
3.3 Marine Habitats

**Supplemental Environmental Impact Statement/
Overseas Environmental Impact Statement
Mariana Islands Training and Testing**

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3.3 Marine Habitats

3.3.1 Affected Environment

The purpose of this section is to supplement the analysis of impacts on marine habitats presented in the *2015 Mariana Islands Training and Testing (MITT) Final Environmental Impact Statement/Overseas Environmental Impact Statement (EIS/OEIS)* with new information relevant to proposed changes in training and testing activities conducted at sea. New information made available since the publication of the 2015 MITT Final EIS/OEIS is included below to better understand potential stressors and impacts on the nonliving (abiotic) marine habitats resulting from training and testing activities. Information presented in the 2015 MITT Final EIS/OEIS that remains valid is noted as such and referenced in the appropriate sections (U.S. Department of the Navy, 2015). Other necessary habitats for living resources, including those that form biotic habitats such as aquatic plant beds and coral reefs, are discussed in other sections (e.g., Section 3.7, Marine Vegetation; and Section 3.8, Marine Invertebrates). Comments received from the public during scoping related to marine habitats are addressed in Section 3.3.3 (Public Comments). Comments received from the public during the Draft Supplemental EIS (SEIS)/OEIS commenting period related to marine habitats are addressed in Appendix K (Public Comment Responses). Additional or updated information on the Mariana Trench Marine National Monument was added to this section.

3.3.1.1 Existing Conditions

The information on marine habitat types (i.e., soft shores, rocky shores, vegetated shores, aquatic beds, soft bottoms, hard bottoms, and artificial structures) presented in the 2015 MITT Final EIS/OEIS has not substantially changed and remains valid. In 2017, Kendall et al. (2017) mapped the benthic habitat of Saipan Lagoon. This new data was taken into consideration during the development of this SEIS/OEIS and is shown in Figure 3.3-1. After reviewing this data, the information and analysis on marine habitat types (i.e., soft shores, rocky shores, vegetated shores, aquatic beds, soft bottoms, hard bottoms, and artificial structures) presented in the 2015 MITT Final EIS/OEIS has not substantially changed and remains valid. The majority of the MITT Study Area lies within open-ocean areas. Located in the Mariana Archipelago, the Marianas Trench Marine National Monument protects approximately 95,216 square miles of submerged lands and waters (U.S. Fish & Wildlife Service, 2012). This area is comprised of three units: the Islands Unit (waters and submerged lands of the three northernmost Mariana Islands), the Volcanic Unit (submerged lands within 1 nautical mile of 21 designated volcanic sites), and the Trench Unit (submerged lands extending from the northern limit of the Exclusive Economic Zone of the United States in the Commonwealth of the Northern Mariana Islands to the southern limit of the Exclusive Economic Zone of the United States in the Territory of Guam (U.S. Fish & Wildlife Service, 2012). Information on the biological resources that inhabit the hydrothermal vents are presented in Section 3.8 (Marine Invertebrates).

Relatively little of the Study Area includes intertidal and shallow subtidal areas in U.S. territory waters where numerous habitats are exclusively present (e.g., salt/brackish marsh, mangrove, coral reefs, and seagrass beds). Intertidal abiotic habitats (e.g., beaches, tidal deltas, mudflats, rocky shores) are addressed only where intersections with military training and testing activities are reasonably likely to occur. Impacts on the water column are analyzed in Section 3.1 (Sediments and Water Quality). In addition, since the publication of the 2015 MITT Final EIS/OEIS, no critical habitat has been designated that needs to be considered here. Essential Fish Habitat (EFH) is discussed in Section 6.1.3 (Magnuson-Stevens Fishery Conservation and Management Act) and is not discussed further in this section.

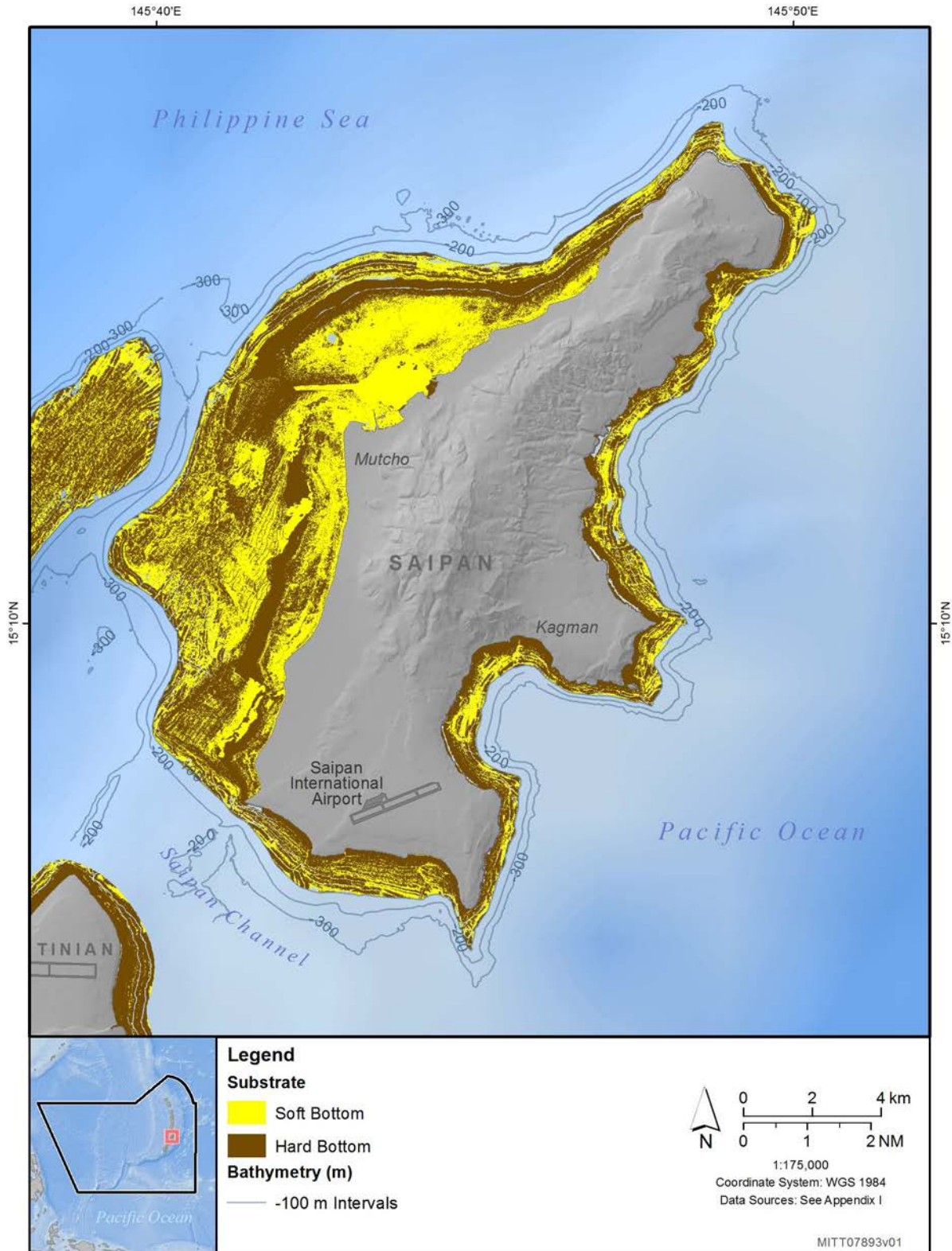


Figure 3.3-1: Nearshore Marine Habitats around Saipan

3.3.2 Environmental Consequences

The 2015 MITT Final EIS/OEIS considered training and testing activities that currently occur in the Study Area and considered potential stressors related to marine habitats. The stressors applicable to marine habitats in the Study Area for this SEIS/OEIS are the same stressors considered in the 2015 MITT Final EIS/OEIS.

- Explosive (in-air explosions and in-water explosions)
- Physical disturbance and strike (vessels, in-water devices, military expended materials, seafloor devices, and personnel disturbance)

This section evaluates how and to what degree potential impacts on marine habitats from stressors described in Section 3.0.1 (Overall Approach to Analysis) may have changed since the analysis presented in the 2015 MITT Final EIS/OEIS was completed. Proposed training and testing activities, the number of times each event would be conducted annually, and the locations within the Study Area where the activity would typically occur under each alternative are presented in Tables 2.5-1 and 2.5-2 in Chapter 2 (Description of Proposed Action and Alternatives). Information for training and testing activities proposed in the 2015 MITT Final EIS/OEIS is also included for comparison purposes.

The analysis presented in this section also considers standard operating procedures, which are discussed in Section 2.3.3 (Standard Operating Procedures) of this SEIS/OEIS, and mitigation measures that are described in Chapter 5 (Mitigation). The Navy would implement these measures to avoid or reduce potential impacts on marine habitats from stressors associated with the proposed training and testing activities. Marine habitats in the remainder of this section will be referred to as marine substrates to reflect the subset of marine habitats being evaluated, similar to the 2015 MITT Final EIS/OEIS analysis.

3.3.2.1 Explosive Stressors

As stated in the 2015 MITT Final EIS/OEIS, underwater detonations that occur on or near the bottom are the only explosive stressors that would impact marine substrates. All other explosive stressors (e.g., gunnery exercises, missile exercises, and air-to-surface rockets) used during training and testing activities occur on the water surface or in the water column and would not impact marine substrates. Underwater detonations that occur on or near the bottom are primarily used during various mine warfare training activities. The impacts of in-water explosions vary with the bottom substrate type. As stated in the 2015 MITT Final EIS/OEIS, mine warfare training and testing activities utilizing bottom placed detonations would only occur in the existing mine warfare underwater detonation area at Outer Apra Harbor, as shown in Figure 3.3-2. Mid-water detonations at Piti and Agat would occur in the water column and would not impact bottom habitat. Therefore, impacts on marine habitats from explosive stressors at Piti and Agat are not discussed further. The majority of Outer Apra Harbor is sandy bottom habitat; however, cobble, rocky reef, and other hard-bottom habitat may be scattered throughout the area. Those hard-bottom areas, which may contain coral or wrecks, would be avoided during training and testing to the maximum extent practicable.

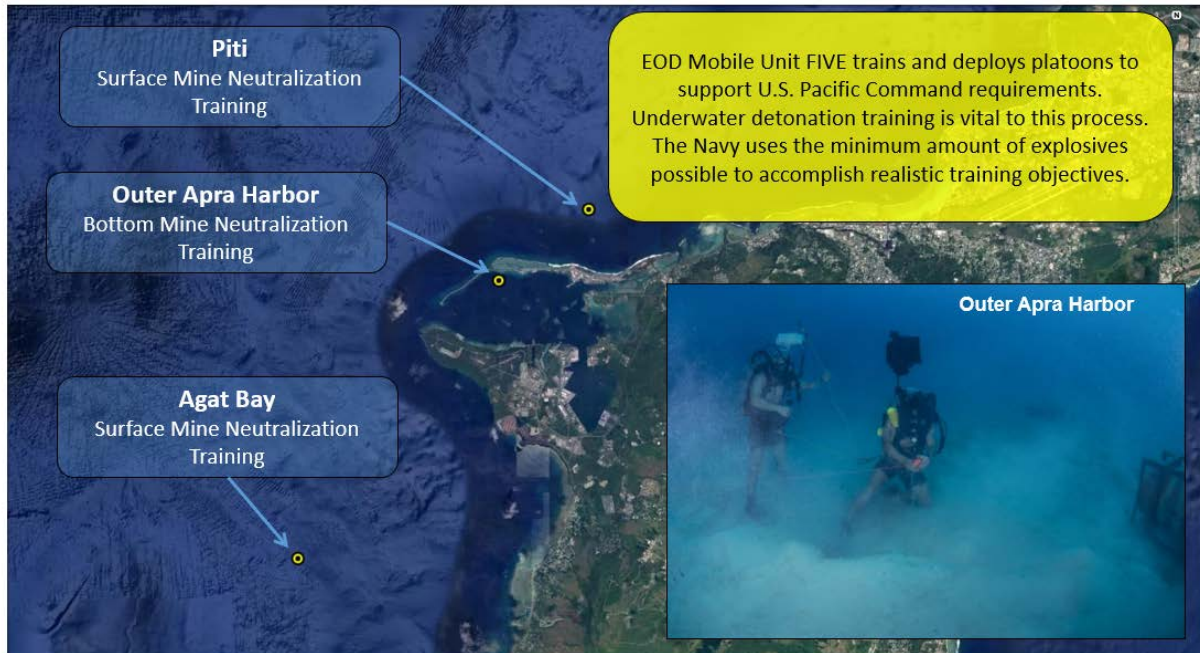


Figure 3.3-2: Existing Mine Warfare Underwater Detonation (UNDET) Areas

3.3.2.1.1 Impacts from Explosive Stressors Under Alternative 1

Under Alternative 1, underwater detonations associated with training activities would increase for underwater demolition qualification/certification (Table 2.5-1). However, these activities would continue to occur in the same areas at the Agat Bay site, Piti, and Outer Apra Harbor sites, and would have no appreciable change in the impact analysis or conclusions for explosive stressors as presented in the 2015 MITT Final EIS/OEIS. There would be no increases in underwater detonations associated with testing activities. Therefore, the analysis in the 2015 MITT Final EIS/OEIS remains valid.

Mitigation measures will help the Navy avoid or reduce impacts on seafloor resources (including shallow-water coral reefs, live hard bottom, artificial reefs, and shipwrecks) from explosives during applicable activities, as described in Section 5.4.1 (Mitigation Areas for Seafloor Resources).

3.3.2.1.2 Impacts from Explosive Stressors Under Alternative 2 (Preferred Alternative)

Under Alternative 2, the number of explosives used during training and testing events are proposed to be the same as under Alternative 1 described in this SEIS/OEIS (Table 3.0-7) and increase compared to the 2015 MITT Final EIS/OEIS. Under Alternative 2, proposed increases would have no appreciable change on the impact conclusions for explosive stressors as summarized above under Alternative 1 because these activities would continue to occur in the same designated areas as presented in the 2015 MITT Final EIS/OEIS.

Mitigation measures will help the Navy avoid or reduce impacts on seafloor resources (including shallow-water coral reefs, live hard bottom, artificial reefs, and submerged cultural resources) from explosives during applicable activities, as described in Section 5.4.1 (Mitigation Areas for Seafloor Resources).

3.3.2.1.3 Impacts from Explosive Stressors Under the No Action Alternative

Under the No Action Alternative, proposed training and testing activities would not occur. Other military activities not associated with this Proposed Action would continue to occur. Explosive stressors as listed above would not be introduced into the marine environment. Therefore, existing environmental conditions would either remain unchanged or would improve after cessation of ongoing training and testing activities.

Discontinuing the training and testing activities would result in fewer explosive stressors within the marine environment where training and testing activities have historically been conducted. Therefore, discontinuing training and testing activities under the No Action Alternative would lessen the potential for explosive impacts on marine habitat, but would not measurably improve the overall distribution or abundance of marine habitat.

3.3.2.2 Physical Disturbance and Strike Stressors

Bottom substrates could be disturbed by vessels (i.e., during amphibious landings and only in amphibious landing areas) and in-water devices, military expended materials, seafloor devices used for training and testing activities, and from personnel disturbance such as walking, standing, or swimming in the nearshore waters during activities such as raids and assaults. The Navy takes precautions to avoid or reduce impacts on bottom substrates from vessel strikes. These precautions include only performing amphibious landings in amphibious landing areas, at high tide, and where there are clear routes. By implementing these precautions, disturbance from vessel strikes would be avoided or reduced to the maximum extent practicable. Raids and assaults are planned to occur in areas that are primarily soft-bottom sandy habitat. Due to the nature of high-energy surf and shifting sands in these areas, ocean approaches would not be expected to affect marine habitats.

Seafloor devices would be located in areas that would be primarily soft-bottom and previously disturbed habitat to the greatest extent practical. The impact of seafloor devices on marine habitats is unlikely because these activities would occur over soft-bottom sediment, the items used in nearshore areas have a small footprint, and the items are retrieved. These potential impacts to bottom substrates would be minimal in size and temporary (recovery in days to weeks) to short term (recovery in weeks up to three years) in duration. Further, the majority of military expended materials are widely distributed throughout the Study Area offshore, where the majority of the marine habitat is expected to consist of soft-bottom habitat. Once on the seafloor, military expended material would be buried by sediment, corroded from exposure to the marine environment, or colonized by benthic organisms. As stated in the 2015 MITT Final EIS/OEIS, impacts of physical disturbance or strike resulting from training and testing activities on biogenic soft bottom (e.g., seagrasses, macroalgae, etc.) and hard bottom (e.g., corals, sponges, tunicates, oysters, mussels, macroalgae, etc.) substrates are discussed in Sections 3.7 (Marine Vegetation) and 3.8 (Marine Invertebrates), respectively.

3.3.2.2.1 Impacts from Physical Disturbance and Strike Stressors Under Alternative 1

Under Alternative 1, there would be a slight increase in the use of towed in-water devices (Table 3.0-13). The increase in the number of in-water devices is unlikely to change the impact conclusion presented in the 2015 MITT Final EIS/OEIS. As stated in the 2015 MITT Final EIS/OEIS, the impact of vessels and in-water devices on marine habitats would remain inconsequential because vessel and in-water activities that could come into contact with marine substrates would be located in previously disturbed areas (i.e., nearshore shallow waters), and seafloor devices would be used in predominantly soft bottom previously disturbed areas and therefore would not be expected to affect marine substrates.

Various activities (such as amphibious assault and raid activities) that could involve personnel disturbance from walking, standing, and swimming in nearshore waters to shore would not increase under Alternative 1 on Tinian or Guam within the Mariana Islands Range Complex. These activities would cause minor and temporary increases in suspended sediments in soft-bottom habitats, similar to impacts that occur on beaches that are open to the public (i.e., where people walk around and swim). Hard-bottom substrates would be impacted by personnel disturbance from walking and standing in cobble-laid or reef areas. Contact with hard-bottom substrate in nearshore waters, such as coral reefs, would be avoided or reduced to the greatest extent possible.

Under Alternative 1, the number of military expended materials used for training and testing events that have the potential to impact marine habitats would generally increase (see Tables 3.0-14 through 3.0-17). As shown in Table 3.0-18, the surface area of the ocean bottom that could be impacted by the use of military expended materials as proposed in this Supplemental EIS/OEIS would decrease from the amount analyzed in the 2015 MITT Final EIS/OEIS under Alternative 1. Military expended materials are very small relative to the amount of available marine habitat and would not significantly change the quality or type of habitat present throughout the Study Area. Therefore, these increases are not expected to pose a risk to marine habitats.

Under Alternative 1, the number of seafloor devices used in shallow-water habitats during training and testing events would decrease from the number presented in the 2015 MITT Final EIS/OEIS (Table 3.0-18). Seafloor devices would pose a negligible risk to marine habitat for the same reason described above for military expended materials.

Any impacts on marine habitats incurred by vessel movements and in-water devices or military expended materials to soft-bottom substrates would be minimal and temporary. Physical disturbance and strike of live hard-bottom substrates would be permanent but minimal if it were to occur, and would be avoided or reduced through implementation of standard operating procedures as described in Section 2.3.3 (Standard Operating Procedures) and mitigation measures as described in Section 5.4.1 (Mitigation Areas for Seafloor Resources).

In addition, potential impacts on bottom substrates would be localized and temporary (recovery in days to weeks) to short-term (recovery in weeks up to three years) in duration. Artificial structures should not be adversely affected by the use of seafloor devices.

Mitigation measures will help the Navy avoid or reduce impacts on shallow-water coral reefs, live hard bottom, artificial reefs, and submerged cultural resources from precision anchoring and military expended materials during applicable activities, as described in Section 5.4.1 (Mitigation Areas for Seafloor Resources).

3.3.2.2.2 Impacts from Physical Disturbance and Strike Stressors Under Alternative 2 (Preferred Alternative)

Under Alternative 2, the combined number of proposed training and testing events involving vessels and in-water devices (Table 3.0-12 and Table 3.0-13) are proposed to increase compared to Alternative 1 and the numbers presented in the 2015 MITT Final EIS/OEIS. Military expended materials (Table 3.0-14, Table 3.0-15, and Table 3.0-16) are proposed to increase, and seafloor devices (Table 3.0-19) are proposed to decrease compared to Alternative 1 and the number in the 2015 MITT Final EIS/OEIS. However, the total footprint of military expended materials in the Study Area would decrease under Alternative 2. Proposed increases in some physical disturbance and strike stressors, such as military expended materials, could increase the impact risk on marine habitats but does not appreciably change

the analysis as described under Alternative 1, or impact conclusions presented in the 2015 MITT Final EIS/OEIS.

Mitigation measures will help the Navy avoid or reduce impacts on shallow-water coral reefs, live hard bottom, artificial reefs, and submerged cultural resources from precision anchoring and military expended materials during applicable activities, as described in Section 5.4.1 (Mitigation Areas for Seafloor Resources).

3.3.2.2.3 Impacts from Physical Disturbance and Strike Stressors Under the No Action Alternative

Under the No Action Alternative, proposed training and testing activities would not occur. Other military activities not associated with this Proposed Action would continue to occur. Physical disturbance and strike stressors as listed above would not be introduced into the marine environment. Therefore, existing environmental conditions would either remain unchanged or would improve slightly after cessation of ongoing training and testing activities.

Discontinuing the training and testing activities would result in fewer physical disturbance and strike stressors within the marine environment where training and testing activities have historically been conducted. Therefore, discontinuing training and testing activities under the No Action Alternative would lessen the potential for physical disturbance and strike impacts on marine habitat, but would not measurably improve the overall distribution or abundance of marine habitat.

3.3.3 Public Comments

The public raised a number of issues during the scoping period in regard to marine habitats. The issues are summarized in the list below. Comments received from the public during the Draft SEIS/OEIS commenting period related to marine habitats are addressed in Appendix K (Public Comment Responses).

- **Impact of unexploded ordnance on the ocean floor** – Unexploded ordnance is not part of the military expended materials proposed to be expended under the Proposed Action.
- **Destruction of habitat** – Proposed training and testing activities are not expected to cause the destruction of marine habitat in the Study Area. Any impacts on marine habitats incurred by vessel movements and in-water devices or military expended materials to soft- and hard-bottom substrates would be minimal. Explosive impacts on hard-bottom habitat are not expected to occur, because bottom explosions only occur in sandy-bottom habitat (i.e., Outer Agat Harbor). Furthermore, the implementation of mitigation measures helps to avoid or reduce impacts on live hard bottom, as defined in Chapter 5 (Mitigation). Impacts on the soft-bottom substrate are determined to be short term and minimal due to the mobile nature of soft-bottom substrates (i.e., sandy bottoms can be stirred up and settle relatively quickly when compared to impacts on hard-bottom substrates).
- **Recommend consideration of temporal mitigation and habitat avoidance mitigation** – Temporal mitigation and habitat avoidance mitigation were considered, and mitigation areas are discussed in Section 5.4 (Mitigation Areas to be Implemented) of Chapter 5 (Mitigation) as well as Appendix I (Geographic Mitigation Assessment).
- **Impacts on EFH from training activities (deposition and resuspension of sediments, erosion and sedimentation, and impacts from unexploded ordnance)** – Because training activities would have adverse effects on EFH, the Navy completed supplemental consultation with NMFS

addressing activities that have changed (i.e., increased) as a result of the Proposed Action; see Section 6.1.3 (Magnuson-Stevens Fishery Conservation and Management Act), and Appendix C (Agency Correspondence) for further discussion. To avoid or reduce adverse impacts on hard-bottom habitat, the Navy created mitigation measures to protect the resource. As shown in Table 5.4-1 of Chapter 5 (Mitigation), shallow-water coral reefs, live hard bottom, artificial reefs, and submerged cultural resources are areas of focus for protection from explosives and physical disturbance and strike stressors. Mitigation area requirements to reduce impacts on live hard-bottom substrate are listed in Table 5.4-1.

REFERENCES

- Kendall, M. S., B. Costa, S. McKagan, L. Johnston, and D. Okano. (2017). *Benthic habitat maps of Saipan Lagoon* (NOAA Technical Memorandum NOS-NCCOS-229). Silver Spring, MD: National Oceanic and Atmospheric Administration.
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