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March 4, 2022

Ms. Linda Speerstra
Chief, Regulatory Branch
U.S. Army Corps of Engineers
Honolulu District Regulatory Office
Building 230
Fort Shafter, HI 96858-5440

RE: Reinitiation of Informal Consultation and Conference for the U.S. Army Corps of Engineers Pac-SLOPES Program (I-PI-21-1928-AG, PIRO-2021-01430)

Dear Ms. Speerstra:

On May 13, 2021, NOAA's National Marine Fisheries Service (NMFS) received your written request for concurrence that the U.S Army Corps of Engineers (USACE) proposed action to continue implementing standard local operating procedures in the central and western Pacific Region (Pac-SLOPES) is not likely to adversely affect (NLAA) the following endangered or threatened species or designated critical habitat under our jurisdiction: endangered Western North Pacific humpback whales; endangered Main Hawaiian Island insular false killer whales; endangered Hawaiian monk seals; endangered Central South Pacific and Central West Pacific green turtles; threatened Central North Pacific green turtles; endangered hawksbill turtles; threatened Indo-West Pacific scalloped hammerhead sharks; threatened oceanic whitetip sharks; threatened giant manta rays; 5 threatened Indo-Pacific corals (*Acropora globiceps*, *A. retusa*, *A. speciosa*, *Isopora crateriformis*, and *Euphyllia paradivisa*); threatened chambered nautilus; and designated critical habitat for Hawaiian monk seals and Main Hawaiian Islands insular false killer whales. Under Section 7(a)(4) of the Endangered Species Act of 1973 (ESA), as amended (16 U.S.C. §1531 *et seq*.), a Federal action agency may request a conference on any proposed action that may affect proposed species or proposed critical habitat (USFWS & NMFS 1998); thus, this consultation also includes conferencing on proposed coral critical habitat.

On May 13, 2021, we received a biological evaluation (BE) and request to initiate consultation from the USACE. Beginning on May 19, 2021, we requested additional information and exchanged several emails with USACE. These emails included discussion of best management practices (BMPs), exclusion of impact pile driving, and inclusion of ESA-listed species. On September 8, 2021, we received an updated BE and all necessary information to evaluate the proposed action and initiated Section 7 consultation. On October 28, 2021, we requested clarification about the use of treated wood. On the same day, the USACE changed the proposed action to include no treated wood installation in any manner under Pac-SLOPES. On January 24, 2022, the USACE informed us that they are adding treated wood under limited circumstances back into the proposed action. We received a new BE from USACE on March 3, 2022, and as of that date, reinitiated Section 7 consultation.

The USACE permits projects under Section 10 of the Rivers and Harbors Act of 1899 and Section 404 of the Clean Water Act, or as carried out by the USACE as part of civil works programs authorized by Sections 206, 536, and 1135 of the Water Resources Development Act. Many of these projects include activities that are minor, repetitive, and predictable in nature, and share similar requirements for regulatory approval. Under Pac-SLOPES, applications for proposed projects that the USACE finds to be within the range of effects considered in the corresponding concurrence letter are issued a permit with conditions. Applications found not to be within this range of effects are submitted to NMFS for a site-specific ESA consultation. We issued previous Pac-SLOPES programmatic concurrence letters in 2010 and 2017. This consultation is a reinitiation of the 2017 consultation and includes additions of species and critical habitat to the Pac-SLOPES program.

We prepared this response to your request pursuant to Section 7 of the ESA, implementing regulations at 50 CFR 402, and agency guidance for the preparation of letters of concurrence. This letter underwent pre-dissemination review using standards for utility, integrity, and objectivity in accordance with applicable guidelines issued under the Information Quality Act (Section 515 of the Treasury and General Government Appropriations Act for Fiscal Year 2001, Public Law 106-554). A complete record of this consultation is on file at the Pacific Island Regional Office, Honolulu, Hawaii.

Consultation History

We consulted previously with the USACE on the Pac-SLOPES program on:

- August 6, 2010 (PIR-2010-03501; original consultation)
- October 5, 2015 (PIR-2016-9840; reinitiation)
- May 26, 2017 (PIR-2017-10106; reinitiation)

Our (NMFS and USACE) experiences during administration and implementation of the Pac-SLOPES program guide us in our determination of when it is necessary to adjust projects authorized under the Pac-SLOPES consultation. These adjustments ensure that covered projects will continue to meet ESA requirements; share characteristics that produce environmental effects which are minor, repetitive, and predictable in nature; and share similar requirements for regulatory approval. This reinitiated consultation and conference replaces the 2017 letter and includes the addition of newly ESA-listed species, species proposed for listing under the ESA, and proposed critical habitat.

Between January 01, 2017, and May 19, 2021, the USACE issued 99 permits for projects verified under the Pac-SLOPES consultation. Most of the projects occurred in the Main Hawaiian Islands and most of the projects were repairs or installation of structures within a marina or harbor. The number of projects and their locations are summarized in Table 1. In 2017, the USACE verified 36 projects under Pac-SLOPES, the greatest annual number of verifications within the 2017 to 2021 timeframe. Subsequently, the USACE verified 25, 19, 9, and 10 projects in each calendar year of 2018, 2019, 2020, and 2021, respectively.

Table 1. Number of projects permitted under Pac-SLOPES for each activity, on each island, between January 01, 2017 and May 19, 2021.

		CNMI			Hawaii				
	American Samoa	Saipan	Rota	Guam	Oahu	Maui	Kauai	Hawaii	Total
Site Prep				1	8	1	1		11
Survey Activities		1		8	4	1			14
Marina Improvements		1	2	6	7	4	1		21
Piling Installation									0
Mooring		2	1		3	8		9	23
Dredging					4		3	2	9
Vessel Removal	1	4		1					6
Cable Installation	3	2		3	1				9
Coral Nursery				6					6
TOTAL	**4**	**10**	**3**	**25**	**27**	**14**	**5**	**11**	**99**

Proposed Action

In summary, the USACE is proposing to issue permits pursuant to Section 10 of the Rivers and Harbors Act of 1899 or Section 404 of the Clean Water Act to various applicants conducting 14 categories of common activities occurring in the Commonwealth of the Northern Mariana Islands (CNMI), Guam, American Samoa, Pacific Remote Island Areas (PRIA), and the Hawaiian Islands. USACE will use Pac-SLOPES to issue permits for the following categories of activities:

1. Site Preparation for Above-water, Over-water, or In-water Construction;
2. Survey Activities;
3. Marina or Harbor Repair and Improvement Activities;
4. Piling Installation, Repair, Replacement and/or Removal;
5. Installation and/or Repair of Buoys and Other Similar Structures;
6. Maintenance Dredging;
7. Other Minor Discharges and Dredging/Excavation;
8. Utility Line Installation and Repair;
9. Outfall Structure Repair and/or Replacement;
10. Maintenance of Existing Bank Stabilization Structures;
11. Stream Clearing Activities;
12. Road Repair, and/or Improvements;
13. Bridge Repair and Replacement;
14. Removal of Structures or Vessels.

Projects permitted under Pac-SLOPES often span multiple activity categories. For an in-depth description of the activities, refer to the March 3, 2022 BE provided by USACE. The USACE explicitly excluded some activities from authorization under Pac-SLOPES, requiring individual consultation for them, including:

1. Projects that would affect structures or substrate with ESA-listed corals attached. Should ESA-listed corals be present in the project area, but not on the structures or substrate that

would be directly impacted by the activity, that activity may be covered under Pac-SLOPES if the activity complies with the Pac-SLOPES conditions and BMPs
2. Blasting or use of explosives for demolition purposes
3. Installation or proofing of steel or concrete pilings and/or sheet pile via impact hammer
4. Construction of new bank stabilization, including any expansion of existing bank stabilization
5. Construction of new roads
6. New construction dredging or in-water trenching
7. Construction of new or expanded effluent discharge systems
8. Any use of treated wood in or above marine or aquatic habitats, except in limited circumstances described on page 7 of the BE
9. Any vibratory pile driving activity whose estimated sound propagation exceeds the isopleths in Table 8

The USACE further described these excluded activities in the BE. The USACE will apply a number of BMPs to each project permitted under Pac-SLOPES. These conditions are described in detail in Section 7.0 of the March 3, 2022 BE, and are intended to minimize exposure and/or effect to listed species and critical habitat. We attached this updated list to this letter in Appendix A. The USACE BMPs intend to avoid or minimize a number of stressors that would likely occur during the construction or future operation of a structure.

As part of a permit evaluation or operational planning process:

1. The USACE will confirm whether a proposed project is within the present or historic range of an ESA-listed marine species or designated critical habitat, and make an effects determination
2. If the USACE determines that the project may affect an ESA-listed marine species or critical habitat, the USACE will review the project for applicability under Pac-SLOPES based on the following criteria:
    a) The proposed project conforms with all applicable requirements and limitations described in the BE
    b) The Pac-SLOPES BMPs (Appendix A) can be applied to the project
    c) All potential effects are not likely to adversely affect any of the listed species or critical habitats addressed herein, and are within the range of effects considered in this programmatic consultation for the implementation of Pac-SLOPES. Projects that do not fit within Pac-SLOPES may be modified to fit within this framework
3. The USACE will submit the *Pac-SLOPES Verification Form* (Appendix B), with a list of all Pac-SLOPES BMPs that are applicable to the proposed project, to NMFS to request verification that the project is within the scope of Pac-SLOPES
4. We will verify if the given action complies with Pac-SLOPES or will refer USACE to informal or formal consultation. We will strive to provide a verification form response within 15 calendar days of the date of receipt of the USACE verification form submittal.

As part of an adaptive management approach to improving the conservation value, efficiency, and accountability of this program, the USACE will coordinate an annual meeting with us each year. This meeting will discuss the projects completed under Pac-SLOPES from August 1st through July 31st of the previous year and to share lessons learned in the application of this programmatic to projects throughout the region. Prior to the annual meeting, the USACE will

submit a table showing how many times they used Pac-SLOPES during this timeframe for each category.

Action Area

The action area is defined by regulation as all areas to be affected directly or indirectly by the Federal action and not merely the immediate area involved in the action (50 CFR §402.02). The action area for the proposed activities encompasses the full extent of the action's modifications to land, water, and air. For this action, the most appropriate definition of the full geographic extent the program encompasses is the lands and adjacent waters on and within approximately three miles of the Main Hawaiian Islands (MHI), the Northwest Hawaiian Islands, American Samoa, Guam, CNMI, and the PRIA. Within this geography, the action area consists of the combined action areas for each future project authorized or carried out under this program.

The action area includes all areas affected by noise, turbidity, general construction-related disturbance, vessels, accidental wastes and discharges, and long-term effects from new or replaced structures. For each future project location, the most appropriate measure of the full extent of effects is the distance noise is propagated by construction activities. The furthest extent of noise during construction will come from impact pile driving, which we estimate at 901 meters. Thus, the action area includes a circle with a radius of 901 meters around each future project location. The action area also includes the paths of vessels traveling to and from the future project locations, including the distance we estimate sound will propagate from the vessels (up to 3,000 meters).

Listed Species

We are reasonably certain the ESA-listed threatened and endangered species under our jurisdiction listed in Table 2 occur in the action area, and may be affected by the proposed action. Detailed information about the biology, habitat, and conservation status of the animals listed in Table 2 can be found in their status reviews, recovery plans, federal register notices, and other sources at https://www.fisheries.noaa.gov/species-directory/threatened-endangered.

Table 2. Common name, scientific name, ESA status, effective listing date, and Federal Register reference for ESA-listed species considered in this consultation.

Species	Scientific Name	ESA Status	Effective Listing Date	Federal Register Reference
Green Sea Turtle Central West Pacific	*Chelonia mydas*	Endangered	05/06/2016	81 FR 20057
Green Sea Turtle Central South Pacific	*Chelonia mydas*	Endangered	05/06/2016	81 FR 20057
Green Sea Turtle Central North Pacific	*Chelonia mydas*	Threatened	05/06/2016	81 FR 20057
Hawksbill Sea Turtle	*Eretmochelys imbricata*	Endangered	06/03/1970	35 FR 8491
Hawaiian Monk Seal[1]	*Neomonachus schauinslandi*	Endangered	11/23/1976	41 FR 51612

Species	Scientific Name	ESA Status	Effective Listing Date	Federal Register Reference
Humpback Whale Western North Pacific	*Megaptera novaeangliae*	Endangered	9/08/2016	81 FR 62260
False Killer Whale Main Hawaiian Island Insular[2]	*Pseudorca crassidens*	Endangered	12/28/2012	77 FR 70915
Scalloped Hammerhead Shark Indo West Pacific	*Sphyrna lewini*	Threatened	09/02/2014	79 FR 38213
Oceanic Whitetip Shark	*Carcharhinus longimanus*	Threatened	03/01/2018	83 FR 4153
Giant Manta Ray	*Manta birostris*	Threatened	02/21/2018	83 FR 2916
Corals	*Acropora globiceps*	Threatened	10/10/2014	79 FR 53852
	Acropora retusa	Threatened	10/10/2014	79 FR 53852
	Acropora speciosa	Threatened	10/10/2014	79 FR 53852
	Euphyllia paradivisa	Threatened	10/10/2014	79 FR 53852
	Isopora crateriformis	Threatened	10/10/2014	79 FR 53852
Chambered Nautilus	*Nautilus pompilius*	Threatened	10/29/2018	83 FR 48976

[1]Critical Habitat was designated for Hawaiian monk seals on 5/26/1988 (53 FR 18990), revised on 8/21/2015 and became active 9/21/2015(80 FR 50925).
[2]Critical Habitat was designated for Main Hawaiian Island Insular false killer whales on 7/24/2018 and became active 8/23/2018 (83 FR35062).

The USACE has determined there will be no effect on leatherback, olive ridley or loggerhead sea turtles, or blue, fin, sei, sperm, or North Pacific right whales and did not initiate consultation for them. We will not discuss these species further.

Critical Habitat

Hawaiian monk seal. In designated areas of the MHI, critical habitat for monk seals includes the marine environment with a seaward boundary that extends from the 200-meter depth contour line (relative to mean lower low water), including the seafloor and all subsurface waters and marine habitat within 10 meters of the seafloor, through the water's edge 5 meters into the terrestrial environment. Detailed information on Hawaiian monk seal critical habitat can be found at https://www.fisheries.noaa.gov/action/critical-habitat-hawaiian-monk-seals.

The specific areas within the designation, with their physical and biological features are:

1. Terrestrial areas and adjacent shallow, sheltered aquatic areas with characteristics preferred by monk seals for pupping and nursing;
2. Marine areas from 0 to 200 meters in depth that support adequate prey quality and quantity for juvenile and adult monk seal foraging; and
3. Significant areas used by monk seals for hauling out, resting or molting.

False Killer Whale. Critical habitat for MHI insular false killer whales (IFKW) includes the geographic area of the 45-meter depth contour to the 3200-meter depth contour in waters that surround the Main Hawaiian Islands from Niihau east to the Island of Hawaii. Critical habitat for the main Hawaiian Islands insular false killer whale consists of one essential feature comprised of four characteristics:

1. Space for movement and use within shelf and slope habitat
2. Prey species of sufficient quantity, quality, and availability to support individual growth, reproduction, and development, as well as overall population growth;
3. Waters free of pollutants of a type and amount harmful to MHI IFKWs; and
4. Sound levels that would not significantly impair false killer whales' use or occupancy.

Detailed information on Main Hawaiian Islands insular false killer whale critical habitat can be found at: https://www.fisheries.noaa.gov/action/final-rule-designate-critical-habitat-main-hawaiian-islands-insular-false-killer-whale.

Corals. We proposed critical habitat for five Indo-Pacific corals (11/27/20; 85 FR 76262). All potentially proposed critical habitat is included in this consultation. Major threats to habitat include ocean warming, ocean acidification, trophic effects of reef fishing, nutrient enrichment, contaminants, and sedimentation. The proposed coral critical habitat consists of substrate and water column habitat characteristics essential for the reproduction, recruitment, growth, and maturation of the listed corals. Sites that support the normal function of all life stages of the corals are natural, consolidated hard substrate or dead coral skeleton free of algae and sediment at the appropriate scale at the point of larval settlement or fragment reattachment, and the associated water column. Several attributes of these sites determine the quality of the area and influence the value of the associated feature to the conservation of the species:

1. Substrate with presence of crevices and holes that provide cryptic habitat, the presence of microbial biofilms, or presence of crustose coralline algae;
2. Reefscape (all the visible features of an area of reef) with no more than a thin veneer of sediment and low occupancy by fleshy and turf macroalgae;
3. Marine water with levels of temperature, aragonite saturation, nutrients, and water clarity that have been observed to support any demographic function; and
4. Marine water with levels of anthropogenically-introduced (from humans) chemical contaminants that do not preclude or inhibit any demographic function.

Analysis of Effects

Under the ESA, "effects of the action" are all consequences to listed species or critical habitat caused by the proposed action, including the consequences of other activities caused by the proposed action. A consequence is caused by the proposed action if it would not occur but for the proposed action and it is reasonably certain to occur. Effects of the action may occur later in time and may include consequences occurring outside the immediate area involved in the action (50 CFR 402.02).

In order to determine that a proposed action is not likely to adversely affect ESA-listed species, we must find that the effects of the proposed action are reasonably certain to be discountable, insignificant, or completely beneficial. As defined in the *Endangered Species Consultation Handbook* (USFWS and NMFS 1998), beneficial effects are contemporaneous positive effects without any adverse effects to the species. Discountable effects are those extremely unlikely to occur. When the terms "discountable" or "discountable effects" appear in this document, they

refer to potential effects that are found to support a "not likely to adversely affect" conclusion because they are extremely unlikely to occur. The use of these terms should not be interpreted as having any meaning inconsistent with our regulatory definition of "effects of the action."

Insignificant effects relate to the size of the impact and should never reach the scale where take occurs. "Take" is defined by the ESA as harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct. We define "harass" as to "create the likelihood of injury to wildlife by annoying it to such an extent as to significantly disrupt normal behavioral patterns which include, but are not limited to, breeding, feeding, or sheltering" (Wieting 2016). We define "harm" as "an act which actually kills or injures fish or wildlife." Such an act may include significant habitat modification or degradation where it actually kills or injures fish or wildlife by significantly impairing essential behavioral patterns, including breeding, spawning, rearing, migrating, feeding or sheltering. Take of species listed as endangered is prohibited at the time of listing, while take of threatened species may not be specifically prohibited unless we have issued regulations prohibiting take under Section 4(d) of the ESA.

Based on best judgment, a person would not: 1) be able to meaningfully measure, detect, or evaluate insignificant effects; or 2) expect discountable effects to occur (USFWS & NMFS 1998). We applied this standard, as well as consideration of the probable duration, frequency, and severity of potential interactions, during the analysis of effects of the proposed action on ESA-listed marine species, as is described in the consultation request and BE. We only discuss activities that have the potential to adversely affect ESA-listed species here.

The following stressors have the potential to affect ESA-listed marine species in Pac-SLOPES projects:

- Vessel Strikes
- Direct physical impact
- Entanglement
- Disturbance from human activity and equipment operation
- Elevated turbidity and sedimentation
- Exposure to wastes and discharges
- Elevated noise
- Loss of forage

To assess the effects of proposed actions, we use an *exposure-response* assessment framework. Effects are discountable if exposure is extremely unlikely to occur. For this reason, we first determine the probability of stressors co-occurring with individuals from the listed species, or features of critical habitat. For stressors where exposure is not discountable, we discuss the significance of the species' response.

Vessel Strikes

Many of the activity categories described above involve the use of vessels in nearshore marine waters as well as in the lower reaches of rivers and streams. 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. The USACE will apply BMPs as conditions to permits that involve the use of a vessel to minimize the risk of a vessel colliding with a listed species. The BMPs include limiting vessel speeds, using trained observers, altering

course when listed species are sighted, and putting the engine in neutral when listed animals approach the vessel or are in close proximity to the vessel.

Sea Turtles. Kelly (2020) documented vessel collisions with sea turtles resulting in lethal and sub-lethal injuries. Sea turtles may be in the action area, and could potentially be struck by the transiting vessel during the proposed activities. Green sea turtles are most vulnerable to small vessels (<15 meters), travelling at fast rates (>10 knots) (Kelly 2020). Increased vessel speed decreases the ability of sea turtles to recognize a moving vessel in time to dive (Hazel et al. (2007) and escape being hit, as well as the vessel operator's ability to recognize the turtle in time to avoid it. NMFS (2008) estimated 37.5 vessel strikes of sea turtles per year from an estimated 577,872 trips per year from vessels of all sizes in Hawaii. More recently, we estimated as many as 200 green sea turtle strikes annually in Hawaii (Kelly 2020). If these turtle strikes are evenly distributed around the islands, the probability of a green sea turtle strike from any one vessel trip is extremely low (on average 0.035%, calculated by dividing the most recent strike estimate of 200 per year by the best estimate of all vessel transits of 577,872 per year). However, green sea turtle strikes are not evenly distributed throughout the islands. They are concentrated in areas where small vessel activity is highest (e.g., near small boat harbors and boat launches), such as Kāneʻohe Bay and Pearl Harbor on O'ahu (Kelly 2020).

Other sea turtle species are hit by vessels less frequently than green sea turtles, most likely due to their low abundance numbers and preference for deeper offshore waters (Kelly 2020). There were only four documented vessel strikes of hawksbill sea turtles between 1984 and 2020 and two olive ridley sea turtles in Hawaii (Kelly 2020). We have no documentation of vessel strikes on leatherback or loggerhead sea turtles in Hawaii.

In 2019, there were roughly 521 commercial vessel transits in and out of American Samoa, 271 commercial vessel transits in and out of Guam, and 253 commercial vessel transits in and out of CNMI[1]. These numbers do not include smaller power boats that do not have automated information systems onboard. We do not have similar vessel strike data from American Samoa, PRIA, CNMI or Guam as we do for Hawaii, but vessel strikes on turtles have been documented there. The amount of vessel traffic is far lower than in Hawaii. Therefore, the probability of vessel strike of a sea turtle in American Samoa, PRIA, Guam, or CNMI is probably slightly lower due to a lower amount of vessel traffic.

The action area of individual projects authorized under Pac-SLOPES may be in a location identified by Kelly (2020) as a hot spot for green sea turtle strikes, or in other areas with significant overlap of high-density boating activity and sea turtle habitat. However, because of the BMPs included by USACE, we are reasonably certain the probabilities of a green sea turtle strike will be lower than the overall rate calculated above. Projects that are not within hotspots of turtle activity and/or in areas with low boating activity will have even lower probabilities. The number of vessel trips from these non-hotspot marinas or docks to and from project sites will not likely exceed 100 annually. Due to the maneuverability of a smaller vessel (15-30 feet) that would be utilized to ferry people to and from a work site, the slow speed of a larger equipment barge/tug, and BMPs regarding approach distances to ESA-listed marine animals, trained observers, and vessel speed restrictions, we are reasonably certain that the probability of ESA-

[1] https://www.marinetraffic.com/en/ais/home/centerx:-157.9/centery:21.2/zoom:11 2019 estimates for commercial traffic with AIS installed.

listed sea turtles being struck by vessels associated with the proposed action is extremely unlikely and therefore discountable.

Hawaiian Monk Seals. NMFS considers it highly unlikely that vessels used for Pac-SLOPES will collide with Hawaiian monk seals. Hawaiian monk seals are uncommon in nearshore waters, and it is relatively easy to avoid areas where they are known to or observed using as haul out areas or nursing site. According to the Pacific Islands Fishery Science Center's (PIFSC) database there have been only four verified vessel strikes of Hawaiian monk seals between 1981 and 2016 (John Henderson, PIFSC 5/4/17). Other wounds and blunt force trauma have been documented. However, wounds, especially those that have healed, are difficult to distinguish as vessel strikes versus other blunt force trauma such as intentional killing. Considering the BMPs included with this project, the rarity of documented vessel strikes, and the low abundance and widely scattered nature of monk seals in the action area; we are reasonably certain the likelihood of exposure of any monk seal to vessel strikes from this proposed action is extremely unlikely, and therefore discountable.

Whales. Whales surface to breathe, with calves surfacing more regularly than adults. While at the surface, a whale is at risk of being struck by a vessel. In a study by Lammers et al. (2003), 22 whale/vessel incidents were recorded in Hawaii between 1975 and 2003, with 14 of those occurring during the years from 1994-2003. Using the ten-year period of highest vessel strikes, and the same number vessel transits mentioned above, that calculates to a probably of a collision between a whale and a transiting vessel to be 0.0000024%. According to Lammers et al. (2003), the vast majority (17) of the vessel strikes were from vessels traveling at speeds in excess of 15 knots, and nearly all of them occurred in close proximity to the coastline of the main four Hawaiian Islands.

Lammers et al. (2013) estimated at most a risk of 7 humpback whale strikes per year in Hawaii. Most strikes occurred in February and March, which is the peak of the humpback whale season in Hawaii (Lammers et al. 2013). Furthermore, most recorded vessel strikes occurred with calves. These trends are relevant because they represent a biased rate of collision. The Hawaii humpback whale DPS is no longer listed under the ESA and are by far more common than any of the listed whale species in the region or in this consultation.

Most listed baleen whales will be solitary and the rate of vessel strikes for those species will be likely lower than the rate of strikes documented by Lammers et al. (2013) for humpback whales. For example, in Alaska, from 2012 through 2019, there were an estimated 44 vessel strikes of humpback whales, while only 4 vessel strikes of fin whales, 2 vessel strikes of sperm whales, and no documented vessel strikes of sei or North Pacific right whales (NOAA undocumented data). Given the lack of peak seasons and breeding grounds for the West North Pacific DPS humpback whale as well as low numbers of humpback whales occurring in CNMI and Guam, the rarity of other baleen whales within 3 miles of the coastlines of the territories, PRIA, and Hawaii, and the implemented BMPs regarding vessel approach distance and speed, we are reasonably certain that the probability of ESA-listed humpback, fin, sei, North Pacific right, and blue whales being struck by vessels associated with the proposed action is extremely unlikely, and therefore discountable.

False killer whales commonly travel in pods and are known to approach vessels and ride the bows of vessels. We have little to no data on vessel strikes on false killer whales, but false killer whales are much more agile than baleen whales and few vessel strikes on false killer whales have

been reported. We expect the probability of vessel strikes of false killer whales to be lower than reported in Lammers et al. (2013) for other species. False killer whales typically prefer waters deeper than 1,005 meters (3,300 feet[2]). Sperm whales exhibit a strong preference for waters deeper than 1,000 meters and are rarely found in depths less than 300 meters (NMFS 2013). Therefore, we are reasonably certain that, with the exception of mooring installations, projects permitted under Pac-SLOPES will not spatially overlap with false killer whales or sperm whales due to project proximity to the shoreline. Considering the low probability of vessel strikes, the rarity of listed individuals in the action area, and that most projects occur close to shore, we are reasonably certain that the probability of insular false killer whales and sperm whales being struck by vessels associated with the proposed action is extremely unlikely and therefore discountable.

Sharks and rays. Sharks and rays may occasionally swim on the surface of the ocean but, unlike sea turtles and marine mammals, sharks and rays do not need to surface to breathe. Studies on scalloped hammerhead sharks have shown that they have well-developed electrosensory systems and vision (Kaijura 2001) that presumably enables them to detect activity in the water at a distance and to quickly move away from slow-moving vessels. While specific studies have not been conducted for oceanic whitetip sharks or giant manta rays for vessel avoidance, they are also elasmobranchs and highly mobile species. The lateral line in manta rays is poorly understood, however they also have a suite of other biological functions, which are considered highly sophisticated sensory systems (Bleckman and Hoffman 1999, Deakos 2010). This suggests that they possess similar capabilities of detection as other elasmobranchs and could avoid slow moving vessels as well. However, manta rays are commonly observed on the surface, and vessel collisions are listed as a threat to giant manta rays (82 FR 3694). Because manta ray aggregation sites are sometimes in areas of high maritime traffic, manta rays are potentially at risk of being struck by vessels. These aggregation sites do not exist most projects, and the sites will be avoided during transit.

We do not have vessel strike information on sharks and rays, and few are ever reported. The probability of a vessel collisions with sharks and rays associated with the Pac-SLOPES program is extremely low because most projects are nearshore where giant manta rays generally are not observed, and sharks are highly maneuverable thus can avoid vessels. Due to the BMPs regarding vessel speed (10 knots or less in proximity of sharks and rays) and course alterations to stay at least 50 meters from ESA-listed sharks and rays, and because sharks and rays spend minimal time at the ocean surface and are highly maneuverable, we are reasonably certain that the probability of ESA-listed sharks and rays being struck by vessels associated with the proposed action is extremely unlikely, and therefore discountable.

Corals. Vessels accidentally ground on coral reefs throughout the Pacific. The vessels used in these projects could ground and damage listed corals. The BMPs for projects with the potential to impact corals will reduce the risk of an interaction between a vessel and corals. Project applicants will use experienced operators who are familiar with the area and will have local knowledge to be able to avoid coral and hard substrate during transit. The USACE will require commercial vessels to adhere to US Coast Guard standards to reduce the risk that they will stall and ground. In addition, operators will avoid anchoring during operation, or avoid anchoring in or near coral, and avoid operations during inclement weather. These all reduce the probability of

[2] https://www.fisheries.noaa.gov/species/false-killer-whale#overview

vessel grounding or damage to coral associated with vessel movement. Thus, we are reasonably certain that the probability of ESA-listed corals being struck by vessels associated with the proposed action is extremely unlikely, and therefore discountable.

Chambered nautilus. Chambered nautilus are found in tropical, coastal reef, deep-water habitats off American Samoa and other non-US areas of the Pacific in depths typically from 100-500 meters. Given these depths, it is unlikely that a vessel would strike a chambered nautilus. Therefore, we are reasonably certain that the probability of a vessel strike of a chambered nautilus is extremely unlikely to occur, and thus discountable.

Direct physical impact

The USACE will permit projects covered by this consultation that will use divers, have workers wading into waters, use equipment working from vessels or from land including back hoes and cranes, and will occasionally drive equipment into the water. During these and other similar construction activities, workers risk accidental contact with listed species. The USACE will apply BMPs as conditions to their permit that will minimize their risk of contacting and injuring a listed species during construction.

Corals. Projects that would affect structures or substrate with ESA-listed corals attached are excluded from coverage under Pac-SLOPES Applicants must conduct a survey by qualified personnel within the area to identify listed corals in the work area that could be impacted by any of their proposed activities. Applicants are prohibited from touching or disturbing or otherwise interacting with ESA-listed species. If listed corals are in the project area, their locations will be flagged so that impacts are avoided. To minimize impacts to coral larvae, notably the listed species covered in this programmatic consultation, the permittee shall avoid in-water work during mass-coral spawning times or peak coral spawning seasons. Permittees must consult with local biologists (either NMFS Habitat Conservation Division representatives in their respective locations, or the appropriate local government agencies) to determine the exact period and dates when coral spawning would occur for the given year. All moorings will be placed with an appropriate line length or with midline floats so moorings will not ground and will be removed from the marine environment immediately after the completion of the authorized work or the end of the mooring's service life. Further, any permanent or long-term deployments will include an inspection and maintenance program to reduce the likelihood of failures that could result in loose mooring lines lying on the substrate. With these BMPs in place and exclusion of projects with listed corals on structures that will be worked on, we are reasonably certain that the probability of direct contact with ESA-listed corals is extremely unlikely, and thus discountable.

Other ESA-listed species. Direct contact with non-coral ESA-listed species (marine mammals, sea turtles, sharks, rays, chambered nautilus) is unlikely to occur because the conditions of the USACE's permit will include BMPs that include constant monitoring during construction. All applicants will be required to designate a competent observer who will search and monitor work sites and adjacent areas prior to the start of work each day, including prior to resumption of work following any break of more than 30 minutes. If practicable, divers will visually confirm that the area is clear of ESA-listed species. Soft starts will be implemented for work that directly contacts the bottom at the beginning of the work day and after a break of 30 minutes or more, during which equipment will be operated slowly and very controlled for several cycles prior to achieving full operational impact strength or tempo. All in-water work will be postponed or halted when ESA-listed marine species are within 50 meters of the proposed work, and will only

begin/resume after the animals have voluntarily departed the area. If a listed animal enters within 50 meters of the work area after work has commenced, a biologist may determine if work may continue without disturbing the listed animal (divers performing surveys or underwater work [excluding the use of toxic chemicals] is likely safe, whereas the use of heavy machinery is not). All workers will avoid interacting with any listed species. Lastly, it is extremely unlikely that the chambered nautilus, sharks, and rays will be in spatial proximity to work areas given their preferred depth ranges. Direct impact during mooring installation would be the only foreseeable activity that could impact these deep water ocean-based ESA-listed species. Based on Pac-SLOPES BMPs and conditions, we are reasonably certain that the probability of any direct physical contact with ESA-listed species is so extremely unlikely that it is discountable.

With respect to direct contact with contaminants, the applicant may place, pour, or inject concrete below the water surface or adjacent to the water to repair a failing structure. Uncured concrete can leach into the water column where it could kill organisms, and irritate skin, eyes, nasal passages, gills, and other organs of listed animals. Outplanting of corals is one instance when epoxy or cement might be used. During outplanting, an applicant may use a low-toxicity epoxy (e.g. All Fix, Splashzone) to secure fragments onto hard substrate. If the applicant is attaching hundreds of corals, Portland II cement may be used instead with an additive such as SikaCrete 950P to reduce pluming. Portland II cement has been used extensively in marine environments for securing corals since the 1980s and has recently been shown to have the same survivorship as attachment methods as the nail and cable tie method and two-part epoxy putty method (Unsworth et al. 2021). Cement leaches small amounts of hydroxides, but these are quickly dissipated in a high flow environment, and any change in pH due to cement outplanting is miniscule and short lived (Unsworth et al. 2021).

Industry standard marine use of concrete typically involves using fast-forming non-reactive grout, tremie concrete, or similar products (V. Koskelo, pers. comm., 7/1/21). Additionally, State of Hawaii Department of Health Water Quality Certification requires that all materials placed in Hawaii waters are free of pollutants that are hazardous to aquatic life. The applicant may also place underwater epoxy during some of the activity categories. The epoxy adheres to hard surfaces and cures within hours, which reduces exposure time and probabilities of interaction with listed species. The epoxy is also water resistant and does not leach or dissolve in water (Z*SPAR Splash Zone A-788 MSDS), and will not degrade the water column or organisms around it. BMPs requiring that the project area be free of ESA-listed species during the activity and the quickness with which the concrete and epoxy set should prevent an ESA-listed species from coming into contact with a contaminant associated with concrete and epoxy. Based on industry standards and water quality certification requirements, as well as BMPs requiring the area to be free of ESA-listed species, we are reasonably certain that the potential effects on all ESA-listed species in this consultation from direct contact with contaminants is extremely unlikely and therefore discountable.

Entanglement

The USACE will issue permits under Pac-SLOPES that will add ropes and other materials that could be entanglement hazards to listed animals and corals. USACE BMPs will ensure that permitees will use the least amount of line possible, taking into account the expected fluctuations in water depth due to tides and waves to minimize entanglement risk, and to maximize the amount of time when ropes are pulled tightly. Mooring lines will be a single line that remains taut with the intent of eliminating the potential for loops to form. Midline floats will be used to

prevent lines from grounding on coral reefs. Long term deployments or permanent deployments will include an inspection and maintenance program.

Rope entanglement is a relatively rare cause of death for sea turtles. In decades of stranding data and thousands of recorded strandings, the turtle stranding network in Hawaii has never recorded an entanglement of a sea turtle on an active mooring buoy, nor have Hawaiian monk seals (PIR-2017-10106). All green and hawksbill sea turtle strandings due to entanglement from 2016 through 2018 were associated with line or nets from fishing gear (Murakawa 2019). Humpback whales have been entangled in active buoys in Hawaii, which has led to a requirement of state permits to install them in approved areas which are generally shallow, adjacent to marinas, away from reefs, and where humpback whales are more commonly observed. Although the Hawaii DPS is no longer listed under the ESA, it still underlines the threat of entanglement from buoys if not properly sized or placed and has implications for other whale species in other parts of the action area. Whales, Hawaiian monk seals, and sea turtles have all been entangled with ropes in the Pacific region. This suggests that unattached derelict ropes could be a concern, although the majority of these entanglements are from derelict fishing gear. While we do not have comparable data in Guam, CNMI, or American Samoa, we expect the mechanism of entanglement in the ocean to be the same.

The rate of mooring placement permitted under Pac-SLOPES has been about five per year, with most of them going in the MHI where they are regulated by the state for placement and other concerns. From 2017 through mid-2021, 20 moorings were installed in the MHI and three were installed in CNMI. We expect this trend to continue at the same rate. Based on USACE BMPs and no documented incidence of entanglements of turtles or monk seals associated with moorings, we are reasonably certain that the probability of entanglement associated with the proposed action is extremely unlikely and therefore discountable.

Disturbance from human activity and equipment operation

The activities covered under Pac-SLOPES could disturb green and hawksbill sea turtles, Hawaiian monk seals, MHI IFKW, and sharks. Non-consumptive human interactions like recreational diving, viewing, and approaching animals has been demonstrated to negatively affect hawksbill sea turtles by reducing foraging time, reducing survival, reducing breeding success, and other sublethal effects (Hayes et al. 2016). Underwater work by divers and wading on shore has the potential to evoke similar behavioral reactions by ESA-listed species. Heavy equipment on vessels, on land near water, or in water may cause greater disturbance to listed animals due to their presence and noise. Noise effects are discussed below. The USACE will apply BMPs as conditions to their permits to minimize the effects of interactions with listed species. Applicants under the permit will not enter an area when a listed sea turtle, seal, or shark is observed within 50 meters of the site, and will not interact with, pursue, or touch listed animals if they enter the work area. The applicant will also avoid working when listed animals are observed within 50 meters of the work area, unless a biologist determines the risk of disturbance is low. Interaction with ESA-listed species may occur, but it will be temporary, minimal, and unlikely to cause more than a minor behavioral shift, such as temporary avoidance of the project location. During the verification process, we will verify that the project falls under Pac-SLOPES considering all consequences of the project including aggregate impacts. Based on the BMPs and conditions required by USACE for Pac-SLOPES consultations, which reduce the likelihood and types of interactions with ESA-listed species, we are reasonably certain that the potential effects

of disturbance from human activity and equipment operation will not reach the scale where harm or harassment occurs, and are therefore insignificant.

Elevated turbidity and sedimentation

The applicants may expose listed species to elevated turbidity or sedimentation, especially during activities such as stream clearing, maintenance dredging, and pile removal. The USACE will apply BMPs as conditions to their permit such as halting construction when listed species are within 50 meters of construction activities, which will further minimize their exposure, and require erosion control methods such as using a silt curtain, which is a standard requirement under the Water Quality Certifications (33 CFR 325.2(b)(1)(ii) and 33 CFR 330.4(c)(6)). Some turbidity is expected escape the turbidity curtain, but we are reasonably certain that this will occur at levels below the threshold for harm to ESA-listed species. The Pac-SLOPES program prohibits the use of dustpan dredges that use high velocity water jets, which causes high turbidity. During dredging, USACE will require an appropriate silt containment device to avoid degradation of adjacent coral reefs.

The likelihood of an MHI IFKW, giant manta ray, oceanic whitetip, or chambered nautilus being affected by elevated turbidity or sedimentation is low given that the projects that could cause turbidity and sedimentation are close to land and do not spatially overlap with these ESA-listed species. We are reasonably certain that the probability of ESA-listed MHI IFKW, giant manta ray, oceanic whitetip, or chambered nautilus being exposed to elevated turbidity and sedimentation is extremely unlikely and thus discountable.

Sea turtles and sharks are often observed in turbid waters. Sea turtles and monk seals breathe air, so turbid waters are not expected to affect their respiratory system; turbidity can affect the respiratory system of sharks. Turbidity can make it more difficult for sea turtles and monk seals to detect predators. However, sea turtles, monk seals, and sharks are highly mobile and capable of avoiding turbid areas.

Suspended sediments carried from the site could spread to coral reefs, which may contain ESA-listed corals. However, Pac-SLOPES BMPs and water quality standards require the use of turbidity curtains. Thus, the turbidity associated with projects permitted under Pac-SLOPES that escapes the turbidity curtain will be temporary and minimal. The Pac-SLOPES program excludes projects that would affect structures or substrate with ESA-listed corals attached. If ESA-listed corals are present in the project area, but not on the structures or substrate being directly worked on, the work may be covered if BMPs and Pac-SLOPES conditions are met by the applicant.

Due to Pac-SLOPES conditions and BMPs, we expect the small increases in turbidity and sedimentation from activities permitted by Pac-SLOPES will be short in duration and light in severity. We are reasonably certain the effects will not significantly disrupt normal behavioral patterns of the listed species, including listed corals, or degrade the quality or quantity of forage habitat for listed species. Therefore, we are reasonably certain that the potential effects from turbidity and sedimentation on ESA-listed sea turtles, Hawaiian monk seals, scalloped hammerhead sharks, and corals will not reach the level of harm or harassment, and thus are insignificant.

Exposure to wastes and discharges

Permittees may expose listed species to waste and discharge associated with heavy equipment, vessels, and vehicles. Treated wood also has potential to leach contaminants into the

environment. Corals in the project areas cannot move away from any spill of waste or discharge. However, all equipment, vessels, and vehicles will be checked prior to the start of each day's activities and maintained in proper working condition. Sensitive resource areas, such as corals, coral reefs and seagrass beds known to occur within a project area will be identified on project figures. Project staff will be instructed to avoid the sensitive resource areas to the greatest extent practicable, flagging the areas if appropriate.

In addition, the applicant will strictly adhere to all BMPs and conditions provided as part of the proposed action for Pac-SLOPES, as well as regional conditions under the USACE Nationwide permit system, which includes adherence to US Coast Guard regulations for commercial vessels. These measures include BMPs and/or regulations for 1) fueling, 2) hazardous waste management and disposal, 3) disposal of waste and spoils from drill and dredging (isolation and disposal upland), and 4) prevention of debris and other waste entering the marine environment. BMPs for treated wood include complete sealing of all surfaces to prevent leaching. These BMPs reduce the likelihood of a discharge or accidental release of wastes. Discharges and spills could occur, but they are expected to be infrequent, small, and quickly cleaned. Additionally, USACE permit conditions require a stormwater management plan for each project, which will control the amount of discharge associated with runoff. Based on maintenance of vessels and equipment and adherence to proposed BMPs, including those for treated wood, we are reasonably certain that the potential for ESA-listed species to be exposed to waste or discharges from Pac-SLOPES permitted projects is extremely unlikely and thus discountable.

Elevated noise

Many activities covered under the Pac-SLOPES program will generate sounds that may affect ESA-listed species. The sounds generated during construction include common construction noises on land and in water from vessels, dredging, heavy machinery, hand tools, and pile driving. Man-made sounds can affect animals in three ways: non-auditory damage to gas-filled organs, hearing loss expressed by a permanent threshold shift (PTS) or temporary threshold shift (TTS), and behavioral responses or changes. Non-auditory injury can occur from activities such as blasting, which is not permissible under Pac-SLOPES. Below we analyze the potential exposure and likely response to TTS, PTS and non-auditory injury, and behavioral changes separately.

TTS. Since each species is different in size and anatomy, they receive sounds differently and have different sensitivities to effects of sound. NMFS has defined thresholds at which we believe noise will cause hearing loss or behavior changes considered harmful to individuals of the hearing group. Table 4 reports thresholds for TTS and behavioral changes.

Table 3. Estimated thresholds for TTS and behavioral changes for marine mammal hearing groups (NMFS 2018), sea turtles, sharks and rays

Hearing Group	Weighted TTS onset threshold (SEL_{CUM}) for Continuous Sound	Weighted TTS onset threshold (SEL_{CUM}) for Impulsive Sound	Estimated threshold for behavioral changes (dB_{RMS} re 1 μPa)
Low-frequency cetaceans (humpback whale and other baleen whales)	179 dB	199 dB	Continuous = 120 dB Impulsive = 160 dB
Mid-frequency cetaceans (false killer whales and other toothed whales)	178 dB	198 dB	Continuous = 120 dB Impulsive = 160 dB
Phocid pinnipeds (Hawaiian monk seals)	181 dB	201 dB	Continuous = 120 dB Impulsive = 160 dB
Sea turtles[1]	200 dB	189 dB	175 dB
Sharks and rays[2]	186 dB	186 dB	150 dB

[1] DON (2017)

[2] Popper and Hawkins (2019). 186 dB is listed as the proposed interim criteria for impulsive sound. Popper and Hawkins (2019) do not give a proposed criteria for continuous sound, thus we applied the same level to continuous sound as they recommended for impulsive sound.

Smaller vessels like skiffs with outboards commonly used to assist in-water and near-water construction range from 150-170 decibels (dB) (Richardson et al. 1995). Vessels are generally mobile and the sound sources are considered continuous (or non-impulsive), temporary, and mobile. Air bubbles from SCUBA have a mean level of 161 dB and mean peak level of 177 dB at 1 meter (Radford et al. 2005). We consider this source a continuous (non-impulsive), mobile, intermittent noise source. Because of the mobile nature of vessels and the intermittent nature of SCUBA bubbles, and because the loudest source levels associated with smaller vessels and air bubbles is lower than the TTS level for mid- and low-frequency cetaceans, Hawaiian monk seals, sea turtles, sharks, and rays (Table 4), these species are not likely to be exposed to the source long enough or continuously enough to experience TTS from vessels and SCUBA air bubbles.

Larger vessels like barges used to carry pile driving equipment can create sounds ranging from 170-190 dB. At 190 dB for a vessel traveling at 10 knots, the distance to TTS is less than 10 meters for all species covered by this consultation. Based on the temporary and transitory nature of large vessels, and the small number of large vessels associated with Pac-SLOPES activities, it is unlikely that ESA-listed species will be exposed to the sound source long enough or continuously enough to experience TTS from sound generated by large vessels.

The USACE will permit maintenance dredging activities which will create noise in the action area. Reine et al. (2014) compiled sound recordings from several types of dredging. The recordings included sounds generated during cutterhead suction dredging, engine and generator noises, rock breaking, barge loading from mechanical backhoe dredging, hydraulic rams, anchoring spuds, walking anchoring spuds, and unidentified popping sounds that are commonly

recorded. Each type of sound has frequencies that are detectable by both sea turtles and monk seals. All recordings were measured and calculated in decibels referencing: dB root mean squared ($dB_{rms;}$ Table 5). Hydraulic (or suction) dredging was described as quiet and continuous (NMFS calculations would utilize continuous calculations with an ESA-listed species threshold of 120 dB). The sound created by cutterhead dredging was considered continuous; main sources of the sound were believed to be the sound of the sediments breaking apart as they were being sucked into the dredging arm and the mechanical sound of the pumps. Reine et al. (2014) described the sounds generated by mechanical dredging as repetitive (NMFS would utilize impulsive calculations with the ESA-listed species threshold of 160 dB). The processes that comprise sound sources associated with mechanical bucket or backhoe (excavator) dredges fall within several categories: physical removal of sediment from the substrate as the bucket is inserted into the bed, forcing through the bed in a "scooping" arc, and removal from the bed that produces grinding and scraping sounds. These measurements are consistent with those referenced in the USACE's BE.

Table 4. Sound level recording levels for typical types of dredging (Reine et al. 2014).

Source of sound	**Source level recordings***
Cutterhead dredging	175 dB_{rms}
Mechanical backhoe sounds from engines and generator	167 dB_{rms}
Rock breaking from mechanical dredging	179 dB_{rms}
Hydraulic ram	164 dB_{rms} (backcalculated)
Barge loading	166 dB_{rms} (backcalculated)
Anchoring spuds	173 dB_{rms}
Walking spuds	176 dB_{rms}

* Measured at 1 meter from source unless otherwise noted

** Highest recorded in a series of distances

The loudest activities presented in Reine et al. (2014) were rock breaking from mechanical dredging (179 dB_{rms} at 1m) and cutterhead suction dredging (175 dB_{rms} at 1m). Both levels are not loud enough to immediately cause TTS in any of the ESA-listed species included in Pac-SLOPES consultations. Exposure to 8 hours to these source levels could create sound exposure levels that could be harmful to marine mammal, sea turtle, and shark and ray hearing, but only if they are within a meter from the source. Therefore, USACE BMPs requiring work shutdowns if ESA-listed species are within 50 meters of the activity would prevent TTS due to sound levels. Considering the USACE BMPs and the mobile nature of marine mammals, sea turtles, sharks, and rays, the degree of exposure above TTS is extremely unlikely to occur.

Engines and the mechanisms of sound generation from land-based heavy equipment and machinery in and near water are similar to those generated by engines in machinery used in dredging and the vessels that carry them. The sounds generated by on-land machinery in and near-water are similar in nature, volume, and intensity as defined in Table 4, namely for backhoe sounds from engines and generators, and rockbreaking from mechanical dredging. Similarly, the sounds generated by mechanical equipment in or near water are not considered loud enough to cause TTS immediately, and while sound exposure levels from continuous exposure could cause TTS, this level of effect is unlikely because the animal would have to be within a meter of the source and exposed for a long period of time.

Anthony et al. (2009) presented sounds generated from the hand tools permitted under Pac-SLOPES, including pneumatic drills, saws, hammers, chippers, grinders, welding tools, cutting torches Table 6. All noises produced by these common hand tools produce sounds that are not loud enough to cause non-auditory injury or immediate hearing loss to marine animals nearby. With the exception of gun tools, all other hand tools do not generate sounds loud enough to cause TTS initially and even with a conservative estimate of 8 hours of exposure at their respective amplitudes, cumulative sound exposure levels are only high enough to cause TTS in listed animals less than 1 meter away.

Table 5. Noise levels generated by underwater tools (Anthony et al. 2009).

Source of noise	Source Sound Level (dB)
Concrete island drilling structure	175
3 underwater tools: pneumatic rock drill two different high pressure water jet lances	Up to 170.5
Chainsaw (Stanley CS11)	162
Disk grinder (Stanley GR24)	158
Rock breaker (Stanley B67)	180
Rock chipper (Stanley CH18)	163
Hand drill (Stanley DL08)	159
Impact wrench (Stanley IW16)	167
Clucas 'Kerri cable' cutter	163
Clucas 'oxy-arc' cutter	148

* Source level in water, re 1 µPa @ 1 m

The applicants may remove and install piles by vibrating them into the sediment with a vibratory hammer. The USACE is prohibiting the use of impact pile driving in Pac-SLOPES. Vibratory pile driving creates continuous noises that can have different levels of effects at different frequencies and intensities based on pile type, pile size, water depth, and substrate. For example, in water depth less than 5 meters, a 12-inch steel H-type pile was determined to have an RMS of 150 dB, while a 72-inch steel pipe pile at approximately 5 meters water depth was determined to have an RMS of approximately 170 dB (CalTrans 2020).

Table 6. Summary of near-source (10-m) unattenuated sound pressure levels for in-water vibratory pile installation (adapted from CalTrans 2020)

Size	Pile Type	Relative water depth (m)	Average Sound Pressure (dB)	
			RMS*	SEL**
12-inch	Steel H	<5	150	150
12-inch	Steel pipe	<5	155	155
36-inch	Steel pipe	~5	170	170
24-inch	AZ steel sheet	~15	160	160
72-inch	Steel pipe	~5	170	170

* RMS – root mean square, ** SEL – sound exposure level for 1 second continuous driving

Pile driving stops as installation and removal are completed and equipment is moved from one location to another. Time is required to position piles for installation. Given the standard eight hour work day, at least one hour for set up and take down per pile, 15 minutes of driving per pile,

plus breaks, only about 6 piles could be installed daily. This results in 90 minutes of vibratory hammering per day. Using the NMFS spreadsheet for conducting the calculations, assuming 90 minutes of vibratory hammering per day, the lowest source level of 150 dB at 10 meters results in a distance to TTS for mid-frequency cetaceans of 41.8 m, and the highest source level of 170 dB at 10 meters results in a distance to TTS for mid-frequency cetaceans of 901 meters (Table 8).

Table 7. Distance in meters to TTS for the lowest and highest source level for vibratory hammering 6 piles per day for 15 minutes each, and the pile driving isopleth extents (m) permissible in the Pac-SLOPES program.

	150 dB	170 dB	Isopleths
Low-frequency cetaceans	36	773	1,000
Mid-frequency cetaceans	42	901	1,000
Phocid pinnipeds	26	569	100
Sea turtles	0.1	1.4	50
Fish (elasmobranchs)	10	215	250

Listed species will hear sounds produced during construction. However, BMPs require that applicants and observers continuously monitor the area expected to exceed TTS, and all work to cease if a listed individual is within that area. Thus, the project will be shut down prior to an ESA-listed animal experiencing TTS. Considering BMPs which include halting activities when listed animals are observed within 50 meters of the work site, the isopleth constraints instituted by USACE to qualify for Pac-SLOPES for pile driving, and the observer requirements, it is extremely unlikely that they would be exposed long enough and continuously enough to experience TTS. We are reasonably certain all ESA-listed marine individuals exposed to sounds generated by the proposed action will be below the thresholds for TTS. Because the exposure is extremely unlikely, we are reasonably certain TTS is discountable.

PTS and non-auditory injury. The noise thresholds for PTS and non-auditory injury are higher than those for TTS. Because exposure to noise levels above TTS thresholds is extremely unlikely, we are reasonably certain the exposure to noise levels causing PTS or non-auditory injury are also extremely unlikely. Thus, the probability of exposure to PTS and non-auditory injury are also discountable.

Behavioral changes. Many noises generated by activities permitted under Pac-SLOPES could be loud enough to disturb and alter the behavior of listed animals without implementation of BMPs. However, BMPs required by the USACE will lower the sound intensity and shorten its duration. Cetaceans, Hawaiian monk seals, sea turtles, sharks, and rays may respond to noises by avoiding the vicinity or halting their activities. The noise may mask their normal auditory signals in their environment, or cause an attraction to source noises. Although the true causes of those anticipated behavior responses are unclear since animals can use other cues such as vision to trigger behavior response. Avoidance is most likely for most sound sources associated with Pac-SLOPES permitted activities, and is a common natural reaction by listed species. We consider avoidance to be a low risk behavior (of little to no significance to the animal). The mobile ESA-listed species in this consultation are large and agile, and capable of swimming away safely from disturbances that could harm them.

Some individuals may not be capable of avoiding vibratory pile driving given the distance noise will propagate above the disturbance response thresholds. However, the pile driving is temporary and short in duration (at most 15 minutes at a time, 6 times a day). Some individuals may also not be capable of avoiding noise from large vessels. The range from large vessels to the edge of behavioral response thresholds for a continuous, mobile sound source traveling at 10 knots is between approximately 300-3000 meters for sound levels of 170-190 dB re 1 µPa. Traveling at 10 knots, a vessel will expose a stationary animal to noise above the behavioral response threshold for a maximum of 19 minutes and 36 seconds. Thus, the sound associated with a large vessel may result in a behavioral response, most likely a temporary masking of communications between cetaceans, and in predator-prey dynamics (a predator's ability to detect prey and vice versa). However, the masking is temporary and transitory in nature, and there are relatively few large vessels used in projects permitted under the Pac-SLOPES program.

Given the BMPs required by the USACE, such as halting activities when ESA-listed species are observed and not restarting until the animal is no longer present, we are reasonably certain exposure to most noise will be short in duration and low in severity. ESA-listed individuals are likely to avoid noises other than those from vibratory pile driving and transiting large vessels. Exposure to noise from vibratory pile driving and large vessels will be 15-20 minutes in duration, much less than the duration for which the disturbance response threshold was developed (24 hours). Any masking of communication and/or acoustic environmental cues, alteration of ongoing behaviors, or avoidance will be limited spatially and temporally and will be unlikely to harm or harass any ESA-listed individuals. Therefore, while ESA-listed species may hear some sound and experience some disturbance from the proposed action, we are reasonably certain the effects are insignificant.

Loss of forage

The applicants may expose ESA-listed species to long-term habitat changes due to activities permitted under Pac-SLOPES. Most of the projects proposed under Pac-SLOPES will limit construction to replacements within the original footprint of the existing structures and will not add structures to the action area. There will be some activities in the Pac-SLOPES program that could result in some loss of forage area or change to foraging habitat including, but not limited to; mooring buoy placement, utility line placement, and some harbor improvements. The additions will be small scale in the action area, where they would not be a blockage to ESA-listed animals, prevent coral and other favorable habitat features from growing, nor create a structure that would damage or reduce the quality of nearby habitat. The amount of forage displaced by these structures is too small to have a meaningful effect and sea turtles are capable of foraging elsewhere. We are reasonably certain the amount of forage removed by the addition or replacement of manmade structures under Pac-SLOPES permitting will be insufficient to rise to the level of harming any on ESA-listed individual, thus is insignificant.

All dredging under Pac-SLOPES will be maintenance dredging and will be in the original footprint of previously dredged areas. Construction dredging, namely newly dredged areas or deepening of previously dredged channels past their original footprints, is excluded from Pac-SLOPES. Dredging will alter the depth profile of the water column, but will not change benthic habitats because dredging hard substrate is restricted under Pac-SLOPES and will be limited to unconsolidated sediments where corals do not colonize. The change of depths will have a minimal, if any, effect on sea turtles, sharks, or monk seals that use the action area. Unconsolidated sediments host a number of infauna species within the sediments that have

minimal direct forage value for sea turtles, Hawaiian monk seals, and sharks. Some macroalgae could be present in small amounts within the dredging footprint, upon which green sea turtles can forage, but it would be limited to growing on cobbles and small boulders. Dredging of areas with seagrass will not be permitted under Pac-SLOPES. In the short term, the amount of forage displaced by dredging is too small to have a meaningful effect and turtles are capable of foraging elsewhere. Long-term effects to ESA-listed species will likely be minimal because algae are resilient and will recruit and replenish on new and/or disturbed areas. Based on these reasons and the Pac-SLOPES conditions, we are reasonably certain that alterations of forage habitat due to dredging will be temporary in nature and the amounts are insufficient to rise to the level of harming any individual, and therefore are insignificant.

Analysis of Effects to Designated Critical Habitat

Hawaiian monk seal critical habitat. Many of the activities described above could be conducted in Hawaiian monk seal critical habitat. Most activities permitted under Pac-SLOPES are replacements in-kind and do not result in long-term changes to the physical or biological features of the habitat. Most of the activities will create turbidity, noise, and general construction disturbances in the water column, which are predominantly temporary and will cease once construction is complete. The applicants will implement USACE BMPs to minimize impacts on critical habitat, and applicant presence will have little effect on the conservation value of the critical habitat.

Dredging will be limited to previously dredged areas and unconsolidated sediments, which provide little or no forage value for Hawaiian monk seals, thus have minimal and unmeasurable effects on the conservation value of Hawaiian monk seal critical habitat. Additions of manmade structures under Pac-SLOPES will be limited to placement of mooring buoys and similar structures, piles, and utility lines. These small scale additions to the action area would not create a dangerous obstacle, blockages within critical habitat, prevent coral and other habitat features from growing, or create structures that would damage or reduce the quality of foraging habitat in the action area. The effects from construction, vessel movement, and installation of moorings, utility lines, pilings, and other minor structures within harbors, along with the implementation of BMPs is not likely to reduce adequate prey quality and quantity for adult or juvenile monk seals, or prevent them from hauling out for resting, molting, pupping or nursing. Therefore, we are reasonably certain all effects on designated monk seal critical habitat are either discountable or insignificant.

Main Hawaiian Island false killer whale critical habitat. Most of the projects permitted under Pac-SLOPES are along the shoreline, and thus would not impact the deep water habitat used for movement along the shelf and slope. Additions of manmade structures under Pac-SLOPES that may affect MHI IFKW critical habitat will be limited to placement of mooring buoys and similar structures. These small scale additions will not create a dangerous obstacle, prevent movement within critical habitat, or affect prey species necessary to support growth of MHI IFKW. The sound associated with mooring buoy installation is predominantly vessel noise, which is transitory and temporary, thus would not significantly impair false killer whales' use or occupancy of the critical habitat. The USACE BMP requiring a pollution control plan and the Blanket Water Quality Certification for the State of Hawaii prohibit putting pollutants into the water that could be harmful to MHI IFKWs. Therefore, we are reasonably certain all effects on designated MHI IFKW critical habitat are either discountable or insignificant.

Proposed Coral Critical Habitat. Proposed coral critical habitat is located in the Mariana Islands, American Samoa, and the PRIA. The proposed coral critical habitat consists of substrate and water column habitat characteristics essential for the reproduction, recruitment, growth, and maturation of the listed corals.

Several USACE BMPs will minimize or eliminate potential effects to the proposed coral critical habitat. Specifically, USACE requires surveys if there is a potential for an activity to effect an ESA-listed coral. Avoiding locations where the species is present is likely to avoid areas with the essential features required for critical habitat. The USACE must ensure corals and coral critical habitat are identified on project drawings. The USACE must ensure project staff are instructed to avoid the sensitive resource areas. Anchoring in or immediately adjacent to corals is to be avoided, and anchor drag is to be minimized, which reduces the probability of a direct physical impact to the essential features of coral critical habitat. An erosion control plan and use of silt containment devices will prohibit sediment from affecting the reefscape. A stormwater management plan is required for activities permitted under Pac-SLOPES, which will mitigate effects from runoff during storm events that traverse the activity area, thus maintaining marine water levels that support demographic function of proposed coral critical habitat. Plans for stormwater management, erosion control, and pollution control will prevent activities from increasing chemical contaminants that could inhibit demographic function of proposed coral critical habitat. Based on the BMPs for activities permitted under the Pac-SLOPES program, we are reasonably certain all effects on proposed coral critical habitat are either discountable or insignificant.

Project Implementation Reviews

This programmatic consultation examines the general consequences of a broad suite of activities that are routinely permitted by the USACE. In this consultation, we focused our analysis on the general patterns of exposures and responses of listed species as a result of these routine activities. Subsequent decisions as to what projects fit within this framework are the responsibility of the USACE. However, submission of the verification form allows us to check on the USACE's decision to include a particular project under this programmatic consultation.

In practice, the USACE has requested technical assistance with us for almost all projects that may fit under PAC-SLOPES prior to submitting verifications. This coordination typically includes discussions of the activity categories, which BMPs are appropriate, which species and critical habitats are present, and whether or not the project's effects are consistent with the analyses in the BE and consultation letters. After technical assistance, the USACE begins the verification process. Between January 01, 2017, and May 19, 2021, the USACE covered 99 projects under Pac-SLOPES (Table 1). During this time, we did not concur that three projects fit the programmatic. The USACE subsequently withdrew all three of these projects from coverage under Pac-SLOPES. These results demonstrate the programmatic process functions as intended, meeting the assumptions and analyses of the consultation. Monitoring Logs

As part of this revision, the USACE proposes to begin requiring observation logs (Appendix C) during project implementation. The logs include important information about the project and any species observed. This monitoring documentation will provide a final check on each project covered under the Pac-SLOPES programmatic, ensuring the assumptions and analyses in this consultation are valid. This real-time data collection and documentation will also ensure timely

triggering of reinitiation, if necessary. Furthermore, the data collected from monitoring under this revision of Pac-SLOPES will be valuable in the effects analysis of future revisions.

Annual Meeting

For each annual meeting, the USACE will produce a report of projects covered during the year. In our experience, these meetings are important to the programmatic process and have been extremely productive. They give both agencies a forum to discuss what has worked well and what has not, further improving communication, relationships, and overall efficiency of the program. They provide another check on the program to make sure it continues to be consistent with the effects determinations and analyses. The information exchanged in previous meetings heavily influenced revisions for this current version of Pac-SLOPES. For instance, during the last meeting, the USACE's idea of post-project reporting resulted in the development of the monitoring logs. Furthermore, the venue allows for effective communication between agencies on changing regulations, potential new species listings and critical habitat designations, contact personnel changes, and any other topics that may affect program implementation.

Conclusion

Considering the information and assessments presented in the consultation request and available reports and information, and in the best scientific information available about the biology and expected behaviors of the ESA-listed marine species considered in this consultation, all effects of the proposed action are either discountable or insignificant. Accordingly, we concur with your determination that the proposed action is not likely to adversely affect the following ESA-listed species and designated critical habitats: Central West Pacific green sea turtle, Central South Pacific green sea turtle, Central North Pacific green sea turtle, hawksbill sea turtle, Hawaiian monk seal, Western North Pacific humpback whale, Main Hawaiian Island Insular False Killer Whale, Indo West Pacific scalloped hammerhead shark, oceanic whitetip shark, giant manta ray, five species of corals, chambered nautilus, designated critical habitat for Hawaiian monk seals and Main Hawaiian Islands insular false killer whales, and proposed critical habitat for corals.

This concludes informal consultation under Section 7 of the ESA for species under our jurisdiction.

Reinitiation Notice

ESA Consultation must be reinitiated if: 1) take occurs to an endangered species, or to a threatened species for which we have issued regulations prohibiting take under Section 4(d) of the ESA; 2) 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; 3) the identified action is subsequently modified in a manner causing effects to ESA-listed species or designated critical habitat not previously considered; or 4) a new species is listed or critical habitat designated that may be affected by the action.

If you have further questions, please contact Sarah Pautzke at Sarah.Pautzke@noaa.gov. Thank you for working with us to protect our nation's living marine resources.

Sincerely,

GARRETT.ANN.M.1365883323 Digitally signed by GARRETT.ANN.M.1365883323 Date: 2022.03.04 12:53:35 -10'00'

Ann M. Garrett
Assistant Regional Administrator
Protected Resources Division

Cc: Vera Koskelo (Vera.B.Koskelo@usace.army.mil)
NMFS File No.: PIRO-2021-01430
PIRO Reference No.: I-PI-21-1928-AG

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Appendix A
Corps-Proposed Best Management Practices

The Corps will include the following BMPs for the activities identified in their incoming Biological Evaluation as permit conditions.

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A. General BMPs

1. The Corps will retain the right of reasonable access to projects authorized under Pac-SLOPES to monitor the compliance with and effectiveness of permit conditions.

2. For in-water work where ESA corals may occur, structures and substrate that could be affected by the proposed activity must be surveyed by personnel qualified to identify ESA-listed corals. Where divers are to be used, before entering the water, all divers shall be made aware of ESA-listed corals, and the requirement to avoid contact with the corals while performing their duties. This shall include taking measures to avoid kicking corals with fins and to secure dive and survey equipment in a manner that will prevent the equipment from being dragged across the substrate.

3. To minimize impacts to coral larvae, notably the listed species covered in this programmatic consultation, the permittee shall avoid in-water work during mass-coral spawning times or peak coral spawning seasons June 1 to September 30 if practicable. The Corps must consult with the NMFS HCD biologist to determine the period and dates when coral spawning will occur for the given year.

4. Constant vigilance shall be kept for the presence of ESA-listed marine species (sea turtles, marine mammals, sharks, rays) during all aspects of the proposed action.

5. A responsible party (i.e. permittee/site manager/project supervisor) shall designate an appropriate number of competent trained observers[3] to survey the areas adjacent to the authorized work area (i.e. proposed action) for ESA-listed marine species. The competent observer will not be simultaneously engaged in any other activity (e.g. captaining, operating equipment, etc).

6. Surveys shall be made prior to the start of work each day, and prior to resumption of work following any break of more than one half hour. Additional periodic surveys throughout the work day are strongly recommended.

7. All work shall be postponed or halted when ESA-listed marine species are within 50 meters (54.7 yards, 164 feet) of the proposed work, and will only begin/resume after the animals have voluntarily departed the area.
    a. If ESA-listed marine species are noticed within 50 meters (54.7 yards, 164 feet) after work has already begun, that work may continue only if, in the best judgement of a biologist, the activity will not adversely affect (i.e. disturb or harm) the animal(s). For example: divers performing underwater work (excluding the use of toxic chemicals) such as surveys would likely be permissible, whereas operation of heavy equipment is not.

8. Project-related personnel shall NOT conduct activities resulting in a take of an ESA-listed species, a species proposed for listing, or listed or proposed critical habitat. "Take" as defined under the ESA means "to harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect or attempt to engage in any such conduct". Activities that would qualify as take include attempting to disturb, touch, ride, feed, or otherwise intentionally interact with any protected species.

9. Sensitive resource areas, such as corals, coral reefs and seagrass beds known to occur within a project area must be identified on project figures. Project staff must be instructed to avoid the sensitive resource areas to the greatest extent practicable, including avoiding anchoring in these areas, flagging the areas if appropriate, and securing all in-water equipment in a manner that will prevent the equipment from being dragged across the substrate.

10. Project construction must cease under unusual conditions, such as large tidal events and high surf conditions, except for efforts to avoid or minimize resource damage.

11. When a diver is involved in the action, the diver will do their best to avoid ESA-listed species. If an animal traverses within 50 m, however, the diver will take into account his/her own personal safety. The diver will report the interaction via the reporting requirement in BMP A 13.

[3] NMFS staff are not available to serve as an observer.

12. If an ESA-listed species is adversely affected as a result of the project, all work must stop until coordination with the Corps and NMFS has been completed.
13. Reporting
    a. Any monk seal sightings:
        i. At the time of observation, the observer will report the sighting to the NOAA Statewide Hawaii Marine Wildlife Hotline at 888-256-9840. The observer will be prepared to provide information to the hotline operator about the sighting location and other site-specific information to help the operator determine the most appropriate response, if any.
        ii. The observer will email documentation of Hawaiian monk seal sightings (e.g., photos, video, reports, etc.) to: pifsc.monksealsighting@noaa.gov, with the subject line indicated as: "Monk seal sighting documentation per Pac-SLOPES ESA section 7 consultation." Documentation will always include the specific sighting location and the contact information of the reporting party.
    b. Observer logs. All interactions with listed species must be documented and reported to the Corps and NMFS in monitoring logs (Appendix C).
        i. Monitoring logs shall be completed daily. If no ESA-listed species are observed, the observer will record "0" in the daily report.
        ii. The monitoring logs will be submitted in a digital and queryable format to NMFS reporting contact(s) in Table 1, with the following information:
            1. Total hours and dates of monitoring,
            2. Identification of which ESA species were observed and in what location and circumstances, including date, numbers of individuals of species observed, the outcome of the species observance relative to the authorized project, and any factors which may have affected visibility
            3. If applicable, observed ESA species behaviors and movement types relative to the project activity at time of observation
        iii. All monitoring logs must be submitted to the NMFS within 90 calendar days of the completion of the project. The Corps will provide final reports to NMFS as part of the annual report.

B. BMPs for Waste and Discharge

1. 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.

2. An erosion control plan for the project site and adjacent areas must be prepared and carried out. Erosion controls must be properly installed before any alteration of the project area may take place.

3. A pollution control plan for the project site and adjacent areas must be prepared and implemented. At a minimum, this plan shall include:
    a. Proper installation and maintenance of equipment diapers, or drip pans.
    b. A contingency plan to control and clean spilled petroleum products, hydraulic leaks, and other toxic materials.

c. Appropriate materials to contain and clean potential spills will be stored at the work site and be readily available.
d. All project-related materials and equipment placed in the water will be free of pollutants.
e. Daily pre-work inspections of heavy equipment and vessels for cleanliness and leaks, with all heavy equipment operations and vessel use postponed or halted until leaks are repaired and equipment is cleaned.
f. Fueling of land-based vehicles and equipment shall take place at least 50 feet (15 meters) away from the water, preferably over an impervious surface.
g. All construction discharge water (e.g., concrete washout, pumping for work area isolation, vehicle wash water, drilling fluids) must be treated before discharge.
h. Debris and other wastes will be prevented from entering or remaining in the marine environment during the project.

4. Temporary access roads and drilling pads must avoid steep slopes, 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 construction of new access routes.

5. Temporary fills must be removed in their entirety. All areas impacted by construction must be returned to pre-construction elevations. The affected areas must be stabilized and revegetated with native species as appropriate.

6. All disturbed areas must be immediately stabilized following cessation of activities for any break in work longer than 4 days.

7. Drilling and dredging are restricted to uncontaminated areas, and any associated waste or spoils must be completely isolated and disposed of in an approved upland disposal location.

C. BMPs for activities that may result in <u>Direct Physical Impact</u>

1. Before any equipment, anchor(s), or material enters the water, a responsible party, i.e., permittee/site manager/project supervisor, shall verify that no ESA-listed marine animals are in the area where the equipment, anchor(s), or materials are expected to contact the substrate. If practicable, the use of divers to visually confirm that the area is clear is preferred.

2. Equipment operators shall employ "soft starts" when initiating work each day and after each break of 30 minutes or more that directly impacts the bottom. Buckets and other equipment shall be sent to the bottom in a slow and controlled manner for the first several cycles before achieving full operational impact strength or tempo.

3. All objects lowered to the bottom shall be lowered in a controlled manner. This can be achieved by the use of buoyancy controls such as lift bags, or the use of cranes, winches, or other equipment that affect positive control over the rate of descent.

D. BMPs for activities that may result in <u>Entanglement</u>

1. Temporary in-water tethers, as well as mooring lines for vessels and marker buoys shall be kept taut to the minimum length necessary, and shall remain deployed only as long as needed

to properly accomplish the required task.

2. Mooring systems shall employ the minimum line length necessary to account for expected fluctuations in water depth due to tides and waves.

3. Mooring systems shall be designed to keep the line as tight as possible, with the intent to eliminate the potential for loops to form.

4. Mooring lines shall consist of a single line connected to the buoy float. No additional lines or material capable of entangling marine life may be attached to the mooring line or to any other part of the deployed system.

5. Mooring systems shall be designed to keep the gear off the bottom, by use of a mid-line float when appropriate.

6. Any permanent or long-term deployments shall include an inspection and maintenance program to reduce the likelihood of failures that may result in loose mooring lines lying on the substrate or hanging below a drifting buoy.

7. Mooring systems, including those used for temporary markers, scientific sensor buoys, or vessel moorings, shall be completely removed from the marine environment immediately at the completion of the authorized work or the end of the mooring's service life. The only exceptions to this rule shall be mooring anchors such as eyebolts that are epoxied into the substrate and which pose little or no risk to marine life.

E. BMPs for activities that may result in <u>Exposure to Elevated Noise Levels</u>

1. Maintenance dredging, in-water excavation, movement of large armor stones, and benthic core sampling shall not be undertaken if any ESA-listed marine animals are within 50 meters (54.7 yards, 164 feet) of the authorized work, and those operations will immediately shut-down if an ESA-listed marine animal enters within 50 meters (54.7 yards, 164 feet) of the authorized work. This condition is intended to ensure that no ESA-listed marine animals are exposed to sound levels anywhere near the TTS threshold isopleths.

2. Operation of buoy acoustic release systems shall cease when ESA-listed marine animals are within 250 meters (273 yards) (safety zone). It is further recommended that the permittee carefully survey the safety zone around the vessel/buoy from 30 minutes prior to activating the acoustic release, to 30 minutes following the end of transducer operations.

F. BMPs for activities that may result in <u>Vessel Strikes</u>

1. When piloting vessels, vessel operators shall alter course to remain at least 100 meters (109 yards) from whales, and at least 50 meters (54.7 yards, 164 feet) from other ESA-listed marine animals.

2. Reduce vessel speed to 10 knots or less when piloting vessels in proximity of ESA-listed marine mammals, sharks, and rays.

3. Reduce vessel speed to 5 knots or less when piloting vessels in areas of known or suspected sea turtle activity.

4. If despite efforts to maintain the distances and speeds described above, a marine mammal or turtle approaches the vessel, the vessel operator will put the engine in neutral until the animal is at least 15 meters (~50 feet) away, and then slowly move away to the prescribed distance.

5. Marine mammals, sea turtles and other ESA-listed motile species shall not be encircled or trapped between multiple vessels or between vessels and the shore.

6. The Corps and NMFS contacts in Table 1 will be notified within 48 hours of a vessel grounding or abandonment during the proposed action.

G. Marina or Harbor Repair and Improvement Activities

1. Repair and replacement of over-water and in-water structures (such as piers, docks, and launch ramps) under Pac-SLOPES is expressly limited to their existing footprints.

2. Replacement decking should be designed to reduce in-water shading to the greatest extent practicable.

3. 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.

4. Removed materials must be disposed of at an approved upland disposal site.

5. The use of treated wood is not authorized.

H. Piling Installation, Repair, Replacement and/or Removal

1. Repair and removal work will be accomplished in a manner that minimizes the potential spread of invasive species.

2. Removed pilings must be disposed of at an approved upland disposal site.

3. Pac-SLOPES cannot be used if the distance to the TTS isopleth is greater than 50 m for sea turtles, 100 m for monk seals, 1000 m for cetaceans, or 250 m for sharks and rays. The Corps will provide calculations and details (including number of piles per day, minutes per pile, pile size, etc.) to NMFS to verify the distances to the TTS isopleths. Applicants can 1) use the publically available NMFS marine mammal sound calculator (https://www.fisheries.noaa.gov/national/marine-mammal-protection/marine-mammal-acoustic-technical-guidance) to conduct their own analyses and have the Corps submit the spreadsheet and results to NMFS, or 2) the Corps may request technical assistance for help determining the TTS isopleths from NMFS as part of a Pac-SLOPES verification request. For permit applicants,

the Corps will submit all analyses and information to NMFS as part of Pac-SLOPES verification. Should the applicant request technical assistance, the applicant must provide; pile size (diameter in inches), pile material (wood, concrete, or steel), number of piles installed within a 24-hour period, duration to drive a single pile (in minutes), water depth (feet or meters), and, if possible, the substrate type and type of vibratory hammer.

4. An appropriate number of observers will be designated to monitor the entire pile driving shutdown zone, which is determined by the TTS isopleths calculated in the preceding BMP.

I. Installation and/or Repair of Buoys and Other Similar Structures

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

2. Deployment of moored active acoustic devices must operate in frequency bands well outside the hearing ranges of ESA-listed marine animals (such as certain wave and current monitoring systems operating above 200 kHz), and moorings with acoustic release devices may only transmit a brief signal during deployment and during recovery of the mooring.

3. Should a mooring break free and ground, the permittee will notify the Corps and of the grounding, including date and exact location. See Table 1 for Corps and NMFS reporting contact(s).

J. Maintenance Dredging

1. With the exception of the actual dredging apparatus (e.g. clamshell buckets, or the scoop and articulated arm of a backhoe, hydraulic head, etc.), heavy equipment will be operated from above and out of the water.

2. 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 and juvenile scalloped hammerhead sharks.

3. The applicant will not use a Trailing Suction Hopper Dredge (or hopper dredge) to conduct dredging. There have been numerous observed mortalities of sea turtles and sharks associated with these vessels.

4. The applicant will not use Dustpan dredges, which use high velocity water jets to loosen material before sucking it into their apparatus. This technique causes high turbidity and the effects of water velocities from water jets to listed species have not been evaluated.

5. The applicant may use cutterhead dredges that are equipped with suction heads of 36 inches diameter or less, and a maximum intake velocity of 4.6 meters per second (15 feet per second), and an intake velocity of 95 cm per second (3.1 feet per second) at 1 meter away from the suction head.

6. The applicant may use pipeline dredges with openings no larger than 36 inches diameter, and intake velocities of 4.6 meters at the source and 95 cm per second at 1 meter. To avoid lethal entrainment or dismemberment of sea turtles, hammerhead sharks, or marine mammals, suction head openings larger than 12 inches must be either screened with 2-inch mesh or less, operated or monitored by a diver, or behind a barrier (e.g., coffer dams or silt curtains).

7. To minimize exposure to listed animals in the water column, the applicant will avoid moving the suction head through the water column while the pump is turned on. The applicant will turn on suction only when the suction heads are at the bottom and in contact with the sediment and turn it off before lifting the suction head up to the surface.

8. In known scalloped hammerhead shark nursery areas, the applicant will conduct all suction dredging behind barriers (e.g., coffer dams or silt curtains), or with a diver operating or monitoring the suction head and screening.

9. The portions of the equipment that enter the water will be clean and free of pollutants.

10. Appropriate silt containment devices must be used and properly installed to avoid degradation of adjacent coral reefs, and aquatic vegetation.

11. Dredged material must be deposited at upland sites, or at EPA designated ocean disposal sites provided sediment standards are met.

In the modified Blanket Water Quality Certification for the State of Hawaii 0901, dated 26 May 2020, General Condition f states "Ensure that pollution control measures and BMPs are utilized that prevent water pollutants from leaving the in-water work area authorized by the USACE POH permit. Any visual plume emanating from the authorized in-water work area is a violation of HAR Chapter 11-54".

K. Other Minor Discharges and Dredging/Excavations

1. The dredged or discharged material will be free of contamination.

2. The site of excavation or discharge will contain no known forage or resting habitat for ESA-listed marine species.

L. Utility Line Installation and Repair

1. Utility line placement location and method must be designed to avoid to the greatest extent practicable, impacts to live corals, submerged aquatic or marine vegetation and other benthic organisms, and wetlands.

M. Maintenance of Existing Bank Stabilization Structures

1. No material will be discharged into special aquatic sites.

2. Bank stabilization will be limited to replacement within the current footprint only and will not extend waterward from the present site.

3. No new bank stabilization.

4. An activity will involve no more than 500 feet in total length along the bank.

5. The maximum amount of material placed shall not exceed the minimum needed for erosion protection.

6. No material is of a type, or is placed in any location, or in any manner, that will impair surface water flow into or out of any waters of the United States.

7. All material will be placed in a manner that will avoid erosion by normal or expected high flows.

N. Road Repairs and/or Improvements

1. No new road construction.

2. Maximum road width shall be limited to the minimum width necessary.

3. Roads shall be designed and constructed in a manner that minimizes adverse impacts on surface and marine waters due to runoff and erosion, including adequate stormwater treatment. Erosion control BMPs will be checked daily during the construction period.

4. Roads shall be constructed as near as possible to pre-construction contours and elevations.

5. Roads must be bridged or culverts installed based on present or future (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.

O. Bridge Repair and Replacement

1. Temporary fills must consist of stable materials, and be placed in a manner, that will not be eroded by expected high flows.

2. Temporary fills must be removed in their entirety and the affected areas returned to pre-construction elevations within 30 days of project completion.

a.

P. Stranded, Injured, Sick, or Dead Marine Mammal or Turtle

1. If observers become aware of any injured, sick, or dead marine mammal or turtle (whether or not it may be related to the proposed action), they will immediately call the NOAA Statewide

Hawaii Marine Wildlife Hotline at 888-256-9840. The observer will be prepared to provide information to the hotline operator about the animal's condition, location, and other information specific to the situation to help the operator determine the most appropriate response.

2. The observers will submit photos and data as soon as possible regarding stranded, injured, sick, or dead marine animals that NMFS may use to inform NMFS-directed field responses and/or further analysis to determine whether a taking resulted (see 3. below). Photos and data submitted to NMFS regarding stranded, injured, sick, or dead marine animals will include date, time, location, species, and number of animals, as well as a description of the animal's condition, event type (e.g., entanglement, dead, floating), and behavior of live-stranded marine animals. The observers will email this documentation to: respectwildlife@noaa.gov, with the subject line indicated as: "Stranded animal information per Pac-SLOPES ESA Section 7 consultation."

3. If NMFS responders determine the proposed action resulted in the taking, reinitiation is warranted. The Corps will collect the following information and include it in the reinitiation request:
    a. number of individuals and species of listed animals affected;
    b. the date, time, and location of each event (provide geographic coordinates);
    c. description of the event;
    d. the time the animal(s) was first observed or entered the shutdown zone, and, if known, the time the animal was last seen or exited the zone, and the fate of the animal;
    e. mitigation measures implemented prior to and after the take; and
    f. if a vessel struck a marine mammal, the contact information for the observer on duty, or the contact information for the individual piloting the vessel if there was no observer on duty;
    g. Photographs or video footage of the animal(s) (if available).

Q. Contact Information

Table 1. Summary of agency contact information.

Reason for Contact	**Contact Information**
Consultation Questions	ESA email inbox (efhesaconsult@noaa.gov), and Consultation Biologist: @noaa.gov
Reports & Data Submittal (please include ECO tracking number in subject line)	efhesaconsult@noaa.gov, and CEPOH-RO@usace.army.mil

NOAA Fisheries Hawai‘i Statewide Marine Stranding, Entanglement, and Reporting Hotline *(not related to project activities)*	Stranding Hotline (24/7 coverage): (888) 256-9840
Oil Spill & Hazardous Materials Response	U.S. Coast Guard National Response Center: 1-800-424-8802
Illegal Activities *(not related to project activities; e.g., feeding, unauthorized harassment, or disturbance to marine mammals)*	NMFS Office of Law Enforcement: 1-800-853-1964
NMFS Pacific Islands Regional Office	808-725-5000
Corps Honolulu District Regulatory Office	CEPOH-RO@usace.army.mil 808-835-4303

APPENDIX B

Pac-SLOPES Notification and Verification Form

US Army Corps of Engineers, Honolulu District
and
NOAA Fisheries/PIRO/Protected Resources Division

Pac-SLOPES Notification and Verification Form

DA File Number: POH-202X-XXXX
NMFS PCTS Number:
PIRO Reference Number:
Project Name: XXXX
Subject: Pac-SLOPES Notification and Verification

This form constitutes the verification under the Standard Local Operating Procedures for Endangered Species in the Central and Western Pacific Region (Pac-SLOPES). The Corps has initially determined that the proposed action regulated under Section 10 and/or Section 404 is not likely to adversely affect endangered or threatened under the Endangered Species Act (ESA) and NMFS jurisdiction or to destroy or adversely modify designated critical habitat. The permittee will be required to comply with the Pac-SLOPES general conditions, special conditions, and activity-specific best management practices (BMPs) to avoid effects to threatened and/or endangered marine species.

Date of Request:
Date of Requested NMFS Response: ***15-days from Date of Request***

Applicant Name:

Project Location:
Project Center Latitude & Longitude:
Project Waterway:

Project Manager Name:
Phone Number & Email:

Project Description:

Provide justification, description of marine environment to be impacted, additional BMPs, special conditions and/or avoidance and minimization measures the applicant has proposed in order to comply with the Pac-SLOPES programmatic consultation and to ensure the proposed project is not likely to adversely affect endangered or threatened species under NMFS jurisdiction or to

destroy or adversely modify critical habitat. Attach map and drawings.

DA Permit to be authorized/verified:
☐ Nationwide Permit XX (NWP-XX)
☐ Letter of Permission (LOP)
☐ Standard Permit (SP) / Individual Permit (IP)

Type of Action:
☐ Site preparation for above-, over-water, or in-water construction
☐ Survey activities
☐ Marina or harbor repair & improvement
☐ Piling repair & removal
☐ Buoy, aids to navigation, fish aggregating devices, temporary structures installation & repair
☐ Maintenance dredging
☐ Other minor discharges and dredging/excavation
☐ Utility line installation & repair
☐ Outfall structure repair & replacement
☐ Bank stabilization structures (new and maintenance)
☐ Stream clearing
☐ Road construction, repair, and improvement
☐ Bridge repair & replacement
☐ Vessel removal

NOAA Species/Critical Habitat Present in Action Area:
Identify all the species potentially found in the action area.

Marine Mammals and/or Sea Turtles:
☐ Green sea turtle (*Chelonia mydas*)
  ☐ Central North Pacific DPS (threatened) – Hawaii
  ☐ Central West Pacific DPS (endangered) – Guam/CNMI
  ☐ Central South Pacific DPS (endangered) – American Samoa
☐ Hawksbill sea turtle (*Eretmochelys imbricata*), endangered
☐ Western North Pacific Humpback whale (*Megaptera novaeangliae*), endangered (Guam/CNMI Only)
☐ Hawaiian Insular false killer whales (*Pseudora crassidens*), endangered
☐ Indo-West Pacific DPS Scalloped Hammerhead shark (*Sphyrna lewini*), threatened (Guam/CNMI Only)
☐ Hawaiian monk seals (*Monachus schauinslandi*), endangered
☐ Chambered nautilus (*Nautilus pompilius*), threatened
☐ Giant manta ray (*Manta birostris*), threatened
☐ Oceanic whitetip shark (*Carcharhinus longimanus*), threatened

Critical Habitat:
☐ Hawaiian monk seal (*Monachus schauinslandi*) critical habitat
☐ Hawaiian Insular false killer whales (*Pseudora crassidens*), critical habitat
☐ Threatened coral species, proposed critical habitat

Threatened Coral Species in American Samoa:
☐ *Acropora globiceps*
☐ *Acropora retusa*
☐ *Acropora speciosa*
☐ *Isopora crateriformis*
☐ *Euphyllia paradivisa.*

Threatened Coral Species in Marianas Islands (Guam and CNMI):
☐ *Acropora globiceps*

Corps Conclusion:

☐ The proposed project is consistent with Pac-SLOPES, as described and checked above, and the programmatic Section 7 consultation.

☐ Proposed project is consistent with Pac-SLOPES, as described and checked above, and the programmatic Section 7 consultation per the justification, BMPs and/or special conditions provided above.

_____Corps PM Signature

_____Date

NOAA Fisheries Determination:

☐ NMFS concurs with the Corps determination that the proposed project is consistent with Pac-SLOPES, as described and checked above, and the programmatic Section 7 consultation.

☐ NMFS does not concur with the Corps determination that the project is consistent with Pac-SLOPES, as described and checked above, and/or with the programmatic Section 7 consultation and recommends a separate Section 7 consultation.

_____NMFS Representative Signature

_____Date

APPENDIX C

Monitoring Logs

Instructions	
Data Attribute	**Definition**
Project Name	Indicate the name of the project.
Location	Specify the project location or observation station. This is extremely important if there are multiple observation stations.
Observer(s)	Indicate the observer(s) at the station during monitoring effort. If the observer(s) switch in the middle of the day indicate the time of the switch.
Agency record numbers	POH number for the Corps and the ECO number for NMFS PIRO
Project Activities	
Start and end times	Record start and end times of all in-water activities. Make sure to record breaks in any in-water activities. Military time is preferable.
Type of Activity	Specify the type of in-water activity and make sure to indicate specifics such as bubble curtain use. Types of activities may include soft-start, impact pile installation (w/ or w/o bubble curtain), vibratory pile installation or removal (w/ or w/o bubble curtain), down the hole drilling, dredging, vessel activity, anchor handling, fill placement, or other sources of in-water disturbance.
ESA-listed Animals Sighting	
Species	Identify the species observed. (FKW) false killer whale, (MS) monk seal, (UW) unidentified cetacean, (BW) blue whale, (FW) fin whale, (SEW) sei whale, (SPW) sperm whale, (NPRW) north pacific right whale, (HW) humpback whale, (HT) hawksbill sea turtle, (GT) green sea turtle, (OR) olive ridley sea turtle, (LHT) loggerhead sea turtle, (LBT) leatherback sea turtle, (SHS) scalloped hammerhead shark, (OWT) oceanic whitetip shark, (GR) giant manta ray, (AG) acropora globiceps, (ARE) A. retusa, (AS) A. speciosa, (EP) Euphyllia paradivisa, (IC), Isopora crateriformis.
Quantity	Document the number of animals seen per sighting (e.g. 1 turtle, 3 whales, etc.)

Behavior	(T) traveling - moving in a linear or near-linear direction without interruption (M) milling - moving in a non-linear, weaving or circular pattern within an area (HO) hauled out - hauled out on land (D) diving - moving downward through the water column (rapidly or slowly), often showing tail fluke before dive (V) vocalizing - snorting, whistling, or chirping (BR) breaching - leaps clear out of water (SH) spyhopping - holding body vertically with head out of water for several seconds or more (ST) startled - rapidly changing behavior, dispersing or travelling that indicates a response to external event (**must describe disturbance in the notes**) (F) flush from haulout - enters water in response to disturbance (**must describe disturbance in the notes**) (CH) change direction - sudden change in direction that may be caused by disturbance (**must describe in notes**) (A) avoidance - avoiding an area (**must describe in notes**) (O) unclassified behavior (**must describe in notes**) (U) unknown - behavior indistinguishable due to monitoring conditions and/or lack of ability to watch marine mammal for length of time to determine (no comment is necessary) (S) sessile - for corals **(All behavioral changes caused by the project activities or other activities must be described in the notes. Include a detailed description of activities/animal's behavior before and after potential project related behavior change)**
Location (inside/outside shutdown zone) and duration	Location – indicate if the species was inside or outside the shutdown zone. Duration – record the length of time if the ESA species was inside the shutdown zone.
Action taken by project	Indicate if a shutdown or delay was implemented due to marine mammals, sharks, rays, or sea turtles being observed.
NOTES EXAMPLES	
Duration of Shutdown or Delay	If a shutdown or delay occurred due to ESA-listed animal presence, indicate how long the shutdown or delay lasted.
Sighting Notes	Include any additional information, include specifics about ESA-listed animals behavioral changes from project activities.

Project Name:	
Location:	
Observer(s):	
Corps and NOAA Project numbers:	POH-202___-_____, PIRO-202___-_____

Date	Start time	End time	Activity type(s)	ESA-listed animal sighted	Quantity	Behavior	Location (i.e. inside/outside shutdown zone)	Duration	Action taken by project	No sightings this day
										☐
										☐
										☐
										☐
										☐
										☐
										☐

Notes: