

**MARINE PROTECTED SPECIES FINAL MONITORING REPORT
FOR THE NAVY'S PIER 302 REPLACEMENT PROJECT
AT
NAVAL BASE POINT LOMA, CALIFORNIA**



Submitted to:

**Office of Protected Resources,
National Oceanic and Atmospheric Administration's
National Marine Fisheries Service**

Prepared by:

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For:

Naval Base Point Loma



FINAL
APRIL 2025

Prepared for:



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Under Contract: N6247321D1812, Delivery Order: N6247324F4087

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**Suggested Citation: Naval Facilities Engineering Systems Command Southwest. 2025.
Marine Protected Species Final Monitoring Report for the Navy's Pier 302 Replacement
Project at Naval Base Point Loma, California.**

Table of Contents

1.0	Introduction.....	1
1.1	Project Description.....	2
1.1.1	Project Location.....	2
1.1.2	Project Activities.....	4
2.0	Monitoring Methods	5
2.1	Marine Species Monitoring.....	5
2.1.1	Level A and Level B Harassment Monitoring and Shutdown Zones	5
2.1.2	Monitoring Periods	6
2.1.3	Monitoring Zones and PSO Locations.....	6
2.1.4	Shutdown and Delay Procedures	9
2.1.5	Project Staffing	9
2.1.5.1	PSO Training	9
2.1.5.2	PSO Approval	10
2.1.6	Shutdown and Delay Procedures	10
3.0	Monitoring Results.....	11
3.1	Monitoring Effort.....	11
3.2	Marine Species Monitoring.....	11
3.2.1	Summary of Numbers of Protected Species Observed and Monitoring Effort During IHA #1 and IHA #2.....	13
3.2.1.1	IHA #1 Observations	14
3.2.1.2	IHA #2 Observations	14
3.2.2	California Sea Lion	14
3.2.3	Coastal Bottlenose Dolphin	18
3.2.4	Pacific Harbor Seal	18
3.2.5	Environmental Data	19
3.2.6	Distance and Bearing	20
3.2.7	Delays and Shutdowns During Monitoring Efforts	21
3.3	Summary of Observed Level B Take (11 March to 19 December 2024).....	22
4.0	Discussion.....	25
5.0	References.....	27
	Appendix A: Protected Species Observer Animal Data (Part 1)	A-1
	Appendix B: Protected Species Observer Animal Data (Part 2)	B-1
	Appendix C: Distances and Bearings to Animals Observed During Active Construction.....	C-1
	Appendix D: Duration of Vibratory Hammer used to Install 6-inch Round Steel Piles by Pile Number	D-1
	Appendix E: Start and End Times	E-1

Appendix F: Daily Activities Monitored	F-1
Appendix G: Daily Weather Conditions During Monitoring	G-1
Appendix H: Time in Level B Harassment Zone	H-1

List of Figures

Figure 1-1. Regional Location of the Fuel Pier Replacement Project.	3
Figure 2-1. PSO/Command Positions and Monitored ZOIs.	8
Figure 3-1. California Sea Lion Observations Recorded During IHA #1.	15
Figure 3-2. Pacific Harbor Seal and Coastal Bottlenose Dolphin Observations Recorded During IHA #1.	16
Figure 3-3. California Sea Lion Observations Recorded During IHA #2	17

List of Tables

Table 1-1. IHAs issued for the Project, and Associated Phases of In-Water Work.	1
Table 1-2. Authorized and Observed Amount of Taking by Level A/B Harassment, by Species During IHA #1.	2
Table 1-3. Authorized and Observed Amount of Taking by Level A/B Harassment, by Species During IHA #2.	2
Table 1-4. Activity Summary for Proposed Pile Demolition and Driving Activities.	4
Table 1-5. Activity Summary for Actual Pile Demolition and Driving Activities.	4
Table 2-1. Calculated Distance to Underwater Acoustic Thresholds and ZOIs within the Thresholds from Pile Driving and Removal.	6
Table 2-2. Monitored Distances to Underwater Level A Thresholds by Marine Mammal Hearing Group.	7
Table 2-3. Project Staff.	9
Table 3-1. Pier 302 Construction Activities by Pile Type.	11
Table 3-2. Summarized PSO Observation Time by Month and Activity.	12
Table 3-3. Protected Species Observed and Monitoring Effort During IHA #1 and IHA #2.	13
Table 3-4. Average Observed Animals Per Day Across IHA #1 and #2.	13
Table 3-5. Resights by Species.	13
Table 3-6. Species Observed by Construction Activity within Monitoring Zone, includes resights.	14
Table 3-7. California Sea Lion Observations (not including resights).	14
Table 3-8. Age Class of California Sea Lions Observed by IHA Period.	14
Table 3-9. California Sea Lion Age and Sex Classes ¹	18
Table 3-10. Observations of California Sea Lion Primary Behaviors.	18
Table 3-11. Coastal Bottlenose Dolphin Observations (not including resights).	18
Table 3-12. Pacific Harbor Seal Observations (not including resights).	19
Table 3-13. Pacific Harbor Seal Age Classes ¹	19

Table 3-14. Individuals Observed by Tidal Cycle.....	19
Table 3-15. Individuals Observed by Beaufort Sea State.....	19
Table 3-16. Individuals Observed by Visibility.....	20
Table 3-17. Individuals Observed by Sky Cover.....	20
Table 3-18. Sky Cover at Beginning of Pre-Con and End of Post-Con.	20
Table 3-19. Visibility at Beginning of Pre-Con and End of Post-Con.	20
Table 3-20. Delays and Shutdowns in Project Activities Due to Protected Species Observed Within the Shutdown Zone at Pier 302.	21
Table 3-21. Summary of Total Authorized and Observed Level B Take in IHA #1.....	22
Table 3-22. Number of Takes by Construction Activity	23

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1.0 Introduction

This final monitoring report summarizes the protected species monitoring efforts that the United States (U.S.) Navy (Navy) was required to undertake during the construction of the Pier 302 Replacement Project (Project) at the Naval Information Warfare Center Pacific Bayside Complex on Naval Base Point Loma (NBPL), California (Figure 1-1). Marine mammal monitoring efforts were conducted in accordance with two Marine Mammal Protection Act (MMPA) Incidental Harassment Authorizations (IHAs) issued by the National Oceanic and Atmospheric Administration's (NOAA) National Marine Fisheries Service (NMFS).

The initial IHA application (Merkel & Associates 2022), hereinafter referred to as IHA #1) covered the incidental take of the following species: California sea lion (*Zalophus californianus*); Pacific harbor seal (*Phoca vitulina*); northern elephant seal (*Mirounga angustirostris*); coastal bottlenose dolphin (*Tursiops truncatus*); common dolphin including long- and short-beaked (*Delphinus capensis* and *D. delphis*); and Pacific white-sided dolphin (*Lagenorhynchus obliquidens*). IHA #1 authorized all applicable working days from 01 October 2023 through 30 September 2024. As pile driving work at Pier 302 was not completed by 30 September 2024 the Navy submitted an interim report and an IHA reauthorization request (Naval Facilities Engineering Systems Command Southwest [NAVFAC SW] 2024) 60 days before the end of the IHA #1 period. This request was granted with issuance of the second IHA (hereinafter referred to as IHA #2) for the period beginning 21 October 2024 through 30 September 2025.

This final report summarizes results from both the protected species monitoring efforts that occurred for 11 days between 01-20 March 2024, during IHA #1, and for two days between 18-19 December 2024. During this timeframe, Project activities covered under the IHA #1 and #2 included the demolition and installation of structural piles for the new Pier 302 (Table 1-1).

Table 1-1. IHAs issued for the Project, and Associated Phases of In-Water Work.

IHAs	In-Water Activities Monitored	Start	End	Method(s)
Demolition Activities				
IHA #1 (01 Oct. 2023 – 30 Sep. 2024)	18-inch Octagonal Concrete	3/26/2024	3/29/2024	Dead-pull only
	18-inch Round Steel	2/28/2024	2/28/2024	Dead-pull only
Installation Activities				
IHA #1 (01 Oct. 2023 – 30 Sep. 2024)	24-inch Octagonal Concrete structural piles	3/1/2024	3/20/2024	IPD
	14-inch Square Concrete	3/20/2024	3/20/2024	IPD
IHA #2 (21 Oct. 2024 – 30 Sep. 2025)	6-inch Round Steel guide piles	12/18/2024	12/19/2024	VPD

Abbreviations: IHA = Incidental Harassment Authorization; IPD = impact pile driving; VPD = vibratory pile driving.

Incidental take in the form of Level B harassment was expected as a result of the Project. Table 1-2 and Table 1-3 presents the total authorized take for species covered under IHA #1 and IHA #2 respectively, as well as the documented take for the Project. Level B take of marine mammals was determined by assessing whether or not an animal was present within the Level B ZOI by pile during active underwater sound-producing activities covered under IHA for the project.

Table 1-2. Authorized and Observed Amount of Taking by Level A/B Harassment, by Species During IHA #1.

Species	Authorized Take 01 Oct. 2023 - 30 Sep. 2024		Documented Take 1 Mar. 2024 – 20 Mar. 2024		
	Level A	Level B	Level A	Level B	Percent of Authorized
California sea lion (<i>Zalophus californianus</i>)	0	480	0	0	0.00%
Pacific harbor seal (<i>Phoca vitulina</i>)	0	32	0	2	6.25%
Northern elephant seal (<i>Mirounga angustirostris</i>)	0	32	0	0	0.00%
Coastal bottlenose dolphin (<i>Tursiops truncatus</i>)	0	288	0	0	0.00%
Common dolphin including long- and short-beaked (<i>Delphinus capensis</i> and <i>D. delphis</i>)	0	32	0	0	0.00%
Pacific white-sided dolphin (<i>Lagenorhynchus obliquidens</i>)	0	7	0	0	0.00%
Total	0	871	0	2	0.23%

Table 1-3. Authorized and Observed Amount of Taking by Level A/B Harassment, by Species During IHA #2.

Species	Authorized Take 21 Oct. 2024 - 30 Sep. 2025		Documented Take 18 Dec. 2024 – 19 Dec. 2024		
	Level A	Level B	Level A	Level B	Percent of Authorized
California sea lion (<i>Zalophus californianus</i>)	0	30	0	0	0.00%
Pacific harbor seal (<i>Phoca vitulina</i>)	0	2	0	0	0.00%
Northern elephant seal (<i>Mirounga angustirostris</i>)	0	2	0	0	0.00%
Coastal bottlenose dolphin (<i>Tursiops truncatus</i>)	0	18	0	0	0.00%
Common dolphin including long- and short-beaked (<i>Delphinus capensis</i> and <i>D. delphis</i>)	0	2	0	0	0.00%
Pacific white-sided dolphin (<i>Lagenorhynchus obliquidens</i>)	0	1	0	0	0.00%
Total	0	55	0	0	0.00%

Protected Species Observers (PSOs) observed only three species covered under the IHA: California sea lions, Pacific harbor seals, and coastal bottlenose dolphins. No other species covered under the current IHA were observed. Furthermore, no other MMPA-covered species were observed, nor were any Endangered Species Act (ESA)-covered species, such as green sea turtles (*Chelonia mydas*), observed. As of 19 December 2024, all in-water sound-producing demolition of the old Pier 302 and pile installation for the new Pier 302 was completed.

1.1 Project Description

1.1.1 Project Location

The Project includes replacement of Pier 302 at NBPL in San Diego Bay (Figure 1-1). Constructed by the Navy in 1937, Pier 302 was partially modified in 1987. During a 2018 engineering assessment (Collins 2018), Pier 302 was rated as having “Poor” portions of the steel beams making up the superstructure, as well as several corroded concrete piles and deteriorated timber decking. To maintain safe and secure access to the mammal pens and small vessels utilized by the Navy marine mammal program, the assessment recommended replacement of the deck and superstructure.

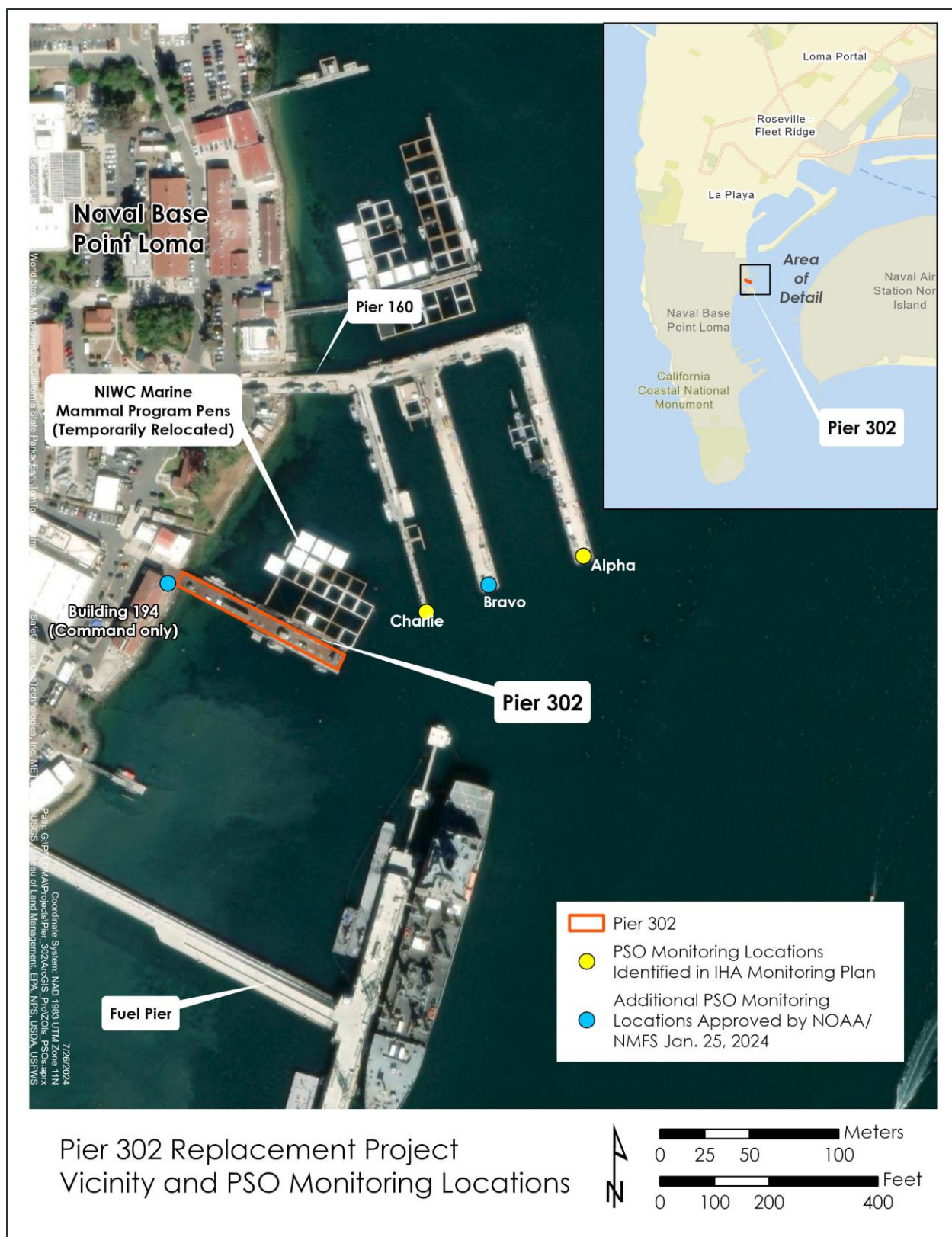


Figure 1-1. Regional Location of the Fuel Pier Replacement Project.

1.1.2 Project Activities

The demolition and construction activities at Pier 302 are summarized in Table 1-4 and Table 1-5. The proposed methods listed in Table 1-4 outline the activities covered under the IHA for Pier 302 (Merkel & Associates 2022). For the demolition phase, multiple alternative methods were approved under the IHA. However, the contractor ultimately removed all piles using the dead-pull method (Table 1-5). Since this approach does not generate underwater sound that would result in Level A or Level B “take,” the remainder of this report focuses on the construction activities that involved impact hammering for 24-inch octagonal concrete piles and 14-inch square piles (Table 1-5), and the vibratory hammering to install the final set of seventeen 6-inch round steel piles during Winter 2024.

Table 1-4. Activity Summary for Proposed Pile Demolition and Driving Activities.

Method	Pile Size and Type	Number of Piles	Average Piles/Day	Total Estimated Days
Pile Removal Activities				
Vibratory Extraction	18-inch Octagonal Concrete	22	5	5
Vibratory Extraction	18-inch Round Steel	3	1	3
Dead-Pull	14-inch Round Timber	up to 10	1	10
Pile Installation Activities				
Impact Hammer	24-inch Octagonal Concrete	30	4	8
	14-inch Square Concrete	2	1	2
Vibratory Hammer	6-inch Round Steel	17	5	4
Total In-Water Workdays				32

Note: High-pressure water jetting was to be used to assist pile installation/extraction and a hydraulic cutter was to be used to clip piles at the mudline.

Table 1-5. Activity Summary for Actual Pile Demolition and Driving Activities.

Method	Pile Size and Type	Number of Piles	Average Piles/Day	Total Days
Pile Removal Activities				
Dead-pull ¹	18-inch Octagonal Concrete	22	5	6
	18-inch Round Steel	3	1	
	14-inch Round Timber	10	2	
Pile Installation Activities				
Impact Hammer	24-inch Octagonal Concrete	30	2.7	11
	14-inch Square Concrete	2	2	
Vibratory Hammer	6-inch Round Steel	5	2.5	2
Silent Pile Pressing	6-inch Round Steel	12	10.5	

Note: ¹All pile demolition employed dead-pulls and occurred over the course of six non-consecutive days starting on 28 February 2024 and ending on 29 March 2024. Dead-pulling of piles did not co-occur on days when pile installation activities took place.

2.0 Monitoring Methods

The IHA Marine Species Monitoring Plan (Merkel & Associates 2022) provided an in-depth description of the various monitoring efforts for marine species, including timeframes, data acquisition requirements, and protocols for marine species monitoring. Objectives associated with marine species monitoring during the Project included the following:

- 1) To minimize the potential for Level A (injury) harassment of marine mammals by implementing a shutdown of activities when a marine mammal is observed within any Project designated buffered Level A shutdown zone for Project-related in-water activity. With this mitigation measure in place, the proposed activities are not expected to result in any Level A harassment; therefore, no Level A take is being requested for this project.
- 2) To enumerate the numbers and species of marine mammals that occur within established Level A and Level B (behavioral disturbance) ZOIs, and to document any differences in species, numbers, or behavioral effects associated with Project-related in-water activities.

2.1 Marine Species Monitoring

As per the IHA Monitoring Plan (Merkel & Associates 2022), PSOs monitored the buffered shutdown zone and Zones of Influence (ZOIs) for each relevant activity during all days of in-water construction that had the potential to result in either Level A or Level B harassment for the following species:

- California sea lion;
- Pacific harbor seal;
- Northern elephant seal;
- Coastal bottlenose dolphin;
- Common dolphin including long- and short-beaked; and
- Pacific white-sided dolphin.

In addition, PSOs monitored for other marine species for which authorization had not been granted. In these cases, if the animal was observed approaching or within the monitoring zone (Table 2-1), pile driving and removal activities would be shut down immediately using delay and shutdown procedures. Similarly, if the authorized amount of take species identified in the IHA had been met, PSOs would follow the same delay and shutdown procedures for this species until a revised IHA was in place.

2.1.1 Level A and Level B Harassment Monitoring and Shutdown Zones

The IHA application for the Pier 302 Replacement Project (Merkel and Associates 2022) presents distances to Level A and Level B acoustic harassment thresholds associated with the pile driving and removal activities at Pier 302. The calculated distances to Level A and B thresholds are presented in Table 2-1, and the monitored Level A and Level B ZOIs are presented in Table 2-2 and shown on Figure 2-1. Note that the construction contractor determined that all pile demolition/removal activities would be performed with the dead-pull method, so while the Level A and Level B zones for vibratory extraction are presented here for reference, IHA-compliant monitoring for the activities during the demolition phase was unnecessary. Alternatively, the Navy used PSOs to simply monitor the 20-meter (m; 66-foot [ft]) shutdown ZOI to prohibit physical interaction with protected species.

Table 2-1. Calculated Distance to Underwater Acoustic Thresholds and ZOIs within the Thresholds from Pile Driving and Removal.

Method	Pile Type and Size	Maximum RMS SPL (dB re 1 μPa)1	Duration (hours/ day)	Projected Distances to Level A Thresholds (m [ft])			Projected Distances to Level B Thresholds (m [ft])
				MF	PW	OW	
Pile Removal Activity							
Vibratory Extraction	18-inch Octagonal Concrete	162	1.25	0.8 (2.6)	5.6 (18.4)	0.4 (1.3)	1,445 (4,742)
	18-inch Round Steel	156	0.25	0.1 (1.6)	0.8 (11.5)	0.1 (0.7)	575 (1,888)
Pile Installation Activity							
Impact Pile Driving	24-inch Octagonal Concrete	176	1.33	4.1 (13.4)	62.4 (204.7)	4.5 (14.8)	117 (383)
	14-inch Square Concrete	166	0.25	0.2 (3.3)	2.5 (8.2)	0.2 (3.6)	25 (85)
Vibratory Hammer	6-inch Round Steel	155	0.07	0.0 (0.0)	0.3 (1.0)	0.0 (0.0)	494 (1,619)

Abbreviations: dB re 1 μ Pa = decibels referenced to a pressure of 1 microPascal, m = meters, ft = feet, MF = mid-frequency cetaceans, PW = phocid pinnipeds, OW = otariid pinnipeds

2.1.2 Monitoring Periods

PSOs conducted pre-activity monitoring for at least 30 minutes prior to the commencement of in-water construction activities (hereinafter referred to as “Pre-Con”). PSOs conducted monitoring during both active pile extraction and pile installation (hereinafter referred to as “During”), as well as in-between active construction monitoring (hereinafter referred to as “Pre-/Post-”). Once construction was complete for the day, PSOs conducted post-activity monitoring for a total of 30 minutes (hereinafter referred to as “Post-Con”).

2.1.3 Monitoring Zones and PSO Locations

The ZOIs for impact and vibratory pile driving were determined using NMFS Technical Guidance (NMFS 2018), including the NMFS User Spreadsheet and practical spreading loss model (NMFS 2020). Figure 2-1 presents the ZOIs and the PSO locations used for the Project.

The Pier 302 monitoring plan (Merkel & Associates 2022) initially suggested potential PSO locations at the end of the Alpha and Charlie fingers of Pier 160. Prior to the initiation of IHA-covered activities at Pier 302, the Navy received permission from NOAA to revise these PSO locations to enhance visibility of the shutdown zone and ZOIs. This permission was granted through emails exchanged on 24-25 January 2024, between Todd McConchie (Naval Facilities Engineering Systems Command Northwest) and Jessica Taylor (Office of Protected Resources, NMFS). The PSO locations shown in Figure 2-1 differ from those in the original monitoring plan in the following ways:

- The Command PSO was originally positioned along the Charlie finger of Pier 160. Prior to monitoring for IHA-covered activities, it became clear to PSOs monitoring under ESA protocols that this position was inadequate to properly observe construction activities since the barge that supported the retrofit of Pier 302 would obstruct the view of the shutdown zone. As an alternative, the Navy proposed the use of the second-floor balcony of Building 194 just to the west and south of Pier 302. This would provide an elevated and closer view of the Pier and shutdown zone.
- Similarly, depending on the ZOIs associated with the various piles, it made sense for the PSO position at the Pier 160 Alpha position to have the option to move to the Bravo position as needed.

Table 2-2. Monitored Distances to Underwater Level A Thresholds by Marine Mammal Hearing Group.

Method	Pile Type and Size	Estimated Blow Count ¹	Estimated Duration per Pile (mm:ss) ¹	Peak Sound Pressure (dB re 1 μPa) ^{2,3}	SEL (dB re 1 μPa 2 sec) ^{2,3}	Mean Maximum RMS SPL (dB re 1 μPa) ^{2,3}	Monitored Level A ZOIs (m [ft])			Monitored Level B ZOIs (m [ft]) ⁴
							MF	PW	OW	
Pile Demolition Activities ⁵										
Vibratory Extraction	18-inch Octagonal Concrete	N/A	15:00	N/A	N/A	162	20 (66)	20 (66)	20 (66)	1,445 (4,742)
	18-inch Steel Pipe	N/A	15:00	N/A	N/A	156	20 (66)	20 (66)	20 (66)	575 (1,888)
Pile Installation Activities										
Impact Hammer	24-inch Octagonal Concrete	500	N/A	188	166	176	20 (66)	70 (230)	20 (66)	117 (383)
	14-inch Square Concrete	250	N/A	183	154	166	20 (66)	20 (66)	20 (66)	25 (85)
Vibratory Hammer	6-inch Round Steel	N/A	1:00	171	155	155	20 (66)	20 (66)	20 (66)	494 (1,619)

Notes: ¹Estimated durations and blow counts as provided by the construction contractor. ²References for source level data by pile type and activity are in Table 6-4 and Table 6-5 of the IHA for this project (Merkel & Associates 2022). ³As measured, or calculated, at 10 m (33 ft). ⁴The Level B ZOIs for continuous pile demolition and installation activities are based on the distance for noise to decay to ambient levels (129.6 dB re 1 µPa), while 160 dB was used for impulsive sound. Assumes Practical Spreading Loss. ⁵All demolition activities were completed using the dead-pull method and not monitored using IHA methodologies.

Note: Bolded values are greater than the buffered shutdown zone of 20 m (66 ft) and will be monitored as shutdown zones to ensure no Level A takes of harbor seals or northern elephant seals occur during impact pile driving of 24-inch octagonal concrete piles.

Abbreviations: RMS = root mean square, dB re 1 µPa = decibels referenced to a pressure of 1 microPascal, m = meters, ft = feet, MF = mid-frequency cetaceans, PW = phocid pinnipeds, OW = otariid pinnipeds, ZOI = Zone of Influence

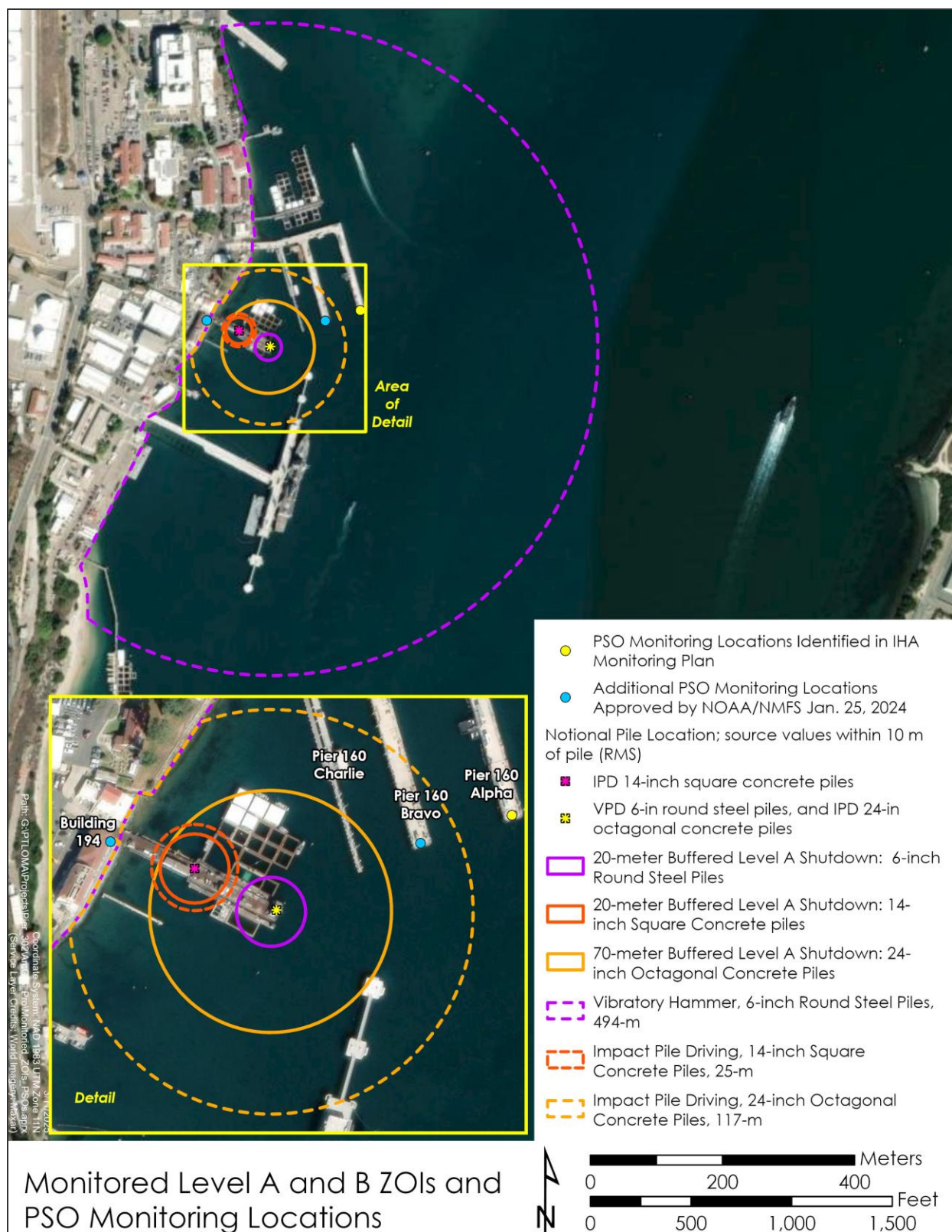


Figure 2-1. PSO/Command Positions and Monitored ZOIs.

2.1.4 Shutdown and Delay Procedures

If a marine mammal entered the buffered shutdown zone during pile driving operations, pile installation was to be either: 1) halted if installation was in progress, or 2) delayed if installation was not currently active, but imminent. A shutdown or delay was in place until either the animal had voluntarily left and been visually confirmed beyond the shutdown zone, or 15 minutes had passed without a re-detection of the animal(s) from the last observation time.

If a marine mammal species not covered in the IHA entered the Level B harassment zone, all pile installation or demolition activities were to be halted until the animal(s) had been either observed to have left the applicable Level B ZOI or was not observed for at least one hour.

2.1.5 Project Staffing

Staff included the Project manager, on-site field supervisor, database administrator, and PSOs (Table 2-3). PSOs were experienced in marine species identification and were approved by the Navy as well as NMFS. Furthermore, prior to beginning their observations, all PSOs received training on identifying the marine species likely to be present in San Diego Bay, the specifics of the ZOIs, and the Project activities likely to occur.

Table 2-3. Project Staff.

Company/Organization	Name	Role(s)
Tierra Data, Inc.	Karen Green	PM
	Robert Wolf	APM, DA, CC
	Daniel Conley	PSO, Primary FS, CC
	Jim Kellogg	PSO, FS
	Cai Leao	PSO, FS
	Robert Hanna	PSO
	Beth Sabiston	PSO, FS
	Scott Snover	PSO

Abbreviations: PM = Project Manager; APM = Assistant Project Manager; PSO = Protected Species Observer; FS = Field Supervisor; DA = Database Administrator; CC = Company Contact.

2.1.5.1 PSO Training

All PSOs received consistent training relative to marine mammals covered under the IHA. Each observer was informed of Project details and their roles and responsibilities as an observer, including regulatory requirements (i.e., MMPA/ESA) and professional behavior. All observers were trained to be consistent, diligent, and free of distractions for the entirety of the monitoring period. Additionally, observers were instructed on proper methods for locating local marine species, sighting cues for the various species anticipated to occur in the Project area, and how to estimate distances between their PSO location and observed species. PSOs were given training on how to use the smartphone-based data collection application FieldMaps (ESRI Corp).

The Navy also provided in-person training to all PSOs and the construction contractor prior to the initiation of in-water work. In addition to this training, all contracted PSOs were required by the Navy to watch an on-line Navy Marine Species Awareness Training video (Navy 2015).

2.1.5.2 PSO Approval

PSOs were required to have NMFS approval based on NMFS's review of their educational background as well as former training and/or work as a PSO. Individuals that met NMFS standards were unconditionally approved to work as PSOs on the Project. Potential monitors that may have had the educational background but did not have previous work experience as a PSO were conditionally approved by NMFS, pending on-site understudy working alongside NMFS-designated "lead observers." These understudy periods lasted at least five full days of monitoring or more until the PSO had developed sufficient skills to monitor on their own.

2.1.6 Shutdown and Delay Procedures

If a protected species entered the buffered shutdown zone (20 m [66 ft] or 70 m [230 ft]) during pile installation, pile driving was to be either: 1) halted if demolition or installation was in progress, or 2) delayed if demolition or installation was not currently active, but imminent. A shutdown or delay would be in place until either the animal voluntarily left and was visually confirmed beyond the shutdown zone or 15 minutes passed without a re-detection of the animal(s) from the last observation time.

If a marine mammal species not covered in the IHA entered the Level B harassment zone, all pile driving or removal activities were to be halted until the animal(s) were either observed to leave the Level B ZOI or were not observed for at least one hour after the last observation time.

3.0 Monitoring Results

The results of the marine species monitoring efforts associated with this Project are presented in Section 3.1 and Section 3.2 and detail the data collected during March 2024. Appendix A and B provides all data collected during each observation of a protected species. Appendix C provides the distance and bearing of animals to the pile that were observed during active pile installation.

3.1 Monitoring Effort

Over the course of 13 days, the construction contractor completed the pile installation for the Project (Table 3-1). During IHA #1 a total of 32 structural piles were installed over 11 days in Spring 2024 between 01-20 March. During IHA #2 seventeen 6-in round steel piles were installed using either the vibratory hammer or pressing. Refer to Appendix D for the duration of driving time for piles installed via vibratory hammer.

Table 3-1. Pier 302 Construction Activities by Pile Type.

IHA Period	Pile Size and Type	Activity	Methods	Total Piles	Date Ranges	Days of Activity ¹
IHA #1	18-inch Octagonal Concrete	Demolition	Dead-pull	22	3/27/2024-3/29/2024	3
IHA #1	18-inch Round Steel	Demolition	Dead-pull	3	2/28/2024-2/29/2024	2
IHA #1	14-inch Round Timber	Demolition	Dead-pull	10	3/27/2024-3/29/2024	3
IHA #1	24-inch Octagonal Concrete	Install	Impact Hammer	30	3/1/2024-3/20/2024	11
IHA #1	14-inch Square Concrete	Install	Impact Hammer	2	3/20/2024	1
IHA #2	6-inch Round Steel	Install	Vibratory Hammer	5	12/18/2024-12/19/2024	2
IHA #2	6-inch Round Steel	Install	Silent Pile Pressing	12	12/18/2024-12/19/2024	2

Note: ¹ The total amount of days monitored was 13. Impact driving of 14-inch square concrete piles co-occurred on the last day of installation of 24-inch octagonal concrete piles. All dead-pulling of piles occurred after initial pile installation activities in IHA #1. Some workdays saw no piles installed; however, these are not included in the Days of Activity column totals.

3.2 Marine Species Monitoring

Marine species data were collected on 13 days and over 208 hours of observer effort (Table 3-2), with an average observation time per day of 8 hours per PSO. The number of PSOs remained consistent during all monitoring efforts, with a single command position stationed at Building 194, and a PSO stationed at the Bravo finger of Pier 160 (see Figure 2-1). Appendix E presents the start and end times for each day of monitoring. Appendix F details the daily activities monitored. Appendix G provides the weather conditions at the beginning and end of each day of monitoring. Appendix H discusses the estimated time that animals that experienced “take” while in the Level B ZOI.

Table 3-2. Summarized PSO Observation Time by Month and Activity.

IHA Period	Month	Days Monitored	Number of Observer Days ¹	Activity Duration ²							
				Pre-Con	IPD ³	VPD	Pre-Post	Delay	Shutdown	Post-Con	Total Monthly Hours
IHA #1	Mar-24	11	22	11:00:00	10:34:34	0:00:00	147:53:24	0:26:13	0:32:20	11:00:00	181:26:50
IHA #2	Dec-24	2	4	2:00:00	0:00:00	0:10:18	22:59:06	0:00:00	0:00:00	2:00:00	27:09:24
Total		13	26	13:00:00	10:34:34	0:10:18	170:52:30	0:26:13	0:32:20	13:00:00	208:36:14

Notes: ¹Cumulative number of monitors present each day for the entire month. Daily PSOs were a single command position at Building 194, and Pier 160-based PSO. ²All time in hh:mm:ss. Times presented are the product of the number of observers and elapsed time for each activity of the course of a month. ³Includes both impact pile driving and impact soft start.

Abbreviations: Pre-Con = pre-construction activities; Pre-/Post- = pre- and post-construction activities; Post-Con = post-construction activities.

3.2.1 Summary of Numbers of Protected Species Observed and Monitoring Effort During IHA #1 and IHA #2

The following sections summarize the protected species that were observed during the monitoring effort from 1 March 2024 to 19 December 2024. Monitoring effort remained the same during both IHA periods, however IHA #1 lasted for 11 days while IHA #2 only lasted for two days. Table 3-3 presents the numbers of individuals of the three protected species observed for both IHA periods. Three protected species were observed: California sea lions, coastal bottlenose dolphins, and Pacific harbor seals. During both IHA periods California sea lions were the most observed species, indeed they were the only species observed in IHA #2. The next most common species was Pacific harbor seals, followed by a single coastal bottlenose dolphin observed in IHA #1. Table 3-4 presents the average animals observed per day across both IHA #1 and #2. Table 3-5 presents the total number of observations and individuals observed during the monitoring activities, as well as observations that were considered as resights of previous observations.

Table 3-3. Protected Species Observed and Monitoring Effort During IHA #1 and IHA #2.

Species	Total Animals Observed	IHA #1 (11 days)			IHA #2 (2 days)		
		A	B	A/B	C	D	C/D
		Total Animals Observed	Monitor-Days	Animals/Monitor Day	Total Animals Observed	Monitor-Days	Animals/Monitor Day
California sea lions	50	47	22	2.1	3	4	0.75
Coastal bottlenose dolphins	1	1		0.05	0		0
Pacific Harbor seals	13	13		0.6	0		0

Table 3-4. Average Observed Animals Per Day Across IHA #1 and #2.

Species	Number of Individuals	Total Monitoring Days in IHA #1 and #2	Average Animals per Day
California sea lions	50	13	3.85
Coastal bottlenose dolphins	1		0.08
Pacific Harbor seals	13		1.00

Table 3-5 presents the total number of observations and individuals observed during the monitoring activities, as well as observations that were considered as resights of previous observations. When there was more than a single observation of an animal these observations were registered by PSOs as “resights”. PSOs recorded resights when one observer was “handing off” tracking an animal to another observer and/or there was a change in behavior that the monitor wanted to note. Examples include an instance when California sea lion, initially observed swimming, was then observed hauling out. In another case, a Pacific harbor seal was twice logged as a resight when the animal was seen changing direction and triggering a shutdown, and thereafter observed changing direction and exiting the shutdown zone.

Table 3-5. Resights by Species.

Species	Total Observations		Resights	
	Individuals	Observations	Individuals	Observations
California sea lion	51	39	1	1
Coastal bottlenose dolphin	1	1	0	0
Pacific Harbor seals	15	12	2	2
Total	67	52	3	3

3.2.1.1 IHA #1 Observations

The following section summarize the protected species that were observed during the monitoring effort during IHA #1, that lasted for 11 days between 01-20 March 2024. Table 3-6 presents the number of animals observed during the construction activities. Figure 3-1 through Figure 3-3 depict the locations of animals observed as well as the construction activity that coincided with the observation. In all, there were 46 observations of 61 protected animals, excluding resights.

Table 3-6, as well as Figure 3-1 and Figure 3-2, include resights to describe and depict observer effort and their observational reach. There were no resights recorded in IHA #2.

Table 3-6. Species Observed by Construction Activity within Monitoring Zone, includes resights.

Species	Pile Driving Monitoring [Individuals (Observations)]			Non-Construction Monitoring [Individuals (Observations)]		
	IPD	Shutdown	Delay	Pre-Con	Pre-/Post-	Post-Con
California sea lion	4 (2)	0 (0)	0 (0)	4 (3)	43 (34)	0 (0)
Coastal bottlenose dolphin	0 (0)	0 (0)	0 (0)	0 (0)	1 (1)	0 (0)
Harbor seal	0 (0)	2 (2)	3 (3)	0 (0)	10 (7)	0 (0)
Total	4 (2)	2 (2)	3 (3)	4 (3)	54 (42)	0 (0)

Abbreviations: VPE = Vibratory pile extraction; IPD = Impact pile driving; Pre-Con = Pre-construction monitoring; Pre-/Post- = Pre-/Post-construction monitoring; Post-Con = Post-construction monitoring

3.2.1.2 IHA #2 Observations

During IHA #2, which lasted between December 18th and 19th, 2024 there were a total of three observations of California sea lions. No other species were observed.

3.2.2 California Sea Lion

California sea lions were the most frequently observed marine mammal species. While typically seen as solitary individuals, they were occasionally spotted in groups of two to three. Notably, during the 11 days of monitoring, the only species observed as “hailed-out” in the Project vicinity was a lone California sea lion. Table 3-7 and 3-8 present California sea lion observations and age classes respectively.

Table 3-7. California Sea Lion Observations (not including resights).

Month ¹	Days Monitored	Indiv. Observed	Obs.	Group Size			Avg. Indiv./Day	Observer Hrs.	Indiv./Observer Hr.
				Mean	Min	Max			
IHA #1 March	11	47	35	1.34	1	3	4.3	181:26:50	0.19
IHA #2 December	2	3	3	1	1	1	1.5	27:09:24	0.11
Total	13	50	38	-	-	-	3.8	208:36:14	0.24

Abbreviations: Indiv. = Individuals; Obs. = Observations; Avg. = Average; Hrs. = Hours

Table 3-8. Age Class of California Sea Lions Observed by IHA Period.

Month	Adults	Subadult	Juvenile	Mixed	Unknown Age
IHA #1 March	28	0	14	5	0
IHA #2 December	3	0	0	0	0
Total	31 (60%)	0 (0%)	14 (28%)	5 (10%)	0 (0%)

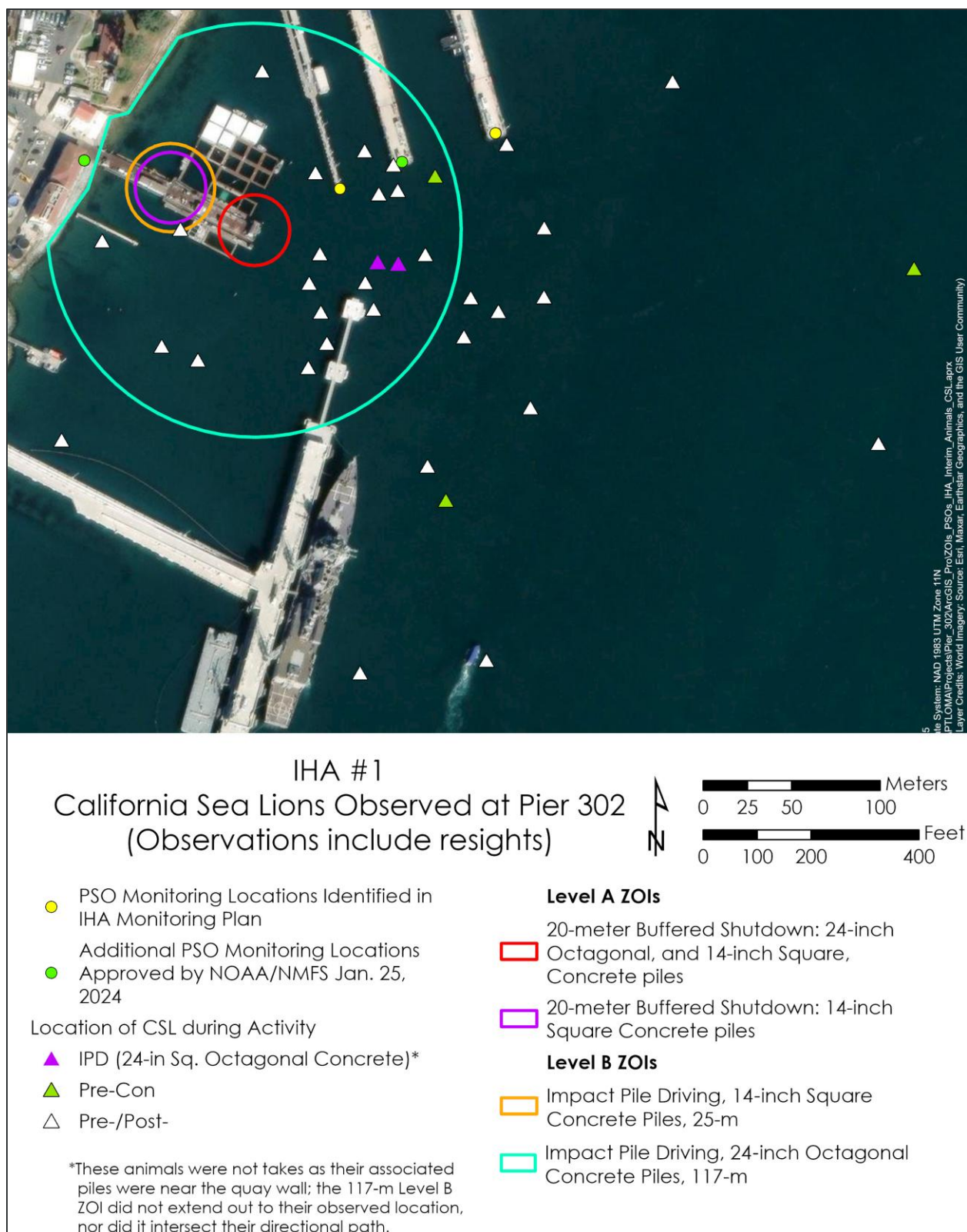


Figure 3-1. California Sea Lion Observations Recorded During IHA #1.

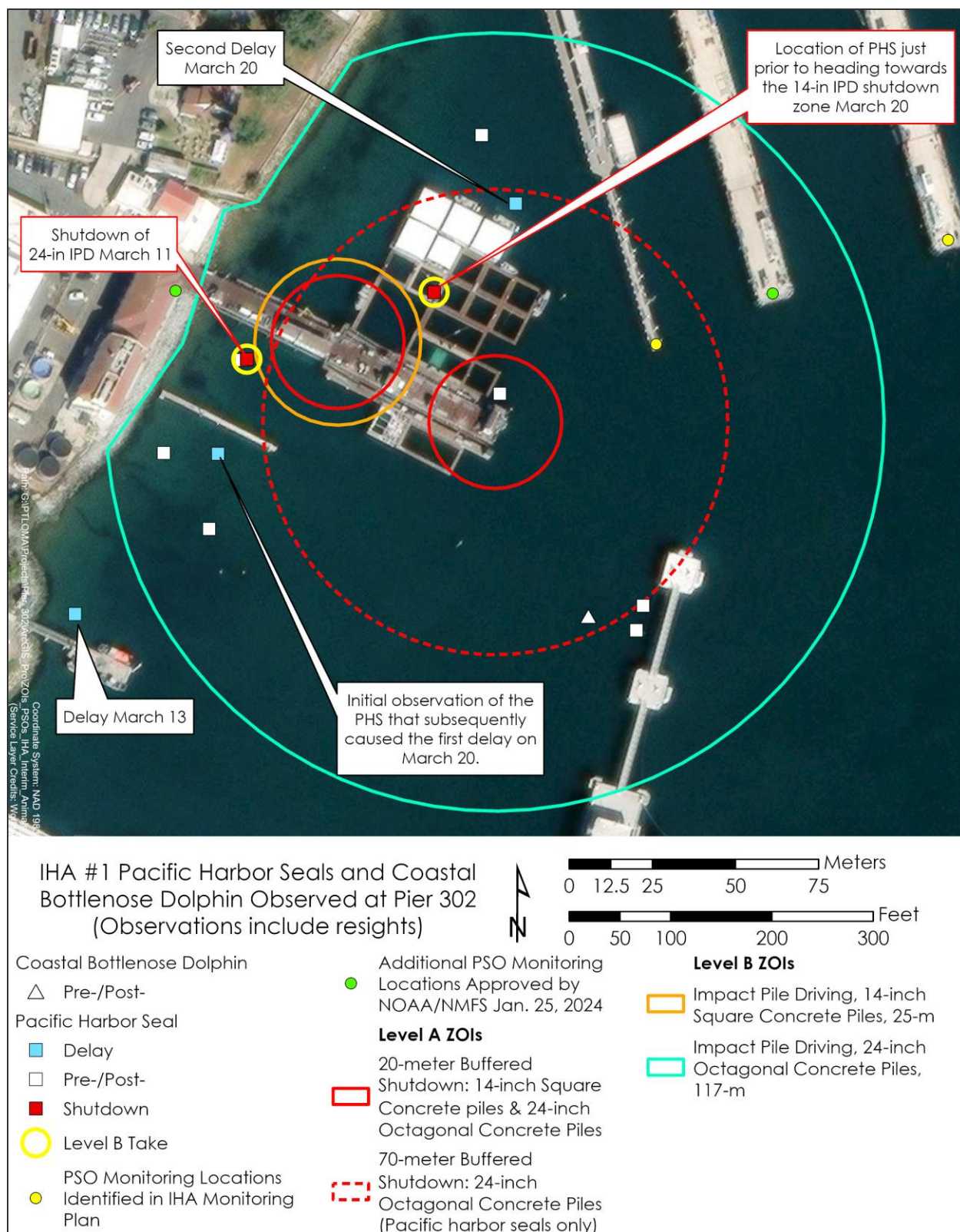


Figure 3-2. Pacific Harbor Seal and Coastal Bottlenose Dolphin Observations Recorded During IHA #1.

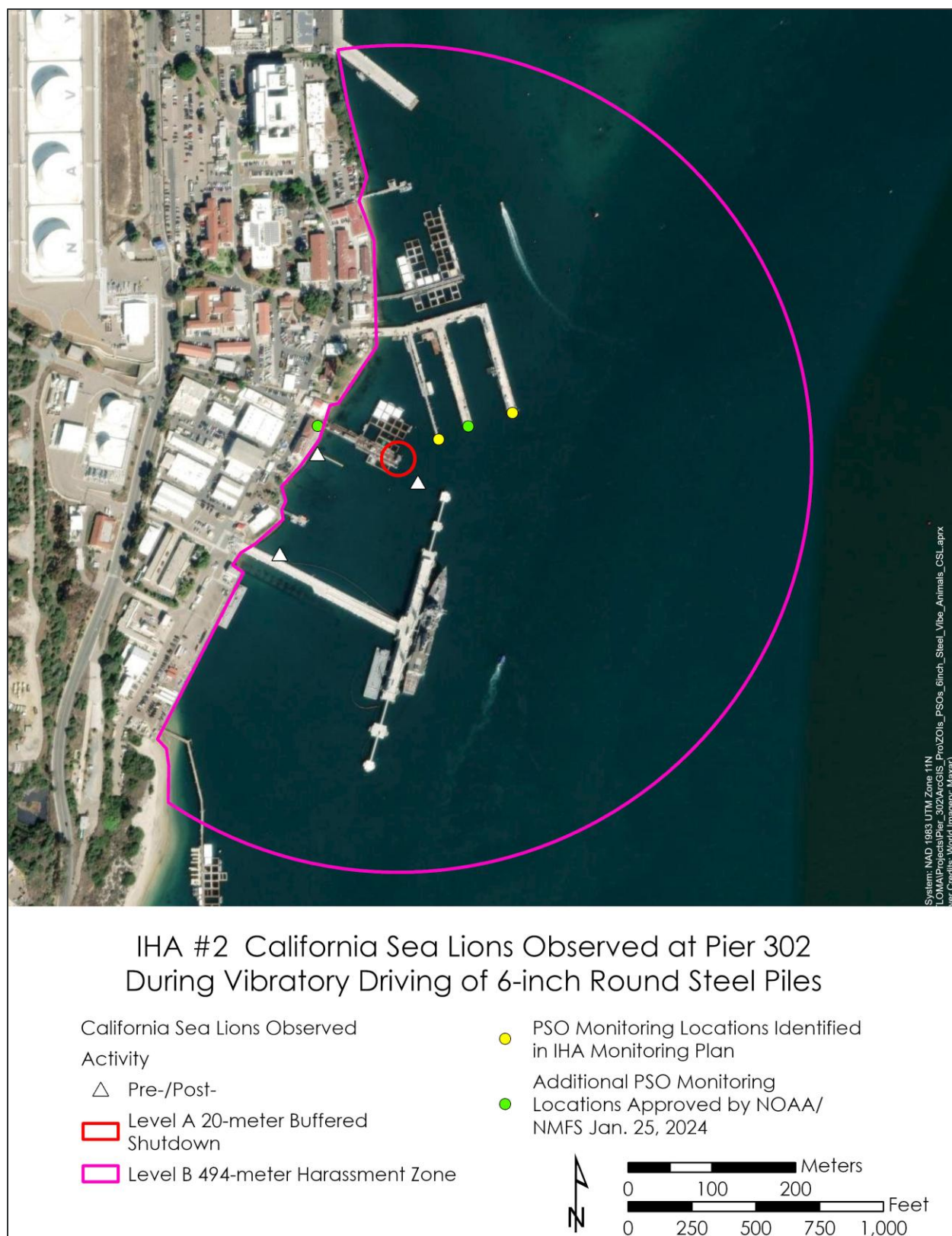


Figure 3-3. California Sea Lion Observations Recorded During IHA #2

Table 3-9 presents the sex classes as observed by PSOs at the Project. Of the individuals that were categorized by sex, on the whole, females outnumbered males nearly four to one. The reason for so many adult individuals of unknown sex in the various age classes is unclear; however, all were in the water and many of them between 500-1,000 m (1,600-3,300 ft) from the PSO.

Table 3-9. California Sea Lion Age and Sex Classes.¹

Sex Class	Adult	Juvenile	Mixed	Total
Female	10	0	0	10
Male	14	0	0	14
Mixed	7	0	5	12
Unknown	0	14	0	14
Total	31	14	5	50

¹PSOs distinguished age and sex classes using the following visual cues. Juveniles have a sleeker and slimmer body shape compared to adults and typically lack obvious sexually dimorphic traits. Adult females have a smaller and more streamlined body than do males, and have no sagittal crest as the head appears more rounded in profile. Adult males are much larger than females and have a prominent sagittal crest and a thicker neck.

Table 3-10 presents the observed behaviors of California sea lions inclusive of resights as this is the only observer data apart from location that can possibly differ for any given animal between the initial sighting and a potential resight. The three most common behaviors observed were swimming (88%) and milling (8%), followed by haul outs and rafting (both 2%). PSOs recorded no secondary behaviors in response to Project activities.

Table 3-10. Observations of California Sea Lion Primary Behaviors.

Behaviors Recorded	Number of Individuals (includes resights)	Percent of Total Observations
Hauled-Out	1	2%
Milling	4	8%
Rafting	1	2%
Swimming	45	88%

3.2.3 Coastal Bottlenose Dolphin

A single adult coastal bottlenose dolphin was observed from the PSO on Pier 160 Bravo on March 4 during a Pre-/Post- at the northern end of the NBPL Fuel Pier heading south-east. The sex of the animal was recorded as unknown. No resights were recorded. Table 3-10 presents the coastal bottlenose dolphin observation and associated monitoring effort.

Table 3-11. Coastal Bottlenose Dolphin Observations (not including resights).

Month	Days Monitored	Indiv. Observed	Obs.	Group Size			Avg. Indiv./Day	Observer Hrs.	Obs./Observer Hrs.
				Mean	Min	Max			
March	11	1	1	1	1	1	0.09	181:26:50	0.006
December	2	0	0	0	0	0	0	27:09:24	0

Abbreviations: Indiv. = Individuals; Obs. = Observations; Avg. = Average; Hrs. = Hours

3.2.4 Pacific Harbor Seal

Pacific harbor seals were observed on five of the 11 days of IHA monitoring. On three occasions, pairs of Pacific harbor seals were recorded, identified as a cow and pup. The presence of individual seals near the project led to three delays and two shutdowns, totaling 29 minutes and 26 seconds.

Table 3-12 presents harbor seal observations. All observations of Pacific harbor seals were made during IHA #1. Table 3-13 presents recorded harbor seal age classes.

Table 3-12. Pacific Harbor Seal Observations (not including resights).

Month	Days Monitored	Indiv. Observed	Obs.	Group Size			Avg. Indiv./Day	Observer Hrs.	Obs./Observer Hrs.
				Mean	Min	Max			
March	11	13	10	1.3	1	2	1.18	181:26:50	0.055
December	2	0	0	0	0	0	0	27:09:24	0

Abbreviations: Indiv. = Individuals; Obs. = Observations; Avg. = Average; Hrs. = Hours

Table 3-13. Pacific Harbor Seal Age Classes¹.

Month	Adults	Subadult	Juvenile	Mixed	Unknown Age
March	5	1	0	6	1
December	0	0	0	0	0
Total	5 (38%)	1 (8%)	0 (0%)	6 (46%)	1 (8%)

¹PSOs differentiate juvenile, sub-adult, and adult Pacific harbor seals primarily by body size and physical proportions. Juveniles are noticeably smaller with more slender bodies and less developed musculature. Sub-adults are intermediate in size, while adults are the largest, with broad heads, thick necks, and fully developed body mass. Abbreviations: PHS = Pacific harbor seal; IPD = Impact Pile Driving; ZOI = Zone of Influence; PSO = Protected Species Observer; m = meters; ft = feet

3.2.5 Environmental Data

Six-minute tide data was accessed from NOAA's U.S. Tsunami Program Coastal Water Level Data Inventory (NOAA 2024) and matched to each animal observation. Table 3-14 presents the numbers of individuals observed during ebb and flood tides observed for each species.

Table 3-14. Individuals Observed by Tidal Cycle.

Species	Indiv. Observed (Ebb)		Indiv. Observed (Flood)		Indiv. Observed
California Sea Lion	31	62%	19	38%	50
Coastal Bottlenose Dolphin	1	100%	-	-	1
Pacific Harbor Seal	8	62%	5	38%	13
Grand Total	40	62%	24	38%	64

Abbreviation: Indiv. = Individuals

For each observation, PSOs collected Beaufort sea state (Table 3-15), visibility (Table 3-16), and sky cover (Table 3-17). The tables below summarize the information for these environmental variables. Table 3-18 and Table 3-19 show the sky cover and visibility during Pre Beginning of Pre-Con and End of Post-Con.

Table 3-15. Individuals Observed by Beaufort Sea State.

Beaufort Sea State	0	1	2	3	4	Total Indiv. Observed
California Sea Lion	3	22	25	-	-	50
Coastal Bottlenose Dolphin	-	-	1	-	-	1
Pacific Harbor Seal	-	10	3	-	-	13
Grand Total	3	32	29	-	-	64
Percentage of Total	5%	50%	45%	0%	0%	100%

Abbreviation: Indiv. = Individuals

Table 3-16. Individuals Observed by Visibility.

Beaufort Sea State	Excellent (>20 km)	Good (10-20 km)	Moderate (5-10 km)	Poor (0.5-5 km)	Bad (<0.5 km)	Total Indiv. Observed
California Sea Lion	11	28	9	1	1	50
Coastal Bottlenose Dolphin	-	1	-	-	-	1
Pacific Harbor Seal	-	6	5	2	-	13
Grand Total	11	35	14	3	1	64
Percentage of Total	17%	54%	21%	5%	2%	100%

Abbreviations: Indiv. = Individuals; km = Kilometer(s)

Table 3-17. Individuals Observed by Sky Cover.

Sky Cover	Clear	Partly Cloudy	Cloudy	Overcast	Hazy	Fog	Total Indiv. Observed
California Sea Lion	9	27	4	7	2	1	50
Coastal Bottlenose Dolphin	-	1	-	-	-	-	1
Pacific Harbor Seal	1	4	6	2	-	-	13
Grand Total	10	32	10	9	2	1	64
Percentage of Total	16%	50%	16%	14%	3%	1%	100%

Abbreviation: Indiv. = Individuals

Table 3-18. Sky Cover at Beginning of Pre-Con and End of Post-Con.

Sky Cover	Pre-Con		Post-Con	
	Number of Days	Percentage of Days	Number of Days	Percentage of Days
Clear	3	23.08%	0	0.00%
Cloudy	1	7.69%	1	7.69%
Fog	0	0.00%	1	7.69%
Haze	0	0.00%	1	7.69%
Light rain	1	7.69%	0	0.00%
Overcast	1	7.69%	1	7.69%
Partly Cloudy	7	53.85%	9	69.23%
Total	13	100.00%	13	100.00%

Abbreviations: Pre-Con = pre-construction activities; Post-Con = post-construction activities.

Table 3-19. Visibility at Beginning of Pre-Con and End of Post-Con.

Visibility	Pre-Con		Post-Con	
	Number of Days	Percentage of Days	Number of Days	Percentage of Days
Excellent (>20 km)	4	30.77%	4	30.77%
Good (10 - 20 km)	5	38.46%	6	46.15%
Moderate (5 - 10 km)	4	30.77%	2	15.38%
Poor (0.5 - 5 km)	0	0.00%	1	7.69%
Total	13	100.00%	13	100.00%

3.2.6 Distance and Bearing

The distances and bearings of each marine mammal observed during pile driving or removal relative to the pile is provided in Appendix C. These values were calculated based on the PSO-recorded location of the animal and specific location of the pile being extracted or driven.

3.2.7 Delays and Shutdowns During Monitoring Efforts

A total of three delays and two shutdowns (Table 3-20; see Figure 3-1 and Figure 3-2) occurred during the monitoring efforts, all due to Pacific harbors seals. The first delay lasted over 11 minutes, while the subsequent two delays lasted just under one minute each. Similarly, one shutdown lasted under one minute while the other lasted 15 minutes and 15 seconds.

Table 3-20. Delays and Shutdowns in Project Activities Due to Protected Species Observed Within the Shutdown Zone at Pier 302.

Date	Species	No. of Individuals	Start	Stop	Duration	Activity	Description
3/11/2024	PHS	1	12:13:30	12:28:45	00:15:15	Shutdown IPD 24-inch Octagonal Concrete Pile	At 11:58:00, the crew conducted a soft start sequence on Pile 4 before beginning IPD at 12:00:50. The crew stopped briefly at 12:01:28 and resumed at 12:04:10. After approximately 441 hits, a single PHS surfaced approximately 20.1 m (66 ft) southeast of Pile 4 (within the PHS shutdown zone) at 12:13:30 for 2-3 seconds before diving towards the pile being driven resulting in Level B Take. As soon as it surfaced, Command issued a shutdown over the radio. The crew chief repeated the order, and driving was stopped. Hydro-jetting resumed almost immediately, but all other activities ceased for 15 minutes while the monitors searched for the PHS. Since it did not reappear, and for extra caution, the Command PSO instructed the crew to conduct another full soft start sequence before resuming driving. The second soft start began at 12:28:46. No further sightings of the PHS occurred for the rest of the day.
3/13/2024	PHS	1	10:16:01	10:27:21	00:11:20	Delay IPD 24-inch Octagonal Concrete Pile	After an IPD session of 28 hits on Pile 11 was complete, the command immediately issued a delay at 10:16:01 to monitor a PHS that appeared shortly after impact pile driving had stopped. Although the seal did not enter the shutdown zone, this delay was requested to ensure it was not swimming towards the area. When the animal was observed leaving the area, IPD resumed at 10:27:22.
3/20/2024	PHS	1	11:48:50	11:49:47	0:00:57	Delay IPD 14-inch Square Concrete Pile	After an ISS sequence on Pile 30, the construction contractor performed impact pile driving on Pile 30 for approximately 30 seconds starting at 11:47:14 AM. During the subsequent Pre-/Post- period in which the crew were moving a hose to continue impact pile driving, an adult PHS surfaced at the eastern edge of the floating docks south of Pier 302 (see Map 3-2), and dove in the direction of Pile 30. The PHS entered the shutdown zone, and a delay was called at 11:48:50. The PHS was subsequently observed north of Pier 302, 60-80 ft from shore, outside of the shutdown zone, and the delay was ended at 11:49:47. Impact pile driving resumed at 11:52:00.
3/20/2024	PHS	1	11:52:10	11:53:05	0:00:55	Shutdown IPD 14-inch Square Concrete Pile	After six hits from the impact hammer, the PHS surfaced for a moment just north of the crane barge and then dove again in the direction of Pile 30, a shutdown was immediately called at 11:52:10, though four more hits occurred as the machinery was being shutdown. The animal was presumed to be, but not observed, within the shutdown zone. Then after less than one minute the PHS resurfaced again near Pier 160 outside of the IPD ZOI and swam showing no signs of aberrant behavior. As the animal was both outside of the Shutdown Zone and ZOI for the pile, the Shutdown was ended at 11:53:05.

Date	Species	No. of Individuals	Start	Stop	Duration	Activity	Description
3/20/2024	PHS	1	11:53:06	11:54:05	0:00:59	Delay IPD 14-inch Square Concrete Pile	After the Shutdown (discussed immediately above) the command position had the construction contractor hold IPD at 10:53:06 to ensure the animal would not return. It swam northwest along the surface for approximately 30 seconds before diving below Pier 160 where the Pier connects to the shore. After a brief wait to confirm that it would not be returning, the command gave the crew the all-clear to resume work at 11:54:05. NOTE: The seal returned well after the cessation of IPD and foraged in the area around Pier 302 for a few minutes before swimming away. It appears superficially that the seal might have been purposely swimming toward the pile as it was being driven, similarly to the shutdown/take event on March 11.

Abbreviations: ft = feet; IPD = impact pile driving; ISS = Impact Soft Start; m = meters; PHS = Pacific harbor seal; PSO = Protected Species Observer; ZOI = Zone of Influence.

3.3 Summary of Observed Level B Take (11 March to 19 December 2024)

MMPA Level B Take at Pier 302 has been significantly less than authorized under the IHAs. Take only occurred during IHA #1. While two Pacific harbor seals entered the shutdown zone during impact pile driving, immediately resulting in a shutdown, subsequent monitoring suggested no evidence of Level A take. These two Pacific harbor seals are recorded as Level B take, and are presented as such in Table 3-21. These two Level B takes represent 6.25% of the total allotted take for Pacific harbor seals. The two total individuals that have been incidentally harassed account for 3.125% of the total in-water individuals (n=64) observed. The closest approach and time in Level B harassment zone recorded for these two animals was 20.1 meters and 60 seconds, and 36.7 and 12.5 seconds. The time in zone was estimated based on the an assumed average swimming speed of 2 meters per second.

Table 3-21. Summary of Total Authorized and Observed Level B Take in IHA #1.

Species	Total Number of Animals Observed in the Water		Authorized Level B "Take" Total (IHA #1)	Observed Level B "Take" in IHA #1 Total Individuals (Sightings)
	Indiv.	Sightings		
California sea lion	50	38	480	0 (0)
Coastal bottlenose dolphin	1	1	32	0 (0)
Pacific harbor seal	13	10	32	2 (2)

Abbreviation: Indiv. = Individuals

The monitoring protocols have proven effective in allowing comprehensive observation of the monitoring zone during IPD. With reference to the two shutdowns that occurred on 11 March and 20 March, we believe that there was no evidence of Level A take, i.e. injury or mortality as a result of the project activities for the following reasons:

- The project strictly adhered to the prescribed mitigation measures, including constant monitoring of shutdown zones and implementation of soft start procedures. These measures were designed to minimize the risk of injury to marine mammals.
- Continuous monitoring by trained observers ensured that any marine mammals entering the vicinity of the construction area were promptly detected. This allowed for immediate implementation of delay or shutdown procedures when necessary, preventing any potential for Level A take.

- There were two instances where marine mammals entered the shutdown zones during impact pile driving. In each case, operations were halted immediately, effectively preventing any harm to the animals.
- There were no recorded instances of injury or mortality. This absence of Level A take is a positive indication that the mitigation measures and monitoring efforts were successful.
- The monitoring team remained vigilant and responsive throughout the project, ensuring that all protective measures were consistently applied.

Table 3-22 presents the total number of takes by construction activity. Since all pile demolition was conducted via dead-pull, there was no potential for underwater sound to impact animals covered under this IHA. All observed takes occurred during impact pile driving.

Table 3-22. Number of Takes by Construction Activity

Construction Activity	Vibratory Pile Installation	Impact Pile Driving
Number of Takes	N/A	2
Percentage of Total Take	N/A	100%

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4.0 Discussion

IHA monitoring at Pier 302 consisted only of installation activities, namely impact pile driving of three pile types, 24-inch octagonal concrete, 14-inch square concrete, and 6-inch round steel piles.

Demolition of Pier 302's preexisting piles (18-inch octagonal concrete and 18-inch round steel piles) was planned to be via vibratory extraction. However, as the demolition of the old pier's piles was completed entirely using dead-pull methods, the IHA monitoring required at Pier 302 was less than anticipated.

Installation activities were completed over a total of 13 days—11 days in March 2024 (IHA #1) and two days in December 2024 (IHA #2). The long gap between these periods of activity was in part due to the construction schedule, as well as to restrictions on pile driving from April through September, which coincide with the breeding season of the endangered California least tern (*Sternula antillarum browni*). These reasons necessitated an extension of the original IHA, which was initially valid only through September 30, 2024, leading to the issuance of IHA #2. Additional construction-related delays further extended operations into December.

The IHA for the project authorized taking of six different species, California sea lion, Pacific harbor seal, California bottlenose dolphin, common dolphin, Pacific white-sided dolphin, and northern elephant seal. The diversity observed during the 13 days of IHA monitoring was much lower, with only three of these species observed: California sea lion, Pacific harbor seal, and California bottlenose dolphin. California sea lions were far and away the most common species observed (50), followed by Pacific harbor seals (13), and Coastal bottlenose dolphins (1). A majority of animals were observed in the morning and midday. All takes occurred during IHA #1 with only Pacific harbor seals having 2 takes (6.25% of authorized in IHA#1). As the monitoring periods were relatively short for this project, it is suggested that one consults the results of additional IHA reports for similar projects in the area when estimating daily averages for animal presence for future projects.

PSOs reported that they felt comfortable with their ability to monitor the Level B ZOIs for pile driving. However, if PSOs had to monitor the ZOI for vibratory extraction of the 18-inch Octagonal Concrete Piles with its formidable Level B ZOI (radius 1,445 m), it would have imposed challenges. Indeed, the bay-side of Point Loma is busy with boat traffic, has marine mammal attractions such as the bait barge and haul-outs, as well as many piers that can obstruct surface water viewsheds.

The relocation of the command PSO to Building 194 greatly improved the quality of the monitoring and enhanced mitigation and avoidance measures. As the command position was on a second-floor balcony, the PSO had a much-improved view of the worksite and undoubtedly contributed to the well-called and documented delays (3) and shutdowns (2).

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5.0 References

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Appendix A: Protected Species Observer Animal Data (Part 1)

Table A-1. Data collected at time of each animal observation.

IHA Period	Animal No.	Species	Activity	Pile Number	Observation Date/Time"	PSO Name	PSO Location	Species Identification Confidence	Number of Individuals	Min/Max/ Best Estimate	Closest Point of Approach (m)	x	y
1	1	CaSL	Precon	N/A	3/1/24 6:56 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.234939	32.70100511
1	2	CaSL	Prepost	N/A	3/1/24 7:18 AM	Cai Leao	Bldg 194	High	1	1	na	-117.2356589	32.70180442
1	3	CaSL	Prepost	N/A	3/1/24 9:20 AM	Cai Leao	Bldg 194	High	1	1	na	-117.236544	32.70238385
1	4	CaSL	Prepost	N/A	3/1/24 10:33 AM	Cai Leao	Bldg 194	High	1	1	na	-117.2357666	32.70211011
1	5	CBD	Prepost	N/A	3/4/24 7:29 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2357975	32.70185058
1	6	PHS	Prepost	N/A	3/5/24 7:20 AM	Robert Hanna	Pier 160 Bravo	High	2	2	na	-117.2360833	32.70245077
1	7	CaSL	Prepost	N/A	3/5/24 7:35 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2323307	32.70129972
1	8	CaSL	Prepost	N/A	3/5/24 7:47 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2344304	32.70147821
1	9	CaSL	Prepost	N/A	3/5/24 9:04 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2364369	32.70171696
1	10	PHS	Prepost	N/A	3/5/24 9:22 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.235622	32.70187672
1	11	CaSL	Prepost	N/A	3/5/24 9:42 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2347919	32.70203795
1	12	CaSL	IPD	5	3/5/24 10:15 AM	Cai Leao	Bldg 194	High	1	1	na	-117.2353536	32.70221802
1	13	PHS	Prepost	N/A	3/5/24 11:33 AM	Cai Leao	Bldg 194	High	1	1	na	-117.236143	32.70315195
1	14	CaSL	IPD	3	3/5/24 12:05 PM	Robert Hanna	Pier 160 Bravo	High	3	3	na	-117.2352292	32.70220995
1	15	CaSL	Prepost	N/A	3/6/24 9:36 AM	Scott S	Pier 160 Bravo	High	2	2	na	-117.2345771	32.70281998
1	16	PHS	Prepost	N/A	3/11/24 10:24 AM	Cai Leao	Bldg 194	High	2	2	na	-117.2369117	32.70254042
1	17	CaSL	Prepost	N/A	3/11/24 11:56 AM	Scott Snover	Pier 160 Bravo	High	2	2	na	-117.2348324	32.70183885
1	18	PHS	SHUTDOWN	4	3/11/24 12:13 PM	Cai Leao	Bldg 194	High	1	1	20.1	-117.2368952	32.70254285
1	19	CaSL	Prepost	N/A	3/12/24 9:23 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2352335	32.70258399
1	20	CaSL	Prepost	N/A	3/12/24 9:36 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2357301	32.70267308

IHA Period	Animal No.	Species	Activity	Pile Number	Observation Date/Time"	PSO Name	PSO Location	Species Identification Confidence	Number of Individuals	Min/Max/ Best Estimate	Closest Point of Approach (m)	x	y
1	21	CaSL	Prepost	N/A	3/12/24 11:53 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2360531	32.70319092
1	22	CaSL	Prepost	N/A	3/12/24 12:30 PM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2353474	32.70256602
1	23	CaSL	Prepost	N/A	3/12/24 12:49 PM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2357025	32.70226055
1	24	PHS	Delay	11	3/13/24 10:16 AM	Cai Leao	Bldg 194	High	1	1	na	-117.2374449	32.70185091
1	25	PHS	Prepost	N/A	3/13/24 12:49 PM	Cai Leao	Bldg 194	High	1	1	na	-117.2371613	32.70228824
1	26	CaSL	Prepost	N/A	3/13/24 1:58 PM	Scott Snover	Pier 160 Bravo	High	3	3	na	-117.2343497	32.70239454
1	27	CaSL	Precon	N/A	3/14/24 8:21 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2321181	32.70219179
1	28	CaSL	Prepost	N/A	3/14/24 9:16 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2346921	32.70018991
1	29	PHS	Prepost	N/A	3/14/24 9:40 AM	Cai Leao	Bldg 194	High	1	1	na	-117.2370149	32.70208234
1	30	CaSL	Prepost	N/A	3/14/24 9:53 AM	Cai Leao	Bldg 194	High	2	2	na	-117.2346248	32.70196846
1	31	CaSL	Prepost	N/A	3/14/24 10:21 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2335773	32.70314154
1	32	CaSL	Prepost	N/A	3/14/24 11:05 AM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2350504	32.70117894
1	33	CaSL	Prepost	N/A	3/14/24 11:28 AM	Cai Leao	Bldg 194	High	1	1	na	-117.2357708	32.70168028
1	34	CaSL	Prepost	N/A	3/14/24 12:26 PM	Cai Leao	Bldg 194	High	1	1	na	-117.2372579	32.70130814
1	35	CaSL	Prepost	N/A	3/14/24 12:52 PM	Robert Hanna	Pier 160 Bravo	High	1	1	na	-117.2354339	32.7027853
1	35	CaSL	Prepost	N/A	3/14/24 12:56 PM	Cai Leao	Bldg 194	High	1	1	na	-117.237016	32.702324
1	36	CaSL	Prepost	N/A	3/18/24 10:24 AM	Robert Hanna	Bldg 194	High	1	1	na	-117.2353775	32.70197864
1	37	CaSL	Prepost	N/A	3/19/24 9:26 AM	Robert Hanna	Bldg 194	High	2	2	na	-117.2343501	32.70204312
1	38	CaSL	Prepost	N/A	3/19/24 12:00 PM	Cai Leao	Pier 160 Alpha	High	3	3	na	-117.2356959	32.70196274
1	39	CaSL	Prepost	N/A	3/19/24 12:38 PM	Robert Hanna	Bldg 194	High	1	1	na	-117.2366556	32.70178763
1	40	CaSL	Precon	N/A	3/20/24 7:58 AM	Scott Snover	Pier 160 Bravo	High	2	2	na	-117.2350082	32.70265783
1	41	CaSL	Prepost	N/A	3/20/24 9:18 AM	Scott Snover	Pier 160 Bravo	High	1	1	na	-117.23526	32.70271353

IHA Period	Animal No.	Species	Activity	Pile Number	Observation Date/Time"	PSO Name	PSO Location	Species Identification Confidence	Number of Individuals	Min/Max/ Best Estimate	Closest Point of Approach (m)	x	y
1	42	CaSL	Prepost	N/A	3/20/24 9:38 AM	Cai Leao	Bldg 194	High	1	1	na	-117.2350665	32.7022575
1	43	PHS	Prepost	N/A	3/20/24 10:01 AM	Cai Leao	Bldg 194	High	2	2	na	-117.2356431	32.70181017
1	44	CaSL	Prepost	N/A	3/20/24 11:28 AM	Scott S	Pier 160 Bravo	High	1	1	na	-117.2354547	32.70012477
1	45	PHS	Delay	30	3/20/24 11:48 AM	Cai Leao	Bldg 194	High	1	1	na	-117.236987	32.702286
1	45	PHS	SHUTDOWN	30	3/20/24 11:52 AM	Cai Leao	Bldg 194	High	1	1	36.7	-117.236151	32.702799
1	45	PHS	Delay	30	3/2/24 11:53 AM	Cai Leao	Bldg 194	High	1	1	na	-117.236987	32.702286
1	46	CaSL	Prepost	N/A	3/20/24 12:09 PM	Cai Leao	Bldg 194	High	2	2	na	-117.2354283	32.70211372
2	47	CSL	Prepost	N/A	12/18/24 1:18 PM	Cai Leao	Pier 160 Bravo	High	1	1	na	-117.2358465	32.70213548
2	48	CSL	Prepost	N/A	12/18/24 2:30 PM	Cai Leao	Pier 160 Bravo	High	1	1	na	-117.237604	32.70135876
2	49	CSL	Prepost	N/A	12/19/24 9:58 AM	Daniel Conley	Bldg 194	High	1	1	na	-117.2371271	32.70243845

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Appendix B: Protected Species Observer Animal Data (Part 2)

Table B-1. Data collected at time of each animal observation.

IHA Period	Animal No.	Species	Activity	Pile No.	Obs. Date/Time	Sky Cover	Beaufort Scale	Visibility	Ebb or Flood	Sex	Age	Animals By Cohort	Direction of travel	Resight	Primary Behavior	Take Evaluation	Other - Primary Behavior	Estimated Time in Level B Harassment Zone	x	y
1	1	CaSL	Precon	N/A	3/1/24 6:56 AM	Clear	2	Good (10 - 20 km)	flood	Male	Adult	Adult	S	No	Swimming Cet Pin	No	na	na	-117.234939	32.70100511
1	2	CaSL	Prepost	N/A	3/1/24 7:18 AM	Clear	1	Good (10 - 20 km)	flood	Unknown	Juvenile	Juvenile	NE	No	Swimming Cet Pin	No	na	na	-117.2356589	32.70180442
1	3	CaSL	Prepost	N/A	3/1/24 9:20 AM	Partly Cloudy	1	Good (10 - 20 km)	flood	Unknown	Juvenile	Juvenile	N	No	Swimming Cet Pin	No	na	na	-117.236544	32.70238385
1	4	CaSL	Prepost	N/A	3/1/24 10:33 AM	Partly Cloudy	1	Good (10 - 20 km)	flood	Unknown	Juvenile	Juvenile	S	No	Swimming Cet Pin	No	na	na	-117.2357666	32.70211011
1	5	CBD	Prepost	N/A	3/4/24 7:29 AM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Unknown	Adult	Adult	SE	No	Swimming Cet Pin	No	na	na	-117.2357975	32.70185058
1	6	PHS	Prepost	N/A	3/5/24 7:20 AM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Mixed	Mixed	Adult and neonate	SW	No	Swimming Cet Pin	No	na	na	-117.2360833	32.70245077
1	7	CaSL	Prepost	N/A	3/5/24 7:35 AM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Unknown	Juvenile	Juvenile	S	No	Swimming Cet Pin	No	na	na	-117.2323307	32.70129972
1	8	CaSL	Prepost	N/A	3/5/24 7:47 AM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Unknown	Juvenile	Juvenile	W	No	Swimming Cet Pin	No	na	na	-117.2344304	32.70147821
1	9	CaSL	Prepost	N/A	3/5/24 9:04 AM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Unknown	Juvenile	Juvenile	S	No	Swimming Cet Pin	No	na	na	-117.2364369	32.70171696
1	10	PHS	Prepost	N/A	3/5/24 9:22 AM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Unknown	Unknown	Unknown	S	No	Swimming Cet Pin	No	na	na	-117.235622	32.70187672
1	11	CaSL	Prepost	N/A	3/5/24 9:42 AM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Male	Adult	Adult	E	No	Swimming Cet Pin	No	na	na	-117.2347919	32.70203795
1	12	CaSL	IPD	5	3/5/24 10:15 AM	Partly Cloudy	1	Good (10 - 20 km)	ebb	Unknown	Juvenile	Juvenile	S	No	Swimming Cet Pin	No	na	na	-117.2353536	32.70221802
1	13	PHS	Prepost	N/A	3/5/24 11:33 AM	Partly Cloudy	1	Good (10 - 20 km)	ebb	Unknown	Adult	Adult	N	No	Swimming Cet Pin	No	na	na	-117.236143	32.70315195
1	14	CaSL	IPD	3	3/5/24 12:05 PM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Mixed	Mixed	Adult and 2 juveniles	SE	No	Swimming Cet Pin	No	na	na	-117.2352292	32.70220995
1	15	CaSL	Prepost	N/A	3/6/24 9:36 AM	Partly Cloudy	1	Excellent (> 20 km)	ebb	Mixed	Mixed	Adult and juvenile	S	No	Swimming Cet Pin	No	na	na	-117.2345771	32.70281998
1	16	PHS	Prepost	N/A	3/11/24 10:24 AM	Cloudy	1	Moderate (1.5 - 10 km)	flood	Mixed	Mixed	Adult and neonate	N	No	Look Pin	No	Swimming Cet Pin	na	-117.2369117	32.70254042
1	17	CaSL	Prepost	N/A	3/11/24 11:56 AM	Partly Cloudy	1	Excellent (> 20 km)	ebb	Mixed	Adult	Adult	S	No	Swimming Cet Pin	No	na	na	-117.2348324	32.70183885

IHA Period	Animal No.	Species	Activity	Pile No.	Obs. Date/Time	Sky Cover	Beaufort Scale	Visibility	Ebb or Flood	Sex	Age	Animals By Cohort	Direction of travel	Resight	Primary Behavior	Take Evaluation	Other - Primary Behavior	Estimated Time in Level B Harassment Zone	x	y
1	18	PHS	SHUTDOWN	4	3/11/24 12:13 PM	Cloudy	1	Moderate (1.5 - 10 km)	ebb	Unknown	Subadult	Subadult	N	No	Look Pin	YES Shutdown	Swimming Cet Pin	42.5 sec	-117.2368952	32.70254285
1	19	CaSL	Prepost	N/A	3/12/24 9:23 AM	Partly Cloudy	2	Moderate (1.5 - 10 km)	flood	Unknown	Juvenile	Juvenile	E	No	Swimming Cet Pin	No	na	na	-117.2352335	32.70258399
1	20	CaSL	Prepost	N/A	3/12/24 9:36 AM	Partly Cloudy	2	Moderate (1.5 - 10 km)	flood	Male	Adult	Adult	E	No	Swimming Cet Pin	No	na	na	-117.2357301	32.70267308
1	21	CaSL	Prepost	N/A	3/12/24 11:53 AM	Partly Cloudy	2	Good (10 - 20 km)	flood	Male	Adult	Adult	S	No	Rafting CSL	No	na	na	-117.2360531	32.70319092
1	22	CaSL	Prepost	N/A	3/12/24 12:30 PM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Male	Adult	Adult	N	No	Swimming Cet Pin	No	na	na	-117.2353474	32.70256602
1	23	CaSL	Prepost	N/A	3/12/24 12:49 PM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Female	Adult	Adult	S	No	Swimming Cet Pin	No	na	na	-117.2357025	32.70226055
1	24	PHS	Delay	11	3/13/24 10:16 AM	Cloudy	1	Good (10 - 20 km)	flood	Unknown	Adult	Adult	Unknown	No	Milling Cet Pin	No	na	na	-117.2374449	32.70185091
1	25	PHS	Prepost	N/A	3/13/24 12:49 PM	Cloudy	1	Good (10 - 20 km)	flood	Unknown	Adult	Adult	N	No	Swimming Cet Pin	No	na	na	-117.2371613	32.70228824
1	26	CaSL	Prepost	N/A	3/13/24 1:58 PM	Partly Cloudy	1	Excellent (> 20 km)	ebb	Male	Adult	Adult	S	No	Swimming Cet Pin	No	na	na	-117.2343497	32.70239454
1	27	CaSL	Precon	N/A	3/14/24 8:21 AM	Partly Cloudy	1	Good (10 - 20 km)	flood	Male	Adult	Adult	NE	No	Swimming Cet Pin	No	na	na	-117.2321181	32.70219179
1	28	CaSL	Prepost	N/A	3/14/24 9:16 AM	Partly Cloudy	2	Good (10 - 20 km)	flood	Male	Adult	Adult	SW	No	Swimming Cet Pin	No	na	na	-117.2346921	32.70018991
1	29	PHS	Prepost	N/A	3/14/24 9:40 AM	Cloudy	1	Moderate (1.5 - 10 km)	flood	Unknown	Adult	Adult	S	No	Su Foraging All	No	na	na	-117.2370149	32.70208234
1	30	CaSL	Prepost	N/A	3/14/24 9:53 AM	Cloudy	1	Moderate (1.5 - 10 km)	flood	Unknown	Juvenile	Juvenile	S	No	Swimming Cet Pin	No	na	na	-117.2346248	32.70196846
1	31	CaSL	Prepost	N/A	3/14/24 10:21 AM	Cloudy	2	Good (10 - 20 km)	flood	Male	Adult	Adult	E	No	Swimming Cet Pin	No	na	na	-117.2335773	32.70314154
1	32	CaSL	Prepost	N/A	3/14/24 11:05 AM	Overcast	2	Good (10 - 20 km)	flood	Female	Adult	Adult	SW	No	Swimming Cet Pin	No	na	na	-117.2350504	32.70117894
1	33	CaSL	Prepost	N/A	3/14/24 11:28 AM	Overcast	1	Moderate (1.5 - 10 km)	flood	Female	Adult	Adult	NW	No	Swimming Cet Pin	No	na	na	-117.2357708	32.70168028
1	34	CaSL	Prepost	N/A	3/14/24 12:26 PM	Overcast	1	Moderate (1.5 - 10 km)	flood	Male	Adult	Adult	S	No	Swimming Cet Pin	No	na	na	-117.2372579	32.70130814

IHA Period	Animal No.	Species	Activity	Pile No.	Obs. Date/Time	Sky Cover	Beaufort Scale	Visibility	Ebb or Flood	Sex	Age	Animals By Cohort	Direction of travel	Resight	Primary Behavior	Take Evaluation	Other - Primary Behavior	Estimated Time in Level B Harassment Zone	x	y
1	35	CaSL	Prepost	N/A	3/14/24 12:52 PM	Overcast	2	Moderate (1.5 - 10 km)	flood	Female	Adult	Adult	SW	No	Swimming Cet Pin	No	na	na	-117.2354339	32.7027853
1	35	CaSL	Prepost	N/A	3/14/24 12:56 PM	Overcast	1	Moderate (1.5 - 10 km)	flood	Female	Adult	Adult	NA	Yes	Haul Out Pin	No	na	na	-117.237016	32.702324
1	36	CaSL	Prepost	N/A	3/18/24 10:24 AM	Hazy	2	Good (10 - 20 km)	ebb	Unknown	Juvenile	Juvenile	S	No	Swimming Cet Pin	No	na	na	-117.2353775	32.70197864
1	37	CaSL	Prepost	N/A	3/19/24 9:26 AM	Partly Cloudy	2	Good (10 - 20 km)	ebb	Unknown	Juvenile	Juvenile	NE	No	Swimming Cet Pin	No	na	na	-117.2343501	32.70204312
1	38	CaSL	Prepost	N/A	3/19/24 12:00 PM	Clear	2	Good (10 - 20 km)	ebb	Mixed	Adult	Adult	E	No	Milling Cet Pin	No	na	na	-117.2356959	32.70196274
1	39	CaSL	Prepost	N/A	3/19/24 12:38 PM	Clear	2	Good (10 - 20 km)	ebb	Male	Adult	Adult	S	No	Swimming Cet Pin	No	na	na	-117.2366556	32.70178763
1	40	CaSL	Precon	N/A	3/20/24 7:58 AM	Overcast	0	Excellent (> 20 km)	flood	Female	Adult	Adult	NE	No	Swimming Cet Pin	No	na	na	-117.2350082	32.70265783
1	41	CaSL	Prepost	N/A	3/20/24 9:18 AM	Cloudy	0	Excellent (> 20 km)	ebb	Female	Adult	Adult	S	No	Swimming Cet Pin	No	na	na	-117.23526	32.70271353
1	42	CaSL	Prepost	N/A	3/20/24 9:38 AM	Overcast	1	Poor (.5 - 1.5 km)	ebb	Unknown	Juvenile	Juvenile	N	No	Swimming Cet Pin	No	na	na	-117.2350665	32.7022575
1	43	PHS	Prepost	N/A	3/20/24 10:01 AM	Overcast	1	Poor (.5 - 1.5 km)	ebb	Mixed	Mixed	Adult and neonate	N	No	Swimming Cet Pin	No	na	na	-117.2356431	32.70181017
1	44	CaSL	Prepost	N/A	3/20/24 11:28 AM	Partly Cloudy	1	Excellent (> 20 km)	ebb	Female	Adult	Adult	E	No	Swimming Cet Pin	No	na	na	-117.2354547	32.70012477
1	45	PHS	Delay	30	3/20/24 11:48 AM	Clear	1	Moderate (1.5 - 10 km)	ebb	Unknown	Adult	Adult	N	No	Swimming Cet Pin	No	na	na	-117.236987	32.702286
1	45	PHS	SHUTDOWN	30	3/20/24 11:52 AM	Clear	1	Moderate (1.5 - 10 km)	ebb	Unknown	Adult	Adult	SE	Yes	Swimming Cet Pin	YES Shutdown	na	12.5 seconds	-117.236151	32.702799
1	45	PHS	Delay	30	3/2/24 11:53 AM	Clear	1	Moderate (1.5 - 10 km)	ebb	Unknown	Adult	Adult	N	Yes	Swimming Cet Pin	No	na	na	-117.236987	32.702286
1	46	CaSL	Prepost	N/A	3/20/24 12:09 PM	Clear	1	Moderate (1.5 - 10 km)	ebb	Mixed	Adult	Adult	N	No	Swimming Cet Pin	No	na	na	-117.2354283	32.70211372
2	47	CSL	Prepost	N/A	12/18/24 1:18 PM	Fog	2	Bad (<.5 km)	ebb	Male	Adult	Adult	W	No	Swimming Cet Pin	No	na	na	-117.2358465	32.70213548
2	48	CSL	Prepost	N/A	12/18/24 2:30 PM	Hazy	1	Good (10 - 20 km)	ebb	Female	Adult	Adult	NA	No	Milling Cet Pin	No	na	na	-117.237604	32.70135876

IHA Period	Animal No.	Species	Activity	Pile No.	Obs. Date/Time	Sky Cover	Beaufort Scale	Visibility	Ebb or Flood	Sex	Age	Animals By Cohort	Direction of travel	Resight	Primary Behavior	Take Evaluation	Other - Primary Behavior	Estimated Time in Level B Harassment Zone	x	y
2	49	CSL	Prepost	N/A	12/19/24 9:58 AM	Clear	1	Good (10 - 20 km)	flood	Female	Adult	Adult	N	No	Swimming Cet Pin	No	na	na	-117.2371271	32.70243845

Appendix C: Distances and Bearings to Animals Observed During Active Construction

Table C-1. Distance from in-water activities to marine mammals, and distance from the marine mammal to the observation point.

Species	Animal ID Number	Number of Individuals	Date	Activity	Pile Number	Distance (m)	Bearing (deg)	Take	Notes
CSL	12	1	3/5/24 10:15 AM	IPD	5	152	292	No	Outside ZOI (117 m) for appropriate pile
CSL	14	3	3/5/24 12:05 PM	IPD	3	170	291	No	Outside ZOI for appropriate pile
PHS	18	1	3/11/24 12:13 PM	SHUTDOWN	4	20	337	Yes - Shutdown	Swam directly under pier during IPD. All stop called.
PHS	24	1	3/13/24 10:16 AM	Delay	11	115	41	No	Head and neck held above water for ~5s before diving.
PHS	45	1	3/20/24 11:48 AM	Delay	30	45	47	No	Eastern edge of the floating docks south of Pier 302
PHS	45	1	3/20/24 11:52 AM	SHUTDOWN	30	37	239	Yes - Shutdown	Returned 15 mins later and went back under the barge.
PHS	45	1	3/2/24 11:53 AM	Delay	30	72	231	No	Second Delay, first one occurred before Shutdown

Abbreviations: CSL = California sea lion; PHS = Pacific harbor seal; deg = degrees; IPD = impact pile driving; m = meters; VPD = vibratory pile driving; ZOI = zone of influence.

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Appendix D: Duration of Vibratory Hammer used to Install 6-inch Round Steel Piles by Pile Number

Table D-1. Duration of Vibratory Pile Driving of 6-inch Round Steel Piles During IHA #2. All other 6-inch Round Steel Piles were “pushed” in, without the use of a vibratory hammer.

Pile Number	Duration (h:mm:ss)
3	0:00:03
4	0:00:31
5	0:01:11
9	0:00:47
13	0:00:17
17	0:02:20

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Appendix E: Start and End Times

Table E-1. Beginning of Pre-Con and end of Post-Con for each monitoring day.

IHA Period	Primary Activity	Date	Pre-Con Start Time	Post-Con End Time	Duration
1	Installation	1-Mar-24	6:30:00	16:33:19	10:03:19
1	Installation	4-Mar-24	6:30:00	15:31:05	9:01:05
1	Installation	5-Mar-24	6:28:47	15:04:10	8:35:23
1	Installation	6-Mar-24	6:24:00	13:39:51	7:15:51
1	Installation	11-Mar-24	7:58:27	14:58:47	7:00:20
1	Installation	12-Mar-24	7:15:00	15:13:17	7:58:17
1	Installation	13-Mar-24	7:19:59	16:20:40	9:00:41
1	Installation	14-Mar-24	7:13:22	15:10:44	7:57:22
1	Installation	18-Mar-24	7:10:00	17:10:04	10:00:04
1	Installation	19-Mar-24	7:12:40	13:48:37	6:35:57
1	Installation	20-Mar-24	6:55:00	14:07:05	7:12:05
2	Installation	18-Dec-24	8:37:29	15:30:28	6:52:59
2	Installation	19-Dec-24	7:15:00	13:57:32	6:42:32
Averages:			7:08:26	15:09:40	8:01:13

Abbreviations: IHA = Incidental Harassment Authorization.

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Appendix F: Daily Activities Monitored

Table F-1. Piles driven and PSO locations for each day of monitoring.

IHA Period	Activity Day	Date	PSO Locations	Activity	Pile Type(s)	Total Piles Installed
IHA #1	1	3/1/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	1
IHA #1	2	3/4/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	3
IHA #1	3	3/5/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	3
IHA #1	4	3/6/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	1
IHA #1	5	3/11/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	1
IHA #1	6	3/12/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	4
IHA #1	7	3/13/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	4
IHA #1	8	3/14/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	4
IHA #1	9	3/18/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	4
IHA #1	10	3/19/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete	4
IHA #1	11	3/20/2024	BLDG 194, Pier 160 Bravo	IPD	24-in Octagonal Concrete; 14-in Square Concrete	3
IHA #2	12	12/18/2024	BLDG 194, Pier 160 Bravo	VPD/Silent Pressing	6-in Round Steel	2
IHA #2	13	12/19/2024	BLDG 194, Pier 160 Bravo	VPD/Silent Pressing	6-in Round Steel	4

Abbreviations: IHA = Incidental Harassment Authorization; in = inch; IPD = Impact Pile Driving; PSO = Protected Species Observer; VPD = Vibratory Pile Driving.

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Appendix G: Daily Weather Conditions During Monitoring

Table G-1. Weather conditions at the start of Pre-Con and end of Post-Con for each day monitored.

Date	Start/End	Time	Temp	Wind Direction	Wind Speed	Sky Cover	Visibility (mi)	Beaufort
3/1/2024	Pre-Con	6:30:00	56	0	318	Clear	Good (10 - 20 km)	2
	Post-Con	16:33:19	64	0	8.3	Partly Cloudy	Good (10 - 20 km)	1
3/4/2024	Pre-Con	6:30:00	55.1	130	5.7	Light Rain	Good (10 - 20 km)	2
	Post-Con	15:31:00	62	280	10.5	Partly Cloudy	Good (10 - 20 km)	2
3/5/2024	Pre-Con	6:28:47	56.8	148	4.8	Partly Cloudy	Good (10 - 20 km)	2
	Post-Con	15:04:10	61.7	279	9.2	Partly Cloudy	Good (10 - 20 km)	2
3/6/2024	Pre-Con	6:24:00	53.3	82	5.8	Partly Cloudy	Excellent (> 20 km)	1
	Post-Con	13:39:51	62.6	220	11.4	Partly Cloudy	Excellent (> 20 km)	1
3/11/2024	Pre-Con	7:58:27	54.8	9	0.4	Cloudy	Moderate (1.5 - 10 km)	1
	Post-Con	14:58:47	63	260	11.5	Cloudy	Moderate (1.5 - 10 km)	1
3/12/2024	Pre-Con	7:15:50	56.7	175	3.4	Partly Cloudy	Moderate (1.5 - 10 km)	2
	Post-Con	15:13:17	62.8	256	6	Partly Cloudy	Good (10 - 20 km)	2
3/13/2024	Pre-Con	7:19:59	57.8	110	4.9	Partly Cloudy	Moderate (1.5 - 10 km)	2
	Post-Con	16:20:40	65	261	10.2	Partly Cloudy	Excellent (> 20 km)	1
3/14/2024	Pre-Con	7:13:22	55	0	0	Partly Cloudy	Moderate (1.5 - 10 km)	1
	Post-Con	15:10:44	65.5	53	8.5	Overcast	Good (10 - 20 km)	2
3/18/2024	Pre-Con	7:10:00	52	1	0.4	Clear	Excellent (> 20 km)	1
	Post-Con	17:10:04	73.9	82	14.7	Hazy	Good (10 - 20 km)	1
3/19/2024	Pre-Con	7:08:32	52.3	50	5.5	Partly Cloudy	Good (10 - 20 km)	1
	Post-Con	17:30:00	68	299	9.4	Partly Cloudy	Excellent (> 20 km)	0
3/20/2024	Pre-Con	6:55:00	56.8	354	0.3	Overcast	Excellent (> 20 km)	0
	Post-Con	14:05:05	65	260	9.3	Partly Cloudy	Moderate (1.5 - 10 km)	1
12/18/2024	Pre-Con	8:33:50	55.2	15	0.4	Partly Cloudy	Excellent (> 20 km)	2
	Post-Con	16:31:52	59.1	214	9	Partly Cloudy	Excellent (> 20 km)	1
12/19/2024	Pre-Con	7:15:00	63.1	175	10.2	Clear	Good (10 - 20 km)	1
	Post-Con	13:57:32	63.1	175	10.2	Fog	Poor (.5 - 1.5 km)	0

Abbreviations: mi = miles; Pre-Con = pre-construction activities; Post-Con = post-construction activities.

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Appendix H: Time in Level B Harassment Zone

Table H-1. Description of and estimation of time in Level B ZOI.

Species	Animal ID Number	Activity	Pile Number	Behavior At First Observation	Direction of Travel	Estimated Time in Level B ZOI (hh:mm:ss)	Time in Zone Commentary.
Pacific harbor seal	18	Shutdown	4	Look Pin	N	0:00:42.5	At 11:58:00, the crew conducted a soft start sequence on Pile 4 before beginning IPD at 12:00:50. The crew stopped briefly at 12:01:28 and resumed at 12:04:10. After approximately 441 hits, a single PHS surfaced approximately 26 m (85 ft) southeast of Pile 4 (within the PHS shutdown zone) at 12:13:30 for 2-3 seconds before diving towards the pile being driven resulting in Level B Take. As soon as it surfaced, Command issued a shutdown over the radio. The crew chief repeated the order, and driving was stopped. Hydro-jetting resumed almost immediately, but all other activities ceased for 15 minutes while the monitors searched for the PHS. Since it did not reappear, and for extra caution, the Command PSO instructed the crew to conduct another full soft start sequence before resuming driving. The second soft start began at 12:28:46. No further sightings of the PHS occurred for the rest of the day. As the animal was heading N towards the pile as it was being driven prior to the shutdown, it would have been in the zone for roughly 85 m of swimming. Assuming a speed of 2m/s we can assume it was exposed for 45.2 sec. Based on PSO observations, the closest approach was 20.1 m.
Pacific harbor seal	45	Shutdown	30	Swimming	W	0:00:12.5	After six hits from the impact hammer, the Pacific harbor seal surfaced for a moment just north of the crane barge and then dove again in the direction of Pile 30, a shutdown was immediately called at 11:52:10, though four more hits occurred as the machinery was being shutdown. The animal was presumed to be, but not observed, within the shutdown zone. Then after less than one minute the Pacific harbor seal resurfaced again near Pier 160 outside of the IPD ZOI and swam showing no signs of aberrant behavior. As the animal was both outside of the Shutdown Zone and Level B ZOI for the pile, the Shutdown was ended at 11:53:05. It is very likely that the animal was within the Level B ZOI during the 6+ hits, which would equate to roughly 12.5 seconds, if one assumes that the hammer operates at a rate of 0.5 hz. Based on PSO observations, the closest approach was 36.7 m.

Abbreviations: mi = miles; m/s = meters per second; Pre-Con = pre-construction activities; Post-Con = post-construction activities.

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