
3.13 Public Health and Safety

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3.13 PUBLIC HEALTH AND SAFETY

PUBLIC HEALTH AND SAFETY SYNOPSIS

The United States Department of the Navy (Navy) considered all potential stressors, and the following have been analyzed for public health and safety:

- Underwater Energy
- In-Air Energy
- Physical Interactions
- Secondary Impacts (from sediment and water quality changes)

Preferred Alternative (Alternative 1)

- Because of the Navy's standard operating procedures, impacts on public health and safety would be unlikely. Further, there are no disproportionately high impacts or adverse effects on any low-income populations or minority populations.

3.13.1 INTRODUCTION AND METHODS

3.13.1.1 Introduction

This section of the Environmental Impact Statement (EIS)/Overseas EIS (OEIS) analyzes potential impacts on public health and safety within the Northwest Training and Testing (NWTT) Study Area (hereafter referred to as the Study Area). The Study Area is described in Section 2.1 (Description of the Northwest Training and Testing Study Area) and depicted in Figure 2.1-1.

This section also addresses the potential to impact the health and safety of children. Executive Order (EO) 13045, *Protection of Children from Environmental Health Risks and Safety Risks*, requires federal agencies to identify and assess environmental health and safety risks that may disproportionately affect children and to ensure that its policies, programs, activities, and standards address disproportionate risks to children that result from environmental health risks or safety risks. People, including children, may be present in residential areas or on board private or commercial vessels near some training or testing areas; however, the United States (U.S.) Department of the Navy's (Navy's) safety measures that protect adults from potential impacts also protect children. Therefore, the Proposed Action would not disproportionately expose children to environmental health or safety risks.

Unlike military training and testing activities conducted within the boundaries of a fenced land installation, public access to ocean areas or the overlying airspace cannot be physically controlled. An exception to this situation is the pier-side maintenance and testing at Naval Base (NAVBASE) Kitsap Bangor, NAVBASE Kitsap Bremerton, and Naval Station Everett that is conducted within the waterfront restricted area. The Navy coordinates use of these restricted areas by activity and issues warnings and notices, such as Notices to Mariners (NTMs), to the public before conducting potentially hazardous activities (Section 3.13.2.2). Sensitivity to public health and safety concerns within the Study Area is heightened in areas where the public may be close to certain activities (e.g., Puget Sound). Most testing occurs in Washington and Alaska State waters (within 3 nautical miles [nm] of shore) and areas where there could be interaction with the public. Most training occurs outside of state waters, where there is less potential for interaction with the public.

Generally, the greatest potential for a proposed activity to affect the public is near the coasts and shorelines because that is where public activities are concentrated. These coastal and shoreline areas could include dive sites; American Indian recreational, ceremonial or extractive areas; or other recreational areas where the collective health and safety of groups or individuals that could be exposed to the hazards of training and testing would be of concern. Most commercial and recreational marine activities are close to shore and are usually limited by the capabilities of the boat used. Commercial and recreational fishing may extend as far as 100 nm from shore but is concentrated near the coast.

The alternatives were also reviewed for any disproportionately high or adverse effects on any low-income populations or minority populations in accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*. This EO requires each federal agency to identify and address, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States and its territories and possessions. The Council on Environmental Quality has emphasized the importance of incorporating environmental justice review in the analyses conducted by federal agencies under the National Environmental Policy Act and of developing protective measures that avoid disproportionate environmental effects on minority or low-income populations.

3.13.1.2 Methods

Baseline public health and safety conditions were derived from the current training and testing activities in the Study Area. Existing procedures for ensuring public health and safety and other elements of the baseline (e.g., restricted areas) were derived from federal regulations, Department of Defense (DoD) directives, and Navy instructions for training and testing. These directives and instructions include criteria for public health and safety considerations for planning and execution of training and testing.

The Navy's safety measures implemented as part of standard operating procedures (SOPs) were considered relevant to the analysis of potential impacts on public health and safety from the underwater energy and physical interactions stressors. The analyses in Section 3.1 (Sediments and Water Quality) were used to determine the potential for secondary impacts from sediment and water quality changes to impact public health and safety.

The alternatives were evaluated based on two factors: (1) the probability for a training or testing activity to impact public health and safety, and (2) the degree to which those activities could have an impact. The likelihood that the public would be near a training or testing activity determines the potential for exposure to the activity. If the potential for exposure exists, the degree of the potential impacts on public health and safety, including increased risk of injury or loss of life, is determined. If the potential for exposure were zero, then public health and safety would not be affected. Isolated incidents and other conditions that affect single individuals, although important for safety awareness, may not rise to the level of a public health and safety issue and are not considered in this assessment (e.g., airborne noise effects are not addressed in this section).

Factors used to assess the significance of impacts on environmental justice in accordance with EO 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, include the extent or degree to which an alternative would have a disproportionately high and adverse human health or environmental effects on minority populations or low-income populations. If the analysis shows the environmental effects are significant (as employed by the National Environmental Policy Act [NEPA]) and are or may be having an adverse impact on minority populations,

low-income populations, or Indian tribes that appreciably exceeds or is likely to appreciably exceed those on the general population, then the impacts would be considered disproportionately high. If the environmental effects are not significant (as employed by NEPA), then the impacts on minority or low-income populations are not likely to exceed those of the general population.

3.13.2 AFFECTED ENVIRONMENT

3.13.2.1 Overview

All of the training and testing activities proposed in this EIS/OEIS would occur in one or more of these three range subdivisions:

- Offshore Area (Pacific Northwest Operating Area [OPAREA], including the Olympic MOAs and surf zone at Pacific Beach)
- Inland Waters (Washington State inland waters)
- Western Behm Canal, Alaska (Southeast Alaska Acoustic Measurement Facility [SEAFAC])

The areas of interest for assessing potential impacts on public health and safety are the Washington State inland waters and the U.S. territorial waters (seaward of the mean high water line to 12 nm) in the Study Area. Section 2.1 (Description of the Northwest Training and Testing Study Area) describes the Study Area in detail. Descriptions of the affected environment are presented for three distinct areas of the Study Area because, for the most part, the three areas have distinct activities and resources. Safety and inspection procedures are described for specific areas where appropriate; otherwise, the affected environment descriptions apply to all areas.

The Offshore Area of the Study Area includes air, surface, and subsurface operating areas extending generally west from the coastline of Washington, Oregon, and Northern California for a distance of approximately 250 nm into international waters. The eastern boundary of the Offshore Area lies 12 nm off the coastline for most of the Study Area, including southern Washington, Oregon, and Northern California. The Offshore Area includes the ocean all the way to the coastline only along the Washington coast beneath the airspace of W-237 and the Olympic Military Operations Area (MOA) and the Washington coastline north of the Olympic MOA. The Offshore Area is further described in Section 2.1.1 (Description of the Offshore Area).

The Inland Waters includes air, sea, and undersea space inland of the coastline and eastward to include the Strait of Juan de Fuca, the Puget Sound, and the Strait of Georgia. None of this area extends into Oregon or California. The Inland Waters are further described in Section 2.1.2 (Description of the Inland Waters).

SEAFAC has three major functional components: (1) Back Island Operations Center and supporting facilities, (2) Underway Measurement Site, and (3) Static Site (see Figure 2.1-4). The three major functional components are within the five restricted areas in Western Behm Canal. The main purposes of the restricted areas are to lessen acoustic encroachment from nonparticipating vessels and prohibit certain activities that could damage SEAFAC's sensitive in-water acoustic instruments and associated cables. The perimeter of Restricted Area 5 constitutes the Study Area boundary, and the Study Area will not include land-based support facilities or operations. The sensors at SEAFAC are passive and measure radiated noise in the water, such as from machinery on submarines or other underwater vessels. SEAFAC does not use tactical mid-frequency active sonar (sound navigation and ranging). Active acoustic sources are used for communications and range calibration and to provide position information for units

operating submerged on the range. Further description of the Western Behm Canal is in Section 2.1.3 (Description of the Western Behm Canal, Alaska).

Military, commercial, institutional (including American Indian activities), and recreational activities take place simultaneously in the Study Area (Figure 3.13-1) and have coexisted safely for decades because established rules and practices lead to safe use of the waterway and airspace. The following paragraphs briefly discuss the rules and practices for recreational, commercial, institutional, and military use in sea surface areas and airspace. The safety and inspection procedures are implemented for training and testing activities. Each commanding officer is responsible for implementing safety and inspection procedures for activities inside and outside established ranges. In the absence of specific guidance on matters of safety, the Navy follows the most prudent course of action.



Figure 3.13-1: Simultaneous Activities within the Northwest Training and Testing Study Area

3.13.2.1.1 Sea Space

Most of the sea space in the Study Area is accessible to recreational and commercial activities. However, some activities are prohibited or restricted in certain areas (e.g., danger zones and restricted areas) in accordance with Title 33 Code of Federal Regulations (C.F.R.) Part 334, *Danger Zone and Restricted Area Regulations*. These restrictions can be permanent or temporary. Nautical charts issued by the National Oceanic and Atmospheric Administration (NOAA) include these federally designated zones and areas. Operators of private and commercial vessels have a duty to abide by maritime regulations administered by the U.S. Coast Guard. The Navy's safety measures ensure public health and safety primarily through SOPs to minimize or avoid civilian exposure to training and testing activities.

In accordance with Title 33 C.F.R. 72, *Marine Information*, the U.S. Coast Guard and the Department of Homeland Security inform private and commercial vessels about temporary closures via NTMs, which provide information about durations and locations of closures because of activities that are hazardous to surface vessels. Restricting marine traffic is typically not required as a safety measure for private and

commercial vessels. In cases where certain activities involve navigational hazards, such as explosive ordnance disposal (EOD), the Navy coordinates with the U.S. Coast Guard to issue NTMs. In other cases, NTMs identify locations of planned Navy activities and alert the public to the need to temporarily avoid those locations. During any potentially hazardous surface activity at the Quinault Range Site, public safety is ensured by coordinating with Naval Air Station (NAS) Whidbey Island. Broadcast notices on maritime frequency radio, weekly publications by the appropriate U.S. Coast Guard Navigation Center, and global positioning system navigation charts disseminate these navigational warnings.

3.13.2.1.2 Airspace

Most of the airspace in the Study Area is accessible to general aviation (recreational, private, corporate) and commercial aircraft. Like waterways, however, some areas are temporarily restricted from civilian and commercial use. The Federal Aviation Administration has established Special Use Airspace—airspace of defined dimensions within which activities must be confined because of their nature or, within which, limitations may be imposed upon aircraft operations that are not part of those activities (Federal Aviation Administration 2011). Special Use Airspace in the Study Area includes the following:

- **Restricted Airspace:** Airspace designated under 14 C.F.R. Part 73. Flights are prohibited during published periods of use unless permission is obtained from controlling authority..
- **Military Operations Areas:** Airspace established outside positive control to separate or segregate certain nonhazardous military activities from instrument flight rules traffic and to identify for visual flight rules traffic where these activities are conducted..
- **Warning Areas:** Airspace of defined dimensions extending from 3 or 12 nm outward from the coast of the U.S. that contains activity that may be hazardous to nonparticipating aircraft. The purpose of such warning area is to warn nonparticipating pilots of the potential danger.
- **Air Traffic Control Assigned Airspace:** This airspace is used to contain specified activities, such as military flight training, and segregate it from other instrument flight rules air traffic.

Notices to Airmen (NOTAMs) are created and transmitted by government agencies and airport operators to alert aircraft pilots of any hazards en route to or at a specific location. The Federal Aviation Administration issues NOTAMs to disseminate information on upcoming or ongoing military exercises with airspace restrictions. Operators of civilian aircraft are responsible for being aware of restricted airspace and any NOTAMs that are in effect. Pilots have a duty to abide by aviation rules as administered by the Federal Aviation Administration.

Weather conditions dictate whether pilots (general aviation, commercial, or military) fly under visual flight rules or instrument flight rules. Under visual flight rules, the weather is favorable and the pilot is required to remain clear of clouds by specified distances to ensure separation from other aircraft using see and avoid procedures. Pilots flying under visual flight rules must be able to see outside the cockpit, control the aircraft's attitude, navigate, and avoid obstacles and other aircraft based on visual cues. Pilots flying under visual flight rules assume responsibility for their separation from all other aircraft and are generally not assigned routes or altitudes by air traffic control. During unfavorable weather and as required by Federal Aviation Administration (FAA) airspace regulations, pilots will follow instrument flight rules. Factors such as visibility, cloud distance, cloud ceilings, and weather phenomena cause visual conditions to drop below the minimums required to operate by visual flight referencing. Instrument flight rules are the regulations and restrictions a pilot must comply with when flying in weather conditions that restrict visibility. Pilots can fly under instrument flight rules in visual flight rules weather conditions; however, pilots cannot fly under visual flight rules in instrument flight rules weather conditions.

3.13.2.2 Safety and Inspection Procedures

During training and testing, Navy policy is to ensure the safety and health of personnel and the general public (U.S. Department of the Navy 2011a). The Navy achieves these conditions by considering a location when planning activities, scheduling and notifying potential users of an area, and ensuring that an area is clear of nonparticipants. The Navy also has a proactive and comprehensive program of compliance with applicable standards and implementation of safety management systems.

3.13.2.2.1 Offshore Area

The Pacific Northwest OPAREA comprises the Offshore Area. The area of interest for assessing potential impacts on public health and safety is the U.S. territorial waters; therefore, only the coastal areas beneath the airspace of W-237 and the Olympic MOA and the Washington coastline north of the Olympic peninsula are considered here. As discussed in Section 3.13.1.1 (Introduction), training or testing activity in the coastal area has the potential to affect the public because of the greater potential for public activities. When planning a training or testing event, the Navy considers proximity of the activity to public areas in choosing a location. Important factors considered include the ability to control access to an area; schedule (time of day, day of week); frequency, duration, and intensity of activities; range safety procedures; operational control of activities or events; and safety history.

The Federal Aviation Administration and the U.S. Coast Guard issue NOTAMs and NTMs, respectively. The Navy works closely with the Seattle Air Route Traffic Control Center (Seattle Center) for scheduling and control of W-237. Airspace scheduling and management of Warning Area W-570 and W-93 in the Pacific Northwest OPAREA are handled by the U.S. Air Force.

Most fleet training activities are conducted in the Pacific Northwest OPAREA. Testing conducted by Naval Sea Systems Command (NAVSEA) in the Offshore Area is limited torpedo testing activities and Naval Undersea Warfare Center (NUWC) Division, Keyport activities in the Quinault Range Site. Both sea- and air-based testing activities occur in this area. The activities that occur in the Olympic MOAs do not include weapons firing.

During training and testing activities in the Study Area, the Navy SOPs require that the appropriate safety zone is clear of nonparticipants before engaging in certain activities, such as firing weapons. Inability to obtain a “clear range” could cause an event to be delayed, cancelled, or relocated. Navy uses visual look-outs, sensors and other devices (e.g., radar) to maintain a clear range during activities, thereby ensuring public health and safety. The following outline some of the range safety procedures, range inspection procedures, exercise planning, and scheduling and coordinating procedures for the Navy.

Training activities comply with the *Northwest Training Range Complex Range User’s Manual* (NASWHIDBEYINST 3770.1G, U.S. Department of the Navy 2014), which prescribes a thorough environmental and safety review for all activities before being conducted. This manual incorporates guidance and outlines safety precautions and procedures that apply to range users including, but are not limited to, the following:

- The operational commander conducting an exercise shall be satisfied that the range is clear before beginning the exercise.
- Surface or air firing exercises shall be suspended at any time visual or radar warning indicates the presence of any vessel or aircraft within firing range.
- A sufficient number of qualified Lookouts shall be posted during all firing exercises.

- During surface gunnery exercises involving a towed target, two-way communications must be maintained between the firing unit and the towing vessel.
- Users shall be responsible for separation of their units from other air units, both military and civilian.
- Aircraft carrying service or practice ordnance shall avoid passing over ships.

Training and testing activities in the W-237A airspace and seaspace are scheduled and coordinated with NAS Whidbey Island and Commander Submarine Force. The Quinault Range Site is within the Pacific Northwest OPAREA that underlies W-237A and has a mile-wide stretch of surf zone at Pacific Beach.

NAVSEA testing activities in the Offshore Area are conducted in accordance with safety guidance. For the most part, Naval Air Systems Command (NAVAIR) conducts its testing activities in the same way the fleet conducts its training activities. Therefore, the same safety planning and procedures implemented for training activities in the Study Area apply to NAVAIR testing activities that are proposed for the Pacific Northwest OPAREA. Use of the W-237 range is coordinated through Range Schedules at NAS Whidbey Island, which would request the issuing of a NOTAM for air events. For surface events, the *Northwest Training Range Complex User's Manual* states NTMs are the responsibility of the scheduling entity (U.S. Department of the Navy 2014). Range users are responsible for their own range clearance and de-confliction prior to any live fire events.

3.13.2.2.2 Inland Waters

Washington State inland waters include the Strait of Juan de Fuca to its mouth and the Puget Sound region. The Keyport Range Site, Dabob Bay Range Complex (DBRC) Site, Carr Inlet OPAREA, Navy 3 and Navy 7 OPAREAs, and pierside locations are all within the inland waters of Washington State. Two EOD ranges are in the Inland Waters: Hood Canal EOD Range and Crescent Harbor EOD Range.

The Navy uses specific locations in the Inland Waters for both training and testing. Although it is not a restricted area, the Navy limits or restricts access to Crescent Harbor as a safety protocol during mine warfare training. Access to pierside locations is also restricted. Training or testing activities in these inland areas have the potential to affect the public because of the concentration of public activities.

Training exercises within the Washington State inland waters of the Study Area are conducted in accordance with the *Northwest Training Range Complex User's Manual* (U.S. Department of the Navy 2014). The precautions for public health and safety include, but are not limited to, the following:

- Training exercises can only occur when all nonparticipating vessels and persons are clear of the area.
- Underwater demolition training is authorized only in the designated EOD ranges and must observe 700-yard (yd.) (640 m) radius exclusion zones around the detonation site.

NUWC Division Keyport's water-based test activities within the Washington State inland waters of the Study Area are conducted in compliance with NUWC Division Keyport safety guidance to protect the health and safety of the public. The precautions for public health and safety include, but are not limited to, the following:

- NUWC Division Keyport's safety policy is to observe every reasonable precaution in the planning and execution of all activities to prevent injury to people and damage to property.

- Access to the shoreline and pier at NUWC Division Keyport is heavily restricted, and security police personnel are posted at the main gate for additional security. Guards patrol the perimeter of the base, including the shoreline.

Procedures to initiate active sonar transmission operations pierside at Puget Sound Naval Shipyard and Intermediate Facility and at NAVBASE Kitsap Bangor are provided in Puget Sound Naval Shipyard and Intermediate Maintenance Facility Instruction (PSNS&IMFINST) 10552.1A, *Active sonar transmission operations* (U.S. Department of the Navy 2009). The Intermediate Maintenance Facility also does testing at Naval Station Everett. Because the area is restricted, there is no safety risk to the public.

The Navy performs a thorough safety review before conducting any testing activities in Inland Waters. Other procedures to ensure public safety include communicating activities to tribes, regulators, and the public. The Navy operates in cooperation with local maritime activities and rarely requires completely restricted access from OPAREAs.

Testing sites within Puget Sound have shore-to-shore surveillance capability because of the proximity of land on both sides. This provides the Navy a unique opportunity to implement highly effective visual surveillance procedures for public health and safety. Navy personnel on guard boats may advise nonmilitary vessel operators of test restrictions, request that they shut off their engines for a short time to eliminate acoustical interference during noise-sensitive testing, or restrict them from entering the testing area until the activity is completed.

The Keyport Range Site is charted as a restricted area on NOAA Navigation Chart 18446. The Dabob Bay and Hood Canal restricted areas are charted as Naval Operating Areas on NOAA Navigation Chart 18458. These designations help ensure public safety by promoting public awareness to avoid training and testing areas. In addition, the U.S. Coast Guard has published a final rule establishing protection zones extending 500 yd. (457 m) around all Navy vessels in navigable waters of the U.S. and within the boundaries of Coast Guard Pacific Area (32 C.F.R. Part 761), where all vessels must proceed at a no-wake speed when within this 500 yd. protection zone. Nonmilitary vessels are not allowed to approach within 100 yd. (91 m) of a U.S. naval vessel, whether underway or moored, unless authorized by an official patrol.

The Navy maintains yellow, white, and red lights to warn nonmilitary craft of the status of Navy activities within the Dabob Bay portion of the DBRC Site. Red or alternating white and red lights indicate that range activities involving critical measurements are in progress, engines should be stopped until red beacons have been shut off to indicate the test is completed, and advice of Navy personnel on guard boats should be followed when in or near the range site. Typically, boat passage is permitted between tests when the yellow beacons are operating. The descriptions of the lights are posted at local boat ramps and marinas and are clearly indicated on NOAA Nautical Chart 18458.

Public use restrictions associated with Carr Inlet are codified in U.S. Code Title 33 § 334.1250. These restrictions were established for the level and type of activity that existed when the Navy's Fox Island Laboratory was in place. Since the dis-establishment of the shore lab in 2009, the nature of activity and the in-water infrastructure has changed. Fixed buoys and hydrophones are no longer in place. As such, the restrictions that were in place that pertained to this equipment will be relaxed in an upcoming revision to the C.F.R. The Navy and the Army Corps of Engineers have been in discussion on this matter. The Navy is retaining the Carr Inlet operational area for infrequent operational and acoustic research studies; no explosives are used. The area is open to navigation at all times. Some restrictions may be

instituted when the range is in use. Commercial traffic to points within Carr Inlet and through Carr Inlet to adjacent waters is permitted free access. Whenever the Navy plans operations for the Carr Inlet operational area, the public will be notified via published announcement in local newspapers and in the local U.S. Coast Guard NTM.

3.13.2.2.3 Western Behm Canal, Alaska

Five restricted areas are established (33 C.F.R. § 334) in Behm Canal to ensure public safety and successful completion of mission activities at SEAFAC. The restricted areas provide the Navy with a means to control access to the testing area. In addition, the Navy's SOPs outlined above help to ensure health and safety.

Testing areas are monitored from the shore facility by radar electronically and visually. Radio contact for alert advisories is established with vessels that could be subject to unsafe conditions. Test area lights alert local traffic when SEAFAC is operational, and vessels must coordinate their passage with the SEAFAC facility control officer. The U.S. Coast Guard may also provide support to protect public safety.

3.13.2.3 Aviation Safety

Navy procedures on planning and managing Special Use Airspace are provided in Chief of Naval Operations Instruction (OPNAVINST) 3770.2K, *Airspace Procedures and Planning Manual* (U.S. Department of the Navy 2007). Scheduling and planning procedures for both training and testing air operations in the Study Area are issued through NAS Whidbey Island.

Aircrews involved in a training or testing exercise are aware that nonparticipating aircraft and ships are not precluded from entering the area and may not comply with NOTAMs or NTMs. Aircrews are required to maintain a continuous lookout for nonparticipating aircraft while operating in warning areas under visual flight rules. A qualified safety officer is assigned to each event or exercise and can terminate activities if unsafe conditions exist. In general, aircraft carrying ordnance will attempt to avoid overflight of surface vessels.

3.13.2.4 Submarine Navigation Safety

Submarine crews use various methods to avoid collisions while they are surfaced, including visual and radar scanning, acoustic depth finders, and state-of-the-art satellite navigational systems. When submerged, submarines use all available ocean navigation tools, including inertial navigation systems that calculate position based on the movement of the submarine. The surface is scanned for the presence of nonparticipating vessels before and during activities. Training and testing activities are delayed, cancelled, or relocated if range areas are not clear of nonparticipants. Procedures for safely transitioning to the surface include vertical separation of at least 100 ft. (30.5 m) between the top of a submarine's sail and the depth of a surface ship's keel and at least a 1,500 yd. (1,372 m) horizontal separation from other vessels. Areas with surface vessels can then be avoided to protect both the submarines and surface vessels.

3.13.2.5 Surface Vessel Navigational Safety

The Navy practices the fundamentals of safe navigation; this policy applies to all areas in the Study Area. While in transit, Navy surface vessel operators are alert at all times, use extreme caution, use state-of-the-art satellite navigational systems, and are trained to take proper action if there is a risk. Surface vessels are also equipped with trained and qualified Navy Lookouts. Individuals trained as

Lookouts have the necessary skills to detect objects or activity in the water that could be a risk for the vessel.

3.13.2.5.1 Offshore Area

Before launching a weapon or sensors and other packages, Navy personnel on the vessels are required to determine that all safety criteria have been satisfied, the weapons and target recovery conditions are satisfactory, and recovery helicopters and vessels are ready to be employed. Live fire events are strictly controlled and executed in accordance with detailed standard operating and range safety procedures.

3.13.2.5.2 Inland Waters

For specific testing activities, such as unmanned surface and underwater vehicle testing, a support boat would be used near the testing to ensure safe navigation by participants. Before firing or launching a weapon, Navy surface vessels are required to determine that all safety criteria have been satisfied. When applicable, the surface vessel would use aircraft and other vessels to aid navigation. In accordance with Navy instructions presented in this chapter, safety and inspection procedures ensure consideration for public health and safety.

3.13.2.5.3 Western Behm Canal, Alaska

For specific activities, surface craft conduct visual surveillance before and during testing activities. The facility control officer in the SEAFAC facility operations building maintains visual surveillance of the site. In accordance with Navy instructions presented in this chapter, safety and inspection procedures ensure consideration of public health and safety.

3.13.2.6 Sound Navigation and Ranging (Sonar) Safety

3.13.2.6.1 Offshore Area

Sonar training activities are conducted in accordance with the *Northwest Training Range Complex User's Manual* (U.S. Department of the Navy 2014). Among the various safety precautions, sonar is operated at the lowest practicable level required to meet tactical training objectives, and operators ensure that the safety zone radius around the sound source is clear prior to start up or restart of active sonar.

3.13.2.6.2 Inland Waters

Surface vessels and submarines may use active sonar at the pierside locations listed in Chapter 2 (Description of Proposed Action and Alternatives). Procedures for NAVSEA to initiate active sonar transmission activities pierside are provided in PSNS&IMFINST 10552.1A, *Active sonar transmission operations* (U.S. Department of the Navy 2009). Procedures for training activities in the Inland Waters can be found in the *Northwest Training Range Complex User's Manual* (U.S. Department of the Navy 2014). To ensure safe and effective sonar use, the Navy applies the same safety procedures for pierside sonar use described for sonar use in the presence of Navy divers.

The *U.S. Navy Dive Manual*, Appendix 1A, Safe Diving Distances from Transmitting Sonar, is the Navy is governing document for protecting divers during active sonar use (U.S. Department of the Navy 2011b). Precautions are taken to ensure that divers or swimmers are not exposed to sonar. Before the use of active sonar, Navy observers ensure that there are no non-Navy divers or swimmers in the water within a safe standoff distance. The safe standoff distances vary with sonar and diver characteristics. This instruction provides procedures for calculating safe distances from active sonar, as derived from experimental and theoretical research conducted at the Naval Submarine Medical Research Laboratory and the Navy Experimental Diving Unit. Safety distances vary based on conditions that include diver

attire, type of sonar, and duration of time in the water. Some safety procedures include onsite measurements during testing activities to identify an exclusion area for nonparticipating swimmers and divers (e.g., recreational and shellfish harvest divers).

3.13.2.7 Explosive Ordnance Detonation Safety

3.13.2.7.1 Offshore Area and Inland Waters

Pressure waves from underwater detonations can pose a physical hazard in surrounding waters. Before conducting an underwater training or testing activity, Navy personnel establish an appropriately sized exclusion zone to avoid exposure of nonparticipants to the harmful intensities of pressure. The *U.S. Navy Dive Manual*, Chapter 2, Underwater Physics, provides procedures for determining safe distances from underwater explosions (U.S. Department of the Navy 2011b). In accordance with training and testing procedures for safety planning related to detonations (U.S. Department of the Navy 2011a), the Navy uses the following general and underwater detonation procedures:

- Navy personnel are responsible for ensuring that impact areas and targets are clear before commencing hazardous activities.
- The use of underwater ordnance must be coordinated with submarine operational authorities.
- Aircraft or vessels expending ordnance shall not commence firing without permission of the range safety officer or test safety officer for their specific range area.
- Firing units and targets must remain in their assigned areas, and units must fire in accordance with current safety instructions.
- Detonation activities will be conducted during daylight hours.

3.13.2.8 Weapons Firing and Ordnance Expenditure Safety

3.13.2.8.1 Offshore Area and Inland Waters

In accordance with safety and inspection procedures (U.S. Department of the Navy 2011a), any unit firing or expending ordnance shall ensure that all possible safety precautions are taken to prevent accidental injury or property damage. The officer conducting the exercise shall permit firing or jettisoning of aerial targets only when the area is confirmed to be clear of nonparticipating units, both civilian and military.

Safety is a primary consideration for all training and testing activities. The range must be able to safely contain the hazard area of the weapons and equipment employed. The type of activity determines the size of the buffer zone. For activities with a large hazard area, special sea and air surveillance measures are implemented to ensure that the area is clear before activities commence. Before aircraft can drop ordnance, they are required to make a preliminary pass over the intended target area to ensure that it is clear of boats, divers, or other nonparticipants. Aircraft carrying ordnance to avoid overflight of surface vessels.

Training and testing activities are delayed, moved, or cancelled if there is a question about the safety of the public. Target areas must be clear of nonparticipants before conducting training and testing. If a restriction is in place and not being observed during a NAVSEA testing activity, the nonparticipant will be asked to move out of the safety buffer area. However, the NAVSEA activity will be delayed, moved, or cancelled if the restriction is not observed. When using ordnance with flight termination systems (which terminate the flight of airborne missiles or launch vehicles when they veer from their targeted path), the Navy is required to follow SOPs to ensure public health and safety. In those cases where a weapons system does not have a flight termination system, the size of the target area that needs to be clear of

nonparticipants is based on the flight distance of the weapon plus an additional distance beyond the system's performance capability.

3.13.3 ENVIRONMENTAL CONSEQUENCES

This section evaluates how and to what degree the activities described in Chapter 2 (Description of Proposed Action and Alternatives) could impact public health and safety. In this section, each public health and safety stressor is introduced, analyzed by alternative, and analyzed for relevant training and testing activities. Tables 2.8-1 through 2.8-3 present the baseline and proposed training and testing activity locations for each alternative (including the number of events and ordnance expended). Tables E-1 and E-2 in Appendix E (Training and Testing Activities Matrices) describe the warfare areas and associated stressors that were considered for analysis of public health and safety. The stressors vary in intensity, frequency, duration, and location within the Study Area. Four stressors are applicable to public health and safety:

- Underwater energy
- In-air energy
- Physical interactions
- Secondary impacts from sediment and water quality changes

Alternatives 1 and 2 provide for inclusion of activities pierside, in Puget Sound, and at the Carr Inlet OPAREA, as described in Chapter 2 (Description of Proposed Action and Alternatives). Alternatives 1 and 2 would adjust locations and frequency of training and testing activities but would employ existing safety procedures and SOPs such that no new or additional risks to the public health and safety would be created.

Potential public health and safety impacts were evaluated assuming continued implementation of the Navy's current safety procedures for each training and testing activity or group of similar activities. Generally, the greatest potential for the proposed activities to be co-located with public activities would be in coastal areas because the intensity of commercial and recreational activities declines with increasing distance from the coast.

Training and testing activities in the Study Area are conducted in accordance with guidance provided in *Northwest Training Range Complex Range User's Manual* (NASWHIDBEYINST 3770.1G, *Navy Safety and Occupational Health Program Manual* (OPNAVINST 5100.23G CH-1), *Active sonar transmission operations* (PSNS&IMFINST 10552.1A, U.S. Department of the Navy 2009), range operating procedures, SEAFAC SOPs, and NUWC Division Keyport safety guidance. These manuals and instructions provide operational and safety procedures for all normal Navy events. They also provide information to range users that is necessary to operate safely and avoid affecting nonmilitary activities such as shipping, recreational boating, diving, and commercial or recreational fishing. Ranges are managed in accordance with SOPs that ensure public health and safety. Current requirements and practices (e.g., SOPs) designed to prevent public health and safety impacts discussed in Section 3.13.2 (Affected Environment) are incorporated in Chapter 5 (Standard Operating Procedures, Mitigation, and Monitoring).

Table 3.13-1 contains the number of components or activities for each of the stressors with respect to their location and changes among the alternatives. The specific analysis of the training and testing activities presented in this section considers relevant components and associated data with the geographic location of the activity and the resource. Training activities are not proposed in the Western

Behm Canal; therefore, only activities in the Offshore Area and the Inland Waters will be analyzed under Training Activities.

3.13.3.1 Underwater Energy

Underwater energy can come from acoustic sources or underwater explosions. Active sonar, underwater explosions, and vessel movements all produce underwater acoustic energy. A negligible amount of energy from sound will travel from air to water during aircraft overflights because of refraction. Electromagnetic energy can enter the water from mine warfare training devices and from unmanned underwater systems. The potential for the public to be exposed to this stressor would be limited to individuals, such as recreational swimmers or self-contained underwater breathing apparatus (SCUBA) divers, that are under water and within unsafe proximity of a training or testing event.

Non-Navy swimmers and SCUBA divers (e.g., recreational and shellfish harvest divers) are not expected to be near Navy pierside locations (which include shipyards) because access to these areas is controlled for safety and security reasons. Locations of popular offshore diving spots are well documented, and dive boats (typically well marked) and diver-down flags would be visible from the vessels conducting the training and testing. Swimmers and divers are not expected to be near training and testing locations where active sonar activities and underwater explosions would occur because of the strict procedures for clearance of nonparticipants before conducting activities. Therefore, co-occurrence of divers and Navy activities is unlikely.

The *U.S. Navy Dive Manual* (U.S. Department of the Navy 2011b) prescribes safe distances for divers from active sonar sources and underwater explosions. Safety precautions specified in DoD Instruction 6055.11 (U.S. Department of Defense 2009) would be used as the standard safety buffers for underwater energy to protect public health and safety. If unauthorized personnel were detected within the exercise area, the activity would be promptly halted until the area was again clear. Therefore, the public is unlikely to be exposed to underwater energy at Navy pierside locations, in training or testing areas, or in ports.

Many of the proposed activities generate underwater acoustic energy; however, not all sources rise to the level of consideration in this EIS/OEIS as a risk to public health and safety. Swimmers or divers (e.g., recreational and shellfish harvest divers) might intermittently hear ship noise or underwater acoustic energy from aircraft overflights if they are near a training or testing event, but public health and safety would not be affected because aircraft or ship movement near an individual would be transitory. Because of the transitory nature of aircraft or ship movement, potential impacts on public health and safety of underwater acoustic energy from vessel movements and aircraft overflights would not be substantial and are not analyzed in further detail.

Table 3.13-1: Stressor Table for Public Health and Safety

Component	Area	Number of Components or Events					
		No Action Alternative		Alternative 1		Alternative 2	
		Training	Testing	Training	Testing	Training	Testing
Underwater Energy							
Sonar and other active sources (hours)	Offshore Area	332	24	551	977	551	1,073
	Inland Waters	0	2,061	407	5,448	407	5,939
	W. Behm Canal	0	0	0	2,762	0	3,838
Sonar and other active sources (items)	Offshore Area	880	364	1,616	773	1,616	837
	Inland Waters	0	1,188	0	1,308	0	1,410
	W. Behm Canal	0	0	0	0	0	0
Explosives	Offshore Area	209	0	142	148	142	164
	Inland Waters	4	0	42	0	42	0
	W. Behm Canal	0	0	0	0	0	0
In-Air Energy							
Various sources of electromagnetic energy	Offshore Area	Qualitative					
	Inland Waters						
	W. Behm Canal						
Physical Interactions							
Activities including aircraft	Offshore Area	5,342	2	8,040	80	8,040	92
	1	196	2	117	20	117	25
	W. Behm Canal	0	0	0	0	0	0
Activities including vessels	Offshore Area	1,003	39	1,116	158	1,116	187
	Inland Waters	4	339	310	602	310	665
	W. Behm Canal	0	28	0	60	0	83
Activities including in-water devices	Offshore Area	387	38	493	134	493	158
	Inland Waters	0	377	1	628	1	691
	W. Behm Canal	0	0	0	0	0	0
Military expended materials	Offshore Area	189,815	604	198,028	3,922	198,028	4,325
	Inland Waters	8	442	3,085	513	3,085	563
	W. Behm Canal	0	0	0	0	0	0
Secondary Stressors							
Sediment and water quality changes	Offshore Area	Qualitative					
	Inland Waters						
	W. Behm Canal						

Active sonar and underwater explosions are the only sources of underwater acoustic energy evaluated for potential impacts on public health and safety. Various training and testing activities result in underwater acoustic activity; these activities are listed in Section 3.0.5.3.1 (Acoustic Stressors). Activities beyond U.S. territorial waters are not considered in the analysis of potential impacts on public health and safety, including most anti-surface warfare activities associated with weapons firing and anti-submarine warfare events that occur beyond 12 nm from shore.

The impacts on public health and safety from underwater energy depend on many factors. The effects of active sonar on humans vary with the sonar frequency. Of the four types of sonar (very high-, high-, mid-, and low-frequency), mid-frequency and low-frequency sonar have the greatest potential to impact humans because of the range of human hearing. Underwater explosives cause a physical shock front that compresses the explosive material, and the pressure wave then passes into the surrounding water. Generally, the pressure wave would be the primary cause of injury. The effects of an underwater explosion depend on several factors, including the size, type, and depth of the explosive charge and where it is in the water column.

3.13.3.1.1 No Action Alternative

3.13.3.1.1.1 Training Activities

Offshore Area

Under the No Action Alternative, active sonar training activities would continue at baseline levels and within the established Northwest Training Range Complex. Most of the active sonar activities are conducted beyond 12 nm in the Pacific Northwest OPAREA. Activities involving underwater explosions would continue at baseline levels within the Northwest Training Range Complex; however, most activities involving weapons firing and ordnance use would be conducted beyond 12 nm from shore (outside U.S. territorial waters).

Because most of these activities will occur beyond 12 nm from shore, and because the implementation of strict operating procedures will protect public health and safety, the potential for training activities emitting underwater energy to impact public health and safety under the No Action Alternative is low. These operating procedures include ensuring clearance of the area before commencing training activities involving underwater energy. Because the potential for impacts are low, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

Inland Waters

Current locations for underwater explosions include specific training areas in the underwater training ranges at Crescent Harbor and Hood Canal. The EOD activities would include four training events per year: two events at Crescent Harbor EOD training area with net explosive weight at a maximum of 2.5 pounds (lb.) (1.1 kilograms [kg]), and two events in the Hood Canal EOD training area with net explosive weight at a maximum of 1.5 lb. (0.68 kg). Extensive onsite surveillance to protect threatened and endangered species would also protect public safety and health. Because of the Navy's safety procedures, the potential for training activities emitting underwater energy to impact public health and safety under the No Action Alternative is low. Because the potential for impacts are low, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

3.13.3.1.1.2 Testing Activities

Offshore Area

Under the No Action Alternative, active acoustic testing activities would continue at baseline levels. No testing activities involving underwater explosions would be conducted under the No Action Alternative.

Surf zone activities at Pacific Beach Safety would be conducted after the area is free of nonparticipants. SOPs and visual surveillance are also implemented. The surf zone would be kept clear of nonparticipants prior to, during, and immediately after each test to avoid potential safety issues.

Implementation of strict operating procedures would protect public health and safety under the No Action Alternative. Therefore, the potential for adverse impacts is low. These operating procedures include ensuring clearance of the area before commencing testing activities involving underwater energy. Because the potential for impacts is low, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

Inland Waters

Under the No Action Alternative, sonar use for NUWC Division Keyport unmanned underwater devices and miscellaneous testing would occur at DBRC Site and Keyport Range Site. Because of the Navy's safety procedures, the potential for testing activities emitting underwater energy to impact public health and safety is low. Because the potential for impacts is negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

Western Behm Canal

The acoustic sensors at SEAFAC are passive; active acoustic sources are used for communications, for range calibration, and to provide position information for units operating submerged on the range. Activities would be conducted in the five restricted areas within Western Behm Canal. The restricted areas provide for vessel and public safety, lessen acoustic encroachment from nonparticipating vessels, and prohibit certain activities that could damage SEAFAC's sensitive in-water acoustic instruments and associated cables. Acoustic measurements would be conducted at baseline levels, with 28 events per year at SEAFAC. Proposed activities include surface vessel acoustic measurement, underwater vessel acoustic measurement, underwater vessel hydrodynamic performance measurement, component system testing, and measurement system repair and replacement. Because of the Navy's safety procedures, the potential for testing activities to impact public health and safety is low. Because the potential for impacts is low, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

3.13.3.1.2 Alternative 1

3.13.3.1.2.1 Training Activities

Offshore Area

The proposed adjustments to baseline training activities under Alternative 1 include an increase in active sonar training and a decrease in activities involving underwater explosions, including the elimination of sinking exercises, as described in Tables 3.0-11 and 3.13-1. However, most of these activities would occur beyond 12 nm from shore. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure training areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the No Action Alternative would not likely increase. Because the potential for impacts are low, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

Inland Waters

Alternative 1 would adjust and introduce training activities, as described in Tables 3.0-11 and 3.13-1. None of the additional activities include live fire. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the

No Action Alternative would not likely increase. Because the potential for impacts are low, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

3.13.3.1.2.2 Testing Activities

Offshore Area

The proposed adjustments to baseline testing activities under Alternative 1 include increases in active sonar testing and activities involving underwater explosions plus the addition of aircraft and aircraft system testing, as described in Tables 3.0-11 and 3.13-1. The frequency of active sonar testing activities in the Quinault Range Site would increase over the No Action Alternative. The number of components or activities involving the use of explosives would increase from none in the Offshore Area to 148. The Navy's existing safety procedures would ensure that the potential for these activities to impact public health and safety would be low.

NAVAIR would conduct activities to evaluate the sensors and systems (sonobuoys) used by maritime patrol aircraft and improved extended echo ranging sonobuoys in the Pacific Northwest OPAREA. These NAVAIR activities would likely be conducted outside U.S. territorial waters. NAVSEA testing activities would increase under Alternative 1 but would continue to occur beyond 12 nm from shore. NUWC Division Keyport activities such as torpedo testing, countermeasures testing, and other miscellaneous tests would increase in the Quinault Range Site. These tests use active acoustic systems. The amount of underwater energy, including sonar, emitted by these activities would increase over the No Action Alternative. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the No Action Alternative would not likely increase. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

Inland Waters

Sonar use for NUWC Division Keyport testing activities would be similar as described under the No Action Alternative. NAVSEA pierside testing while ships are in port at Navy piers would occur at NAVBASE Kitsap Bremerton, NAVBASE Kitsap Bangor, and Naval Station Everett. Naval Surface Warfare Center, Carderock Division, Detachment Puget Sound would conduct acoustic testing activities in Hood Canal and resume testing activities at Carr Inlet OPAREAs. Although the Naval Surface Warfare Center, Carderock Division, Detachment Puget Sound activities have not previously been assessed, they are on-going activities. The type and tempo of activity contemplated in Alternative 1 is similar to the existing level of activity; Alternative 1 would therefore not represent a significant change in activity visible to the public in Hood Canal. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the No Action Alternative would not likely increase. Resuming use of Carr Inlet would be a minor change in activity visible to the public; however, because use of Carr Inlet would be limited to no more than 2 weeks of the year, and the same SOPs for notifying and working safely with the public would apply, the level of impacts would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

Western Behm Canal

The proposed adjustment to Alternative 1 testing activities includes an increased frequency of operations at SEAFAC. The small increase would allow for future testing requirements. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the No Action Alternative would not likely increase. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

3.13.3.1.3 Alternative 2

3.13.3.1.3.1 Training Activities

Offshore Area

The proposed adjustments to baseline training activities under Alternative 2 include increases in active sonar training and activities involving underwater explosions, including sinking exercises, as described in Tables 3.0-11 and 3.13-1. However, most of these activities would occur beyond 12 nm from shore. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure training areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the No Action Alternative would not likely increase. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

Inland Waters

The proposed adjustments to Alternative 2 training activities include increasing the integrated maritime homeland defense/security mine countermeasures exercise frequency to an annual event. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the No Action Alternative would not likely increase. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

3.13.3.1.3.2 Testing Activities

Offshore Area

The proposed adjustments to the levels and tempo of testing include an increased frequency of testing operations. The proposed activities under Alternative 2 are similar to Alternative 1, as described in Tables 3.0-11 and 3.13-1. The proposed testing activities involving underwater explosions are similar to Alternative 1, which would occur within established ranges and locations. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the No Action Alternative would not likely increase. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

Inland Waters

The proposed adjustments to the levels and tempo of testing activities include an increase in the number of events for NUWC Division Keyport unmanned underwater vehicles testing and miscellaneous testing activities. The small increase would allow for future testing requirements. The frequency of

pierside sonar testing at NAVBASE Kitsap Bremerton, NAVBASE Kitsap Bangor, and Naval Station Everett would increase under Alternative 2. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the No Action Alternative would not likely increase. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

Western Behm Canal

The proposed adjustments to the levels and tempo of testing activities includes an increased frequency of operations at SEAFAC. The small increase would allow for future testing requirements. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety beyond those identified under the No Action Alternative would not likely increase. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

3.13.3.2 In-Air Energy

In-air energy stressors include sources of electromagnetic energy and lasers. As described in Section 3.0.5.3.2.1 (Electromagnetic), emission of electromagnetic energy by magnetic influence mine neutralization systems occur only in training activities in Inland Waters. As described in Section 3.0.5.3.2.2 (Lasers), only low-energy lasers are used under the Proposed Action. Low-energy lasers are used to illuminate or designate targets, to guide weapons, and to detect or classify mines. Lasers are only used to guide bombing exercises for training in the Offshore Area. Laser safety requirements for aircraft require verification that target areas are clear before commencement of the exercise. In addition, during actual laser use, the aircraft run-in headings are restricted to preclude inadvertent lasing of areas where the public may be present.

3.13.3.2.1 No Action Alternative

3.13.3.2.1.1 Training

Offshore Area

Thirty bombing exercises using low energy targeting lasers are proposed per year. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, there is no difference among the alternatives and no difference in the types of impacts as described in Section 3.0.5.3.2.2 (Lasers). Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

Inland Waters

There are no training activities that include in-air energy.

3.13.3.2.1.2 Testing

There are no testing activities that include in-air energy.

3.13.3.2.2 Alternative 1

3.13.3.2.2.1 Training

Offshore Area

Thirty events are proposed per year. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, there is no difference among the alternatives and no difference in the types of impacts as described in Section 3.0.5.3.2.2 (Lasers). Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

Inland Waters

Alternative 1 would introduce the use of electromagnetic energy under maritime homeland defense/security mine countermeasures. One event is proposed every other year (three in 5 years). Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

3.13.3.2.2.2 Testing

There are no testing activities that include in-air energy.

3.13.3.2.3 Alternative 2

3.13.3.2.3.1 Training

Offshore Area

Thirty events are proposed per year. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, there is no difference among the alternatives and no difference in the types of impacts as described in Section 3.0.5.3.2.2 (Lasers). Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

Inland Waters

Alternative 2 would increase in frequency to one event each year. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

3.13.3.2.3.2 Testing

There are no testing activities that include in-air energy.

3.13.3.3 Physical Interactions

Public health and safety could be impacted by direct physical interactions with Navy activities. Navy aircraft, vessels, targets, munitions, towed devices, seafloor devices, and other expended materials

resulting from training and testing activities could have direct physical encounters with recreational, commercial, or institutional aircraft, vessels, and users such as swimmers, divers (e.g., recreational and shell fish harvest divers), and anglers. Because of the nature of vessel movements during SEAFAC testing, the lack of military expended materials, and the remote likelihood of physical disturbance or interaction, physical interactions related to SEAFAC testing will not be analyzed.

Both Navy and private aircraft operate under FAA regulations requiring them to observe and avoid other aircraft. In addition, NOTAMs advise pilots about when and where Navy training and testing activities are scheduled. Finally, Navy personnel are required to verify that the range is clear of nonparticipants before initiating any potentially hazardous activity. Together, these procedures minimize the potential for adverse interactions between Navy and nonparticipant aircraft. The Navy's SOPs minimize the potential for private and commercial aircraft traversing the Study Area during training or testing activities to interact with Navy aircraft, ordnance, or aerial targets.

Both Navy and private vessels operate under maritime navigational rules requiring them to observe and avoid other vessels. In addition, NTMs advise vessel operators about when and where navigational hazards exist because of Navy training and testing activities. Finally, Navy personnel are required to verify that the range is clear of nonparticipants before initiating any potentially hazardous activity. Together, these procedures minimize the potential for adverse interactions between Navy and nonparticipant vessels. The Navy's SOPs minimize the potential for private and commercial vessels traversing the Study Area during training or testing activities to interact with Navy vessels, ordnance, or surface targets.

Recreational diving within the Study Area takes place primarily at known diving sites such as shipwrecks and reefs. The locations of these popular dive sites are well documented, dive boats are typically well marked, and diver-down flags are visible from a distance. As a result, ships conducting training or testing activities would easily avoid dive sites. Interactions between training and testing activities and divers thus would be minimized, reducing the potential for collisions or ship strikes.

Commercial and recreational fishers could encounter military expended materials that could entangle fishing gear and could pose a safety risk. The Navy would continue to recover targets at or near the surface that were used during training or testing to ensure that they would not pose a collision risk. Unrecoverable pieces of military expended materials are typically small (such as sonobuoys), constructed of soft materials (such as target cardboard boxes), or intended to sink to the bottom after use, so they would not be a collision risk to civilian vessels or equipment. Thus, these targets do not pose a safety risk to individuals using the area for recreation because the public would not likely be exposed to these items before they sank to the seafloor.

As discussed in Section 3.1 (Sediments and Water Quality), a west coast study categorized types of marine debris collected by a trawler during a groundfish survey. Military expended materials categorized as plastic, metal, fabric and fiber, and rubber accounted for 7.4, 6.2, 13.2, and 4.7 percent, respectively, of the total count of items collected. The footprint of military expended materials in the Study Area is discussed in Section 3.3 (Marine Habitats), which concludes that if all military expended materials were placed side by side in the Study Area, the footprint would be approximately 0.04 square nautical mile. Because this footprint is so small relative to the size of the Study Area, recreational and commercial fishers probably would not encounter military expended materials.

Section 3.1 (Sediments and Water Quality) also discussed the low failure rates of munitions, which indicate that most munitions function as intended. Practically all of the munitions are consumed in an exercise, and training ordnance is usually recovered. While fish trawls may encounter undetonated ordnance lying on the ocean floor, such an encounter would be unlikely because the density of munitions in the Study Area is low. Further, activities involving live ordnance occur further offshore, which further reduces the potential for risk. The U.S. Army Corps of Engineers prescribes safety procedures to the public if military munitions are encountered.

The analysis focuses on the potential for a direct physical interaction between the public and an aircraft, vessel, target, underwater devices, or expended training or testing item. All proposed activities have some potential for a direct physical interaction that could pose a risk to public health and safety, so the following analysis is not activity specific. While some of the activities may not pose a potential for a direct physical interaction (like pierside testing) the platforms used in the activity (aircraft, vessel, towed device) could have a direct physical interaction that could pose a risk. The greatest potential for a physical interaction would be in nearshore areas because of the higher concentration of public activities, leading to a greater potential for co-occurrence.

3.13.3.3.1 No Action Alternative

3.13.3.3.1.1 Training

Offshore Area

The potential for direct physical interaction between the public and aircraft, vessels, targets, or expended materials would be similar to baseline conditions due to the continued implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants. The potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

Inland Waters

Mine warfare activities in Crescent Harbor EOD Range and Hood Canal EOD Range, as well as naval special warfare activities, could impact public health and safety by direct physical interactions. However, the Navy's implementation of strict operating procedures would protect public health and safety from training activities. Because of the implementation of these strict operating procedures, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

3.13.3.3.1.2 Testing

Offshore Area

Additional activities under this alternative that could impact public health and safety by direct physical interactions include torpedo testing and miscellaneous testing in the Quinault Range Site. In-water testing of non-explosive torpedoes, unmanned underwater devices, and anti-submarine warfare activities in the surf zone at Pacific Beach could also impact public health and safety. Because the potential for a physical interaction is not activity specific or location specific, the analysis of the training activities above applies to testing activities under the No Action Alternative. Because of the implementation of strict operating procedures that protect public health and safety, including

procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

Inland Waters

Testing in the DBRC Site and Keyport Range Site could impact public health and safety by direct physical interactions. Countermeasure materials expended during testing are sought for recovery and test evaluation. Sonobuoys are recovered for further analysis after testing. Torpedoes and unmanned undersea vehicles used for testing do not contain explosives and are recovered for reuse and for performance evaluation. However, materials such as decelerator/parachutes, guidance wires, and ballast weights are expended. Targets may be temporarily deployed and then recovered. Stationery targets may be in the water column either floating suspended or anchored. If there is a navigational hazard, then an NTM is issued for advisory notice to the public. Because of the implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

3.13.3.3.2 Alternative 1

3.13.3.3.2.1 Training

Offshore Area

Under Alternative 1, the number of events involving aircraft, vessels, and in-water devices would increase from the No Action Alternative (see Table 3.13-1). The amount of military expended materials is expected to decrease from the No Action Alternative. The increased number of aircraft, vessel, and in-water device movements would be conducted under the same safety and inspection procedures as under the No Action Alternative. Under Alternative 1, most activities in the Pacific Northwest OPAREA that could impact public health and safety would likely be conducted outside U.S. territorial waters. The potential for direct physical interaction between the public and aircraft, vessels, targets, or expended materials would be similar to baseline conditions due to the continued implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants. Because of these strict operating procedures, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

Inland Waters

Under Alternative 1, the number of events involving aircraft, vessels, in-water devices, and military expended materials would increase from the No Action Alternative and Alternative 1 (see Table 3.13-1). The proposed adjustments to baseline training activities include anti-surface warfare activities at Crescent Harbor, mine warfare activities in Crescent Harbor EOD Range and Hood Canal EOD Range, and maritime homeland defense/security mine countermeasures exercises inside Puget Sound and Strait of Juan de Fuca. Alternative 1 includes the addition of Transit Protection System (TPS) and Coastal Riverine Group (CRG) events in Inland Waters that will increase the number of vessel movements. Despite the increase in the number of vessels and vessel movements, the potential for direct physical interaction between the public and aircraft, vessels, targets, or expended materials would be similar to baseline conditions due to the continued implementation of strict operating procedures that protect public

health and safety, including procedures to make sure areas are clear of nonparticipants. Because of these strict operating procedures, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

3.13.3.3.2.2 Testing

Offshore Area

Under Alternative 1, the number and type of events involving aircraft, vessels, in-water devices, and military expended materials would increase from the No Action Alternative (see Table 3.13-1). The types and frequency of testing activities in the Offshore Area would increase under Alternative 1. The potential for direct physical interaction between the public and aircraft, vessels, targets, or expended materials would be similar to baseline conditions due to the continued implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants. Because of these strict operating procedures, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

Inland Waters

Under Alternative 1, the number and type of events involving aircraft, vessels, in-water devices, and military expended materials would increase from the No Action Alternative (see Table 3.13-1). The number of events for testing in the DBRC Site and Keyport Range Site would increase under Alternative 1. The potential for direct physical interaction between the public and aircraft, vessels, targets, or expended materials would be similar to baseline conditions due to the continued implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants. Because of these strict operating procedures, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

3.13.3.3.3 Alternative 2

3.13.3.3.3.1 Training

Offshore Area

Under Alternative 2, the number of events involving aircraft, vessels, in-water devices, and military expended materials would be the same as Alternative 1 (see Table 3.13-1). The potential for direct physical interaction between the public and aircraft, vessels, targets, or expended materials would be similar to baseline conditions due to the continued implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants. Because of these strict operating procedures, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

Inland Waters

Under Alternative 2, the number of events involving aircraft, vessels, in-water devices, and military expended materials would be the same as Alternative 1 (see Table 3.13-1). The only proposed

adjustment to Alternative 1 training activities that could impact public health and safety by physical interactions is an increased frequency of maritime homeland defense/security mine countermeasures exercises inside Puget Sound and Strait of Juan de Fuca to an annual event. The potential for direct physical interaction between the public and aircraft, vessels, targets, or expended materials would be similar to baseline conditions due to the continued implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants. Because of these strict operating procedures, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of training activities.

3.13.3.3.2 Testing

Offshore Area

Under Alternative 2, the number and type of events involving aircraft, vessels, in-water devices, and military expended materials would increase from the No Action Alternative (see Table 3.13-1). The potential for direct physical interaction between the public and aircraft, vessels, targets, or expended materials would be similar to baseline conditions due to the continued implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants. Because of these strict operating procedures, including procedures to make sure areas are clear of nonparticipants, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

Inland Waters

Under Alternative 2, the number and type of events involving aircraft, vessels, in-water devices, and military expended materials would be greater than under No Action Alternative (see Table 3.13-1). Testing in Inland Waters would increase slightly under Alternative 1. The potential for direct physical interaction between the public and aircraft, vessels, targets, or expended materials would be similar to baseline conditions due to the continued implementation of strict operating procedures that protect public health and safety, including procedures to make sure areas are clear of nonparticipants. Because of these strict operating procedures, the potential for impacts on public health and safety would be negligible. Because impacts are negligible, no disproportionately high and adverse effects on any low-income populations or minority populations would occur as a result of implementation of testing activities.

3.13.3.4 Secondary Impacts

Public health and safety could be impacted in all areas (offshore, inland, and southeast Alaska) of the Study Area if sediment or water quality were degraded. Section 3.1 (Sediments and Water Quality) considered the impacts on marine sediments and water quality of explosives and explosion byproducts, metals, chemicals other than explosives, and other materials (marine markers, flares, chaff, targets, and miscellaneous components of other materials). The analysis determined that neither state nor federal standards or guidelines would be violated by the No Action Alternative, Alternative 1, or Alternative 2. Because these standards and guidelines are structured to protect human health, and the proposed activities do not violate them, no secondary impacts on public health and safety would result from the training and testing activities proposed by the No Action Alternative, Alternative 1, or Alternative 2.

3.13.3.5 Summary of Potential Impacts of All Stressors on Public Health and Safety

Activities described in this EIS/OEIS that could affect public health and safety in offshore, inland, and southeast Alaska portions of the Study Area include those that emit underwater energy, in-air energy, cause physical interactions, or have secondary impacts from changes in sediment or water quality. Under the No Action Alternative, Alternative 1, or Alternative 2, these activities would either be widely dispersed throughout the Study Area or confined to very specific areas. Such activities also are dispersed temporally (i.e., few stressors would be present at the same time). For these reasons, no greater impacts from the combined presence (geographical or temporal) of more than one stressor are expected. The aggregate impact on public health and safety would not observably differ.

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