PROPOSED ACTION:	Issuance of an Incidental Harassment Authorization to the Port of Friday Harbor, WA for the Take of Marine Mammals Incidental to a Marina Reconstruction Project.
TYPE OF STATEMENT:	Environmental Assessment
LEAD AGENCY:	U.S. Department of Commerce National Oceanic and Atmospheric Administration National Marine Fisheries Service
RESPONSIBLE OFFICIAL:	Donna S. Wieting, Director Office of Protected Resources, National Marine Fisheries Service
FOR FURTHER INFORMATION:	Ben Laws National Marine Fisheries Service Office of Protected Resources Permits and Conservation Division 1315 East West Highway Silver Spring, MD 20910 301-427-8401
LOCATION:	Friday Harbor, 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 Port of Friday Harbor for the take of small numbers of marine mammals incidental to construction activities as part of a marina reconstruction project at Friday Harbor, Washington.
DATE:	August 2014

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LIST OF ACRONYMS AND ABBREVIATIONS

µPa	microPascal
Authorization	Incidental Harassment Authorization
CEQ	Council on Environmental Quality
CFR	Code of Federal Regulations
dB	decibel
EA	Environmental Assessment
EFH	Essential Fish Habitat
EIS	Environmental Impact Statement
FONSI	Finding of No Significant Impact
FR	Federal Register
Km	kilometer
m	meter
MMPA	Marine Mammal Protection Act
MSFCMA	Magnuson-Stevens Fishery Conservation Management Act
NAO	NOAA Administrative Order
NEPA	National Environmental Policy Act
NMFS	National Marine Fisheries Service
NOAA	National Oceanic and Atmospheric Administration
OMB	Office of Management and Budget
PORT	Port of Friday Harbor
rms	root-mean-square
USFWS	US Fish and Wildlife Service
WSDOT	Washington State Department of Transportation

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 determinations. This exception is discussed in more detail in Section 1.2.

We propose to issue an Incidental Harassment Authorization (Authorization) to the Port of Friday Harbor (Port), Friday Harbor, Washington, under the MMPA for the incidental taking of small numbers of marine mammals, incidental to construction activities as part of a marina reconstruction project at Friday Harbor, Washington. We do not have the authority to permit, authorize, or prohibit the Port's activities under Section 101(a)(5)(D) of the MMPA, as that authority lies with a different Federal agency.

Our proposed action is a direct outcome of the Port requesting an authorization under Section 101(a)(5)(D) of the MMPA to take marine mammals, by harassment, incidental to conducting a marina reconstruction project because the associated activities have the potential to take, by harassment, marine mammals during construction activities. The Port therefore requires an Authorization for incidental take.

Our issuance of an Authorization to the Port 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 to the Port of Friday Harbor for the Take of Marine Mammals Incidental to a Marina Reconstruction Project*," (hereinafter, EA) addresses the potential environmental impacts of two alternatives, namely:

- Issue the Authorization to the Port for Level B harassment of marine mammals under the MMPA during their 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 the Port in which case, for the purposes of NEPA analysis only, we assume that the activities would proceed without the mitigation and monitoring measures that would otherwise be prescribed in a proposed Authorization.

1.1.1. Background on the Port's MMPA Application

The Port proposes to reconstruct a deteriorating marina at Friday Harbor, Washington. In-water vibratory pile driving (including both removal of old piles and installation of new piles) is the only portion of the

proposed project with potential to incidentally take marine mammals, and would occur from September 1, 2014, through February 15, 2015.

1.1.2. Marine Mammals in the Action Area

The proposed repair project could adversely affect the following marine mammal species under our jurisdiction:

- Steller sea lion (*Eumetopias jubatus monteriensis*)
- California sea lion (*Zalophus californianus*)
- Harbor seal (*Phoca vitulina richardii)*
- Dall's porpoise (*Phocoenoides dalli dalli*)
- Harbor porpoise (*Phocoena phocoena vomerina*)

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 the Port – is to authorize (pursuant to the MMPA) the take of marine mammals incidental to the Port's proposed activities. The Authorization, if issued, would exempt the Port from the take prohibitions contained in the MMPA.

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

Need: On June 11, 2014, the Port submitted an adequate and complete application demonstrating both the need and potential eligibility for issuance of an Authorization 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 the Port's application. Our responsibilities under section 101(a)(5)(D) of the MMPA and its implementing regulations establish and frame the proposed action and its alternatives.

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 Authorization for incidental take of marine mammals during the conduct of the Port's project 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 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 project with mitigation and monitoring for marine mammals. The last of these documents analyzes the effects of a substantially similar activity in the same location. After conducting an independent review of the information and analyses for sufficiency and adequacy, we incorporate by reference the relevant analyses on the Port's proposed action as well as a discussion of the affected environment and environmental consequences within the following documents per 40 CFR 1502.21 and NAO 216-6 § 5.09(d):

- our notice of the proposed Authorization in the *Federal Register* (79 FR 43402, July 25, 2014);
- *Request for an Incidental Harassment Authorization under the Marine Mammal Protection Act – Port of Friday Harbor: Reconstruction of Docks C, E, and F Project* (Schwertner, 2014); and
- *Final Environmental Assessment for Issuance of an Incidental Harassment Authorization to the Washington State Department of Transportation to Take Marine Mammals by Harassment Incidental to Dolphin Replacement Project at Orcas Island and Friday Harbor Ferry Terminals, Washington* (NMFS, 2013).

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.

On July 25, 2014, we published a notice of proposed Authorization in the *Federal Register* (79 FR 43402), which included the following:

- a detailed description of the proposed action and an assessment of the potential impacts on marine mammals;
- plans for the Port's mitigation and monitoring measures to avoid and minimize potential adverse impacts to marine mammals and their habitat and proposed reporting requirements; and
- our preliminary findings.

We considered the Port's proposed mitigation and monitoring measures and preliminarily determined that they would effect the least practicable impact on marine mammals. These measures include: (1) visual monitoring for marine mammals and implementation of shutdown zones; (2) use of soft start for pile driving; and (3) implementation of a robust monitoring plan designed to allow cessation of project activities in the event that any large whale occurs in the defined 120-dB Level B harassment zone. Through the MMPA process, we preliminarily determined – provided that the Port implements the required mitigation and monitoring measures – that the impact on marine mammals of conducting the proposed project would result, at worst, in a temporary modification in behavior of small numbers of certain species of marine mammals that may be present in the vicinity of the proposed activity, resulting in a negligible impact on the affected species or stocks.

Within our notice, we requested that the public submit comments, information, and suggestions concerning the Port's request, the content of our proposed Authorization, and potential environmental

effects related to the proposed issuance of the Authorization. This EA incorporates by reference and relies on the Port's application (Port of Friday Harbor, 2014), our notice of a proposed Authorization (79 FR 43402; July 25, 2014), and other environmental analyses (NMFS, 2013) to avoid duplication of analysis and unnecessary length.

In summary, those analyses support our conclusion that the issuance of an Authorization to the Port for the marina reconstruction project would not result in any direct, indirect, or cumulative significant impacts. Based on our analysis, there is no possibility of injury or death to marine mammals due to the nature and duration of the proposed activity. Further, the incorporation of monitoring and mitigation measures proposed by the Port will reduce the effects of the specified activities to the level of least practicable impact. Finally, the analyses support our conclusion that no additive or cumulative effects of the project on its own or in combination with other activities would occur.

1.3.2. Scope of Environmental Analysis

Given the limited scope of the decision for which we are responsible (i.e., whether to issue an MMPA Authorization including prescribed means of take, mitigation measures, and monitoring requirements) this EA provides more focused information on the primary issues and impacts of environmental concern related specifically to our issuance of the Authorization. This EA does not further evaluate effects to the elements of the human environment listed in Table 1 because previous environmental reviews have shown that the Port's proposed project would not significantly affect those components of the human environment. Moreover, those analyses are consistent with our analyses regarding non-significant impacts to marine mammals.

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

Biological	Physical	Socioeconomic / Cultural
Amphibians	Air Quality	Commercial Fishing
Humans	Essential Fish Habitat	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. NEPA Public Involvement Summary

NAO 216-6 established agency 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 requested comments on the potential environmental impacts described in the Port's MMPA application and in the *Federal Register* notice of the proposed Authorization. The CEQ regulations further encourage agencies to integrate the NEPA review process with review under the environmental statutes. Consistent with agency practice we integrated our NEPA review and preparation of this EA with the public process required by the MMPA for the proposed issuance of an Authorization.

The *Federal Register* notice of the proposed Authorization, combined with our preliminary determinations, supporting analyses, and corresponding public comment period are instrumental in providing the public with information on relevant environmental issues and offering the public a meaningful opportunity to provide comments to us for consideration in both the MMPA and NEPA decision-making processes.

The *Federal Register* notice of the proposed Authorization summarized our proposed action and the anticipated effects on the affected marine mammal species or stocks; stated that we would prepare an EA for the proposed action; and invited interested parties to submit written comments concerning the application and our preliminary analyses and findings including those relevant to consideration in the EA. The notice of the proposed Authorization was available for public review and comment for thirty days, concluding on August 25, 2014.

1.3.4. Relevant Comments on Our *Federal Register* Notice

During the 30-day public comment period on the notice of the proposed Authorization, we received only one comment letter from the Marine Mammal Commission which submits comments on all proposed Incidental Take Authorizations as part of its established role under the MMPA. The Marine Mammal Commission recommended that we require the Port to re-estimate the number of harbor seal takes using an area-specific haul-out correction factor, rather than a pooled regional correction factor, from Huber *et al*. (2001). Use of the recommended correction factor increases the estimated number of harbor seal takes relative to the stock abundance from 4.1 percent to 5.0 percent, and does not affect our preliminary findings under the MMPA. We received no other substantive comments from the public.

Our response to the Marine Mammal Commission's comment will appear in the *Federal Register* notice announcing the final determination on whether to issue or deny the Authorization. We fully considered the Marine Mammal Commission's comments in preparing the final Authorization and this EA. Their recommendation did not lead us to substantively change this EA.

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. Marine Mammal Protection Act

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

1.4.2. 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. EFH has been identified in the waters surrounding Friday Harbor. For the proposed action – NMFS' action of authorizing harassment of marine mammals in the form of an Authorization to the Port of Friday Harbor – there is no impact to EFH; therefore, an EFH consultation was not conducted by NMFS.

Chapter 2 Alternatives

2.1. Introduction

The NEPA and the implementing CEQ regulations (40 CFR §§ 1500-1508) require consideration of alternatives to proposed major federal actions and NAO 216-6 provides agency policy and guidance on the consideration of alternatives to our proposed action. An EA must consider reasonable alternatives, including Alternative 1 (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) 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.

Alternative 1 includes a suite of mitigation measures intended to minimize potentially adverse interactions with marine mammals. 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 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 the Port'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.

2.2. Description of the Port's Proposed Activities

We presented a general overview of the Port's project in our *Federal Register* notice of proposed Authorization (79 FR 43402; July 25, 2014). We incorporate those descriptions and those found in the Port's request for incidental take authorization (Schwertner, 2014) by reference in this EA and briefly summarize them here.

2.2.1. Specified Time and Specified Area

The Port of Friday Harbor Marina is located at Friday Harbor, WA, on the eastern shore of San Juan Island. Friday Harbor is approximately 111 km north of Seattle, WA and 52 km southeast of Victoria, BC. The Town of Friday Harbor is located directly adjacent to the marina.

The allowable season for in-water work, including pile driving, in the vicinity of Friday Harbor is July 16 through February 15, a window established by the Washington Department of Fish and Wildlife in coordination with NMFS and the U.S. Fish and Wildlife Service to protect salmonid fish. The proposed action would occur only during a portion of that window, from September 1, 2014, through February 15, 2015. The Port expects to require three days for pile removal and a maximum of 26 days for pile

installation, for a total of 29 days during this period. Pile driving and removal may occur on any day during the specified period, only during daylight hours.

2.2.2. Pile Driving Conducted for Marina Reconstruction

The Port has determined that reconstruction of the marina is necessary due to the increasing age of the existing structures. Repair and replacement work is necessary in order to maintain the existing purpose of the marina, which provides access, permanent and short-term moorage and berthing opportunities, and marina support facilities to commercial and recreational boaters. A vibratory hammer would be used to extract existing timber piles. Broken and damaged pilings unable to be removed with the vibratory hammer may need to be removed with a clamshell bucket. All new piles would be driven with a vibratory hammer, to the extent possible. If vibratory driving is not effective for any given pile (i.e., due to substrate conditions), piles may be installed via confined drilling. No impact pile driving is proposed for this project. The Port does not plan to operate multiple pile driving rigs concurrently.

2.2.2.1. Vibratory Hammer Pile Removals

Vibratory hammer extraction is a common method for removing piling. A vibratory hammer is a large mechanical device mostly constructed of steel (weighing 5 to 16 tons) that is suspended from a crane by a cable. It is attached to a 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 will continue to raise the hammer and pull 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.

Vibratory removal will take approximately 10 to 15 minutes per pile. The piling will be loaded onto the barge or into a container and disposed of offsite in accordance with State of Washington Administrative Code 173-304 Minimum Functional Standards for Solid Waste Handling.

2.2.2.2. Direct Pull and Clamshell Removal

Older timber pilings are particularly prone to breaking at the mudline because of damage from marine borers and vessel impacts, and must be removed because they can interfere with the installation of new pilings. 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 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. Direct pull and clamshell removal are not expected to produce noise loud enough for concerns of marine mammals.

2.2.2.3. Vibratory Hammer Pile Installation

Vibratory hammers are commonly used in pile installation where sediments allow and involve the same vibratory hammer used in pile extraction. The pile is placed into position using a choker and crane, and

then vibrated between 1,200 and 2,400 vibrations per minute. The vibrations liquefy the sediment surrounding the pile, allowing it to penetrate to the required depth.

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 Authorization to the Port allowing the incidental take, by Level B harassment, of five species of marine mammals subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the proposed Authorization, if issued.

Our *Federal Register* notice requesting comments on the proposed Authorization analyzed the potential impacts of this Alternative in detail. We incorporate those analyses by reference in this EA and briefly summarize the mitigation and monitoring measures and reporting requirements that we would incorporate in the final Authorization, if issued, in the following sections.

MITIGATION, MONITORING, AND REPORTING MEASURES

To reduce the potential for disturbance associated with the activities, the Port has proposed to implement several monitoring and mitigation measures for marine mammals. NMFS has proposed some additional measures. The proposed monitoring and mitigation measures include:

(1) During all pile driving, the Port shall implement a minimum shutdown zone of 10 m radius around the pile for marine mammals. If a marine mammal comes within this zone, such operations shall cease.
(2) The Port shall similarly avoid direct interaction with marine mammals during in-water heavy machinery work other than pile driving that may occur in association with the construction project. If a marine mammal comes within 10 m of such activity, operations shall cease and vessels shall reduce speed to the minimum level required to maintain steerage and safe working conditions, as appropriate.
(3) The Port shall establish monitoring locations as described in the Marine Mammal Monitoring Plan developed in coordination with NMFS (and incorporated here by reference). For pile installation activities, a minimum of one observer shall be assigned to the active pile driving rig in order to monitor the shutdown zone, while at least three additional observers shall be positioned for optimal monitoring of the surrounding waters within the Level B harassment zone (see Figure 1). At least two of these shall be vessel-based. During pile removal, a minimum of three observers shall be deployed at the best vantage points to observe the shutdown and disturbance zones. These observers shall record all observations of marine mammals, as well as behavior and potential behavioral reactions of the animals.
(4) Monitoring shall take place from 15 minutes prior to initiation of pile driving activity through 30 minutes post-completion of pile driving activity. Pre-activity monitoring shall be conducted for 15 minutes to ensure that the shutdown zone is clear of marine mammals, and pile driving may commence when observers have declared the shutdown zone clear of marine mammals. In the event of a delay or shutdown of activity resulting from marine mammals in the shutdown zone, animals shall be allowed to remain in the shutdown zone (i.e., must leave of their own volition) and their behavior shall be monitored and documented. Monitoring shall occur throughout the time required to drive a pile. The shutdown zone must be determined to be clear during periods of

good visibility (i.e., the entire shutdown zone and surrounding waters must be visible to the naked eye).

(5) If a marine mammal approaches or enters the shutdown zone, all pile driving activities shall be halted. If pile driving is halted or delayed due to the presence of a marine mammal, the activity may not commence or resume 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.

(6) Monitoring shall be conducted by qualified observers, as described in the Monitoring Plan. Trained observers shall be placed from the best vantage point(s) practicable to monitor for marine mammals and implement shutdown or delay procedures when applicable through communication with the equipment operator.

(7) The Port shall use soft start techniques recommended by NMFS for vibratory pile driving. The soft start requires contractors to initiate sound from vibratory hammers for fifteen seconds at reduced energy followed by a thirty-second waiting period. This procedure is repeated two additional times. Soft start shall be implemented at the start of each day's vibratory pile driving and at any time following cessation of pile driving for a period of 30 minutes or longer.

(8) Pile driving shall only be conducted during daylight hours.

(9) The Port shall collect sighting data and behavioral responses to pile driving for marine mammal species observed in the region of activity during the period of activity. All observers shall be trained in marine mammal identification and behaviors, and shall have no other construction-related tasks while conducting monitoring.

The Port is required to submit a draft monitoring report to NMFS Office of Protected Resources within 90 days after the conclusion of the activities. A final report shall be prepared and submitted within 30 days following resolution of any comments on the draft report from NMFS. A description of the activities conducted by the Port and the monitoring protocols would be included in the report.

In our *Federal Register* notice of proposed Authorization, which we incorporate by reference, we preliminarily determined that the measures included in the proposed Authorization were sufficient to reduce the effects of the Port's activity on marine mammals to the level of least practicable impact. In addition, we described our analysis of impacts and preliminarily determined that the taking of small numbers of marine mammals, incidental to the Port's project would have a negligible impact on the relevant species or stocks and would not have an unmitgable adverse impact on affected species or stocks for taking for subsistence uses.

We have neither altered the mitigation, monitoring and reporting requirements to be included in the final Authorization nor have we received any information that would cause us to change our preliminary determinations under the MMPA. Accordingly, this Preferred Alternative would satisfy the purpose and need of our proposed action under the MMPA–issuance of an Authorization, along with required mitigation measures and monitoring that meets the standards set forth in section 101(a)(5)(D) of the MMPA and the implementing regulations.

Figure 1. Friday Harbor monitoring zone (area bounded by blue line)

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 Authorization to the Port for the proposed project.

Under the No Action Alternative, the Port could choose not to proceed with their proposed activities or to proceed without an Authorization. If they choose the latter, the Port 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 the Port not receiving an Authorization and the Port conducting the project without the protective measures and reporting requirements required by an Authorization under the MMPA. We take this approach to meaningfully evaluate the primary environmental issues – the impact on marine mammal species or stocks from these activities in the absence of protective measures.

2.4. Alternatives Considered but Eliminated from Further Consideration

NMFS considered whether other alternatives could meet the purpose and need and support the Port's proposed project. An alternative that would allow for the issuance of an Authorization 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.

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 and briefly summarize or supplement the relevant sections for marine mammals in the following subchapters.

3.1. Physical Environment

We are required to consider impacts to the physical environment under NAO 216-6. As discussed in Chapter 1, our proposed action and alternatives relate only to the authorization of incidental take of marine mammals and not to the physical environment. Certain aspects of the physical environment are not relevant to our proposed action (see subchapter 1.3.2 - Scope of Environmental Analysis). Because of the requirements of NAO 216-6, we briefly summarize the physical components of the environment here.

3.1.1. Marine Mammal Habitat

We presented information on marine mammal habitat and the potential impacts to marine mammal habitat in the *Federal Register* notice of the proposed Authorization. In summary, there are no rookeries or major haul-out sites nearby (there are rocks used by harbor seals as haul-outs within the acoustic zone of influence, approximately 5 km from the project site) or ocean bottom structure of significant biological importance to marine mammals that may be present in the marine waters in the vicinity of the project area. No critical habitat exists in the area of the proposed activities.

3.1.2. Ambient Sound

The need to understand the marine acoustic environment is critical when assessing the effects of anthropogenic noise on marine wildlife. Sounds generated by coastal construction such as pile driving and dredging within the marine environment can affect its inhabitants' behavior (e.g., deflection from loud sounds) or ability to effectively live in the marine environment (e.g., masking of sounds that could otherwise be heard).

Ambient sound levels are the result of numerous natural and anthropogenic sounds that can propagate over large distances and vary greatly on a seasonal and spatial scale. These ambient sounds occupy all frequencies and contributions in ocean soundscape from a few hundred Hz to 200 kHz (NRC, 2003). In typical urban coastal waters such as the one at the proposed action area, the main sources of underwater ambient sound would be associated with:

- Wind and wave action
- Precipitation
- Vessel and industrial activities
- Biological sounds (fish, snapping shrimp)

The contribution of these sources to the background sound levels differs with their spectral components and local propagation characteristics (e.g., water depth, temperature, salinity, and ocean bottom conditions). In deep water, low-frequency ambient sound from 1-10 Hz mainly comprises turbulent pressure fluctuations from surface waves and the motion of water at the air-water interfaces. At these infrasonic frequencies, sound levels depend only slightly on wind speed. Between 20-300 Hz, distant anthropogenic sound (ship transiting, etc.) dominates wind-related sounds. Above 300 Hz, the ambient

sound level depends on weather conditions, with wind- and wave-related effects mostly dominating sounds. Biological sounds arise from a variety of sources (e.g., marine mammals, fish, and shellfish) and range from approximately 12 Hz to over 100 kHz. The relative strength of biological sounds varies greatly; depending on the situation, biological sound can be nearly absent to dominant over narrow or even broad frequency ranges (Richardson et al. 1995).

The only available in-water background noise data in the San Juan Islands area was collected on the west side of San Juan Island (approximately 6 miles west of the Friday Harbor terminal), as part of the OrcaSound in-water monitoring study. Data was collected over an 18-month period (April 2004-November 2005). Average daytime in-water noise levels during the summer (July-Aug.) were 118 dB rms re 1 µPa and 116 dB rms re 1 µPa non-summer (Oct.-April) (Veirs and Veirs, 2005).

3.2. Biological Environment

3.2.1. Marine Mammal Habitat

We presented information on marine mammal habitat (including prey species) and the potential impacts to marine mammal habitat in the *Federal Register* notice of the proposed Authorization. In summary, marine mammal prey (i.e., fish) may be present in the project area but not in high densities. The description of fish species, in the context of marine mammal habitat, found in NMFS (2013) is incorporated here by reference. No critical habitat exists in the area of the proposed activities.

3.2.2. Marine Mammals

We provide information on the occurrence of marine mammals most likely present in the proposed activity areas in section 1.1.2 of this EA. The marine mammals most likely to be harassed incidental to conducting the pile driving activities associated with the project are California sea lions; Steller sea lions; harbor seals, harbor porpoises, and Dall's porpoises. None of these species are listed as threatened or endangered under the Endangered Species Act. We provided information on the distribution, population size, and conservation status for each species in the proposed Authorization *Federal Register* notice, and we incorporate those descriptions by reference here. We briefly summarize this information here. NMFS' 2013 Stock Assessment Reports (Carretta *et al*., 2014; Allen and Angliss 2014) provide the latest abundance and life history information about each species/stock in Washington.

3.2.2.1. California Sea Lion

An estimated 3,000 to 5,000 California sea lions migrate northward along the coast to central and northern California, Oregon, Washington, and Vancouver Island during the non-breeding season from September to May (Jeffries *et al*., 2000) and return south the following spring (Mate, 1975; Bonnell *et al*., 1983). Peak numbers of up to 1,000 California sea lions occur in Puget Sound during this time period (Jeffries *et al*., 2000). The nearest documented California sea lion haul-out sites to Friday Harbor are intertidal rocks and reef areas around Trial Island and Race Rocks near Victoria, B.C. (approximately 24 km west of Friday Harbor). Small numbers of sea lions may occasionally haul-out on navigation buoys in the San Juan Islands (Jeffries *et al*., 2000).

3.2.2.2. Steller Sea Lion

In Washington, Steller sea lions primarily occur at haul-out sites along the outer coast from the Columbia River to Cape Flattery and in inland waters sites along the Vancouver Island coastline of the Strait of Juan

de Fuca (Jeffries *et al*., 2000; Olesiuk and Trites, 2003; Olesiuk, 2008). Numbers vary seasonally in Washington waters with peak numbers present during the fall and winter months (Jeffries *et al*., 2000). Haul-outs in the San Juan Islands include Green Point on Speiden Island (13 km northwest of Friday Harbor), North Peapod Rock (23 km northeast of Friday Harbor), Bird Rocks (19 km southeast of Friday Harbor), and Whale Rock (11 km south of Friday Harbor) (Jeffries *et al*., 2000).

3.2.2.3. Harbor Seal

The nearest known haul-out sites to Friday Harbor are the intertidal rocks northeast of Point George on Shaw Island (approximately 4-5 km northeast of Friday Harbor). The level of use during the project timeframe is unknown, but would be expected to be less as air temperatures become colder than water temperatures in the fall and winter.

3.2.2.4. Harbor Porpoise

Harbor porpoises occur year-round and breed in the waters around the San Juan Archipelago and north into Canadian waters (Calambokidis and Baird, 1994). Little information exists on harbor porpoise occurrence in the project area, although it is suspected that in some areas harbor porpoises migrate seasonally.

3.2.2.5. Dall's Porpoise

Dall's porpoise distribution on the U.S. west coast is highly variable between years and appears to be affected by oceanographic conditions (Forney and Barlow, 1998); animals may spend more or less time outside of U.S. waters as oceanographic conditions change. Because distribution and abundance of this stock is so variable, population trends are not available (Carretta *et al*., 2014). In Washington, Dall's porpoises are most abundant in offshore waters where they are year-round residents, although interannual distribution is highly variable (Green *et al*., 1992). In inland waters, Dall's porpoises are most frequently observed in the Strait of Juan de Fuca and Haro Strait between San Juan Island and Vancouver Island (Nysewander *et al*., 2005).

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 Authorization. The Port's application, our notice of a proposed Authorization, and other related environmental analyses identified previously, facilitate an analysis of the direct, indirect, and cumulative effects of our proposed issuance of an Authorization.

Under the MMPA, we have evaluated the potential impacts of the Port's activities on the affected marine mammal species or stocks in order to determine whether to authorize incidental take of marine mammals. Under NEPA, our EA is appropriate to evaluate the potential significance of environmental impacts resulting from the issuance of our Authorization.

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

Alternative 1 is the Preferred Alternative where we would issue an Authorization to the Port allowing the incidental take, by Level B harassment, of five species of marine mammals, subject to the mandatory mitigation and monitoring measures and reporting requirements set forth in the proposed Authorization, and described earlier in this EA.

4.1.1. Impacts to Marine Mammal Habitat

Our proposed action (i.e., the issuance of an Authorization for the take of marine mammals) would have no additive or incremental effect on the physical environment, or on components of the biological environment that function as marine mammal habitat, beyond those resulting from the Port's proposed project. The Port's proposed activity area is not located within a marine sanctuary or a National Park. The proposed activities would not result in substantial damage to ocean and coastal habitats that might constitute marine mammal habitat. The main impact associated with the proposed activity would be temporarily elevated sound levels and the associated direct effects on marine mammals. Contact with the seafloor, through pile driving, would temporarily increase turbidity, but no long-term adverse effects would result. Turbidity events would be limited to the duration of pile driving. However, the removal of creosoted timber piles would facilitate the removal of harmful contaminants from marine mammal habitat. The proposed activities could potentially result in, at most, temporary avoidance by potential prey (i.e., fish) of the immediate area. We do not anticipate that the project would physically alter the marine environment or negatively impact the physical environment or components of the biological environment that function as marine mammal habitat in the proposed action area. The MMPA Authorization would not impact physical or biological habitat features, such as substrates and/or water quality or availability of marine mammal prey, as the Authorization only allows for the take of marine mammals by Level B harassment and includes mitigation measures to reduce impacts to marine mammals. Those mitigation measures will not have any effect on the physical environment. More information on potential impacts to marine mammal habitat is contained in the Port's application (Schwertner, 2014) and our proposed Authorization notice, which are incorporated herein by reference.

4.1.2. Impacts to Marine Mammals

We expect that behavioral disturbance resulting from exposure to underwater sound resulting from the activities associated with the project has the potential to impact marine mammals and comprises the only likely source of effects to marine mammals. 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. Our notice of proposed Authorization and the Port's application (Schwertner, 2014) provide detailed descriptions of

these potential effects of the proposed project activities on marine mammals. That information is incorporated herein by reference and summarized next.

Based on this information, we expect that these takes would result, at worst, in a temporary modification in behavior and/or temporary changes in animal distribution (Level B harassment) of certain species or stocks of marine mammals. At most, we interpret these effects on marine mammals as falling within the MMPA definition of Level B (behavioral) harassment. We expect these impacts to be minor because we do not anticipate measurable changes to the population or impacts to rookeries, mating grounds, and other areas of similar significance.

We expect no long-term or substantial adverse effects on marine mammals, their habitats, or their role in the environment. We base our conclusion on the results of previous monitoring for the same activities and anecdotal observations for the same activities in the proposed area.

Estimated Take of Marine Mammals by Level B Incidental Harassment: The Port has requested take by Level B harassment as a result of underwater sound produced through pile driving associated with the project. We expect that the proposed project would cause short-term behavioral disturbance and/or displacement for marine mammals in the proposed areas.

As mentioned previously, we estimate that the activities could potentially affect, by Level B harassment only, five species of marine mammals under our jurisdiction. For each species, these estimates are small numbers (less than five percent for each species) relative to the population sizes. Table 2 outlines the number of Level B harassment takes that we propose to authorize in this Authorization, the regional population estimates for marine mammals in the action area, the percentage of each population or stock that may be taken as a result of the Port's activities, and the trend of each marine mammal population.

Table 2. Estimates of Level B harassment take and percentage of stocks potentially affected as a result of the Port's proposed project.

Common Species Name	Estimated Take by Level B harassment	Abundance of Stock	Percentage of Stock Potentially Affected	Population Trend
Steller sea lion	162	63,160-78,198	0.3	Increasing
California sea lion	133	296,750	0.04	Increasing
Harbor seal	726	14,612	5.0	Stable
Harbor porpoise	376	10,682	3.5	Increasing
Dall's porpoise	81	42,000	0.2	Unknown

Our proposed Authorization notice and the Port's application (Schwertner, 2014) contain complete descriptions of how these take estimates were derived. None of these have changed since those documents were published. In summary, the take estimates were based on density estimates found in the Navy's Marine Species Density Database (Hanser *et al*., 2014), the size of the ensonified area expected to result from project activities, and the total number of days that would be needed to complete the work (i.e., 29 days). We do not expect the proposed activities to impact rates of recruitment or survival for any affected species or stock. Further, the activities would not adversely affect marine mammal habitat.

4.2. Effects of Alternative 2 – No Action Alternative

Under the No Action Alternative, we would not issue an Authorization to the Port. As a result, the Port would not receive an exemption from the MMPA prohibitions against the take of marine mammals and would be in violation of the MMPA if take of marine mammals occurs.

The impacts to elements of the human environment resulting from the No Action alternative – conducting the marina reconstruction project in the absence of required protective measures for marine mammals under the MMPA – would be greater than those impacts resulting from Alternative 1, the Preferred Alternative.

4.2.1. Impacts to Marine Mammal Habitat

Under the No Action Alternative, the effects on the physical environment or on components of the biological environment that function as marine mammal habitat would result from the Port's planned pile removal and installation activities, which we evaluated in the referenced documents. Even without mitigation measures, impacts to marine mammal habitat (including prey species) would be minimal and temporary because 1) impact pile driving is not proposed for this project; 2) the area of potential effect is limited in both space and time (e.g., short daily duration of sound associated with individual pile driving events); and 3) there are no rookeries or major haul-out sites nearby (there are rocks used by harbor seals as haul-outs within the acoustic zone of influence, approximately 5 km from the project site) or ocean bottom structure of significant biological importance to marine mammals that may be present in the project area. The most likely impact to marine mammal habitat occurs from minor impacts to the immediate substrate during installation and removal of piles during the project or from temporary avoidance by prey species of the immediate area. This Alternative would result in similar effects on the physical environment and components of the biological environment that function as marine mammal habitat as Alternative 1.

4.2.2. Impacts to Marine Mammals

Under the No Action Alternative, the Port's planned pile removal and installation activities could result in increased amounts of Level B harassment to marine mammals, although no takes by injury (Level A harassment), serious injury, or mortality would be expected even in the absence of mitigation and monitoring measures. While it is difficult to provide an exact number of takes that might occur under the No Action Alternative, the numbers would be expected to be larger than those presented in Table 2 above because the Port would not be required to implement measures designed to warn marine mammals of the impending increased underwater sound levels, and additional species may be incidentally taken because the Port would not be required to shut down activity if any large whale occurred in the project vicinity.

If the activities proceeded without the protective measures and reporting requirements required by Alternative 1, the direct, indirect, and cumulative effects on the human or natural environment of not issuing the Authorization would include the following:

- Increases in the number of behavioral responses and frequency of changes in animal distribution, and potential takes to additional species, because of the lack of mitigation measures required in the Authorization. Thus, the incidental take of marine mammals would likely occur at higher levels than we have already identified and evaluated in our *Federal Register* notice on the proposed Authorization; and

- We would not be able to obtain the monitoring and reporting data needed to assess the anticipated impact of the activity upon the species or stock; and increased knowledge of the species as required under the MMPA.

4.3. Unavoidable Adverse Impacts

The Port's application, our notice of a proposed Authorization, and other environmental analyses identified previously summarize unavoidable adverse impacts to marine mammals or the populations to which they belong or on their habitats occurring in the proposed project area. We incorporate those documents by reference.

We acknowledge that the incidental take authorized would potentially result in unavoidable adverse impacts. However, we do not expect the Port's activities to have adverse consequences on the annual rates of recruitment or survival of marine mammal species or stocks in Washington inland waters, 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 and recovering 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), that the proposed project and the take resulting from the proposed project activities 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.

4.4. 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.

Other environmental analyses identified previously summarize the potential cumulative effects to marine mammals or the populations to which they belong or on their habitats occurring in the action area. We incorporate those documents and analyses by reference and briefly summarize them here. Thus, this cumulative effects analysis focuses on the activities that may temporally or geographically overlap with the Port's activities and would most likely impact the marine mammals present in the proposed areas. We consider the impact of the Port's presence and effects of conducting activities in the proposed action areas to be insignificant when compared to other human activities in the area.

Past, present, and reasonably 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 which 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*., 2013a).

The proposed project would add another, albeit temporary, activity in Washington inland waters. This activity would be limited to a small area at Friday Harbor 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. Additional information on cumulative effects can be found in NMFS' 2013 EA (NMFS, 2013).

4.4.1. 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 (USFWS, 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.

4.4.2. Coastal Development

Between 2000 and 2008, the population of Kitsap County increased by roughly 15,000. Thus, we assume that future public and private actions will continue within the action area, increasing as the population density rises. We do not expect that areas already set aside as limited and public open space will be converted to intensive land uses. Furthermore, much of the area that may be redeveloped in future years is already under uses that impair or reduce ecological function.

4.4.3. 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 California sea lions, harbor seals, and Steller sea lions.

The Port's construction activities associated with the marina reconstruction 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 Port will use barges to carry out all construction debris and demolition material for proper disposal.

4.4.4. 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.

The population size of the gray whale stock has been increasing over the past several decades despite a west coast Unexplained Mortality Event (UME) from 1999-2001. It is likely that oceanographic factors limited food availability (LeBouef *et al*., 2000; Moore *et al*., 2001; Minobe, 2002; Gulland *et al*., 2005), with resulting declines in survival rates of adults (Punt and Wade, 2012). The population has recovered to levels seen prior to the UME (Carretta *et al*., 2014). In 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. However, the total number of recent mortalities remains well below the peak numbers documented in during the UME and are not unusual.

4.4.5. Ferry Terminal Construction

The Washington State Department of Transportation (WSDOT) operates a ferry terminal immediately adjacent to the Port of Friday Harbor marina. Between September 2013 and February 2014, WSDOT conducted construction activity to replace dolphins (an offshore structure that is used to guide the ferry into the terminal and hold it in place while docked) at the Friday Harbor ferry terminal, and conducted similar work at the Orcas Island ferry terminal (also located within the San Juan Islands).

4.4.6. 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. These cumulative adverse effects, however, are not expected to be significant.

4.4.7. Conclusion

Based on the summation of activity in the area provided in this section, NMFS determined that the incremental impact of an Authorization for the proposed project at Friday Harbor would not be expected to result in a cumulative significant impact to the human environment from past, present, and future activities. The potential impacts to marine mammals, their habitats, and the human environment in

general are expected to be minimal based on the limited and temporary footprint and mitigation and monitoring requirements of the Authorization.

Chapter 5 List of Preparers and Agencies Consulted

Agencies Consulted
No other persons or agencies were consulted in preparation of this EA.

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