**PROPOSED ACTION:** Issuance of an Incidental Harassment Authorization for the Coupeville Timber Towers Preservation Project on Whidbey Island, Washington.

**TYPE OF STATEMENT:** Final Environmental Assessment

**LEAD AGENCY:**
U.S. Department of Commerce
National Oceanic and Atmospheric Administration
National Marine Fisheries Service

**RESPONSIBLE OFFICIAL:**
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**LOCATION:** Whidbey Island, Washington

**ABSTRACT:** This Environmental Assessment analyzes the environmental impacts of the National Marine Fisheries Service, Office of Protected Resources' proposal to issue an Incidental Harassment Authorization, pursuant to section 101(a)(5)(D) of the Marine Mammal Protection Act, to the Washington State Department of Transportation for the take of small numbers of marine mammals incidental to conducting the Coupeville Timber Towers Preservation Project on Whidbey Island, Washington.

**DATE:** March 2016

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# Chapter 1 Introduction and Purpose and Need

## 1.1. Description of Proposed Action

The Marine Mammal Protection Act (MMPA) prohibits the incidental taking of marine mammals. The incidental take of a marine mammal falls under three categories: mortality, serious injury, or harassment, which includes injury and behavioral effects. The MMPA defines harassment as any act of pursuit, torment, or annoyance which: (1) has the potential to injure a marine mammal or marine mammal stock in the wild (Level A harassment); or (2) has the potential to disturb a marine mammal or marine mammal stock in the wild by causing disruption of behavioral patterns, including, but not limited to, migration, breathing, nursing, breeding, feeding, or sheltering (Level B harassment). There are exceptions to the MMPA's prohibition on take, such as the authority at issue here for us to authorize the incidental taking of small numbers of marine mammals by harassment upon the request of a U.S. citizen provided we follow certain statutory and regulatory procedures and make certain determinations. This exception is discussed in more detail in Section 1.2.

We propose to issue an Incidental Harassment Authorization (IHA) to the Washington State Department of Transportation (WSDOT) under the MMPA for the taking of small numbers of marine mammals, incidental to WSDOT's Coupeville Timber Towers Preservation Project on Whidbey Island, Washington. We do not have the authority to permit, authorize, or prohibit WSDOT's construction activities.

Our proposed action is a direct outcome of WSDOT requesting an IHA under Section 101(a)(5)(D) of the MMPA to take marine mammals, by harassment, incidental to conducting the Coupeville Timber Towers Preservation Project. Pile removal and pile driving activities associated with that Project have the potential to take, by harassment, marine mammals. WSDOT therefore requires an IHA for incidental take.

Our issuance of an IHA to WSDOT is a major federal action under the National Environmental Policy Act (NEPA), the Council on Environmental Quality (CEQ) regulations in 40 CFR §§ 1500-1508, and NOAA Administrative Order (NAO) 216-6. Thus, we are required to analyze the effects of our proposed action.

This Environmental Assessment (EA), titled "*Issuance of an Incidental Harassment Authorization for Coupeville Timber Towers Preservation Project on Whidbey Island, Washington,*" (hereinafter, EA) addresses the potential environmental impacts of two alternatives, namely:

- Issue the Authorization to WSDOT under the MMPA for Level B harassment of marine mammals during WSDOT's Coupeville Timber Towers Preservation Project, taking into account the prescribed means of take, mitigation measures, and monitoring requirements required in the proposed Authorization; or

- Not issue an Authorization to WSDOT in which case, for the purposes of NEPA analysis only, we assume that WSDOT would forego the proposed Coupeville Timber Towers Preservation Project.

### 1.1.1. Background on WSDOT's MMPA Application

On May 8, 2015, WSDOT submitted a request to NOAA for an Authorization for the possible harassment of small numbers of 11 marine mammal species incidental to construction associated with the Coupeville Timber Towers Preservation Project at the Coupeville Ferry Terminal on Whidbey Island, Washington, between July 15, 2016, and July 14, 2017. However, additional information was needed so WSDOT submitted a revised IHA application on September 22, 2015, which incorporated mitigation measures that would prevent the take of humpback whales and the Southern Resident killer whales, which are listed as endangered under the Endangered Species Act (ESA). The revised IHA application requests the take of small numbers of 10 marine mammal species incidental to the Coupeville Timber Towers Preservation Project. NMFS determined that the IHA application was complete on October 1, 2015.

The purpose of this project at the Coupeville Ferry Terminal is to upgrade the existing transfer span towers at the Coupeville Ferry Terminal.

### 1.1.2. Marine Mammals in the Action Area

The proposed construction project could adversely affect the following marine mammal species under NMFS jurisdiction:

- Harbor seal (*Phoca vitulina*)
- California sea lion (*Zalophus californianus*)
- Northern elephant seal (*Mirounga angustirostris*)
- Steller sea lion (*Eumetopias jubatus*)
- Killer whale (*Orcinus orca*)
- Pacific white-sided dolphin (*Lagenorhynchus obliquidens*)
- Gray whale (*Eschrichtius robustus*)
- Minke whale (*Balaenoptera acutorostrata*)
- Harbor porpoise (*Phocoena phocoena*)
- Dall's porpoise (*P. dalli*)

## 1.2. Purpose and Need

The MMPA prohibits "takes" of marine mammals, with a number of specific exceptions. The applicable exception in this case is an authorization for incidental take of marine mammals in section 101(a)(5)(D) of the MMPA.

Section 101(a)(5)(D) of the MMPA directs the Secretary of Commerce (Secretary) to authorize, upon request, the incidental, but not intentional, taking of small numbers of marine mammals of a species or population stock, by United States citizens who engage in a specified activity (other

than commercial fishing) within a specified geographical region if we make certain findings and provide a notice of a proposed authorization to the public for review. Entities seeking to obtain authorization for the incidental take of marine mammals under our jurisdiction must submit such a request (in the form of an application) to us.

We have issued regulations to implement the Incidental Take Authorization provisions of the MMPA (50 CFR Part 216) and have produced Office of Management and Budget (OMB)-approved application instructions (OMB Number 0648-0151) that prescribe the procedures necessary to apply for authorizations. All applicants must comply with the regulations at 50 CFR § 216.104 and submit applications requesting incidental take according to the provisions of the MMPA.

**Purpose**: The primary purpose of our proposed action—the issuance of an Authorization to WSDOT—is to authorize (pursuant to the MMPA) the take of marine mammals incidental to WSDOT's proposed activities. The IHA, if issued, would exempt WSDOT from the take prohibitions contained in the MMPA for the takes authorized.

To authorize the take of small numbers of marine mammals in accordance with Section 101(a)(5)(D) of the MMPA, we must evaluate the best available scientific information to determine whether the take would have a negligible impact on marine mammals or stocks and not have an unmitigable adverse impact on the availability of affected marine mammal species for certain subsistence uses. We cannot issue an IHA if it would result in more than a negligible impact on marine mammal species or stocks or if it would result in an unmitigable adverse impact on subsistence.

In addition, we must prescribe, where applicable, the permissible methods of taking and other means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat (i.e., mitigation), paying particular attention to rookeries, mating grounds, and other areas of similar significance. If appropriate, we must prescribe means of effecting the least practicable impact on the availability of the species or stocks of marine mammals for subsistence uses. Authorizations must also include requirements or conditions pertaining to the monitoring and reporting of such taking, in large part to better understand the effects of such taking on the species. Also, we must publish a notice of a proposed Authorization in the *Federal Register* for public notice and comment.

The underlying purpose of this action is therefore to determine whether the take resulting from WSDOT's Coupeville Timber Towers Preservation Project would have a negligible impact on affected marine mammal species or stocks and would not have an unmitigable adverse impact on the availability of marine mammals for taking for subsistence uses, and to develop mitigation and monitoring measures to reduce the potential impacts.

**Need**: WSDOT submitted an application demonstrating both the need and potential eligibility for issuance of an IHA in connection with the activities described in section 1.1.1. We now have

a corresponding duty to determine whether and how we can authorize take by Level B harassment incidental to the activities described in WSDOT's application. Our responsibilities under section 101(a)(5)(D) of the MMPA and its implementing regulations establish and frame the need for this proposed action.

Any alternatives considered under NEPA must meet the agency's statutory and regulatory requirements. Our described purpose and need guide us in developing reasonable alternatives for consideration, including alternative means of mitigating potential adverse effects. Thus, we are developing and analyzing alternative means of developing and issuing an Authorization, which may require the applicant to include additional mitigation and monitoring measures in order for us to make our determinations under the MMPA.

### 1.3. The Environmental Review Process

NEPA compliance is necessary for all "major" federal actions with the potential to significantly affect the quality of the human environment. Major federal actions include activities fully or partially funded, regulated, conducted, authorized, or approved by a federal agency. Because our issuance of an Authorization would allow for the taking of marine mammals consistent with provisions under the MMPA and incidental to the applicant's activities, we consider this as a major federal action subject to NEPA.

Under the requirements of NAO 216-6 section 6.03(f)(2)(b) for incidental harassment authorizations, we prepared this EA to determine whether the direct, indirect, and cumulative impacts related to the issuance of an IHA for incidental take of marine mammals during the conduct of WSDOT's Coupeville Timber Towers Preservation Project at the Coupeville Ferry Terminal on Whidbey Island, Washington, could be significant. If we deem the potential impacts to be not significant, this analysis, in combination with other analyses incorporated by reference, may support the issuance of a Finding of No Significant Impact (FONSI) for the proposed Authorization.

#### 1.3.1. Laws, Regulations, or Other NEPA Analyses Influencing the EA's Scope

We have based the scope of the proposed action and nature of the two alternatives considered in this EA on the relevant requirements in section 101(a)(5)(D) of the MMPA. Thus, our authority under the MMPA bounds the scope of our alternatives. We conclude that this analysis—when combined with the analyses in the following documents—fully describes the impacts associated with the proposed construction project with mitigation and monitoring for marine mammals. After conducting a review of the information and analyses for sufficiency and adequacy, we incorporate by reference the relevant analyses on WSDOT's proposed action as well as discussions of the affected environment and environmental consequences within the following documents, per 40 CFR §1502.21 and NAO 216-6 § 5.09(d):

- *Request for an Incidental Harassment Authorization under the Marine Mammal Protection Act: Coupeville Timber Towers Preservation Project* (WSDOT, 2015),

- *Biological Assessment Reference for the Washington State Ferries Capital, Repair, and Maintenance Projects* (WSF 2014).

**MMPA APPLICATION AND NOTICE OF THE PROPOSED AUTHORIZATION**

The CEQ regulations (40 CFR § 1502.25) encourage federal agencies to integrate NEPA's environmental review process with other environmental reviews. We rely substantially on the public process for developing proposed Authorizations and evaluating relevant environmental information and provide a meaningful opportunity for public participation as we develop corresponding EAs. We fully consider public comments received in response to our publication of the notice of proposed Authorization during the corresponding NEPA process.

We considered WSDOT's proposed mitigation and monitoring measures and determined that they would help ensure that the Project would affect the least practicable impact on marine mammals. These measures include: (1) conducting in-water construction only during daylight hours, when visual monitoring of marine mammals can be conducted; (2) implementing a soft start for all impact and vibratory pile driving; and (3) implementing shutdown measures if a marine mammal within a zone of influence appears disturbed by the work activity. Through the MMPA process, we preliminarily determined that, provided WSDOT implements the required mitigation and monitoring measures, the impact of the Project on marine mammals would be, at worst, a temporary modification in behavior of small numbers of certain species of marine mammals that may be hauled out in the vicinity of the proposed activity.

We also prepared a *Federal Register* notice (81 FR 3378; January 21, 2016) on the proposed activity and request that the public submit comments, information, and suggestions concerning WSDOT's request, the content of our proposed IHA, and potential environmental effects related to the proposed issuance of the Authorization. During the 30-day public comment period, NMFS received one comment, and it was from the Marine Mammal Commission (Commission). The Commission concurs with NMFS's preliminary finding and recommends that NMFS issue the incidental harassment authorization, subject to inclusion of the proposed mitigation, monitoring, and reporting measures.

In summary, the analyses referenced above support our conclusion that, with the incorporation of the proposed monitoring and mitigation measures, the issuance of an IHA to WSDOT for the Coupeville Timber Towers Preservation Project would not result in any significant direct, indirect, or cumulative impacts. Based on our MMPA analysis, the intermittent frequency and short duration of the harassment from the construction project would allow adequate time for the marine mammals to recover from potentially adverse effects. Furthermore, the referenced analyses concluded that additive or cumulative effects of the construction project on its own or in combination with other activities, are not expected to occur. Finally, the environmental analyses did not identify any significant environmental issues or impacts.

### 1.3.2. Scope of Environmental Analysis

Given the limited scope of the decision for which we are responsible (*i.e.*, issue the IHA including prescribed means of take, mitigation measures, and monitoring requirements; or not issue the IHA), this EA provides more focused information on the primary issues and impacts of environmental concern related specifically to our issuance of the IHA. This EA does not further evaluate effects to the elements of the human environment listed in Table 1, because previous environmental reviews (WSF 2014) have shown that the issuance of an IHA for activities similar to WSDOT's proposed construction project would not significantly affect those components of the human environment. Moreover, those analyses are consistent with our MMPA analysis concluding that there would be no significant impacts to marine mammals.

**Table 1. Components of the human environment not affected by our issuance of an IHA.**

| Biological | Physical | Socioeconomic / Cultural |
|---|---|---|
| Amphibians | Air Quality | Commercial Fishing |
| Humans | | Military Activities |
| Non-Indigenous Species | Geography | Oil and Gas Activities |
| Seabirds | Land Use | Recreational Fishing |
| | Oceanography | Shipping and Boating |
| | State Marine Protected Areas | National Historic Preservation Sites |
| | Federal Marine Protected Areas | National Trails and Nationwide Inventory of Rivers |
| | National Estuarine Research Reserves | Low Income Populations |
| | National Marine Sanctuaries | Minority Populations |
| | Park Land | Indigenous Cultural Resources |
| | Prime Farmlands | Public Health and Safety |
| | Wetlands | Historic and Cultural Resources |
| | Wild and Scenic Rivers | |
| | Ecologically Critical Areas | |

### 1.3.3. Comments on This EA

NAO 216-6 established NOAA procedures for complying with NEPA and the implementing NEPA regulations issued by the CEQ. Consistent with the intent of NEPA and the clear direction in NAO 216-6 to involve the public in NEPA decision-making, we released the Draft EA for public comment on the potential environmental impacts of our issuance of an IHA, as well as comment on the activities described in WSDOT's MMPA application and in the *Federal Register* notice (81 FR 3378; January 21, 2016) of the proposed IHA. During the 30-day public comment period, NMFS only received comments from the Marine Mammal Commission. The Commission recommends that NMFS issue the requested incidental harassment authorization, subject to inclusion of the proposed mitigation, monitoring, and reporting measures.

### 1.4. Other Permits, Licenses, or Consultation Requirements

This section summarizes federal, state, and local permits, licenses, approvals, and consultation requirements necessary to implement the proposed action.

#### 1.4.1. National Environmental Policy Act

Issuance of an Authorization is subject to environmental review under NEPA. NMFS may prepare an EA, an EIS, or determine that the action is categorically excluded from further review. While NEPA does not dictate substantive requirements for an Authorization, it requires consideration of environmental issues in federal agency planning and decision making. The procedural provisions outlining federal agency responsibilities under NEPA are provided in CEQ's implementing regulations (40 CFR §§ 1500-1508).

#### 1.4.2. Marine Mammal Protection Act

The MMPA and its provisions that pertain to the proposed action are discussed above in section 1.2.

#### 1.4.3. Endangered Species Act (ESA)

The humpback whale and the Southern Resident stock of killer whale are the only marine mammal species currently listed under the ESA that could occur in the vicinity of WSDOT's proposed construction projects. However, WSDOT proposes a set of rigorous monitoring and mitigation measures that would prevent the take of ESA-listed marine mammal species. NMFS' Headquarters determined that with the implementation of the monitoring and mitigation measures, take of ESA-listed Southern Resident killer whale and humpback whale is unlikely. In addition, to fulfill requirements and obligations under ESA, NMFS Headquarters coordinated with the West Coast Regional Office (WCRO). WRCO concluded that NMFS' proposed action is not likely to adversely affect any species or designated critical habitat pursuant to the ESA. Therefore, a formal consultation pursuant to ESA Section 7 for NMFS issuance of an IHA to WSDOT was not required. This determination from WCRO is dependent on the implementation of the mitigation and monitoring measures proposed by WSDOT and required by the IHA to avoid adverse effects to Southern Resident killer whale and humpback whale. Because NMFS Headquarters worked in conjunction with WRCO in the review of WSDOT application for an IHA and this EA, further consultation pursuant to ESA may be required if one or more of the following occurs:

- There is any incidental take of ESA-listed species;
- New information reveals effects of the action that may affect ESA-listed species, critical habitat, or marine mammals in a manner or to an extent not previously considered;
- The action is modified in a manner causing effects to ESA-listed species or critical habitat or marine mammals not previously considered; or
- A new species is listed or critical habitat designated that may be affected by the action.

### 1.4.4. Magnuson-Stevens Fishery Conservation and Management Act

Under the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), Federal agencies are required to consult with the Secretary of Commerce with respect to any action authorized, funded, or undertaken, or proposed to be authorized, funded, or undertaken, by such agency which may adversely affect essential fish habitat (EFH) identified under the MSFCMA. All WSDOT terminals are within Pacific groundfish, coastal pelagic, and Pacific salmon EFH. Coastal pelagic fish are primarily associated with the open-ocean and coastal areas, and are not likely to occur near WSDOT terminals.

WSDOT and the Federal Highway Administration (FHWA), in its consultation with NMFS West Coast Regional Office (WCRO), determined that the project would not adversely affect EFH. Therefore, consultation under the MSA and conservation recommendations pursuant to MSA (section 305(b)(4)(A)) are not necessary. The FHWA must initiate EFH consultation with NMFS if the proposed action is substantially revised in a way that may adversely affect EFH.

# Chapter 2 Alternatives

## 2.1. Introduction

NEPA and the CEQ implementing regulations (40 CFR §§ 1500-1508) require consideration of alternatives to proposed major federal actions and NAO 216-6 provides NOAA policy and guidance on the consideration of alternatives to our proposed action. An EA must consider all reasonable alternatives, including the Preferred Alternative. It must also consider the No Action Alternative, even if it that alternative does not meet the stated purpose and need. This provides a baseline analysis against which we can compare the other alternatives.

To warrant detailed evaluation as a reasonable alternative, an alternative must meet our purpose and need. In this case, as we previously explained in Chapter 1 of this EA, an alternative only meets the purpose and need if it satisfies the requirements under section 101(a)(5)(D) of the MMPA. We evaluated each potential alternative against these criteria; identified one action alternative along with the No Action Alternative; and carried these forward for evaluation in this EA. This chapter describes the alternatives and compares them in terms of their environmental impacts and their achievement of objectives.

As described in Section 1.2, the MMPA requires that we must prescribe the means of effecting the least practicable impact on the species or stocks of marine mammals and their habitat. In order to do so, we must consider WSDOT's proposed mitigation measures, as well as other potential measures, and assess how such measures could benefit the affected species or stocks and their habitat. Our evaluation of potential measures includes consideration of the following factors in relation to one another: (1) the manner in which, and the degree to which, we expect the successful implementation of the measure to minimize adverse impacts to marine mammals; (2) the proven or likely efficacy of the specific measure to minimize adverse impacts as planned; and (3) the practicability of the measure for applicant implementation.

Any additional mitigation measure proposed by us beyond what the applicant proposes should be able to or have a reasonable likelihood of accomplishing or contributing to the accomplishment of one or more of the following goals:

- Avoidance or minimization of marine mammal injury, serious injury, or death, wherever possible;
- A reduction in the numbers of marine mammals taken (total number or number at biologically important time or location);
- A reduction in the number of times the activity takes individual marine mammals (total number or number at biologically important time or location);
- A reduction in the intensity of the anticipated takes (either total number or number at biologically important time or location);
- Avoidance or minimization of adverse effects to marine mammal habitat, paying special attention to the food base; activities that block or limit passage to or from biologically

important areas; permanent destruction of habitat; or temporary destruction/disturbance of habitat during a biologically important time; and

- For monitoring directly related to mitigation, an increase in the probability of detecting marine mammals, thus allowing for more effective implementation of the mitigation.

Alternative 1 (the Preferred Alternative) includes a suite of mitigation measures intended to minimize potentially adverse interactions with marine mammals.

### 2.2. Description of WSDOT's Proposed Activities

WSDOT proposes to conduct Coupeville Timber Towers Preservation Project at the Washington Coupeville Ferry Terminal on Whidbey Island, Washington (Figure 1), to upgrade the existing transfer span towers at the Coupeville Ferry Terminal.

Eight 24-inch diameter hollow steel piles would be installed to support the towers, and concrete caps will be installed on top of the towers in order to support the headframe that houses the pulleys for the transfer span cables. Five to seven 12-inch timber piles would be removed to allow room for the new steel piles to be installed. The remaining tower timber piles would remain in place to help support the structure. Up to 6 temporary 24-inch diameter hollow steel piles would be installed to support the transfer span and towers cable systems during construction. All pile installation would be using impact pile driving.

Temporary steel piles would be removed with a vibratory hammer. Timber piles would be removed with a vibratory hammer or by direct pull using a chain wrapped around the pile. The crane operator would take measures to reduce turbidity, such as vibrating the pile slightly to break the bond between the pile and surrounding soil, and removing the pile slowly; or if using direct pull, keep the rate at which piles are removed low enough to meet regulatory turbidity limit requirements. If piles are so deteriorated they cannot be removed using either the vibratory or direct pull method, the operator would use a clamshell to pull the piles from below the mudline. All work would occur in water depths between -10 and -20 feet mean lower-low water.

#### 2.2.1. Dates and Duration

The number of days it would take to complete the project depends on the difficulty in removing and installing piles. Only one vibratory or impact hammer will be in operation at a time. Durations are conservative, and the actual amount of time to remove and install will likely be less. Duration estimates are:

- Vibratory removal of timber piles would take approximately 30 minutes per pile, with 5-7 piles removed over two days.
- Impact driving of each temporary 24-inch steel pile would take approximately 15 minutes, (approximately 700 strikes per pile), with up to 6 piles installed over 2 days. Temporary piles do not need to be impacted as deep as permanent piles, therefore the duration is shorter.
- Impact driving of each permanent 24-inch steel pile would take approximately 30 minutes, (approximately 1,400 strikes per pile), with 8 piles installed over 2 days.

- Vibratory removal of each temporary 24-inch steel pile would take approximately 30 minutes, with up to 6 piles removed over 2 days.

A summary of the pile to be removed and installed is provided in Table 1.


**Figure 1. Location of WSDOT's proposed Coupeville Timber Towers Preservation Project**

## 2.2.2. Specified Geographic Region

The proposed Coupeville Timber Towers Preservation Project would be conducted at the Coupeville Ferry Terminal, located on Whidbey Island, Island County, Washington (Figure 1).

**Table 1 Summary of piles to be removed and driven for the Coupeville Timber Towers Preservation Project**

| Size | Install or Remove/ Pile Type | Number of Piles | Hammer Noise Type | Duration (Minutes per Pile) | Duration (Hours) | Duration (Days) |
|---|---|---|---|---|---|---|
| 12-inch | Remove timber (existing) | 5-7 | Vibratory | 30 | 3.5 | 2 |
| 24-inch | Install steel (temporary) | 6 | Impact | 15 | 1.5 | 2 |
| 24-inch | Install steel (permanent) | 8 | Impact | 30 | 4 | 2 |
| 24-inch | Remove steel (temporary) | 6 | Vibratory | 30 | 3 | 2 |
| Totals | | 5-7 existing removed<br>6 temporary installed/removed<br>8 permanent installed | | | 12 | 8 |

### 2.2.3. Detailed Description of Activities

The following construction sequence is anticipated:

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

Detailed descriptions of these activities are provided below.

**Vibratory Hammer Removal**
Vibratory hammer extraction is a common method for removing timber and steel piling. A vibratory hammer is suspended by cable from a crane and derrick, and positioned on the top of a pile. The pile is then unseated from the sediments by engaging the hammer, creating a vibration that loosens the sediments binding the pile, and then slowly lifting up on the hammer with the aid of the crane.

Once unseated, the crane continues to raise the hammer and pulls the pile from the sediment. When the pile is released from the sediment, the vibratory hammer is disengaged and the pile is pulled from the water and placed on a barge for transfer upland..

**Direct Pull and Clamshell Removal**
Older timber pilings are prone to breaking at the mudline because of damage from marine borers and vessel impacts. In some cases, removal with a vibratory hammer is not possible if the pile is too fragile to withstand the hammer force. Broken or damaged piles may be removed by wrapping the piles with a cable and pulling them directly from the sediment with a crane.

If the piles break below the waterline, the pile stubs will be removed with a clamshell bucket, a hinged steel apparatus that operates like a set of steel jaws. The bucket will be lowered from a crane and the jaws will grasp the pile stub as the crane is pulled up. The broken piling and stubs will be loaded onto the barge for off-site disposal. Clamshell removal will be used only if necessary, as it will produce temporary, localized turbidity impacts. Turbidity will be kept within required regulatory limits. Direct pull and clamshell removal do not produce noise that could impact marine mammals. Direct pull and clamshell removal of piles are not expected to affect marine mammals.

**Impact Hammer Installation**

Impact hammers can be used to install plastic/steel core, wood, concrete, or steel piles. An impact hammer is a steel device that works like a piston. Impact hammers are usually large, though small impact hammers are used to install small diameter plastic/steel core piles. Impact hammers have guides (called a lead) that hold the hammer in alignment with the pile while a heavy piston moves up and down, striking the top of the pile, and drives it into the substrate from the downward force of the hammer on the top of the pile.

To drive the pile, the pile is first moved into position and set in the proper location using a choker cable or vibratory hammer. Once the pile is set in place, pile installation with an impact hammer can take less than 15 minutes under good conditions, to over an hour under poor conditions (such as glacial till and bedrock, or exceptionally loose material in which the pile repeatedly moves out of position).

## 2.3. Description of Alternatives

### 2.3.1. Alternative 1 – Issuance of an Authorization with Mitigation Measures

The proposed action constitutes Alternative 1 and is the Preferred Alternative. Under this alternative, we would issue an IHA (valid from July 15, 2016, through July 14, 2017) to WSDOT allowing the incidental take, by Level B harassment, of 10 species of marine mammals, subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the proposed IHA, if issued, along with any additions based on consideration of public comments.

**PROPOSED MITIGATION MEASURES**

For WSDOT's proposed Coupeville Timber Towers Preservation Project, WSDOT worked with NMFS and proposed the following mitigation measures to minimize the potential impacts to marine mammals in the Project vicinity. The primary purposes of these mitigation measures are to minimize sound levels from the activities, to monitor marine mammals within designated zones of influence corresponding to NMFS' current Level B harassment thresholds and, if marine mammals are detected within or about to enter the exclusion zone, to initiate immediate shutdown or power down of the piling hammer, making it very unlikely potential injury or temporary hearing threshold shift (TTS) to marine mammals would occur and ensuring that Level B behavioral harassment of marine mammals would be reduced to the lowest level practicable.

Time Restriction

Work would occur only during daylight hours, when visual monitoring of marine mammals can be conducted. In addition, all in-water construction will be limited to the period between July 15, 2016, and February 15, 2017.

Underwater Noise Attenuation Device

An air bubble curtain system or other noise attenuation device would be employed during impact installation or proofing of steel piles unless the piles are driven on dry areas.

Establishment of Exclusion Zone and Level B Harassment Zones of Influence

Before the commencement of in-water pile driving activities, WSDOT would establish Level A exclusion zones and Level B zones of influence (ZOIs). The received underwater sound pressure levels (SPLs) within the exclusion zone would be 190 dB (rms) re 1 µPa and above for pinnipeds and 180 dB (rms) re 1 µPa and above for cetaceans. The Level B ZOIs would encompass areas where received underwater SPLs are higher than 160 dB (rms) and 120 dB (rms) re 1 µPa for impulse noise sources (impact pile driving) and non-impulses noise sources (vibratory pile removal), respectively.

Based on in-water measurements at the WSDOT Port Townsend Ferry Terminal (WSDOT 2011a), removal of 12-in timber piles generated 149 to 152 dB (rms) re 1 µPa with an overall

average value of 150 dB (rms) re 1 µPa measured at 16 m. A worst-case noise level for vibratory removal of 12-in timber piles would be 152 dB (rms) re 1 µPa at 16 m.

Based on in-water measurements at the WSDOT Port Townsend Ferry terminal, impact pile driving of 24-in steel piles ranged from 175 to187 dB (rms) re 1 µPa measured at 10 m during the use of an air bubble curtain (WSDOT 2014a). An air bubble curtain would be used to attenuate steel pile impact driving noise during this project. A worst-case noise level for impact driving of 24-in steel piles would be 187 dB (rms) re 1 µPa at 10 m.

Data for vibratory removal of 24-inch temporary steel piles is not available, so it is conservatively assumed to be the same as vibratory driving. Based on in-water measurements at the WSDOT Keystone Ferry Terminal (now renamed Coupeville), vibratory driving of 24-in steel piles ranged from 164 to 176 dB (rms) re 1 µPa with an overall average value of 171 dB (rms) re 1 µPa. Distances from hydrophone to pile ranged between 6 and 11 m (WSDOT 2010a). A worst-case noise level for vibratory removal of 24-in steel piles will be 176 dB (rms) re 1 µPa at 6 m.

Using a simple practical spreading model (sound transmission loss of 4.5dB per doubling distance) to determine the distance where underwater sound will attenuate to the 120 dB (rms) re 1 µPa threshold, the ZOIs are calculated below and shown in Figure 2:

- 152 dB (rms) re 1 µPa at 16 m (12-in timber vibratory pile removal): ~2.3 km/1.4 mi
- 176 dB (rms) re 1 µPa at 6 m (24-in steel vibratory pile removal): ~32 km/20 mi (land is reached at ~31 km/19 mi)

The vibratory pile removal source level does not exceed the Level A harassment exclusion zones. During the project, in-water measurements of vibratory pile removal and driving may be taken to determine if the vibratory ZOIs need to be modified.

Using 187 dB (rms) re 1 µPa at 10 m for 24-in impact pile driving and the practical spreading loss model, the distances to the thresholds are calculated below and shown in Figure 3:

- the 190 dB (rms) re 1 µPa pinniped Level A harassment exclusion zone is reached within 6.3 m/21 ft.
- the 180 dB (rms) re 1 µPa cetacean Level A harassment exclusion zone is reached within 29 m/95 ft.
- the 160 dB (rms) re 1 µPa Level B ZOI is reached within 631 m/2,070 ft.

The more conservative cetacean injury zone (29 m/95 ft.) will be used to set the 24-inch steel Zone of Exclusion (ZOE). The 24-inch steel impact ZOE and ZOI are shown in Figure 3 for one representative pile.

During the project, in-water measurements of impact pile driving would be taken to determine if the impact exclusion zones and ZOIs needs to be modified.

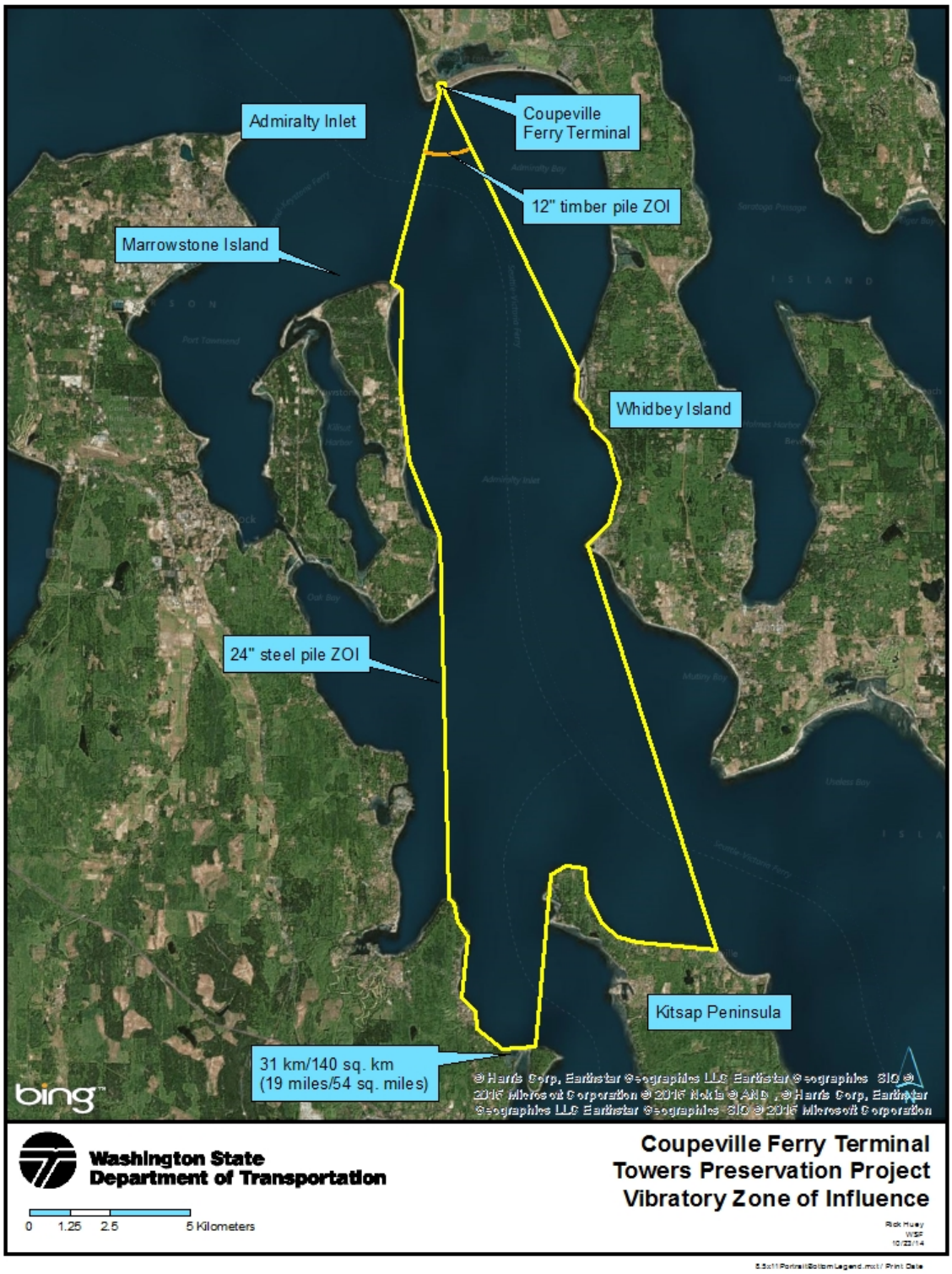


**Figure 2. Vibratory ZOIs**


**Figure 3. Impact pile driving exclusion zones**

A summary of distances and areas of the exclusion zones for Level A harassment and ZOI for Level B harassment is provide in Table 2 below.

**Table 2. Distances and areas of Level A and Level B harassment zones for vibratory and impact pile driving activities**

| Pile Driving Method | Distance to 190 dB (m) | Distance to 180 dB (m) | Distance to 160 dB (m) | Distance to 120 dB (km) | ZOI size ($km^2$) |
|---|---|---|---|---|---|
| Vibratory pile removal (12-in timber) | NA | NA | NA | 2.3 | 6.4 |
| Vibratory pile removal (24-in steel) | NA | NA | NA | 32 | 140 |
| Impact driving (24-in steel pile) | 6 | 29 | 631 | NA | 0.16 |

Soft Start

A "soft-start" technique is intended to allow marine mammals to vacate the area before the pile driver reaches full power. Whenever there has been downtime of 30 minutes or more without pile driving, the contractor will initiate the driving with ramp-up procedures.

For vibratory hammers, the contractor shall initiate the driving for 15 seconds at reduced energy, followed by a 1 minute waiting period. This procedure shall be repeated two additional times before continuous driving is started. This procedure shall also apply to vibratory pile removal.

For impact driving, an initial set of three strikes would be made by the hammer at 40-percent energy, followed by a 1-minute waiting period, then two subsequent three-strike sets at 40-percent energy, with 1-minute waiting periods, before initiating continuous driving.

Shutdown and Power-down Measures

WSDOT shall implement shutdown or power-down measures if a marine mammal is sighted within or approaching the Level A exclusion zone. In-water construction activities shall be suspended until the marine mammal is sighted moving away from the exclusion zone, or if a large cetacean is not sighted for 30 minutes or if a small cetacean or pinniped is not sighted for 15 minutes after the shutdown.

In addition, WSDOT would implement shutdown or power-down measures when Southern Resident killer whales (as identified by Orca Network, NMFS, or other qualified source) or humpback whales are detected to approach the ZOIs during pile removal and pile driving, therefore preventing Level B takes of Southern Resident killer whales.

Finally, WSDOT would implement shutdown or power-down measures to prevent Level B takes when the take of any other species or stock of marine mammal is approaching the limited take authorized under the IHA (if issued).

## PROPOSED MONITORING AND REPORTING MEASURES

### Proposed Monitoring Measures

During pile removal and installation, land-based and vessel-based protected species observers (PSOs) would monitor the area from the best observation points available. The number of PSOs will be based on the sizes of ensonified zones and to ensure that the entire zones are monitored.

- During 24-inch steel impact pile driving, two land-based PSOs monitors will monitor the ZOE and ZOI. Pile driving will be paused if any marine mammal approaches the exclusion zone.
- During vibratory timber pile removal, two land-based PSOs will monitor the ZOI.
- During 24-inch vibratory pile removal, 7 land-based PSOs and one monitoring boat with a PSO and boat operator will monitor the ZOI.
- If weather prevents safe use of the boat in the main channel of the ZOI, the boat will be used in other areas of the ZOI that are safe, such as the southwest corner of the ZOI, where lack of public access prevents stationing a land-based PSO.

The PSOs would observe and collect data on marine mammals in and around the project area for 30 minutes before, during, and for 30 minutes after all pile removal and pile installation work. If a PSO observes a marine mammal within or approaching the exclusion zone, the PSO would notify the work crew to initiate shutdown measures.

Monitoring of marine mammals around the construction site shall be conducted using high-quality binoculars (e.g., Zeiss, 10 x 42 power). To verify the required monitoring distance, the exclusion zones and ZOIs will be determined by using a range finder or hand-held global positioning system device.

### Proposed Reporting Measures

WSDOT would be required to submit a final monitoring report within 90 days after completion of the construction work or the expiration of the IHA (if issued), whichever comes earlier. This report would detail the monitoring protocol, summarize the data recorded during monitoring, and estimate the number of marine mammals that may have been harassed. NMFS would have an opportunity to provide comments on the report, and if NMFS has comments, WSDOT would address the comments and submit a final report to NMFS within 30 days.

In addition, NMFS would require WSDOT to notify NMFS' Office of Protected Resources and NMFS' Stranding Network within 48 hours of sighting an injured or dead marine mammal in the vicinity of the construction site. WSDOT shall provide NMFS with the species or description of the animal(s), the condition of the animal(s) (including carcass condition, if the animal is dead), location, time of first discovery, observed behaviors (if alive), and photo or video (if available).

In the event that WSDOT finds an injured or dead marine mammal that is not in the vicinity of the construction area, WSDOT would report the same information as listed above to NMFS as soon as operationally feasible.

Coordination with Local Marine Mammal Research Network

Prior to the start of pile driving, the Orca Network and/or Center for Whale Research would be contacted to find out the location of the nearest marine mammal sightings. Daily sightings information can be found on the Orca Network Twitter site (https://twitter.com/orcanetwork), which would be checked several times a day.

The Orca Sightings Network consists of a list of over 600 (and growing) residents, scientists, and government agency personnel in the U.S. and Canada. Sightings are called or emailed into the Orca Network and immediately distributed to other sighting networks including: the Northwest Fisheries Science Center of NMFS, the Center for Whale Research, Cascadia Research, the Whale Museum Hotline, and the British Columbia Sightings Network.

"Sightings" information collected by the Orca Network includes detection by hydrophone. The SeaSound Remote Sensing Network is a system of interconnected hydrophones installed in the marine environment of Haro Strait (west side of San Juan Island) to study orca communication, in-water noise, bottom-fish ecology and local climatic conditions. A hydrophone at the Port Townsend Marine Science Center measures average in-water sound levels and automatically detects unusual sounds. These passive acoustic devices allow researchers to hear when different marine mammals come into the region. This acoustic network, combined with the volunteer (incidental) visual sighting network allows researchers to document presence and location of various marine mammal species.

With this level of coordination in the region of activity, WSDOT will be able to get real-time information on the presence or absence of whales before starting any pile driving.

### 2.3.2. Alternative 2 – No Action Alternative

We are required to evaluate the No Action Alternative per CEQ NEPA regulations. The No Action Alternative serves as a baseline to compare the impacts of the Preferred and other Alternatives. Under the No Action alternative, we would not issue an IHA to WSDOT for the proposed construction project.

Under the No Action Alternative, WSDOT could choose not to proceed with their proposed activities or to proceed without an IHA. If they choose the latter, WSDOT would not be exempt from the MMPA prohibitions against the take of marine mammals and would be in violation of the MMPA if take of marine mammals occurs.

For purposes of this EA, we characterize the No Action Alternative as WSDOT not receiving an IHA and WSDOT not conducting construction activities for its proposed Coupeville Timber Towers Preservation Project.

## 2.4. Alternatives Considered but Eliminated from Further Consideration

NMFS considered whether other alternatives could meet the purpose and need and support WSDOT's proposed construction project. An alternative that would allow for the issuance of an IHA with no required mitigation or monitoring was considered but eliminated from consideration, as it would not be in compliance with the MMPA and therefore would not meet the purpose and need. For that reason, this alternative is not analyzed further in this document. No other alternatives that would meet the purpose and need of the Project were identified.

# Chapter 3 Affected Environment

This chapter describes existing conditions in the proposed action areas. Complete descriptions of the physical, biological, and social environment of the action area are contained in the documents listed in Section 1.3.1 of this EA. We incorporate those descriptions by reference from Chapter 4 of the *Biological Assessment Reference for the Washington State Ferries Capital, Repair, and Maintenance Projects* (WSF 2014a) and briefly summarize or supplement the relevant sections for marine mammals in the following subchapters.

## 3.1. Physical Environment

### 3.1.1. Natural Environment

The Coupeville Ferry Terminal is located on Whidbey Island, Island County, Washington. The terminal is located in Section 22, Township 31 North, Range 1 East, and is located in Keystone Harbor, tributary to Admiralty Inlet (Figure 1). Land use in the area is a mix of parks, residential, and farming.

### 3.1.2. Essential Fish Habitat

The area includes marine habitat, and is within designated Pacific groundfish, coastal pelagic and Pacific salmonid EFH.

## 3.2. Biological Environment

The primary component of the biological environment that would be impacted by the proposed action and alternatives would be marine mammals, which would be directly impacted by the authorization of incidental take.

### 3.2.1. Marine Mammals

The marine mammal species under NMFS jurisdiction most likely to occur in the proposed construction area include Pacific harbor seal (*Phoca vitulina richardsi*), northern elephant seal (*Mirounga angustirostris*), California sea lion (*Zalophus californianus*), Steller sea lion (*Eumetopias jubatus*) (eastern Distinct Population Segment, or DPS), killer whale (*Orcinus orca*) (transient and Southern Resident stocks), gray whale (*Eschrichtius robustus*), humpback whale (*Megaptera novaeangliae*), minke whale (*Balaenoptera acutorostrata*), harbor porpoise (*Phocoena phocoena*), Dall's porpoise (*P. dali*), and Pacific white-sided dolphin (*Lagenorhynchus obliquidens*). Only the Southern Resident killer whales and humpback whales are listed as endangered species under the Endangered Species Act (ESA).

General information on the marine mammal species found in Washington coastal waters can be found in Caretta et al. (2015), which is available at the following URL: http://www.nmfs.noaa.gov/pr/sars/pdf/pacific_sars_2014_final_noaa_swfsc_tm_549.pdf. Refer to that document for information on these species. A list of marine mammals in the vicinity of the action and their status are provided in Table 3. Specific information concerning these species in the vicinity of the proposed action area is provided in detail in the WSDOT's IHA application (WSDOT, 2015); please refer to that document for detailed information.

**Table 3. Marine Mammal Species Potentially Present in Region of Activity**

| Species | ESA Status | MMPA Status | Occurrence |
|---|---|---|---|
| Harbor Seal | Not listed | Non-depleted | Frequent |
| California Sea Lion | Not listed | Non-depleted | Frequent |
| Northern Elephant Seal | Not listed | Non-depleted | Occasional |
| Steller Sea Lion (eastern DPS) | Not listed | Under review | Rare |
| Harbor Porpoise | Not listed | Non-depleted | Frequent |
| Dall's Porpoise | Not listed | Non-depleted | Occasional |
| Pacific White-sided dolphin | Not listed | Non-depleted | Occasional |
| Killer Whale | Endangered (Southern Resident) | Depleted | Occasional |
| Gray Whale | Delisted | Unclassified | Occasional |
| Humpback Whale | Endangered | Depleted | Rare |
| Minke Whale | Not listed | Non-depleted | Rare |

### 3.3. Social Environment

NMFS does not expect the issuance of an IHA to WSDOT to result in significant social or economic impacts interrelated with natural or physical environmental effects. Effects of the Coupeville Timber Towers Preservation Project would be limited to the localized harassment of the marine mammals authorized by the permits. Authorization of the proposed Coupeville Timber Towers Preservation Project could result in a low level of economic benefit to construction companies performing the work. However, such impacts would likely be negligible and on a regional or local level.

The activities authorized would not substantially impact use of the environment or use of natural or depletable resources, such as might be expected from large scale construction or resource extraction activities. Further, issuance of an IHA would not result in inequitable distributions of environmental burdens or access to environmental goods.

NMFS has determined that issuance of an IHA would not adversely affect low-income or minority populations. There would be no impact of the activity on the availability of the species or stocks of marine mammals for subsistence uses, as there are no subsistence uses that take place in the areas affected.

## Chapter 4 Environmental Consequences

This chapter of the EA analyzes the impacts of the two alternatives and addresses the potential direct, indirect, and cumulative impacts of our issuance of an IHA. WSDOT's application and other related environmental analyses identified previously facilitate this analysis.

Under the MMPA, we have evaluated the potential impacts of WSDOT's construction program activities in order to determine whether to authorize incidental take of marine mammals. Under NEPA, we have determined that an EA is appropriate to evaluate the potential significance of environmental impacts resulting from the issuance of an IHA.

### 4.1. Effects of Alternative 1 – Issuance of an IHA with Mitigation Measures

Alternative 1 is the Preferred Alternative, under which we would issue an IHA to WSDOT allowing the incidental take, by Level B harassment, of 10 species of marine mammals from July 15, 2016, through July 14, 2017, subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the IHA, if issued. We would incorporate the mitigation and monitoring measures and reporting described earlier in this EA into a final IHA.

#### 4.1.1. Impacts to Marine Mammal Habitat

No permanent impacts to marine mammal habitat are proposed to or would occur as a result of the proposed Project. The WSDOT's proposed Coupeville Timber Towers Preservation Project would not modify the existing habitat. Therefore, no restoration of the habitat would be necessary. A temporary, small-scale loss of foraging habitat may occur for marine mammals, if the marine mammals leave the area during pile extraction and driving activities.

Acoustic energy created during pile replacement work would have the potential to disturb fish within the vicinity of the pile replacement work. As a result, the affected area could temporarily lose foraging value to marine mammals. During pile driving, high noise levels may exclude fish from the vicinity of the pile driving. Hastings and Popper (2005) identified several studies that suggest fish will relocate to avoid areas of damaging noise energy. The acoustic frequency and intensity ranges that have been shown to negatively impact fish and an analysis of the potential noise output of the proposed Project indicate that Project noise has the potential to cause temporary hearing loss in fish over a distance of approximately 42 meters from pile driving activity. If fish leave the area of disturbance, pinniped foraging habitat in that area may have temporarily decreased foraging value when piles are driven using impact hammering.

The duration of fish avoidance of this area after pile driving stops is unknown. However, the affected area represents an extremely small portion of the total foraging range of marine mammals that may be present in and around the project area.

Because of the short duration of the activities and the relatively small area of the habitat that may be affected, the impacts to marine mammals and the food sources that they utilize are not

expected to cause significant or long-term consequences for individual marine mammals or marine mammal populations.

Project-related impacts to Pacific groundfish, coastal pelagic and Pacific salmon EFH are expected to be negligible due to the following reasons:

- Piles would be driven with a vibratory hammer, which would not cause injury or mortality to fish species
- The project is not expected to significantly affect the distribution or abundance of potential Pacific groundfish, coastal pelagic or Pacific salmon prey species in the action area due to its small scale.
- Though a low number of prey species individuals may be disturbed during in-water work, impacts would be short-term and limited to the immediate area around the pile.
- Though a low number of prey species individuals may be exposed to localized turbidity, impacts would be short-term and limited to the immediate vicinity of the pile.

### 4.1.2. Impacts to Marine Mammals

We expect that behavioral disturbance or displacement resulting from the activities associated with the Project have the potential to impact marine mammals. The majority of impacts are likely to occur from pile driving and pile removal activities. Pile driving and removal activities associated with the construction could cause pinniped behavioral modification and temporary displacement within the vicinity of the action area through: (1) noise generated from pile removal and pile driving; and (2) visual disturbance from construction activities and crew. These activities are not anticipated to result in injury, serious injury, or mortality of any marine mammal species and none is proposed to be authorized.

#### 4.1.2.1. Acoustic Impacts

When considering the influence of various kinds of sound on the marine environment, it is necessary to understand that different kinds of marine life are sensitive to different frequencies of sound. Based on available behavioral data, audiograms have been derived using auditory evoked potentials, anatomical modeling, and other data, Southall et al. (2007) designate "functional hearing groups" for marine mammals and estimate the lower and upper frequencies of functional hearing of the groups. The functional groups and the associated frequencies are indicated below (though animals are less sensitive to sounds at the outer edge of their functional range and most sensitive to sounds of frequencies within a smaller range somewhere in the middle of their functional hearing range):

- Low frequency cetaceans (13 species of mysticetes): functional hearing is estimated to occur between approximately 7 Hz and 25 kHz;

- Mid-frequency cetaceans (32 species of dolphins, six species of larger toothed whales, and 19 species of beaked and bottlenose whales): functional hearing is estimated to occur between approximately 150 Hz and 160 kHz;
- High frequency cetaceans (eight species of true porpoises, six species of river dolphins, *Kogia*, the franciscana, and four species of cephalorhynchids): functional hearing is estimated to occur between approximately 200 Hz and 180 kHz; and
- Pinnipeds in Water: functional hearing is estimated to occur between approximately 75 Hz and 75 kHz, with the greatest sensitivity between approximately 700 Hz and 20 kHz.

As mentioned previously in this document, 11 marine mammal species are likely to occur in the proposed seismic survey area. WSDOT and NMFS determined that in-water pile removal and pile driving during the Coupeville Timber Towers Preservation Project has the potential to result in behavioral harassment of the marine mammal species and stocks in the vicinity of the proposed activity.

Marine mammals exposed to high-intensity sound repeatedly or for prolonged periods can experience hearing threshold shift (TS), which is the loss of hearing sensitivity at certain frequency ranges (Kastak et al. 1999; Schlundt et al. 2000; Finneran et al. 2002; 2005). TS can be permanent (PTS), in which case the loss of hearing sensitivity is unrecoverable, or temporary (TTS), in which case the animal's hearing threshold will recover over time (Southall et al. 2007). Since marine mammals depend on acoustic cues for vital biological functions, such as orientation, communication, finding prey, and avoiding predators, hearing impairment could result in the reduced ability of marine mammals to detect or interpret important sounds. Repeated noise exposure that causes TTS could lead to PTS.

Experiments on a bottlenose dolphin (*Tursiops truncates*) and beluga whale (*Delphinapterus leucas*) showed that exposure to a single watergun impulse at a received level of 207 kPa (or 30 psi) peak-to-peak (p-p), which is equivalent to 228 dB (p-p) re 1 μPa, resulted in a 7 and 6 dB TTS in the beluga whale at 0.4 and 30 kHz, respectively. Thresholds returned to within 2 dB of the pre-exposure level within 4 minutes of the exposure (Finneran *et al*. 2002). No TTS was observed in the bottlenose dolphin. Although the source level of one hammer strike for pile driving is expected to be much lower than the single watergun impulse cited here, animals being exposed for a prolonged period to repeated hammer strikes could receive more noise exposure in terms of sound exposure level (SEL) than from the single watergun impulse (estimated at 188 dB re 1 $\mu Pa^2$-s) in the aforementioned experiment (Finneran *et al*. 2002).

Chronic exposure to excessive, though not high-intensity, noise could cause masking at particular frequencies for marine mammals that utilize sound for vital biological functions (Clark *et al*. 2009). Masking is the obscuring of sounds of interest by other sounds, often at similar frequencies. Masking generally occurs when sounds in the environment are louder than, and of a similar frequency as, auditory signals an animal is trying to receive. Masking can interfere with

detection of acoustic signals, such as communication calls, echolocation sounds, and environmental sounds important to marine mammals. Therefore, under certain circumstances, marine mammals whose acoustical sensors or environment are being severely masked could also be impaired.

Masking occurs at the frequency band which the animals utilize. Since noise generated from in-water vibratory pile removal and driving is mostly concentrated at low frequency ranges, it may have little effect on high-frequency echolocation sounds by odontocetes (toothed whales), which may hunt California sea lion and harbor seal. However, the lower frequency man-made noises are more likely to affect the detection of communication calls and other potentially important natural sounds, such as surf and prey noise. The noises may also affect communication signals when those signals occur near the noise band, and thus reduce the communication space of animals (e.g., Clark *et al*. 2009) and cause increased stress levels (e.g., Foote *et al*. 2004; Holt *et al.* 2009).

Unlike TS, masking can potentially impact the species at community, population, or even ecosystem levels, as well as individual levels. Masking affects both senders and receivers of the signals and could have long-term chronic effects on marine mammal species and populations. Recent science suggests that low frequency ambient sound levels in the world's oceans have increased by as much as 20 dB (more than 3 times, in terms of SPL) from pre-industrial periods, and most of these increases are from distant shipping (Hildebrand 2009). All anthropogenic noise sources, such as those from vessel traffic and pile removal and driving, contribute to the elevated ambient noise levels, thus intensifying masking.

Nevertheless, the sum of noise from WSDOT's proposed Coupeville Timber Towers Preservation Project construction activities is confined to a limited area by surrounding landmasses; therefore, the noise generated is not expected to contribute to increased ocean ambient noise. In addition, due to shallow water depths in the project area, underwater sound propagation of low-frequency sound (which is the major noise source from pile driving) is expected to be poor.

Finally, in addition to TS and masking, exposure of marine mammals to certain sounds could lead to behavioral disturbance (Richardson *et al*. 1995), such as: changing durations of surfacing and dives, number of blows per surfacing, or moving direction and/or speed; reduced/increased vocal activities; changing/cessation of certain behavioral activities, such as socializing or feeding; visible startle response or aggressive behavior, such as tail/fluke slapping or jaw clapping; avoidance of areas where noise sources are located; and/or flight responses (e.g., pinnipeds flushing into water from haulouts or rookeries).

The biological significance of many of these behavioral disturbances is difficult to predict, especially if the detected disturbances appear minor. However, the consequences of behavioral

modification could be expected to be biologically significant if the change affects growth, survival, or reproduction. Some of these types of significant behavioral modifications include:

- Drastic change in diving/surfacing patterns (such as those thought to be causing beaked whale strandings due to exposure to military mid-frequency tactical sonar);
- Habitat abandonment due to loss of desirable acoustic environment; and
- Cessation of feeding or social interaction.

The onset of behavioral disturbance from anthropogenic noise depends on both external factors (characteristics of noise sources and their paths) and the receiving animals (hearing, motivation, experience, demography), and is therefore difficult to predict (Southall *et al*. 2007).

The proposed project area is not a prime habitat for marine mammals, nor is it considered an area frequented by marine mammals. Therefore, behavioral disturbances that could result from anthropogenic noise associated with WSDOT's construction activities are expected to affect only a small number of marine mammals on an infrequent and limited basis.

#### 4.1.2.2.Visual Disturbance

The activities of workers in the project area may also cause behavioral reactions by marine mammals, such as pinnipeds flushing from the jetty or pier or moving farther from the disturbance to forage. However, observations of the area show that it is unlikely that more than 10 to 20 individuals of pinnipeds would be present in the project vicinity at any one time. Therefore, even if pinnipeds were flushed from the haul-out, a stampede is very unlikely, due to the relatively low number of animals onsite. In addition, proposed mitigation and monitoring measures would minimize the startle behavior of pinnipeds and prevent the animals from flushing into the water.

#### 4.1.2.3. Estimated Take of Marine Mammals by Level B Incidental Harassment

As discussed above, in-water pile removal and pile driving (vibratory and impact) generate loud noises that could potentially harass marine mammals in the vicinity of WSDOT's proposed Coupeville Timber Towers Preservation Project.

As mentioned earlier in this document, currently NMFS uses 120 dB re 1 µPa and 160 dB re 1 µPa at the received levels for the onset of Level B harassment from non-impulse (vibratory pile driving and removal) and impulse sources (impact pile driving) underwater, respectively. Table 5 summarizes the current NMFS marine mammal take criteria.

**Table 4. Current Acoustic Exposure Criteria for Non-explosive Sound Underwater**

| Criterion | Criterion Definition | Threshold |
|---|---|---|
| Level A Harassment (Injury) | Permanent Threshold Shift (PTS) (Any level above that which is known to cause TTS) | 180 dB re 1 µPa (cetaceans) 190 dB re 1 µPa (pinnipeds) root mean square (rms) |
| Level B Harassment | Behavioral Disruption (for impulse noises) | 160 dB re 1 µPa (rms) |

| | | |
|---|---|---|
| Level B Harassment | Behavioral Disruption (for non-impulse noise) | 120 dB re 1 μPa (rms) |

As explained above, exclusion zones and ZOIs will be established that encompass the areas where received underwater sound pressure levels (SPLs) exceed the applicable thresholds for Level A and Level B harassments, respectively.

With the exception of harbor seals, Steller sea lion and harbor porpoise, it is anticipated that all of the marine mammals that enter the Level B acoustical harassment ZOIs will be exposed to pile driving and removal noise only as they are transiting the area. Only harbor seals, Steller sea lion and harbor porpoise are expected to forage and haulout in the Coupeville ZOIs with any frequency and could be exposed multiple times during a project.

As mentioned earlier, the distances to NMFS threshold for Level B (harassment) take for impact pile driving and vibratory pile removal were estimated as follows:

- ZOI-1: the 160 dB (rms) impact pile driving harassment threshold for 24" steel = 631 m/2,070 ft.
- ZOI-2: the 120 dB (rms) vibratory harassment threshold for 12-inch timber vibratory pile removal: = ~2.3 km/1.4 mi
- ZOI-3: the 120 dB (rms) vibratory harassment threshold for 24-inch steel vibratory pile removal: = ~32 km/20 mi (land is reached at ~31 km/19 mi)

Airborne noises can affect pinnipeds, especially resting seals hauled out on rocks or sand spits. The 90 dB (rms) re 20 μPa harbor seal threshold was estimated at 126 ft/38 m, and the 100 dB (rms) re 20 μPa sea lion threshold at 40 ft/12 m.

The closest documented harbor seal haulout is the Rat Island/Kilisut Harbor Spit haulout in Port Townsend Bay, 5.5 miles southwest. The closest documented California sea lion haulout is a channel marker buoy located off Whidbey Island's Bush Point, 9 miles south. The closest documented Steller sea lion haulout is Craven Rock haulout, east of Marrowstone Island, 5.5 miles south of the ferry terminal.

In-air disturbance will be limited to those pinnipeds moving on the surface through the immediate pier area, within approximately 126 ft/38 m and 40 ft/12 m of pile removal and driving.

No Level A take is expected due to implementing monitoring and mitigation measures such as installing air bubble curtain device for all impact pile driving and implementing shut-down measures for marine mammals about to enter the exclusion zones.

Incidental take for each species is estimated by determining the likelihood of a marine mammal being present within a ZOI during active pile driving or removal. Expected marine mammal presence is determined by past observations and general abundance near the project site during the construction window. Typically, potential take is estimated by multiplying the area of the ZOI by the local animal density. This provides an estimate of the number of animals that might

occupy the ZOI at any given moment. However, there are no density estimates for any Puget Sound population of marine mammal. As a result, the take requests were estimated using local marine mammal data sets (e.g., The Whale Museum, Orca Network, state and federal agencies), opinions from state and federal agencies, and observations from WSDOT biologists.

The calculation for marine mammal exposures is estimated by:

Exposure estimate = N × days of pile driving/removal, where:

N = # of animals

Using this approach, a summary of estimated takes of marine mammals incidental to WSDOT's Coupeville Timber Towers Preservation Project are provided in Table 5.

**Table 5. Estimated numbers of marine mammals that may be exposed to received noise levels that could cause Level B behavioral harassment.**

| Species | Estimated marine mammal takes | Abundance | Percentage |
|---|---|---|---|
| Pacific harbor seal | 256 | 11,036 | 2.3% |
| California sea lion | 16 | 296,750 | 0.01% |
| Steller sea lion | 328 | 63,160 | 0.6% |
| Northern elephant seal | 16 | 74,913 | 0.02% |
| Harbor porpoise | 440 | 10,682 | 4.1% |
| Dall's porpoise | 24 | 42,000 | 0.06% |
| Killer whale, transient | 48 | 243 | 19.7% |
| Pacific white-sided dolphin | 16 | 29,930 | 0.05% |
| Gray whale | 8 | 19,126 | 0.04% |
| Minke whale | 8 | 202 | 4% |

### 4.2. Effects of Alternative 2 – No Action Alternative

Under the No Action Alternative, we would not issue an IHA to WSDOT. As a result, WSDOT would not receive an exemption from the MMPA prohibitions against the take of marine mammals and would be in violation of the MMPA if they proceeded with their project and take of marine mammals occurred. If the project is not conducted, the "No Action" alternative would result in no disturbance to marine mammals.

### 4.3. Compliance with Necessary Laws – Necessary Federal Permits

We have determined that the issuance of an IHA is consistent with the applicable requirements of the MMPA, MSFMCA, and our regulations. Please refer to Section 1.4 of this EA for more information.

### 4.4. Unavoidable Adverse Impacts

WSDOT's application and the other environmental analyses identified previously (WSDOT 2014) summarize unavoidable adverse impacts to marine mammals or to their populations to which they belong or on their habitats occurring in the proposed project area. We incorporated those documents by reference to include potential effects on other species.

We acknowledge that the incidental take authorized would potentially result in unavoidable adverse impacts to individual animals that would be harassed as a result of the Project. However, we do not expect WSDOT's activities to have adverse consequences on the viability of marine mammals in the Pacific Ocean or in Puget Sound, and we do not expect the marine mammal populations in that area to experience reductions in reproduction, numbers, or distribution that might appreciably reduce their likelihood of surviving in the wild. We expect that the numbers of individuals of all species taken by harassment would be small (relative to species or stock abundance) and that the proposed Coupeville Timber Towers Preservation Project would have a negligible impact on the affected species or stocks of marine mammals.

The MMPA requirement of ensuring the proposed action has no unmitigable adverse impact to subsistence uses does not apply here because there are no permitted subsistence uses of marine mammals in the region.

### 4.5. Cumulative Effects

NEPA defines cumulative effects as "the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other actions" (40 CFR §1508.7). Cumulative impacts can result from individually minor but collectively significant actions that take place over a period of time.

Past, present, and foreseeable impacts to marine mammal populations include the following: commercial whaling; climate change affecting the prey base and habitat quality as a result of global warming; ship strikes; fishing gear entanglement; exposure to biotoxins and the resulting bioburden; acoustic masking from anthropogenic noise; competition with commercial fisheries; and killer whale predation. These activities account for cumulative impacts to regional and worldwide populations of marine mammals, many of whom are a small fraction of their former abundance. However, quantifying the biological costs for marine mammals within an ecological framework is a critical missing link to our assessment of cumulative impacts in the marine environment and assessing cumulative effects on marine mammals (Clark *et al.*, 2009). Despite these regional and global anthropogenic and natural pressures, available trend information indicates that most local populations of marine mammals in the Pacific Ocean are stable or increasing (Carretta *et al.*, 2015).

The proposed construction project would add another, albeit localized and temporary, activity in Washington coast. This activity would be limited to a small area on Whidbey Island, WA, for a relatively short period of time. This section provides a brief summary of the human-related activities affecting the marine mammal species in the action area.

#### 4.5.1. Ferry Terminal Construction

Beside the proposed Coupeville Timber Towers Preservation Project, WSDOT also performs other types of coastal construction activities. Between August 2010 and February 2011,

WSDOT conducted pile driving activities associated with the Manette Bridge replacement in the city of Bremerton in Kitsap County. From November 2012 to February 2013, WSDOT's Washington State Ferry (WSDOT) replaced a cable-lift transfer span at the Port Townsend Ferry Terminal. In addition, WSDOT conducted construction on replacement of the dolphin structure at the Orcas Island and Friday Harbor ferry terminals between September 2013 and February 2014. Furthermore, WSDOT is planning several other ferry terminal engineering projects, which include Mukilteo Multimodal Project, Seattle Terminal building and north trestle replacement, Vashon Ferry Terminal seismic retrofit, and Southworth Terminal timber trestle and terminal replacement, and Spur/Friday Harbor Terminal timber trestle and terminal replacement in the foreseeable future. Additionally, the U.S. Navy Base in Kitsap Washington is extending a pier in the Puget Sound region. These activities, however, are not expected to have significant impacts to the overall region environment as the activities involved are brief, localized, and of small scales. In addition, most of these projects will not be occurring concurrently.

### 4.5.2. Marine Pollution

Marine mammals are exposed to contaminants via the food they consume, the water in which they swim, and the air they breathe. Point and non-point source pollutants from coastal runoff, offshore mineral and gravel mining, at-sea disposal of dredged materials and sewage effluent, marine debris, and organic compounds from aquaculture are all lasting threats to marine mammals in the project area. The long-term impacts of these pollutants, however, are difficult to measure.

The persistent organic pollutants (POPs) tend to bioaccumulate through the food chain; therefore, the chronic exposure of POPs in the environment is perhaps of the most concern to high trophic level predators such as Southern Resident killer whales, Eastern Pacific gray whales, California sea lions, Pacific harbor seals, and Steller sea lions.

The WSDOT's construction and demolition activities associated with the Coupeville Timber Towers Preservation Project are not expected to cause increased exposure of POPs to marine mammals in the project vicinity due to the small scale and localized nature of the activities. Additionally, the WSDOT will use barges to carry out all construction debris and demolition material for proper disposal.

### 4.5.3. Disease

Disease is common in many marine mammal populations and has been responsible for major die-offs worldwide, but such events are usually relatively short-lived.

As recently as April 2010, five gray whales were found dead in Puget Sound. The die-off raised concerns among researchers who monitor gray whales and the health of marine mammals in the region. The total number of recent mortalities remains well below the peak numbers documented in big mortality year and the 5 that died in 2010 was still under the average for an entire year. These mortalities are currently being investigated by scientists from the Northwest

Marine Mammal Stranding Network including NMFS, Cascadia Research, Central Puget Sound Marine Mammal Stranding Network, and Washington Department of Fish and Wildlife.

### 4.5.4. Commercial and Private Marine Mammal Watching

Although marine mammal watching is considered by many to be a non-consumptive use of marine mammals with economic, recreational, educational, and scientific benefits, it is not without potential negative impacts. One concern is that animals may become more vulnerable to vessel strikes once they habituate to vessel traffic (Swingle *et al.* 1993; Laist *et al*. 2001; Jensen and Silber 2004; Douglas *et al.* 2008). Another concern is that preferred habitats may be abandoned if disturbance levels are too high. Several recent research efforts have monitored and evaluated the impacts of people closely approaching, swimming, touching, and feeding marine mammals and has suggested that marine mammals are at risk of being disturbed ("harassed"), displaced, or injured by such close interactions. Researchers investigating the adverse impacts of marine mammal viewing activities have reported boat strikes, disturbance of vital behaviors and social groups, separation of mothers and young, abandonment of resting areas, and habituation to humans (Nowacek *et al.* 2001).

There are no known marine mammal watching operations based in the vicinity of the proposed action area. Marine mammal watching operations, however, especially killer whale watching operations, are common in the nearby Greater Puget Sound area, and thus marine mammals that occur in both the action area and the Puget Sound area could be adversely affected by such marine mammal watching operations over time. However, the proposed WSDOT's Coupeville Ferry Terminal construction work would not likely add additional cumulative adverse effects due to its small spatial scale and brief duration.

### 4.5.5. Shipping

The Puget Sound is home to major Pacific Northwest shipping routes; literally thousands of vessels enter and leave the major ports of Washington State and British Colombia. In addition, to cargo ships, vacation cruise lines, and fishing vessels that travel on a regular basis throughout the region, there are scores of recreational vehicles, ferry traffic, and whale watching boats. While long-term studies are needed to better understand the impact of vessel traffic on marine mammals like whales, short-term research has already begun and findings suggest that boat noise directly affects the behavior of marine mammals. Increased boat traffic not only has the potential to increase the likelihood of ship strike of marine mammals, it also contributes to increased ambient noise level. The proposed action area is mainly served by WSDOT ferries that shuttle among different city ports within the Puget Sound region. There is no increase in ferry services and number in the foreseeable future.

### 4.5.6. Commercial Fishing

Commercial fisheries may affect marine mammals indirectly by altering the quality of their habitat. The removal of large numbers of fish (both target and non-target or bycatch species)

from a marine ecosystem can change the composition of the fish community, altering the abundance and distribution of prey available for marine mammals. In addition, by removing large amounts of biomass, commercial fisheries compete with other consumers that depend on the target species for food, which can, in turn, increase competition between different piscivorous predators. Nevertheless, the proposed action area is a ferry terminal where no fishing activity is occurring. The proposed ferry terminal replacement would not change the current status quo of commercial fisheries in the Puget Sound area.

### 4.5.7. Climate Change

Global climate change could significantly affect the marine resources of the Northwest Pacific region. Possible impacts include temperature and rainfall changes and potentially rising sea levels and changes to ocean conditions. These changes may affect the coastal marine ecosystem in the proposed action area by increasing the vertical stratification of the water column and changing the intensity and rhythms of coastal winds and upwelling. Such modifications could cause ecosystem regime shifts as the productivity of the regional ecosystem undergoes various changes related to nutrients input and coastal ocean process (FWS 2011).

The precise effects of global climate change on the action area, however, cannot be predicted at this time because the coastal marine ecosystem is highly variable in its spatial and temporal scales.

### 4.5.8. Summary of Cumulative Effects

Although commercial harvest no longer takes place, whale watching, coastal construction and development, marine pollution, and disease continue to result in some level of impact to marine mammal populations in the area. Nonetheless, the proposed construction work at the Coupeville Ferry Terminal would only add negligible additional impacts to marine mammals in the project area due to the limited project footprint within the action area.

The pile driving and pile removal activities associated with the Coupeville Timber Towers Preservation Project are well planned to minimize impacts to the biological and physical environment of the areas by implementing mitigation and monitoring protocols. Therefore, NMFS has determined that the WSDOT's Coupeville Timber Towers Preservation Project would not have a significant cumulative effect on the human environment, provided that the mitigation and monitoring measures described in Sections 2.3.4 and 2.3.5 are implemented.

## Chapter 5 List of Preparers and Agencies Consulted

**Agencies Consulted**
NMFS West Coast Regional Office
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