Final Incidental Harassment Authorization Monitoring Report

Washington State Department of Transportation Ferries Division

Coupeville Timber Towers Preservation Project

May 18, 2017

Washington State Ferries

Washington State Department of Transportation

Submitted to:

National Marine Fisheries Service
Office of Protected Resources
1315 East-West Highway
Silver Spring, Maryland 20910-3226

Prepared by:

Washington State Ferries
Richard D. Huey
2901 Third Avenue, Suite 500
Seattle, Washington 98121-3014
206-515-3721
hueyr@wsdot.wa.gov

Cover: Steller Sea Lions near eastern shore of Marrowstone Island, November 21, 2010. *(Photo by N. Baker).*

Table of Contents

LIST OF TABLES

LIST OF FIGURES

1.0 Monitoring Results

The Coupeville Towers project began September 15, 2017 and was completed November 17, 2017. Pile driving or removal took place over 9 days. Table 1 provides a summary of species observed, permitted Level B takes and observed Level B takes.

Table 1-1 Level B Acoustical Harassment Take Request

Species	Number Observed	Permitted Take	Observed Take
Pacific Harbor Seal	34	256	5
California Sea Lion	1	16	0
Steller Sea Lion	73	328	21
Harbor Porpoise	67	440	6
Dall's Porpoise	0	24	0
Transient Killer Whale	0	48	0
Gray Whale	0	8	0
Minke Whale	0	16	0

2.0 Description of the Activity

2.1 Introduction

The purpose of this project was to ensure the safe and reliable function of the Coupeville Ferry Terminal. The timber towers needed to be upgraded due to scour from ferry vessel propellers that were reducing pile embedment. The project placed permanent steel piles to support the towers

2.2 Project Setting and Land Use

The Coupeville Ferry Terminal is located on Whidbey Island, adjacent to Keystone Harbor/Admiralty Inlet, Island County, Washington. The terminal is located in Section 22, Township 31 North, Range 1 East. The terminal serves State Route 20.

2.3 Project Description

The transfer span towers and headframe house the cable and weight system that raises and lowers the transfer span to adjust to the tides, allowing for vehicle traffic to enter and exit the ferry vessel (Figure 2-1). The towers needed to be upgraded to due to scour from ferry vessel propellers that were reducing pile embedment. The project was completed in one in-water work window. Work took place from a barge containing a derrick, crane and other necessary equipment.

Eight 24-inch diameter hollow steel piles were installed to support the towers, and concrete caps were installed on top in order to support the headframe that houses the pulleys for the transfer span cables. Five 12-inch timber piles were removed to allow room for the new steel piles to be installed. The remaining tower timber piles remained in place to help support the structure.

Figure 2-1 Coupeville Timber Towers

Up to six temporary 24-inch diameter hollow steel piles were planned to be installed to support the transfer span and towers cable systems during construction. However, only two temporary steel piles were used to support the transfer span. The temporary piles were not driven deep, and were removed in approximately 10 minutes.

All permanent steel piles were installed with an impact hammer, instead of the normal practice of using a vibratory hammer and then proofing permanent piles to establish weight-bearing capacity. There were three reasons for this approach: terminal closure for the project, monitoring area size and geotechnical information. A closure of two days was required to complete this work. The closure was scheduled for specific dates so that it could be communicated to terminal users and reservation holders. If those dates had shifted days before the project, communicating the change would have been very difficult.

Use of a vibratory hammer to drive steel piles would have created a 31 km/19-mile long/140 sq. km/54 square mile vibratory zone of influence (ZOI) (Figure 3-4). If there were delays due to the inability to monitor the ZOI (reduced visibility and rough water), then the two-day terminal closure would have been put at risk. Eliminating vibratory hammer installation reduced that risk.

In addition, geotechnical studies indicate that the ground in Keystone Harbor is very hard at depth. During the 2010 Keystone (renamed Coupeville) Ferry Terminal Wingwalls project, it was difficult during vibratory driving of steel piles to reach the required tip depths. Several piles

never reached the required depth, though the overall structure requirements were met. Therefore, vibratory driving (followed by proofing of the permanent piles) may have had limited value in reducing impacting duration.

Temporary steel and timber piles were removed with a vibratory hammer. All work will occur in water depths between -10 and -20 feet mean lower-low water. Construction photos are provided in Appendix A.

2.3.1 Construction Sequence

The following construction sequence was followed:

- Remove timber piles
- Install permanent steel piles
- Install concrete caps
- Install temporary steel piles to hold transfer span
- Transfer headframe to new pile caps
- Remove temporary piles

3.0 Marine Mammal Monitoring Plan

Qualified Protected Species Observers (PSOs) were present on site at all times during pile removal and driving. Marine mammal behavior, overall numbers of individuals observed, frequency of observation, and the time corresponding to the daily tidal cycle were recorded.

The project included vibratory driving and removal of 24-inch steel piles, vibratory removal of 12-inch timber piles, and impact driving of 24-inch steel piles. Distances to injury and harassment thresholds are provided below:

Table 3-1 Distances/Areas to Injury and Harrassment Thresholds

Pile Driving Method	190 dB Injury (m)	180 dB Injury (m)	160 dB Harassment (m)	120 dB Harassment (km)	ZOI size (km^2)
Vibratory pile driving/removal (12-in timber)	NA	NA	NA	2.3	1.6
Predicted Impact driving (24-in steel pile)	5	22	464	NA	0.1
Actual Impact driving (24-in steel pile)	16	74	1,585	NA	0.75

During the project, in-water measurements of impact pile driving noise levels were taken. Actual impact driving source level was a maximum of 193 RMS vs. the predicted 185 RMS source level used to establish the original monitoring areas. The ZOE/ZOI was adjusted accordingly to account for the actual source level (Figure 3-2).

3.1.1 Monitoring to Estimate Level B Take Levels and Prevent Level A Take

WSF proposed the following Marine Mammal Monitoring Plan in order to prevent Level A injury take in the ZOE, and to estimate Level B harassment take in the ZOIs:

- During 24-inch steel impact pile driving, two land-based PSOs monitored the ZOE and ZOI (Figure 3-2).
- During vibratory timber pile removal, two land-based PSOs monitored the ZOI (Figure 3-3).
- During 24-inch vibratory pile removal, 7 land-based PSOs and one monitoring boat with a PSO and boat operator monitored the ZOI (Figure 3-4).
- To verify the required monitoring distance, the ZOE and ZOIs were determined by using a range finder or hand-held global positioning system device.
- The ZOE and ZOIs were monitored for the presence of marine mammals 30 minutes before, during, and 30 minutes after any pile driving or removal activity.
- Monitoring was continuous unless the contractor took a significant break, in which case, monitoring began 30 minutes prior to restarting pile removal.
- When marine mammals were observed, their location within the ZOIs, and their reaction (if any) to pile removal or driving activities was documented.

3.1.2 Monitoring to Prevent Killer Whale Take

The following measures were in place to prevent SRKW Level B acoustical harassment take (no killer whales were observed during this project):

- If SRKW (as identified by Orca Network, NMFS or another qualified source) approach the ZOIs during pile removal or driving, work will be paused until the SRKW exit the ZOIs to avoid Level B harassment take.
- If killer whales approach the ZOIs during pile removal or driving, and it is unknown whether they are SRKW or transient, it shall be assumed they are SRKW in order to prevent SRKW Level B harassment take.
- If SRKW enter the ZOIs undetected, up to 4 Level B harassment takes may be used. Work will be paused until the SRKW exit the ZOI to avoid further Level B harassment take. The intent of monitoring is to prevent any take of SRKW. The 4 Level B harassment takes will be used only if necessary.

WSF proposed the following Marine Mammal Monitoring Plan for Transient killer whale:

- If positively identified Transients (as identified by Orca Network, NMFS or another qualified source) approach the ZOIs during pile removal or driving, and it is known that SR killer whales are not in the vicinity (from the same qualified sources) work will continue.
- If the permitted number of Transient killer whale takes have been used, and killer whale approach the ZOI during vibratory pile removal, work shall be paused to avoid take.

3.1.3 Minimum Qualifications for Protected Species Observers

Qualifications for PSOs include:

- Visual acuity in both eyes (correction is permissible) sufficient for discernment of moving targets at the water's surface with ability to estimate target size and distance. Use of binoculars may be necessary to correctly identify the target.
- Experience or training in the field identification of marine mammals (cetaceans and pinnipeds).
- Sufficient training, orientation or experience with the construction operation to provide for personal safety during observations.
- Ability to communicate orally, by radio or in person, with project personnel to provide real time information on marine mammals observed in the area as necessary.
- Experience and ability to conduct field observations and collect data according to assigned protocols (this may include academic experience).
- Writing skills sufficient to prepare a report of observations that would include such information as the number and type of marine mammals observed; the behavior of marine mammals in the project area during construction, dates and times when observations were conducted; dates and times when in water construction activities were conducted; dates and times when marine mammals were present at or within the Level B acoustical harassment ZOI; dates and times when pile removal was paused due to the presence of marine mammals.

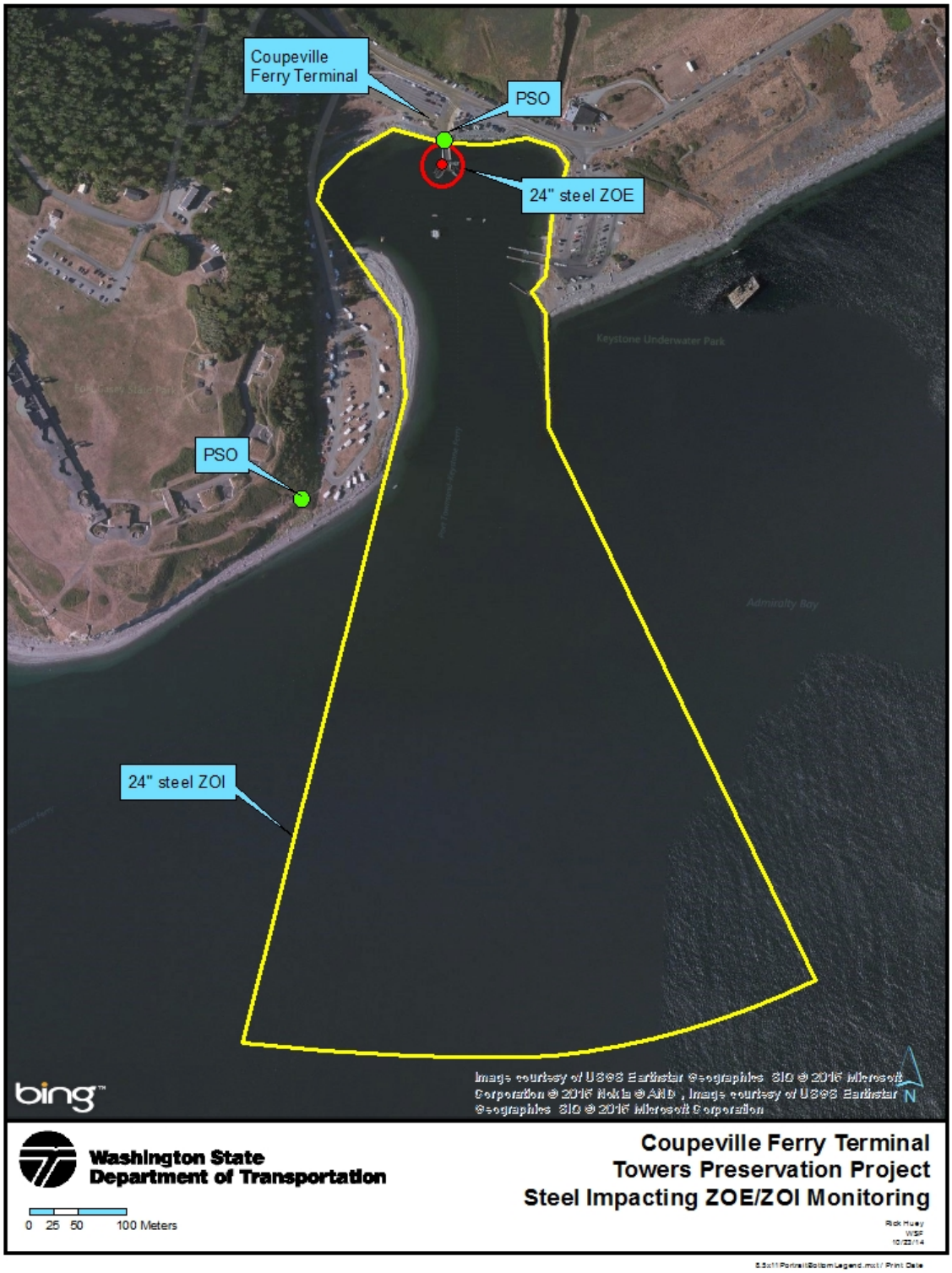

Figure 3-1 Predicted 24" Steel Impact Monitoring

Figure 3-2 Actual 24" Steel Impact Monitoring

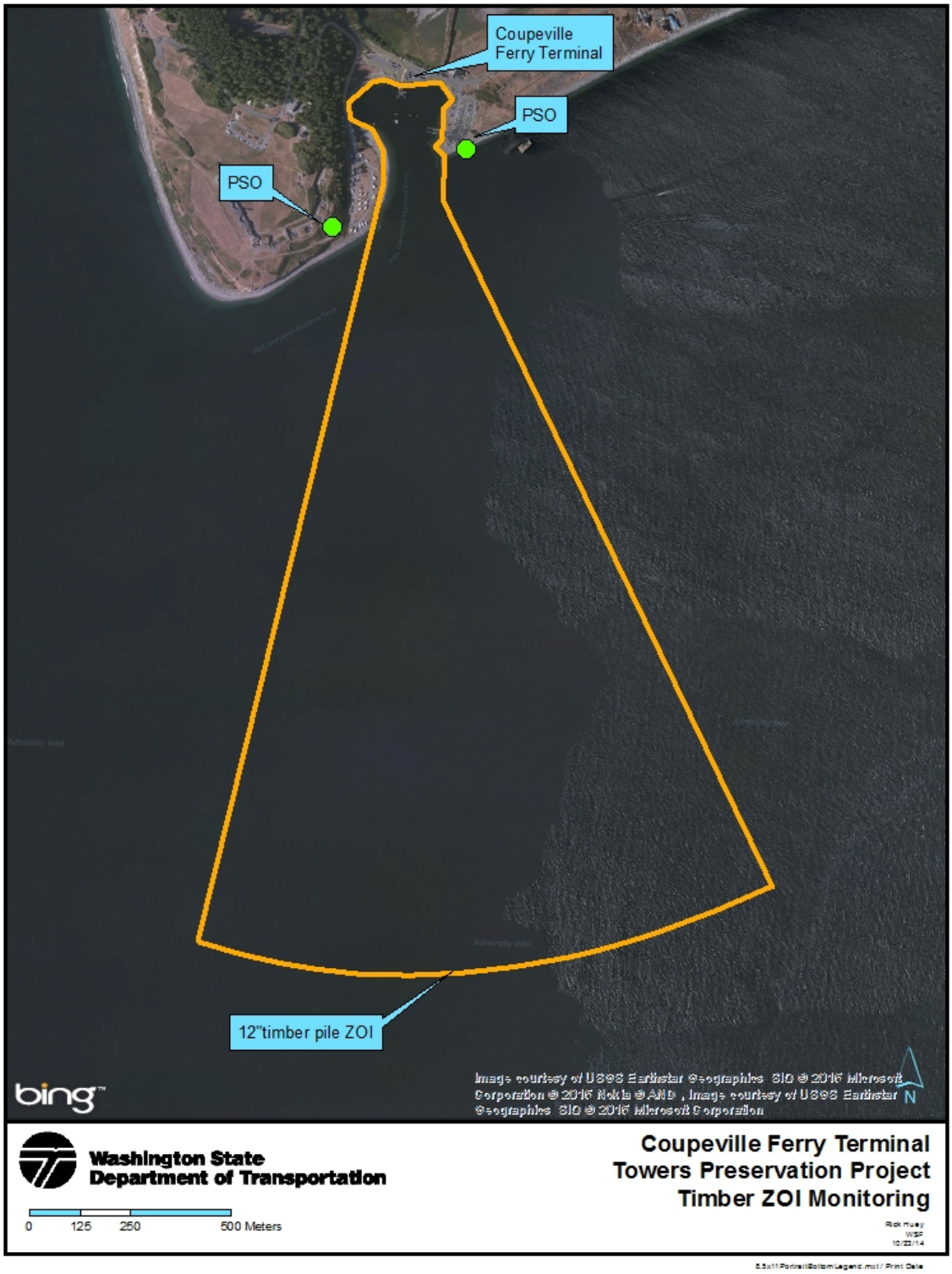

Figure 3-3 12" Timber Vibratory Removal Monitoring

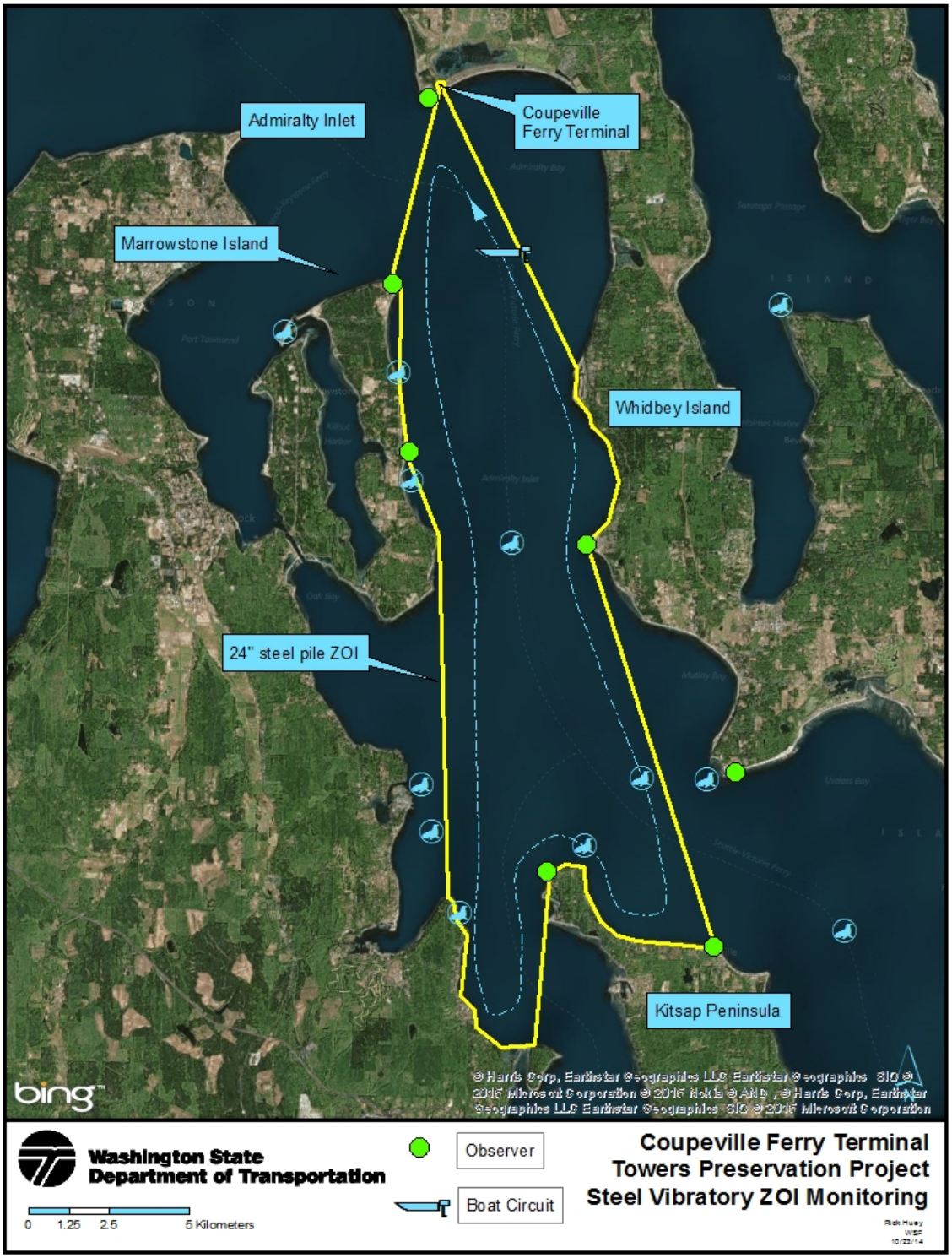

Figure 3-4 24" Steel Vibratory Removal Monitoring

Appendix A – Construction Photos

Figure 1 Preparing Bubble Curtain

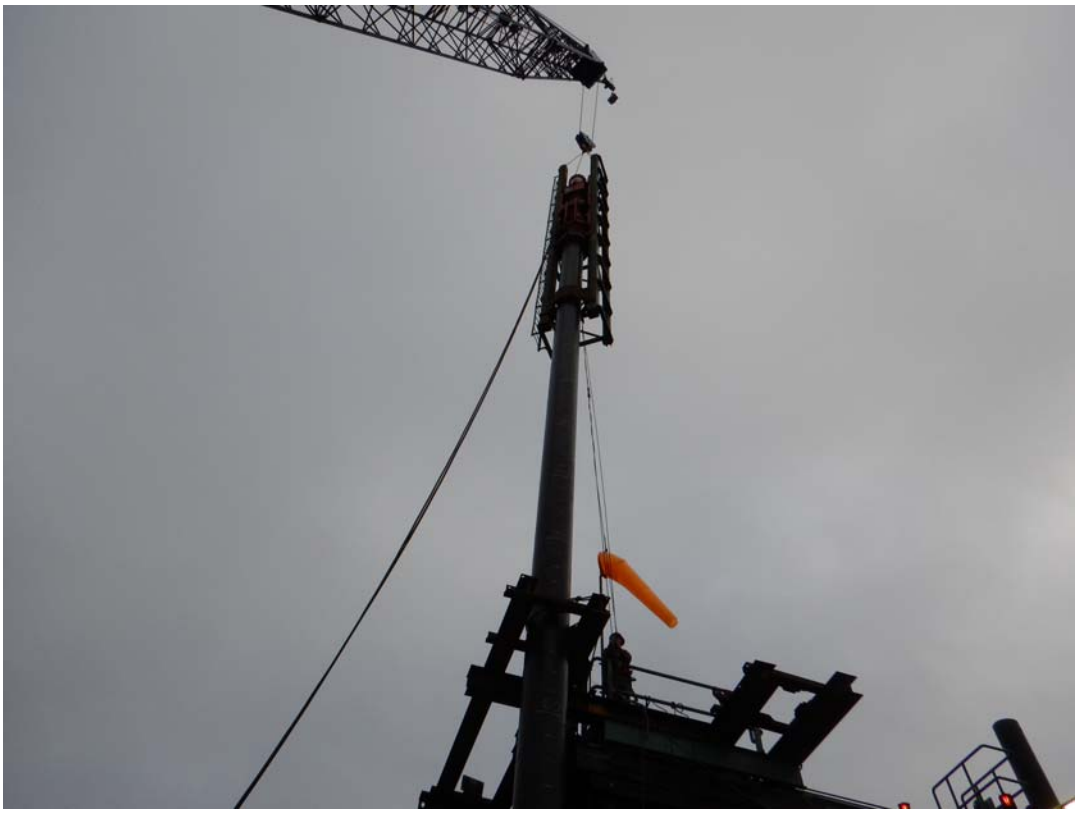

Figure 2 Positioning Impact Hammer

Figure 3 Bubble Curtain Active

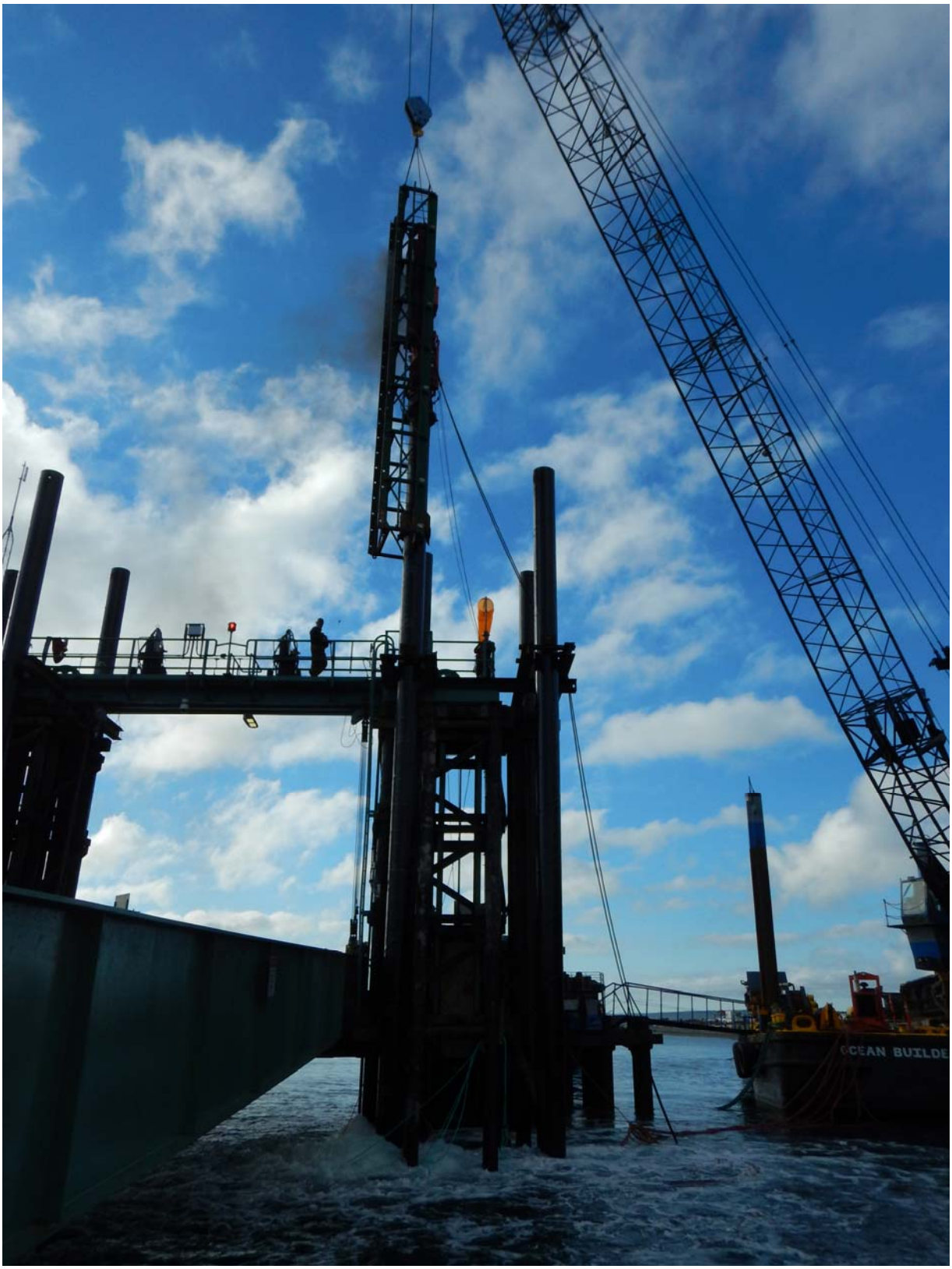

Figure 4 Impact Driving

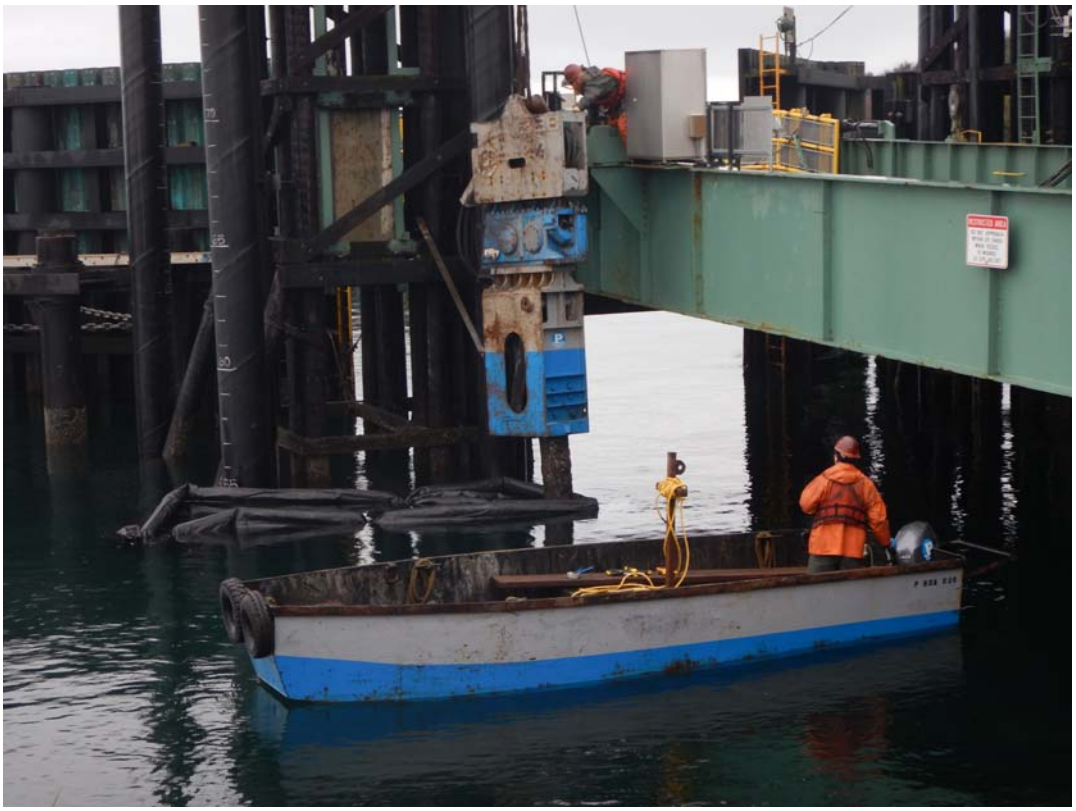

Figure 5 Vibratory Removal of Timber Pile

Figure 6 Cable Lift Timber Pile to Barge

Figure 7 Vibratory Removal of Steel Pile

Figure 8 Cable Lift of Steel Pile to Barge