



United States Department of the Interior



FISH AND WILDLIFE SERVICE
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard, Room 3-122
Honolulu, Hawaii 96850

In Reply Refer To:
01EPIF00-2020-I-0420

July 27, 2021

Mr. Alessandro Amaglio
Regional Environmental Officer
Federal Emergency Management Agency
1111 Broadway, Suite 1200
Oakland, California 94607

Subject: Programmatic Informal Consultation and Standard Local Operating Procedures for Federal Emergency Management Agency Recurring Actions in the Hawaiian and Pacific Islands

Dear Mr. Amaglio:

In accordance with section 7 of the Endangered Species Act (ESA) of 1973 (16 U.S.C. 1531, et seq.), as amended, this letter documents the U.S. Fish and Wildlife Service's (Service) assessment of select actions authorized by the U.S. Department of Homeland Security's Federal Emergency Management Agency (FEMA) within the Hawaiian and other Pacific Islands. This programmatic informal consultation (PA) was developed in response to FEMA's biological evaluation (BE) and Standard Local Operating Procedures (SLOPES) which we received on November 17, 2020.

Our findings and recommendations are based on the best available information presented in your BE, and otherwise cited below. A complete decision record of this consultation is on file at our Pacific Islands Fish and Wildlife Office (PIFWO) in Honolulu, Hawaii. Our log number for this consultation is 01EPIF00-2020-I-0420.

DESCRIPTION OF THE PROPOSED ACTION

In addition to direct Federal actions initiated by FEMA, such as emergency work in the aftermath of a disaster, FEMA administers Federal grant programs to assist with preparedness, response, recovery, and mitigation for natural and human-caused disasters. These disasters can result from natural events, such as floods, earthquakes, wildfires, rains, and windstorms, and human-caused events, such as fires and terrorist attacks.

INTERIOR REGION 9
COLUMBIA-PACIFIC NORTHWEST

IDAHO, MONTANA*, OREGON*, WASHINGTON

*PARTIAL

INTERIOR REGION 12
PACIFIC ISLANDS

AMERICAN SAMOA, GUAM, HAWAII, NORTHERN
MARIANA ISLANDS

This PA is intended to address typical recurring actions funded through those grant programs (both disaster and non-disaster) such as: Individual Assistance, Public Assistance, Hazard Mitigation Assistance (HMA), and direct Federal actions initiated by FEMA. For a proposed action to be covered under this PA, the project must meet the suitability criteria for ESA section 7(a)(2) compliance and must follow the applicable conservation measures outlined below. If a proposed project does not meet the criteria outlined below, an individual ESA consultation is required. As the Federal action agency, FEMA is ultimately responsible for determining if a project is covered under this PA, and for ensuring the implementation of applicable conservation measures.

Within the Hawaiian and Pacific Islands, nearly all land, in-water, and near-shore actions within FEMA Region 9's area of responsibility have the potential to be occupied by an ESA-listed species. As a result, the actions addressed in this PA have the potential to impact ESA-listed species and their designated or proposed critical habitat across the Hawaiian and Pacific Islands. Project actions funded through FEMA's disaster, mitigation and preparedness programs consist of the following:

Non-Emergency Debris Removal

For purposes of this PA, debris removal performed in non-emergency situations includes:

- removing rock, silt, sediment, or woody debris that floodwaters have deposited in harbors and ports, stream channels, bridge and culvert openings, canals, sedimentation basins, sewage treatment ponds, ditches, and other facilities in such a manner as to disrupt normal flows, navigation, recreation, or municipal services;
- removing woody debris and other vegetation following events that damage or destroy trees;
- removing rock and earth from landslides caused by events such as earthquakes or heavy rains; and
- removing rubble after earthquakes.

Removal of material from stream channels usually requires coordination with the U.S. Army Corps of Engineers (USACE) for compliance and permitting under the Clean Water Act and the Rivers and Harbors Act. All removed debris will be disposed of at approved and licensed disposal sites, in compliance with existing laws and regulations. Any hazardous materials or other contaminants will be removed and disposed of in an appropriate manner. Woody debris and construction materials can be recycled if recycling facilities exist.

Constructing, Modifying, or Relocating Facilities

The follow activities are included:

- upgrading or modifying facilities;
- providing temporary facilities;
- acquiring and demolishing existing facilities;
- repairing, realigning, or otherwise modifying roads, trails, utilities, and rail lines;
- constructing of new facilities or relocating existing facilities;
- relocating the function of an existing facility;
- survey actions;
- repair or replacement of intake and outfall structures; and

- developing demonstration projects.

Actions Involving Watercourses and Coastal Features

Many FEMA actions pertain to inland water sources, such as streams, rivers, and lakes, and coastal features, such as harbors and beaches. Inland water sources may be perennial or dry during the summer months. Work in a stream channel often includes temporary diversion of the channel using sandbags or a cofferdam constructed of fill. Heavy equipment is typically operated from an adjacent road, bank, or other feature; however, in some cases, operating equipment in a channel area once flow has been diverted may be necessary. A pipe or a temporary secondary channel may be used to convey the diverted water.

If the action involves channel modifications, changes to the capacity of bridges and culverts, or the installation of attenuation structures, conducting hydraulic or hydrologic analyses to evaluate the changes of upstream and downstream flow rates and determine whether additional action components need to be added to address any changes in hydraulics and hydrology outside the action area may be necessary. These actions also require coordination with the USACE.

If actions involving modifying or constructing a coastal feature interacts with sea turtle nesting habitat during nesting and hatchling emergence timeline conservation measures for surveys or avoidance will be followed. Relevant categories of actions include the following:

- repairing, stabilizing, or non-coastal armoring embankments;
- creating, widening, clearing, or dredging a waterway;
- constructing or modifying a water crossing;
- constructing or modifying other flood control structures or repairing a water detention, retention, storage or conveyance facility; and
- reconstructing, replacing, or modifying a coastal feature.

Disaster Programs

FEMA is authorized to provide disaster assistance by the Robert T. Stafford Disaster Relief and Emergency Assistance Act (42 U.S.C. § 5121–5207), as amended (Stafford Act). Pursuant to the Stafford Act, the President may declare an emergency or major disaster when an event exceeds the capabilities of State, local, and tribal governments to respond and recover. This declaration enables FEMA to make supplemental assistance available, either directly through Department of Defense and other Federal agencies, or through financial assistance programs. Financial assistance programs are generally funded through Congressional appropriations in the Disaster Relief Fund, which Congress replenishes periodically. Pursuant to the Stafford Act, FEMA provides funds through the following:

- Programs to help individuals and households who have been affected by the disaster, including assistance with minor home repairs, temporary housing, transportation, medical assistance, funeral assistance, crisis counseling, and disaster legal services; extraordinary costs of State, territorial, tribal, and local governments for measures to save lives, protect public health and safety, and protect improved property;
- Repair or replacement of disaster-damaged buildings and infrastructure owned by State, territorial, tribal, and local governments, and by certain private non-profit entities (e.g., hospitals, schools, and electrical cooperatives);
- Alternate Projects, in situations where a public or private non-profit facility owner determines that it is not in the public's interest to restore a disaster-damaged facility;

- As part of the repair of a disaster-damaged facility, implementation of cost-effective measures to reduce the risk of damage to that facility in future, similar disasters;
- State-, territory-, and tribally-managed hazard mitigation programs to reduce the risks associated with future disasters through community-wide and facility-specific mitigation measures; and,
- Assistance to States, territories, and tribes for extraordinary costs associated with fighting wildfires, including measures to reduce post-fire erosion, flooding, and debris flows.

For some of these actions, the costs are shared among FEMA and States, territories, or tribes, and sub-recipients for assistance.

Non-Disaster Programs

FEMA also implements a wide range of non-disaster financial assistance programs under the authority of several laws. In general, Congress provides funding for these programs through annual appropriation, and the Federal share of program costs varies. These programs include the following:

- State-, territory-, and tribally-managed hazard mitigation programs;
- Planning, project, and technical assistance to States, territories, tribes, and local governments to reduce the risk of flood damage to public and privately-owned buildings, thereby reducing the financial impact of flooding; and
- Programs to enhance the preparedness of States, territories, tribes, local governments, and urban areas through financial assistance for planning, training, exercises, and the purchase of systems and equipment.

These programs include funding for State emergency management agencies, regional organizations, law enforcement and firefighting agencies, medical services providers, transportation providers, operators of critical infrastructure, and organizations devoted to the preparedness of the public.

Potential Project Actions and Project Process

Similar project actions may be administered by disaster and non-disaster programs or may be initiated by FEMA as direct Federal actions. Under this PA, FEMA will use SLOPES for the following types of actions:

- Non-Emergency Debris Removal
- Constructing, Modifying, or Relocating Facilities
 - Upgrading or otherwise modifying facilities;
 - Providing temporary facilities;
 - Acquiring and demolishing existing facilities;
 - Repairing, realigning, or otherwise modifying roads, trails, utilities and rail lines;
 - Constructing new facilities or relocating existing facilities;
 - Relocating the function of an existing facility;
 - Survey actions;
 - Intake and outfall structures; and
 - Developing demonstration projects.
- Actions Involving Watercourses and Coastal Features
 - Repairing, stabilizing, or armoring embankments;
 - Creating, widening, clearing, or dredging a waterway;

- Constructing or modifying a water crossing;
- Constructing or modifying other flood control structures or repairing a water detention, retention, storage, or conveyance facility; and
- Reconstructing, replacing, or modifying a coastal feature.

Use of these SLOPES will ensure that these actions continue to meet requirements of the ESA with procedures that are simple to use, efficient, and accountable for all parties. Projects that are explicitly excluded from authorization under SLOPES will require individual consultation and include any project that has the potential to result in adverse effects to any ESA-listed species or adversely modify any designated critical habitat, and projects that utilize any of the following:

- Blasting;
- New construction dredging or in-water trenching;
- Construction of new effluent discharge systems; and
- Construction of new bank stabilization structures.

Based on their analysis of potential consequences to ESA-listed species and designated critical habitat, FEMA has determined their future actions may affect, but are not likely to adversely affect or modify, the following ESA-listed species or their designated critical habitat:

Table 1. ESA-Listed Species evaluated.

Scientific Name	Common Nam	ESA Status
Arachnids		
<i>Adelocosa anops</i>	Kauai cave wolf spider	Endangered
Birds		
<i>Acrocephalus Luscinia</i>	nightingale reed-warbler	Endangered
<i>Aerodramus vanikorensis bartschi</i>	Mariana gray swiftlet	Endangered
<i>Anas wyvilliana</i>	Hawaiian duck	Endangered
<i>Branta sandvicensis</i>	Hawaiian goose	Threatened
<i>Chasiempis ibidis</i>	Oahu elepaio	Endangered
<i>Corvus kubaryi</i>	Mariana crow	Endangered
<i>Drepanis coccinea</i>	iiwi	Threatened
<i>Fulica americana alai</i>	Hawaiian coot	Endangered
<i>Gallicolumba stairi</i>	friendly ground-dove	Endangered
<i>Gallinula chloropus guami</i>	Mariana common moorhen	Endangered
<i>Gallinula galeata sandvicensis</i>	Hawaiian common gallinule	Endangered
<i>Halcyon cinnamomina cinnamomina</i>	Guam Micronesian kingfisher	Endangered
<i>Himantopus mexicanus knudseni</i>	Hawaiian stilt	Endangered
<i>Loxioides bailleui</i>	Palila	Endangered
<i>Megapodius laperouse</i>	Micronesian megapode	Endangered
<i>Oceanodroma castro</i>	band-rumped storm petrel	Endangered
<i>Pterodroma sandwichensis</i>	Hawaiian petrel	Endangered
<i>Puffinus auricularis newelli</i>	Newell's shearwater	Threatened
<i>Rallus owstoni</i>	Guam rail	Endangered
<i>Zosterops conspicillatus</i>	bridled white-eye	Endangered

Crustaceans		
<i>Procaris hawaiiiana</i>	anchialine pool shrimp	Endangered
<i>Spelaeorchestia koloana</i>	Kauai cave amphipod	Endangered
<i>Vetericaris chaceorum</i>	anchialine pool shrimp	Endangered
Insects		
<i>Drosophila aglaia</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila differens</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila digressa</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila hemipeza</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila heteroneura</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila montgomeryi</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila mulli</i>	Hawaiian picture-wing fly	Threatened
<i>Drosophila musaphilia</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila neoclavisetae</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila obatai</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila ochrobasis</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila sharpi</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila substenoptera</i>	Hawaiian picture-wing fly	Endangered
<i>Drosophila tarphytrichia</i>	Hawaiian picture-wing fly	Endangered
<i>Hylaeus anthracinus</i>	Hawaiian yellow-faced bee	Endangered
<i>Hylaeus assimulans</i>	Hawaiian yellow-faced bee	Endangered
<i>Hylaeus facilis</i>	Hawaiian yellow-faced bee	Endangered
<i>Hylaeus hilaris</i>	Hawaiian yellow-faced bee	Endangered
<i>Hylaeus kuakea</i>	Hawaiian yellow-faced bee	Endangered
<i>Hylaeus longiceps</i>	Hawaiian yellow-faced bee	Endangered
<i>Hylaeus mana</i>	Hawaiian yellow-faced bee	Endangered
<i>Hypolimnas octocula marianensis</i>	Marianas eight-spot butterfly	Endangered
<i>Ischnura luta</i>	Rota blue damselfly	Endangered
<i>Manduca blackburni</i>	Blackburn's sphinx moth	Endangered
<i>Megalagrion xanthomelas</i>	orangeblack Hawaiian damselfly	Endangered
<i>Vagrans egistina</i>	Mariana wandering butterfly	Endangered
Mammals		
<i>Emballonura semicaudata</i>	Pacific sheath-tailed bat	Endangered
<i>Lasiurus cinereus semotus</i>	Hawaiian hoary bat	Endangered
<i>Pteropus mariannus mariannus</i>	Mariana fruit bat	Threatened
<i>Pteropus tokudae</i>	little Mariana fruit bat	Endangered
Reptiles		
<i>Chelonia mydas</i>	green turtle	Endangered
<i>Eretmochelys imbricata</i>	hawksbill turtle	Endangered
<i>Emoia sleveni</i>	Slevin's skink	Endangered
Snails		
<i>Achatinella spp.</i>	Oahu tree snails	Endangered
<i>Partula gibba</i>	humped tree snail	Endangered
<i>Partula radiolata</i>	Guam tree snail	Endangered

<i>Partulina semicarinata</i>	Lanai tree snail	Endangered
<i>Partulina variabilis</i>	Lanai tree snail	Endangered
<i>Samoana fragilis</i>	fragile tree snail	Endangered
<i>Partula langfordi</i>	Langford's tree snail	Endangered

Plants

PIFWO jurisdiction includes more than 400 ESA-listed plant species. More than 100 plant taxa have gone extinct in Hawaii, and over 200 are considered to have 50 or fewer individuals remaining in the wild. As a result, the list of protected plant species in the Hawaiian and Pacific Islands is continually updating. Up-to-date species information is available from the Service's Environmental Conservation Online System at: <https://ecos.fws.gov/ecp0/reports/ad-hoc-species-report-input>.

Critical Habitat

FEMA's potential projects span the entire PIFWO jurisdiction and therefore may include any number of designated critical habitat units. For a comprehensive list of species with designated critical habitat and their associated maps please visit the Service's Critical Habitat report page here: <https://ecos.fws.gov/ecp/report/table/critical-habitat.html>.

Analysis

Our assessment of potential consequences of the proposed actions is based on phone calls and emails between Johnathon Kraska (Service), Emma Gosliner (FEMA), and Paul Haywood (former FEMA contractor). Proposed actions and potential consequences to ESA-listed species were discussed and conservation measures were agreed upon by both agencies.

Under the terms of this PA, FEMA will submit an annual report to the Service by July 31, which will include; date of verification, island, FEMA project number, project title, TMK or coordinates, actions implemented, project scope, species impacted, and conservation measures applied (Appendix D). A meeting will occur between FEMA and the Service no later than August 31 of each year to review this PA and summarize the actions permitted to inform recommendations to improve future effectiveness of the program.

The Service's Information for Planning and Consultation (IPaC) online tool will eventually be used for obtaining project specific species lists and annual reporting capabilities. Annual reporting summary materials will be extracted by the Service from IPaC for species list and informal section 7 consultations related to this PA. If FEMA or the Service become unsatisfied with the results of implementing this PA, it will be rescinded, and consultations will resume on an individual project basis.

The current scope of this PA is limited to those actions that may affect, but are not likely to adversely affect ESA-listed species or designated critical habitat. However, this PA is intended to be adaptive, accountable, and credible as a conservation and regulatory tool. As such, additional actions may eventually be evaluated for inclusion this PA, as long as their potential effects do not exceed the insignificant or discountable levels.

SLOPES Evaluation and Project Process

As part of a SLOPES evaluation for potential project actions, the following steps will be followed as required:

Step 1: FEMA will confirm whether a proposed project is the type of action (e.g., administrative, staff services, procurement of supplies or equipment, etc.), that will not result in any direct or indirect effects to any ESA-listed species or designated critical habitat. FEMA will also determine whether the proposed project is located in a developed area, within an urban setting, and has no potential to adversely affect any ESA-listed species or designated critical habitat. In addition, FEMA will review the Service's online IPaC system (when available) and coordinate with the Service to verify whether:

- The proposed action is within the range of an ESA-listed species (Appendix A) or designated critical habitat;
- Whether the physical and biological features (PBF) of designated critical habitat occur within the action area; and
- Make an effects determination consistent with FEMA's internal review standards and protocols.

Step 2: If FEMA determines that the project may affect an ESA-listed species or designated critical habitat and a no effect determination was not feasible in Step 1, FEMA will review the project for applicability under these SLOPES based on the following criteria:

- The proposed project conforms with all applicable requirements and limitations described herein;
- The general conditions below can be applied to the project; and
- All potential effects on ESA-listed species or designated critical habitat are within the range of consequences considered in this PA, as outlined in the implementation of these SLOPES. Actions that do not initially comply with these SLOPES may be brought into compliance through technical assistance among the FEMA applicant, FEMA, and the Service. If there are proposed project actions that not addressed by the SLOPES, FEMA will need to initiate a separate, individual consultation with the Service on the project.

Step 3: FEMA will complete the SLOPES Internal Documentation Form (Appendix B) as an internal record for project tracking purposes within FEMA of the utilization of these SLOPES;

Step 4: FEMA will provide the completed SLOPES Internal Documentation Form to the applicant for signature, acknowledgement of SLOPES, and the required conservation measures. The applicant will return the signed form to FEMA prior to the initiation of work;

Step 5: Within 30 days of completion of the approved action, the applicant will provide FEMA with a signed SLOPES Certification of Compliance Form (Appendix C) along with conservation measure implementation documentation for FEMA's internal project closeout; and

Step 6: FEMA will provide the Service an annual summary report, the SLOPES Annual Summary Report Form (Appendix D), of the projects completed under this PA.

Note: The Service is expanding its online IPaC system to include areas under the jurisdiction of PIFWO through the Environmental Conservation Online System (ECOS). IPaC is a project

planning tool which streamlines the Service's environmental review process. The Service plans to add a Decision Key to incorporate their programmatic agreements into IPaC. This will use SLOPES to provide conservation measures for specific actions to reach concurrence that the proposed action meets the requirements of this agreement. Once the development of IPaC for PIFWO is completed, the IPaC process will replace the documentation between FEMA and the Service (i.e., Step 6); however, FEMA will maintain the internal documentation (i.e., Step 3 through Step 5) related to ESA compliance within FEMA project files.

Action Area

The action area encompasses the lands and adjacent waters on and around the State of Hawaii, and U.S. Pacific Territories of, American Samoa, Guam, and Commonwealth of the Northern Mariana Islands (CNMI), where ESA-listed species or their habitats may be impacted by FEMA actions. This PA includes, but is not limited to, all lands, navigable waters of the United States, other water bodies, and adjacent wetlands (such as nearshore marine waters), and shoreline areas utilized by sea turtles and Hawaiian monk seals. Projects that may impact species and habitats below mean sea level may require separate consultation with the National Marine Fisheries Service (NMFS) which is not included in this PA.

Description of Action

The following actions may qualify for a "may affect, not likely to adversely affect" (NLAA) determination without conservation measures. However, some actions will need to implement species specific conservation measures in order to meet the criteria for a NLAA determination without the utilization of these SLOPES. FEMA will determine whether the applicant should incorporate the applicable conservation measures described in this PA into the proposed project. If FEMA determines that these conservation measures are necessary to minimize effects to listed species or their designated critical habitat to insignificant or discountable levels, the applicant must implement them or FEMA would need to initiate formal section 7 consultation for that action.

FEMA will typically make an NLAA determination for an applicant's proposed action that meets the criteria listed below. However, implementation of the conservation measures described within this PA alone does not ensure an NLAA determination. If the proposed project cannot achieve an NLAA determination, individual consultation with the Service is required. The following criteria will be used to make an NLAA determination:

- Effects to listed species or designated critical habitat are insignificant (too small to identify or measure), discountable (highly unlikely to occur), or wholly beneficial.
- The action includes all applicable species-specific conservation measures listed in this PA and will minimize effects on listed species and designated critical habitat to insignificant or discountable levels.
- The action occurs within the species-specific avoidance work windows (Appendix E), during the time of year that ESA-listed species are not nesting or present.
- The action occurs outside of the species-specific work avoidance windows (Appendix E) when listed species are present, but the actions would cause insignificant or discountable effects (such as brief and minor increased turbidity) or would be wholly beneficial.
- The action area includes designated critical habitat for a listed species and contains the PBFs to support a listed species, but applicant's proposed project would not affect those PBFs.

- Project action results in wholly beneficial effects to listed, with no adverse effects. Under the ESA, beneficial effects are defined as “contemporaneous positive effects without any adverse effects to the species.”

CONSERVATION MEASURES

General Conditions

FEMA, its applicants, and contractors will implement the following set of general conditions for any action authorized under these SLOPES. Additionally, action specific conservation measures described herein will be required, as applicable.

- Each applicable conservation measure will be included as an enforceable part of the approval document.
- FEMA and the Service will be provided reasonable access to projects authorized under these SLOPES to monitor the compliance with and efficacy of approval conditions.
- FEMA will require that approved applicants document and report all interactions with ESA-listed species to FEMA and the Service. Should it become apparent that an ESA-listed species may be adversely affected by the project, all non-emergency work must stop pending completion of formal ESA section 7 consultation between FEMA and the Service for the action. Emergency work may continue with FEMA informing the Service that the project is being conducted as an emergency action. FEMA must document the amount and types of take that occurs as a result of the project in order to complete formal section 7 consultation once the emergency action is complete.
- Constant vigilance will be kept for the presence of ESA-listed species during all aspects of the approved action;
 - A responsible party (i.e., applicant, site manager, or project supervisor) will designate a qualified biologist knowledgeable of the species life cycles and able to identify individuals in all life stages and their representative nests and eggs to survey the action area for ESA-listed species. A qualified biologist consists of an environmental professional with at least a bachelor’s degree in Biology, Ecology, Natural Resources, Environmental Sciences, or similar, and has significant experience over multiple years working with ESA-listed species, their habitats, and ESA implementation in Hawaii or the Pacific Islands. All personnel will be briefed on the species with the potential to occur in the action area. The action area encompasses all areas to be affected directly or indirectly by the Federal action. This includes the project footprint and areas beyond the project footprint where stressors such as noise, night-time lighting, and changes in water quality, air quality, wind exposure, sunlight, or humidity may affect listed plants or animals as a result of project implementation;
 - Surveys of the action area, including laydown and staging areas, will be conducted for individuals of ESA-listed species as well as their nests and eggs prior to the start of work each day. Periodic additional surveys throughout the workday are strongly recommended following any breaks in action;
 - Any site at which listed species have been identified will have a biological monitor present during all work. The biological monitor will have the authority to stop and resume work, and enforce buffer distances; and

- No one will attempt to feed, touch (e.g., pet, relocate, etc.), or otherwise intentionally interact with any protected species.
- Project footprints must be limited to the minimum area necessary to complete the project and project work limits must be clearly defined.
- Sensitive resource areas, such as ESA-listed terrestrial plants and nests, within the action area must be visibly flagged; however, fencing with non-natural material and smaller than 3x3 inch mesh size, and loose-weave joints for projects on or near the coast or suitable waterbird habitat, is prohibited due to the ensnarement hazard potential that exists with this type of material.
- Project operations must cease under unusual conditions, such as large tidal events, heavy rains and strong storms, and high surf conditions, with the exception of emergency protective measures implemented to preserve life and property resulting from such conditions.
- A stormwater management plan, commensurate to the size of the project must be prepared and carried out, for any project that will produce any new impervious surface or a land cover conversion that will slow the entry of water into the soil, to ensure that effects to water quality and hydrology are minimized.
- A pollution and erosion control plan for the action area and adjacent areas must be prepared and carried out. As a minimum, this plan will include:
 - Proper installation and maintenance of silt fences, booms, equipment diapers, or drip pans;
 - A contingency plan to control and clean spilled petroleum products and other toxic materials;
 - Appropriate materials to contain and clean potential spills will be stored at the action area, and be readily available;
 - All project-related materials and equipment placed in the water will be free of pollutants;
 - Daily pre-work inspections of heavy equipment for cleanliness and leaks, with all heavy equipment operations postponed or halted until leaks are repaired and equipment is cleaned;
 - Fueling of project-related vehicles and equipment will take place at least 50 feet away from the water, preferably over an impervious surface;
 - A plan will be developed to prevent trash and debris from entering the environment during the project; and
 - All construction discharge water (e.g., concrete washout, pumping for work action area isolation, vehicle wash water, drilling fluids, etc.) must be treated prior to discharge or disposed of in an approved waste disposal facility;
- Erosion controls must be properly installed before any alteration of the action area may take place. When erosion control is necessary selecting products with biodegradable netting (natural fiber, biodegradable polyesters) is preferred as well as netting with flexible, non-welded, rectangular shaped mesh with openings no smaller than three inches by three inches. Additional options exist that include open weave textile, rolled erosion control products with woven, natural fiber netting. Erosion control products that require UV-light to biodegrade, netting with square mesh, plastic mesh are not authorized.

- Construction barriers that prevent dust from traveling off site will be used where feasible to reduce any potential effects to listed snails or plants. A dual-purpose physical barrier will be utilized to accomplish work separation from listed snail clusters as well as for dust mitigation. These barriers will be free standing (rebar anchored). Barriers will be approximately 10 feet high. Final barrier shape to be determined in the field to adjust to survey findings and will accommodate a buffer distance if feasible. Barrier material proposed is High-Density Polyethylene, with Ultra Violet protection, shade rate of 30-90 percent, weight of 55-240 grams per meter squared, high strength, and easy fixing. The barrier will remain until the project actions have been fully completed. Removal of the barriers will then be completed as a final project task.
- Barriers to protect occupied habitat should be placed outside the buffer distance and no one should enter the protected habitat (to prevent crushing of snails or brushing snails off vegetation). Recommended minimum is 10 meters from the outermost individual detected during the survey. The survey biologist should be present when barriers are installed.
- Vegetation clearing will be strictly limited to that which is required for project completion. Indiscriminate clearing will not be permitted. Any clearing proposed within a project footprint will require a re-survey for listed species, including a 10-meter exterior buffer, prior to vegetation removal. In areas where listed tree snails occur, vegetation to be removed shall be inspected for the presence of federally listed tree snails no earlier than the evening before clearing activities. Branches and tree limbs should be removed manually, and green waste gently placed or pushed back into the adjacent forested area to remain on site. Overhanging or encroaching vegetation clearing should be timed for dry conditions when possible, to reduce the likelihood that tree snails will be present on exposed limbs or branches.
- Temporary access roads and drilling pads must avoid steep slopes of 15 degrees or steeper where grade, soil types, or other features suggest a likelihood of excessive erosion or failure; existing access routes must be utilized or improved whenever possible, in lieu of the construction of new access routes.
- All disturbed areas must be immediately stabilized in accordance with aforementioned erosion controls following cessation of actions in advance or any break in work longer than four days.
- Drilling and sampling associated waste or spoils must be completely isolated and disposed of in an upland location and approved disposal site. Disposal sites will be previously permitted by the Service and subject to individual project compliance review based on the action area.
- Authorized work must comply with all applicable general, action- and species-specific conditions.

Biosecurity Protocols

- All work vehicles, machinery, and equipment are to be cleaned, inspected by its user, and be free of mud, dirt, debris and organisms prior to entry into and exit from the action area, as well as prior to transport to or from another island.
 - Vehicles, machinery, and equipment must be thoroughly pressure washed in a designated cleaning area (designated by the responsible land manager) and visibly free of mud, dirt, plant debris, insects, frogs (including frog eggs) and other vertebrate species such as rats, mice and non-vegetative debris. A hot water wash is preferred. Areas of particular concern include bumpers,

- grills, hood compartments, areas under the battery, wheel wells, undercarriage, cabs, and truck beds (truck beds with accumulated material intentionally placed or fallen from trees are prime sites for accidental transport of invasive species).
- The interior and exterior of vehicles, machinery, and equipment must be free of garbage and food. The interiors of vehicles and the cabs of machinery must be vacuumed clean. Floor mats will be sanitized with a solution of at least 70-percent isopropyl alcohol or a freshly mixed 10-percent bleach solution.
 - Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter action area. Treatment is the responsibility of the equipment or vehicle owner and operator.
 - If slinging in a load (equipment, supplies, etc.) into the forest, everything should be wrapped up if it is to be sitting at the landing zone prior to sending out.
- Base yards and staging areas inside and outside natural areas and native habitat must be kept free of invasive species.
 - Base yards and staging areas are to be inspected at least weekly for invasive species and any invasive found is to be removed immediately. The local land manager(s) will determine what species are to be targeted in these inspections and removal procedures. The local land manager will also ensure regulatory compliance with all actions. Land managers are to pay particular attention to where vehicles are parked overnight, keeping areas within 30-feet of vehicles free of debris. Parking on pavement and not under trees, while not always practical, is best.
 - Project vehicles or equipment stored outside of action area, such as a private residence, are to be kept in a pest free area as defined by the onsite land or project manager.

General BMPs to prevent the spread of Brown Tree Snakes (BTS) and Coconut Rhinoceros Beetle (CRB) from Guam to other ports of entry:

- BTS and adult CRB are nocturnally active. From sunset to sunrise, both species are at greatest risk to contact and enter cargo or transportation vehicles (e.g., planes, boats, vehicles). The loading of cargo containers, boats, planes, or any transport vessels will be conducted during daylight hours when there is a lower chance of movement of individuals.
- CRB are attracted to light. Cargo loading areas will only be operated during the day and all containers will be closed and away from lighted areas at night.
- All cargo or transportation vehicles (e.g., planes, boats, vehicles) originating on Guam will be inspected for BTS and CRB.
- Private boats departing Guam small boat harbors and bound for locations in the CNMI will be inspected for BTS and operators can receive a free inspection from USDA Wildlife Services (WS).
- Cargo can be anything and packed in any way: loose (breakbulk), palletized, containerized, etc.
- Inspections will be conducted for all outbound aircraft, boats, cargo, household goods, vehicles, and any items that may depart Guam via the transportation network.

- Cargo will be inspected at all stages of build-up all the way through to departure. Final cargo inspections will be as close to loading as possible.
- Building and construction materials, in particular pipes, personal vehicles or breakbulk cargo, are of greatest risk to harbor BTS.
- Inspections for either species will be conducted during the day and occur during daylight hours the day of departure prior to 1800 hours.
- Inspections will be conducted using canine BTS detector dog teams.

Contact Guam WS at (671) 635-4400 or fax (671) 635-4401 for more information on the inspection of cargo and household goods.

General BMPs to prevent the spread of Little Fire Ants:

- All work vehicles, machinery, and equipment are to be inspected for invasive ants prior to entering the action area.
 - A visual inspection for little fire ants (*Wasmannia Auropunctata*) is to be conducted prior to entry into action area.
 - Hygiene is paramount but even the cleanest vehicle may transport little fire ants. Place insect bait into refillable tamper resistant bait stations. Note larger vehicles, such as trucks, may require multiple stations. Monitor bait stations frequently (every week at a minimum) and replace bait as needed. If the station does not have a sticker to identify the contents, apply a sticker listing contents of the station. More detailed information on baiting can be found here: https://littlefireants.com/wp-content/uploads/02a-LFA-Fact-Sheet_v2.5_May2020.pdf.
 - Any machinery, vehicles, equipment, or other supplies found to be infested with ants (or other invasive species) must not enter action area until it is sanitized and re-tested following a resting period of at least 24 hours. Infested vehicles must be sanitized following recommendations by the Hawaii Ant Lab (<http://www.littlefireants.com>) or other ant control expert and in accordance with all State and Federal laws. Treatment is the responsibility of the equipment or vehicle owner and operator.
- For individuals working in the action area:
 - Before going into the action area, visually inspect and clean clothes, boots, pack, radio harness, tools, and other personal gear and equipment, for seeds, soil, plant parts, insects, and other debris. A small brush is handy for cleaning boots, equipment, and gear. Soles of shoes are to be sanitized using a solution of greater than 70 percent isopropyl alcohol or a freshly mixed 10 percent bleach solution.
 - Immediately before leaving the action area, visually inspect and clean your clothes, boots, pack, radio harness, tools, and other personal gear and equipment, for seeds, soil, plant parts, insects, and other debris. Soles of shoes are to be sanitized using a solution of greater than 70 percent isopropyl alcohol or a freshly mixed 10 percent bleach solution.
 - Little fire ants nest in trees. If you are under a tree and that tree is bumped or somehow stressed, the threat response of the ants is to fall from the leaves and sting the person under the tree. If you are subject to an ant attack, do not panic. The ants are extremely small, but their stings are painful, so

make sure you remove all ants from your body and clothing. The stings produce inch long welts that are itchy and painful and can last for weeks.

- Treat stings as you would other insect stings. In some persons, stings can produce life threatening reactions. Stocking antihistamine in the first aid kit is a reasonable precaution.

General BMPs to prevent the spread of Rapid Ohia Death and Rat Lungworm Disease:

- All cutting tools used in an action area must be sanitized to prevent the spread of the Rapid Ohia Death (ROD) fungus.
 - Avoid wounding ohia trees and roots with mowers, chainsaws, weed eaters, and other tools. Cut only the minimum number of trees and branches as approved for the project.
 - All cutting tools, including machetes, chainsaws, and loppers must be sanitized to remove visible dirt and other contaminants prior to entry into action area. Tools may be sanitized using a solution of greater than 70 percent isopropyl alcohol or a freshly mixed 10 percent bleach solution. One minute after sanitizing, you may apply an oil-based lubricant to chainsaw chains or other metallic parts to prevent corrosion.
 - Only dedicated tools and chainsaws are to be used to sample known or suspected ROD infected trees.
 - Vehicles, machinery, and equipment must be cleaned as described above.
- Imported ohia firewood, logs, and ohia parts:
 - Ohia firewood, logs, and parts are not to be transported. For State guidance see: <http://hdoa.hawaii.gov>.
- Rat Lungworm disease is caused by a parasite that can infect humans who consume raw or undercooked infected snails or slugs or consume raw produce that contains a small infected snail or slug. Infection is rare but can be serious. Symptoms can include severe headache, neck stiffness, low grade fever, nausea, and vomiting anywhere from one to six weeks after exposure. The disease is not spread person to person. Anyone who handles snails or slugs is to wear gloves or wash hands. Eating unwashed produce is discouraged.

Water Quality

FEMA will apply the following set of general water quality conservation measures to each action authorized under this PA. The following measures will be required, as applicable, and incorporated into projects to minimize the degradation of water quality and minimize the negative consequences to fish and wildlife resources (USFWS, 2018).

- Turbidity and siltation from project-related work will be minimized and contained within the vicinity of the site through the appropriate use of effective silt containment devices and the curtailment of work during adverse tidal or weather conditions.
- Dredging or filling in the marine environment will be scheduled to avoid coral spawning and recruitment periods and sea turtle nesting and hatching periods.
- Dredging and filling in the marine or aquatic environment will be designed to avoid or minimize the loss special aquatic site habitat (beaches, coral reefs, wetlands, etc.) and the function of such habitat will be replaced.
- All project-related materials and equipment (dredges, barges, backhoes, etc.) to be placed in the water will be cleaned of pollutants prior to use.
- No project-related materials (fill, revetment rock, pipe, etc.) will be stockpiled in the water (intertidal zones, reef flats, stream channels, wetlands, etc.) or on beach habitats.

- All debris removed from the marine or aquatic environment will be disposed of at an approved upland or ocean dumping site.
- No contamination (trash or debris disposal, non-native species introductions, attraction of non-native pests, etc.) of adjacent habitats will result from project-related actions. This will be accomplished by implementing a litter-control plan and developing a Hazard Analysis and Critical Control Point Plan (HACCP) to prevent attraction and introduction of non-native species.
- Fueling of project-related vehicles and equipment will take place at least 50 feet away from the water and a Spill Prevention, Control, and Countermeasure (SPCC) plan to control petroleum products accidentally spilled during the project will be developed. Absorbent pads and containment booms will be stored on-site, if appropriate, to facilitate the clean-up of accidental petroleum releases.
- Any under-layer fills used in the project will be protected from erosion with stones (or core-loc units) as soon after placement as practicable.
- Any soil exposed near water as part of the project will be protected from erosion (with geotech, filter fabric etc.) after exposure and stabilized as soon as practicable (with native or non-invasive vegetation matting, hydroseeding, etc.).

Species-Specific Avoidance and Minimization Measures

The following conservation measures will be required, as applicable, and incorporated into projects to avoid or minimize the potential project impacts to threatened and endangered animals and plants. In addition, applicants must adhere to the species avoidance dates provided in Appendix E, which include survey requirements and other restrictions by species (USFWS, 2017, 2019a, 2019b).

For the purpose of this PA, a qualified biologist consists of an environmental professional with at least a bachelor's degree in Biology, Ecology, Natural Resources, Environmental Sciences, or similar, and has significant experience over multiple years working with ESA-listed species, their habitats, and ESA implementation in Hawaii or the Pacific Islands.

Kauai cave wolf spider and Kauai cave amphipod

- A qualified biologist familiar with the species will survey project area for depth of soil deposits and the presence of caves. Any areas with soil deposits greater than 12 inches are not likely to provide appropriate habitat or have the species present.
- Any areas with the presence of caves or with soil deposits less than 12 inches are not covered by this PA. Any action in those areas require a separate consultation with the Service.
- No smoking near any cave entrances.

Hawaiian Goose

- Do not approach, feed, or disturb Hawaiian geese.
- If Hawaiian geese are observed loafing or foraging within the action area during the breeding season (September 1 to April 30), halt work and have a qualified biologist familiar with the nesting behavior of Hawaiian geese survey for nests in and around the action area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of three or more days (during which the birds may attempt to nest).

- Cease all work immediately and contact the Service for further guidance if a nest is discovered within a radius of 100 feet of project activities. A 100-foot boundary will be clearly marked around the nest with guidance from a qualified biologist, and actions will remain outside the boundary.
- In action areas where Hawaiian geese are known to be present or observed during construction, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.

Hawaiian Seabirds

- Fully shield all outdoor lights so the bulb can only be seen from below bulb height and only use when necessary.
- Install automatic motion sensor switches and timer controls on all outdoor lights or turn off lights when human action is not occurring in the lighted area.
- Avoid nighttime construction during the seabird fledging period, September 15 to December 15.

For tower or antennae projects, include the following:

- The profile of the tower will be as small as possible, minimizing the extent of the tower that protrudes above the surrounding vegetation layer, and avoid the use of guywires.
- If the top of the tower must be lit to comply with FAA regulations, use a flashing red light versus a steady-beam red or white light.
- If possible, co-locate with existing towers or facilities.

For projects occurring near known seabird colonies, include the following:

- Where fences extend above vegetation, integrate three strands of polyethylene tape into the fence to increase visibility.
- For powerlines, guy wires and other cables, minimize exposure above vegetation height and vertical profile.

Hawaiian Waterbirds

- In action areas where waterbirds are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site or nearby.
- Cover any container that has the potential for collecting low standing water.
- Have a biological monitor that is familiar with the species' biology conduct waterbird nest surveys where appropriate habitat occurs within 100 feet of the proposed action area prior to project initiation. Repeat surveys again within three days of project initiation and after any subsequent delay of work of three or more days (during which the birds may attempt to nest).

If a nest or active brood is found in the action area:

- Contact the Service within 24 hours for further guidance.
- Establish and maintain a 100-foot buffer around all active nests or broods until the chicks or ducklings have fledged. Do not conduct potentially disruptive actions or habitat alteration within this buffer.
- Have a biological monitor that is familiar with the species' biology present in the action area during all construction or earth moving actions until the chicks or ducklings fledge to ensure that waterbirds or nests are not adversely impacted.

Hawaiian forest birds

- Avoid conducting activities within forest bird habitat that:
 - Promote the spread or survival of invasive species.
 - Increase mosquito populations or stagnant water habitat.
 - Increase wildfire threat to montane forest habitats.
 - Remove tree cover during the peak breeding season (January 1 to June 30).
- Avoid using playback calls or recordings during bird surveys.

Friendly ground dove

- An individual who is knowledgeable of friendly ground dove biology and life history will survey work area at least two days prior to the start of the project to determine if the friendly ground dove is in the area. Surveys will also occur prior to the start of each work day.
- If friendly ground dove is found in or within 100 feet of the work area, all work will cease, with the work crew quietly leaving the area until the bird(s) leave on their own. Work crew will not encourage birds out of the work area or vicinity.
- If a nest is found, all work will cease and the Service will be notified within three working days.

Nightingale Reed-Warbler

- Prior to project initiation, a qualified biologist will survey the action area to determine if the nightingale reed-warbler is present in the action area. If present, CNMI Division of Fish and Wildlife (DFW) and the Service will be notified prior to the commencement of work.
- If an active nightingale reed-warbler nest is present, a 165-foot (50-meter) boundary will be clearly marked around the nests with guidance from a qualified biologist, and all actions will remain outside the boundary.
- If nightingale reed-warblers are found to be present, a qualified biologist will monitor any individual nightingale reed-warblers or nests daily throughout the duration of the project and brief workers of the last known location so that individuals or groups of birds can be avoided.
- When possible, the use of equipment that generates noise greater than 60 decibels will be limited to the non-active or non-peak breeding seasons from (April 1 to June 30) and (October 1 to December 31).
- Due to the reliance of nightingale reed-warblers on native forest habitat, projects will minimize the encroachment and colonization of invasive plant and vine species to the greatest extent possible.

Mariana crow

- Proposed project sites in forested areas of Rota should be surveyed for the Mariana crow by CNMI DFW staff.
- Restrict all project work to periods outside the peak breeding and nesting season (August 1 to February 28).
- No limestone forest should be removed to implement any of the proposed actions.
- Staff from CNMI DFW should be invited to inspect the property during any vegetation removal to ensure no unanticipated habitat is removed.

Guam rail

- If a Guam rail is present within 500 feet of the project site, postpone work until the bird has left the area.
- Do not clear vegetation beyond a 33-foot wide swath.

Guam Micronesian kingfisher

- Project-related removal of limestone forest, ravine forest, coconut plantation, or Palma brava (*Heterospatha elata*) grove should be avoided.

Mariana common moorhen

- Prior to project initiation, a qualified biologist will survey the action area to determine if it is occupied by moorhens.
- If moorhens are present, a qualified biologist will monitor any individuals or nests throughout the duration of the project and inform workers of the last known location so that individuals or groups of birds can be avoided.
- If an active moorhen nest is present, a 150-foot (45-meter) boundary will be clearly marked around the nest with guidance from a qualified biologist, and actions will remain outside the boundary.
- Due to the reliance of this species on open water wetland habitat, after the completion of clean-up and response actions the project proponent will minimize the encroachment and colonization of invasive plant and vine species to the greatest extent possible.

Micronesian megapode

- Prior to project initiation, a qualified biologist will survey the action area to determine if it is occupied by a megapode.
- If present, a qualified biologist will monitor any individual megapodes or nests throughout the duration of the project and inform workers of the last known location so that individuals or groups of birds can be avoided.
- If an active megapode nest is present, a 150-foot (45-meter) boundary will be clearly marked around the nest with guidance from a qualified biologist, and actions will remain outside the boundary.
- Due to the reliance of this species on native forest habitat, projects will minimize the encroachment and colonization of invasive plant and vine species to the greatest extent possible.

Mariana gray swiftlet and Pacific sheath-tailed bat

- In areas of known swiftlet or bat presence, a qualified biologist as defined herein will survey the action area to determine if it is occupied by swiftlets, bats, or near a roosting cave.
- Actions that may increase human disturbance and noise within 1,640 feet (500 meters) of a limestone cave entrance and within the caves themselves will be avoided.
- Construction of vertical structures and use of guy wires that may pose a flight hazard to swiftlets or bats will be avoided.
- Avoid the use of pesticides within areas of known swiftlet or bat presence.

Anchialine pool shrimp

Surveys should be conducted for the presence of Anchialine pools prior to the start of project actions. If anchialine pool shrimp are observed during the survey, this PA shall not be used; a separate consultation with the Service is required. NOTE: You cannot survey for anchialine pool shrimp without a permit as identification requires trapping, capturing, and holding. In order to avoid Section 9 violations, surveyor must hold a section 10(a)(1)(A) permit from the Service.

- Protect anchialine pools (both in and around) from the following human disturbance:
 - Restrict vehicles to existing roads and trails.
 - Prevent trash, and other waste from entering into anchialine pools.
 - Avoid or limit to the maximum extent practicable entrance into the anchialine pools.
 - Install educational signs near anchialine pools to inform people of the presence of sensitive species and habitats.
 - No draining degraded water into the anchialine pool or surrounding area as there is subterranean connections between the pools.

Picture-wing flies

Surveys should be conducted for the presence of picture wing flies prior to the start of work. If picture-wing flies are observed during the survey, this PA is not to be used and a separate consultation with the Service is required. NOTE: You cannot survey for picture-wing flies without a permit as identification requires trapping, capturing, and holding. In order to avoid Section 9 violations, surveyor must hold a section 10(a)(1)(A) permit from the Service.

- If the site is potentially occupied based on location and presence of host plants, conduct surveys prior to the start of any work.
- Avoid clearing forest vegetation within 200 feet of a site potentially occupied by endangered *Drosophila*.
- Restrict construction equipment to existing roads and trails.

Hawaiian damselflies

Stream surveys should be conducted prior to the start of work to determine if damselfly habitat occurs project area. If listed damselflies are observed during the survey, this PA is not to be used and a separate consultation with the Service is required. NOTE: You cannot survey for damselflies without a permit as identification requires trapping, capturing, and holding. In order to avoid Section 9 violations, surveyor must hold a section 10(a)(1)(A) permit from the Service.

All of the damselflies species are site specific, so check for detailed locations if stream work is occurring.

M. leptodemas breeds in slow reaches of streams and seep-fed pools. *M. nesiotus* is found along one stream on Maui (formerly on Hawaii as well). Naiads may be terrestrial or semi-terrestrial and the species appears to be closely associated with uluhe.

M. nigrohamatum nigrolineatum occurs in slow sections or pools along mid-reach and headwater sections of upland streams and seep-fed pools. *M. oceanicum* is found in swiftly flowing sections of streams, usually amid rocks and gravel in stream riffles. Naiads can forage out of the stream on wet moss on rocks.

M. pacificum is found in seepage-fed pools cut off from the main stream channel, usually in areas with thick vegetation. Formerly found on all islands, now known from Molokai, Maui, and Hawaii Islands at low elevations. *M. xanthomelas* is known from Hawaii, Maui, Lanai, Molokai, Oahu, and formerly Kauai. It breeds in a widespread number of sites, including anchialine pools, coastal wetlands, small streams, and artificial ponds at low elevations.

Hawaiian yellow-faced bees

Surveys should be conducted for Hawaiian yellow-faced bee habitat before project work begins. If Hawaiian yellow-faced bees are observed during the survey, this PA is not to be used and a separate consultation with the Service is required. NOTE: You cannot survey for Hawaiian yellow-faced bees without a permit as identification requires trapping, capturing, and holding. In order to avoid Section 9 violations, surveyor must hold a section 10(a)(1)(A) permit from the Service

General species information (bold islands are known populations):

Species	Island(s)	Habitat
<i>H. anthracinus</i>	Hawaii, Maui, Kahoolawe , Lanai, Molokai, Oahu	Coastal and lowland dry forests
<i>H. assimulans</i>	Maui, Kahoolawe, Lanai , Oahu	Coastal and lowland dry forests
<i>H. facilis</i>	Maui, Lanai, Molokai, Oahu	Coastal and dry and mesic shrublands and forests
<i>H. hilaris</i>	Maui, Lanai, Molokai	Coastal to dry forest; obligate parasite on <i>H. anthracinus</i> , <i>H. longiceps</i> , and <i>H. asssimulans</i> .
<i>H. kuakea</i>	Oahu	Lowland mesic
<i>H. longiceps</i>	Maui, Lanai, Molokai, Oahu	Coastal and dry shrubland
<i>H. mana</i>	Oahu	Lowland mesic; possible close association with <i>Santalum freycinetianum</i>

For coastal species:

- If an action will occur adjacent to known occupied habitat, no action will take place within 328 feet around the habitat.
- Protect all coastal strand habitat from human disturbance, including:
 - No fires or wood collecting.
 - Leave woody debris in place.
 - Restrict vehicles to existing roads and trails.
 - Post educational signs to inform people of the presence of sensitive species.

For the non-coastal species:

- Ant control should be implemented.

Blackburn's Sphinx Moth

- A qualified biologist familiar with the species will survey areas of proposed actions for Blackburn's sphinx moth and its larval host plants prior to work initiation.

- Surveys will be conducted during the wettest portion of the year (usually November 1 to April 30, or several weeks after a significant rain), and within four to six weeks prior to construction.
- Surveys will include searches for eggs, larvae, and signs of larval feeding (chewed stems, excrement, or leaf damage).
- If moths or the native aiea or tree tobacco taller than three feet are found during the survey, please contact the Service for additional guidance to avoid adverse effects. If no Blackburn's sphinx moth, aiea, or tree tobacco are found during surveys, it is imperative that measures be taken to avoid attraction of Blackburn's sphinx moth to the project location and prohibit tree tobacco from entering the site:
 - Remove any tree tobacco less than three feet tall.
 - Monitor the site every four to six weeks for new tree tobacco growth before, during and after the proposed ground-disturbing action.
 - Monitoring for tree tobacco can be completed by anyone provided with picture placards of tree tobacco at different life stages.

Mariana Eight Spot Butterfly and Mariana wandering butterfly

- Survey the project action area for host plants of the listed butterflies and if a host plant occurs near the project, visibly mark of the area occupied by the butterfly plant and implement the buffer distances in Table 1 to avoid affecting the plant. Where project actions will occur within these buffer distances, additional consultation with the Service is required.

Hawaiian Hoary Bat

- Do not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season, June 1 to September 15.
- Do not use barbed wire for fencing.

Mariana fruit bat and little Mariana fruit bat

- Minimize alteration or loss of bat habitat to protect roosting, foraging, and breeding sites.
- Limit exposing bat locations to the public and contractors to reduce potential poaching.
- If a bat is present within 492 feet (150 meters) of the project site postpone work until the bat has left the area to reduce harassment of the bats.
- No lighting will be used from dusk to dawn within 492 feet (150 meters) of all potential bat roost habitat.
- Before the start of construction, all construction and project personnel will be briefed regarding the presence of all listed species and the importance of minimizing and avoiding the impacts to these species and their habitat.
- Exercise special care to maintain natural surroundings as much as possible.
- If there is a potential for the presence of bats within the project area, one week prior to the start of construction, the project site and adjacent areas will be surveyed by a qualified biologist to determine if bats are present. If bats are observed within 492 feet (150 meters) of the project site, all activities within 492 feet (150 meters) of the bat(s) will be delayed until the animal(s) have left of their own accord. Surveys will be conducted every morning prior to commencement of work.

Sea Turtles

To avoid or minimize potential project impacts to sea turtles and their nests you will implement the following conservation measures:

- No vehicle use on or modification of the beach or dune environment during the sea turtle nesting or hatching season (May 1 to December 31 for Hawaii; throughout the year in Guam and the CNMI; October 1 to March 31 for American Samoa).
- Do not remove native dune vegetation.
- Have a qualified biologist familiar with sea turtles conduct a visual survey of the action area to ensure no basking sea turtles are present.
- Remove any project-related debris, trash, or equipment from the beach or dune if not actively being used.
- Do not stockpile project-related materials in the intertidal zone, reef flats, or stream channels.

If a basking sea turtle is found within the action area:

- Cease all mechanical or construction actions within 100 feet until the animal voluntarily leaves the action area.
- Cease all actions between the basking turtle and the ocean.

To avoid or minimize potential project impacts to sea turtles from light attraction, implement the following conservation measures:

- Avoid nighttime work during the nesting and hatching season (May 1 to December 31 for Hawaii; throughout the year in the Marianas; October 1 to March 31 for American Samoa).
- Minimize the use of lighting and shield all project-related lights so the light is not visible from any beach or the water.
- If lights can't be fully shielded or if headlights must be used, fully enclose the light source with light filtering tape or filters.
- Incorporate design measures into the action or operation of buildings adjacent to the beach to reduce ambient outdoor lighting such as tinting or using automatic window shades for exterior windows that face the beach; reducing the height of exterior lighting to below three feet and pointed downward or away from the beach. In order to minimize light intensity, lighting sources will use low pressure sodium 18 watts, 35 watts and lighting sources that produce light of 580 nanometers or longer and, when possible, include timers and motion sensors (Florida Fish and Wildlife Commission, 2018).

The following conservation measures are required for action types that have the potential to result in vessel or equipment collisions with ESA-listed species:

- Vessel operators will alter course to remain at least 150 feet (45 meters) from sea turtles.
- Vessel operators will reduce vessel speed to five knots or less when piloting vessels in areas of known or suspected turtle occupancy.
- If approached by a turtle, the vessel operator will put the engine in neutral and allow the animal to pass.
- Vessel operators will not encircle or trap sea turtles between multiple vessels or between vessels and the shore.

Slevin's skink

If ESA-listed skinks may occur in the vicinity of the proposed action area, the following conservation measure will be implemented:

- On Cocos Island, limit all project activities to existing areas of development and mowed grass lawn.

Snails

If ESA-listed tree snails may occur in the vicinity of the proposed action area, you will implement the following conservation measures:

- Where work must be conducted in forested areas, a qualified biologist will survey proposed action areas for the presence of snails following the approved Service survey protocol. NOTE: In order to avoid Section 9 violations, the surveyor must hold a section 10(a)(1)(A) permit from the Service.
- If any snails are found, determine the extent of the colony by surveying outwards in all directions from the original sighting until individuals are no longer detected.
- Avoid cutting or removing vegetation within 200 feet (60 meters) of the known occurrence to minimize impacts to the tree snails and their habitat.
- Mark the trees and shrubs occupied by snails with brightly colored flagging tape and keep Vehicle, equipment, and foot traffic to a minimum of 33 feet (10 meters) from marked vegetation to avoid inadvertently dislodging and trampling individuals.
- Avoid clearing understory and canopy vegetation outside existing developed areas; intact vegetation is important for maintaining microclimates and air movement conditions that allow snails to survive in a given area.
- Confine movement of heavy equipment to existing roadways.
- If helicopters are used to reach the action area, avoid affecting occupied sites with helicopter rotor wash that could dislodge snails by selecting alternate landing areas.

Plants

- Minimize disturbance outside of existing developed or otherwise modified areas.
- When disturbance outside existing developed or modified sites is proposed, conduct a botanical survey for ESA-listed plant species within the action area (surveys will be conducted by a botanist with documented experience in identifying native plants); surveys will be conducted during an appropriate time period for the potentially occurring protected species, if possible; for example, “surveys will be conducted during the wettest part of the year (e.g., October to April)”.
- The boundary of the area occupied by ESA-listed plants will be marked with flagging by the surveyor and implement the buffer distances in Table 2. Where project actions will occur within these buffer distances, additional consultation with the Service is required.
- Where disturbed areas do not need to be maintained as an open area, restore disturbed areas using native plants as appropriate for the location.
- Ensure that all equipment, personnel and supplies are properly checked and are free of contamination (i.e., weed seeds, organic matter, or other contaminants) before entering action areas.
- Quarantines or management actions occurring on specific priority invasive species in the vicinity of a project will be adequately addressed, as required.
- These conservation measures apply to areas outside of designated critical habitat; if project actions occur within designated critical habitat, additional consultation with the Service is required.

Direct Impacts

The following conservation measures are required for actions that have the potential to result in direct physical impacts to ESA-listed species or designated critical habitat.

- Before any equipment or materials are placed in undisturbed habitats (e.g., greenfield sites), a qualified biologist will survey the action area to ensure that no ESA-listed species are present prior to project initiation where the equipment, anchors, materials, etc. are expected to disturb habitats.
- Equipment operators will employ “soft starts” when initiating work each day and after each break of 30 minutes or more that directly impacts the substrates and vegetation. Buckets and other equipment will be operated in a slow and controlled manner for the first several cycles before achieving full operational impact strength or tempo.
- All objects lowered to the bottom in aquatic or marine habitats will be lowered in a controlled manner. This can be achieved utilizing buoyancy controls such as lift bags, or the use of cranes, winches, or other equipment that affect positive control over the rate of descent.
- Vegetation removal will avoid injuring ohia to the maximum extent practicable; ohia wood or parts will be burned or disposed appropriately (e.g., will not be transported inter-island); and gear, tools, vehicles, and equipment will be cleaned prior to entering action areas.

Entanglement

The following conservation measures are required for actions that have the potential to result in the entanglement of ESA-listed species.

- Mooring systems will employ the minimum line length necessary to account for expected fluctuations in water depth due to tides and waves.
- Fencing will employ the minimum line length necessary to account for appropriate exclusion or enclosure.
- Mooring systems and supportive lines such as guy wires will be designed to keep the line as tight as possible, with the intent to eliminate the potential for loops to form.
- Mooring lines will consist of a single line. No additional lines or material capable of entangling may be attached to the mooring line or to any other part of the deployed system.
- Mooring systems will be designed to keep the gear off the bottom, by use of a mid-line float when appropriate, with the intent to eliminate entanglement of the line on the substrate.
- Any permanent or long-term deployments will include an inspection and maintenance program to reduce the likelihood of failures that may result in loose fencing, lines, etc.
- Mooring systems, including those used for temporary markers, scientific sensor buoys, or vessel moorings, and construction fencing will be completely removed from the environment immediately upon completion of the authorized work or the end of the mooring’s, fence’s, etc. service life.

Elevated Noise

The following conservation measures are required for actions that have the potential to result in the exposure of ESA-listed species to noise levels above 65 decibels.

- Special attention will be given to ensure that no ESA-listed animal species are within 150 feet of equipment prior to any action (e.g., dredging, clearing, etc.).
- Operations will immediately shut down should an ESA-listed animal (e.g., sea turtle) enter the action area within the mandatory 150-foot shut down range.
- Equipment operators will employ “soft starts” when initiating work to reduce initial sound pressure levels. The soft start method is intended to be a warning mechanism for fauna so that they can vacate the action area before maximum sound pressure levels are reached.

Marinas and Harbors

The following conservation measures are required for actions associated with the repair, improvement, or replacement of marina or harbor infrastructure.

- Repair and replacement of over-water and in-water structures, such as piers, docks, and launch ramps, is limited to their existing footprints under this PA.
- The installation or proofing of steel piles, concrete piles or sheet pile with impact hammer is not authorized.
- Replacement decking will be designed to reduce in-water shading to the greatest extent practicable.
- Repair and removal work will be accomplished in a manner that minimizes the potential spread of invasive species that may reside on the piles, such as immediate removal from the water upon extraction, or other appropriate approved containment methods.
- Removed materials must be disposed of at an approved upland disposal site.
- The use of treated wood that would be in constant contact with the marine or aquatic habitats is not authorized.

Pilings

The following conservation measures are required for actions associated with the installation, repair, replacement, or removal of pilings.

- Detailed information about the size of the piles, duration of the installation of each pile, and details of proposed species monitoring will be provided on the SLOPES Internal Notification Form.
- Repair and removal work will be accomplished in a manner that minimizes the potential spread of invasive species that may reside on the pilings, such as immediate removal from the water upon extraction, or other appropriate approved containment methods.
- Removed pilings must be disposed of at an approved upland disposal site.
- The installation or proofing of steel piles, concrete piles, or sheet pile with impact hammer in the water is not authorized.
- The use of any treated wood (i.e., treated pilings, cross beams, fenders, bunks, etc.) that would be in constant contact with marine or aquatic habitats is not authorized.

Buoys and Other Similar Structures

The following conservation measures are required for actions associated with the installation or repair of buoys or other similar structures.

- Anchoring locations and moorings must be designed to avoid, to the greatest extent practicable, impacts to live corals, sea grass, and other benthic organisms and sensitive habitats.

- Deployment of moored active acoustic devices must operate in frequency bands well outside the hearing ranges of ESA-listed marine life such as certain wave and current monitoring systems operating above 200 kilohertz.
- Moorings with acoustic release devices may only transmit a brief signal during deployment and during recovery of the mooring.
- Moorings will employ the conservation measures designed to reduce the potential for entanglement, as outlined herein.

Dredging and Excavation

The following conservation measures are required for actions associated with dredging.

- Heavy equipment will be operated from above and out of the water, except for the actual dredging apparatus (e.g. clamshell buckets, or the scoop and articulated arm of a backhoe, hydraulic head, etc.).
- Use of hydraulic dredging must include the installation of excluder devices adequate to prevent the entrainment or impingement of protected marine species such as sea turtles.
- The use of a trailing suction hopper dredge, or hopper dredge, is not authorized. There have been numerous observed mortalities of sea turtles associated with these vessel types.
- The use of dustpan dredges, which use high velocity water jets to loosen material before sucking it into their apparatus, is not authorized. This technique causes high turbidity and the effects of water velocities from water jets to ESA-listed species have not been evaluated.
- The use of cutter head dredges is authorized if:
 - The suction head diameter is 36 inches or less;
 - The maximum intake velocity of 15 feet per second or less; and
 - The intake velocity is three feet per second or less three feet away from the suction head.
- The use of pipeline dredges is authorized if:
 - The opening diameter is not larger than 36 inches;
 - The maximum intake velocity is 15 feet per second at the source;
 - The intake is three feet per second or less three feet away from the opening; and
 - To avoid lethal entrainment or dismemberment, pipeline openings larger than one foot in diameter must be either screened with a two inch or less mesh, operated or monitored by a diver, or placed behind a barrier (e.g., coffer dams or silt curtains).
- To minimize exposure to ESA-listed species in the water column, avoid moving the suction head through the water column while the pump is turned on. The suction will only be turned on when the suction head is at the bottom and in contact with the sediment, and it will be turned off before it is lifted to the surface.
- The portions of the equipment that enter the water will be clean and free of pollutants.
- Appropriate silt containment devices must be used and properly installed to avoid the potential degradation of adjacent habitats and aquatic vegetation.
- Dredged material must be deposited at upland sites, or at EPA designated ocean disposal sites, provided the sediment standards are met.

Utility Lines

The following conservation measures are required for actions associated with the construction, maintenance, improvement, or repair of utility lines:

- New utility corridors (i.e., new construction) are not authorized, except for service drops or connections to existing distribution lines.
- Maximum utility corridor width will be limited to the minimum width necessary for safe operation and maintenance.
- Utilities will be designed and constructed in a manner that minimizes negative consequences on aquatic and marine waters due to runoff and erosion, including adequate stormwater treatment.
- Utilities will be constructed as near as possible to pre-construction contours and elevations.

Water Courses and Coastal Features

The following conservation measures are required for actions associated with the maintenance or repair of existing water courses and coastal features such as bank stabilization structures, flood control structures, etc.

- No material will be discharged into special aquatic sites (i.e., wetlands, sanctuaries and refuges, mud flats, vegetated shallows, coral reefs, and riffle and pool complexes).
- Structures are limited to the current footprint only and will not extend towards the water.
- A project will involve no more than 500 linear feet of bank. Projects involving more than 500 linear feet of bank will require written approval from the Service or additional consultation, as directed by the Service.
- The maximum amount of material placed will not exceed the minimum needed for erosion protection.
- All material will be placed in a manner that will avoid erosion by normal or expected high flows.

Roads and Railways

The following conservation measures are required for actions associated with the maintenance, improvement, or repair of roads and railways:

- New road or rail (i.e., new construction) is not authorized.
- Maximum road or rail corridor width will be limited to the minimum width necessary for safe operation.
- Road and rail will be designed and constructed in a manner that minimizes negative consequences on surface and marine waters due to runoff and erosion, including adequate stormwater treatment.
- Road and rail will be constructed as near as possible to pre-construction contours and elevations.
- Road and rail water crossings must be bridged, or culverts installed, based on present or future (e.g., based on climate change data) 100-year flood flows, and in a manner that maintains surface flows with minimal modification to flow direction or velocity.

Bridges and Water Crossings

The following conservation measures are required for actions associated with the maintenance, improvement, repair, or replacement of bridges and culverts.

- Temporary fills must consist of clean, stable materials, and be placed in a manner that will not be eroded by expected high flows.
- Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations within 30 days of project completion.
- The installation or proofing of steel piles, concrete piles, or sheet pile with impact hammer is not authorized.
- The use of treated wood that would be constant contact with marine or aquatic habitats is not authorized.

CONSEQUENCES OF THE ACTION

Collision with Vehicles, Vessels, or Equipment

The use of vehicles and equipment will be required for most of the actions, ranging from transporting people and materials to heavy equipment operation. Many actions described above also involve the use of vessels. Vessels may range in size from small outboard boats used to install silt curtains or support divers, up to large tugboats and barges used to position heavy equipment at project locations.

Animal-vehicle collisions (AVCs) make up five percent of all U.S.-reported motor vehicle collisions every year and represent a growing problem. Between 2014 and 2017, insurance claims related to AVCs increased six percent. Wildlife vehicle collisions represent approximately 64 percent of total reports, while events involving domestic animals (e.g., dogs, cattle, etc.) are approximately 31 percent, and the remaining 5 percent of reports are unspecified. In addition to AVCs, collision with equipment and vessels, though slower moving, also have the potential for direct interaction with ESA-listed species. Potential injuries and their severity will depend on the speed and size of the vehicle, vessel, or equipment, the part that strikes the animal, and the body part impacted. Injuries may include bruising, broken bones or carapaces, lacerations, or death (FHWA, 2008).

Examples include Hawaiian goose road mortality in and around Hawaii Volcanoes National Park, particularly during the breeding season, as well as boat collisions with green sea turtles, indicated as a major threat around the main Hawaiian Islands in the recovery plan. Recovery plans for ESA-listed animals suggest that the incidence of collision is expected to increase as vehicle, vessel, or equipment size, speed, and traffic density increases, or as animal density increases. Consequently, drivers and operators must be responsible to actively watch for and avoid ESA-listed species, and to adjust their speed based on expected animal density and on lighting and turbidity conditions to allow adequate reaction time to avoid animals (NMFS and USFWS, 1998a, 1998b; Hazel et al., 2007; Lepczyk et al. 2019).

A relatively low number of vessel trips are expected to be conducted annually. In addition, the low speeds of construction equipment and expectation that vehicles, vessels, and equipment will be operated in accordance with the general conditions and conservation measures described herein will minimize the risk to listed species. The risk of collisions between project activity-related vehicles, vessels, and equipment and ESA-listed species is very low and therefore, discountable for all species considered in this PA.

Direct Physical Impact

Many actions described above involve the use of heavy equipment such as backhoes and cranes for project implementation. Some projects may include the placement of materials, such as large stones or concrete shapes, removing debris, clearing vegetation, grading, dredging, etc. All of these actions have the potential for materials to directly strike ESA-listed species should those species be present during equipment use or project materials placement. Potential injuries and their severity will depend on the species proximity when struck, the angle of the strike, and the body part impacted, but may include cuts, bruises, broken bones, and amputations, any of which could result in death.

Mobile animals will likely avoid action areas on their own due to ongoing human activities; however, the general conditions and species-specific conservation measures (e.g., buffer distances) require that the project manager ensure the action area is free of ESA-listed species and that all materials and equipment will be operated (e.g., lowered, swung, etc.) in a controlled manner. Therefore, the potential for impact with ESA-listed species is extremely low and the risk of a species being physically injured is discountable.

Entanglement

Many actions described above involve the temporary or permanent deployment of fencing, wiring, markers, buoys, etc. that ESA-listed aquatic and terrestrial species may encounter. Birds, bats, sea turtles, and other animals often become entangled with debris such as mooring lines, erosion control matting, or fencing. As such, these actions have the potential to result in the entanglement of ESA-listed animals. Drowning and death from exposure are the most serious potential effects of entanglement, while slow amputation of an appendage may occur if an entanglement becomes tighter over time, and animals may drag entangled material for the rest of their lives. This burden may require more exertion for movement, reduce foraging efficiency, and it may interfere with reproduction.

To minimize the risk of entanglement involving temporary or permanent deployment of markers, buoys, moorings, support lines (e.g., guy wires) erosion control matting and fencing, the conservation measures as described above are expected to result in well-maintained single-line moorings, minimized fencing lengths, and minimal slack in both support and mooring lines, thus preventing loops from forming in the lines. It is likely that ESA-listed species will pass along any lines or fencing without injury. Additionally, the conservation measures require the complete removal of mooring systems and fencing at the end of a project's life, along with inspection and maintenance for permanent or long-term deployments, minimizing the risk of entanglement. Furthermore, using erosion control products with biodegradable netting, rectangular-shaped or flexible mesh with adequate openings will prevent entanglement from erosion control matting. By incorporating the conservation measures outlined herein, potential effects to ESA-listed species due to entanglement-related actions are extremely unlikely to occur, and are therefore discountable.

Disturbance from Lighting and Noise

Nearly all actions described above involve work in habitats where ESA-listed species may be directly exposed to project-related activity. Species may be startled and result in stress should they encounter site preparation and construction actions such as lighting and noise. The reaction could range from one extreme where an animal calmly approaches and investigates the action, to

an opposite reaction of panicked flight, where an animal injures itself in an attempt to flee. In addition to actions and presence, artificial lighting can result in disturbance. While most species will not be affected by lighting, others are sensitive and susceptible to consequences from artificial lighting, such as seabirds and sea turtles. Projects that require lighting could result in direct and indirect effects on ESA-listed species. Lights are known to attract insect species and have the potential to attract ESA-listed night-flying bird species. The effects of light disturbance could arise from temporary construction actions at night (that require artificial lighting) or from construction of facilities with lighting (especially lighting mounted on towers). Artificial lighting can disorient seabird fledglings, causing them to eventually fall to the ground exhausted or increase their chance of colliding with artificial structures, while coastal lighting can also discourage female sea turtles from nesting and disorient hatchlings and nesting females from returning to the ocean.

The movement and operation of heavy equipment during project actions, such as vibratory pile driving, impact pile driving, drilling, cutting, or excavation can have indirect effects on ESA-listed species by increasing ambient noise and vibration. Noise and vibration from project actions may result in nest abandonment, fleeing, and temporary cessation of feeding or courtship behaviors, or cause physical harm when noise levels are substantially higher than existing background noise levels. The significance of the effects depends on the noise and vibration source, ambient noise and vibration levels, duration of the effects, physical and biological characteristics of the action area and adjacent areas, proximity, and physiology of the ESA-listed species.

Most actions will occur in areas of existing development (e.g., repair or replacing existing structures) and disturbance during the actions may not significantly differ from background levels. In addition, the ESA-listed animal species evaluated in this PA typically avoid human activity. The most likely effect of this type of interaction will be moderate stress to avoidance behavior leading to the animal rapidly leaving action areas without injury. Regarding artificial lighting, species-specific conservation measures, such as shielding or filtering lights, motion sensors, timers, and seasonal night work restrictions are intended to reduce the potential negative consequences associated with lighting for sensitive species.

Activities, such as blasting, and hammer pile driving may produce in-air and in-water sound levels capable of injury or adverse behavioral modifications for terrestrial and aquatic or marine life. Pile driving, in-water drilling, cutting, or excavation can have short-term adverse effects on aquatic wildlife species by increasing in-water noise and vibration. For example, when piles are driven into or adjacent to water, the high-intensity sound acts as a pressure wave that can cause barotrauma or harassment to fish. Barotrauma is the term used to describe the damage inflicted to soft tissue, such as the swim bladder or eyes, resulting from sudden changes in pressure caused by intense underwater sound. Vibratory driving produces less intense noise than impact driving and is unlikely to cause barotrauma however, it can still cause temporary shifts in hearing thresholds or alter behavior of ESA-listed species. Consequently, those actions are excluded from consideration under these SLOPES and will require separate consultation with the Service. Among the actions considered under these SLOPES capable of producing significant sound levels include maintenance dredging, in-water excavation, movement of large armor stones, benthic core sampling, and deployment of certain acoustic buoys are likely the loudest.

Effects of elevated noise vary with the frequency, intensity, and duration of the sound source, as well as the hearing characteristics of the affected animal. Effects to ESA-listed species may include physical injury or permanent hearing damage, also referred to as permanent threshold shifts, behavioral consequences through temporarily reduced sensitivity, also referred to as temporary threshold shifts, temporarily masked communications or acoustic environmental cues, and modified behavior such as attraction or avoidance.

NMFS recently developed and revised the acoustic technical guidance for assessing the effects of anthropogenic sound on marine mammal species; though marine mammals are not addressed in this PA, the following information is included for reference, as marine mammals are generally considered one of the most sensitive groups to elevated noise (i.e., applying marine mammal guidance and standards would provide superfluous protection to the species addressed in this PA). It should be noted that in addition to the ESA, all actions included under these SLOPES will be required to comply with the Marine Mammal Protection Act. For marine mammals, the threshold for permanent threshold shifts onset ranges from 202 to 232 logarithmic decibel peak sound pressure for impulsive noises, and ranges from 173 to 219 decibels for non-impulsive noises. The threshold for temporary threshold shifts ranges from 152 to 198 decibels for non-impulsive noises. Acoustics and their effects to sea turtles and other marine life have been studied much less than marine mammals, though NMFS has guidelines for sea turtles that have been incorporated into the species-specific conservation measures outlined herein.

The sound intensity at 165 feet and 328 feet from the source is approximately 142 decibels and 137 decibels, respectively. Adopting a mandatory shut-down range of 165 feet for work that generates distinct, short duration in-water sounds such as maintenance dredging, excavation and movement of large stones will minimize the potential for ESA-listed marine animals to be exposed to sound levels near the temporary threshold shifts threshold. Due to quicker attenuation, sounds will not be anywhere near the temporary threshold shifts threshold for terrestrial animals, though they may experience an insignificant level of behavioral modification in the form of temporary avoidance of the area out as far as 4,130 feet. NMFS and USACE have completed analysis of hammer-driven core sampling; the estimated in-air sound level was 90 decibels, yielding an in-water level of 116 decibels. This level remains well below the temporary threshold shifts threshold for impulsive noises and combined with the conservation measure of a mandatory shut-down range of 165 feet minimizes the potential for ESA-listed animals to be exposed to high received sound levels (NMFS and USACE, 2017).

Activities such as blasting, impact pile-driving, and new construction dredging may produce in-air or in-water sound levels capable of injury or adverse behavioral modifications for marine and aquatic species. Consequently, those actions are expressly excluded under this PA and will require separate consultation with the Service. Proposed actions that produce significant in-water sound levels include: maintenance dredging, in-water excavation, movement of large armor stones, benthic core sampling, vibratory hammer, and deployment of certain acoustic buoys. Based on the incorporation of conservation measures herein, exposure to elevated noise levels will not be likely result in injury to the ESA-listed species discussed in this PA and are considered insignificant.

Nearly all the actions described above involve work in or near potential habitats where ESA-listed species may be directly exposed to project-related activity. The general conditions and

conservation measures listed herein require applicants to reduce the likelihood of ESA-listed species interactions by surveying for and avoiding protected species before commencing work, and by postponing, adjusting, or halting operations when protected species are within the vicinity of project actions. In addition, the use of shielded lights and minimizing artificial lighting will protect ESA-listed species that are sensitive to light. Disturbance from lighting and noise related actions will be infrequent and non-injurious resulting in insignificant effects on the ESA-listed species discussed in this PA.

Turbidity and Sedimentation

Elevated turbidity and sedimentation may impact ESA-listed turtles, waterbirds, insects, and other aquatic plants and animals. Given that some species have aquatic phases (e.g., orange-black Hawaiian damselfly), increased turbidity could adversely affect their respiration or other biological functions. While sea turtles are an aquatic or marine species, they breathe air instead of water, and increased turbidity should not adversely affect their respiration or other biological functions. Non-aquatic (e.g., waterbirds) ESA-listed species may also be found in turbid waters, but avoid dense turbidity plumes in favor of clearer. These SLOPES expressly exclude large scale in-water actions capable of generating large sediment plumes, such as in-water trenching and new construction dredging, construction of new shoreline stabilization, and new roads. The actions included in this PA are relatively small-scale actions with limited amounts of in-water substrate disturbance that should not adversely affect any ESA-listed species. Additionally, the SLOPES requirements, exclusions, general conditions, and conservation measures include measures intended to prevent or reduce erosion and contain mobilized sediments in the marine environment.

The SLOPES requirements, exclusions, general conditions, and conservation measures for in-water work include measures intended to prevent or reduce erosion and contain mobilized sediments in the aquatic and marine environment (e.g., silt fencing, storm water controls, silt curtains, etc.). Exposure to elevated turbidity levels will be minimal and will be non-injurious to aquatic species, resulting in insignificant effects on all ESA-listed species discussed in this PA.

Waste and Discharges

Construction-generated waste may include trash that could cause digestive blockage, suffocation, or entanglement. Equipment spills and discharges from an action area could include hydrocarbon-based chemicals such as fuel oils, gasoline, lubricants, hydraulic fluids and other toxicants, which could expose protected species to toxic chemicals and contaminate soil or water sources during project implementation. Depending on the chemicals and their concentration, exposure could result in a range of effects, from avoidance of an area to the death of the exposed animal. Short-term effects of accidentally spilled hazardous material could include mortality of ESA-listed species, their prey, or plants that provide habitat. A high concentration of hazardous material may cause suffocation or poisoning of ESA-listed species. Spilled hazardous materials could also injure ESA-listed species or their prey without directly causing mortality through food web interactions. Long-term effects of spilled hazardous materials could include lingering elevated contaminant levels in soils and streambeds that could leach out and continue injuring or reducing reproductive success of ESA-listed species or their prey.

Local and Federal regulations prohibit the intentional discharge of toxic wastes and plastics into the environment. Based on the expectation that project-related equipment and vehicle or vessel

operators will comply with the conservation measures to contain and properly dispose of wastes and to inspect and properly maintain equipment to avoid leaks and spills, it is expected that project measures will prevent the introduction of wastes and toxicants into the environment. The implementation of conservation measures will significantly reduce these hazards. The project proponent will prepare a Spill Prevention and Pollution Control Plan to minimize the risk of spilled hazardous materials and other construction debris from entering soils and waterways.

Equipment will be inspected daily for fuel leaks, any fuel leaks discovered will be immediately cleaned up, wet cement and uncured concrete will not be allowed to enter waterways, stockpiled soils will be covered to prevent erosion, and all staging and hazardous material storage areas will be placed in upland areas that are paved, graveled, or otherwise non-erodible and away from water bodies or sensitive habitat. For proposed projects involving work over water, measures will be taken to ensure that construction debris is contained and does not fall into the water.

The SLOPES requirements, exclusions, general conditions, and conservation measures include measures intended to prevent the introduction of and exposure to wastes and toxicants into the environment. While discharges and spills could occur, they are expected to be infrequent, small, and quickly cleaned. Therefore, exposure to construction wastes and discharges that may result from project actions will result in insignificant effects on all protected species considered in this PA.

Herbicide Use

Any of the ESA-listed species could potentially be affected by herbicide use; however, the implementation of conservation measures outlined herein will avoid or minimize these potential effects. Projects that require use of chemical herbicides may result in direct or indirect effects on listed species. These effects may be temporary, semi-permanent, or permanent. The effects on listed animal species potentially include injury, mortality, abnormal behavioral changes, and induced sub-lethal effects. Additionally, herbicide application may result indirectly in the loss of prey species.

Use of herbicides may directly result in the removal, damage, or mortality of ESA-listed plant species. In addition, unintentional loss of listed plant species may occur directly through applicator error, or indirectly through changes in adjacent habitat that modify the site-specific physical conditions (shading, removal of associated species) required for the listed plant to survive. ESA-listed species may be indirectly affected through a variety of mechanisms, including drift, changes in food web, amount of shading that could affect the habitats of ESA-listed species, and micro- or macro-level habitat changes that alter the ability for the species to complete life history requirements. These effects may be either lethal or sub-lethal.

Beneficial effects to listed species may occur as a result of herbicide application. These beneficial effects include interruption of trends toward community succession or dominance of invasive species that may decrease habitat suitability for the listed species and may result in increased habitat value for these species. For some projects, herbicide application may reduce the risk of wildfires, which may reduce the potential for local or regional population decline.

Herbicide use would be minimal and applied in small quantities in targeted, localized application. The SLOPES requirements, exclusions, general conditions, and conservation

measures include measures intended to prevent the introduction of and exposure to herbicides into the environment. With the incorporation of the applicable conservation measures listed above, exposure to herbicides will be minimal and result in insignificant effects on the ESA-listed species discussed in this PA.

Invasive Species and Pathogens

Any of the listed species could potentially be affected by invasive species and pathogens; however, the implementation of the conservation measures outlined herein will avoid or minimize these potential effects. In general, there is potential for invasive species or pathogens to be introduced to previously uninvaded areas during implementation of an applicant's proposed project. During land-based construction, invasive species and pathogens are most typically introduced to an area when contaminated construction equipment is moved from a site containing the invasive species or pathogen to an uninvaded site. Seeds, propagules, and pathogens embedded in mud, soil, or other debris on construction equipment can fall into the soil or water of the uninvaded site. Invasive species (such as little fire ants, coconut rhinoceros beetle, or brown tree snake) and pathogens (such as Rapid Ohia Death) may also be transferred to an uninvaded site via construction materials or on the clothing or boots of those working at the site.

During in-water work, invasive species and pathogens can be introduced to a water body if vessels are inadequately cleaned prior to transfer between invaded and uninvaded sites. Waterborne invasive species and pathogens are also commonly introduced via ballast or bilge water discharge. Plant pathogens may be introduced on construction equipment or on nursery plant material used in revegetation. Once introduced, invasive species can adversely affect listed species and designated critical habitat through resource competition and predation. A major concern in Hawaii is the spread of Rapid Ohia Death (ROD). Pathogens can directly injure or kill ESA-listed species, or indirectly harm them by reducing prey abundance or detrimentally affecting aquatic and riparian vegetation. The risk of spreading invasive species and pathogens will be reduced by implementing conservation measures as described herein. Construction equipment, vehicles, clothing, waders, and boots will be properly cleaned prior to moving between action areas, particularly if the prior action area is known to contain invasive species or pathogens.

Based on the information provided above and the incorporation of conservation measures, exposure to invasive species and pathogens will result in insignificant effects on the ESA-listed species discussed in this PA.

Habitat Loss and Disturbance

Any of the ESA-listed species could potentially be affected by temporary disturbance to habitat; however, the implementation of the conservation measures herein will avoid or minimize these potential effects. Except for those proposed projects that solely involve updates to existing facilities, actions that occur only in existing disturbed or hardscape areas, or otherwise in areas where ESA-listed species are not likely to occur, the applicants' proposed projects may result in some form of habitat removal or disturbance. For the purposes of this PA, temporary habitat disturbances are defined as areas that return to pre-project conditions within one growing season. Generally, this means that habitat disturbance that happens during the dry season will be returned to pre-project habitat value by the end of the following dry season. For many ESA-listed

projects, temporary disturbances will result in effects that will be discountable or insignificant in nature.

Proposed projects may include actions that will temporarily or permanently disturb, or remove aquatic or terrestrial habitat, including, but not limited to, mowing, trimming, mechanical removal of vegetation, or physical modification to the substrate on which listed species depend. Other actions that will result in disturbance or loss include stream crossings of equipment, equipment staging and access, the placement of barges and other in-water construction equipment, disturbance to vegetation (including fuel reduction), temporary removal of large woody debris, or in-water maintenance actions. These actions may result in short-term degradation of habitat for listed species through a temporary loss of productivity or cover or a permanent and incremental reduction of habitat. If listed species are present, the disturbance or loss of habitat may cause shifts in habitat use or reduce the amount of habitat that the species are dependent on to complete their life history requirements (e.g., feeding, breeding, sheltering, migration or dispersal, etc.).

Nearly all actions described above involve work in or near habitats where ESA-listed species may forage on various species of plants, algae, fish, and invertebrates. Construction actions such as excavation, clearing, placement of armor stones, various concrete structures, and anchors may impact these resources through direct mechanical damage or destruction. Project components that can cause erosion and sediment mobilization also have the potential to disturb biological resources. Loss of significant levels of available biological resources may lead to lower growth rates, reduced fitness, reduced reproductive success, and potentially death. At a larger scale, this could eventually cause local extirpation through the death or emigration of members of that population. The actions listed under these SLOPES with the greatest potential to remove or damage forage habitats include maintenance dredging in aquatic environments, and site preparation and construction in terrestrial environments. Additional project actions that may result in habitat loss and disturbance include bank stabilization, roadway repair, and actions that include the placement of anchors or support structures on substrates. In addition, these SLOPES requirements, exclusions, general conditions, and conservation measures are intended to prevent or reduce habitat loss and disturbance.

Indirect effects of habitat disturbance vary based on the duration, extent, and magnitude of the project. The disturbance or removal of vegetation will reduce prey availability, reduce cover, and increase risk of predation for a listed species. Projects that affect vegetation could also lead to reduced habitat quality, quantity, and complexity of the areas within or adjacent to the project footprint. Removal of single large trees or extensive smaller shrubs will affect bird nesting, roosting, and perching; resulting in incremental degradation of water quality (temperature); and increased likelihood of potential effects of associated erosion and sedimentation.

The conservation measures described herein, especially the requirements to conduct work outside of the sensitive periods, such as breeding, nesting, and migration periods for ESA-listed species, will reduce the potential adverse effects of such actions.

The actions evaluated under these SLOPES are generally small-scale with limited amounts of disturbance such as preexisting or previously disturbed areas such buildings, structures, roads, etc. Any habitat loss or disturbance is expected to be temporary and will be appropriately

revegetated following construction. Additionally, the SLOPES requirements, exclusions, general conditions and conservation measures include measures intended to prevent or reduce habitat disturbance or loss that might reduce biological resources. Based on the information above, potential habitat losses will be small and within a restricted area and temporary in duration. Therefore, the habitat loss and disturbance that may result from these actions will result in insignificant effects on the species considered in this PA.

Hydrologic Effects of Streambed, Bank, and Shoreline Modification

Any of the ESA-listed aquatic species could potentially be affected by changes in hydrology caused by streambed, bank, and shoreline modification; however, the implementation of the conservation measures will avoid or minimize these potential effects. The addition of impervious surfaces within a watershed may result in permanent adverse effects to the hydrology and habitat quality. Streambed, bank, and shoreline modification can cause a decrease in infiltration, reducing stream flows by reducing the interception, storage, and release of ground water. This decrease in infiltration affects habitat availability and productivity. Generally, instream functions and values begin to substantially deteriorate when the levels of impervious surfaces exceed 10 percent of a sub-basin.

The expansion of impervious surfaces can increase both the volume of surface runoff and the peak rate of flow resulting from a storm event. The magnitude of stream discharge can strongly influence substrate and channel morphology. Increased peak runoff from impervious surfaces may cause stream bank erosion and channel scouring. Sediment from eroded and unstable stream banks may be deposited downstream, filling pools and altering the substrate characteristics of a drainage. The alteration in quantity and timing of surface runoff may also accelerate the downstream transport of woody debris. This alteration results in simplified stream channels and greater instability, which reduces habitat value for aquatic organisms. Similarly, the armoring of stream banks and the deepening of channels may reduce overall habitat complexity, increase flow velocities, and affect stability of downstream banks.

Hydrologic and habitat effects caused by streambed, bank, and shoreline modification would be avoided or minimized by implementing the conservation measures described herein. These measures include protecting stockpiles from runoff and wind by properly covering stockpiled soils; avoiding placement of staging areas, and other facilities adjacent to aquatic ecosystems as much as possible; and returning contours of the aquatic substrate environments, vegetation, and flows to pre-construction conditions or better after the completion of work. Designing projects to minimize the creation of new impervious surfaces and use of bioengineering and living shorelines techniques may also avoid or minimize adverse effects, where applicable.

Changes in hydrology caused by streambed, bank, and shoreline modification has the potential to affect habitat and impact ESA-listed species. However, due to the expected limited project footprints and the implementation of the conservation measures herein would avoid or minimize these potential effects. Based on the information provided above and the incorporation of conservation measures, hydrologic effects will result in insignificant effects on the ESA-listed species discussed in this PA.

Consequences of the proposed action

Birds:

Nightingale reed-warbler: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary disturbance or loss of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the nightingale reed-warbler.

Mariana gray swiftlet: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary disturbance or loss of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Mariana gray swiftlet.

Hawaiian duck: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, the temporary loss or disturbance of habitat and hydrologic effects. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Hawaiian duck.

Hawaiian goose: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, the temporary loss or disturbance of habitat, and hydrologic effects. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Hawaiian goose.

Hawaiian coot: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, the temporary loss or disturbance of habitat, and hydrologic effects. The implementation of BMPs and AMMs including general conditions and project- and species-specific will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Hawaiian coot.

Marianas common moorhen: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, the temporary

loss or disturbance of habitat, and hydrologic effects. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Mariana common moorhen.

Hawaiian common gallinule: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, the temporary loss or disturbance of habitat, and hydrologic effects. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Hawaiian common gallinule.

Hawaiian stilt: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, the temporary loss or disturbance of habitat, and hydrologic effects. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Hawaiian stilt.

Palila: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, invasive species and pathogens and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the palila.

Micronesian megapode: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Micronesian megapode.

Band-rumped storm petrel: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the band-rumped storm petrel.

Newell's shearwater: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the

temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions, will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for Newell's shearwater.

Hawaiian petrel: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Hawaiian petrel.

Bridled white-eye: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the bridled white-eye.

Oahu elepaio: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary disturbance or loss of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Oahu elepaio.

Iiwi: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary disturbance or loss of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the iiwi.

Mariana crow: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary disturbance or loss of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Mariana crow.

Friendly ground dove: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary disturbance or loss of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct

and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the friendly ground dove.

Guam Micronesian kingfisher: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary disturbance or loss of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Guam Micronesian kingfisher.

Guam rail: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary disturbance or loss of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Guam rail.

Insects:

Marianas eight spot butterfly: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary loss or disturbance of habitat. The implementation of BMPs including general conditions and project-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined Marianas eight spot butterfly.

Mariana wandering butterfly: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary loss or disturbance of habitat. The implementation of BMPs including general conditions and project-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined Mariana wandering butterfly.

Rota blue damselfly: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, invasive species and pathogens, increased sedimentation and turbidity, the temporary loss and disturbance of habitat, and hydrologic effects. The implementation of BMPs including general conditions and project-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Rota blue damselfly.

Blackburn's sphinx moth: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct

and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for Blackburn's sphinx moth.

Orange-black Hawaiian damselfly: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, invasive species and pathogens increased sedimentation and turbidity, the temporary loss or disturbance of habitat and hydrologic effects. The implementation of BMPs and AMMs including general conditions and project-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the orangeblack Hawaiian damselfly.

Hawaiian picture-wing flies: The proposed activities in this PA may affect these species through collisions, direct physical impact, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for Hawaiian picture-wing flies.

Hawaiian yellow-faced bees: The proposed activities in this PA may affect these species through collisions, direct physical impact, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for Hawaiian yellow-faced bees.

Mammals:

Hawaiian hoary bat: The proposed activities in this PA may affect this species through collisions, direct physical impact with the use of heavy equipment or materials, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, the temporary loss or disturbance of habitat or hydrologic effects. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Hawaiian hoary bat.

Mariana fruit bat: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Mariana fruit bat.

Little Mariana fruit bat: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the

temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the little Mariana fruit bat.

Pacific sheath-tailed bat: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Pacific sheath-tailed bat.

Reptiles:

Green turtle: The proposed activities in this PA may affect this species through direct physical impact, entanglement, elevated noise levels and light disturbance, elevated turbidity, wastes and discharges, invasive species and pathogens, the temporary loss or disturbance of habitat, and hydrologic effects. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the green turtle.

Hawksbill turtle: The proposed activities in this PA may affect this species through direct physical impact, collision with vessels, entanglement, elevated noise levels and light disturbance, elevated turbidity, wastes and discharges, invasive species and pathogens, the temporary loss and disturbance of habitat, and hydrologic effects. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the hawksbill turtle.

Slevin's skink: The proposed activities in this PA may affect this species through direct physical impact, entanglement, elevated noise levels and light disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, the temporary loss and disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for Slevin's skink.

Snails:

Oahu tree snails: The proposed activities in this PA may affect these species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for O'ahu tree snails.

Humped tree snail: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance

of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Humped tree snail.

Guam tree snail: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Guam tree snail.

Fragile tree snail: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the fragile tree snail.

Lanai tree snails: The proposed activities in this PA may affect these species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Lanai tree snails.

Langford's tree snail: The proposed activities in this PA may affect these species through collisions, direct physical impact, entanglement, elevated noise and disturbance, exposure to wastes and discharges, herbicide use, invasive species and pathogens, and the temporary loss or disturbance of habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Langford's tree snail.

Arachnids:

Kauai cave wolf spider: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting, exposure to wastes and discharges, herbicide use, invasive species and pathogens, habitat disturbance or loss, hydrologic effects and increased sedimentation or turbidity. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions and surveys, will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Kauai cave wolf spider.

Crustaceans:

Anchialine pool shrimp: The proposed activities in this PA may affect these species through collisions, direct physical impact, entanglement, elevated noise, exposure to wastes and discharges, herbicide use, invasive species and pathogens, habitat disturbance or loss, hydrologic

effects and increased sedimentation or turbidity. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions and surveys, will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the anchialine pool shrimp.

Kauai cave amphipod: The proposed activities in this PA may affect this species through collisions, direct physical impact, entanglement, elevated noise and lighting, exposure to wastes and discharges, herbicide use, invasive species and pathogens, habitat disturbance or loss, hydrologic effects and increased sedimentation or turbidity. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions and surveys, will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the Kauai cave amphipod.

Plants:

The proposed activities in this PA may affect ESA-listed plants through collisions, direct physical impact, exposure to wastes and discharges, herbicide use, invasive species and pathogens, habitat disturbance or loss, hydrologic effects and increased sedimentation or turbidity. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions and surveys, will reduce the potential for direct and indirect impacts. Therefore, a may affect, but not likely to adversely affect is determined for the ESA-listed plants within the region.

Critical Habitat:

Many of the listed species addressed in this PA have critical habitat designated. Critical habitat contains the physical and biological features necessary for the long-term survival and recovery of listed species. The activities associated with this PA may affect designated critical habitat through the destruction or modification of the physical and biological features that make up designated critical habitat. The implementation of BMPs and AMMs including general conditions and project- and species-specific conditions and surveys, will reduce the potential for direct and indirect impacts to critical habitat. A may affect, but not likely to adversely affect determination is appropriate if no physical and biological features would be affected within designated critical habitat units; however, if the physical and biological features are likely to be affected, separate ESA section 7 consultation will be necessary.

CONCLUSION

For the reasons listed above in the consequences of the action section, the Service has concluded that the FEMA actions approved under this PA will have insignificant or discountable effects on ESA-listed species. In addition, FEMA actions within designated critical habitat units that do adversely affect the physical and biological features of critical habitat would also be considered insignificant or discountable. We therefore concur with your determination that implementation of any of the actions as described in the Description of the Proposed Action, above, may affect, but are not likely to adversely affect the federally listed Kauai cave wolf spider, Newell's shearwater, Hawaii distinct population segment of the band-rumped storm petrel, Hawaiian petrel, Hawaiian stilt, Hawaiian coot, Hawaiian duck, Hawaiian common gallinule, Hawaiian goose, Oahu elepaio, Palila, iiwi, nightingale reed-warbler, Mariana crow, Mariana gray swiftlet,

friendly ground dove, Guam Micronesian kingfisher, Guam rail, Micronesian megapode, Mariana common moorhen, bridled white-eye, anchialine pool shrimp, Kauai cave amphipod, Hawaiian picture-wing flies, yellow-faced bees, Blackburn's Sphinx Moth, Hawaiian Damselflies, Mariana Eight Spot Butterfly, Mariana wandering butterfly, Rota Blue Damselfly, Hawaiian hoary bat, Mariana fruit bat, little Mariana fruit bat, Pacific sheath-tailed bat, Central North Pacific distinct population segment of the green sea turtle, hawksbill sea turtle, Slevin's skink, Oahu tree snails, Lanai tree snails, humped tree snail, Guam tree snail, fragile tree snail, Eua zebrine, *Ostodes strigatus*, Langford's tree snail, or any ESA-listed plant species. Similarly, we concur with your determination that the actions, as described in the Description of the Proposed Action, above, may affect, but are not likely to adversely affect designated critical habitat.

Reinitiation of consultation is required and will be requested by the Federal agency, where discretionary Federal involvement or control over the action has been retained or is authorized by law and: (1) new information reveals effects of the action that may affect ESA-listed species or designated critical habitat in a manner or to an extent not previously considered; (2) if the identified action is subsequently modified in a manner that causes an effect to the ESA-listed species or designated critical habitat that was not considered in this PA; or (3) if a new species is listed or critical habitat designated that may be affected by the identified action.

We appreciate your efforts to conserve endangered species. If you have any questions, please contact Johnathon Kraska at johnathon_kraska@fws.gov or by telephone at 808-792-9427.

Sincerely,

Gregory A. Koob
Assistant Field Supervisor
Programmatic Operations

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Tables

Table 1. ESA-Listed Species within the Vicinity of the Action Area and Summary of Effects Determination.

Scientific Name	Common Name	Native Common Name	ESA Status	ESA Determination
Arachnids				
<i>Adelocosa anops</i>	Kauai cave wolf spider	pe'e pe'e maka 'ole	Endangered	NLAA
Birds				
<i>Acrocephalus Luscinia</i>	nightingale reed-warbler	ga'ga'karisu	Endangered	NLAA
<i>Aerodramus vanikorensis bartschi</i>	Mariana gray swiftlet	yáyaguak	Endangered	NLAA
<i>Anas wyvilliana</i>	Hawaiian duck	koloa maoli	Endangered	NLAA
<i>Branta sandvicensis</i>	Hawaiian goose	nēnē	Threatened	NLAA
<i>Chasiempis ibidis</i>	Oahu elepaio	'elepaio	Endangered	NLAA
<i>Corvus kubaryi</i>	Mariana crow	āga	Endangered	NLAA
<i>Drepanis coccinea</i>	iiwi	'i'iwi	Threatened	NLAA
<i>Fulica americana alai</i>	Hawaiian coot	'alae ke'oke'o	Endangered	NLAA
<i>Gallicolumba stairi</i>	friendly ground-dove	tu'aimeo	Endangered	NLAA
<i>Gallinula chloropus guami</i>	Mariana common moorhen	--	Endangered	NLAA
<i>Gallinula galeata sandvicensis</i>	Hawaiian common gallinule	'alae 'ula	Endangered	NLAA
<i>Halcyon cinnamomina cinnamomina</i>	Guam Micronesian kingfisher	sihek	Endangered	NLAA
<i>Himantopus mexicanus knudseni</i>	Hawaiian stilt	ae'o	Endangered	NLAA
<i>Loxioides bailleui</i>	Palila	palila	Endangered	NLAA
<i>Megapodius laperouse</i>	Micronesian megapode	sasangat	Endangered	NLAA
<i>Oceanodroma castro</i>	band-rumped storm petrel	'akē'akē	Endangered	NLAA
<i>Pterodroma sandwichensis</i>	Hawaiian petrel	'ua'u	Endangered	NLAA
<i>Puffinus auricularis newelli</i>	Newell's shearwater	'a'o	Threatened	NLAA
<i>Rallus owstoni</i>	Guam rail	ko'ko'	Endangered	NLAA
<i>Zosterops conspicillatus</i>	bridled white-eye	nosa'	Endangered	NLAA
Crustaceans				
<i>Procaris hawaiana</i>	anchialine pool shrimp	'Ōpae'ula	Endangered	NLAA
<i>Spelaeorchestia koloana</i>	Kauai cave amphipod	--	Endangered	NLAA
<i>Vetericaris chaceorum</i>	anchialine pool shrimp	'Ōpae'ula	Endangered	NLAA

Scientific Name	Common Name	Native Common Name	ESA Status	ESA Determination
Insects				
<i>Drosophila aglaia</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila differens</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila digressa</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila hemipeza</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila heteroneura</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila montgomeryi</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila mulli</i>	Hawaiian picture-wing fly	--	Threatened	NLAA
<i>Drosophila musaphilia</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila neoclavisetae</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila obatai</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila ochrobasis</i>	Hawaiian picture-wing fly	nalo makamae	Endangered	NLAA
<i>Drosophila sharpi</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila substenoptera</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Drosophila tarphytrichia</i>	Hawaiian picture-wing fly	--	Endangered	NLAA
<i>Hylaeus anthracinus</i>	Hawaiian yellow-faced bee	--	Endangered	NLAA
<i>Hylaeus assimulans</i>	Hawaiian yellow-faced bee	--	Endangered	NLAA
<i>Hylaeus facilis</i>	Hawaiian yellow-faced bee	--	Endangered	NLAA
<i>Hylaeus hilaris</i>	Hawaiian yellow-faced bee	--	Endangered	NLAA
<i>Hylaeus kuakea</i>	Hawaiian yellow-faced bee	--	Endangered	NLAA
<i>Hylaeus longiceps</i>	Hawaiian yellow-faced bee	--	Endangered	NLAA
<i>Hylaeus mana</i>	Hawaiian yellow-faced bee	--	Endangered	NLAA
<i>Hypolimnna octocula marianensis</i>	Marianas eight-spot butterfly	--	Endangered	NLAA
<i>Ischnura luta</i>	Rota blue damselfly	--	Endangered	NLAA
<i>Manduca blackburni</i>	Blackburn's sphinx moth	--	Endangered	NLAA
<i>Megalagrion xanthomelas</i>	orangeblack Hawaiian damselfly	--	Endangered	NLAA
<i>Vagrans egistina</i>	Mariana wandering butterfly	ababbang/ Libweibwogh	Endangered	NLAA
Mammals				
<i>Emballonura semicaudata</i>	Pacific sheath-tailed bat	pe'ape'a vai	Endangered	NLAA
<i>Lasiurus cinereus semotus</i>	Hawaiian hoary bat	'ōpe'ape'a	Endangered	NLAA

Scientific Name	Common Name	Native Common Name	ESA Status	ESA Determination
<i>Pteropus mariannus mariannus</i>	Mariana fruit bat	fanihi	Threatened	NLAA
<i>Pteropus tokudae</i>	little Mariana fruit bat	fanihi	Endangered	NLAA
Reptiles				
<i>Chelonia mydas</i>	green turtle	honu, haggan	Endangered	NLAA
<i>Eretmochelys imbricata</i>	hawksbill turtle	haggan karai, honu‘ea	Endangered	NLAA
<i>Emoia sleveni</i>	Slevin’s skink	gualiik halumtanu/ gholuuf	Endangered	NLAA
Snails				
<i>Achatinella spp.</i>	Oahu tree snails	--	Endangered	NLAA
<i>Partula gibba</i>	humped tree snail	akaleha’	Endangered	NLAA
<i>Partula radiolata</i>	Guam tree snail	akaleha’	Endangered	NLAA
<i>Partulina semicarinata</i>	Lanai tree snail	pupu kani oe	Endangered	NLAA
<i>Partulina variabilis</i>	Lanai tree snail	pupu kani oe	Endangered	NLAA
<i>Samoana fragilis</i>	fragile tree snail	akaleha’	Endangered	NLAA
<i>Partula langfordi</i>	Langford’s tree snail	akaleha/ denden	Endangered	NLAA

Notes

NLAA = May Affect, but Not Likely to Adversely Affect

Table 2. Recommended Buffer Distances.

Proposed Action	Buffer Distances	
	Herbs/Shrubs	Trees
Vegetation removal (hand tools)	3 feet (1 meter)	1 meter
Vegetation removal (mechanical)	Variable ^a	Variable ^a
Vegetation removal (heavy equipment)	Variable ^b	820 feet (250 meters)
Hand application of herbicide	10 feet (3 meters)	Crown Diameter
Ground spray of herbicide (e.g., backpack sprayer)	50 feet (15 meters)	250 feet (76 meters)
Aerial spray of herbicide (ball applicator)	250 feet (76 meters)	250 feet (76 meters)
Aerial spray of herbicide (paintball or individual treatment)	100 feet (30 meters)	100 feet (30 meters)
Aerial spray of herbicide (boom)	Prohibited	Prohibited
Ground/soil disturbance (hand tools)	20 feet (6 meters)	2x Crown Diameter
Ground/soil disturbance (heavy equipment)	328 feet (100 meters)	820 feet (250 meters)
Surface hardening/soil compaction (trails)	6 meters	2x Crown Diameter
Surface hardening/soil compaction (roads/utilities/buildings)	328 feet (100 meters)	820 feet (250 meters)
Prescribed burns	Prohibited	Prohibited
Farming, ranching, and silviculture	820 feet (250 meters)	820 feet (250 meters)

Notes

USFWS recommended buffer distances for no effect determination (USFWS, 2019b)

^a 3 feet (1 m), or the height of the vegetation to be removed, whichever is greater.

^b 2x the width of the equipment, plus the height of the vegetation to be removed.