

FOREWORD

The Draft Northwest Training and Testing (NWTT) Supplemental Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS) was released for public review and comment March 29, 2019, through June 12, 2019. Changes in this Final Supplemental EIS/OEIS reflect consideration of all substantive comments made on the Draft Supplemental EIS/OEIS during the public comment period, information raised during ongoing regulatory processes, and Navy refinements to the Proposed Action. Public comments and their corresponding responses are provided in Appendix H (Public Comments and Responses).

Research and scientific information are constantly being updated, so this Final Supplemental EIS/OEIS includes a number of new references that only became available since the Draft Supplemental EIS/OEIS was released. The Navy considered each of these in its analysis.

While most sections in the Final Supplemental EIS/OEIS were changed in some manner between the draft and final versions, many of those changes were not substantive and entailed minor modifications to improve clarity. Substantive changes made to sections between the Draft Supplemental EIS/OEIS and Final Supplemental EIS/OEIS are summarized below.

- Chapter 2 (Description of Proposed Action and Alternatives):

The descriptions of Warning Area 237 (W-237) and the Olympic Military Operations Area (MOA) A and MOA B were revised to reflect a recent realignment of Offshore Area Special Use Airspace made by the Federal Aviation Administration (FAA). W-237A and W-237B were combined and retained the name W-237A (W-237B airspace no longer exists). Furthermore, Olympic MOA A and MOA B are now combined and retained the name Olympic MOA. The FAA made this administrative change for purposes of airspace management and air traffic control to enhance the efficient use of airspace. Throughout this Final Supplemental EIS/OEIS, references to W-237 and the Olympic MOA were updated accordingly.

The general description of proposed activities in Section 2.3 (Proposed Activities) was revised to clarify that many proposed activities could occur throughout the year, and that details on seasonality of activities could be found in the detailed descriptions of activities in Appendix A (Navy Activities Descriptions).

The Navy updated Figure 2.3-1 to more accurately portray typical aircraft routes as they exit the Olympic MOA.

Section 2.3.4 (Mitigation Measures) has been updated to reflect changes to mitigation areas.

Within Section 2.4.1 (Alternatives Eliminated from Further Consideration), the Navy made the following changes:

- The Navy added a new section (Section 2.4.1.2, Alternative EA-18G Growler Training and Testing Locations) to describe the alternative EA-18G Growler training locations that were considered in relation to Olympic MOA training and eliminated from further consideration.

- Additional information was added to Section 2.4.1.4 (renumbered to Section 2.4.1.5, Simulated Training and Testing Only, in this Final Supplemental EIS/OEIS) to further explain why simulated training and testing only was not considered to be a viable alternative.
- The Navy added a new section (Section 2.4.1.7, “Status Quo” Alternative) to provide information on why a “Status Quo” alternative was eliminated from further consideration.

In Table 2.5-1, a note was added to the Air Combat Maneuver activity, clarifying that the increased level of activity in Alternative 1 would result in approximately 300 additional aircraft flights per year. The Navy decreased the number of large- and medium-caliber rounds proposed to be fired during the Gunnery Exercise (Surface-to-Air). The description of explosive charges used in the Mine Neutralization – Explosive Ordnance Disposal Training activity was revised from “1 oz.” to “< 0.1 lb.” The Intelligence, Surveillance, Reconnaissance activity was revised to reflect that it could occur in the Inland Waters in addition to the Offshore Area. Finally, the Small Boat Attack Exercise description was revised to show that it could include a maximum of 3,000 small-caliber blank rounds. The Draft Supplemental EIS/OEIS did not include ordnance for this activity.

In Table 2.5-2, the annual tempo of several activities was revised slightly; two decreased and two increased. The projectiles used during the Kinetic Energy Weapon Test was increased to include 160 non-explosive practice munitions per year. The Radar and Other System Testing activity was expanded to include eight annual activities in the Dabob Bay Range Complex.

- Section 3.0 (Introduction to Affected Environment and Environmental Consequences):
The quantity of MF4 and MF5 proposed to be tested was revised downward for both Alternative 1 and Alternative 2. The description of the HF9 bin was revised to better define the source. The analysis of impacts resulting from the reduction of MF4 and MF5 use was revised accordingly.

Additional information was provided in Section 3.0.3.1.2 (Vessel Noise) that compares Navy vessel noise with commercial vessel noise.

In Table 3.0-4 (Representative Aircraft Sound Characteristics), all references to F-35 aircraft have been removed as the F-35 is not representative of proposed activities.

The Navy updated Figure 3.0-1 to more accurately portray typical aircraft routes as they exit the Olympic MOA.

The discussion of Muzzle Blast from Naval Gunfire in Section 3.0.3.1.4 (Weapon Noise) was significantly enhanced to more fully describe and depict with images how noise is transmitted into the ocean.

The Long-Range Acoustic Device description was removed from Section 3.0.3.1.4 as it is no longer proposed to be used.

In Section 3.0.3.2.1 (Explosions in Water), the Navy improved the description of the Mine Countermeasure and Neutralization Testing activity, to provide a more accurate depiction of where the activities could occur.

Section 3.0.3.3.2 (Lasers) was rewritten to provide a more robust description of low-energy lasers and to describe high-energy lasers as either weapons or communication systems. Table 3.0-10 was revised to show an increase of high-energy laser tests in the Offshore Area from 54 to 55, and to add 8 new tests in the Inland Waters. This change was carried through the analyses of all applicable resource areas in the remainder of Chapter 3.

The annual number of some expended non-explosive practice munitions (Table 3.0-14), other expended or recovered items (Table 3.0-15), explosive munitions that may result in fragments (Table 3.0-16), expended and recovered targets (Table 3.0-17), wires and cables (Table 3.0-19), and decelerators/parachutes (Table 3.0-20) were revised as the Navy further refined its requirements. In nearly every instance, the update resulted in a decrease in the number of items. One type of target that had been omitted from the Draft Supplemental EIS/OEIS was added to Table 3.0-17. The analysis of impacts described in this Final Supplemental EIS/OEIS considered these changes. These changes were carried through the analyses of all applicable resource areas in the remainder of Chapter 3.

- Section 3.1 (Sediments and Water Quality):

Additional information was provided on uniform national discharge standards, (Section 3.1.2, Assessment of Water Quality), the effect of anthropogenic debris in the deep sea environment (Section 3.1.3.2, Marine Debris, Military Expended Materials, and Marine Sediments), the effect of increasing ocean acidity on sediment quality (Section 3.1.3.3, Climate Change and Sediments), and chlorophyll-*a* concentrations in the Offshore Area (Section 3.1.3.4.1, Water Quality in the Offshore Area; Section 3.1.3.4.2, Water Quality in the Inland Waters).

The analysis of impacts includes new information on the degradation of explosives in the marine environment (Section 3.1.4.1, Explosives and Explosives Byproducts) and an enhanced discussion of the effect of climate change on corrosion rates of metals (Section 3.1.4.2, Metals).

Tables 3.1-2, 3.1-3, 3.1-4, and 3.1-5 have been updated based on changes to expended items described above under Chapter 2 (Description of Proposed Action and Alternatives) and Section 3.0.

- Section 3.2 (Air Quality):

In Section 3.2.1 (Introduction and Methods), the Navy noted a change since the 2015 NWTT Final EIS/OEIS; the Seattle-Tacoma area completed the 20-year maintenance period required by the Clean Air Act and transitioned from a maintenance area for carbon monoxide to an attainment area.

The Navy added a new section (Section 3.2.1.2) describing the National Environmental Policy Act evaluation process, and added a new table (Table 3.2-2) detailing the current attainment status of pierside and inland waters locations.

Vessel emissions from Navy training activities were revised to consider their entire underway hours. This method is consistent with other similar Navy projects and determined to be more accurate than the previous method of estimating the emissions of each activity.

New tables were added (Tables 3.2-4, 3.2-5, and 3.2-6) to show baseline criteria air pollutant emissions at different ranges from shore (within 3 nautical miles [NM], within 12 NM, and greater than 12 NM, respectively).

Values in a number of tables, including greenhouse gas emissions, were updated to reflect small changes in estimated emissions resulting from improved vessel calculations and revised emissions factors.

- Section 3.3 (Marine Habitats):

Changes in the impact analysis were made to reflect changes described above in Chapter 2 (Description of Proposed Action and Alternatives) and Section 3.0.

- Section 3.4 (Marine Mammals):

Marine mammal species listing status, abundance estimates, general threats discussions, and environmental consequences sections were updated based on the most recent stock assessment reports and new literature. Following the release of the Draft Supplemental EIS/OEIS, NMFS published a proposal to expand the 2006 designated Southern Resident killer whale critical habitat by including marine waters along the U.S. West Coast, from the U.S. international border with Canada south to Point Sur, California. Also, after the Draft Supplemental EIS/OEIS was released, NMFS published a proposal to designate humpback whale critical habitat along the U.S. West Coast, including Alaska, Washington, Oregon, and California. In this Final Supplemental EIS/OEIS, the Navy analyzed potential impacts on these newly proposed critical habitat areas.

Predicted impacts on pygmy and Dwarf sperm whales were combined to yield impacts on whales in the *Kogia* spp. guild. New information on the presence of Southern Resident killer whales in the Offshore Area was incorporated into the estimate of impacts. Estimates of impacts in the Offshore Area were revised based on a more accurate assessment of the location of certain testing activities with sonar, as well as changes to the number and location of explosive Mine Countermeasure and Neutralization Testing events. The analysis of impacts from high-energy lasers was revised to distinguish between laser-based optical communication system testing and high-energy laser weapons testing. The Navy revised its calculation of the probability of a vessel strike with a large whale based on updated information on the Navy's proposed activities.

Endangered Species Act (ESA) and Marine Mammal Protection Act conclusions were updated and mitigation measures (Section 3.4.2.2.3) were refined as consultations with the National Marine Fisheries Service progressed.

- Section 3.5 (Sea Turtles):

Table 3.5-5 was revised to remove unneeded source depths for some explosive bins and cluster sizes for all explosive bins. Table 3.5-6 was revised to add new source depths and cluster sizes for some explosive bins. Ranges to effects for Bin E3 were revised in both tables to show only Offshore Area use.

Additional information was added to the discussion of impacts from explosives during testing, to clarify where the Mine Countermeasure and Neutralization testing activity could occur. Additional

information and clarification of text describing the use of explosive sources and mitigation measures were included under Section 3.5.2.2.2 (Impacts from Explosives).

The analysis of impacts from in-water electromagnetic devices was removed since there would be no occurrence of sea turtles in the Inland Waters where the electromagnetic devices would be used.

The analysis of impacts from high-energy lasers was revised to distinguish between laser-based optical communication system testing and high-energy laser weapons testing.

The analysis of impacts from vessels and in-water devices has been revised to reflect updated estimates of the number of activities involving vessels or in-water devices.

The discussion of entanglement impacts from biodegradable polymer was removed since there would be no occurrence of sea turtles in the Inland Waters where biodegradable polymer would be used. The analysis of other entanglement stressors has been revised to reflect updated estimates of the number of these items that would be expended.

- Section 3.6 (Birds):

Because of the offshore nature of the Navy's proposed activities, two terrestrial bird species were removed from analysis in this Final Supplemental EIS/OEIS: streaked horned lark and western snowy plover. Additionally, in this Final Supplemental EIS/OEIS, the Navy dismissed the northern spotted owl from further analysis due to the lack of changes in activities that could result in impacts on the owl and conclusions from previous U.S. Fish and Wildlife Service (USFWS) Biological Opinions regarding impacts.

Throughout this Final Supplemental EIS/OEIS, the Navy considered additional information regarding the ESA-listed marbled murrelet and updated text where appropriate. The new information included new research regarding murrelet hearing and occurrence within the action area. Additional information was also provided regarding the occurrence of the ESA-listed short-tailed albatross within the action area. ESA conclusions were updated and mitigation measures were refined as consultations with the USFWS progressed.

- Section 3.7 (Marine Vegetation):

The analysis of impacts from seafloor devices was revised to reflect updated estimates of the number of these activities proposed to be conducted.

- Section 3.8 (Marine Invertebrates):

The analysis of impacts from high-energy lasers was revised to distinguish between laser-based optical communication system testing and high-energy laser weapons testing.

- Section 3.9 (Fishes):

The Navy included a new figure representing the marine critical habitat for Hood Canal summer-run chum salmon.

The Acoustic Stressors discussion was updated with additional information about how sonar and explosives could affect fish. Tables 3.9-8 and 3.9-9 were revised to include range information of the

E0 bin of explosives (less than 0.1 lb. net explosive weight). Updates were made to fishes effect determinations under explosives due to new geographic mitigation measures.

ESA conclusions were updated and mitigation measures (Sections 3.9.3.1.5, Impacts from Weapon Noise; and Section 3.9.3.2.2.3, Impacts from Explosives Under Alternative 1 for Training Activities) were refined as consultations with NMFS and USFWS progressed.

The analysis of impacts from high-energy lasers was revised to distinguish between laser-based optical communication system testing and high-energy laser weapons testing.

- Section 3.10 (Cultural Resources):

The Affected Environment section was revised to be more descriptive of the categories of cultural resources and the activities conducted within the Study Area. Two tables were added that list the archeological sites (Table 3.10-1) and the architectural sites (Table 3.10-2) under the Olympic MOA that are listed in the National Register of Historic Places.

The information on Traditional Cultural Resources has been updated, including a change to the name of the section to Traditional Cultural Properties.

Additional analysis and explanation have been provided regarding potential acoustic impacts on cultural properties.

- Section 3.11 (American Indian and Alaska Native Traditional Resources):

In this Final Supplemental EIS/OEIS, the Navy added three new figures depicting tribal lands for American Indian and Alaska Native Tribes associated with the Study Area. The Navy also updated information in Table 3.11-1. A new section (Section 3.11.1.2.4, Tribal Traditional Knowledge) was added to this section to acknowledge the importance of tribal traditional knowledge.

In the analysis of impacts, the Navy included additional information on subsistence uses of resources by Alaska Native tribes.

- Section 3.12 (Socioeconomic Resources and Environmental Justice):

The analysis of environmental justice was expanded upon in this Final Supplemental EIS/OEIS to address concerns expressed by the public on the potential for some training and testing activities to disproportionately impact vulnerable populations.

Aircraft, vehicle, and vessel traffic, along with tourism, fishing, and cargo data were updated with the most current available information.

The Navy expanded its analysis of potential noise impacts from aircraft transiting to and from the Olympic MOA.

- Section 3.13 (Public Health and Safety):

Additional analysis has been provided regarding potential impacts from aircraft overflight, including non-auditory health effects.

- **Chapter 4 (Cumulative Impacts):**

Table 4.3-1 has been revised to show an updated listing of past, present, and reasonably foreseeable actions that would contribute to cumulative impacts in the Study Area.

The analysis of cumulative impacts on sediments and water quality has been revised to provide additional information regarding environmental risks from munitions constituents and metals.

Additional analysis and explanation have been provided regarding cumulative acoustic impacts on cultural properties and to socioeconomic resources.
- **Chapter 5 (Mitigation):**

As detailed in the Final Supplemental EIS/OEIS, based on its ongoing analysis of the best available science and potential mitigation measures, the Navy made updates to the mitigation measures for Mine Countermeasure and Neutralization Testing to enhance protection of marine species to the maximum extent practicable (Table 5.3-9). The chapter was also updated with the best available science and discussions of newly published journal articles regarding mitigation technologies.
- **Chapter 6 (Additional Regulatory Considerations):**

The Status of Compliance information within Table 6.1-1 was updated to reflect the most current status of the Navy's compliance with the various laws, executive orders, and international standards. Similarly, updates were made to reflect the updated status of Coastal Zone Management Act compliance with Washington, Oregon, and California; National Marine Sanctuaries Act compliance; and Magnuson-Stevens Fishery Conservation and Management Act compliance.
- **Chapter 7 (List of Preparers):**

Changes were made to update the List of Preparers based on changes in personnel working on the project.
- **Chapter 8 (Public Involvement and Distribution):**

Information regarding the public participation process, related to the release of the Draft Supplemental EIS/OEIS, public meetings held, and the public comments received on the Draft Supplemental EIS/OEIS comments were added.
- **Appendix A (Navy Activities Descriptions):**

Changes were made to improve descriptions of proposed activities and to correct errors.
- **Appendix B (Activity Stressor Matrices):**

Changes were made to reflect corrections made to Appendix A (Navy Activity Descriptions), and to correct errors.
- **Appendix C (Air Quality Emission Calculations and Record of Non-Applicability):**

Tables were revised due to the change in the method used to calculate vessel emissions from Navy training activities.
- **Appendix D (Acoustic and Explosive Concepts):**

Minor edits were made to improve readability.

- Appendix E (Estimated Marine Mammal and Sea Turtle Impacts from Exposure to Acoustic and Explosive Stressors Under Navy Training and Testing Activities):
For all tables, pygmy sperm whales and dwarf sperm whales were combined into one *Kogia* whales guild. The California stock of harbor seals was removed from all tables.

Numerical revisions were made throughout the tables to reflect refined analysis of acoustic impacts on marine mammals.
- Appendix F (Military Expended Material and Direct Strike Impact Analysis):
Changes were made to the military expended materials tables and the benthic substrate impact tables to correct errors made in the accounting of these materials.
- Appendix G (Federal Register Notices):
Additional Federal Register Notices since the public release of the Draft Supplemental EIS/OEIS were added.
- Appendix H (Public Comment Responses):
This Appendix was added since the release of the Draft Supplemental EIS/OEIS and includes an explanation of the public comment process for the Draft Supplemental EIS/OEIS, list of agencies and organizations that provided comments, and a table containing the comments received and the Navy's responses.
- Appendix I (Agency Correspondence):
Agency correspondence received since the public release of the Draft Supplemental EIS/OEIS is included.
- Appendix J (Airspace Noise Analysis for the Olympic Military Operations Area):
This appendix was significantly revised to include the following:
 - An expanded explanation on why computer modeling is the appropriate method of analyzing aircraft noise in a MOA
 - An expanded analysis of aircraft transits to and from the Olympic MOA
 - A new map (Figure J-4) that depicts the typical transit routes to and from the Olympic MOA
 - The addition of audibility as a noise metric analyzed in this appendix
 - The addition of two sites in the discussion of the National Park Service's acoustic monitoring report
- Appendix K (Geographic Mitigation Assessment):
For this Final Supplemental EIS/OEIS, the Navy further identified additional opportunities to increase its mitigation measures in the NWTT Study Area based on its ongoing analysis of the best available science and potential mitigation suggested by comments on the 2019 NWTT Draft Supplemental EIS/OEIS and during the Marine Mammal Protection Act and ESA consultation processes. The Navy newly developed or modified the following mitigation area measures for this Final Supplemental EIS/OEIS:

- Seasonal awareness notification mitigation within 50 NM from shore to alert ships and aircraft operating within the Marine Species Coastal Mitigation Area to the possible seasonal presence of concentrations of humpback whales, gray whales, and Southern Resident killer whales.
- Requirement that when conducting Mine Countermeasure and Neutralization Testing within 20 NM from shore, that events will be conducted to the maximum extent practicable from July 1 to September 30.
- Requirements from October 1 through June 30 to conduct a maximum of one explosive Mine Countermeasure and Neutralization Testing event, not to exceed the use of 20 explosives from bin E4 and 3 explosives from bin E7 annually, and not to exceed the use of 60 explosives from bin E4 and 9 explosives from bin E7 over seven years within 20 NM from shore in the Marine Species Mitigation Area.
- Requirements to not conduct explosive Mine Countermeasure and Neutralization Testing event within a new mitigation area known as the Juan de Fuca Eddy Marine Species Mitigation Area.
- Requirement to not use explosives in bin E7 closer than 6 NM from shore in the Quinault Range Site.
- Annual restrictions on the use of surface ship hull-mounted MF1 mid-frequency active sonar during testing in three combined mitigation areas: within 20 NM from shore in the Marine Species Coastal Mitigation Area, the new Juan de Fuca Eddy Marine Species Mitigation Area, and within the Olympic Coast National Marine Sanctuary. As described above for measures continued from the 2015 NWTT Final EIS/OEIS, the annual restriction for testing previously only applied to the Olympic Coast National Marine Sanctuary Mitigation Area. Furthermore, for this Final Supplemental EIS/OEIS, the Navy removed an exception in the mitigation language that excluded the Quinault Range Site from the annual sonar restrictions. Now, the Navy's annual restrictions will apply throughout the entire Olympic Coastal National Marine Sanctuary Mitigation Area, including within the portion of the mitigation area that overlaps the Quinault Range Site.
- Requirements to conduct a maximum of one Unmanned Underwater Vehicle Training event within 12 NM from shore at the Quinault Range Site, and to cancel or move Unmanned Underwater Vehicle Training events within 12 NM from shore at the Quinault Range Site if Southern Resident killer whales are detected at the planned training location during the event planning process, or immediately prior to the event, as applicable.
- Requirements to not use low-frequency, mid-frequency, or high-frequency active sonar during training or testing unless a required element necessitates that the activity be conducted in NWTT Inland Waters during (1) Unmanned Underwater Vehicle Training, (2) Civilian Port Defense - Homeland Security Anti-Terrorism/Force Protection Exercises, (3) activities conducted by Naval Sea Systems Command at designated locations, and (4) pierside sonar maintenance or testing at designated locations.

- Requirements to use the lowest active sonar source levels practical to successfully accomplish each event.
- Requirements to not use explosives during testing.
- Requirements to not use explosives during training except at the Hood Canal and Crescent Harbor Explosive Ordnance Disposal ranges during explosive mine neutralization activities involving the use of Navy divers.
- Requirements to not conduct non-explosive live fire events (except firing blank weapons), including gunnery exercises, missile exercises, torpedo exercises, bombing exercises, and Kinetic Energy Weapon Testing.
- Requirements for Navy event planners to coordinate with Navy biologists during the event planning process prior to conducting explosive mine neutralization activities involving the use of Navy divers.
- Requirements to conduct a maximum of one Unmanned Underwater Vehicle Training activity annually at the Navy 3 Operating Area (OPAREA), Navy 7 OPAREA, and Manchester Fuel Depot (i.e., a maximum of one event at each location).
- Requirements for Navy event planners to coordinate with Navy biologists during the event planning process prior to conducting Unmanned Underwater Vehicle Training at the NAVY 3 OPAREA, Manchester Fuel Depot, Crescent Harbor Explosive Ordnance Disposal Range, and NAVY 7 OPAREA, and to cancel or move events to another training location if the presence of Southern Resident killer whales is reported through available monitoring networks.
- Requirements to issue annual seasonal awareness notification messages to alert ships and aircraft operating within the Puget Sound and Strait of Juan de Fuca Mitigation Area to the possible seasonal presence of concentrations of Southern Resident killer whales and gray whales.