



## INCIDENTAL HARASSMENT AUTHORIZATION

The Seattle Department of Transportation (DOT) and/or its designees (holders of the Authorization) are hereby authorized under section 101(a)(5)(D) of the Marine Mammal Protection Act (16 U.S.C. 1371(a)(5)(D)) to harass small numbers of marine mammals incidental to pile driving and removal activities as part of Seattle DOT's Pier 62 Project.

1. This Authorization is valid from August 1, 2018, through February 28, 2019.
2. This Authorization is valid only for activities associated with in-water construction work at the Seattle Department of Transportation's (Seattle DOT) Pier 62 Project (Season 2) in Elliott Bay, Seattle, Washington.
3. General Conditions
  - (a) A copy of this Authorization must be in the possession of each of the applicant, its designees, and work crew personnel operating under the authority of the issued Authorization for the construction work at the Pier 62 Project.
  - (b) The species authorized for taking, by Level A harassment and Level B harassment, and in the numbers shown in Table 1 are: harbor seal (*Phoca vitulina*), northern elephant seal (*Mirounga angustirostris*), California sea lion (*Zalophus californianus*), Steller sea lion (*Eumetopias jubatus*), harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*Phocoenoides dalli*), long-beaked common dolphin (*Delphinus capensis*), bottlenose dolphin (*Tursiops truncatus*), both southern resident killer whale (SRKW) and transient killer whale (*Orcinus orca*), humpback whale (*Megaptera novaeangliae*), gray whale (*Eschrichtius robustus*), and minke whale (*Balaenoptera acutorostrata*).

**Table 1. Authorized Incidental Take by Level A and Level B Harassment**

Species	Authorized Level A Take	Authorized Level B Take	Authorized Total Take
Pacific harbor seal ( <i>Phoca vitulina</i> )	53	1,598	1,651
Northern elephant seal ( <i>Mirounga angustirostris</i> )	0	2	2
California sea lion ( <i>Zalophus californianus</i> )	0	1,905	1,905
Steller sea lion ( <i>Eumetopias jubatus</i> )	0	187	187
Southern resident killer whale DPS ( <i>Orcinus orca</i> )	0	23 (single occurrence of one pod)	23 (single occurrence of one pod)



Species	Authorized Level A Take	Authorized Level B Take	Authorized Total Take
Transient killer whale ( <i>Orcinus orca</i> )	0	42	42
Long-beaked common dolphin ( <i>Dephinus capensis</i> )	0	49	49
Bottlenose dolphin ( <i>Tursiops truncatus</i> )	0	49	49
Harbor porpoise ( <i>Phocoena phocoena</i> )	25	2,716	2,741
Dall's porpoise ( <i>Phocoenoides dalli</i> )	2	196	198
Humpback whale ( <i>Megaptera novaengliae</i> )	0	5	5
Gray whale ( <i>Eschrichtius robustus</i> )	0	4	4
Minke whale ( <i>Balaenoptera acutorostrata</i> )	0	10	10

(c) The authorization for taking by harassment is limited to the following acoustic sources and from the following activities:

- (i) Impact pile driving;
- (ii) Vibratory pile driving; and
- (iii) Vibratory pile removal

#### 4. Prohibitions

The taking, by incidental harassment only, is limited to the species listed under condition 3(a) above and by the numbers listed in Table 1 of this Authorization. The taking by serious injury or death of these species or the taking by harassment, injury or death of any other species of marine mammal is prohibited unless separately authorized or exempted under the MMPA and may result in the modification, suspension, or revocation of this Authorization.

#### 5. Mitigation Measures

The holder of this Authorization is required to implement the following mitigation measures:

##### (a) Timing Restriction

In-water construction work must occur only during daylight hours.

##### (b) Pre-Construction Briefing

Seattle DOT must conduct briefings for construction supervisors and crews, the monitoring team, and Seattle DOT staff prior to the start of all pile driving or removal activity, and when new personnel join the work, in order to explain responsibilities, communication procedures, the marine mammal monitoring protocol, and operational procedures.

(b) Bubble Curtain

A bubble curtain must be used during pile driving activities with an impact hammer and must be conducted using the following bubble curtain performance standards:

- (i) The bubble curtain must distribute air bubbles around 100 percent of the piling perimeter for the full depth of the water column.
- (ii) The lowest bubble curtain ring must be deployed on or as close to the mudline for the full circumference of the ring as possible, without causing turbidity.
- (iii) Seattle DOT must require that construction contractors train personnel in the proper balancing of air flow to the bubblers, and must require that construction contractors submit an inspection/performance report for approval by Seattle DOT within 72 hours following the performance test. Corrections to the attenuation device to meet the performance standards must occur prior to impact driving.

(c) Level B Harassment/Monitoring Zones

Seattle DOT must monitor for Level B harassment in the Level B Harassment/Monitoring Zones as described in Table 2.

**Table 2. Level B Zone Harassment/Monitoring Zones Descriptions and Duration of Activity**

Sound Source	Activity	Construction Method	Level B Harassment/Monitoring Zone (m)
1	Removal of 14-in Timber Piles	Vibratory	2,929
2	Installation of 30-in Steel Piles and Temporary 24-in Template Steel Piles	Vibratory	54,117
3	Installation of 30-in Steel Piles	Impact	1,201

(d) Shutdown Zones

- (i) Seattle DOT must implement shutdown measures if a marine mammal is detected within or approaching the Shutdown Zones as outlined in Table 3. Seattle DOT must implement a minimum shutdown zone of 10 m radius around each pile for all construction methods for all marine mammals.
- (ii) A determination that the shutdown zone is clear must be made during a period of good visibility (*i.e.*, the entire shutdown zone and surrounding waters must be visible to the naked eye).
- (iii) If a marine mammal approaches or enters the Shutdown Zone during activities or pre-activity monitoring, all pile driving or removal activities at that location must be halted or delayed, respectively. If pile driving or removal is halted or delayed due to the presence of a marine mammal, the activity may not resume or commence until either the animal has voluntarily left and been visually confirmed beyond the Shutdown Zone or 15 minutes have passed without re-detection of the animal. Pile driving or removal activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving or removal equipment is no more than thirty minutes.

**Table 3. Shutdown Zones for various pile driving or removal activities for marine mammal hearing groups.**

Sound Source Type	Shutdown Zones (meters)				
	Low-Frequency Cetaceans	Mid-Frequency Cetaceans	High-Frequency Cetaceans	Phocid Pinnipeds	Otariid Pinnipeds
1 - Vibratory (pile removal)	28	10	41	17	10
2 - Vibratory (installation)	505	45	747	307	22
3 - Impact (installation)	89	10	106	48	10

(e) Additional Shutdown Measures

- (i) For in-water heavy machinery activities other than pile driving or removal, if a marine mammal comes within 10 m, operations must cease and vessels must reduce speed to the minimum level required to maintain steerage and safe working conditions.
- (ii) Seattle DOT must implement shutdown measures if the cumulative total of individuals observed within the Level B Harassment/Monitoring Zones for any particular species exceeds the number authorized under the IHA and if such marine mammals are sighted within the vicinity of the project area and are approaching the Level B Harassment/Monitoring Zones during in-water construction activities.

(iii) Southern Resident Killer Whales (SRKW) – Seattle DOT must implement shutdown measures if a marine mammal is detected within or approaching the Shutdown Zones provided in Table 3 of this Authorization. In addition, if Seattle DOT has met or exceeded the one time occurrence of one pod of SRKW by Level B harassment, Seattle DOT must implement the following shutdown measures:

- a. If SRKWs are sighted within the vicinity of the project area and are approaching the Level B Harassment/Monitoring Zone during in-water construction activities.
- b. If a killer whale approaches the Level B Harassment/Monitoring Zone during pile driving or removal, and it is unknown whether it is a SRKW or a transient killer whale, it must be assumed to be a SRKW and Seattle DOT must implement the shutdown measure identified in 5(f)(4).
- c. If a SRKW enters the Level B Harassment/Monitoring Zone undetected, in-water pile driving or pile removal must be suspended until the SRKW exits the Level B Harassment/Monitoring Zone to avoid further Level B harassment.

(iv) If a species for which authorization has not been granted, or a species for which authorization has been granted but the authorized takes are met, is observed approaching or within the Level B Harassment/Monitoring Zones for the pile size and method used (Table 2), or within the Shutdown Zones (Table 3), pile driving and removal activities must shut down immediately using delay and shut-down procedures. Activities must not resume until the animal has been confirmed to have left the area or the observation time period, as indicated in 5(e) above, has elapsed.

(f) Soft-Start for Impact Pile Driving

Each day at the beginning of impact pile driving or any time there has been cessation or downtime of 30 minutes or more without pile driving, contractors must initiate soft-start for impact hammers by providing an initial set of three strikes from the impact hammer at 40 percent energy, followed by a 30-second waiting period, then two subsequent three-strike sets.

(g) Additional Coordination

The project team must monitor and coordinate with local marine mammal sighting networks (*i.e.*, The Orca Network and/or The Center for Whale Research)



on a daily basis for sightings data and acoustic detection data to gather information on the location of whales prior to initiating pile driving or removal activities. The project team must also coordinate with Washington State Ferries to discuss marine mammal sightings on days when pile driving and removal activities are occurring on their nearby projects. In addition, reports must be made available to interested parties upon request. With this level of coordination in the region of activity, Seattle DOT must obtain real-time information on the presence or absence of whales before starting any pile driving or removal activities.

In addition, to minimize impacts from noise on the Seattle Aquarium's captive marine mammals as well as for air and water quality concerns, Seattle DOT will implement the following:

- (i) If aquarium animals are determined by the Aquarium veterinarian to be distressed, Seattle DOT will coordinate with Aquarium staff to determine appropriate next steps, which may include suspending pile driving or removal work for 30 minutes, provided that suspension does not pose a safety issue for the Pier 62 project construction crews.
- (ii) Seattle DOT will make reasonable efforts to take at least one regularly scheduled 20-minute break in pile driving or removal each day.
- (iii) Seattle DOT will regularly communicate with the Aquarium staff when pile driving or removal is occurring.
- (iv) Seattle DOT will further coordinate with the Aquarium to determine appropriate methods to avoid and minimize impacts to water quality.
- (v) Seattle DOT does not anticipate the project resulting in impacts associated with airborne dust. If, during construction, odors associated with the project are an issue, Seattle DOT will coordinate with its contractor to determine appropriate mitigation measures.

## 6. Monitoring

### (a) Protected Species Observers (PSOs)

Seattle DOT must employ NMFS-approved PSOs to conduct marine mammal monitoring for its construction project. NMFS-approved PSOs must meet the following qualifications.

- (i) Independent PSOs (*i.e.*, not construction personnel) are required.
- (ii) At least one PSO must have prior experience working as a marine mammal observer during construction activities.

- (iii) Other PSOs may substitute education (degree in biological science or related field) or training for experience.
  - (iv) Where a team of three or more PSOs are required, one observer should be designated as lead observer or monitoring coordinator. The lead observer must have prior experience working as a marine mammal observer during construction activities.
  - (v) NMFS must require submission and approval of observer CVs.
- (b) Seattle DOT must ensure that observers have the following additional qualifications:
- (i) Ability to conduct field observations and collect data according to assigned protocols.
  - (ii) Experience or training in the field identification of marine mammals, including the identification of behaviors.
  - (iii) Sufficient training, orientation, or experience with the construction operation to provide for personal safety during observations.
  - (iv) Writing skills sufficient to prepare a report of observations including but not limited to the number and species of marine mammals observed; dates and times when in-water construction activities were conducted; dates, times, and reason for implementation of mitigation (or why mitigation was not implemented when required); and marine mammal behavior.
  - (v) 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.
- (c) Monitoring Protocols

PSOs must be present on site at all times during pile removal and driving. Marine mammal visual monitoring must be conducted for different Level B Harassment/Monitoring Zones based on different sizes of piles being driven or removed.

- (i) Pre-activity monitoring must take place from 30 minutes prior to initiation of pile driving or removal activity and post-activity monitoring must continue through 30 minutes post-completion of pile driving or removal activity. Pile driving or removal may commence at the end of the 30-minute pre-activity monitoring period, provided observers have determined that the Shutdown Zone is clear of marine mammals, which includes delaying start of pile driving or removal activities if a marine

mammal is sighted in the Shutdown Zone, as described in (5)(e). If the constructors take a break between subsequent pile driving or pile removal for more than 30 minutes, then additional 30-minute pre-activity marine mammal monitoring must be required before the next start-up of pile driving or pile removal.

- (ii) During pile removal or installation with a vibratory hammer, three to four monitors must be used, positioned such that each monitor has a distinct view-shed and the monitors collectively have overlapping view-sheds.
- (iii) During pile driving activities with an impact hammer, one monitor must be based at or near the construction site, and an additional two to three monitors must be used, positioned such that each monitor has a distinct view-shed and the monitors collectively have overlapping view-sheds.
- (iv) Where visibility becomes limited, additional land-based monitors and/or boat-based monitors must be deployed.
- (v) Monitors must record take when marine mammals enter their relevant Level B Harassment/Monitoring Zones based on type of construction activity.
- (vi) If a marine mammal approaches or enters the Shutdown Zone during activities or pre-activity monitoring, all pile driving or removal activities at that location must be halted or delayed, respectively. If pile driving or removal is halted or delayed due to the presence of a marine mammal, the activity may not resume or commence until either the animal has voluntarily left and been visually confirmed beyond the Shutdown Zone or 15 minutes have passed without re-detection of the animal. Pile driving or removal activities include the time to install or remove a single pile or series of piles, as long as the time elapsed between uses of the pile driving or removal equipment is no more than thirty minutes.
- (vii) PSOs must monitor marine mammals around the construction site using high-quality binoculars (*e.g.*, Zeiss, 10 x 42 power) and/or spotting scopes.
- (viii) If marine mammals are observed, the following information must be documented:
  - (A) Date and time that monitored activity begins or ends for each day conducted (monitoring period);
  - (B) Construction activities occurring during each daily observation period, including how many and what type of piles driven or removed;



- (C) Deviation from initial proposal in pile numbers, pile types, average driving times, *etc.*;
- (D) Weather parameters in each monitoring period (*e.g.*, wind speed, percent cover, visibility);
- (E) Water conditions in each monitoring period (*e.g.*, sea state, tide state);
- (F) For each marine mammal sighting:
  - 1. Species, numbers, and, if possible, sex and age class of marine mammals;
  - 2. Description of any observable marine mammal behavior patterns, including bearing and direction of travel and distance from pile driving or removal activity;
  - 3. Location and distance from pile driving or removal activities to marine mammals and distance from the marine mammals to the observation point; and
  - 4. Estimated amount of time that the animals remained in the Level B Harassment/Monitoring Zone.
- (G) Description of implementation of mitigation measures within each monitoring period (*e.g.*, shutdown or delay);
- (H) Other human activity in the area within each monitoring period;
- (I) A summary of the following:
  - 1. Total number of individuals of each species detected within the Level B Harassment/Monitoring Zone, and estimated as taken if correction factor appropriate;
  - 2. Total number of individuals of each species detected within the Shutdown Zone and the average amount of time that they remained in that zone; and
  - 3. Daily average number of individuals of each species (differentiated by month as appropriate) detected within the Level B Harassment/Monitoring Zone, and estimated as taken, if appropriate.

(ix) Acoustic Monitoring

Seattle DOT must conduct acoustic monitoring up to six days per in-water work season to evaluate, in real time, sound production from construction activities and must capture all hammering scenarios that may occur under the planned project.

7. Reporting

(a) Marine Mammal Monitoring

- (i) Seattle DOT must submit a draft marine mammal monitoring report within 90 days after completion of the in-water construction work or the expiration of the IHA, whichever comes earlier. The report must include data from marine mammal sightings as described in 6(c)(viii). The marine mammal monitoring report must also include total takes, takes by day, and stop-work orders for each species.
- (ii) If no comments are received from NMFS within 30 days, the draft report must be considered the final report. Any comments received during that time must be addressed in full prior to finalization of the report.
- (iii) In the unanticipated event that the specified activity clearly causes the take of a marine mammal in a manner prohibited by the IHA, such as an injury (Level A harassment) of unauthorized species, or serious injury, or mortality of any species, Seattle DOT must immediately cease the specified activities and immediately report the incident to the Permits and Conservation Division, Office of Protected Resources, NMFS and the NMFS' West Coast Stranding Coordinator. The report must include the following information:
  - 1. Time, date, and location (latitude/longitude) of the incident;
  - 2. Name and type of vessel involved;
  - 3. Vessel's speed during and leading up to the incident;
  - 4. Description of the incident;
  - 5. Status of all sound source use in the 24 hrs preceding the incident;
  - 6. Water depth;
  - 7. Environmental conditions (*e.g.*, wind speed and direction, sea state, cloud cover, and visibility);
  - 8. Description of all marine mammal observations in the 24 hrs preceding the incident;
  - 9. Species identification or description of the animal(s) involved;
  - 10. Fate of the animal(s); and
  - 11. Photographs or video footage of the animal(s) (if equipment is available).

Activities would not resume until NMFS is able to review the circumstances of the prohibited take. NMFS must work with Seattle DOT to determine what is necessary to minimize the likelihood of further prohibited take and ensure MMPA compliance. Seattle DOT must not resume their activities until notified by NMFS via letter, email, or telephone.

(b) Reporting of Injured or Dead Marine Mammals

- (i) In the event that Seattle DOT discovers an injured or dead marine mammal, and the lead PSO determines that the cause of the injury or death is unknown and the death is relatively recent (*i.e.*, in less than a moderate state of decomposition as described in the next paragraph), Seattle DOT must immediately report the incident to the Permits and Conservation Division, Office of Protected Resources, NMFS and the NMFS' West Coast Stranding Coordinator. The report must include the same information identified in 7(a)(iii). Activities may continue while NMFS reviews the circumstances of the incident. NMFS must work with Seattle DOT to determine whether modifications in the activities are appropriate.
- (ii) In the event that Seattle DOT discovers an injured or dead marine mammal, and the lead PSO determines that the injury or death is not associated with or related to the activities authorized in the IHA (*e.g.*, previously wounded animal, carcass with moderate to advanced decomposition, or scavenger damage), Seattle DOT must report the incident to the Permits and Conservation Division, Office of Protected Resources, NMFS and the NMFS Stranding Hotline and/or by email to the NMFS' West Coast Stranding Coordinator within 24 hrs of the discovery. Seattle DOT must provide photographs or video footage (if available) or other documentation of the stranded animal sighting to NMFS. Activities may continue while NMFS reviews the circumstances of the incident.

- (c) Acoustic Monitoring Report - Seattle DOT must submit an Acoustic Monitoring Report within 90 days after completion of the in-water construction work, expiration of the IHA, or 60 days prior to the requested date of issuance of any subsequent IHA, whichever is earliest. The report must provide details on the monitored piles, method of installation, monitoring equipment, and sound levels documented during both the sound source measurements and the background monitoring. NMFS must have an opportunity to provide comments on the report or changes in monitoring for the second season, and if NMFS has comments, Seattle DOT must address the comments and submit a final report to NMFS within 30 days. If no comments are received from NMFS within 30 days, the draft report must be considered final. Any comments received during that time must be addressed in full prior to finalization of the report.

8. This Authorization may be modified, suspended or withdrawn if the holder fails to abide by the conditions prescribed herein or if NMFS determines the authorized taking is having more than a negligible impact on the species or stock of affected marine mammals.
9. Renewals - On a case-by-case basis, NMFS may issue a subsequent one-year IHA without additional notice when 1) another year of identical or nearly identical activities as described in the Specified Activities section is planned or 2) the activities would not be completed by the time the IHA expires and a subsequent IHA would allow for completion of the activities beyond that described in the Dates and Duration section, provided all of the following conditions are met:
  - (a) A request for renewal is received no later than 60 days prior to expiration of the current IHA.
  - (b) The request for renewal must include the following:
    - (i) An explanation that the activities to be conducted beyond the initial dates either are identical to the previously analyzed activities or include changes so minor (*e.g.*, reduction in pile size) that the changes do not affect the previous analyses, take estimates, or mitigation and monitoring requirements.
    - (ii) A preliminary monitoring report showing the results of the required monitoring to date and an explanation showing that the monitoring results do not indicate impacts of a scale or nature not previously analyzed or authorized.
  - (c) Upon review of the request for renewal, the status of the affected species or stocks, and any other pertinent information, NMFS determines that there are no more than minor changes in the activities, the mitigation and monitoring measures remain the same and appropriate, and the original findings remain valid.

Dated:

  
for Donna S. Wieting,

JUL 31 2018

Director, Office of Protected Resources,

National Marine Fisheries Service.