

**Seattle Multimodal Project**  
**Year Three Marine Mammal Monitoring Plan**

May 10, 2019

In accordance with the Washington State Ferries Seattle Multimodal Project Year 3 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.

Year Three of the project includes vibratory removal of 12-inch steel, 14-inch steel- H, 14-inch timber, and 36-inch steel piles; vibratory driving of 24-inch and 36-inch steel piles; and impact driving of 36-inch steel piles. Removal of 18-inch concrete will not be addressed by this plan, as they will be cut below the mudline.

Distances to shutdown zones (Table 1), and Monitoring of Take and Shutdown zones (Table 2) are attached. PSO locations are shown in attached Figures 1-5. Level A Take zones will be added to this plan when available from the final permit.

**Monitoring**

WSF proposes the following Marine Mammal Monitoring Plan:

- Monitoring distances will be determined by using a range finder, hand-held global positioning system device or landmarks with known distances from the monitoring positions.
- Zones will be monitored for the presence of marine mammals 30 minutes before, during, and 30 minutes after any pile 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.
- If marine mammals are observed, their location within the zones, and their reaction (if any) to pile activities will be documented.

**Monitoring to Prevent Southern Resident Killer Whale (SRKW)**

WSF proposes the following measures to prevent SRKW take:

- If SRKW (as identified by Orca Network, NMFS or another qualified source) approach any of the zones during pile activity, work will be paused until the SRKW exit the zones to avoid Level A/B take.
- If killer whales approach the zones during pile activity, and it is unknown whether they are SRKW or transient, it shall be assumed they are SRKW in order to prevent SRKW Level A/B take.

WSF proposes 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 zones during pile activity, and it is known that SR killer whales are not in the vicinity (from the same qualified sources) work will continue. The exception is that if Transients approach a shutdown zone (zone size dependent on pile type), work will pause to prevent take.
- If the permitted number of Transient killer whale takes have been used, and killer whale approach any of the zones during pile activity, work shall be paused to avoid 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 identify the target correctly.
- 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.
- All PSOs shall be equipped with internet capable electronic devices for ArcGIS online data collection and submittals.

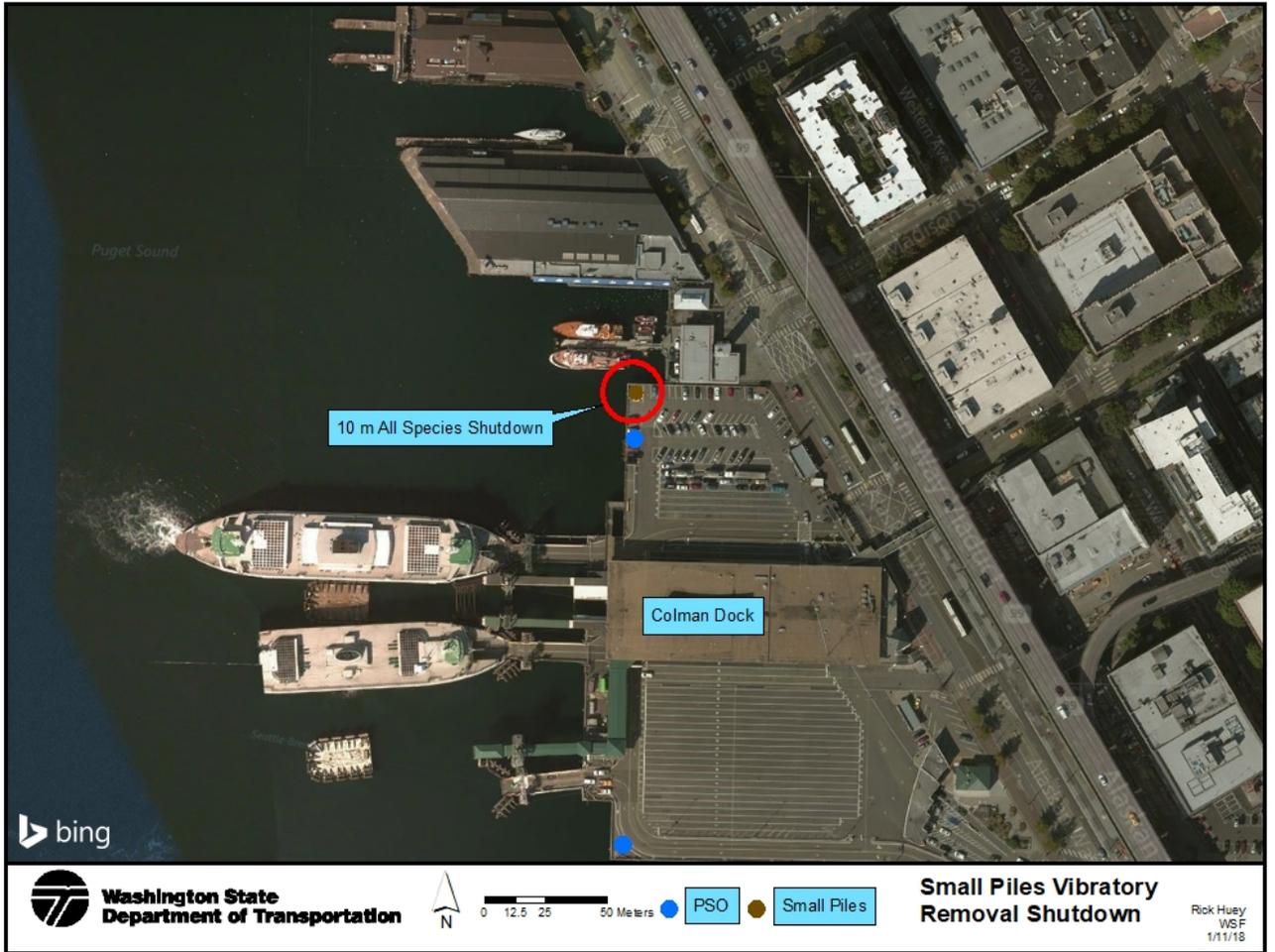
**Table 1 Shutdown Zones**

Pile type, size & pile driving method	Shutdown zone (m)					
	LF cetacean	MF cetacean	HF cetacean	Phocid	Otariid	SRKW
Vibratory drive / removal, 24" steel piles, 8 piles/day	100	10	150	60	10	8,690
Vibratory drive 24" steel pile, 2 piles/day; or vibratory removal 36" steel pile, 1 pile/day	40	10	60	25	10	8,960
Vibratory drive 36" steel pile, 8 piles/day	160	15	230	60	10	2,175
Impact drive (proof) 36" steel pile, 8 piles/day	350	15	410	60	15	736
Vibratory remove 14" timber pile, 20 piles/day; or vibratory removal 12" steel pile, 11 piles/day; or vibratory removal 14" steel pile, 10 piles/day	10	10	15	10	10	2,175
Vibratory removal 18" steel pile, 10 piles/day, 20 min/pile	120	10	170	60	10	2,175

**Table 2 Monitoring Take/Shutdown Zones**

<b>Figure</b>	<b>Distance</b>	<b>Marine Mammal Species</b>	<b>Pile Activity</b>	<b>Take Level</b>	<b>Number of Monitors</b>
1	10 m	All Species	12" Steel/14" Steel-H/14" Timber Vibratory Removal	Shutdown	2
2	2.2 km	All Species	12" Steel/14" Steel-H/14" Timber Vibratory Removal	B SRKW Shutdown	3
3	60 m	Seal, Sea Lion, Transient Killer Whale	18/24" Steel Vibratory Drive, Removal	Shutdown	2
3	120 m	Humpback, Gray Whale	18/24" Steel Vibratory Drive, Removal	Shutdown	
3	170 m	Porpoise, Dolphin	18/24" Steel Vibratory Drive, Removal	Shutdown	
4	60 m	Seal, Sea Lion, Transient Killer Whale	36" Steel Vibratory Drive, Removal	Shutdown	2
4	160 m	Humpback, Gray Whale	36" Steel Vibratory Drive, Removal	Shutdown	
4	230 m	Porpoise, Dolphin	36" Steel Vibratory Drive, Removal	Shutdown	
5	8.7 km	All Species	18/24/36" Steel Vibratory Drive, Removal	B SRKW Shutdown	3

<b>Figure</b>	<b>Distance</b>	<b>Marine Mammal Species</b>	<b>Pile Activity</b>	<b>Take Level</b>	<b>Number of Monitors</b>
6	60 m	Seal, Sea Lion	36" Steel Impact	Shutdown	3
6	350 m	Gray Whale,	36" Steel Impact	Shutdown	
6	410 m	Porpoise, Dolphin	36" Steel Impact	Shutdown	
6	736 m	All Species	36" Steel Impact	B SRKW Shutdown	



**Figure 1 – Small Piles Removal Shutdown  
(12” Steel/14” Steel-H/14” Timber)**

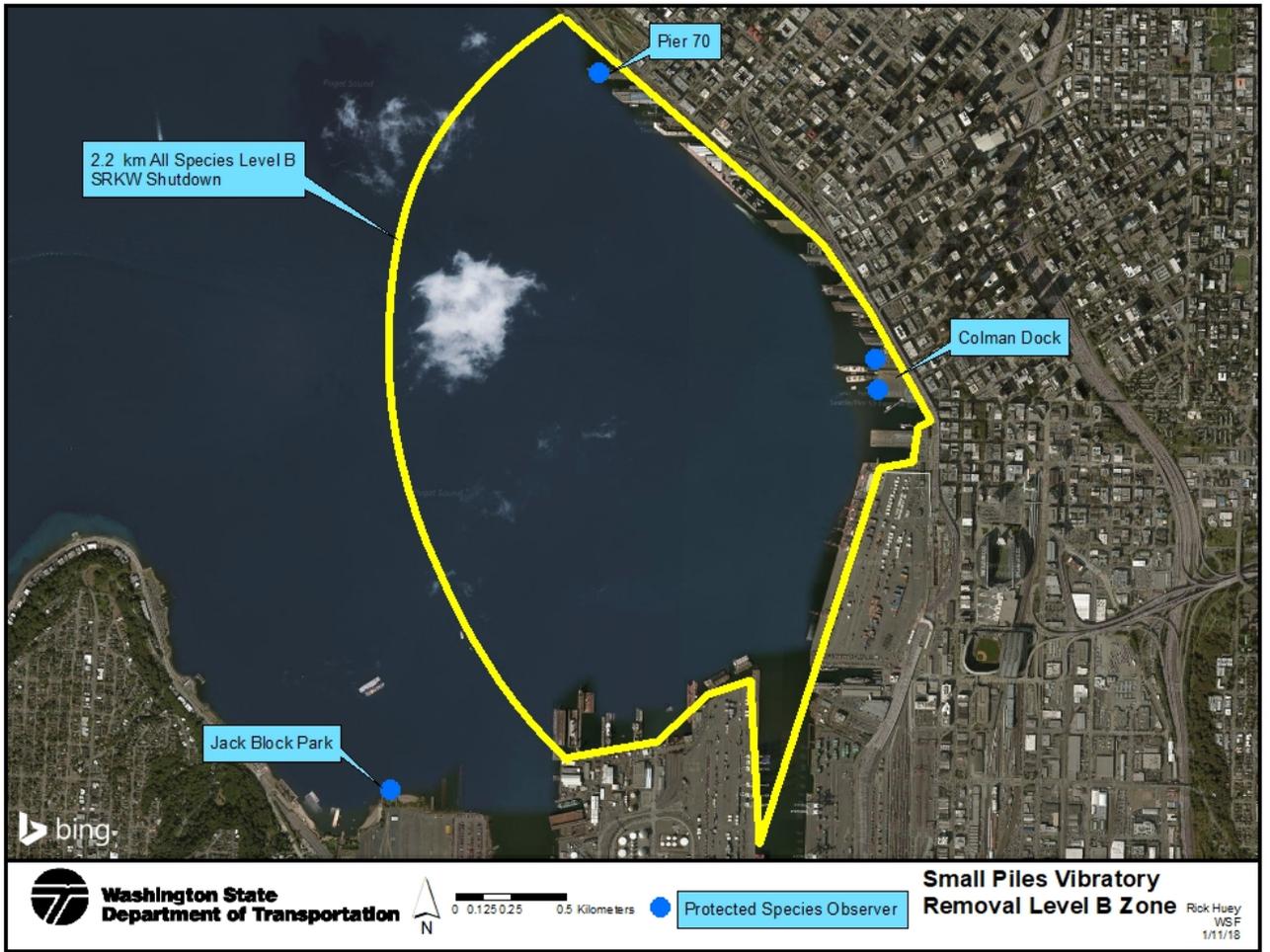


Figure 2 – Small Piles Level B Zone

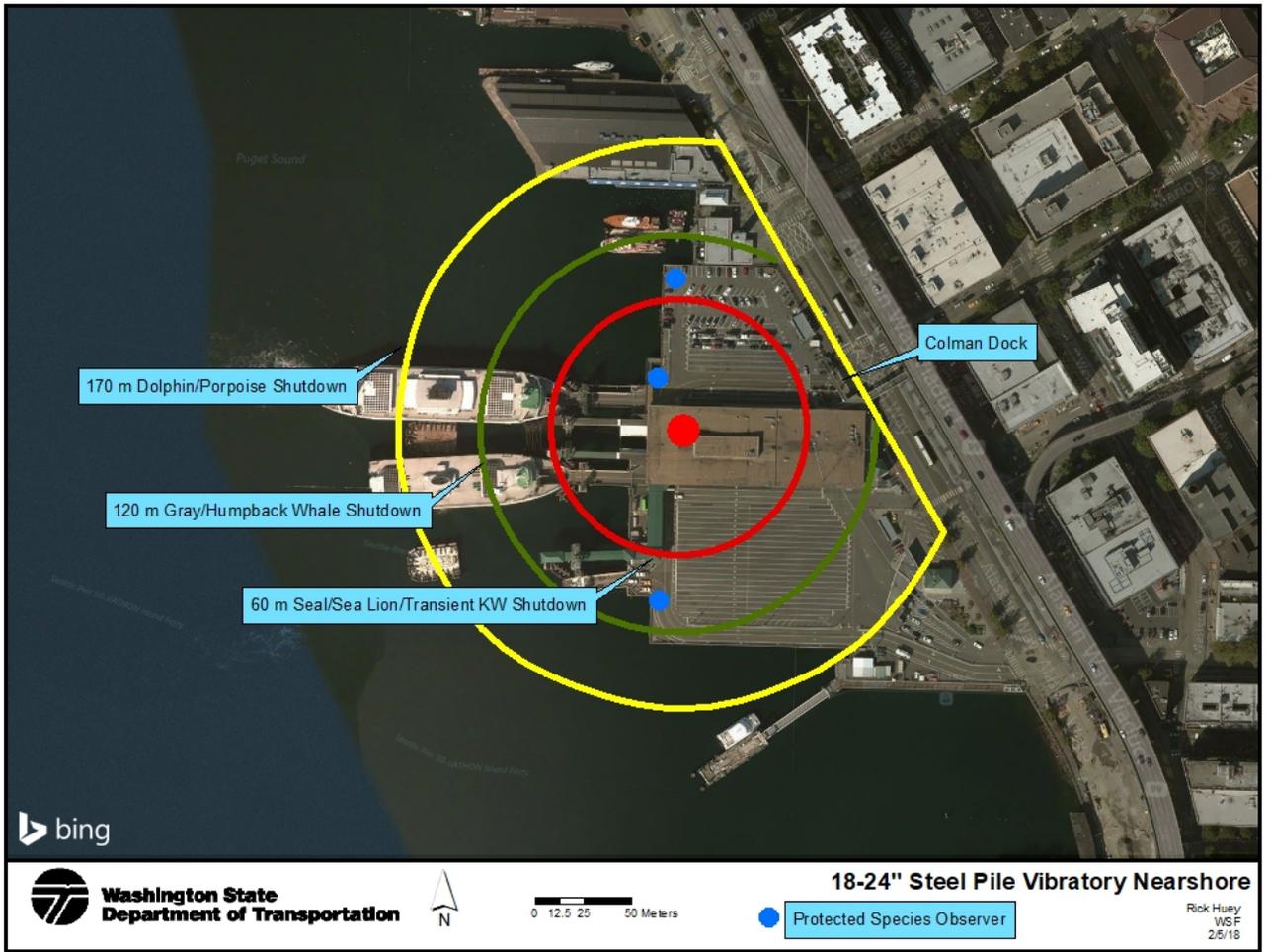


Figure 3 – 18-24” Steel Pile Vibratory Drive/Removal

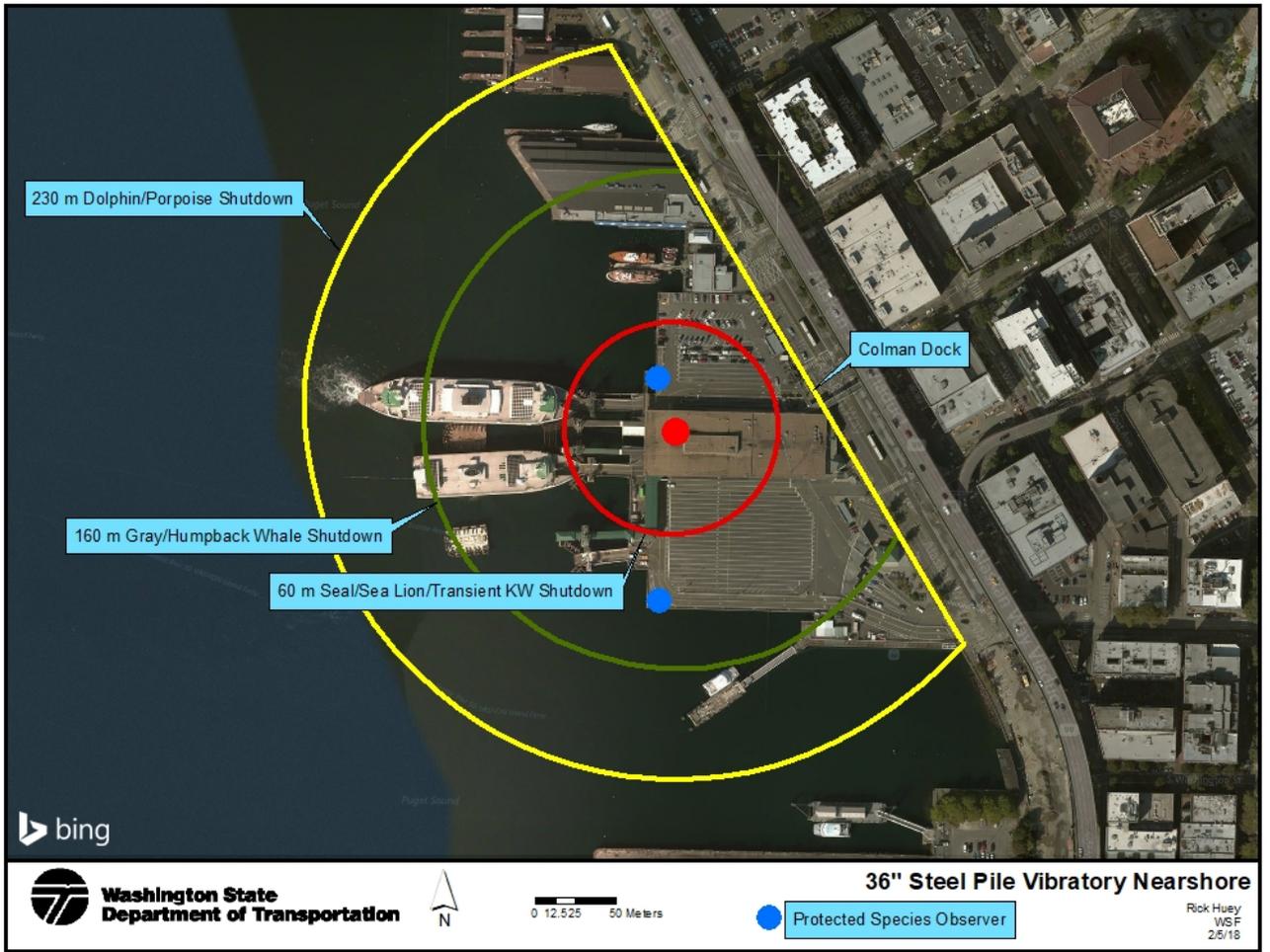


Figure 4 – 36” Steel Pile Steel Pile Vibratory Drive/Removal

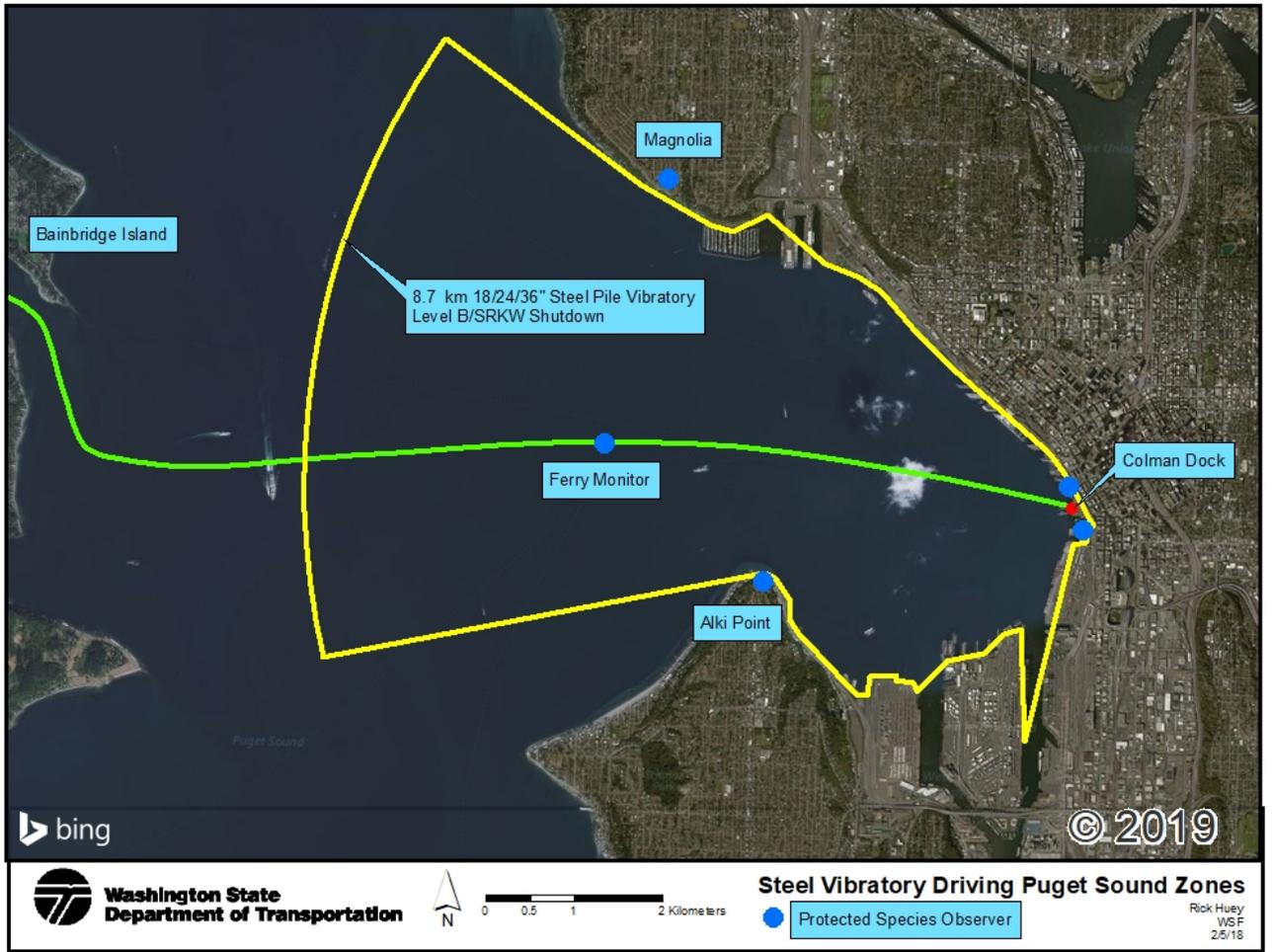


Figure 5 – 18/24/36' Steel Vibratory Zone



Figure 6 – 36” Steel Impact Drive