Magnuson-Stevens Fishery Conservation and Management Act, Programmatic Essential Fish Habitat Consultation

Agency: United States Army Corps of Engineers, Honolulu District, Regulatory Branch
Consultation conducted with: National Marine Fisheries Service, Pacific Islands Regional Office

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I. CONSULTATION OVERVIEW

Authority

The Magnuson-Stevens Fishery Conservation and Management Act (MSA) (Section 305(b)(2)) mandates that federal agencies conduct an essential fish habitat (EFH) consultation with National Oceanic and Atmospheric Administration (NOAA) National Marine Fisheries Service (NMFS) regarding any of their actions authorized, funded, or undertaken that may adversely affect EFH.

Programmatic Consultation Description

As an alternative to an individual consultation, EFH consultation can apply to a program of similar and repetitive activities whose impacts can be adequately reduced through a programmatic EFH consultation (50 CFR 600.920(j)). A programmatic consultation is often appropriate for funding programs, large-scale planning efforts, and other instances where sufficient information is available to address all reasonably foreseeable adverse effects on EFH of an entire program, parts of a program, or a number of similar individual actions occurring within a given geographic area. The purpose of a programmatic consultation is to obtain and implement the EFH consultation recommendations efficiently and effectively. The outcome of a programmatic consultation, at minimum, should result in equal or greater protection to EFH than would have been realized through the otherwise required individual project level EFH consultation. The programmatic consultation process consolidates effort and time upfront while realizing the time saving and coordination benefits later.

The Magnuson-Stevens Fishery Conservation and Management Act, Pacific Islands Region Essential Fish Habitat Programmatic Consultation between the National Marine Fisheries Service (NMFS), Pacific Island Regional Office (PIRO) and the Honolulu District, U.S. Army Corps of Engineers Regulatory Branch, hereinafter referred to as the EFH Programmatic, addresses the numerous in-water and near-shore activities routinely permitted by the Honolulu District, U.S. Army Corps of Engineers Regulatory Branch.

Through this EFH Programmatic, PIRO has determined and USACE Honolulu District has agreed on which project activities, both individually and cumulatively, will not have a substantial adverse effect on EFH and are described herein. Activities that are not explicitly included will be considered separately as an individual consultation. Through the implementation of this programmatic consultation, if PIRO or the Corps determines that other activities may be considered for inclusion in future revisions of the EFH Programmatic, these activities will be considered jointly with NMFS making the final determination. Through the implementation of this programmatic consultation, there will be increased and more productive engagement between staff from both agencies in the Region and increased efficiencies in issuing permits and allowing projects to move projects forward in a timely manner.

The Corps issues Department of the Army (DA) permit authorizations or verifications via Individual Permits (IPs), Letters of Permission (LOPs), Nationwide Permits (NWPs), and Regional General Permits (RGPs) throughout the Honolulu District Area of Responsibility (AOR). The type of permit issued depends on the complexity of the proposed action and the impacts to aquatic resources. The Honolulu District AOR, which is approximately 12 million square miles of the Pacific Ocean, includes the Hawaiian Islands, territories of Guam, American Samoa, and the Commonwealth of the Northern Mariana Islands, and the Pacific Remote Island Areas (PRIA)[1].

The Corps is responsible for overseeing and permitting certain activities regulated under Section 10 of the Rivers and Harbors Act of 1899 (33 U.S.C. 403) (hereinafter referred to as Section 10), Section 404 of the Clean Water Act (33 U.S.C. 1344) (hereinafter referred to as Section 404), and Section 103 of the Marine Protection Research and Sanctuaries Act (33 U.S.C. 1413) (hereinafter referred to as Section 103). Section 10 DA permits are required for any structures or other work that affect the course, location, or condition of navigable waters of the United States. Section 404 DA permits are required for discharges of dredged or fill material[2] into waters of the United States. A DA permit is required irrespective of whether the work is permanent or temporary. Under Section 103, a standard DA permit is required for the transportation of dredged material for the purpose of disposal in the ocean in an approved disposal location, but this programmatic consultation will not apply to projects authorized under Section 103.

Implementation Process

The EFH Programmatic will serve as a fundamental tool between NMFS, the Corps, and applicants for DA permits to review activities that conform to all conditions described. This programmatic consultation will be adaptive, accountable, and credible as a conservation and regulatory tool. As such, additional categories of activities and/or stressors may be added and/or removed based on best available scientific information.

The scope of the EFH Programmatic remains limited to those activity types that will not have a substantial adverse effect both individually and cumulatively on EFH. While we expect a number of DA permits to utilize the EFH programmatic to comply with the EFH provisions of the MSA, we also anticipate the need to conduct EFH consultations on proposed actions independently from the EFH Programmatic either because they are not clearly identified in the programmatic or because they are outside the scope. In addition, NMFS and the Corps will dedicate staff resources to evaluate the performance of this Programmatic consultation in order to inform potential modifications that will lead

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[1] The PRIA comprise Baker Island, Howland Island, Jarvis Island, Johnston Atoll, Kingman Reef, Wake Island, and Palmyra Atoll. Midway is considered as part of the Northwest Hawaiian Islands.

[2] Pursuant to 33 CFR 323.2(e)(1-3), except as specified in paragraph (e)(3) of this section, the term fill material means material placed in waters of the United States where the material has the effect of: (i) Replacing any portion of a water of the United States with dry land; or (ii) Changing the bottom elevation of any portion of a water of the United States. Examples of such fill material include, but are not limited to: rock, sand, soil, clay, plastics, construction debris, wood chips, overburden from mining or other excavation activities, and materials used to create any structure or infrastructure in the waters of the United States. The term fill material does not include trash or garbage.

to further refinement of this Programmatic consultation. Approaches to evaluating performance of the EFH Programmatic will be adaptive and may change over time by mutual agreement.

The list below describes how the Corps and NMFS will use the EFH programmatic consultation to document individual project consultations required by the MSA:

1. The Corps will use a verification form via email (see Enclosure 1) to notify NMFS of proposed activities that fall within the scope of the EFH Programmatic. The purpose of the verification form is to ensure that all conservation recommendations described in this programmatic consultation for each activity type will be fully implementable. NMFS and/or the Corps can propose modifications to the verification form language by mutual written agreement (email is acceptable) by a Corps representative and the PIRO EFH Coordinator.

2. Within 15 calendar days of receipt of the *EFH Notification and Verification Form*, NMFS will email the Corps to confirm whether the given activities fall within the scope and comply or do not comply with the EFH Programmatic. If the 15th calendar falls on a weekend, the deadline shall be the next business day.

    a. If an action falls within the scope of the EFH Programmatic, as confirmed by NMFS, NMFS will affirm and sign, resulting in no further EFH consultation by the Corps.

    b. If NMFS determines an action is outside of the scope of the EFH Programmatic, NMFS will respond to the Corps' verification form request with suggested modifications so that it would fall within the scope of the EFH Programmatic or determine that the Corps needs to resubmit the proposed action to NMFS to initiate an individual project-specific EFH consultation.

3. The Corps must reinitiate consultation under 50 CFR 600.920(l) if the project proponent "substantially revises its plans for an action in a manner that may adversely affect EFH or if new information becomes available that affects the basis for NMFS EFH Conservation Recommendations." Additionally, NMFS may request additional consultation if it receives new information that affects the programmatic conservation recommendations.

4. NMFS will coordinate an annual meeting with the Corps, within a year of execution of the Programmatic and each year thereafter, to discuss the projects completed under this EFH programmatic consultation and to share lessons-learned in the application of this programmatic consultation to actions throughout the region. At that meeting, the Corps will provide a detailed annual summary of all activities implemented through application of the EFH programmatic consultation framework. The summary report, including any modifications, should be finalized within 60 calendar days following the

meeting, unless an extension is requested. Any incoming consultations during the 60-day review period will follow the existing programmatic consultation framework.

5. NMFS and the Corps may revise this document at any time by mutual written agreement of both agencies. NMFS or the Corps may revoke or restrict the scope of this programmatic consultation upon mutual written agreement of both agencies 30 calendar days following initiation or revision.

II. EFH WITHIN THE PACIFIC ISLANDS REGION

EFH is defined as those waters and substrate necessary for federally managed species (fish and invertebrates) to spawn, breed, feed, and/or grow to maturity. It is the legal tool that NMFS uses to manage marine habitat to ensure that the federally managed species identified by the fishery management councils have a healthy future. EFH has been designated (50 CFR 600.10), as per the tables below, for all the federally managed species referred to as the Management Unit Species (MUS) in the Pacific Islands Region and the Honolulu District AOR. The MUS that are managed in accordance with the MSA vary across the region, and may include bottomfish, seamount groundfish, pelagic species, precious corals, coral reef ecosystem species, and crustaceans. Also included are Habitat Areas of Particular Concern (HAPC)[3] which are a subset of EFH and defined as areas where ecological function of the habitat is important, habitat is sensitive to anthropogenic degradation, development activities are, or will stress the habitat, or the habitat type is rare. The HAPC designation is described in the implementing regulations of the EFH provisions (50 CFR § 600.815). Within the EFH consultation process, HAPCs encourage increased scrutiny and more rigorous conservation recommendations for reducing adverse impacts to fish habitat. Limited habitat information is available for most of the Western Pacific's regions and managed species, and HAPCs are primarily defined in terms of habitat types.

The EFH and HAPC designations for the portions of the Western Pacific are listed in Table 1.0 and Table 2.0. In general, the MUS and life stages found within the water column around the Honolulu District AOR include eggs, larvae, juveniles, and adults of the various MUS. EFH for these MUS is described in detail in the Western Pacific Fishery Management Council's Fishery Ecosystem Plans (FEP), available on the Council's website (http://www.wpcouncil.org/fishery-ecosystem-plans-amendments/).

While EFH is designated throughout a wide range of habitats that contain an extraordinary diversity of biological organisms, corals and submerged aquatic

[3] HAPC in the Western Pacific includes: all slopes and escarpments between 40 and 280 m for shallow- and deep-water bottomfish and seamount groundfish MUS; all banks with summits less than or equal to 30 m from the surface for crustacean MUS; Makapuu, Wespac, and Brooks Banks bed for precious coral MUS, and Auau Channel for black coral species; and all no-take MPAs identified in the CRE-FMP, all Pacific remote islands, as well as numerous existing MPAs, research sites, and coral reef habitat throughout the Western Pacific for Coral Reef Ecosystem MUS.

vegetation are particularly vulnerable to many types of adverse effects. The habitats that they form (e.g., coral reefs, patch reefs, etc.) are slow growing and hard-to-replace. In addition to being designated as EFH, these habitats are also described as 'special aquatic sites' under the Clean Water Act in 40 CFR 230 Subpart E, and have widely known critical functions in many or various life stages of multiple MUS. Uncolonized hard bottoms and hard surfaces are also important life-history components under EFH for settlement of new corals. These include artificial surfaces (e.g. wrecks, piers, pilings, artificial reefs, etc.) that occur in the marine environment as a result of man-made structures that provide meaningful functional services. Due to the ecological functions of EFH resources and their fragile nature, avoiding and minimizing adverse effects to corals and seagrass is a priority of this EFH programmatic consultation. Additionally, the water column is a critical component of the EFH designation through which marine life processes, in particular larval stages of fish, corals, and crustaceans, occur and provides critical habitat functions that require full consideration in avoiding and managing potential impacts, such as degraded water quality.

III. SUMMARY OF EFH PROGRAMMATIC ACTIVITIES

Program Description

This EFH Programmatic consultation relates to activities within the Honolulu District's AOR. EFH within this District includes marine and tidal waters from the high tide mark to the limit of the EEZ, as described above. Activities covered under this programmatic consultation may occur within the marine environment and therefore have the potential to impact EFH across the AOR. Many of the proposed activities are similar in nature and repeat consultations have occurred and resulted in standardized EFH conservation recommendations to minimize impacts on EFH. The Corps and PIRO HCD have determined that a suite of activities authorized under the Honolulu District Regulatory Program shall be covered under a single programmatic consultation. This will ensure all covered activities are avoiding and/or minimizing effects to EFH to the maximum extent practicable while allowing the Corps and NMFS to focus on consultations for activities excluded from the EFH Programmatic.

List of Covered Activity Categories

While the Corps may consider any proposed project that includes covered activity categories described below for conformance with the EFH Programmatic, each DA permitted activity must be fully evaluated and must fully conform to all applicable conditions of the EFH Programmatic. The EFH Programmatic is only applicable when both the Corps and NMFS determine that the programmatic conservation recommendations provided will effectively mitigate adverse effects to EFH.

This EFH Programmatic covers an activity when the following conditions are met: 1) when the proposed project is included in the activities list provided below and 2) implementation of the conservation recommendations are able to effectively mitigate environmental impacts. The following activities that involve in-water work are generally covered by this Programmatic:

1. Maintenance, Repairs, Removal, and Replacement of Existing Structures in Waters of the U.S.
2. Buoys, Moorings, and Aids to Navigation (ATON)
3. Utility Lines
4. Survey Activities
5. Scientific Measuring Devices
6. Restoration and Maintenance of Fishponds
7. Removal of Invasive Plants
8. Excavation of Sediment and Debris
9. Temporary Recreational Structures
10. Temporary Construction, Access, and Dewatering Activities
11. Removal of Vessels or Structures

List of Excluded Activities

Activities that are explicitly excluded from the EFH Programmatic, and as such require individual consultation, are all activities in or near the marine environment that involve any of the following:

1. Any activity that results in an irreplaceable loss of NOAA trust resources.

2. Any activity resulting in long-term adverse effects that warrant compensatory mitigation to offset the loss of aquatic resource functions and services.

3. Blasting or use of explosives for demolition purposes.

4. New channel dredging or in-water trenching.

5. Any activity occurring within HAPC or where anticipated indirect adverse effects will reach a HAPC.

6. Construction of new bridges or culverts.

7. Dredging activities, including maintenance dredging that would result in the removal of sediment to increase depth, often conducted to facilitate navigation would not be covered by this Programmatic.

IV. COVERED ACTIVITIES, ASSOCIATED ADVERSE EFFECTS TO EFH, AND CONSERVATION RECOMMENDATIONS

This section describes the 11 activity categories covered by this EFH Programmatic and includes a bulleted list of the potential adverse effects to EFH that may occur. A more detailed description of these adverse effects is described in Section V. and the specific conservation recommendations to be implemented for each identified activity category are also included and are more fully described in Section VI.

1. Maintenance, Repairs, Removal, and Replacement of Existing Structures in Waters of the U.S.

These activities include the repair, rehabilitation, or replacement of any previously authorized, currently serviceable structure, or fill authorized by 33 CFR part 330.3, provided that the structure or fill is not to be put to uses different from those specified or contemplated for in the original permit or the most recently authorized modification. The activities covered under this Programmatic will be for the maintenance and repair of existing structures and fills that have previously received a permit from the Corps. If the activity previously required mitigation, offsets, and/or conservation recommendations, there must be documentary evidence that the original permit was complied with.

Activities include the maintenance, repair, and replacement (same size, scope, and character as the original structure) of existing boat ramps, seawalls, bulkheads, revetments, jetties, groins, breakwaters, piers, pilings, and mooring dolphins. Minor[4] deviations in the structure's configuration or filled area, including those due to changes in materials, construction techniques, requirements of other regulatory agencies, or current construction codes or safety standards that are necessary to make the repair, rehabilitation, or replacement may be applicable.

In-water work examples include but are not limited to: demolition (which does not involve the use of blasting or explosives) and/or removal of existing structures or fills, excavation of the immediate area necessary for site preparation with all excavated material staged and/or discharged at an upland location; clearing of vegetation; recovery of displaced rocks; or complete replacement of rocks. Removal work may include extracting entire piles by pulling them up and out of the substrate, or it may involve divers using power tools, such as saws or cutting torches, to cut-off piles at or below the mudline with the piling supported and lifted out by vibratory hammer or by a large crane.

[4] Minor refers to any change which does not significantly increase a structure's size or result in greater environmental impacts to the project area which is mutually agreed upon.

Adverse Effects of Activities

Adverse effects to EFH are described in Section V, associated with maintenance, repair, removal, and replacement of existing structures in waters of the U.S. include the following categories:

- V.A. Physical impacts to benthic communities
- V.B. Increase in sedimentation and/or turbidity
- V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
- V.D. Increase in acoustic impacts
- V.E. Increase in invasive species

Applicable Conservation Recommendations for this Activity Category

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4, 5, 6
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 1, 2, 3, 4, 5, 6
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 1, 2, 3, 4, 5
4. Conservation recommendations for increase in acoustic impacts: VI.D. 1, 2
5. Conservation recommendations for invasive species: VI.E. 1

2. Buoys, Moorings, and Aids to Navigation (ATON)

The activities covered by this Programmatic will be for the installation of new structures or the maintenance, repair, and/or replacement of existing private, public, and commercial aids to navigation (ATONs), mooring buoys, anchoring systems, and regulatory markers. Anchoring systems will include, but will not be limited to, concrete anchor blocks, manta anchors, and helix-style anchors. Associated hardware will include chains, ropes, shackles, and floats.

These activities could include covering or conversion of underlying substrate to artificial surfaces.

Adverse Effects of Activities

Adverse effects to EFH, as described in Section V, associated with installation, maintenance, and/or repairs of buoys, moorings, and/or aids to navigation (ATON) will include the following categories:

- V.A. Physical impacts to benthic communities
- V.B. Increase in sedimentation and/or turbidity
- V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater

Applicable Conservation Recommendations for this Activity Category

1. Conservation recommendations for physical impacts to benthic communities: VI.A.1, 2, 3, 4, 5, 6, 7, 8
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 3
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 2, 3, 4, 5
4. Conservation recommendations for increase in acoustic impacts: none
5. Conservation recommendations for invasive species: none

3. Utility Lines

This activity category includes new construction, maintenance, repair, and removal of utility lines and associated facilities. The activities covered by the Programmatic will be for the installation of new structures or the maintenance, repair, and/or replacement of existing structures. A "utility line" is defined under this EFH Programmatic as any pipe or pipeline for the transportation of any gaseous (natural gas), liquid (such as oil, water, potable water, wastewater, sewage, and stormwater), liquescent, or slurry substance, for any purpose, and any cable, line, or wire for the transmission for any purpose of electrical energy, telephone, internet, radio, and television communication. Horizontal directional drilling (HDD) activities proposed may be covered under the Programmatic unless it involves an identified excluded activity.

<u>Adverse Effects of Activities</u>
Adverse effects to EFH, as described in Section V, associated with installation, maintenance and/or repairs of utility lines will include the following categories:

V.A. Physical impacts to benthic communities
V.B. Increase in sedimentation and/or turbidity
V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
V.E. Increase in invasive species

<u>Applicable Conservation Recommendations for this Activity Category</u>

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4, 5, 6, 8
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 1, 2, 3, 4, 5, 6, 10
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 1, 2, 3, 4, 7
4. Conservation recommendations for increase in acoustic impacts: none
5. Conservation recommendations for invasive species: VI.E. 1

4. Survey Activities

These covered activities under the Programmatic include work conducted to determine certain characteristics of a substrate. Core sample surveys typically involve the in-water use of a small gauge (approximately 6-inch diameter) pipe that is driven down into the substrate by a small impact hammer or by a drill to determine the vertical constitutional makeup of the substrate from the mudline to sometimes down to more than 100 feet. On-land, near water survey activities may include core sampling, exploratory trenching, seismic surveys, and soil sampling.

<u>Adverse Effects of Activities</u>

Adverse effects to EFH, as described in Section V, associated with survey activities will include the following categories:

V.A. Physical impacts to benthic communities
V.B. Increase in sedimentation and/or turbidity
V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
V.E. Increase in invasive species

<u>Applicable Conservation Recommendations for this Activity Category</u>

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4, 6, 7
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 1, 2, 5, 8
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 1, 2, 3, 4, 5
4. Conservation recommendations for increase in acoustic impacts: none
5. Conservation recommendations for invasive species: VI.E. 1

5. Scientific Measurement Devices

These covered activities under the Programmatic will be for temporary scientific measurement devices. These activities will include the temporary deployment, installation, maintenance and removal of scientific measurement devices, whose purpose is to measure and record scientific data and will be removed following the completion of the project. Such devices will include, but are not limited to staff gauges, tide and current gauges, meteorological stations, water recording and biological observation devices, water quality testing and improvement devices, small weirs and flumes constructed primarily to record water quantity and velocity. Deployment and retrieval may be assisted using divers, AUV, or UAS, if needed. Small vessels could be used in the retrieval of the devices by vessel personnel with a winch to bring the equipment onboard. Upon completion of the use of the device, the measuring device and any other structures associated with that device (e.g. anchors, buoys, lines, chains, etc.) will be required to be removed to the maximum extent practicable and the site restored to pre-construction conditions.

Adverse Effects of Activities

Adverse effects to EFH, as described in Section V, associated with deployment and/or installation of scientific measurement devices will include the following categories:

V.A. Physical impacts to benthic communities
V.B. Increase in sedimentation and/or turbidity
V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
V.E. Increase in invasive species

Applicable Conservation Recommendations for this Activity Category

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4, 5, 6, 7, 8
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 1, 2, 3, 4, 5, 8
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 1, 2, 3, 4, 5
4. Conservation recommendations for increase in acoustic impacts: none
5. Conservation recommendations for invasive species: VI.E. 1

6. Restoration and Maintenance of Fishponds

The activities covered by the Programmatic will be for the maintenance and repair of existing fishponds. These activities involve the restoration and maintenance of existing fishponds with activities such as: routine maintenance, minor repair, restoration, fishpond wall reconstruction, water control structure maintenance, invasive species removal, and minor excavation to remove accumulated sediments within the boundaries of the existing fishpond and access channels. Wetland areas adjacent to fishponds are also sometimes restored to maintain the traditional wetland agriculture system. Practitioners will typically restore water conveyance channels (‘auwai) and revegetate them with native riparian vegetation.

Fishpond restoration or maintenance activities may involve the use of heavy machinery operated from the land or from the deck of a barge or other vessel. Heavy equipment may be used for activities that include, but are not limited to, demolition (excluding blasting or the use of explosives) of existing structures, clearing of vegetated areas, excavation, filling, grading, and other construction activities. Small boats may be used for diver support and to install and remove silt curtains and other in-water equipment.

Adverse Effects of Activities

Adverse effects to EFH, as described in Section V, associated with restoration and/or maintenance of fishponds will include the following categories:

V.A. Physical impacts to benthic communities
V.B. Increase in sedimentation and/or turbidity
V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
V.D. Increase in acoustic impacts
V.E. Increase in invasive species

Applicable Conservation Recommendations for this Activity Category

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4, 5, 6
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 1, 2, 3, 4, 5
4. Conservation recommendations for increase in acoustic impacts: VI.D.1, 2
5. Conservation recommendations for invasive species: VI.E. 1, 2

7. Removal of Invasive Plants

The activities covered under this Programmatic will include the removal of invasive species, such as mangrove trees (Hawaii only), and other documented invasive species throughout the Honolulu District AOR, by mechanical methods. Most of these activities will be conducted to improve the aquatic habitat at the site and restore it to native conditions before the invasive species were introduced at the site. Limited mechanized land clearing to remove non-native invasive, exotic, or nuisance vegetation are activities that may be covered under this Programmatic when such individual and/or cumulative impacts will not exceed 0.10-acre[5].

In Hawai'i, removal of the invasive red mangrove, *Rhisophora mangle*, is a common practice in stream and coastal restoration. In-water removal of invasive algae is also sometimes necessary. Invasive algae can be removed by hand, or by a mechanical suction device attached to a pontoon or boat. The algae is then typically disposed of in an upland location or reused as a farm fertilizer. Guidance for operating a mechanical device, also known as the Super Sucker, should mirror those utilized by the Hawai'i Department of Land and Natural Resources, Department of Aquatic Resources as outlined in their website, https://dlnr.hawaii.gov/ais/invasivealgae/supersucker/.

Activities that involve only the cutting or removing of vegetation above the ground (e.g., mowing, rotary cutting, and chainsaw cutting) where the activity neither substantially disturbs the root system nor involves mechanized pushing, dragging, or other similar

[5] Regional Condition 2 – Acreage Limit: The maximum acreage of permanent loss to special aquatic sites for a new project may not exceed 0.10-acre resulting from any discharge of dredged or fill material. Special aquatic sites include wetlands, coral reefs, riffle and pool complexes, vegetated shallows, mud flats, sanctuaries and refuges as defined in 40 CFR 230.3.

activities that redeposit excavated soil material is not regulated by the Corps so is not covered by this Programmatic.[6]

Adverse Effects of Activities
Adverse effects to EFH, as described in Section V, associated with removal of mangroves (Hawaii only) and/or other invasive species will include the following categories:

V.A. Physical impacts to benthic communities
V.B. Increase in sedimentation and/or turbidity
V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
V.E. Increase in invasive species

Applicable Conservation Recommendations for this Activity Category

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 1, 2, 3, 4, 5, 6, 7, 10
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 1, 2, 3, 4, 5
4. Conservation recommendations for increase in acoustic impacts: none
5. Conservation recommendations for invasive species: VI. E. 1

8. Excavation of Sediment and Debris

Excavation activities that would remove sediment, vegetation and/or soil in shallow waters may be covered under this Programmatic. The activities covered will be for the removal of debris from an area which results in the disruption of the reach, flow and circulation of water. These activities include removal of new obstructions in tidal rivers and streams that restrict stream flow and increase the risk of upstream flooding or that pose other adverse environmental impacts. Obstruction may be the result of accumulated sediments, from improperly discarded rubbish and debris, from over-growth of invasive non-native plant species, or a combination of these or other factors. This activity category excludes maintenance dredging for the primary purpose of navigation or new stream channelization or stream relocation projects.

This category of activities does include the excavation of accumulated sediment for maintenance of stream mouths, and boat ramps, to previously authorized depths. The

[6] As an advisory, pursuant to 33 CFR § 323.2(d)(2)(ii), the discharge of dredged material does not include activities that involve only the cutting or removing of vegetation above the ground (e.g., mowing, rotary cutting, and chainsaw cutting) where the activity neither substantially disturbs the root system nor involves mechanized pushing, dragging, or other similar activities that redeposit excavated soil material. Therefore, these activities are not regulated by the Corps.

excavation of accumulated sediments and debris in the vicinity of and within existing structures (e.g., bridges, culverts at road crossings, and water intake structures, etc.) would also be a covered activity under the Programmatic. The removal of sediment is limited to the minimum necessary to restore the waterway in the immediate vicinity of the structure to the approximate dimensions that existed when the structure was built but cannot extend further than 200 feet in any direction from the structure consistent with how this is described in the Nationwide Permits Program.

Considerations will be made either through appropriate conservation recommendations or best management practices to maintain normal downstream flows and minimize flooding to the maximum extent practicable. Temporary fills must consist of materials, and be placed in a manner that will not be eroded by expected high flows. After conducting the maintenance activity, temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations. All debris will be required to be deposited and retained in an area that has no waters of the United States (i.e. uplands).

Adverse Effects of Activities

Adverse effects to EFH, as described in Section V, associated with removal of sediment and debris will include the following categories:

V.A. Physical impacts to benthic communities
V.B. Increase in sedimentation and/or turbidity
V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
V.E. Increase in invasive species

Applicable Conservation Recommendations for this Activity Category

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4, 5, 6
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 1, 2, 3, 4, 5, 6, 8, 9, 10
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 1, 2, 3, 4, 5
4. Conservation recommendations for increase in acoustic impacts: none
5. Conservation recommendations for invasive species: VI.E. 1, 2

9. Temporary Recreational Structures

The activities covered by the Programmatic will be for the temporary structures which will be completely removed from the marine environment upon completion of the recreational event. Covered activities under the Programmatic include the installation of temporary buoys, markers, small floating docks, and similar structures placed for recreational use during specific events (e.g., outrigger boat races, swim races, stand-up paddleboard races, and surfing competitions), provided that such structures are removed within a specific agreed upon timeframe, after use has been discontinued.

Adverse Effects of Activities
Adverse effects to EFH, as described in Section V, associated with temporary recreational structures will include the following categories:

V.A. Physical impacts to benthic communities
V.B. Increase in sedimentation and/or turbidity
V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
V.E. Increase in invasive species

Applicable Conservation Recommendations for this Activity Category

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4, 5, 9
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 3.
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 2, 3, 4, 5
4. Conservation recommendations for increase in acoustic impacts: none
5. Conservation recommendations for invasive species: VI.E. 1

10. Temporary Construction, Access, and Dewatering Activities

The activities covered under the Programmatic include the installation, maintenance and repair of temporary structures, work, and discharges, including cofferdams, necessary for construction activities or access fills or dewatering of construction sites. Considerations will be made either through appropriate conservation recommendations or best management practices to maintain near normal downstream flows and to minimize flooding. Fill must consist of materials, and be placed in a manner, that will not be eroded by expected high flows. Following completion of construction, temporary fill must be entirely removed to an area that has no waters of the United States and the affected areas must be restored to preconstruction elevations. The affected areas must also be revegetated, as appropriate.

Adverse Effects of Activities
Adverse effects to EFH, as described in Section V, associated with temporary construction, access, and dewatering activities will include the following categories:

V.A. Physical impacts to benthic communities
V.B. Increase in sedimentation and/or turbidity
V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
V.D. Increase in acoustic impacts
V.E. Increase in invasive species

Applicable Conservation Recommendations for this Activity Category

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4, 5, 6, 7
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 1, 2, 3, 4, 5, 6, 7
4. Conservation recommendations for increase in acoustic impacts: VI.D.1, 2
5. Conservation recommendations for invasive species: VI.E. 1, 2

11. Removal of Vessels

The activities covered under this Programmatic include work required for the removal of wrecked, abandoned, or disabled vessels. Removal of vessels may require temporary structures or minor discharges of dredged or fill material which would be covered by this Programmatic.

Projects involving removal of vessels or structures with live coral growing on their surfaces or surrounding the vessel or has any toxicants on board would require further discussion between NMFS and USACE to determine if an individual consultation would be required. .

Adverse Effects of Activities

Adverse effects to EFH, as described in Section V, associated with removal of vessels or structures will include the following categories:

V.A. Physical impacts to benthic communities
V.B. Increase in sedimentation and/or turbidity
V.C. Increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater
V.E. Increase in invasive species

Applicable Conservation Recommendations for this Activity Category

1. Conservation recommendations for physical impacts to benthic communities: VI.A. 1, 2, 3, 4, 5, 6
2. Conservation recommendations for increase in sedimentation and/or turbidity: VI.B. 1, 2, 3, 5
3. Conservation recommendations for increase in nutrients, pesticides and herbicides, contaminants, and/or freshwater: VI.C. 2, 3, 4
4. Conservation recommendations for increase in acoustic impacts: none
5. Conservation recommendations for invasive species: VI.E. 1

V. ADVERSE EFFECTS TO EFH

EFH is designated throughout a wide range of habitats that contain an extraordinary diversity of biological organisms, including corals and submerged aquatic vegetation that are both particularly vulnerable to many types of adverse effects; and the habitats that they form (coral reefs and seagrass beds) are slow growing and hard-to-replace. Technical definitions for these habitats are found in 40 CFR 230.43, and both have widely known critical functions in many or various life stages of multiple MUS for which EFH is defined in the Western Pacific Islands Region. Uncolonized hard bottoms and hard surfaces are also important for settlement of new corals, and artificial surfaces that occur in the marine environment, as a result of man-made structures, often function as a proxy for where coral reefs may have once existed. Due to the ecological functions of these EFH resources and their fragile nature, avoiding and minimizing adverse effects to corals and seagrass is a priority of the EFH Programmatic. This does not preclude the importance of other resources as important EFH, but some areas of uncolonized hard bottoms and hard surfaces tend to be more tolerant of disturbances and/or recover more quickly. Additionally, the water column is the medium through which marine life processes occur and as such requires special consideration.

This section provides an overview of adverse effects to EFH that could result for activities listed under the EFH Programmatic. Information included in this section is derived from or quoted directly from a report to PIRO from Dwayne Minton, *Non-fishing effects that may adversely affect essential fish habitat in the Pacific Islands Region*. The adverse effects that are included in this programmatic must be temporary[7] in nature. There will be no irreplaceable loss to NOAA trust resources associated with the activities covered under this programmatic.

A. Physical Impacts to Benthic Communities and the Water Column

Physical damage to coral or coral reefs is often associated with the abrasion or breaking of coral colonies or in the form of abrasion. The amount of damage is dependent on many factors, but is mostly due to the nature of the physical force and the types of corals being impacted (Storlazzi *et al.* 2005, Shimabukuro 2014). In general, lobate, encrusting, and other massive colony morphologies tend to withstand breakage better than foliose, table, plating, and branching morphologies. However, these more fragile forms tend to have higher growth rates (Minton 2017), which would facilitate more rapid recovery following damage, provided the colony did not experience total mortality.

Improperly deployed sediment and erosion control measures may result in the removal of seagrasses from an area, which could lead to an increase in the abundance of early colonizing species, such as fast growing native and/or invasive algae (Short and Neckles 1999). Because of the way that seagrasses establish themselves in an area, an area where they have been removed may take years to recover (Williams 1990; van Tussenbroek 1994, Creed and Amado Filho 1999).

[7] Temporary refers to existing for a brief time as it relates to a project or a project impact and conditions revert to their former state.

The abundance of fish and other coral and/or seagrass-associated organisms are determined by the quantity and quality on a reef's structure and complexity, and any alterations can lead to declines in biodiversity (Alvarez-Filip *et al.* 2009). For example, Jameson *et al.* (2007) found that sites suffering from anchor and scuba diver damage had a lower frequency of hard coral, and higher percentage of algae, suggesting physical damage can contribute to a shift from coral- to algal-dominated assemblages.

Man-made structures in the marine environment typically recruit corals, algae, sponges, as well as other components of successional communities. Maintenance and repair of those structures and/or actions designed to increase the efficiency of channelized runoff into the marine environment may result in physical damage to corals, or impact corals through the introduction of sediment, nutrients, pesticides and/or metals to their environment.

Physical impacts can also occur in the water column, because of the movement of vessels and/or gear. Vessel movement through the water column can disrupt and cause mortality to floating eggs and larvae by physically damaging them with the hull or other parts, including the ballast and propulsion systems. Vessels, barges, and other equipment that supports the activities described in this programmatic consultation occur at, or near, the ocean's surface and would increase the risk of water column disturbance.

B. Increase in Sedimentation and Turbidity

Increased sedimentation and turbidity can cause smothering of benthic species and block sunlight necessary for those species that rely on photosynthesis. In corals, sedimentation has been shown to reduce species diversity, change growth patterns, and reduce growth and survival (Rogers 1990), while in seagrass beds sedimentation can result in covering plants, eventually leading to mortality. For fish, sedimentation is less likely to cause significant impacts because of their mobility, but some effects are still possible. Fish may be displaced from their normal home range which may result in negative intra- and interspecies interactions, which may impact fitness, lead to lower reproductive success, and make individuals less able to find prey or avoid predators (Kjelland *et al.* 2015).

Coral reef organisms are easily smothered by sediment (Golbuu et al. 2003), and minimal rates of sediment can affect multiple life stages of coral. Sediment levels as low as 1 mg/cm2/day for larvae and 4.9 mg/cm2/day for adults; for suspended sediment, adverse effects occurred as low as 10 mg/L for juveniles and 3.2 mg/L for adults, although corals show considerable interspecific variability (Tuttle and Donohue 2020). Sedimentation can also reduce photosynthetic rates (Philipp and Fabricius 2003), disrupt polyp gas exchange, inhibit nutrient acquisition (Richmond 1996), cause tissue damage (Rogers, 1990), reduce recruitment success (Gilmour 1999; Hodgson 1990), and increase metabolic costs due to enhanced mucus production (Telesnicki and Goldberg 1995).

Increases in suspended sediments and turbidity will reduce the depth that sunlight can penetrate to, which changes the wavelengths of light reaching benthic species. This is important because many photosynthetic marine species are dependent on sunlight and often have a narrow band of wavelengths of light that they are able to use.

Corals are especially sensitive to the amount and wavelengths of sunlight they receive. Increases in sunlight energy have been linked to coral bleaching (Hoegh-Guldberg 1999, Jones *et al.* 1998); while decreases have been shown to affect settlement of coral larvae (Mundy and Babcock 1998). Decreases in the amount of sunlight reaching corals have also been shown to reduce the amount of photosynthesis corals are able to carry out, resulting in lower calcification rates, and may impact the thickness of tissue a coral can produce (Telesnicki and Goldberg 1995; Anthony and Hoegh-Guldberg 2003).

For seagrasses, light levels have been shown to be a major factor in distribution and species composition of seagrass beds, with low light levels resulting in reduced plant biomass and altered growth rates (Dennison 1987, Abal and Dennison 1996, Ralph *et al.* 2007, Campbell *et al.* 2007). Research into the effects of lower light levels on seagrass species have also shown that a reduction may result in the amino acid content and chlorophyll levels (Longstaff and Dennison 1999); and may have an impact on biomass, leaf production rates, and canopy height (Wiginton and McMillan 1979, Dennison and Alberte 1982, Dennison and Alberte 1985, Neverauskas 1988, Tomasko and Dawes 1989, Abal *et al.* 1994, Lee and Dunton 1997, Peralta *et al.* 2002).

Seagrass recovery and expansion after disturbance depends on a variety of factors, most importantly light attenuation (Durako et al. 2003) and the presence of significant nearby vegetation or seeds (Kenworthy et al. 2002; Rollon et al. 1999; Vanderklift et al. 2016). *Halophila decipiens* can recover quickly (10 to 30 days) from biological or storm disturbance (Josselyn et al. 1986). Experimental work on other *Halophila* species—*H. ovalis* and *H. uninervis*—in Australia suggests that recovery of completely bare, 0.5 square m areas to pre-disturbance levels can occur within 2-3 months; however, significant biomass completely surrounding disturbed sites was needed (Vanderklift et al. 2016).

C. Increase in Nutrients, Pesticides and Herbicides, Contaminants, and Freshwater

Increase in nutrients, pollutants, contaminants, and freshwater to the marine environment can reduce fitness and cause mortality of exposed organisms. Increases of land-based runoff and discharges can subject benthic communities to adverse exposures. In addition, when not properly maintained, equipment could release contaminants (oil, fuel, etc.) into the marine environment. Accidental releases or spills due to unanticipated circumstances are also possible. Structures consisting of treated wood must exclude treatment using of any chemicals and/or compounds that have been banned by the EPA or banned for use in marine waters of the U.S. by the EPA or local or state agency. Other chemicals and/or compounds used to treat wood of concern include, but are not limited to: copper-based treatments such as Ammoniacal copper zinc arsenate (ACZA) and Copper Chromium Arsenate (CCA), polycyclic aromatic hydrocarbons (PAHs) in creosote treated wood, borate, Propiconazole-Tebuconazole-Imidicloprid (PTI), sodium silicate, potassium silicate, fire-retardant based, and acetylated wood. If the proposed activity proposes the use of treated wood, an individual EFH consultation would be required so that NMFS could fully evaluate the potential effects the chemicals and/or compounds may have on listed species in and adjacent to the project area.

Nutrients
High nutrient content may cause subtle physiological changes within corals such as abnormal growth, and may impact reproductive success (Stambler *et al.* 1991, Ferrier-Pages *et al.* 2000; Bucher and Harrison 2002; Cox and Ward 2003, Dunn *et al.* 2012), and suppressed calcification rates (Kinsey and Davies 1979; Marubini and Davies 1996; Ferrier-Pages *et al.* 2000). Corals exposed to elevated nutrients often show lower larvae and planula production, reduced planula settlement, and higher rates of irregular embryos (Tomascik and Sander 1987, Richmond 1997, Harrison and Ward 2001, Cox and Ward 2003, Bongiorni *et al.* 2003, Koop *et al.* 2001, Loya *et al.* 2004). Nutrient enrichment has also been found to affect a colony's ability to withstand disease (Bruno *et al.* 2003, Voss and Richardson 2006, Harvell *et al.* 2007) and may increase susceptibility to temperature stress, thereby increasing the chances of bleaching (Wiedenmann *et al.* 2013). Nutrient enrichment promotes algal growth, increasing the potential for a phase-shift towards algal-dominated assemblages (Done 1992, Lapointe et al. 1993).

Pesticides and Herbicides
Because of the industrial and agricultural development that are common throughout the Pacific region, runoff from the islands contain a range of pesticides and/or herbicides, albeit at low concentrations (Orazio *et al.* 2007, Burdick *et al.* 2008, Knee *et al.* 2010, Royer *et al.* 2014). The levels normally recorded have been below those that impact human health, but have been shown to be at levels that adversely affect marine organisms (Richmond 1997, Peters *et al.* 1997, Downs *et al.* 2012). For corals, low concentrations of pesticides, herbicide, and fungicides have been shown to impact reproductive success, and to impact the ability of many species to effectively carry out photosynthesis (Markey *et al.* 2007, Jones *et al.* 2003).

Other Contaminants
For a list of chemicals that have been shown to negatively impact coral processes in the water column, see Nalley et al. (2021).

Heavy metals are other contaminants that have been shown to enter the marine environment through runoff, but are also a product of industrial development (Guzmán and Jiménez 1992, Marx and McGowan 2010, Denton *et al.* 2014, Denton *et al.* 2016). At the coral assemblage level, metal pollution has been linked to decreased coral species abundance, diversity (Ramos *et al.* 2004), and cover (Scott 1990). Sediment grain size is one of the main factors governing heavy metal contamination in the particulate fraction (Yao et al. 2015). The concentration of heavy metals can increase with decreasing particle size because the soil character of smaller particle size fractions (i.e., clays and silt) bind more contaminants due to the presence of minerals, organic matter, and oxides (Cai et al. 2002; Ljung et al. 2006; Semlali et al. 2001; Yao et al. 2015).

Often, contaminants entering the marine environment are lighter than water, and thus float on the surface where much of it evaporates within a few days (Neff *et al.* 2000). Unfortunately, this property of some contaminants may lead to greater exposure for seagrass ecosystems which could cause extensive mortality of the seabed, with the associated loss of juvenile fish and invertebrates due to the loss of habitat (Zieman *et al.* 1984).

For those contaminants that sink, the effects on coral colonies may include mortality, tissue death, reduced growth, impaired reproduction, bleaching, and reduced photosynthetic rates (Fucik *et al.* 1984, Cook and Knap 1983, Neff and Anderson 1981, Burns and Knap 1989, Ballou *et al.* 1989, Guzman *et al.* 1993).

Few studies have been conducted on the adverse effects of oil on tropical fish, but decreased growth, altered behavioral responses, and changes in metabolic rate have been observed (Johnson *et al.* 1979, Kloth and Wohlschlag 1972).

Freshwater

With the repair or maintenance of structures designed to funnel stormwater to the marine environment, there is the chance of a surge of freshwater input to the nearshore marine environment, which may significantly lower the salinity of the water or its temperature.

Seagrasses show a high tolerance for salinity levels, which is a direct result of the variation of the salinity in the habitats where they are found, but they are not immune to the stress from extremes in salinity levels. Excessively high or low salinities can lead to reduced biomass because of the energy that must be spent in maintaining an internal salinity balance (Stewart and Lee 1974, Cavalieri 1983, Yeo 1983, McGahee and Davis 1971, Haller *et al.* 1974, James and Hart 1993).

Because they often live in conditions that do not vary greatly in salinity content, corals have few means to maintain a proper salinity balance (Muthiga and Szmant 1987, Mayfield and Gates 2007), so a significant change in salinity levels can directly alter metabolic processes and/or cause colony mortality. Regardless of individual tolerances, high coral mortality has been observed following intense rain events (Sakai *et al.* 1989), and in those cases where mortality did not occur, bleaching, and other physical changes which impacts fitness were noted (Glynn 1993, vanWoesik *et al.* 1995, Porter *et al.* 1999, Mayfield and Gates 2007).

Tropical species have relatively narrow natural thermal ranges, and for many of these species, they inhabit waters near their physiological temperature tolerance limits (Storch *et al.* 2014), making even small changes in water temperature problematic. Whereas most research on water temperature impacts on corals has been on warming water associated with climate change, the sudden exposure to a cold water event can also result in significant mortality (Lirman *et al*. 2011). For non-photosynthetic marine organisms the most apparent effects of sub-lethal temperature stress are associated with altered metabolic processes such as growth, changes in the timing, and success of reproduction (Walther *et al.* 2002, Walther *et al.* 2005).

D. Increase in Acoustic Impacts

Of all the impacts to the marine habitat environment from anthropogenic sources, acoustic impacts have probably received the least amount of attention. Noise has a broad range of potential effects, especially when it is very loud and has high amplitude (Casper *et al.* 2016), or when it is less intense but long-lasting (Popper and Hastings 2009).

For fish, intense, high amplitude sounds can cause immediate death or cause tissue damage that may ultimately result in mortality (McCauley *et al.* 2003), but at the very least might impact its fitness (Casper *et al.* 2016). Alternatively, chronic noise will not likely result in mortality, but may mask biologically important sounds and alter the natural soundscape, cause hearing loss, have an adverse effect on an organism's stress levels and immune system, and affect coral spawning (Minton 2017, Lecchini et al. 2018).

Masking of the normal reef sounds by artificial sounds may have an impact on species abundances and numbers on coral reefs. Research has shown that larvae of several reef fish families preferentially select traps emitting high frequency sounds over traps emitting sounds similar in frequency to normal background frequencies (Simpson *et al*. 2008). Studies on an invertebrate species has shown that chronic exposure to noise may lead to increased metabolic rates, causing a reduction in growth and reproduction (Lagardère 1982).

E. Increase in Invasive Species

Introduced species are organisms that have been moved, intentionally or unintentionally, into areas where they do not naturally occur. Species can be introduced to new biogeographies, typically via transport on vessel hulls, in ballast water, or on equipment, such as those that may be used in the program activities. Nearly 500 introduced species have been identified in Hawaii (Carlton and Eldredge 2009; Coles and Eldredge 2002; Diaz and Rosenberg 1995; Randall 1987). *A. erecta* is an invasive species observed in Honolulu Harbor in 2014 (Wade et al. 2018). Invasive species rapidly increase in abundance to the point that they come to dominate their new environment, creating adverse ecological effects to other species of the ecosystem and the functions and services it may provide (Goldberg and Wilkinson 2004). Invasive species can decrease species diversity, change trophic structure, and diminish physical structure, but adverse effects are highly variable and species-specific.

Additional Stressors

There may be additional stressors (e.g. light, heat, etc.) from programmatic activities to EFH resources that are not entirely understood and do not have established conservation recommendations at this time. Thus, this programmatic consultation does not determine whether additional stressors may adversely affect EFH. During the annual meeting between NMFS and the Corps referenced in Section 4 under Implementation Process, the current and any additional stressors will be updated and reassessed as new information becomes available.

Cumulative Impacts

This Programmatic consultation must also consider cumulative impacts to EFH that may accumulate over time through multiple activities throughout the region. The Corps annually receives several hundred permit requests for construction and repair projects that impact marine and aquatic environments in their AOR. If the current rate continues, it will need to be confirmed that the cumulative adverse effects from expected stressors to EFH from the activities covered by this Programmatic remain minimal. If this rate were to substantially increase, then NMFS and the Corps will reevaluate this programmatic consultation and the cumulative effects analysis. NMFS and the Corps will continue to track cumulative impacts through information provided on each verification form and through the annual meetings.

VI. EFH CONSERVATION RECOMMENDATIONS

During the EFH programmatic consultation process, the Corps coordinated the activity categories with NMFS. In addition, the Corps requested NMFS provide conservation recommendations that would help conserve EFH by avoiding and minimizing adverse effects to EFH. The Corps has accepted these conservation recommendations described here in Section VI of this Programmatic. To comply with the EFH Programmatic, the Corps will require that project proponents implement all applicable conservation recommendations described within the category that contains that activity. In addition to these conservation recommendations, the Corps may propose additional measures that would result in reduced adverse effects to EFH, but may not substitute new measures for the conservation recommendations linked to each activity as described in the EFH Programmatic. If a project proponent will not or cannot comply, the Corps will initiate and complete an individual EFH consultation with NMFS. The conservation recommendations will become EFH conditions and will be added as special conditions to the Corps permit.

A. Conservation Recommendations for Physical Impacts to Benthic Communities

1. Equipment, anchors, structures, or fill shall not be deployed in project areas containing live corals, seagrass beds, or visible benthic organisms. Perform pre-deployment reconnaissance (e.g., divers, drop cameras, etc.) to ensure these resources are avoided.

2. Minimize direct impact (direct or indirect contact causing damage) by divers and construction related tools, equipment, and materials with benthic organisms, regardless of size, especially corals and seagrass.

3. Prevent trash and debris from entering the marine environment during the project.

4. Maintain all structures, gear, instrumentation, mooring lines, and equipment to prevent failures.

5. All objects lowered to the bottom shall be lowered in a controlled manner. Note: This can be achieved by the use of buoyancy controls such as lift bags, or the use of cranes, winches, or other equipment that affect positive control over the rate of descent. This often requires skilled in-water observation.

6. Select work platforms based on the following preferential hierarchy:
    a. conduct all work from land or an existing structure;
    b. use a barge with auto-positioning systems where thrusters will not cause increased turbidity;
    c. anchor barges to (1) shoreline infrastructure; (2) nearby existing moorings; and, (3) anchors or spuds on sand only (as possible, have SCUBA divers lay anchors by hand in sand areas).

7. Ensure new structures minimize shading impacts to marine habitats. Note: Shade minimization measures include: maximizing the height of the structure and minimizing the width of the structure to decrease shade footprint; grated decking material; using the fewest number of pilings necessary to support the structures; and, aligning the boardwalk in a north-south orientation for the path of the sun to cross perpendicular to the length of the structure to reduce the duration of shading.

8. Mooring systems (e.g., buoys, chains, ropes) must:

    a. be kept taut to the minimum length necessary.

b. employ the minimum line length necessary to account for expected fluctuations in water depth due to tides or waves.

c. use a mid-line floats or other buoyancy devices to prevent contact with the ocean floor.

d. be properly maintained.

9. All temporary structures must be removed at the completion of construction and this timeframe will be defined as aligned with General Condition #30 of the Nationwide Permit Program.

B. Conservation Recommendations for Increase in Sedimentation and/or Turbidity

1. Appropriate silt containment devices must be properly installed, monitored and maintained.

2. Debris and sediment that is removed from the water shall be disposed of at an appropriate upland location. Sediment and debris must be contained while in transit or on the shore.

3. Project operations must cease under unusual conditions, such as large tidal events, storms, and high surf conditions.

4. Conduct intertidal work at low and/or slack tide to the greatest extent feasible.

5. To minimize impacts to coral larvae, you shall avoid in-water work during mass-coral spawning times or peak coral spawning seasons. Permittees shall coordinate with local NMFS Habitat Conservation Division representatives to determine the exact period when coral spawning would occur for the given year at the project site.

6. Maintain baseline water flow, volume, and velocity of the waterbody.

7. Use natural or bio-engineered solutions when feasible.

8. Fully stabilize disturbed upland areas prior to removing silt fences and erosion prevention measures.

9. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction conditions and elevations.

10. Utilize environmental clamshell buckets for mechanical dredging.

C. Conservation Recommendations for Increase in Nutrients, Pesticides and Herbicides, Contaminants, and/or Freshwater

1. Conduct work during the dry season when possible; stop work during storms or heavy rains.

2. Prevent discharges into the water.

3. Inspect all equipment prior to beginning work each day to ensure the equipment is in good working condition, and there are no contaminant (e.g., oil, fuel) leaks. Work must be stopped until leaks are repaired and equipment is cleaned. Equipment should always be stored in appropriate staging area designed to be preventative in terms of containing unexpected spills when equipment is not in use or during fueling.

4. Fueling of project-related vehicles and equipment shall take place at least 50 feet, or the maximum distance possible, from the water and within a containment area, preferably over an impervious surface.

5. Use of treated wood[8] that would be in contact with the water is not authorized.

6. Use diffusers on the end of subtidal discharge pipes to minimize impacts from discharges.

7. Prevent bentonite and other drilling fluids from contacting benthic organisms.

D. Conservation Recommendations for Increase in Acoustic Impacts

1. Use a vibratory hammer to install piles when possible. Under conditions where impact hammers are required, when possible, drive as deep as possible with a vibratory hammer prior to the use of an impact hammer.

2. Implement measures to attenuate the sound or minimize impacts to aquatic resources during pile installation. Methods to mitigate sound

[8] Treated wood must exclude treatment using any chemicals and/or compounds that have been banned by the EPA or banned for use in marine waters of the U.S. by the EPA or local or state agency. Other chemicals and/or compounds used to treat wood of concern include, but are not limited to: copper-based treatments such as Ammoniacal copper zinc arsenate (ACZA) and Copper Chromium Arsenate (CCA), polycyclic aromatic hydrocarbons (PAHs) in creosote treated wood, borate, Propiconazole-Tebuconazole-Imidicloprid (PTI), sodium silicate, potassium silicate, fire-retardant based, and acetylated wood. For a list of chemicals that have been shown to negatively impact coral processes in the water column, see Nalley et al. (2021).

impacts include, but are not limited to, the following: surround the pile with a dewatered cofferdam and/or air bubble curtain system.

E. Conservation Recommendations for Increase in Invasive Species

1. Prior to in-water work, sanitize equipment or dive gear that has been previously used in an area known to contain invasive species.
    a. In-water tool and dive gear (e.g., wetsuit, mask, fins, snorkel, BC, regulator, weight belt, booties) shall be disinfected by one of the following ways: a 1:52 dilution of commercial bleach in freshwater, a 3 percent free chlorine solution, or a manufacturer's recommended disinfectant-strength dilution of a quaternary ammonium compound in "soft" (low concentration of calcium or magnesium ions) freshwater.
    b. Small boats that have been deployed in the field will be cleaned and inspected daily for organic material, including any algal fragments or other organisms. Organic material, if found, will be physically removed and disposed of according to the ship's solid-waste disposal protocol or in approved secure holding systems. The internal and external surfaces of vessels will be rinsed daily with freshwater and always rinsed and be allowed to dry before redeployment.

2. Vegetated areas impacted during construction must be revegetated with appropriate native species.

VII. EFH EFFECT DETERMINATIONS

The Honolulu District has determined that use of this EFH Programmatic Consultation for the 11 activity categories listed above may result in adverse effects on EFH. NMFS is required to provide EFH Conservation Recommendations to Federal and state agencies for actions that would adversely affect EFH which may include measures to avoid, minimize, mitigate, or otherwise offset adverse effects including those that may be direct, indirect, and cumulative.

The Corps will require implementation of applicable conservation measures as a condition of a USACE permit authorization.

NMFS has determined that the effective implementation of the EFH Conservation Recommendations in the EFH Programmatic will maintain the same level of environmental compliance as would have been achieved through individual consultation in a standardized process. NMFS may determine that a programmatic consultation is not appropriate if effects of an individual project were not adequately evaluated in this document, do not fit identified activity categories, or if it is determined by NMFS that a project will have may adversely affect EFH and is not covered by the Programmatic Consultation, in which case an individual project-specific EFH consultation will be initiated.

Table 1. EFH designations for all MUS of Western Pacific FEPS.

FEP	Fishery	Stock or Stock Complex	Life Stage(s)	EFH Designation
Pelagic	All pelagic fisheries	Tropical and temperate	Egg/larval	The water column down to a depth of 200 m (100 fm) from the shoreline to the outer limit of the EEZ
			Juvenile/adult	The water column down to a depth of 1,000 m (500 fm)
American Samoa, Mariana, and Pacific Remote Island Area (PRIA)	Bottomfish	Shallow-water and deep-water complexes	Egg/larval	The water column extending from the shoreline to the outer limit of the EEZ down to a depth of 400 m (200 fm)
			Juvenile/adult	The water column and all bottom habitat extending from the shoreline to a depth of 400 m (200 fm)
PRIA	Coral Reef Ecosystem	Currently harvested coral reef taxa, Labridae	Egg/larval	The water column and all bottom habitat from the shoreline to the outer boundary of the EEZ to a depth of 100 m (50 fm)
		Currently harvested coral reef taxa, Octopodidae	Egg	All coral, rocky, and sand-bottom areas from 0 to 100 m (50 fm)

		Currently harvested coral reef taxa , Carcharhinidae	Egg/larval	No designation
		All other currently harvested coral reef taxa	Egg/larval Egg/larval/juvenile –Kyphosidae only Larval – Octopodidae only	The water column from the shoreline to the outer boundary of the EEZ to a depth of 100 m (50 fm)
		Currently harvested coral reef taxa, Carcharhinidae, Labridae	Juvenile/adult	All bottom habitat and the adjacent water column from 0 to 100 m (50 fm) to the outer extent of the EEZ.
		Currently harvested coral reef taxa, Holocentridae and Muraenidae	Juvenile/adult	All rocky and coral areas and the adjacent water column from 0 to 100 m (50 fm)
		Currently harvested coral reef taxa, Kuhliidae	Juvenile/adult	All bottom habitat and the adjacent water column from 0 to 50 m (25 fm)
		Currently harvested coral reef taxa, Kyphosidae	Adult	All rocky and coral bottom habitat and the adjacent water column from 0 to 30 m (15 fm)
PRIA	Coral Reef Ecosystem	Currently harvested coral reef taxa, Mullidae, Octopodidae, Polynemidae, Priacanthidae	Juvenile/adult	All rocky/coral bottom and sand bottom habitat and the adjacent water column from 0 to 100 m (50 fm)
		Currently harvested coral reef taxa, Mugilidae	Juvenile/adult	All sand and mud bottom and the adjacent water column from 0 to 50 m (25 fm)

		Currently harvested coral reef taxa, Scombridae (dogtooth tuna), Sphyraenidae	Juvenile/adult	Only the water column from the shoreline to the outer boundary of the EEZ to a depth of 100 m (50 fm)
		Currently harvested coral reef taxa, Aquarium Species/Taxa	Juvenile/adult	Coral, rubble, and other hard-bottom features and the adjacent water column from 0 to 100 m (50 fm)
		All other currently harvested coral reef taxa	Juvenile/adult	All bottom habitat and the adjacent water column from 0 to 100 m (50 fm)
		Potentially harvested coral reef taxa	All life stages	The water column and all bottom habitat from the shoreline to the outer boundary of the EEZ to a depth of 100 m (50 fm)
Hawaii	Crustaceans	Kona crab	Egg/larval	The water column from the shoreline to the outer limit of the EEZ down to a depth of 150 m (75 fm)
			Juvenile/adult	All of the bottom habitat from the shoreline to a depth of 100 m (50 fm)
		Deepwater shrimp	Egg/larval	The water column and associated outer reef slopes between 550 and 700 m
			Juvenile/adult	The outer reef slopes at depths between 300-700 m

Hawaii	Bottomfish	Shallow stocks: *Aprion virescens*	Egg	Pelagic zone of the water column in depths from the surface to 240 m, extending from the official US baseline to a line on which each point is 50 miles from the baseline
			Post-hatch pelagic	Pelagic zone of the water column in depths from the surface to 240 m, extending from the official US baseline to the EEZ boundary
		Shallow stocks: *Aprion virescens*	Post-settlement	Benthic or benthopelagic zones, including all bottom habitats, in depths from the surface to 240 m bounded by the official US baseline and 240 m isobath
			Sub-adult/adult	Benthopelagic zone, including all bottom habitats, in depths from the surface to 240 m bounded by the official US baseline and 240 m isobath.
Hawaii	Bottomfish	Intermediate stocks: *Aphareus rutilans, Pristipomoides filamentosus, Hyporthodus quernus*	Eggs	Pelagic zone of the water column in depths from the surface to 280 m (*A. rutilans* and *P. filamentosus*) or 320 m (*H. quernus*) extending from the official US baseline to a line on which each point is 50 miles from the baseline
			Post-hatch pelagic	Pelagic zone of the water column in depths from the surface 280 m (*A. rutilans* and *P. filamentosus*) or 320 m (*H. quernus*), extending from the official US baseline to the EEZ boundary

			Post-settlement	Benthic (*H. quernus* and *A. rutilans*) or benthopelagic (*A. rutilans* and *P. filamentosus)* zones, including all bottom habitats, in depths from the surface to 280 m (*A. rutilans* and *P. filamentosus*) or 320 m (*H. quernus*) bounded by the 40 m isobath and 100 m (*P. filamentosus),* 280 m (*A. rutilans*) or 320 m (*H. quernus*) isobaths
			Sub-adult/adult	Benthic (*H. quernus*) or benthopelagic (*A. rutilans* and *P. filamentosus)* zones, including all bottom habitats, in depths from the surface to 280 m (*A. rutilans* and *P. filamentosus*) or 320 m (*H. quernus*) bounded by the 40 m isobath and 280 m (*A. rutilans and P. filamentosus*) or 320 m (*H. quernus*) isobaths
		Deep stocks: *Etelis carbunculus, Etelis coruscans, Pristipomoides seiboldii, Pristipomoides zonatus*	Eggs	Pelagic zone of the water column in depths from the surface to 400 m, extending from the official US baseline to a line on which each point is 50 miles from the baseline
			Post-hatch pelagic	Pelagic zone of the water column in depths from the surface to 400 m, extending from the official US baseline to the EEZ boundary
			Post-settlement	Benthic zone, including all bottom habitats, in depths from 80 to 400 m bounded by the official US baseline and 400 m isobath

Hawaii	Bottomfish	Deep stocks: *Etelis carbunculus, Etelis coruscans, Pristipomoides seiboldii, Pristipomoides zonatus*	Sub-adult/adult	Benthic (*E. carbunculus* and *P. zonatus*) or benthopelagic (*E. coruscansi*) zones, including all bottom habitats, in depths from 80 to 400 m bounded by the official US baseline and 400 m isobaths
		Seamount groundfish	Eggs and post-hatch pelagic	Pelagic zone of the water column in depths from the surface to 600 m, bounded by the official US baseline and 600 m isobath, in waters within the EEZ that are west of 180°W and north of 28°N
			Post-settlement	Benthic or benthopelagic zone in depths from 120 m to 600 m bounded by the 120 m and 600 m isobaths, in all waters and bottom habitat, within the EEZ that are west of 180°W and north of 28°N
			Sub-adult/adult	Benthopelagic zone in depths from 120 m to 600 m bounded by the 120 m and 600 m isobaths, in all waters and bottom habitat, within the EEZ that are west of 180°W and north of 28°N
	Precious Coral	Deep-water	Benthic	Six known precious coral beds located off Keahole Point, Makapuu, Kaena Point, Wespac bed, Brooks Bank, and 180 Fathom Bank
		Shallow-water	Benthic	Three beds known for black corals in the MHI between Milolii and South Point on the Big Island, the Auau Channel,

				and the southern border of Kauai

Table 2. Habitat areas of particular concern for MUS of all Western Pacific FEPs.

FEP	Fishery	Stock or Stock Complex	HAPC
Pelagic	All pelagic fisheries	Temperate and tropical species	Water column from the surface down to a depth of 1,000 m (500 fm) above all seamounts and banks with summits shallower that 2,000 m (1,000 fm) within the EEZ
American Samoa, Mariana, Pacific Remote Island Areas (PRIA)	Bottomfish	Shallow- and deep-water	All slopes and escarpments between 40 m and 280 m (20 and 140 fm)
PRIA	Coral Reef Ecosystem	Currently and potentially harvested coral reef taxa	All coral reef habitat in the Pacific Remote Island Areas
	Crustaceans	Kona crab	All banks in the NWHI with summits less than or equal to 30 m (15 fm) from the surface
	Precious Coral	Deep-water	Makapuu, Wespac, and Brooks Bank bed
		Shallow-water	Auau Channel bed

Hawaii	Bottomfish	All bottomfish stocks	Discrete areas at Kaena Point, Kaneohe Bay, Makapuu Point, Penguin Bank, Pailolo Channel, North Kahoolawe, and Hilo (please see Amendment 4 to the Hawaii Archipelago FEP, Section 3.3.3 for GPS coordinates of the locations and Appendix 2 for maps)
		Seamount groundfish	Congruent with EFH (See Table 41).

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