Executive Summary

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EXECUTIVE SUMMARY

ES.1 INTRODUCTION

The United States (U.S.) Department of the Navy (Navy) prepared this Environmental Impact Statement (EIS)/Overseas EIS (OEIS) to assess the potential environmental impacts associated with two categories of military readiness activities: training and testing. Collectively, the at-sea areas in which these military readiness activities are proposed to occur are referred to as the Northwest Training and Testing (NWTT) Study Area (Study Area) (Figure ES-1). The Navy also prepared this EIS/OEIS to comply with the National Environmental Policy Act (NEPA) and Executive Order (EO) 12114.

Major conflicts, terrorism, lawlessness, and natural disasters all have the potential to threaten the national security of the United States. National security, prosperity, and vital interests of the United States are increasingly tied to other nations because of the close relationships between the United States and other national economies. The Navy carries out training and testing activities to be able to protect the United States from its enemies, as well as to protect and defend the rights of the United States and its allies to move freely on the oceans. Training and testing activities that prepare the Navy to fulfill its mission to protect and defend the United States and its allies potentially impact the environment. These activities may trigger legal requirements identified in many U.S. federal environmental laws, regulations, and EOs.

After thoroughly reviewing its environmental compliance requirements for training and testing exercises at sea, the Navy instituted a policy in the year 2000 designed to comprehensively address these requirements. That policy—the Navy's At-Sea Policy—resulted, in part, in a series of comprehensive analyses of training and testing activities on U.S. at-sea range complexes and operating areas. These analyses served as the basis for the National Marine Fisheries Service (NMFS) to issue Marine Mammal Protection Act (MMPA) incidental take authorizations because of the potential effects of some training and testing activities on species protected by federal law. These analyses also served as the basis for the NMFS and U.S. Fish and Wildlife Service (USFWS) to issue Biological Opinions (BOs) and incidental take statements pursuant to the Endangered Species Act (ESA). The initial analyses for the Study Area considered in this document (*Northwest Training Range Complex Final EIS/OEIS* [U.S. Department of the Navy 2010a] and *Naval Sea Systems Command Naval Undersea Warfare Center Keyport Range Complex Extension Final EIS/OEIS* [U.S. Department of the Navy 2010b]) resulted in incidental take authorizations and incidental take statements, which begin to expire in 2015.

The present EIS/OEIS updates these analyses and supports incidental take authorizations. This EIS/OEIS also furthers compliance with the Navy's policy for comprehensive analysis by analyzing the potential environmental impacts of training and testing activities in additional areas (areas not analyzed in previous documents) where training and testing historically occur, including Navy ports and shipyards.

ES.2 PURPOSE OF AND NEED FOR PROPOSED MILITARY READINESS TRAINING AND TESTING ACTIVITIES

The purpose of the Proposed Action is to conduct training and testing activities to ensure that the Navy meets its mission, which is to maintain, train, and equip combat-ready naval forces capable of winning wars, deterring aggression, and maintaining freedom of the seas. This mission is achieved in part by conducting training and testing within the Study Area.

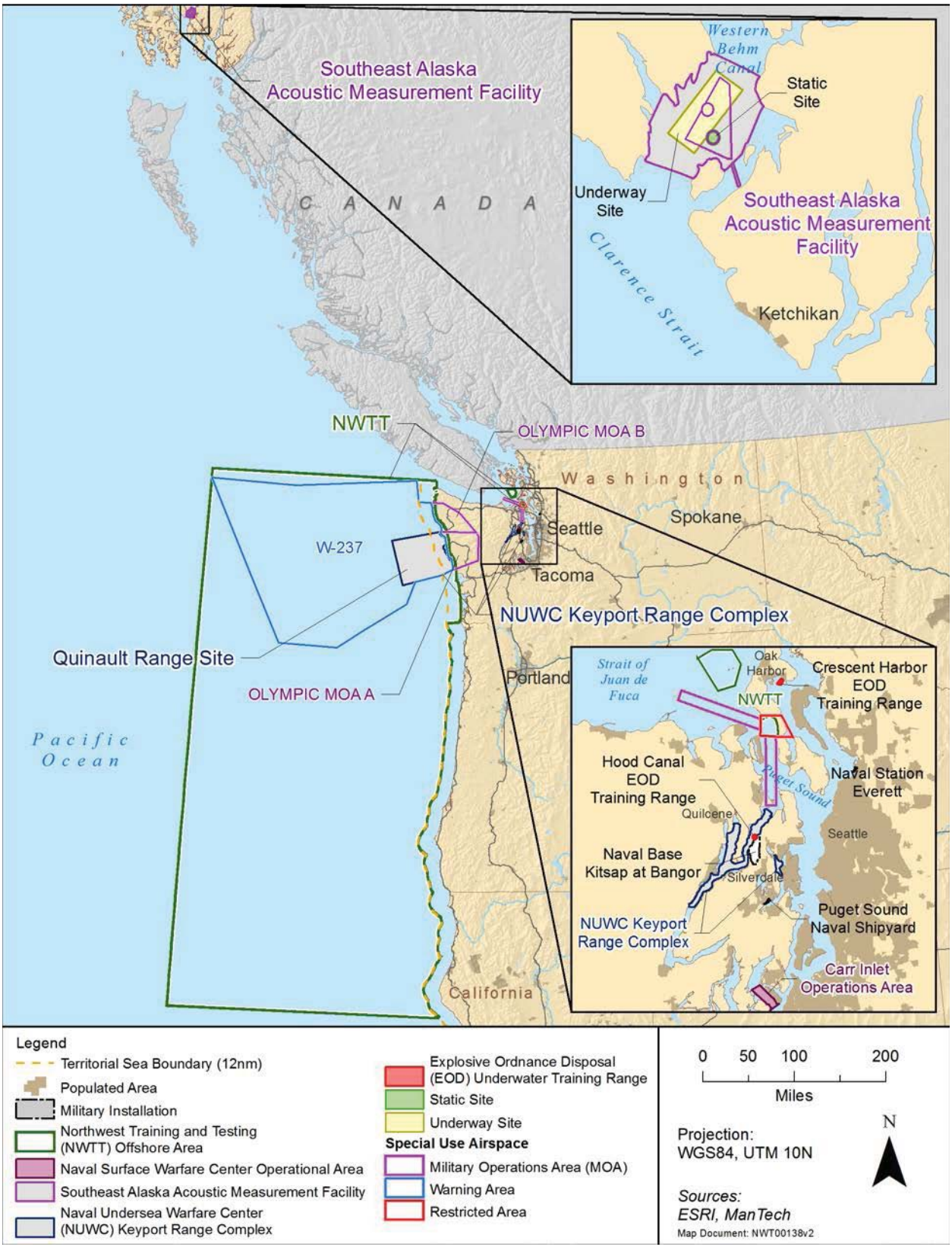

Figure ES-1: Northwest Training and Testing Study Area

ES.3 SCOPE AND CONTENT OF THE ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

In this EIS/OEIS, the Navy assessed military readiness training and testing activities that could potentially impact human and natural resources, especially marine mammals, fish, birds, sea turtles, and other marine resources. The range of alternatives includes a No Action Alternative and other reasonable courses of action. The Navy analyzed direct, indirect, cumulative, short-term, long-term, irreversible, and irretrievable impacts. The Navy is the lead agency for the Proposed Action and is responsible for the scope and content of this EIS/OEIS. The United States Coast Guard is a cooperating agency as this document assesses potential impacts from their activities that are similar to the Navy's. The NMFS is a cooperating agency because of its expertise and regulatory authority over marine resources. Additionally, this document will serve as NMFS' environmental planning documentation for the rule-making process under the MMPA.

In accordance with the Council on Environmental Quality Regulations, 40 Code of Federal Regulations (C.F.R.) § 1505.2, the Navy will issue a Record of Decision (ROD) that provides the rationale for choosing one of the alternatives. The decision will be based on factors analyzed in this EIS/OEIS, including military training and testing objectives, best available science and modeling data, potential environmental impacts, and public interest.

ES.3.1 NATIONAL ENVIRONMENTAL POLICY ACT

Federal agencies are required under NEPA to examine the environmental impacts of their proposed actions within the United States and its territories. An EIS is a detailed public document that provides an assessment of the potential effects that a major federal action might have on the human environment, which includes the natural environment. The Navy undertakes environmental planning for major Navy actions occurring throughout the world in accordance with applicable laws, regulations, and executive orders. Presidential Proclamation 5928, issued 27 December 1988, extended the exercise of U.S. sovereignty and jurisdiction under international law to 12 nautical miles (nm); however, the proclamation expressly provides that it does not extend or otherwise alter existing federal law or any associated jurisdiction, rights, legal interests, or obligations. Thus, as a matter of policy, the Navy analyzes environmental effects and actions within 12 nm (Territorial Sea as identified on Figure ES-1) under NEPA.

ES.3.2 EXECUTIVE ORDER 12114

This OEIS has been prepared in accordance with EO 12114 (44 Federal Register 1957) and in accordance with Navy regulations codified at 32 C.F.R. Part 187, *Environmental Effects Abroad of Major Department of Defense Actions*. An OEIS is required when a proposed action and alternatives have the potential to significantly harm the environment of the global commons. The global commons are defined as geographical areas outside the jurisdiction of any nation and include the oceans outside of the territorial limits (more than 12 nm from the coast) and Antarctica but do not include contiguous zones and fisheries zones of foreign nations (32 C.F.R. § 187.3). The EIS and OEIS have been combined into one document, as permitted under NEPA and EO 12114, to reduce duplication.

ES.3.3 MARINE MAMMAL PROTECTION ACT

The MMPA of 1972 (16 U.S. Code [U.S.C.] § 1361 et seq.) established, with limited exceptions, a moratorium on the "taking" of marine mammals in waters or on lands under U.S. jurisdiction. The act further regulates "takes" of marine mammals in the global commons by vessels or persons under U.S. jurisdiction. The term "take," as defined in Section 3 (16 U.S.C. § 1362(13)) of the MMPA, means "to

harass, hunt, capture, or kill, or attempt to harass, hunt, capture, or kill any marine mammal." "Harassment" was further defined in the 1994 amendments to the MMPA, which provided two levels of harassment: Level A (potential injury) and Level B (potential behavioral disturbance).

The MMPA directs the Secretary of Commerce to allow, upon request, the incidental, but not intentional, taking of small numbers of marine mammals by U.S. citizens who engage in a specified activity (other than commercial fishing) within a specified geographical region if NMFS finds that the taking will have a negligible impact on the species or stock(s) and will not have an unmitigable adverse impact on the availability of the species or stock(s) for subsistence uses (where relevant). The authorization must set forth the permissible methods of taking, other means of attaining the least practicable adverse impact on the species or stock and its habitat, and requirements pertaining to the mitigation, monitoring, and reporting of such taking.

The National Defense Authorization Act of Fiscal Year 2004 (Public Law 108-136) amended the definition of harassment, removing the "specified geographic area" requirement, as well as the small numbers provision as applied to military readiness activities or scientific research activities conducted by or on behalf of the federal government consistent with Section 104(c)(3) (16 U.S.C. § 1371 et seq.). The Fiscal Year 2004 National Defense Authorization Act adopted the definition of "military readiness activity" as set forth in the Fiscal Year 2003 National Defense Authorization Act (Public Law 107-314). A "military readiness activity" is defined as "all training and operations of the Armed Forces that relate to combat" and "the adequate and realistic testing of military equipment, vehicles, weapons, and sensors for proper operation and suitability for combat use." For military readiness activities, the relevant definition of harassment is any act that:

- injures or has the significant potential to injure a marine mammal or marine mammal stock in the wild ("Level A harassment") or
- disturbs or is likely to disturb a marine mammal or marine mammal stock in the wild by causing disruption of natural behavioral patterns, including, but not limited to, migration, surfacing, nursing, breeding, feeding, or sheltering to a point where such behavioral patterns are abandoned or significantly altered ("Level B harassment") (16 U.S.C. § 1362(18)(B)(i) and (ii)).

The Navy has prepared a consolidated request for two 5-year Letters of Authorization: one for the incidental taking of marine mammals during the conduct of training, and another for the incidental taking of marine mammals during the conduct of testing activities within the NWTT Study Area from 2015 through 2020. This EIS/OEIS has been prepared in accordance with the applicable regulations of the MMPA and will evaluate all components of the proposed training and testing activities that have the potential to incidentally take marine mammals.

ES.3.4 ENDANGERED SPECIES ACT

The ESA of 1973 (16 U.S.C. § 1531 et seq.) established protection over and conservation of threatened and endangered species and the ecosystems upon which they depend. An "endangered" species is a species in danger of extinction throughout all or a significant portion of its range. A "threatened" species is one that is likely to become endangered within the near future throughout all or in a significant portion of its range. The USFWS and NMFS jointly administer the ESA and are also responsible for the listing of species (designating a species as either threatened or endangered). The ESA allows the designation of geographic areas as critical habitat for threatened or endangered species. Section 7(a)(2) requires each federal agency to ensure that any action it authorizes, funds, or carries out is not likely to jeopardize the continued existence of any endangered or threatened species or result in the destruction

or adverse modification of critical habitat of such species. When a federal agency's action "may affect" a listed species, that agency is required to consult with NMFS or USFWS, depending on which service has jurisdiction over the species (50 C.F.R. 402.14(a)). Under the terms of Section 7(b)(4) and Section 7(o)(2) of the ESA, taking that is incidental to and not intended as part of the agency action is not considered to be prohibited taking under the act provided that such taking complies with the terms and conditions of an Incidental Take Statement. The ESA applies to certain marine mammals, fish, birds, and sea turtles evaluated in this EIS/OEIS.

This EIS/OEIS analyzes potential effects to species listed under the ESA. In accordance with ESA requirements, the Navy will complete consultation under Section 7 of the ESA with NMFS and USFWS on the potential that implementation of the Proposed Action may affect listed species. With regard to NMFS jurisdiction, upon concluding Section 7 consultation, the Navy will implement protective measures identified by the Services in a BO or other consultation document. In addition, the Navy has applied for a Letters of Authorization, which are expected to impose terms and conditions that, when implemented, would make ESA Section 9 prohibitions inapplicable to covered Navy activities. With regard to USFWS jurisdiction over species present in the Study Area, the Navy will adhere to the terms of the BOs.

ES.3.5 Other Environmental Requirements Considered

The Navy must comply with all applicable federal environmental laws, regulations, and EOs, including, but not limited to, those listed below. Further information on Navy compliance with these and other environmental laws, regulations, and EOs can be found in Chapters 3 and 6.

- Abandoned Shipwreck Act
- Clean Air Act
- Clean Water Act
- Coastal Zone Management Act
- Endangered Species Act
- Magnuson-Stevens Fishery Conservation and Management Act
- Marine Mammal Protection Act
- Migratory Bird Treaty Act
- National Historic Preservation Act
- National Marine Sanctuaries Act
- Rivers and Harbors Act
- EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*
- EO 12962, *Recreational Fisheries*
- EO 13045, *Protection of Children from Environmental Health Risks and Safety Risks*
- EO 13089, *Coral Reef Protection*
- EO 13158, *Marine Protected Areas*
- EO 13175, *Consultation and Coordination with Indian Tribal Governments*
- EO 13547, *Stewardship of the Ocean, Our Coasts, and the Great Lakes*

ES.4 Public Involvement

Under NEPA, federal agencies are required to examine the environmental effects of their proposed actions within U.S. territories. An EIS is a detailed public document that provides an assessment of the potential effects that a major federal action might have on the human environment. The Navy

undertakes environmental planning for major Navy actions occurring throughout the world in accordance with all applicable laws, regulations, and EOs.

The first step in the NEPA process for an EIS is to prepare a Notice of Intent to develop an EIS. The Navy published a Notice of Intent in the *Federal Register* (77 FR 11497) and several newspapers on 27 February 2012. In addition, Notice of Intent/Notice of Scoping Meeting Letters were distributed to more than 790 federal, state, and local elected officials, Native American Tribes, and government agencies. The Notice of Intent provided an overview of the proposed action and the scope of the EIS, and initiated the scoping process.

ES.4.1 SCOPING PROCESS

Scoping is an early and open process for developing the "scope" of issues to be addressed in an EIS and for identifying significant issues related to a proposed action. During scoping, the public helps define and prioritize issues through public meetings and written comments.

Nine scoping meetings were held on March 13, 14, 15, 16, 19, 20, 22, 23, and 27, 2012, in the cities of Oak Harbor, WA; Quilcene, WA; Silverdale, WA; Aberdeen, WA; Tillamook, OR; Newport, OR; Eureka, CA; Fort Bragg, CA; and Ketchikan, AK, respectively. At each scoping meeting, staffers at the welcome station greeted guests and encouraged them to sign in to be added to the project mailing list to receive future notifications. In total, 238 people signed in at the welcome table. The meetings were held in an open house format, presenting informational posters and written information, with Navy staff and project experts available to answer participants' questions. Additionally, a digital voice recorder was available to record participants' oral comments. The interaction during the information sessions was helpful to the Navy, providing an opportunity for communication from the public, including government representatives and non-governmental organizations.

ES.4.2 SCOPING COMMENTS

Scoping participants submitted comments to the Navy in five ways:

- Oral statements at the public meetings (as recorded by the digital voice recorder)
- Written comments at the public meetings
- Written letters (received throughout the public comment period)
- Electronic mail (received throughout the public comment period)
- Comments submitted directly on the project website (received throughout the public comment period)

In total, the Navy received 316 comments from individuals, groups, agencies, and elected officials. Table ES-1 provides a breakdown of areas of concern based on comments received during scoping. Because many of the comments addressed more than one issue, the total number of issues raised is greater than the 316 comments received. The Navy considered all scoping comments in preparing this EIS/OEIS.

Table ES-1: Public Scoping Comment Summary

Area of Concern	No. of times issue raised
Marine Mammals	225
Sound in the Water/Sonar	173
Underwater Explosions	71
Mitigation	59
Study Area/Size	57
Fish	56
Marine Habitats	45
NEPA Process/Public Participation	42
Navy Activities/Proposed Action	38
Sea Turtles	35
Birds	30
Water Quality	29
Socioeconomics/Commercial and Recreational Fishing	29
Cumulative Impacts	25
Public Health and Safety	24
Other	23
Research	20
Air Quality	18
Marine Debris	15
Terrestrial Resources	15
Noise	11
Cultural Resources/Native American Concerns	9
Access to Ocean Areas	5

Note: NEPA = National Environmental Policy Act

ES.4.3 DRAFT ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT

This Draft EIS/OEIS has been prepared to assess potential impacts of the proposed action and alternatives on the environment. A Notice of Availability was published in the *Federal Register* and notices were placed in local and regional newspapers announcing the availability of the Draft EIS/OEIS. This Draft EIS/OEIS is being circulated for review and comment, and public meetings will be held in Washington, Oregon, California, and Alaska.

ES.4.4 FINAL ENVIRONMENTAL IMPACT STATEMENT/OVERSEAS ENVIRONMENTAL IMPACT STATEMENT/RECORD OF DECISION

The Final EIS/OEIS (scheduled for completion in spring 2015) will address all public comments received on the Draft EIS/OEIS. Responses to public comments may include correction of data, clarifications of and modifications to analytical approaches, and inclusion of new or additional data or analyses. Finally, the decision-maker will issue a ROD no earlier than 30 days after the Final EIS/OEIS is made available to the public.

ES.5 PROPOSED ACTION AND ALTERNATIVES

Through this EIS/OEIS, the Navy will:

- Reassess the environmental impacts of Navy at-sea training and testing activities contained in three separate EISs/OEISs and various earlier environmental planning documents (i.e., Environmental Assessments and Categorical Exclusions), and consolidate these analyses into a single environmental planning document, including the following:
    - Northwest Training Range Complex (NWTRC) Final EIS/OEIS
    - Naval Sea Systems Command (NAVSEA) Naval Undersea Warfare Center (NUWC) Division, Keyport Range Complex Extension Final EIS/OEIS
    - Southeast Alaska Acoustic Measurement Facility (SEAFAC) Final EIS
- Update environmental analyses with the best available science and most current acoustic analysis methods to evaluate the potential effects of training and testing activities on the marine environment.
- Analyze the potential environmental impacts of training and testing activities in additional areas (areas not covered in previous documents) where training and testing historically occur, including Navy ports and naval shipyards.
- Update the at-sea environmental impact analyses in the previous documents to account for force structure changes for 2015–2020 and the development of supporting weapons, platforms, and systems.
- Adjust baseline training and testing activities from current levels to the level needed to support Navy training and testing requirements beginning October 2015. Adjustment will include other activities and sound sources not addressed in the previous analyses, adjusted for the 2015–2020 time frame.
- Support authorization of incidental takes of marine mammals under the MMPA and incidental takes of threatened and endangered marine species, including marine birds under the ESA.

Three alternatives are analyzed in this EIS/OEIS:

- **No Action Alternative:** Baseline training and testing activities, as defined by existing Navy environmental planning documents, including the *NWTRC EIS/OEIS*, the *NUWC Keyport Range Complex Extension EIS/OEIS,* and the *SEAFAC EIS*. The baseline activities also include other events that historically occur in the Study Area and have been subject to previous analysis pursuant to NEPA and EO 12114.
- **Alternative 1 (Preferred Alternative):** Adjustments to types and levels of activities, from the baseline as necessary to support current and planned Navy training and testing requirements. This Alternative considers:
    - modified or updated mission requirements associated with force structure changes, including those resulting from the development, testing, and ultimate introduction of new platforms (vessels and aircraft), and weapons systems into the fleet
    - new biennial training exercises conducted in the Offshore Area
    - biennial mine warfare exercises in Puget Sound in support of homeland defense
    - testing with and testing of undersea systems, subsystems, and components in Puget Sound
    - proof-of-concept testing of unique undersea hardware and fixtures
    - resumption of testing activities at the Carr Inlet Operations Area
    - pierside sonar maintenance and life cycle testing

  - sea trials in support of overhaul
  - elimination of sinking exercises in the Study Area

- **Alternative 2:** Consists of Alternative 1 plus adjustments to tempo of training and testing activities. All training activities would remain the same except for an increase in Maritime Homeland Defense training events from one every other year to one every year. The tempo of testing activities over those proposed for Alternative 1 would increase in a range between 6 percent for maintenance and miscellaneous testing events and 38 percent for all testing activities in the Western Behm Canal, Alaska. On average, most testing activities in Alternative 2 would increase about 12 percent over those in Alternative 1.

ES.6 SUMMARY OF ENVIRONMENTAL EFFECTS

Environmental effects which might result from the implementation of the Navy's Proposed Action or alternatives have been analyzed in this EIS/OEIS. Resource areas analyzed include sediments and water quality, air quality, marine habitats, marine mammals, sea turtles, birds, marine vegetation, marine invertebrates, fish, cultural resources, Native American and Alaska Native traditional resources, socioeconomic resources, and public health and safety. The Navy's analysis includes an evaluation of effects on each resource based on the stressors to that resource. The term stressor refers to an agent, condition, or other stimulus that causes stress to an organism or alters physical, socioeconomic, or cultural resources. The effects on these resources are summarized in Table ES-2. This table provides a comparison of the environmental impacts of the No Action Alternative, Alternative 1, and Alternative 2.

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2

Resource Category	Summary of Impacts
Sediments and Water Quality	Stressors analyzed include explosives and explosion byproducts, metals, chemicals other than explosives, and other materials. **No Action Alternative:** Explosives and Explosion Byproducts: Impacts of explosion byproducts would be short term and local, while impacts of unconsumed explosives and metals would be long term and local. Chemical or physical changes in sediment or water quality would not exceed applicable standards, regulations, and guidelines. Metals: Impacts of metals would be long term and local. Corrosion and biological processes would reduce exposure of military expended materials to seawater, decreasing the rate of leaching, and most leached metals would bind to sediments and other organic matter. Elevated levels of metals in sediments would be restricted to a small zone around the metal. Chemicals: Impacts of chemicals other than explosives would be both short term and long term as well as local. Chemical or physical changes in sediment or water quality would not be detectable and would be within existing conditions or designated uses. Other Materials: Impacts of other materials would be short term and local. Most other materials from military expended materials would not be harmful to marine organisms and would be consumed during use. Chemical or physical changes in sediment or water quality would not be detectable. **Alternative 1:** The number of individual impacts may increase slightly under Alternative 1, but the types of impacts would be the same as the No Action Alternative. Despite the small increase, changes to sediments and water quality under Alternative 1 would be considered localized, short term, and long term. Impacts under Alternative 1 would be below applicable standards, regulations, and guidelines and would be within existing conditions or designated uses. **Alternative 2:** The number of individual impacts may increase slightly under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts would be the same as the No Action Alternative. Despite the small increase, changes to sediments and water quality under Alternative 2 would be considered localized, short term, and long term. Impacts under Alternative 2 would be below applicable standards, regulations, and guidelines and would be within existing conditions or designated uses.
Air Quality	Stressors analyzed include criteria air pollutants and hazardous air pollutants. **No Action Alternative:** Criteria Air Pollutants: Reasonably foreseeable emissions of criteria air pollutants in attainment areas from the Navy's actions would not exceed federal ambient air quality standards. Hazardous Air Pollutants: Reasonably foreseeable emissions of criteria air pollutants in maintenance areas from the Navy's actions would not exceed applicable federal *de minimis* levels. The public would not be exposed to substantial concentrations of hazardous air pollutants from the Navy's actions. **Alternative 1:** The number of individual activities may increase under Alternative 1, as would emissions of two of the six criteria air pollutants. However, emissions of four air pollutants would decrease under Alternative 1. All of the changes are relatively small and the types of impacts would be the same as the No Action Alternative. Therefore, changes to air quality under Alternative 1 would be considered minor and localized; changes to air quality from hazardous air pollutants are not expected to be detectable.

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
	Alternative 2: The number of individual activities may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), as would emissions of two of the six criteria air pollutants. However, emissions of four air pollutants would decrease under Alternative 2. All of the changes are relatively small and the types of impacts would be the same as the No Action Alternative. Therefore, changes to air quality under Alternative 2 would be considered minor and localized; changes to air quality from hazardous air pollutants are not expected to be detectable.
Marine Habitats	Stressors analyzed include acoustic (impulse sound sources – underwater explosions) and physical disturbance and strike (vessel and in-water device strikes, military expended materials, and seafloor devices). **No Action Alternative:** Acoustic: Most of the high-explosive military expended materials would detonate at or near the water surface. Only bottom-laid explosives could affect bottom substrate and, therefore, marine habitats. Habitat utilized for underwater detonations would primarily be soft-bottom sediment. The surface area of bottom substrate affected would be a fraction of the total training area available in the Study Area. Physical Disturbance and Strike: Items entering the ocean would not be expected to affect marine habitats because of the nature of high-energy surf in the Offshore Area, and shifting sands in the Offshore Area, Inland Waters, and the Western Behm Canal. Once on the seafloor, larger military expended material would be colonized by benthic organisms because these materials would be anchor points in the shifting bottom substrates. Smaller military expended materials would be incorporated into the bottom substrates. The surface area of bottom substrate affected would be a fraction of the total training area available in the Study Area. Pursuant to the Essential Fish Habitat (EFH) requirements of the Magnuson Stevens Fishery Conservation and Management Act and implementing regulations, the use of explosives on or near the bottom, military expended materials, and seafloor devices during training and testing activities may have an adverse effect on EFH by reducing the quality and quantity of non-living substrates that constitute EFH and Habitat Areas of Particular Concern. Essential Fish Habitat conclusions for associated marine vegetation and sedentary invertebrates are summarized in corresponding resource sections (e.g., marine vegetation, invertebrates). Impacts to the water column as EFH are summarized in corresponding resource sections (e.g., invertebrates, fish) because they are impacts on the organisms themselves. **Alternative 1:** The number of individual impacts may increase under Alternative 1, but the types of impacts would be the same as the No Action Alternative. Despite the increases, most detonations would continue to occur at or near the surface, and those that do occur on the seafloor would be located in primarily soft-bottom habitat. Changes to marine substrates could include localized disturbance of the seafloor and cratering of soft bottom sediments. Impacts on soft bottom habitats would be short term, and impacts on hard bottom would be long term. Activities under Alternative 1 would not impact the ability of marine substrates to serve their function as habitat. **Alternative 2:** The number of individual impacts may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts would be the same as the No Action Alternative. Despite the increases, most detonations would continue to occur at or near the surface, and those that do occur on the seafloor would be located in primarily soft-bottom habitat. Changes to marine substrates could include localized disturbance of the seafloor and cratering of soft bottom sediments. Impacts on soft bottom habitats would be short term, and impacts on hard bottom would be long term. Activities under Alternative 2 would not impact the ability of marine substrates to serve their function as habitat.

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
Marine Mammals	Stressors analyzed include acoustic (sonar and other active acoustic sources; explosive (impulse) sources; weapons firing, launch, and impact noise; vessel noise; and aircraft overflight noise), energy (electromagnetic devices), physical disturbance and strike (vessels, in-water devices, military expended materials, and seafloor devices), entanglement (fiber optic cables and guidance wires, decelerator/parachutes), ingestion (munitions and military expended material other than munitions), and secondary stressors (sediments and water quality). **No Action Alternative:** Acoustic: Pursuant to the MMPA, the use of sonar and other non-impulse sources, and explosive (impulse) sources may result in Level A harassment or Level B harassment of certain marine mammals; the use of weapons firing, vessel noise, and aircraft noise are not expected to result in Level A or Level B harassment of any marine mammals. Pursuant to the Endangered Species Act (ESA), sonar and other active acoustic sources and explosive (impulse) sources may affect and are likely to adversely affect certain ESA-listed marine mammals; weapons firing, launch, and impact noise; vessel noise, and aircraft overflight noise may affect but are not likely to adversely affect certain ESA-listed marine mammals; and all acoustic sources would have no effect on marine mammal critical habitats. Energy: Pursuant to the MMPA, the use of electromagnetic devices is not expected to result in Level A or Level B harassment of any marine mammals. Pursuant to the ESA, the use of electromagnetic devices may affect but is not likely to adversely affect certain ESA-listed marine mammals and would have no effect on marine mammal critical habitats. Physical Disturbance and Strike: Pursuant to the MMPA, the use of vessels may result in mortality or Level A harassment of certain marine mammal species but is not expected to result in Level B harassment. The use of in-water devices, military expended materials, and seafloor devices are not expected to result in Level A or Level B harassment of any marine mammal. Pursuant to the ESA, vessel use may affect and is likely to adversely affect certain ESA-listed species. The use of in-water devices and military expended materials may affect but is not likely to adversely affect certain marine mammal species. The use of seafloor devices would have no effect on any ESA-listed marine mammal. The use of vessels, in-water devices, military expended materials, and seafloor devices would have no effect on marine mammal critical habitats. Entanglement: Pursuant to the MMPA, the use of fiber optic cables, guidance wires, and decelerator/parachutes is not expected to result in mortality or in Level A or Level B harassment of any marine mammal. Pursuant to the ESA, the use of fiber optic cables, guidance wires, and decelerator/parachutes may affect but is not likely to adversely affect certain ESA-listed marine mammals and would have no effect on marine mammal critical habitats. Ingestion: Pursuant to the MMPA, the potential for ingestion of all military expended materials is not expected to result in Level A or Level B harassment of any marine mammal. Pursuant to the ESA, the potential for ingestion of all military expended materials may affect, but is not likely to adversely affect certain ESA-listed species. Secondary Stressors: Pursuant to the MMPA, secondary stressors are not expected to result in Level A or Level B harassment of any marine mammal. Pursuant to the ESA, secondary stressors may affect but are not likely to adversely affect certain ESA-listed marine mammals and would have no effect on marine mammal critical habitat.

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
	Alternative 1: The number of individual impacts under the No Action Alternative may increase for most species under Alternative 1, but the types of impacts, MMPA conclusions, and ESA conclusions would be the same as under the No Action Alternative. Despite the increase, impacts on marine mammals under Alternative 1 are not expected to decrease the overall fitness of any marine mammal population. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase for most species under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts, MMPA conclusions, and ESA conclusions would be the same as under the No Action Alternative. Despite the increase, impacts on marine mammals under Alternative 2 are not expected to decrease the overall fitness of any marine mammal population.
Sea Turtles	Stressors analyzed include acoustic (sonar and other active acoustic sources; underwater explosives; weapons firing, launch, and impact noise; vessel and simulated vessel noise, and aircraft noise), energy (electromagnetic devices), physical disturbance and strike (vessels and in-water devices, and military expended materials), entanglement (fiber optic cables, guidance wires, and decelerator/parachutes), ingestion (munitions and military expended materials other than munitions), and secondary (habitat, sediments, and water quality). **No Action Alternative:** Acoustic: Pursuant to the ESA, the use of sonar and other active acoustic sources during training activities would have no effect on ESA-listed leatherback turtles. The use of sonar and other active acoustic sources during testing activities may affect, but is not likely to adversely affect, leatherback turtles. Underwater explosives, and vessel and aircraft noise may affect, but are not likely to adversely affect, leatherback turtles. Weapons firing, launch, and impact noise during training may affect, but is not likely to adversely affect, leatherback turtles. Weapons firing, launch, and impact noise during testing would have no effect on leatherback turtles. The use of acoustic sources would have no effect on leatherback turtle critical habitat. Physical Disturbance and Strike: Pursuant to the ESA, physical disturbance and strike from the use of vessels during training and testing activities may affect, and is likely to adversely affect, ESA-listed leatherback turtles. The use of in-water devices, military expended materials, and seafloor devices may affect, but is not likely to adversely affect, ESA-listed sea turtles. Physical disturbance and strike stressors would have no effect on leatherback turtle critical habitat. Energy: Pursuant to the ESA, the use of energy sources during training and testing activities would have no effect on ESA-listed leatherback turtles. The use of energy sources would have no effect on leatherback turtle critical habitat. Entanglement: Pursuant to the ESA, entanglement from the use of fiber optic cables, guidance wires, and decelerator/parachutes during training and testing activities may affect, but is not likely to adversely affect, ESA-listed leatherback turtles. Entanglement stressors would have no effect on leatherback turtle critical habitat. Ingestion: Pursuant to the ESA, ingestion hazards the use of munitions during training and testing activities would not affect ESA-listed leatherback turtles. The expenditure of military expended materials other than munitions during training and testing activities may affect, but is not likely to adversely affect, ESA-listed leatherback turtles. Ingestion stressors would have no effect on leatherback turtle critical habitat. Secondary Stressors: Pursuant to the ESA, secondary stressors may affect but are not likely to adversely affect ESA-listed sea turtles because changes in sediment, water, and air quality are not likely to be detectable, and no detectable changes in growth, survival, propagation, or population levels of sea turtles are anticipated. Secondary stressors would have no effect on leatherback turtle critical habitat.

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
	Alternative 1: The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts and ESA conclusions would be the same as under the No Action Alternative. Despite the increase, impacts on sea turtles under Alternative 1 are not expected to decrease the overall fitness of any sea turtle population. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts and ESA conclusions would be the same as under the No Action Alternative. Despite the increase, impacts on sea turtles under Alternative 2 are not expected to decrease the overall fitness of any sea turtle population.
Birds	Stressors analyzed include acoustic (sonar and other active acoustic sources, underwater explosives, vessel and simulated vessel noise, and aircraft noise), physical disturbance and strike (aircraft and aerial target strikes, vessels and in-water device strikes, and military expended materials), and ingestion (munitions and military expended materials other than munitions). **No Action Alternative:** Acoustic: Pursuant to the ESA, the use of sonar, other active acoustic sources, and underwater explosives may affect, and is likely to adversely affect, the marbled murrelet. Vessel and simulated vessel noise from training and testing would have no effect on the marbled murrelet. Aircraft noise during training and testing may affect but is not likely to adversely affect the marbled murrelet. Acoustic sources would have no effect on critical habitat. Physical Disturbance and Strike: Pursuant to the ESA, physical disturbance and strike from the use of aircraft, aerial targets, vessels, in-water devices, and military expended materials for training and testing may affect but is not likely to adversely affect the marbled murrelet. Physical disturbance and strike stressors would have no effect on critical habitat. Ingestion: Pursuant to the ESA, ingestion hazards from the use of munitions and military expended materials other than munitions would have no effect on the marbled murrelet. Ingestion stressors would have no effect on critical habitat. Under the Migratory Bird Treaty Act (MBTA) regulations applicable to military readiness activities (50 C.F.R. Part 21), the impacts from stressors introduced during training and testing activities would not result in a significant adverse effect on migratory bird populations. Under the Bald and Golden Eagle Protection Act, the impacts from stressors introduced during training and testing activities would not result in an adverse effect on bald or golden eagles. **Alternative 1:** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts, and ESA, MBTA, and Bald and Golden Eagle Protection Act conclusions would be the same as under the No Action Alternative. Despite the increase, impacts on seabirds under Alternative 1 are not expected to decrease the overall fitness of any bird population. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts, and ESA, MBTA, and Bald and Golden Eagle Protection Act conclusions would be the same as under the No Action Alternative. Despite the increase, impacts on seabirds under Alternative 2 are not expected to decrease the overall fitness of any bird population.
Marine Vegetation	Stressors analyzed include acoustic (underwater explosives) and physical disturbance and strike (vessel and in-water device strikes, military expended materials, and seafloor devices), and secondary (sediments and water quality). No ESA-listed marine vegetation species are found in the Study Area.

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
	No Action Alternative: Acoustic and Physical Disturbance and Strike: Underwater explosives, physical disturbance, and strike could affect marine vegetation by destroying individual plants or damaging parts of plants. The impacts of these stressors are not expected to result in detectable changes in growth, survival, or propagation, and are not expected to result in population-level impacts on marine plant species. Secondary Stressors: Secondary stressors are not expected to result in detectable changes in growth, survival, propagation, or population-level impacts because changes in sediment and water quality or air quality are not likely to be detectable. These conclusions are based on the fact that the areas of impact are very small compared to the relative distribution and the locations where explosions or physical disturbance or strikes occur. Pursuant to the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations, the use of explosives and other impulse sources, vessel movement, in-water devices, military expended materials, and seafloor devices during training and testing activities may have an adverse effect on EFH by reducing the quality and quantity of marine vegetation that constitutes EFH or Habitat Areas of Particular Concern. **Alternative 1:** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Despite the increase, impacts from acoustic stressors and physical disturbance are not expected to result in detectable changes to marine vegetation growth, survival, or propagation and are not expected to result in population-level impacts. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts would be the same as under the No Action Alternative. Despite the increase, impacts from acoustic stressors and physical disturbance are not expected to result in detectable changes to marine vegetation growth, survival, or propagation and are not expected to result in population-level impacts.
Marine Invertebrates	Stressors analyzed include acoustic (sonar and other active acoustic sources, and underwater explosives), energy (electromagnetic devices), physical disturbance and strike (vessels and in-water devices, and military expended materials), entanglement (fiber optic cables, guidance wires, and decelerator/parachutes), ingestion (munitions and military expended materials other than munitions), and secondary stressors (metals and chemicals). No ESA-listed marine invertebrate species are found in the Study Area. **No Action Alternative:** Acoustic: The use of sonar and other active acoustic sources and underwater explosives is not expected to result in detectable changes in growth, survival, propagation, or population-level impacts because changes in sediment and water quality or air quality are not likely to be detectable. Energy: The use of electromagnetic devices is not expected to result in detectable changes in growth, survival, propagation, or population-level impacts because changes in sediment and water quality or air quality are not likely to be detectable. Physical Disturbance and Strike: Physical disturbance and strikes from the use of vessels, in-water devices, military expended materials, and seafloor devices is not expected to result in detectable changes in growth, survival, propagation, or population-level impacts because changes in sediment and water quality or air quality are not likely to be detectable. Entanglement: Entanglement from the use of fiber optic cables and guidance wires and decelerator/parachutes is not expected to

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
	result in detectable changes in growth, survival, propagation, or population-level impacts because changes in sediment and water quality or air quality are not likely to be detectable. Ingestion: Ingestion hazards from the expenditure of munitions and military expended materials other than munitions are not expected to result in detectable changes in growth, survival, propagation, or population-level impacts because changes in sediment and water quality or air quality are not likely to be detectable. Secondary Stressors: Secondary impacts to marine invertebrates would be inconsequential and not detectable. Pursuant to the EFH requirements of the Magnuson-Stevens Fishery Conservation and Management Act and implementing regulations, the use of sonar and other acoustic sources, vessel noise, weapons firing noise, electromagnetic sources, vessel movement, in-water devices, and metal, chemical, or other material contaminants would have no adverse effect on sedentary invertebrate beds or reefs that constitute EFH or Habitat Areas of Particular Concern. The use of electromagnetic sources would have minimal and temporary adverse impact to invertebrates occupying water column EFH or Habitat Areas of Particular Concern. The use of explosives, military expended materials, seafloor devices, and explosives and explosive byproduct contaminants may have an adverse effect on EFH by reducing the quality and quantity of sedentary invertebrate beds or reefs that constitute EFH or Habitat Areas of Particular Concern. **Alternative 1:** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Despite the increase, impacts on marine invertebrates under Alternative 1 are not anticipated to result in population-level impacts. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts would be the same as under the No Action Alternative. Despite the increase, impacts on marine invertebrates under Alternative 2 are not anticipated to result in population-level impacts.
Fish	Stressors analyzed include acoustic (sonar and other active acoustic sources; underwater explosives; weapons firing, launch, and impact noise; vessel noise; and aircraft noise), energy (electromagnetic devices), physical disturbance and strike (vessels and in-water devices, military expended materials, and seafloor devices), entanglement (fiber optic cables, guidance wires, and decelerator/parachutes), ingestion (munitions and military expended materials other than munitions). **No Action Alternative:** Acoustic: Pursuant to the ESA, the use of sonar and other non-impulse sources during training and testing activities may affect, but is not likely to adversely affect, ESA-listed salmonid species, green sturgeon, Pacific eulachon, and rockfish species; and would have no effect on any species' critical habitat. The use of explosives and other impulse sources during training and testing activities may affect, but is not likely to adversely affect, ESA-listed salmonid species, green sturgeon, Pacific eulachon, and rockfish species; may affect, but is not likely to adversely affect, critical habitat for salmonid species and green sturgeon; and would have no effect on Pacific eulachon critical habitat. Energy: Pursuant to the ESA, the use of electromagnetic devices during training activities may affect but is not likely to adversely affect, ESA-listed salmonid species, green sturgeon, Pacific eulachon, and rockfish species; may affect, but is not likely to adversely affect, salmonid critical habitat; and would have no effect on critical habitat for Pacific eulachon and green sturgeon. Physical Disturbance and Strike: Pursuant to the ESA, the use of vessels and in-water devices may affect, but is not likely to adversely affect, ESA-listed salmonid species, green sturgeon, and Pacific eulachon species; would have no effect on rockfish

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
	species; may affect, but is not likely to adversely affect, salmonid critical habitat; and would have no effect on Pacific eulachon and green sturgeon critical habitat. The use of military expended materials would have no effect on Pacific eulachon and their associated critical habit; may affect, but is not likely to adversely affect, ESA-listed salmonid species, rockfish species, and green sturgeon; and may affect but is not likely to adversely affect salmonid and green sturgeon critical habitat. The use of seafloor devices may affect, but is not likely to adversely affect, ESA-listed salmonid species, Pacific eulachon, green sturgeon, and rockfish species; may affect, but is not likely to adversely affect salmonid and green sturgeon critical habitat; and would have no effect on any species' critical habitat. Entanglement: Pursuant to the ESA, entanglement from the use of fiber optic cables, guidance wires, and decelerator/parachutes during training and testing activities may affect but is not likely to adversely affect ESA-listed salmonid species, green sturgeon, Pacific eulachon, and rockfish species; would have no effect on Pacific eulachon critical habitat; and may affect but is not likely to adversely affect salmonid critical habitat. The use of fiber optic cables and guidance wires would have no effect on green sturgeon critical habitat. The use of parachutes may affect, but is not likely to adversely affect, green sturgeon critical habitat. Ingestion: Pursuant to the ESA, ingestion hazards from the expenditure of munitions and military expended material other than munitions during training and testing activities may affect, but is not likely to adversely affect, ESA-listed salmonid species, green sturgeon, Pacific eulachon, and rockfish species. Ingestion sources may affect, but are not likely to adversely affect, salmonid and green sturgeon critical habitat; and would have no effect on Pacific eulachon critical habitat. Secondary Stressors: Pursuant to the ESA, secondary stressors from training and testing activities would have no effect on ESA-listed salmonid species, green sturgeon, Pacific eulachon, and rockfish species; and would have no effect on salmonid, green sturgeon and Pacific eulachon critical habitat. **Alternative 1:** The number of individual impacts under the No Action Alternative may increase under Alternative 1, but the types of impacts and ESA conclusions would be the same as under the No Action Alternative. Despite the increase, impacts on fish under Alternative 1 are not expected to decrease the overall fitness of any fish population. **Alternative 2:** The number of individual impacts under the No Action Alternative may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts and ESA conclusions would be the same as under the No Action Alternative. Despite the increase, impacts on fish under Alternative 2 are not expected to decrease the overall fitness of any fish population.
Cultural Resources	Stressors analyzed include acoustic (underwater explosions and cratering from underwater explosions) and physical disturbance and interaction (vessel interactions and use of in-water devices, deposition of military expended materials, and use of seafloor devices). **No Action Alternative:** Acoustic and physical stressors, as indicated above, would not adversely affect submerged historic resources within U.S. territorial waters in accordance with Section 106 of the National Historic Preservation Act (NHPA). The Navy previously analyzed impacts that could result from these activities and concluded that there would be either no historic properties affected or no adverse effects on historic properties. The Washington State Historic Preservation Office concurred with these findings. In accordance with Section 402 of the NHPA, no World Heritage sites would be affected. **Alternative 1:** The number of most activities under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Because of the increase in activity under Alternative 1, there could

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
	be an increased probability of disturbing submerged cultural resources depending on the location of the activity when compared to the No Action Alternative. **Alternative 2:** The number of most activities under the No Action Alternative may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts would be the same as under the No Action Alternative. Because of the increase in activity under Alternative 2, there could be an increased probability of disturbing submerged cultural resources depending on the location of the activity when compared to the No Action Alternative.
Native American and Alaska Native Traditional Resources	Stressors analyzed include accessibility (limiting access to the ocean), airborne acoustics, physical disturbance and interactions (activities including seafloor devices and deposition of military expended materials) and secondary impacts from changes to the availability of marine resources. **No Action Alternative:** Impacts on Native American and Alaska Native protected tribal resources and other traditional resources would not occur because inaccessibility to areas of co-use would be temporary, use of seafloor devices could create damage or loss to Native American fishing equipment but would not affect the use of the usual and accustomed fishing grounds, and marine species' population levels would not be altered to such an extent that tribes could no longer find their target species. **Alternative 1:** The number of most activities under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Because of the increase in activity under Alternative 1, there could be an increased probability of disrupting access to co-use areas, but impacts remain unlikely. **Alternative 2:** The number of most activities under the No Action Alternative may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts would be the same as under the No Action Alternative. Because of the increase in activity under Alternative 2, there could be an increased probability of disrupting access to co-use areas, but impacts remain unlikely.
Socioeconomic Resources	Stressors analyzed include accessibility (limiting access to the ocean and the air), physical disturbance and interactions (aircraft, vessels and in-water devices, and military expended materials), airborne acoustics (weapons firing, aircraft and vessel noise), and secondary impacts from changes to the availability of marine resources. **No Action Alternative:** Impacts on socioeconomic resources are not expected because: • Inaccessibility to areas of co-use would be localized and temporary. • The Navy's strict standard operating procedures would minimize physical disturbance and strikes. • Most airborne activities would occur well out to sea far from tourism and recreation locations. • Impacts to marine species are not expected. Further, there are no disproportionately high impacts or adverse effects on any low-income or minority populations. **Alternative 1:** The number of most activities under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Despite the increase in activity under Alternative 1, impacts to socioeconomic resources are not expected. **Alternative 2:** The number of most activities under the No Action Alternative may increase under Alternative 2 (consisting of

Table ES-2: Summary of Environmental Impacts for the No Action Alternative, Alternative 1, and Alternative 2 (continued)

Resource Category	Summary of Impacts
	Alternative 1 plus additional increases in activity tempo), but the types of impacts would be the same as under the No Action Alternative. Despite the increase in activity under Alternative 2, impacts to socioeconomic resources are not expected.
Public Health and Safety	Stressors analyzed include underwater energy, in-air energy, physical interactions, and secondary impacts from sediment and water quality changes. **No Action Alternative:** Because of the Navy's standard operating procedures, impacts on public health and safety would be unlikely. Further, there are no proportionately high impacts or adverse effects on any low-income or minority populations. **Alternative 1:** The number of most activities under the No Action Alternative may increase under Alternative 1, but the types of impacts would be the same as under the No Action Alternative. Despite the increase in activities under Alternative 1, Navy safety procedures would continue to prevent proposed activities being co-located with public activities. Because of the Navy's safety procedures, the potential for activities to impact public health and safety under Alternative 1 would be unlikely. **Alternative 2:** The number of most activities under the No Action Alternative may increase under Alternative 2 (consisting of Alternative 1 plus additional increases in activity tempo), but the types of impacts would be the same as under the No Action Alternative. Despite the increase in activities under Alternative 2, Navy safety procedures would continue to prevent proposed activities being co-located with public activities. Because of the Navy's safety procedures, the potential for activities to impact public health and safety under Alternative 2 would be unlikely.

Notes: C.F.R. = Code of Federal Regulations, ESA = Endangered Species Act, MMPA = Marine Mammal Protection Act, Navy = United States Department of the Navy, U.S. = United States

ES.7 CUMULATIVE IMPACTS

Marine mammals and sea turtles are the primary resources of concern for cumulative impacts analysis. Marine mammal and sea turtles species occurring in the Study Area may be impacted by multiple ongoing and future actions. Explosive detonations, non-impulse sources such as sonar, and vessel strikes under the No Action Alternative, Alternative 1, and Alternative 2 have the potential to disturb, injure, or kill marine mammals and sea turtles.

The impact on marine mammal and sea turtle species of the Navy's proposed activities is small (see Summary of Impacts on marine mammals and sea turtles in Table ES-2 above). The No Action Alternative, Alternative 1, or Alternative 2 would contribute to cumulative impacts, but the relative contribution would be small compared to other actions. Compared to the potential mortality, stranding, and injury resulting from commercial ship strikes and bycatch, entanglement, ocean pollution and other human causes, the potential for mortality, strandings, or injury resulting from Navy training and testing activities is estimated to be orders of magnitude lower (tens of animals versus hundreds of thousands of animals).

Because of the negligible impacts of the proposed action on sediments and water quality, air quality, marine habitats, birds, marine vegetation, marine invertebrates, fish, cultural resources, Native American and Alaska Native traditional resources, socioeconomic resources, and public health and safety, cumulative impacts would likewise be negligible. The No Action Alternative, Alternative 1, or Alternative 2 would also make an incremental contribution to greenhouse gas emissions, representing approximately 0.0009 percent, 0.0007 percent, and 0.0009 percent of U.S. 2010 greenhouse gas emissions, respectively.

ES.8 STANDARD OPERATING PROCEDURES, MITIGATION, AND MONITORING

Within the Study Area, the Navy implements standard operating procedures, mitigation measures, and marine species monitoring and reporting. Navy standard operating procedures have the indirect benefit of reducing potential impacts on marine resources. Mitigation measures are designed to reduce or avoid potential impacts on marine resources. Marine species monitoring efforts are designed to track compliance with take authorizations, evaluate the effectiveness of mitigation measures, and improve understanding of the impacts of training and testing activities on marine resources.

ES.8.1 STANDARD OPERATING PROCEDURES

The Navy currently employs standard operating procedures to provide for the safety of personnel and equipment, including ships and aircraft, as well as the success of the training and testing activities. In many cases there are incidental environmental, socioeconomic, and cultural benefits resulting from standard operating procedures. Standard operating procedures serve the primary purpose of providing for safety and mission success, and are implemented regardless of their secondary benefits. Because of their importance for maintaining safety and mission success, standard operating procedures have been considered as part of the Proposed Action under each alternative, and therefore are included in the environmental analyses for each resource.

ES.8.2 MITIGATION

The Navy recognizes that the Proposed Action has the potential to impact the environment. Unlike standard operating procedures, which are established for reasons other than environmental benefit, mitigation measures are modifications to the Proposed Action that are implemented for the sole purpose of reducing a specific potential environmental impact on a particular resource. These measures

are being coordinated with NMFS and USFWS through the consultation and permitting processes. The ROD for this EIS/OEIS will address any additional mitigation measures that may result from ongoing regulatory processes.

Additionally, the Navy has engaged in consultation processes under the ESA with regard to listed species that may be affected by the Proposed Action described in this EIS/OEIS. For the purposes of the ESA Section 7 consultation, the mitigation measures proposed here may be considered by NMFS, and USFWS as beneficial actions taken by the Federal agency or applicant (50 C.F.R. 402.14(g)(8)). If necessary to satisfy requirements of the ESA, NMFS, and USFWS may develop an additional set of measures contained in reasonable and prudent alternatives, reasonable and prudent measures, or conservation recommendations in any BO issued for this Proposed Action.

The Navy selected mitigation measures that have been documented to be effective in reducing impacts and protecting resources, while maintaining the Navy's ability to meet mission requirements. Table ES-3 summarizes the Navy's recommended mitigation measures with currently implemented mitigation measures for each activity category also summarized in the table.

ES.8.3 MITIGATION MEASURES CONSIDERED BUT ELIMINATED

A number of possible alternative or additional mitigation measures have been suggested during the public comment periods of this or previous Navy environmental documents. In addition, through the evaluation process, some measures were deemed to either be ineffective, have an unacceptable impact on the proposed training and testing activities, or both, and will not be carried forward for further consideration.

ES.8.4 MONITORING

The Navy is committed to demonstrating environmental stewardship while executing its National Defense Mission and complying with the suite of federal environmental laws and regulations. As a complement to the Navy's commitment to avoiding and reducing impacts of the Proposed Action through mitigation, the Navy will undertake monitoring efforts to track compliance with take authorizations, help investigate the effectiveness of implemented mitigation measures, and better understand the impacts of the Proposed Action on marine resources. Taken together, mitigation and monitoring comprise the Navy's integrated approach for reducing environmental impacts from the Proposed Action. The Navy's overall monitoring approach will seek to leverage and build on existing research efforts whenever possible.

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Table ES-3: Mitigation Identification and Implementation

Mitigation Measure	Benefit	Evaluation Criteria	Implementation	Responsible Command	Date Implemented
Marine Species Awareness Training All personnel standing watch on the bridge and Lookouts will successfully complete the training before standing watch or serving as a Lookout.	To learn the procedures for searching for and recognizing the presence of marine species, including detection cues (e.g., congregating seabirds) so that potentially harmful interactions can be avoided.	Successful completion of training by all personnel standing watch and all personnel serving as Lookouts. Personnel successfully applying skills learned during training.	The multimedia training program has been made available to personnel required to take the training. Personnel have been and will continue to be required to take the training prior to standing watch and serving as Lookouts.	Officer Conducting the Exercise or Test or civilian equivalent	Ongoing
Lookouts					
Use of Four Lookouts for Underwater Detonations Mine countermeasure and neutralization activities using time delay or positive control firing devices will include the use of two to four Lookouts, depending on the size of the charge. If applicable, aircrew and divers will report sightings of marine mammals or sea turtles.	Lookouts can visually detect marine species so that potentially harmful impacts to marine mammals and sea turtles from explosives use can be avoided. Lookouts can more quickly and effectively relay sighting information so that corrective action can be taken. Support from aircrew and divers, if they are involved in the activity, will increase the probability of sightings, reducing the potential for impacts.	Annual report documenting NAVSEA testing and marine mammal observation data. Timely reporting of underwater detonations and monitoring results related to bull trout and marbled murrelets.	All Lookouts will receive marine species awareness training and will be positioned on vessels, boats, and aircraft as described in Section 5.3.1.1.1 (Training for Personnel Standing Watch and Lookouts).	Officer Conducting the Exercise or Test	Ongoing
Use of One or Two Lookouts Vessels using low-frequency active sonar or hull-mounted mid-frequency active sonar associated with ASW activities will have either one or two Lookouts, depending on the activity and size of the vessel. Mine countermeasure and neutralization activities with positive control will use two Lookouts, with one on each support vessel. If applicable, aircrew and divers will also report the presence of marine mammals or sea turtles. One Lookout may be used under certain circumstances specific in Section 5.3.1.2 (Lookouts).	Lookouts can visually detect marine species so that potentially harmful impacts to marine mammals and sea turtles from Navy sonar and explosives use can be avoided. Lookouts can more quickly and effectively relay sighting information so that corrective action can be taken. Support from aircrew and divers, if they are involved in the activity, will increase the probability of sightings, reducing the potential for impacts.				
Use of One Lookout Surface ships and aircraft conducting ASW, ASUW, or MIW activities using HFAS, non-hull mounted mid-frequency active sonar, helicopter dipping mid-frequency active sonar, anti-swimmer grenades, IEER sonobuoys, surface gunnery activities, surface missile activities, bombing activities, explosive torpedo testing, and activities using non-explosive practice munitions, will have one Lookout.	Lookouts can visually detect marine species so that potentially harmful impacts to marine mammals and sea turtles from Navy sonar, explosives, sonobuoys, gunnery rounds, missiles, explosive torpedoes, pile driving, towed systems, surface vessel propulsion, and non-explosive munitions can be avoided. Lookouts will quickly and effectively relay sighting information so that corrective action(s) can be taken.				

Table ES-3: Mitigation Identification and Implementation (continued)

Mitigation Measure	Benefit	Evaluation Criteria	Implementation	Responsible Command	Date Implemented
Mitigation Zones					
Use of a Mitigation Zone A mitigation zone is an area defined by a radius and centered on the location of a sound source or activity. The size of each mitigation zone is specific to a particular training or testing activity (e.g., sonar use or explosive use).	A mitigation zone defines the area in which Lookouts survey for marine mammals and sea turtles. Mitigation zones reduce the potential for injury to marine species.	For those activities where monitoring is required, record observations of marine mammals and sea turtles located outside of the mitigation zone and note any apparent reactions to on-going Navy activities. Observation of acute reactions may be used as an indicator that the radius of the mitigation zone needs to be increased.	Mitigation zones have been and will continue to be implemented as described in Section 5.3.2 (Mitigation Zone Procedural Measures). Lookouts are trained to conduct observations within mitigation zones of different sizes.	Officer Conducting the Exercise or Test	Ongoing
Recognize the Importance of Marine Protected Areas In general, most Armed Forces activities are exempt from the prohibitions of marine protected areas. Nevertheless, the Navy would carry out its training and testing activities in a manner that will avoid, to the maximum extent practicable and consistent with training and testing requirements, adverse impacts to National Marine Sanctuary resources.	Avoiding or minimizing impacts while operating in or near marine protected areas could result in improved health of the resources in the areas.	The Navy will report the annual hours of each type of sonar source. For hull-mounted sonar, this report shall include a depiction of the training geographically across the Study Area.	The Navy includes maps in the Protective Measures Assessment Protocol to define marine protected areas. To the greatest extent practicable, adverse impacts to these areas will be avoided.	Officer Conducting the Exercise or Test	Ongoing

Notes: ASW = Anti-Submarine Warfare, ASUW = Anti-Surface Warfare, HFAS = High-Frequency Active Sonar, IEER = Improved Extended Echo Ranging, MIW = Mine Warfare, NAVSEA = Naval Sea Systems Command, Navy = United States Department of the Navy

Consistent with the cooperating agency agreement with NMFS, mitigation and monitoring measures presented in this EIS/OEIS focus on the requirements for protection and management of marine resources. Since monitoring will be required for compliance with the Final Rule issued for the Proposed Action under the MMPA, details of the monitoring program are being developed in coordination with NMFS through the regulatory process.

The Integrated Comprehensive Monitoring Program is intended to coordinate monitoring efforts across all regions where the Navy trains and to allocate the most appropriate level and type of effort for each range complex. The current Navy monitoring program is composed of a collection of "range-specific" monitoring plans, each developed individually as part of MMPA and ESA compliance processes as environmental documentation was completed. These individual plans establish specific monitoring requirements for each range complex and are collectively intended to address the Integrated Comprehensive Monitoring Program top-level goals. A Scientific Advisory Group of leading marine mammal scientists developed recommendations that would serve as the basis for a Strategic Plan for Navy monitoring. The Strategic Plan is intended to be a primary component of the Integrated Comprehensive Monitoring Program and provide a "vision" for Navy monitoring across geographic regions—serving as guidance for determining how to most efficiently and effectively invest the marine species monitoring resources to address Integrated Comprehensive Monitoring Program top-level goals and satisfy MMPA regulatory requirements. The objective of the Strategic Plan is to continue the evolution of Navy marine species monitoring towards a single integrated program, incorporating Scientific Advisory Group recommendations, and establishing a more transparent framework for soliciting, evaluation, and implementing monitoring work across the Fleet range complexes.

ES.8.5 REPORTING

The Navy is committed to documenting and reporting relevant aspects of training and testing activities in order to reduce environmental impacts and improve future environmental assessments. Initiatives include exercise and monitoring reporting, stranding response planning, and bird strike reporting.

ES.8.6 OTHER CONSIDERATIONS

ES.8.6.1 Consistency with Other Federal, State, and Local Plans, Policies and Regulations

Based on an evaluation of consistency with statutory obligations, the Navy's proposed training and testing activities would not conflict with the objectives or requirements of applicable federal, state, regional, or local plans, policies, or legal requirements. The Navy is consulting and will continue to consult with regulatory agencies as appropriate during the planning process and prior to implementation of the Proposed Action to ensure all legal requirements are met.

ES.8.6.2 Relationship Between Short-Term Use of the Environment and Maintenance and Enhancement of Long-Term Productivity

This EIS/OEIS provides an analysis of the relationship between a project's short-term impacts on the environment and the effects that these impacts may have on the maintenance and enhancement of the long-term productivity of the affected environment. The Proposed Action may result in both short- and long-term environmental effects. However, the Proposed Action would not be expected to result in any impacts that would reduce environmental productivity, permanently narrow the range of beneficial uses of the environment, or pose long-term risks to health, safety, or the general welfare of the public.

ES.8.6.3 Irreversible or Irretrievable Commitment of Resources

For the alternatives including the Proposed Action, most resource commitments are neither irreversible nor irretrievable. Most impacts are short term and temporary or, if long lasting, are negligible. No habitat associated with threatened or endangered species would be lost as a result of implementation of the Proposed Action. No commitment of resources to construction is proposed as part of this action.

Implementation of the Proposed Action would require fuels used by aircraft and vessels. Since fixed- and rotary-wing flight and ship activities could increase, relative total fuel use could increase. Therefore, if total fuel consumption increased, this nonrenewable resource would be considered irretrievably lost. The Navy has initiated programs that are expected to greatly reduce consumption of fossil fuels and reduce greenhouse gas emissions. Included among these are Navy plans to deploy by 2016 a green strike group (a “great green fleet”) composed of nuclear vessels and ships powered by biofuel in local operations and with aircraft flying only with biofuels.

ES.8.6.4 Energy Requirements and Conservation Potential of Alternatives and Mitigation Measures

Resources that will be permanently and continually consumed by project implementation include water, electricity, natural gas, and fossil fuels; however, the amount and rate of consumption of these resources would not result in significant environmental impacts or the unnecessary, inefficient, or wasteful use of resources. Prevention of the introduction of potential contaminants is an important component of mitigation of the alternative’s adverse impacts. To the extent practicable, considerations in the prevention of introduction of potential contaminants are included.

Sustainable range management practices are in place that protect and conserve natural and cultural resources and preserve access to training areas for current and future training requirements while addressing potential encroachments that threaten to impact range and training area capabilities.

REFERENCES

U.S. Department of the Navy. (2010a). Northwest Training Range Complex (NWTRC) Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). Prepared by Naval Facilities Engineering Command Northwest.

U.S. Department of the Navy. (2010b). Naval Undersea Warfare Center (NUWC) Keyport Range Complex Extension Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS). Prepared by Naval Facilities Engineering Command Northwest.

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