

**Edmonds Ferry Terminal Dolphin Relocation Project  
Marine Mammal Monitoring Report**

**Washington State Department of Transportation  
Ferries Division**

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Submitted To:

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# 1.0 Description of the Activity

## 1.1 Project Description

The WSDOT/WSF are proposing to relocate one dolphin to improve safety at each of the Bremerton and Edmonds ferry terminals. The Olympic Class ferries have an atypical shape, which at some terminals causes the vessel to make contact with the inner dolphin prior to the stern reaching the intermediate or outer dolphin. This causes rotation of the vessel away from the wingwalls and presents a safety issue. The project will reduce the risk of landing issues for Olympic Class ferries at the Bremerton and Edmonds ferry terminals.

## 1.2 Project Status

The Bremerton project is delayed until the 2019/2020 in-water work window. The Edmonds dolphin relocation project was completed as planned in the 2018/19 in-water work window. This report addresses the monitoring results of the Edmonds project. The locations of the Edmonds Ferry Terminal project elements are shown in Figure 1-1.

## 1.3 Project Setting and Land Use

The Edmonds Ferry Terminal is located in the city of Edmonds, along the downtown waterfront. Edmonds is in Snohomish County, approximately 15 miles north of Seattle. The terminal is located in Section 23, Township 27 North, Range 3 East (Figure 1-2).



Figure 1-1. Edmonds project elements.

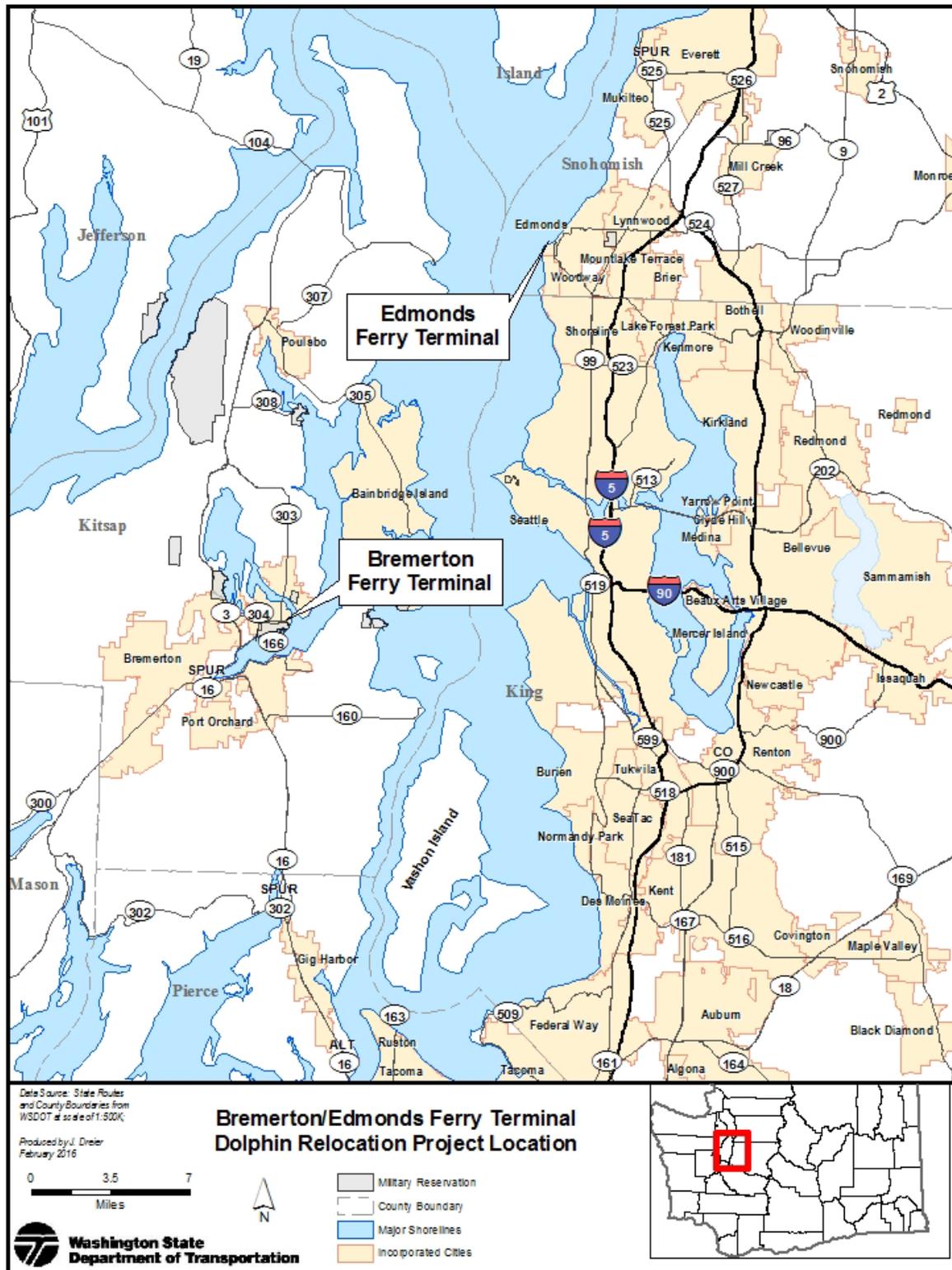


Figure 1-2. Location of Bremerton and Edmonds ferry terminals and nearby features.

## 1.4 Construction Completed

Tables 1-1 and 1-2 summarize the project's pile removal and installation durations at each terminal.

**Table 1-1. Edmonds pile removal and installation.**

<b>Project Element</b>	<b>Diameter</b>	<b>Pile Type</b>	<b>Install or Remove</b>	<b>Method</b>	<b>Number of Piles</b>
Indicator Pile	36-in	Steel	Install	Vibratory	1
		Steel	Remove	Vibratory	1
Existing Dolphin Removal	36-in	Steel	Remove	Vibratory	3
Relocated Dolphin Installation	36-in	Steel	Install	Vibratory	3
	30-in	Steel	Install	Vibratory	3

## 2.0 Monitoring

### 2.1 Monitoring and Take Results

Marine mammal monitoring was implemented for all pile driving and removal in the 2018/19 in-water work window (August 1 to February 15). Monitoring took place over 6 days between January 29 and February 7, 2019. Permitted take, observations and take recorded used are provided below:

**Table 2-1. Permitted and Recorded Take**

Species	Permitted Level B Take	Individuals Observed	Level B Take Recorded	Comment
Harbor Seal	2,286	75	37	
Elephant Seal	15	0	0	
California Sea Lion	1,149	39	22	
Steller Sea Lion	75	5	1	
Transient Killer Whale	30	0	0	
Gray Whale	10	0	1	
Minke Whale	8	0	0	
Harbor Porpoise	1,087	16	7	
Dall's Porpoise	90	1	0	
Long Beaked Common Dolphin	50	0	1	
Unidentified Pinniped		3	(1)	Counted as harbor seal*
Unidentified Large Whale		1	(1)	Counted as Gray whale*
Unidentified Porpoise/Dolphin		1	(1)	Counted as dolphin*

*\*based on observer notes/included in Level B Take Recorded totals*

## 2.2 Data Collection

All data was collected in ArcGIS Survey 123. Data fields collected are listed below. All monitoring data is provided in Appendix A as an electronic Excel spreadsheet. The marine mammal monitoring plan is attached as Appendix B.

**Table 2-2. Data Fields**

<b>Protected Species Observer Data Fields</b>
PSO Monitor Name
Project
PSO Monitoring Station ID
Construction Activity
Weather Conditions
Specify other. (Weather)
Observation Date & Time
Species Observed
Specify other. (Species)
Duplicate Sighting
Number of Individuals Observed
Direction of Sighting from the PSO
Distance from the PSO
Compass Bearing towards Animal from PSO (optional data)
Distance from PSO to Animal (Meters) (optional data)
Compass Bearing to Noise Source from PSO (optional data)
Distance from PSO to Noise Source (Meters) (optional data)
Calculated Angle between the Bearings (optional data)
Distance of Animal from Noise Source (Meters) (optional data)
Observed Behavior
Direction of Travel
Comments about the Sighting
Zone Selection
Number of Individuals in Shutdown Zone
Number of Individuals in Harassment Zone
Harassment/Shutdown Comments

Appendix A  
Monitoring Data  
*Excel Spreadsheet Provided Electronically*

Appendix B  
Marine Mammal Monitoring Plan

**Bremerton and Edmonds Ferry Terminals Dolphin Relocation Project  
Marine Mammal Monitoring Plan**

**March 2018**

In accordance with the March 2018, Washington State Ferries Bremerton-Edmonds Ferry Terminal Dolphin Relocation Project Incidental Harassment Authorization Request, marine mammal monitoring will be implemented during this project.

Qualified Protected Species Observers (PSOs) will be 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 will be recorded.

The project includes vibratory removal and/or driving of 30-inch and 36-inch diameter hollow steel piles. Summaries of distances to injury (Table 1) and harassment (Table 2) thresholds are provided below:

**Table 1. ZOI/ZOE (Shutdown) Zones**

<b>Zone</b>	<b>Project Area</b>	<b>Species</b>	<b>Threshold</b>	<b>Distance to Threshold</b>	<b>ZOI Area (km<sup>2</sup>)</b>
<b>ZOI-1</b>	Bremerton	All*	Level B	39.8 km	13.2 km <sup>2</sup>
<b>ZOI-2</b>	Edmonds	All*	Level B	63.1 km	351 km <sup>2</sup>
<b>ZOE-1</b>	Both	Pinnipeds	Level A	10 m	314 m <sup>2</sup>
<b>ZOE-2</b>	Both	Cetaceans	Level A	35 m	3,849 m <sup>2</sup>

*\*All species, except Southern Resident Killer Whale = shutdown zones*

**ZOI Sound Source Verification (SSV) During Construction (Edmonds)**

In-water noise measurements of vibratory pile driving and removal will be taken during the Edmonds project to determine if the ZOI needs to be modified. The Bremerton project is land-constrained, and measurements are unlikely to significantly change the modeled ZOI. If the Edmonds ZOI is modified, the marine mammal monitoring plan will be adjusted to ensure that harassment take is adequately monitored. If the Edmonds SSV verifies that the actual vs. modeled ZOI is 15 km or less, then the Marrowstone Island and the Mukilteo Ferry positions will be eliminated.

## **Monitoring to Estimate Level B Take Levels and Prevent Level A Take**

WSF proposes 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 all vibratory driving/removal at the Bremerton terminal, two land-based PSOs, and one monitoring boat with one PSO and boat operator will monitor the ZOI.
- During all vibratory driving/removal at the Edmonds terminal, five land-based PSOs, and two ferry-based PSOs will monitor the ZOI.
- If weather prevents safe use of the boat in the Edmonds portion of the ZOI, a boat will be used in other areas of the ZOI that are safe, such as areas where lack of public access prevents stationing a land-based PSO.
- To verify the required monitoring distance, the ZOI will be determined by using a range finder or hand-held global positioning system device.
- The ZOI will be monitored for the presence of marine mammals 30 minutes before, during, and 30 minutes after any pile removal activity.
- Monitoring will be continuous unless the contractor takes a significant break, in which case, monitoring will be required 30 minutes prior to restarting pile removal.

## **Monitoring to Prevent Killer Whale Take**

WSF proposes the following measures to prevent SRKW Level B acoustical harassment take:

- If SRKW (as identified by Orca Network, NMFS or another qualified source) approaches the relevant ZOI during pile removal or driving, work will be paused until the SRKW exit the ZOI to avoid harassment take.
- If killer whales approach the ZOI 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 harassment take.

## **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.

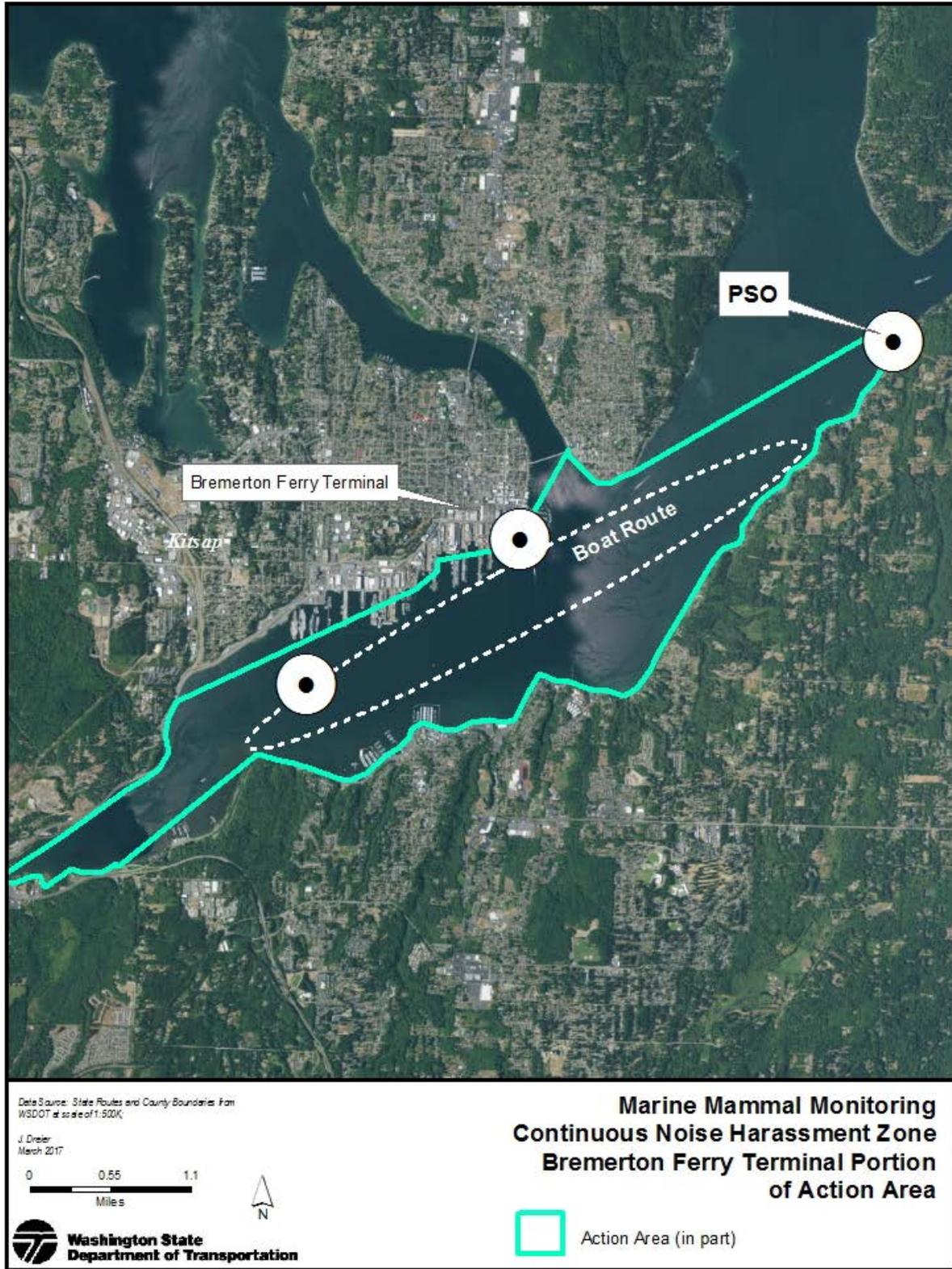
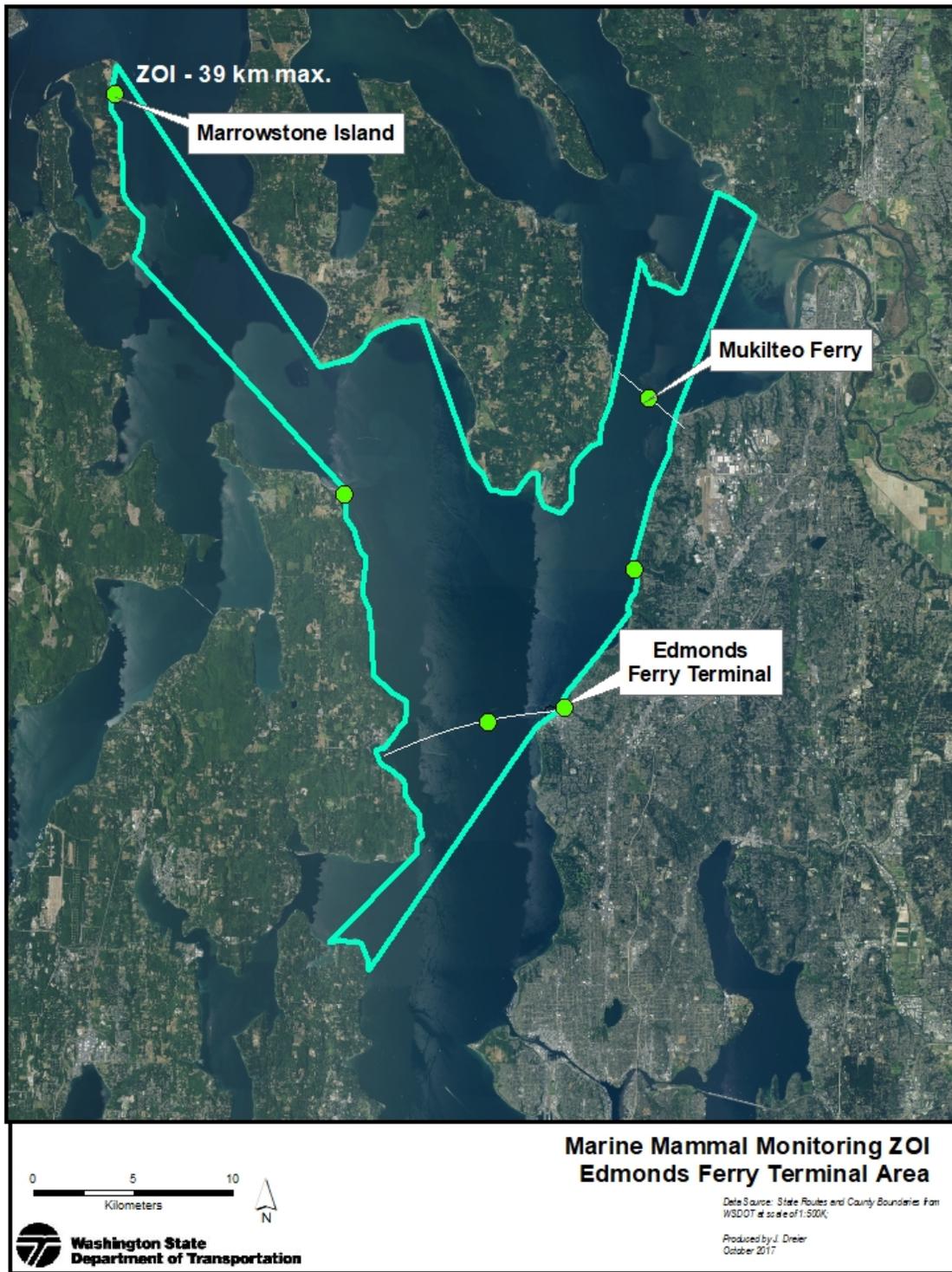
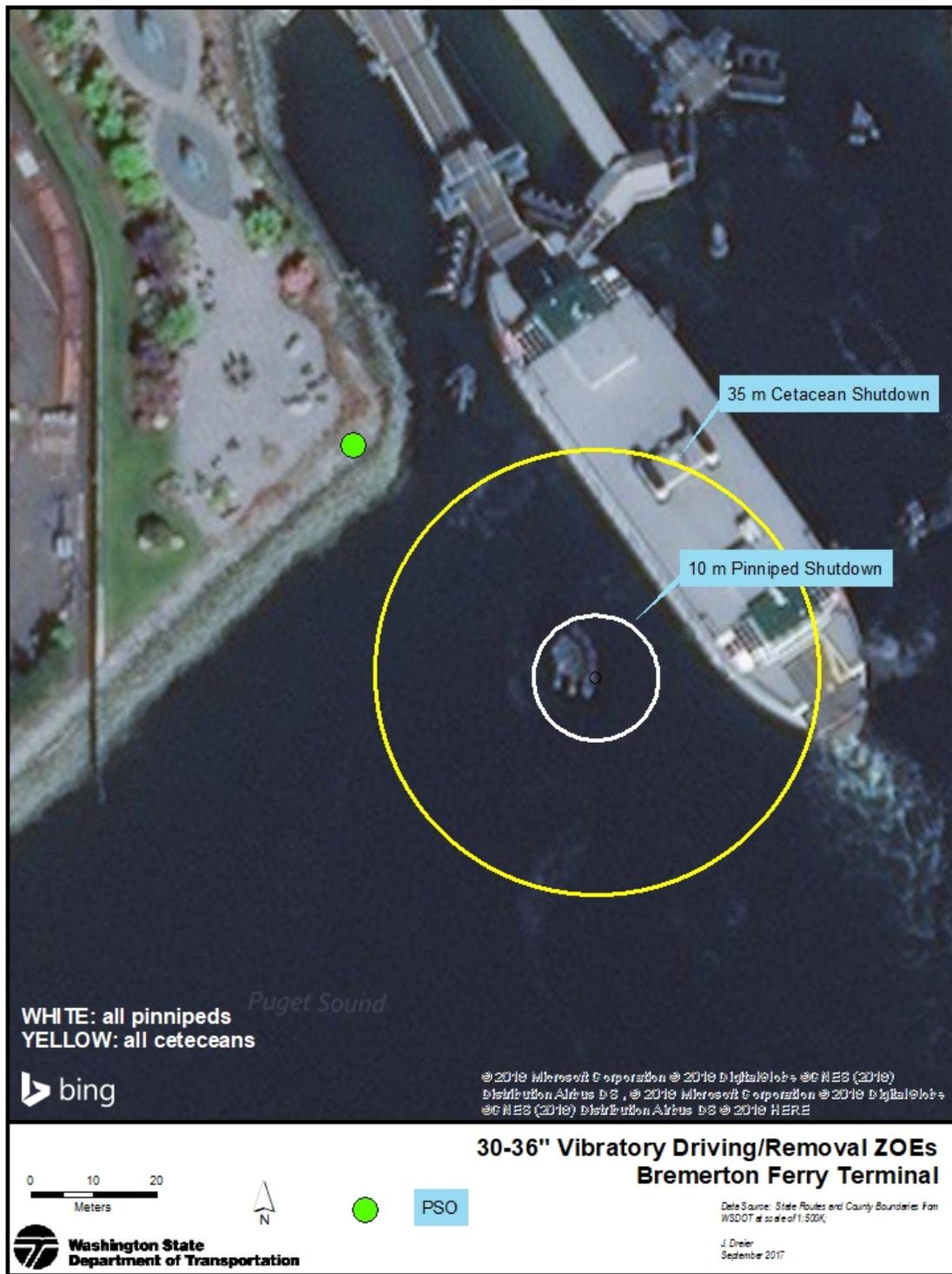


Figure 1. Bremerton monitoring locations during vibratory driving/removal of 30- and 36-inch diameter steel piles (ZOI-1).



**Figure 2. Edmonds monitoring locations during vibratory driving/removal of 30- and 36-inch diameter steel piles (ZOI-2).**



**Figure 3. ZOE monitoring locations during vibratory driving/removal of 30- and 36-inch diameter steel piles (Bremerton).**

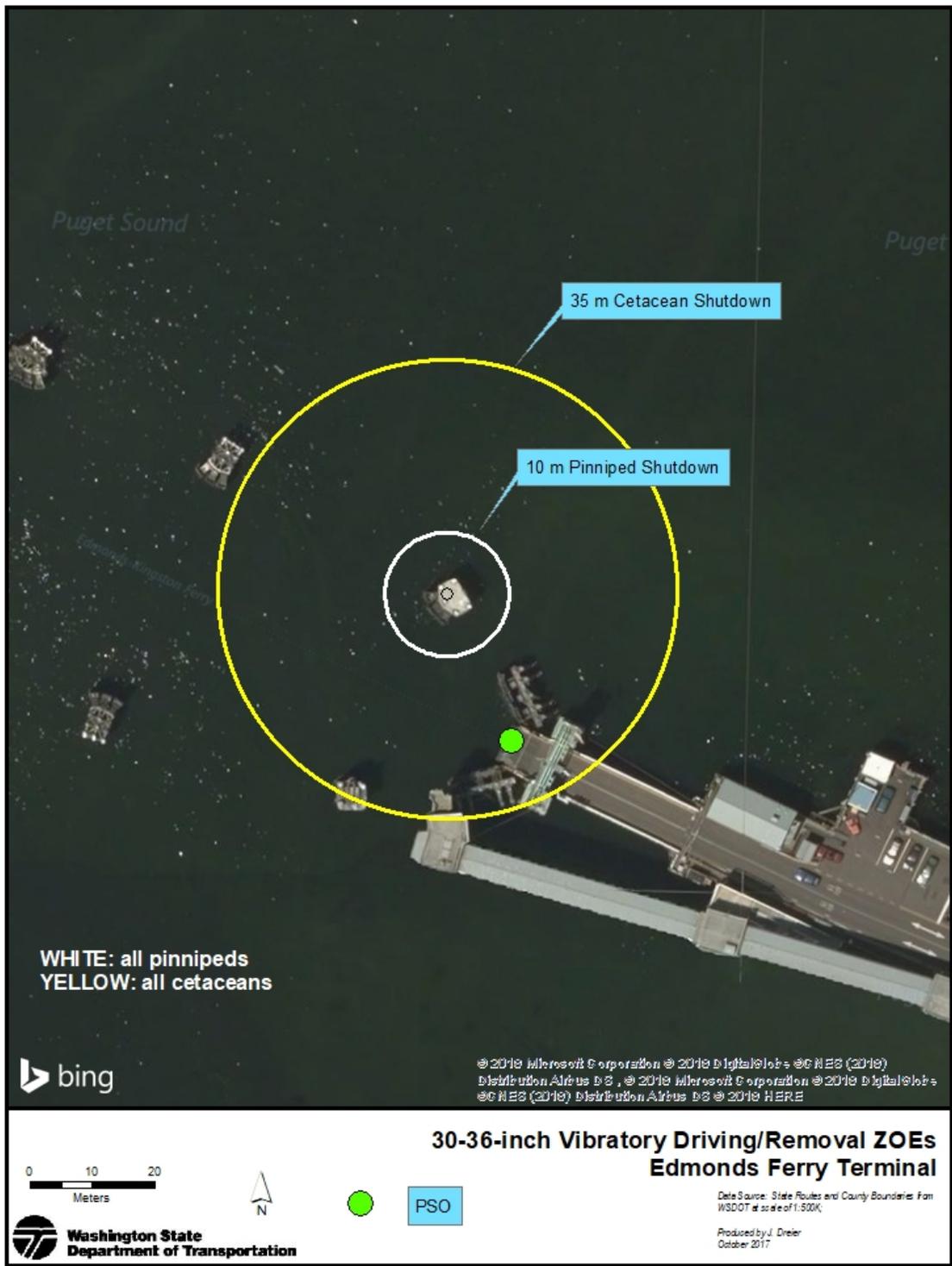


Figure 4. ZOE monitoring locations during vibratory driving/removal of 30- and 36-inch diameter steel piles (Edmonds).