184.39	141.25	171.52	x
					106	148.5	150.62	173.61	132.48	163.76	x
July 7, 2020	11:38	11:40	100	Digging Bucket (N/A)	10	153.1	152.07	175.57	141.79	162.68	x
					106	146.3	145.11	163.45	131.82	153.61	x
July 7, 2020	11:42	11:43	103	Digging Bucket (N/A)	10	163.8	164.49	179.52	142.48	173.49	x
					106	156.3	157.82	167.05	130.16	166.73	x
July 7, 2020	11:50	11:53	177	Digging Bucket (N/A)	10	159.4	160.8	178.56	142.51	173.62	x
					106	153.1	154.83	169.32	133.86	164.74	x
July 7, 2020	11:55	11:56	95	Digging Bucket (N/A)	10	141.2	144.88	176.76	141.12	159.81	x
					106	135.8	137.52	165.49	130.48	140.37	x
July 7, 2020	11:58	12:01	138	Spinner (40)	10	161.1	156.75	182.55	141.4	172.34	145.62
					106	155.8	150.03	172.59	132.76	165.28	139.75
July 7, 2020	12:02	12:03	31	Digging Bucket (N/A)	10	153.4	159.05	183.14	142.53	167.66	x
					106	146.8	151.73	171.65	133.24	158.89	x
July 7, 2020	12:03	12:05	124	Digging Bucket (N/A)	10	149.5	164.45	185.52	142.65	167.66	x
					106	142.9	156.28	172.19	133.52	159.17	x
July 7, 2020	12:06	12:06	6	Digging Bucket (N/A)	10	128	143.16	174.32	141.6	150.03	x
					106	121.5	137.81	162.82	132.54	141.94	x
July 7, 2020	12:08	12:09	83	Digging Bucket (N/A)	10	148.9	162.14	172.38	155.67	169.72	x
					106	142.2	154.2	159.88	145.39	160.76	x

Date	Record Start Time	Record Stop Time	Active Duration (sec)	Hammer Type (No. Strikes)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)	RMS SPL 90% (dB)
July 7, 2020	12:11	12:12	63	Digging Bucket (N/A)	10	134.8	143.13	157.18	140.6	151.22	x
					106	126.7	136.02	146.46	130.24	144.73	x
July 7, 2020	14:05	14:08	200	Digging Bucket (N/A)	10	144.8	153.24	175.62	147.24	166.02	x
					106	138.4	144.79	164.86	136.41	155.88	x
July 7, 2020	14:16	14:30	855	Digging Bucket (N/A)	10	145.5	154.83	188.11	145.82	175.98	x
					106	139.8	143.49	177.28	135.3	165.44	x
July 8, 2020	9:00	9:15	916	Spinner (92)	10	153.7	156.37	175.76	138.78	175.27	140.00
					106	147.6	150.49	166.24	129.51	168.19	134.21
July 8, 2020	9:17	9:47	1810	Digging Bucket (N/A)	10	153.4	161.65	175.93	138	180.75	x
					106	147.3	153.75	166.46	130.18	172.24	x
July 8, 2020	9:53	9:59	186	Spinner (42)	10	149.6	156.83	175.92	135.19	168.21	142.29
					106	143.4	150.28	165.14	126.48	160.92	135.02
July 8, 2020	10:15	10:27	729	Auger (88)	10	155.5	159.24	179.58	133.35	176.48	144.82
					106	148.9	152.95	160.42	125.76	167.51	137.91
August 3, 2020	13:06	13:09	221	Auger (14)	10	141.2	153.94	175.77	137.48	169.16	134.95
					74	134.8	142.11	163.43	133.07	159.43	127.61
August 3, 2020	14:00	14:01	126	Auger (27)	10	148.7	150.53	176.82	142.34	165.48	148.98
					74	142.2	144.07	164.26	137.19	157.19	132.77
August 3, 2020	14:37	14:43	329	Auger (11)	10	141.9	149.89	172.19	137.39	166.20	148.48
					74	137.1	143.10	162.99	131.30	157.66	131.10
August 3, 2020	14:56	14:59	193	Digging Bucket (N/A)	10	147.1	157.25	175.77	137.48	168.13	x
					74	139.9	151.63	159.24	135.79	162.81	x
August 3, 2020	15:04	15:27	1,338	Digging Bucket (N/A)	10	155.8	160.74	192.76	135.54	188.90	x
					74	149.2	154.31	178.38	130.24	176.98	x

Date	Record Start Time	Record Stop Time	Active Duration (sec)	Hammer Type (No. Strikes)	Distance (m)	Mean (dB)[1]	Median (dB)	Maximum (dB)	Minimum (dB)	cSEL (dB)	RMS SPL 90% (dB)
August 5, 2020	11:54	12:07	787	Auger (N/A)	10	155.8	166.33	181.54	133.85	186.84	x
					75	147.4	160.16	170.56	131.50	178.45	x
August 5, 2020	12:08	12:28	1,183	Auger (16)	10	157.1	154.92	182.64	135.94	183.26	141.86
					75	150.5	146.17	166.04	131.21	175.75	128.58
August 5, 2020	12:31	12:33	84	Auger (23)	10	136.4	142.64	174.82	129.38	133.04	140.17
					75	129.8	135.30	156.98	125.50	123.82	126.41
August 5, 2020	12:34	13:00	1,561	Auger (46)	10	143.5	157.86	189.01	132.89	181.82	142.72
					75	136.7	148.47	177.17	128.20	172.39	127.65
August 13, 2020	8:44	9:01	1,015	Auger (33)	10	146.4	171.26	184.47	148.22	188.76	149.74
					84	141.6	153.63	167.38	137.49	173.31	132.89
August 13, 2020	9:04	9:58	3,268	Auger (1,453)	10	145.1	176.23	191.72	150.23	192.93	154.30
					84	138.2	154.71	167.76	129.53	171.43	134.16
August 13, 2020	10:12	10:35	1,371	Auger (121)	10	146.2	172.78	189.73	149.48	190.68	151.95
					84	140.6	152.49	165.11	131.67	171.01	133.02

[1] All dB units except cSEL are presented as dB re 1 µPa. cSEL is presented as dB re 1 $\mu Pa^2 \cdot s$.

Table 13. Hydroacoustic Results from Vibratory Installation of 16-in Pipe Piles[1]

Date	Time Start	Station Name	Sensor	Duration (sec)	One second Peak (dB 1µPa)		One Second RMS (dB 1µPa)		cSEL (dB re 1 µPa2·s)
					Mean	Range	Mean	Range	
Dec. 4, 2020	7:15	Yellow	TC-4033	419	168.3	137.1-186.4	145.2	121.1-158.1	171.5
Dec. 4, 2020	7:15	Yellow	PCB	419	99.2	95.6-104.8	82.5	79.8-87.4	108.8
Dec. 4, 2020	7:15	White	TC-4033	419	147.6	138.2-158.2	132.6	121.2-146.6	158.8
Dec. 4, 2020	7:31	Yellow	TC-4033	239	178.1	138.8-193.9	151.7	122.4-162.7	175.5
Dec. 4, 2020	7:31	Yellow	PCB	239	117	95.0-140.6	104.5	78.6-128.2	128.3
Dec. 4, 2020	7:31	White	TC-4033	239	155.7	137.5-169.7	135	121.2-143.8	158.8
Dec. 4, 2020	7:44	Yellow	TC-4033	1439	161.1	137.9-177.7	138.7	120.1-152.4	170.3
Dec. 4, 2020	7:44	Yellow	PCB	1439	100.4	95.1-107.9	83.7	78.7-89.5	115.3
Dec. 4, 2020	7:44	White	TC-4033	1439	146.9	137.4-156.8	129.9	121.6-139.7	161.4
Dec. 4, 2020	8:12	Yellow	TC-4033	239	165.6	138.9-178.3	141.2	123.5-153.3	165
Dec. 4, 2020	8:12	Yellow	PCB	239	100.4	95.4-105.6	83.7	78.8-88.0	107.5
Dec. 4, 2020	8:12	White	TC-4033	239	147.2	139.9-156.8	129.5	122.6-139.1	153.3
Dec. 4, 2020	8:24	Yellow	TC-4033	1859	161.3	138.0-179.8	139.4	121.9-152.1	172.1
Dec. 4, 2020	8:24	Yellow	PCB	1859	101.8	94.7-110.4	84.7	78.4-92.5	117.4

Dec. 4, 2020	8:24	White	TC-4033	1859	147.3	138.0-156.9	130.2	121.3-138.8	162.9s
Dec. 4, 2020	9:06	Yellow	TC-4033	1019	161.7	139.0-175.3	140.9	122.7-149.4	171
Dec. 4, 2020	9:06	Yellow	PCB	1019	102.6	95.3-108.2	85.2	80.1-90.1	115.3
Dec. 4, 2020	9:06	White	TC-4033	1019	146.6	139.2-152.7	130.5	121.5-139.1	160.6
Dec. 4, 2020	9:47	Yellow	TC-4033	239	163.6	139.3-173.8	143.5	123.1-152.4	167.3
Dec. 4, 2020	9:47	Yellow	PCB	239	103.8	95.8-110.5	86.4	80.1-92.4	110.2
Dec. 4, 2020	9:47	White	TC-4033	239	146.9	138.8-154.5	130.5	122.2-140.2	154.3
Dec. 4, 2020	9:54	Yellow	TC-4033	659	161.6	139.6-170.0	141.6	123.2-150.6	169.8
Dec. 4, 2020	9:54	Yellow	PCB	659	103.7	91.2-111.1	86.3	76.3-92.9	114.5
Dec. 4, 2020	9:54	White	TC-4033	659	149.2	139.7-157.3	131.4	123.8-139.0	159.6

[1] Recordings made by JESCO.

6. CONCLUSIONS

There was no Level A take during the Project's current reporting timeframe. Active PSO monitoring reduced the likelihood of Level A injury takes without jeopardizing construction activities. Total observed Level B take across observed marine mammal species (n=185) was lower than what was reported during construction activities (n=263) for the Berth 11 Waterfront Improvement Project at the Shipyard from January 2018 to January 2019 (NAVFAC 2019). This difference may be due, in part, to the fact that the Berth 11 Project included all observations made during the 30 minutes pre and post-construction as additional takes.

On a per species basis, the combined observed and extrapolated Level B take was well below the amount authorized under the IHA (see Table 13). As previously noted, harbor seals made up the majority of observations as well as takes. In fact, three marine mammal species (harbor porpoise, harp seal, and hooded seal) with potential to occur in the area during the reporting period were seen infrequently (or not at all) and were not subject to any take. Based on the species' presence and estimated densities in the region as described in the Project's IHA application, the construction activities occurring during this reporting period did not result in levels of take that would be expected to have a significant impact on local populations or require reinitiation with NOAA Fisheries.

Table 14. Summary of Marine Mammal Take During Reporting Period

Species[1]	Observed "Take"	Extrapolated "Take"	IHA Authorized "Take"	Percent of Authorized "Take"[2]
Harbor porpoise	Level A: 0 Level B: 0	Level A: 0 Level B: 0	Level A: 5 Level B: 12	Level A: 0% Level B: 0%
Harbor seal	Level A: 0 Level B: 176	Level A: 0 Level B: 76	Level A: 284 Level B: 776	Level A: 0.35% Level B: 32.5%
Gray seal	Level A: 0 Level B: 8	Level A: 0 Level B: 4	Level A: 25 Level B: 35	Level A: 0% Level B: 31.4%
Hooded seal	Level A: 0 Level B: 0	Level A: 0 Level B: 0	Level A: 0 Level B: 5	Level A: 0% Level B: 0%
Harp seal	Level A: 0 Level B: 0	Level A: 0 Level B: 0	Level A: 0 Level B: 5	Level A: 0% Level B: 0%

[1] In addition to the species presented, there was one Level B "take" to an unknown seal species on September 29, 2020.

[2] Percent of authorized take was determined by combining observed and extrapolated take.

7. REFERENCES

Cianbro Corporation. 2020. Submittal 0052A.3 – Marine Mammal Monitoring Plan. Dry Dock No. 1 Super Flood Basin. March 27, 2020. 39 pp.

NAVFAC. 2019. 2018 Monitoring Report for Berth 11 Waterfront Improvement Project at Portsmouth Naval Shipyard. Kittery, Maine. January 8, 2018 – January 7, 2019. 19 pp.

Appendix A
Hydroacoustic Zones of Influence (Figures from 2019 IHA Application)

Appendix B
Example Paper Datasheet

Appendix C
Final Hydroacoustic Monitoring Plan

Appendix D
Final Hydroacoustic Monitoring Reports

Appendix E
JESCO Hydroacoustic Monitoring Report for 16in Pipe Piles