

# DRAFT Environmental Assessment

## *Kīlauea Point National Wildlife Refuge Access Repair Project*

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Prepared by

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## Acronyms and Abbreviations

AML	Alaska Marine Lines
BLM	Bureau of Land Management
CCP	Comprehensive Conservation Plan
CDP	census-designated place
CEQ	White House Council on Environmental Quality
CFR	Code of Federal Regulations
CO	carbon monoxide
COLA	cost-of-living-adjustment
DPS	distinct population segment
EA	Environmental Assessment
EJ	Environmental justice
EO	Executive Order
EPA	U.S. Environmental Protection Agency
ESA	Endangered Species Act
FEMA	U.S. Federal Emergency Management Agency
FHWA	Federal Highway Administration
FONSI	Finding of No Significant Impact
FR	Federal Register
FWS	U.S. Fish and Wildlife Service
GHG	greenhouse gas
GHT	Geotek Hawaii, Inc.
HDOH	Hawai'i Department of Health
HFC	Hydrofluorocarbon
HP	horsepower
IBA	Important Bird Area
IUCN	International Union for the Conservation of Nature
KPNHA	Kīlauea Point Natural History Association
KPNWR	Kīlauea Point National Wildlife Refuge
LF	linear feet
MHWL	mean high water line
NAAQS	National Ambient Air Quality Standards
NEPA	National Environmental Policy Act
NHO	Native Hawaiian Organizations
NO <sub>2</sub>	nitrogen dioxide
NWR	National Wildlife Refuge
NWRS	National Wildlife Refuge System
NWRSAA	National Wildlife Refuge System Administration Act
O <sub>3</sub>	ozone

Pb	lead
PFC	perfluorocarbon
PILOT	payment in lieu of taxes
PM	particulate matter
PND	PND Engineers, Inc.
Refuge	Kīlauea Point National Wildlife Refuge
Service	U.S. Fish and Wildlife Service
SHPO	State Historic Preservation Office
SO <sub>2</sub>	sulfur dioxide
SPT	split spoon sampling
SST	sea surface temperature
TPY	tons per year
USFWS	U.S. Fish and Wildlife Service (Service)
USGS	U.S. Geological Survey
VOC	volatile organic compounds

# Environmental Assessment for Kīlauea Point Refuge Access Repairs

## Introduction

This Draft Environmental Assessment (EA) is being prepared to evaluate the effects associated with the proposed action and complies with the National Environmental Policy Act (NEPA) in accordance with Council on Environmental Quality regulations (40 CFR 1500-1509) and Department of the Interior (43 CFR 46; 516 DM 8) and U.S. Fish and Wildlife Service (550 FW 3) regulations and policies. NEPA requires examination of the effects of proposed actions on the natural and human environment. Additional laws and executive orders evaluated are outlined in Appendix A and throughout this Environmental Assessment.

## Proposed Action

Kauaʻi Island, Hawaiʻi, suffered major flooding as a result of several large storms that resulted in emergency proclamations in 2018, 2020, and 2021. The Kauaʻi National Wildlife Refuge Complex (Complex), managed by the U.S. Fish and Wildlife Service (Service), sustained a significant amount of infrastructure damage from the 2020 and 2021 storms. The Complex oversees management of three National Wildlife Refuges, including the Kīlauea Point National Wildlife Refuge (Refuge). Infrastructure damaged includes the Refuge entrance road, parking lot, boundary fence, and main water line servicing the Refuge. As a result, the Service received emergency disaster relief funding to repair the damaged infrastructure in 2022. The repair of the main entrance road, parking lot, and waterline were prioritized among the many damages across the Complex, and were grouped into one project.

The proposed repair project includes a slight widening of the main entrance road, as well as enhanced markings, drainage, and other safety-related improvements that would improve accessibility and safety for staff, volunteers, and visitors. The main waterline to the Refuge runs underneath the road and parking lots and this waterline would be completely replaced to prevent further leaks and failure before the road is resurfaced. A small section of ungulate fencing that was damaged during storm events would also be replaced to protect the Refuge.

A proposed action may evolve during the NEPA process as the agency refines its proposal and gathers feedback from the public, Native Hawaiian Organizations (NHOs), and other agencies. Therefore, some details of the final proposed action may be different from the original. The proposed action would be finalized at the conclusion of the public comment period for the EA.

## Background

National Wildlife Refuges are guided by the mission and goals of the National Wildlife Refuge System (NWRS), the purposes of an individual Refuge, Service policy, and laws and international treaties. Relevant guidance includes the National Wildlife Refuge System Administration Act of 1966, as amended by the National Wildlife Refuge System Improvement Act (Improvement Act) of 1997 (16 U.S.C. 668dd et seq.), Refuge Recreation Act of 1962, and selected portions of the Code of Federal Regulations (CFR) and Fish and Wildlife Service Manual.

Kīlauea Point National Wildlife Refuge was established on February 15, 1985, under the Refuge Recreation Act, the Transfer of Certain Real Property for Wildlife Conservation Act, and the Endangered Species Act (ESA) to protect and enhance seabird nesting colonies. At this time, under Public Law 80-537, the U.S. Coast Guard transferred 31-acre Kīlauea Point to the Service. Between 1988 and 1994, working with the Trust for Public Lands and several other community partners, the Service acquired the additional 168 acres within Nihokū, Mōkōlea Point, and Kāhili that make up the rest of the Kīlauea Point National Wildlife Refuge today.

The purposes of the Refuge include:

- “...particular value in carrying out the national migratory bird management program.” (16 U.S.C. § 667b, An Act Authorizing the Transfer of Certain Real Property for Wildlife, or other purposes)
- “...suitable for— (1) incidental fish and wildlife-oriented recreational development, (2) the protection of natural resources, (3) the conservation of endangered species or threatened species...” (16 U.S.C § 460k-1)
- “...the Secretary...may accept and use...real...property. Such acceptance may be accomplished under the terms and conditions of restrictive covenants imposed by donors...” (16 U.S.C. § 460k-2, Refuge Recreation Act (16 U.S.C. § 460k-460k-4), as amended)
- “...to conserve (A) fish or wildlife which are listed as endangered species or threatened species...or (B) plants...” (16 U.S.C. § 1534, Endangered Species Act of 1973 (ESA))
- “(1) the protection and recovery of endangered Hawaiian waterbirds and other endangered birds, including the nēnē; and (2) the conservation and management of native coastal strand, riparian, and aquatic biological diversity.” (Public Law 108-481, Kīlauea Point National Wildlife Refuge Expansion Act of 2004).

The mission of the NWRS, as outlined by the Improvement Act, is “...to administer a national network of lands and waters for the conservation, management and, where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans.”

Additionally, the Improvement Act mandates the Secretary of the Interior in administering the NWRS (16 U.S.C. 668dd(a)(4)) to:

- Provide for the conservation of fish, wildlife, and plants, and their habitats within the NWRS;
- Ensure that the biological integrity, diversity, and environmental health of the NWRS are maintained for the benefit of present and future generations of Americans;
- Ensure that the mission of the NWRS described at 16 U.S.C. 668dd(a)(2) and the purposes of each Refuge are carried out;
- Ensure effective coordination, interaction, and cooperation with owners of land adjoining refuges and the fish and wildlife agency of the states in which the units of the NWRS are located;
- Assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the NWRS and the purposes of each refuge;
- Recognize compatible wildlife-dependent recreational uses as the priority general public uses of the NWRS through which the American public can develop an appreciation for fish and wildlife; and
- Ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses; and
- Monitor the status and trends of fish, wildlife, and plants in each refuge.

## **Purpose and Need for the Action**

The purpose of the proposed action is to repair and restore key infrastructure to provide safe access to the Refuge for staff, volunteers, and visitors, and to meet Service priorities and mandates as outlined by the Improvement Act to “...to contribute to the conservation of the ecosystems of the United States..., assist in the maintenance of adequate water quantity and water quality to fulfill the mission of the System and purposes of each refuge... [and] Ensure that opportunities are provided within the NWRS for compatible wildlife-dependent recreational uses” (16 U.S.C. 668dd(a)(4)).

Severe storms at Kilauea Point in 2020 and 2021, damaged the access road and adjacent parking areas, a section of ungulate fencing, and the main water line that services the Refuge. These damages need to be addressed to stop further degradation and loss of water availability, while continuing to provide safe long-term access to the Refuge. The repairs support the mandates of the Improvements Act as well as Goal 6 of the Comprehensive Conservation Plan (CCP). Goal 6 is to “ensure that all visitors enjoy safe and well-maintained operations that contribute to a positive visitor experience” (USFWS 2016). The storms exacerbated long-term challenges with storm water runoff and erosion control and the Refuge now lacks safe access for personnel and visitors. The Refuge hosts upwards of 500,000 visitors annually, and the existing entry-exit road is too narrow for two-lane traffic and shared pedestrian use.

## Alternatives

### **Alternative A – Refuge Access Repairs (Preferred Alternative)**

Under the proposed action alternative, the Service would construct repairs and safety upgrades to the Refuges transportation and utilities infrastructure to restore access, parking, and drainage, and improve functionality and safety for staff and visitors. Construction would take approximately 2.5 months. The Refuge would be closed to the public during this time, with appropriate notification procedures as described in Visitor Use and Experience. Proposed project elements would consist of the following:

- Entrance road repairs and safety improvements including widening, a dedicated shoulder, larger horizontal road radius, and paving;
- Dedicated shoulder lane along the widened entrance road to improve safety and accessibility;
- Repairing and widening existing turn-around knuckle with dedicated passenger loading zone;
- Repair and refinishing existing parking lot;
- Repairs and improvements to culverts, expansion of existing sediment basin, and improved surface runoff;
- Approximately 980 linear feet (LF) of replacement of existing damaged main water line; and
- Replacement of 400 LF of damaged ungulate fence along refuge boundary, clearing as required to install the replacement sections.

Each of these tasks are described in detail in the remaining portions of this section.

### **Construction Activities**

#### **Mobilization**

Equipment such as pickups, excavators, loaders, compactors, water trucks, skid steers, and dozers would be rented from suppliers on the island and delivered to and from the jobsite via the existing road system.

Some equipment such as the track carrier and materials, such as the culverts, may be barged into the port of Nāwiliwili from Anchorage and Seattle through regularly scheduled barges operated by Alaska Marine Lines (AML). Barged material and tools are expected to be moved in 20-foot Conex metal shipping containers.

All material and equipment would be mobilized to the jobsite via Kūhiō Highway and Kīlauea Road by truck and staged near the project site within existing parking lots or flat graveled or paved storage yards.



## **Entrance Road**

The entrance road that would be repaired and resurfaced is approximately 650 feet long starting from the Refuge entrance to the existing parking lot that would be repaired (Appendix B – Figures and Project Drawings) The design closely matches the existing road geometry and provides a slight realignment of the horizontal curves to facilitate large vehicle access. The proposed repairs to the entrance road span a total width of 21 feet, comprised of two 9-foot-wide lanes, accompanied by a 3-foot-wide shoulder lane on the makai (seaward) side. The road repair would incorporate shoulders, side slopes, and ditches that vary in width to align with existing terrain and minimize footprint. The road surface would be resurfaced with 2.5 inches of asphalt over a 4-inch layer of base course.

Centerline elevations for the proposed roadway closely match existing elevations, except at horizontal curves, where fill would be required to keep longitudinal slopes below 16.5%. There is a proposed cut into the uphill bank to accommodate widening needed for the 2-way traffic safety improvements and widening of the designated shoulder lane. Realigning the road to eliminate a cut on the uphill side would introduce large fill footprints on the downhill side and/or require tighter and unsafe horizontal curves, and so that alternative was rejected.

The electric gate operator at the uphill termination of the project is proposed to be replaced. Additional proposed work to the gate itself includes either repairing brackets and arms where gate connects to existing posts or replacing the gate altogether.

## **Parking Lot & Turn-Around Knuckle**

The proposed parking lot repairs and safety improvements include paving the existing gravel parking lot for passenger vehicles and an existing turn-around knuckle near the existing ticket booth area.

The turn-around knuckle would be widened slightly and is proposed to have a 42.5-foot radius, allowing greater maneuverability for large vehicles. A loading zone for small shuttle buses is also being proposed as part of the knuckle.

The parking lot and turn-around knuckle would be surfaced with 2.5-inches of asphalt pavement over a 4-inch layer of base course. There is some fill proposed within the area of the turn-around knuckle to fulfill essential needs. First, it would allow a larger culvert to be placed on the southwest side of the turn-around knuckle to address drainage. Second, it would provide a ditch of sufficient depth to convey runoff from the existing storm drain outlet to the north of the turn-around knuckle. Third, it would decrease the longitudinal slope of the incoming entrance road. And fourth, it would provide for adequate drainage of the turn-around knuckle.

## **Drainage Improvements**

Three points of significant runoff concentration were identified: the entrance – just prior to the gate; the horizontal curves – where an existing culvert is located; and at the end of a gully just south of the proposed turn-around knuckle.

A 30-inch diameter culvert is proposed to replace the existing 24-inch diameter culvert at the horizontal curves. The proposed culvert would accommodate the revised road alignment. The outlet of the culvert would direct the runoff to existing, natural drainages. An earthen berm for storm water containment and minimal use of rip rap reinforcement on exposed slopes will guide run-off.

Widening, paving, and slightly elevating the existing turn-around knuckle, along with raising portions of the entrance road and portions of the road providing access to the quarters to the west, would allow for the installation of a 36-inch diameter culvert beneath the road. This culvert would allow the concentrated flows exiting the gully to bypass the road and parking area and prevent further significant damage to the road and driveway from heavy rains and run-off in the future.

Significant sediment erosion and deposition occurs on the existing site. An infiltration basin, as well as bypass storm drains in the northern portion of the site are completely clogged by sediments from the recent major flooding events. Sediments need to be removed from the existing infiltration basin. An expansion of the open channel and sedimentation basin would be proposed to address this issue. Expansion of the open channel and sedimentation basin would require vegetation clearing from the turn-around knuckle to the north approximately to the existing tractor shed structure. Most of the area has been previously cleared for access to the tractor shed structure and gravel road, so no new disturbance is anticipated.

Further erosion control measurements would be evaluated for culvert outlets, the existing gully, and downstream of the existing infiltration basin to mitigate the sources of the erosion. The proposed location of the expanded sedimentation basin is in the vicinity of a temporary canopy structure used to store a tractor. This tractor storage tent would be moved closer to the turn-around knuckle.

## **Water Utilities**

The existing potable water service line for the site is located beneath the existing entrance road, providing water through a meter at Kīlauea Road to the parking lot where it provides four service connections to existing structures as well as one hydrant. The project includes replacing approximately 980 LF of the storm damaged main water service line with a 2-inch diameter high-density polyethylene Standard Dimension Ratio 9 pipe. The replacement is proposed to begin at the meter vault and extend to the various service connection valves. Hydrants and services would be reconnected to the water main. Corporation stops on connecting water lines would be replaced.

## **Ungulate Fence Repair**

Approximately 400 feet of degraded and damaged ungulate fencing along the Refuge's upper property line has been damaged as a result of the recent storms, rendering it ineffective. This section of ungulate fencing is proposed to be replaced with a coated welded-wire fence measuring 5 feet tall and equivalent to the existing fencing. Vegetation clearing of invasive, non-native vegetation along the existing fence line would be necessary before replacement of the fence can occur.

## **Demobilization**

Refuse and excess materials from the project would be reclaimed, recycled, or disposed of as necessary in accordance with applicable regulations.

During demobilization, all rented equipment would be transferred back to the owners on the public road system. Any equipment barged to Kaua'i would return to Seattle/Anchorage via established commercial routes operated by AML unless the equipment is to be used for a separate project on the island.

## **Alternative B – No Action Alternative**

Under the no action alternative, repair to storm damaged infrastructure such as the main entry road, parking lot, fencing, and main waterline would not be implemented. Infrastructure would remain in disrepair and continue to degrade further from the existing and future storm run-off, possibly hindering future access, water availability, and prevention of encroachment of invasive predators and trespassers; visitors would not have safe access the Refuge, and vehicle management would not be eased. No repair of the badly damaged main water line and drainage collection systems would occur, allowing the existing previously damaged infrastructure to continue to degrade beyond viable use. The no action alternative would not repair or replace damaged sections of the existing ungulate fence, reducing the effectiveness of this key conservation and safety measure.

## **Affected Environment and Environmental Consequences**

This section is organized by affected resource categories and for each affected resource discusses both (1) the existing environmental and socioeconomic baseline in the action area for each resource and (2) the effects and impacts of the proposed action and any alternatives on each resource. The effects and impacts of the proposed action considered here are changes to the human environment, whether adverse or beneficial, that are direct, indirect, or cumulative. This EA includes the written analyses of the environmental consequences on a resource only when the impacts on that resource could be more than negligible and therefore considered an "affected resource." Any resources that would not be more than negligibly impacted by the action have been dismissed from further analysis.

The Refuge comprises approximately 199 acres (80 hectares) in Kīlauea, Kauaʻi, Hawaiʻi. (See map in Appendix B).

Kīlauea Point National Wildlife Refuge primarily consists of coastal woodland-grassland habitat, with sea cliffs along the coastline. There are small areas of restored native plants throughout the wildlife refuge, but the majority of acreage is infested with non-native invasive vegetation. The proposed action is located on and next to the access road that serves as the only entrance and exit to the headquarters and portion of the Refuge that is open to public visitation, and the adjacent parking lot (See project drawings in Appendix B).

For this analysis, the action area is defined as the proposed footprint of ground disturbance and laydown areas, as well as the surrounding area that could be affected by construction-related impacts (e.g., noise, vibration). Based on an analysis of impacts to threatened and endangered species completed prior to geotechnical investigation at the project site, a buffer of 75 feet around the ground disturbance and laydown areas is assumed.

For more information regarding and the general characteristics of the Refuge's environment, please see Section 4.3 in the Refuge's Comprehensive Conservation Plan (CCP), which can be found here: <https://ecos.fws.gov/ServCat/Reference/Profile/87650>. The CCP is also incorporated into this document by reference.

The following resources either (1) do not exist within the action area or (2) would not be affected or only negligibly affected by the proposed action:

- Administration: The proposed action would have no impact on administrative function of the Refuge.
- Land Use: There would be no impacts to the land use on the Refuge, as all repairs are for existing infrastructure.
- Water Quality: No hydrological features exist on Refuge property.
- Wetlands: The proposed action is consistent with Executive Order 11990 – Protection of Wetlands, 42 Fed. Reg. 26961 (1977) because implementation of the proposed action would not impact wetlands.
- Wild and Scenic Rivers: The Refuge does not contain any designated wild and scenic rivers (16 U.S.C. 1271 et seq.)
- Floodplains: The proposed action would not occur within a floodplain (Executive Order 11988 – Floodplain Management, 42 Fed. Reg. 26951 (1977)).

## Natural Resources

### Terrestrial Wildlife

#### Affected Environment

This section focuses on wildlife that is not on the federal list of threatened and endangered species nor other special status species that may be affected by the proposed action. For a discussion of ESA-listed and other special status species, including species protected under the Migratory Bird Treaty Act of 1918 (MBTA; 16 U.S.C. 703-712), as amended, please see the section below titled *Threatened and Endangered Species, and Other Special Status Species*.

The action area is likely to support a variety of native and introduced wildlife species including arthropods, mollusks, and other invertebrates, as well as reptiles and birds. Introduced pest mammals such as cats (*Felis catus*) and rats (*Rattus spp.*) could also be present in the action area. A search of the Global Biodiversity Information Facility (GBIF) database for species occurrences within the action area found records of 17 species of invertebrates, 57 species of birds, and two species of reptiles (GBIF 2024). Avian species occurrences in the database include passerines (perching birds), waterfowl, upland fowl (gamebirds), pigeons/doves, seabirds, and owls. A list of the top ten avian species without federal protections by number of occurrences in the database search area is included in Table 1.

Table 1. Avian species without federal protections by number of recorded occurrences (top 10) in the action area (GBIF 2024).

Scientific Name	Common Name (Hawaiian Name)	Number of Occurrences (GBIF 2024)	Origin on Kaua'i
<i>Acridotheres tristis</i>	Common mynah	413	Introduced
<i>Paroaria coronata</i>	Red-crested cardinal	326	Introduced
<i>Zosterops japonicus</i>	Warbling white-eye	310	Introduced
<i>Geopelia striata</i>	Zebra dove	257	Introduced
<i>Copsychus malabaricus</i>	White-rumped shama	250	Introduced
<i>Spilopelia chinensis</i>	Spotted dove	243	Introduced
<i>Columba livia</i>	Rock dove/pigeon	195	Introduced
<i>Gallus gallus</i>	Chicken (moa)	171	Introduced (Polynesian/modern)
<i>Passer domesticus</i>	House sparrow	69	Introduced
<i>Lonchura punctulata</i>	Scaly-breasted munia	53	Introduced

In an effort to deter destructive mammals such as ungulates (e.g., invasive feral pigs; *Sus domesticus*), dogs (*Canis familiaris*), or trespassing humans from entering Refuge property, the

Refuge maintains a welded-wire fence (5 feet tall with 2-inch by 4-inch mesh) along the Refuge boundary. During recent storm events, a portion of this ungulate fence was damaged near the entrance road, potentially allowing ungulates or trespassers onto Refuge property.

Uncontrolled access to the Refuge by feral pigs, dogs, or trespassers poses a serious threat to both native and introduced wildlife through destruction of habitat, predation, or disturbance, although the impacts on native species are of greater concern (see *Threatened and Endangered Species, and Other Special Status Species*).

The Refuge receives up to 500,000 visitors annually, all of which use the entrance road to access the Refuge facilities. Due to the high levels of human activity in the action area, the wildlife found there has become habituated to pedestrians and vehicles. Due to safety and infrastructure issues, including damage to the entrance road and the water line that serves all Refuge facilities, Refuge staff are often required to direct traffic or attend to infrastructure issues rather than performing wildlife conservation duties.

### **Impacts on Affected Resource**

#### ***Alternative A — Refuge Access Repairs (Preferred Alternative)***

The boundary ungulate fence is important to keep feral pigs, dogs, cats or trespassers that pose a threat to wildlife off the Refuge because they can destroy habitat, prey on wildlife, disrupt nesting, and otherwise disturb wildlife. Replacing the fence to secure the Refuge from these incursions would be highly beneficial to wildlife for the life of the new fence.

Construction equipment and activities could cause wildlife to temporarily avoid the area or present a collision and crushing hazard if animals remain in the area. Ground disturbance and vegetation clearing required to repair the entrance road and water utility are likely to result in flushing and some mortality of invertebrates and reptiles, which could temporarily attract native and introduced birds to the work area, increasing the chance of collisions or crushing by construction equipment. Construction equipment would be limited to current road and parking areas where vehicles and people are often present so the additional equipment and workers are expected to have limited additional disturbance to wildlife because they are already habituated to human presence in the area.

Wildlife that exclusively uses the vegetated areas at the fringes of the project would be displaced to the surrounding habitat long term; however, bare soil within the project limits would be reseeded with native grass seed that would provide grazing and foraging habitat for other wildlife (see *Habitat and Vegetation (including vegetation of special management concern)*).

Repairs and safety improvements designed to ease traffic congestion and vehicle-pedestrian conflicts would indirectly benefit wildlife by providing safe habitat and alleviating the need for Refuge staff to periodically direct and manage traffic, allowing them to use their time working to fulfill the purposes of the Refuge.

Conservation measures that would be used during construction are listed in Appendix E and are expected to mitigate effects to terrestrial wildlife from the proposed alternative.

### **Alternative B — No Action**

Under the no action alternative, the damaged entrance road and water main that service the Refuge would not be repaired and would continue to degrade. Existing safety, sanitation, and infrastructure issues would continue to worsen and access to Refuge facilities by staff, volunteers, and visitors could eventually be cut off. Refuge staff would increasingly be required to devote time to directing traffic and tending to failing infrastructure, rather than working to fulfill the purposes of the Refuge.

If the Refuge does not act, four hundred linear feet of damaged ungulate fence would remain in poor condition, potentially allowing feral pigs, dogs, cats or trespassers onto the Refuge to potentially destroy habitat, infrastructure, and restoration areas and prey on or otherwise destroy eggs and chicks of the native ground-nesting and burrowing birds that nest at the Refuge.

## **Threatened and Endangered Species, and Other Special Status Species**

### **Affected Environment**

Several species listed as either threatened or endangered under the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, and 450), occur or have suitable habitat at the Refuge. Three ESA-listed seabirds (collectively, Hawaiian seabirds) can be found there: the threatened 'a'o (*Puffinus auricularis newelli*), or Newell's shearwater; the endangered 'ua'u (*Pterodroma sandwichensis*), or Hawaiian petrel; and rarely the endangered Hawai'i distinct population segment (DPS) of 'akē'akē (*Hydrobates castro*), or band-rumped storm petrel. However, of these three species only 'a'o would be expected to occur near the action area. 'A'o nest at the Refuge, with as many as nine breeding pairs as recently as 2016 (Raine et al. 2018). A single 'a'o nest was observed in the vicinity of the action area during the 2024 nesting season, while other 'a'o nests were in other parts of the Refuge far from the action area (pers. comm. Heather Abbey, USFWS).

The threatened nēnē (*Branta sandvicensis*), or Hawaiian goose, also nests at the Refuge, including within the action area, and can be found there year-round. The only terrestrial mammal native to Hawai'i, the endangered 'ōpe'ape'a (*Lasiurus cinereus semotus*), or Hawaiian hoary bat, has been seen at the Refuge and suitable foraging and roosting habitat is available there (USFWS 2016). The endangered 'ilio-holo-i-ka-uaua (*Monachus schauinslandi*), or Hawaiian monk seal, and the threatened honu (*Chelonia mydas*), or Central North Pacific DPS of green sea turtle, can be seen offshore, and marine and terrestrial critical habitat for both species has been designated or proposed adjacent to the Refuge (80 FR 50925, 88 FR 46376).

Expanded discussions of threatened and endangered species, their status, and critical habitats near the Refuge can be found in Appendix C.

Other special status species at the Refuge include native and introduced birds protected by the MBTA. A search of the Global Biodiversity Information Facility database for species occurrences within the action area found records of 37 bird species protected by the MBTA (GBIF 2024). A list of the top ten avian species with MBTA protections by number of occurrences in the database search area is included in Table 2.

Table 2. Avian species with MBTA protections by number of recorded occurrences (top 10) in the action area (GBIF 2024).

Scientific Name	Common Name (Hawaiian Name)	Number of Occurrences (GBIF 2024)	Origin on Kauaʻi
<i>Sula sula</i>	Red-footed booby (ʻĀ)	825	Native
<i>Branta sandvicensis</i>	Hawaiian goose (Nēnē) <sup>1</sup>	670	Native (endemic to Hawaiʻi)
<i>Fregata minor</i>	Great frigatebird (ʻIwa)	624	Native
<i>Phaethon lepturus</i>	White-tailed tropicbird (Koaʻe kea)	413	Native
<i>Phaethon rubricada</i>	Red-tailed tropicbird (Koaʻeʻula)	409	Native
<i>Puffinus pacificus</i>	Wedge-tailed shearwater (ʻUaʻu kani)	378	Native
<i>Phoebastria immutabilis</i>	Laysan albatross (Mōlī)	370	Native
<i>Sula leucogaster</i>	Brown booby (ʻĀ)	292	Native
<i>Haemorhous mexicanus</i>	House finch	256	Introduced
<i>Bubulcus ibis</i>	Cattle egret	245	Introduced

Among the species listed in Table 2, most are seabirds that would be expected offshore away from the action area or near the sea-cliffs that border the Refuge, but some may occasionally fly over the action area. ʻUaʻu kani, on the other hand, are known to nest in the action area, while mōlī nest in the vicinity of the action area. Cattle egrets are an invasive predator of native bird chicks and take of cattle egrets in Hawaiʻi is authorized for certain government agencies, including the USFWS, under an MBTA control order (82 FR 34419).

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<sup>1</sup> In addition to MBTA protections, the nēnē is also listed as threatened under the ESA



If allowed on the Refuge, invasive feral pigs, dogs, and trespassers would be particularly damaging to the native birds found there. Nēnē and mōlī nest on the ground and their eggs and chicks can be trampled or eaten. Adult nēnē are flightless for several weeks while molting and would be vulnerable to dog attacks during that time. ‘Ua‘u kani and ‘a‘o nests are also vulnerable because they nest in earthen burrows that could be rooted up by pigs or dug by dogs. Storm damage to the ungulate fence protecting the Refuge has increased the likelihood that pigs, dogs, cats, or trespassers could have uncontrolled access to the Refuge, putting these protected species at risk.

### **Impacts on Affected Resource**

#### ***Alternative A — Refuge Access Repairs (Preferred Alternative)***

Under Alternative A the Refuge would initiate formal ESA Section 7 consultation to avoid and minimize any potential adverse impacts to the threatened nēnē and informal consultation for potential impacts to the endangered ‘ōpe‘ape‘a, and the threatened ‘a‘o.

In November of 2023, the Refuge requested consultations with the Pacific Islands Fish and Wildlife Office (PIFWO) for geotechnical investigation along the existing entrance road to support the project design. Because the geotechnical investigation was scheduled to occur during the nēnē nesting season and nēnē nests are common throughout the Refuge, including near the entrance road, PIFWO concurred with the Refuge that the investigation was likely to adversely affect the nēnē and issued an Incidental Take Statement in a biological opinion dated 02/14/2024. With the implementation of avoidance and minimization measures agreed upon during consultation with PIFWO, no take of nēnē occurred during the geotechnical investigation.

Similarly, the construction of Alternative A would need to begin during the nēnē nesting season, and avoiding disturbance to nēnē entirely may not be practicable as vegetation clearing and ground disturbance necessary to complete the project must be completed prior to the more critical ‘a‘o nesting period. Conservation measures to avoid and minimize impacts to nēnē, such as excessive disturbance or potential abandonment of nests due to noise and vibration have been included in this document and would be refined and updated following consultation with PIFWO. Impacts to other threatened and endangered species can largely be avoided by timing project components around nesting and pupping windows. Detailed conservation measures are listed in Appendix E.

Similarly, impacts to ‘ua‘u kani and mōlī (e.g., destruction of nests, nest abandonment due to disturbance) nesting in or near the action area would be minimized and avoided to the extent practicable while utilizing the provisions of the MBTA. Four hundred feet of ungulate fencing would be replaced under this alternative, which is important to keep out feral pigs, dogs, and trespassers that threaten the protected birds the Refuge was established to protect. Replacing the damaged fence would be highly beneficial to the protected wildlife at the Refuge.

### **Alternative B — No Action**

Under the no-action alternative, the damaged entrance road and water main that service the Refuge would not be repaired and would continue to degrade. Existing safety, sanitation, and infrastructure issues would continue to worsen and access to Refuge facilities by staff, volunteers, and visitors could eventually be cut off. Refuge staff would increasingly be required to devote time to directing traffic and tending to failing infrastructure, rather than working to conserve the ESA- and MBTA-protected birds the Refuge was established to protect.

If the Refuge does not act, four hundred linear feet of storm-damaged ungulate fence would remain in poor condition, potentially allowing feral pigs, dogs, cats, or trespassers onto the Refuge to potentially destroy habitat, infrastructure, and restoration areas, and prey on or otherwise destroy eggs and chicks of the native ground-nesting and burrowing birds that nest at the Refuge.

### **Habitat and Vegetation (including vegetation of special management concern)**

#### **Affected Environment**

Terrestrial habitats at Kīlauea Point are composed of coastal, mesic to dry, mixed woodland-grassland and sea cliffs. Both native and non-native plants make up the various vegetation communities present on the Refuge. Native plant communities, which were re-established through a habitat restoration program beginning in the 1980s, are dominated by naupaka kahakai (*Scaevola taccada*, beach naupaka), 'ilima (*Sida fallax*, yellow ilima), hala (*Pandanus tectorius*, screw pine), 'akoko (*Euphorbia celastroides*), and pōhinahina (*Vitex rotundifolia*). One large endangered pōkalakala tree (*Polyscias racemosa*) is present in the vicinity of the action area, makai of the existing road.

Invasive plants in the action area include Guinea grass (*Panicum maximum*), sourbush (*P. carolinensis*), Christmasberry (*Schinus terebinthifolius*), invasive species of morning glory (*Ipomoea spp.*) ironwood (*Casuarina equisetifolia*), haole koa (*Leucaena leucocephala*), and lantana (*Lantana camara*), which dominate the vegetative cover in some areas.

The coastal mixed woodland-grassland habitat constitutes breeding habitat for mōlī, 'ua'ū kani, 'a'ō, and nēnē. Nēnē also use the habitat year-round for foraging, molting, and protection. The sea cliffs along the coast of the Refuge provide protection from disturbance and predation for breeding and non-breeding seabirds. Beach strands adjacent to the Refuge at the base of the cliffs are important for shorebirds and 'ilio-holo-i-ka-uaua. An expanded discussion of habitat and vegetation communities can be found in the Refuge's CCP (USFWS 2016).

A section of ungulate fencing and the main water line that services the Refuge were damaged during recent storm events. The ungulate fence is important to keep invasive pigs, dogs, cats, and trespassers off of the Refuge. Pigs, in particular, can be extremely damaging to habitat and vegetation through trampling and rooting. If the damaged water main continues to degrade,

the Refuge could be left without irrigation used to maintain existing vegetation and for habitat restoration.

Within the approximately 1.9-acre project footprint, the existing paved surface comprises about 0.5 acres, and approximately 0.7 acres of undisturbed mixed woodland grassland dominated by invasive plants and naupaka kahakai exists at the fringes of the project area. The remainder of the project footprint (approximately 0.7 acres) consists of gravel roads and parking areas, a storm water basin, and naupaka kahakai hedges.

### **Impacts on Affected Resource**

#### ***Alternative A — Refuge Access Repairs (Preferred Alternative)***

In order to repair the entrance road and water utility, approximately 1.9 acres of mostly previously disturbed and developed land would be cleared of asphalt and vegetation and graded to design specifications. Mixed woodland-grassland composed of primarily invasive vegetation and naupaka kahakai (*Scaevola taccada*, beach naupaka) in approximately 0.7 acres of undisturbed ground at the fringes of the proposed work, and portions of some naupaka kahakai hedges near existing buildings, roads, and parking areas would need to be removed. Small-scale vegetation removal in mixed woodland-grassland may also be needed for equipment access to replace 400 linear feet of storm-damaged ungulate fence but would not exceed approximately 3,000 square feet.

Under Alternative A, the total paved surface within the action area would increase from approximately 0.5 acres to around 0.7 acres. Storm water conveyance improvements would include approximately 500 linear feet of 3-foot-wide concrete swales along portions of the entrance road (~1500 sq. ft.), less than 4000 sq. ft. of riprap swales, and an approximately 220 sq. ft. riprap basin. These improvements would constitute a permanent loss of about 0.35 acres of existing and potential habitat, although about one third of the area of the drainage improvements (estimated at 0.05 acres) would be constructed in the existing disturbed footprint at the Refuge.

The remaining disturbed area in the project footprint (approximately 1.05 acres) would be reseeded with beneficial grassland habitat. This would effectively replace and expand the approximately 0.7 acres of invasive-dominated mixed woodland-grassland proposed for removal. The change from invasive-dominated woodland-grassland to grassland is a moderate benefit to habitat and vegetation because it represents a shift toward a more desirable vegetation community composition specified by Refuge biologists.

Seeds of non-native and invasive species could be introduced during construction if tools and equipment are not properly cleaned and inspected prior to mobilizing to the site. Non-native and invasive plants can also be introduced via fill, mulch, and other products used in construction. Refuge bio-security protocols are incorporated into the proposed project to

prevent the introduction of non-native and invasive seeds. See Appendix E for additional conservation measures that would be used during construction.

Improvements designed to ease traffic congestion conflicts could indirectly benefit vegetation and habitat by alleviating the need for Refuge staff to periodically direct and manage traffic, allowing them to use their time working to fulfill the purpose of the Refuge, including habitat restoration, protection, and management. Repairing the main water line that services the Refuge would ensure that the Refuge has a safe and adequate water supply long into the future that can be used for grounds maintenance, and for irrigating habitat restoration projects.

### ***Alternative B — No Action***

If the Refuge does not act, approximately 0.7 acres of mixed woodland-grassland, comprising primarily invasive plants, would not be disturbed, and existing naupaka kahakai hedges along roads, buildings, and parking areas would remain intact.

However, the damaged entrance road and water main that services the Refuge would not be repaired and would continue to degrade. Existing safety, sanitation, and infrastructure issues would continue to worsen and access to Refuge facilities could eventually be cut off. Refuge staff would increasingly be required to devote time to directing traffic and tending to failing infrastructure, rather than implementing habitat restoration projects. Water service could also be lost entirely, meaning that the grounds and restoration projects could no longer be irrigated.

Four hundred linear feet of storm-damaged ungulate fence would remain in poor condition, potentially allowing feral pigs, dogs, cats, or trespassers onto the Refuge that are extremely destructive to habitat, infrastructure, and restoration areas.

## **Geology and Soils**

### **Affected Environment**

Kaua'i consists of a single principal shield volcano erected from the sea floor through thousands of thin flows of basaltic lava (Macdonald, Davis, et. al 1960). This volcano was created through extrusion from lava of the Waimea Canyon Volcanic Series during the late Pliocene Epoch (USFWS 2016). Following the primary volcanic event, renewed volcanic activity occurred with the extrusion of the post-erosional Kōloa Volcanic Series. Currently, Kaua'i is home to Hawai'i's oldest and most heavily eroded rocks, with dates ranging back to 5.5 million years ago (USGS 2024).

Kīlauea Point, located along the northeast coast of Kaua'i, is a geologic remnant of the Kīlauea volcanic vents of the Kōloa volcanic series. The volcanic cone complex that makes up the unique geology of Kīlauea point was formed during the vents of Kōloa approximately 3.65 to 0.52 million years ago (USFWS 2016). Kaua'i as an entirety was designated a Seismic Zone 1 by the 1997 Uniform Building Code which ranges from 0 to 4. This indicates a lower chance of earthquake occurrence.

Coastal erosion from rising sea levels is resulting in a rapid loss of shorelines in Kauaʻi. A research study conducted by Charles Fletcher at the University of Manoa found that Kauaʻi is anticipated to face a significant increase in coastal erosion due to sea level rise. This increase in coastal erosion is expected to result in partial or total loss of 90% of beaches by 2100 (Fletcher 2016).

As a consequence of coastal erosion, an estimated one-third of the Kīlauea volcano complex remains (Blay and Siemers 2004). Kīlauea Point consists of Kōloa stony silty clay, Līhuʻe silty clay, and rock outcrop. The Līhuʻe-Puhi soil association ranges from near sea level to 800 feet in elevation (USFWS 2016). Due to storm damage and aging infrastructure, the soils surrounding the Refuge entrance road and parking areas are eroded and lack efficient drainage (KPNWR 2024). The majority of the rock outcrops are concentrated along the cliff edges surrounded by the ocean while the remaining soil types fill in the in-land areas. The north slope of Kīlauea Point has significantly eroded in the past decade. This erosion can be attributed to wind, steep grades, highly erosive soils, excessive rainfall, lack of vegetation, and soil disturbance from burrowing wedge-tailed shearwaters.

Storms caused damage to both the natural and engineered drainage along the existing roadway, and the infiltration basin is blocked with sediment. Ongoing drainage issues at the Refuge have the potential to exacerbate erosion.

### **Impacts on Affected Resource**

#### ***Alternative A – Refuge Access Repairs (Preferred Alternative)***

Under Alternative A, use of heavy machinery could result in soil compaction, reduction in natural soil porosity, and lead to less percolation and more runoff within the immediate vicinity where equipment is used (USFWS 2016). However, impacts in the action area would be localized and minimized with appropriate storm water design features and soil conservation measures listed in Appendix E. Thus, long term impacts to soil porosity would be negligible.

The proposed action would result in a small net increase of impervious surface area at the Refuge which could increase the velocity and volume of storm water runoff. The project design incorporates improvements to site drainage and storm water run-off intended to counter long-term issues with erosion, resulting in a moderate long-term improvement to soil conditions. Additionally, the measures listed in Appendix E would minimize any potential increase in surface runoff from the proposed alternative.

Repair and expansion of the open channel and sedimentation basin would require vegetation clearing from the turn-around knuckle to approximately the existing tractor shed structure. Some additional clearing of slopes that have been previously disturbed would occur to accommodate the new drainage features. Additionally, the replacement of approximately 400 linear feet of ungulate fencing would require clearing, but this area is infested with invasive, non-native species. This would temporarily expose soils throughout the cleared areas, resulting

in highly erodible patches that can be potential sources of sedimentation. However, the majority of the proposed clearing areas have been cleared and disturbed previously for access, and areas would be revegetated with native seed, making impacts to soils temporary. Additional conservation measures that would be implemented are detailed in Appendix E.

### ***Alternative B – No Action***

Under the no action alternative, the Refuge would not initiate rehabilitation of the entrance road and no immediate changes would occur. Soil disturbance and short-term potential erosion resulting from construction would not occur. However, significant sediment erosion and deposition are currently present at the site. Taking no action would result in continued runoff, accelerating erosion and additional sediment deposition over time.

## **Air Quality**

### **Affected Environment**

Kaua'i generally does not face issues regarding air quality due to its low population and limited industrial activity. Kaua'i experiences trade winds year-round as well as deep convective rainfall events (Zhang et al. 2016). The high level of regular precipitation improves air quality by breaking up particulate matter. Rainfall and variance in wind direction can also disperse smog, wildfire smoke, and other harmful pollutants (Moreau 2019).

The Clean Air Act requires the EPA to develop National Ambient Air Quality Standards (NAAQS) for six criteria air pollutants: carbon monoxide (CO), particulate matter (PM), nitrogen dioxide (NO<sub>2</sub>), lead (Pb), ozone (O<sub>3</sub>), and sulfur dioxide (SO<sub>2</sub>). The Hawai'i Department of Health (HDOH) only monitors O'ahu, Maui, and Hawai'i islands for these criteria pollutants. The island of Kaua'i does not have monitoring capabilities for criteria air pollutants. There is only one monitoring station, located at Niumalu, that monitors specifically for cruise ship emissions.

Excluding emissions from volcanic activity, the State of Hawai'i is in attainment status for NAAQS and is considered satisfactory in terms of air pollution. Over the past few decades, total net emissions in Hawai'i have decreased by 13.6 percent (ICF, University of Hawai'i 2024). A notable decline was seen in emissions from 2019 to 2020, as a result of reduced travel during the COVID-19 pandemic; however, a large increase in emissions occurred in 2021 with the rebound of economic activity (ICF, University of Hawai'i 2024). Energy production is the state's largest source of air emissions, and results primarily in carbon dioxide (CO<sub>2</sub>) emissions.

HDOH established statewide GHG emission limits under State Act 234. The GHG limit excludes aviation and international bunker fuel emissions, but includes carbon sinks, such as forested land. Any source of GHG emissions equal to or exceeding 100,000 tons of CO<sub>2</sub>e per year must submit an approved GHG emission reduction plan to the health director.

Honolulu County is the largest source of GHG emissions in Hawai'i, representing 75.4% of emissions but also home to 65% of the state's population. Kaua'i, in contrast, accounts for less

than 5% of the state's GHG emissions (ICF, University of Hawai'i 2024). Given that energy production is the largest source of emissions for Hawai'i, decreases are anticipated with the development of renewable energy sources in the near future.

### **Impacts on Affected Resource**

#### ***Alternative A – Refuge Access Repairs (Preferred Alternative)***

Alternative A would result in a temporary, negligible increase in greenhouse gas emissions and criteria air pollutants during construction activities. No pollutants would near or exceed the de minimis threshold for NAAQS as established by the EPA (see analysis in Appendix D), nor would the project affect Hawai'i's attainment status under the Clean Air Act.

Road repairs and safety improvements would improve long-term traffic flow and alleviate congestion, reducing the number of vehicles sitting idle on the Refuge. A reduction in traffic could result in minor improvement to localized air quality. Best management practices for the project construction regarding air quality and pollution are included in Appendix E.

#### ***Alternative B – No Action***

There are no impacts to air quality under Alternative B, as the Refuge does not currently produce sizable amounts of criteria air pollutants.

### **Climate Change**

Executive Order (EO) 13990, *Protecting Public Health and the Environment and Restoring Science to Tackle the Climate Crisis*, along with Council on Environmental Quality (CEQ) updates to 40 CFR §1502.16(a)(6), requires federal agencies to consider climate change effects to and as a result of a proposed action. Given that the international scientific community largely agrees that greenhouse gas (GHG) emissions are the primary driver behind anthropogenic climate change, the CEQ has provided additional instructions on analyzing GHG emissions resulting from a proposed action. Total GHG emissions, in comparison to national standards, is the main factor weighted in a proposed action's impact to the cumulative effect of climate change.

GHGs are distinguished by their ability to trap heat in the atmosphere, causing heating of the Earth's surface. Notably, GHGs are absorbed into the atmosphere as a whole, and negative impacts are not relative to the location of emissions. GHGs include carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), and multiple fluorinated gases. Carbon dioxide (CO<sub>2</sub>) is the most prolific GHG and accounted for 79% of US emissions in 2021, though methane (CH<sub>4</sub>) emissions continue to increase sharply and are 28 times more potent than CO<sub>2</sub> (USEPA 2024a).

### **Affected Environment**

Certain areas are more vulnerable to the effects of climate change due to large coastlines or inadequate economic resources to compensate for impacts. Small island communities and nations are particularly susceptible to these risk factors, and Hawai'i is identified as being



especially sensitive to climate variations. Geographic isolation exacerbates these factors, as residents face challenges when evacuating in response to disasters such as hurricanes, tsunamis, and wildfires.

The Hawaiian Islands have shown sea level rise at an average rate of nearly one inch every 4 years (Marra and Kruk 2017). While millimeters of annual sea rise are not visually obvious, flooding at high tide from larger gravity swells will become increasingly apparent (Climate Resilience Collaborative 2023). Furthermore, current predictions show that Hawai'i will experience a sea level rise between 1.3 and 5.8 feet by the end of the 21<sup>st</sup> century, making it one of the most vulnerable parts of the country (Sweet, W.V. et al. 2022). Hawai'i is located on tectonic plates impacted by isostatic sinking, resulting in elevation changes relative to the ocean. Additionally, the ocean absorbs approximately 90% of the heat added to Earth's atmosphere, causing glacial melt and seawater expansion (Lindsey and Dahlman 2023). As a result, climate change has the propensity to augment the sea level rise around the Hawaiian Island chain. Increases in rainfall and intensity can also contribute to flooding and soil erosion. Rain intensity in Hawai'i, which contributes to stream overflow and flooding, increased approximately 12 percent from 1958 to 2007 (USFWS 2016).

The Refuge is located atop a 180-foot ocean bluff, providing relief for nesting seabird colonies that may otherwise be destroyed by erosion from rising sea levels. However, many species are sensitive to temperature fluctuations and breeding cycles can be negatively impacted or fail to thrive in a warming environment. Average sea surface temperature (SST) continues to increase and is projected to increase by 1.6°C to 4.3°C (2.9°F to 7.7°F) by the year 2100 (Marra and Kruk 2017).

### **Impacts on Affected Resource**

#### ***Alternative A – Refuge Access Repairs (Preferred Alternative)***

Cumulatively, the proposed project would result in a small amount of greenhouse gas emissions during construction (detailed in Appendix D). Some vegetation clearing would reduce carbon sinks, but these areas would be replanted with native seed and are anticipated to revegetate within a few months. Traffic flow improvements would reduce CO<sub>2</sub> emissions over time through less vehicle idling. The repair of the road would include a widening that would improve traffic flow and congestion and add a designated shoulder lane may further reduce vehicle emissions.

Increased occurrence, frequency, and intensity of storm and flooding events on the island of Kaua'i as a result of climate change has resulted in erosion, sediment deposition, and infrastructure damage. The proposed project would mitigate negative drainage effects through a large culvert that would route flows away from the road and parking area. Furthermore, the repair, expansion and improvement of the open channel and sedimentation basin would curb impacts of sediment deposition.



Calculation of carbon dioxide equivalent (CO<sub>2</sub>e) emissions provides the most accurate estimate of GHG emissions for a proposed action. CO<sub>2</sub>e emissions are calculated using a combination of carbon dioxide (CO<sub>2</sub>), methane (CH<sub>4</sub>), nitrous oxide (N<sub>2</sub>O), hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) sulfur hexafluoride (SF<sub>6</sub>), and nitrogen trifluoride (NF<sub>3</sub>) based on potency of each pollutant. The proposed action alternative is estimated to have a total of 526 tons of CO<sub>2</sub>e emissions. See discussion of air quality and emissions calculations in Appendix D.

### ***Alternative B – No Action***

The no action alternative would avoid the negligible greenhouse gas emissions associated with construction equipment and vegetation clearing but would not mitigate the pollution caused by long vehicle idling times. The no action alternative would not mitigate other negative impacts exacerbated by climate change, such as erosion and drainage issues.

## **Wilderness or Other Special Designation**

### **Affected Environment**

The Service's policy necessitates that a wilderness review be completed for all CCPs. The Refuge's CCP planning team completed a wilderness inventory which concluded that the Refuge is not suitable for wilderness designation (USFWS 2016).

The entirety of the Refuge is designated as an Important Bird Area (IBA) because it regularly holds "significant numbers of a globally threatened species" (USFWS 2016) and supports rare species with restricted ranges (BirdLife International 2024). The IBA Program exists as a worldwide effort to identify locations that are especially essential to the survival and recovery of birds and promoting conservation in and around the designated area.

### **Impacts on Affected Resource**

#### ***Alternative A – Refuge Access Repairs (Preferred Alternative)***

Alternative A would not impact the Refuge's IBA designation, and any potential impacts to migratory birds would be minimized or negligible. Proper conveyance and drainage of storm water would be valuable in minimizing erosion and sediment deposition within the IBA. Furthermore, replacing the 400 linear feet of ungulate fencing would allow for the continued protection of the IBA and the species inhabiting the area by keeping out feral hogs. Refer to Appendix E for a complete list of proposed conservation measures.

#### ***Alternative B – No Action***

Under the no action alternative, no direct effects to the IBA from project construction would occur, but improvements to erosion control and restoration of ungulate fencing would also not occur. The IBA may be negatively impacted over time if ungulates are able to harm nesting avian species unabated, and ongoing erosion could damage burrowing habitat.

## **Visitor Use and Experience**

### **Affected Environment**

The Refuge is widely regarded for its scenic cliff views, birdwatching, and photography opportunities. Up to 500,000 visitors come to the Refuge every year, with the vast majority of them being non-local. The Refuge attracts visitors for several activities, including, but not limited to, fishing, wildlife observation and photography, environmental education, interpretation programs, and outdoor recreation such as hiking. Hunting is not permitted on the Refuge. The Refuge is currently open by reservation only, Wednesday through Saturday, 10:00 am – 3:30 pm.

Surveyed visitors reported that they heard about the Refuge from travel guidebooks, visitor brochures, and highway signs (USFWS 2016). Most visitors are from the mainland United States and access the Refuge almost exclusively by rental vehicle. The average time spent on the Refuge is 40 minutes, but 75% of visitors surveyed indicated they would spend more time on the Refuge if guided hikes or tours were offered (*Ibid.*).

Currently, a private motor vehicle or limited authorized commercial tours are the only ways to safely access the Refuge as a designated bicycle/pedestrian route does not exist. Traffic flow on the narrow access road was noted by visitors as providing challenges such as narrow passing and inability to turn around. Parking and traffic flow issues are present year-round due to damaged areas that have not yet been repaired and lack of safe access, including permanently designated parking areas. The reservation system, initiated in 2020, prevents overflow parking and has resulted in improved visitor management.

### **Impacts on Affected Resource**

#### ***Alternative A – Refuge Access Repairs (Preferred Alternative)***

Under the CCP, one of the goals for the future of the Refuge is to ensure that all visitors enjoy a safe visit, with an objective of improving visitor access. One strategy to address this is to improve parking safety and efficiency (USFWS 2016). The safety of staff and volunteers is especially vital to preserve and promote the efforts of those who work on the Refuge.

Repairing the access road and visitor drop-off area could accommodate additional visitors and expand awareness and appreciation of the wildlife and ecology supported by the Refuge. Enhancing safe access for school or tour buses can serve educational purposes and assist the NWR mission of serving Americans of all ages.

The Refuge is estimated to be closed for up to 2.5 months during project construction. The closure would maintain public safety while facilitating three separate, unrelated but concurrent projects that are all adjacent to the main county access road and Refuge. Any additional closures would be minimized to the extent possible. All closures would be communicated to the public via the Refuge's standard media practices and posted on the website. Dates of closures

would be shared with neighborhood associations and local newsletters. Signs indicating the closure would also be posted on gates and in nearby public areas. Reservations would be unavailable during Refuge closures.

### ***Alternative B – No Action***

Under the no action alternative, Refuge access traffic issues from the damaged access road could impact visitor safety and capacity, such as congestion, longer wait times, and lack of parking. Temporary visitor access limitations during construction would not occur.

## **Cultural Resources and Subsistence**

### **Affected Environment**

Cultural and historic resources for the Refuge have been summarized previously in the Refuge's CCP and are incorporated here by reference (USFWS 2015). A literature review of existing archaeological studies resulted in the identification of one historic district within the vicinity of the proposed project, the Daniel K. Inouye Kīlauea Point Lighthouse (State Inventory of Historic Places (SIHP) #30-04-300) which is listed on the National Register of Historic Places. The Daniel K. Inouye Kīlauea Point Lighthouse was originally listed in 1979 as the Kīlauea Point Lighthouse.

In 2006, an addendum was submitted to change the property's name (Kīlauea Point Lighthouse to Kīlauea Point Light Station); clarify the boundaries; expand the significance; increase the number of contributing resources; and include additional contextual information that reflects the broader significance of the station. In addition to the Lighthouse, Fresnel lens, and the three keeper's quarters, two buildings (oil storage building and 1933 storage building), a contributing site (landing platform ruins), and a structure (water tank) were included as contributing resources. The District's criteria of significance was changed from Criteria A and D to Criteria A and C for its historic and architectural significance. Previous archaeological investigations did not yield or confirmed the potential to yield archaeological deposits, therefore Criterion D was removed. The Keeper accepted the addendum.

The Keeper accepted an amendment, proposed by the USFWS, to change the name from the Kīlauea Point Light Station to the Daniel K. Inouye Kīlauea Point Lighthouse in 2013.

The nearest historic buildings are the three Keeper's Quarters which are outside of the action area. These buildings are identical 37 by 43-foot single story volcanic rubble stone bungalows with hipped roofs. All have been repurposed for Refuge activities. The existing paved road is mentioned in the National Register nomination and is described to generally follow the same routes established in 1913.

### **Impacts on Affected Resource**

A complete assessment of Section 106 impacts is underway and this discussion will be updated prior to publication of the Service's final finding.

### ***Alternative A – Refuge Access Repairs (Preferred Alternative)***

The nearest project-related disturbance to the lighthouse would be the use of existing parking areas as laydown areas, over 750 feet away. Project activities will occur closer to the three keeper's quarters and storage buildings, but no alterations are proposed to those facilities. Improvements and maintenance would be made of existing paved roadways, parking areas, and site drainage, but the location and usage of those features would not change.

Access to the lighthouse would be temporarily limited during Refuge closures.

The cove below the refuge Overlook is accessed for fishing by families with traditional ties to the area. These families would be temporarily prevented from fishing via the Refuge access but could access the cove via alternative methods.

### ***Alternative B – No Action***

Under the no action alternative, Refuge access traffic issues from the damaged entrance road and site erosion could impact visitor safety and capacity, limiting access to the historic district.

## **Socioeconomics**

### **Local and Regional Economies**

#### **Affected Environment**

Tourism is known to have significant financial impacts on local economies, and public lands and recreational facilities contribute to this. In the fiscal year of 2017, over 53.6 million visits were made to Refuges around the country. The resulting expenditures from the visitors in the respective regional economies is estimated to be valued at \$3.2 billion (in 2017; approx. \$4.1 billion today, adjusted for inflation). The spending by these visitors, through direct and indirect effects, generated approximately 41,000 jobs and over \$1.1 billion in employment income (in 2017; approx. \$1.4 billion today, adjusted for inflation) (Caudill, J., and E. Carver. 2019).

In addition to the role that visitation plays in a Refuge's local economy, the Service provides PILOTs (payments in lieu of taxes) to the counties where Refuges are located. In 2012, Kaua'i County received a total of \$23,524 in PILOTs from FWS through the Refuge Revenue Sharing program for the three Refuges located in Kaua'i County (USFWS 2016).

Kīlauea Point National Wildlife Refuge is one of the most visited Refuge within the entire Refuge System and attracts approximately one third of all Kaua'i's visitors. The Refuge is the 8<sup>th</sup> most visited attraction in the State of Hawai'i. Most of the visitors to the Refuge are non-local, and many of those are in the area for vacation. Other popular destinations for those that visit the Refuge include Hanalei Bay, Ke'e Beach State Park, and Hā'ena Beach State Park (USFWS 2016).

Near the Refuge is the town of Kīlauea, which is the gateway to Kīlauea Point and the Overlook. Most visitors in the town are also there to visit the Refuge, and approximately 13.7 percent of

Refuge visitors reported Kīlauea as the primary town for making purchases on their trip. The town has a number of restaurants and gift shops, and one of two gas stations on the entire North Shore. Other nearby towns include Princeville, a resort town with accommodations and outdoor recreation opportunities, Kapa‘a, whose economy is centered around tourism, and Līhu‘e, one of the largest towns on the island of Kaua‘i, home to the island’s airport, county government, and shipping and commerce hubs (USFWS 2016).

While agriculture (primarily kalo) is still an important sector on the island, tourism has surpassed it as Kaua‘i’s leading industry. In 2011, 23.1 percent of the County’s jobs were in the sectors of arts, entertainment, accommodation, food, and recreation, as compared to 16.1 percent for Hawai‘i and 9 percent for the country. In the same year, passenger transportation, retail trade, entertainment and recreation, arts, food, and accommodation accounted for 40.3 percent of private employment in Kaua‘i County, compared to 27.8 percent statewide and 15.2 percent nationally (USFWS 2016).

Further demonstrating the economic importance of tourism within the island of Kaua‘i, local unemployment has a history of increasing when tourism decreases. In 2007, the island had almost 1.3 million visitors, but saw a reduction of 20.6 percent the following year. In that same time period, state-wide unemployment increased from 2.7 to 4 percent. When tourism decreased by another 10 percent from 2008 to 2009, unemployment increased from 4 to 6.8 percent. When visitor arrivals increased between 2009 and 2010, unemployment declined from 6.8 to 6.6 percent (USFWS 2016).

### **Impacts on Affected Resource**

#### ***Alternative A – Refuge Access Repairs (Preferred Alternative)***

Alternative A would have little impact on the local and regional economies. Construction would require the Refuge to be closed to the public for up to 2.5 months, resulting in potential loss of revenue from visitor’s fees. This amount is insignificant long-term and would not impact operation of the Refuge when it reopens. Measures planned to reduce the impacts on visitors (and therefore visitor-dependent economic activities) are included in Appendix E.

#### ***Alternative B – No Action***

Under the no action alternative, the storm damage to the Refuge would not be repaired. A failure of the main water infrastructure would be likely, potentially causing closure of the Refuge and loss of revenue. In the meantime, storms and significant rainfall events continue to occur on Kaua‘i. With further damage to the already degraded access road, the Refuge might also have to be closed to the public. While these impacts would happen gradually and are more long-term, they may pose a risk to the local economy if visitor levels decline or cease altogether. Impacts to visitation would have a ripple effect into the ecosystem services provided by the Refuge.

## Environmental Justice

### Affected Environment

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, requires all federal agencies to incorporate environmental justice into their missions by identifying and addressing disproportionately high or adverse human health or environmental effects of their programs and policies on minorities and low-income populations and communities.

The Refuge is located adjacent to the town of Kīlauea, an unincorporated community with a population of 3,014 residents as of the 2020 census. Kīlauea had a median household income of \$85,227 in 2022 compared to the national average of \$69,021 (USFWS 2023), and a statewide average of \$92,458. However, Kīlauea had a higher share of families in poverty, at 17%, compared to the national average of 8.9%, and 10.2% statewide. Kīlauea census-designated place (CDP) also has a higher percentage of those without healthcare coverage (9.8%) compared to the State of Hawai‘i (3.5%). Kīlauea has lower rates of disability and veterans, and a higher employment rate than the state level (USCB, n.d.).

According to the USFWS Headwaters Economic Tool, Kīlauea has a minority population slightly above national average (43.3% vs. 40.6%), including a large Asian community, those who classify as two or more races, Hispanic or Latino residents, and Native Hawaiians or Other Pacific Islanders (by order of prevalence). When comparing Kīlauea to the State of Hawai‘i, Kīlauea has higher percentages of populations identifying as American Indian and Alaska Native and Other race. The percentages of Asian, Black or African American, Hispanic or Latino, Native Hawaiian and Other Pacific Islander, and Two or More Races are lower for Kīlauea than the entire state (USCB, n.d.).

The federal government’s Climate and Economic Justice Screening tool lists the town of Kīlauea within tract number 15007040103 and does not identify this tract as a disadvantaged area. Though it may not qualify as an environmental justice community under this one tool, the tract falls in the 80th percentile for lack of indoor plumbing, and contains a former Defense site, contributing to legacy pollution in the vicinity (CEQ, n.d.).

Under the EPA’s environmental justice screening and mapping tool, “EJScreen,” the town of Kīlauea falls within tract number 1500704105, roughly the same area as the tract for the Climate and Economic Justice screening tool. The data provided for this tract does not place the area in percentiles higher than the state or national level for any selected indicator, including pollution sources and socioeconomic indicators (USEPA, n.d.). The EJScreen tool aims to solely provide the levels of various factors and does not designate any areas as an “environmental justice community” (USEPA, 2024b).

While most communities around the globe face varying levels of issues related to health, pollution, access to green space, and socio-economic factors, the data presented above allows

us to conclude that the town of Kīlauea would not be considered an environmental justice community.

### **Impacts on Affected Resource**

#### ***Alternative A – Refuge Access Repairs (Preferred Alternative)***

Under this scenario, the previously mentioned repairs and safety improvements to the entrance road and vehicle turn-around area would take place. This would allow for continued visitation to the Refuge. Since the town of Kīlauea is not an environmental justice community, this alternative is not anticipated to have an impact on the “status” of being, or not being, an EJ community, though residents and visitors can still benefit from access to the Refuge. Spending time in nature has displayed positive impacts on individuals’ physical and mental health, regulation of circadian and diurnal body rhythms, reduction in blood pressure, and decreases in stress (Seymour 2016). Residents of Kīlauea and visitors can receive these benefits when spending time at the Refuge.

#### ***Alternative B – No Action***

Since we have determined that the Town of Kīlauea is not an environmental justice community the no action alternative would not have a direct impact on the community’s status as a non-environmental justice community. However, if the no action alternative results in further degradation of the Refuge’s infrastructure in the long term and therefore decreased visitation (and thus decreased revenue) it could have a negative impact on the further maintenance and support of the Refuge and on the tourism and related activities in nearby communities.

This scenario is not guaranteed to change the vicinity into an environmental justice community, but it could have negative impacts on those who rely on the Refuge for access to nature and green space. There is evidence that access to green space can have positive impacts on physical health. A meta-analysis from the University of East Anglia found that those who spend time in green spaces, compared to those who do not, have lower risks for chronic illness, and found evidence that green space is linked to lower blood pressure, lower cholesterol, lower heart rates, and reduced incidence of asthma, stroke, and coronary heart disease (Marques da Costa and Kállay, 2020).

It would take multiple decades for any potential negative impacts to human health to amass from restricting access to the Refuge and it is not a guaranteed outcome, but the value of the Refuge to human health and recreation, in addition to the various ecosystem services and habitat preservation, should be weighed when assessing Alternatives A and B.

### **Cumulative Impacts**

In accordance with NEPA and CEQ guidance, three types of impacts are included in analysis of a proposed federal action. Direct and indirect impacts in relation to the proposed action have been discussed throughout this document. The third type of impact, cumulative impacts, refers



to impacts that can result from minor but collectively substantial actions undertaken over a period of time by federal, state, or local governments and private developers (40 CFR§1508.1(i)(3)). Projects that are proposed, under construction, recently completed, or anticipated to be implemented in the near future are included in the discussion.

Two other proposed actions on Kauaʻi may overlap in timeframe and general location of the preferred action alternative. USFWS has plans to stabilize and rehabilitate the Refuge’s north slope, located at the overlook and turn-around area at the entrance of the Refuge. Erosion on the north slope as a result of storm damage has undermined stability, posing a risk to visitor safety and causing damage to the overlook sidewalk and parking lot. The proposed action encompasses stabilization of a section of the slope with planned construction in January of 2025.

Additionally, a project is underway with the Federal Highway Administration (FHWA) and Kīlauea County to make access improvements to the Refuge through multimodal access along Kīlauea Road. The proposed action includes roadway widening segments and installation of a sidewalk to make Kolo Road and Kīlauea Road accessible for pedestrians and cyclists. Construction timing for this proposed action would run concurrent with proposed Refuge repairs.

The two proposed actions outlined above, including the preferred action alternative for Refuge access repairs, seek to improve safety, reduce risks, and protect access to the Refuge.

### ***Terrestrial Wildlife and Aquatic Species***

Temporary effects on wildlife during construction would be similar for all three projects. The two Refuge-led projects would follow the conservation measures listed in Appendix E to minimize any potential negative effects from the action. The County-led project would be subject to similar levels of environmental review and conservation of important resources under the auspices of FHWA.

In combination, these projects are expected to improve visitor and employee access to the Refuge, thereby increasing road capacity. A coincident increase in traffic on Kīlauea Road may slightly increase conflicts with terrestrial wildlife along that transportation corridor.

### ***Threatened and Endangered Species, and Other Special Status Species***

Like the effects on wildlife, temporary effects on threatened nēnē during construction would be similar for all three projects. Effects to ‘a’o are not anticipated for the North Slope Stabilization or County Road projects. The two Refuge-led projects would follow the conservation measures listed in Appendix E to minimize any potential negative effects from the action. The County-led project would be subject to similar levels of environmental review and conservation of protected resources.

### ***Habitat and Vegetation (including vegetation of special management concern)***



Similar to the effects on wildlife, temporary effects on habitat and vegetation within the project footprints during construction would be similar for all three projects. Cleared areas would be reseeded and are expected to revegetate quickly.

No significant long-term impacts to habitat or vegetation are expected to result from these projects in part or cumulatively.

### ***Climate Change***

Climate change is a globally cumulative process, making it difficult to assess a single project's impact on climate change. Greenhouse gas emissions are regarded as the best assessment. While Hawai'i has experienced decreases in carbon emissions that enabled it to meet 2020 emissions goals, GHG emissions continue to increase on a global level that is unsustainable. The most recent data from 2022 shows that global levels of carbon dioxide, methane, and nitrous oxide have risen to all-time records (NOAA 2023).

Collectively, the three proposed actions would have a negligible impact on climate change. GHG emissions as a result of project construction are temporary, localized, and insubstantial. Additionally, once constructed, the proposed actions are not likely to be adversely affected by climate change in the immediate or near future due to the Refuge's position above sea level. However, Hawai'i and other Pacific islands will have to continue to find effective mitigation and adaptation measures for ongoing sea level rise and erosion. This may involve increased construction and repair actions, particularly in waterfront locations.

### ***Visitor Use and Experience***

In combination, the concurrent proposed actions would likely temporarily affect or prevent visitor use on a limited number of days during construction. All information regarding closures would be communicated in advance to the public through signs, the reservation system, local newsletters, and posted on the Refuge website.

After construction, each of these projects seeks to improve public access and safety while visiting the Refuge, thereby providing a net benefit to the ongoing visitor experience.

## **Monitoring**

Refuge staff will be present during construction activity to monitor and assess impacts to wildlife within the project area. Specifically, Refuge staff will closely monitor if threatened nēnē are disrupted during nesting and abandoning their nests. Avoidance measures specified during ESA consultation will be followed.

## **List of Preparers**

USFWS

Heather Abbey, Refuge Project Leader

Christa McLeod, Wildlife Refuge Specialist

Jennifer Waipa, Visitor Services Manager

Becky Clow, Conservation Manager

Claire McClory, Planning Branch Chief

PND Engineers, Inc.

Brenna Hughes, Lead Environmental Scientist

Schuyler Roskam, Biologist

Baila Kunesova, Environmental Scientist

Danielle Schultz, Environmental Scientist

Jessica Ngo, Environmental Scientist

## **State and Local Coordination**

We will be coordinating with the State Historic Preservation Office on Section 106. In addition, we have been closely coordinating with the County of Kaua'i on this project, beginning with the design phase, since they have jurisdiction over the adjacent main road and will be the lead on a Federal Lands Access Program project on the adjacent Kilauea Road that is proposed to be implemented around the same time as this proposed project.

## **Native Hawaiian Organization Coordination**

## **Public Outreach and Section 106 Consultation**

This draft EA will be posted for a 14-day public review and comment period. The draft EA will be available at the Kilauea Point NWR office (3500 Kilauea Road Kilauea, HI 96754) and on the Kilauea Point NWR website <https://www.fws.gov/refuge/kilauea-point>. The public may submit comments or requests for additional information through any of the following methods:

Email: [Jennifer\\_Waip@fws.gov](mailto:Jennifer_Waip@fws.gov)

Mail: Kaua'i National Wildlife Refuge Complex, P.O. Box 1128, Kilauea, Hawai'i 96754

All comments received from individuals become part of the official public record. All requests for such comments are handled in accordance with the Freedom of Information Act and the CEQ's NEPA regulations in 40 CFR 1506.6(f). The Service's practice is to make comments, including names and home addresses of respondents, available for public review during regular business hours. Individual respondents can request that we withhold their home address from

the record, which we will honor to the extent allowable by law. If you wish us to withhold your name and/or address, you must state this prominently at the beginning of your comments. Section 106 consultation with the Native Hawaiian community and organizations will be held concurrently with the public outreach efforts.

## **Determination**

This section will be filled out upon completion of the public comment period and at the time of finalization of the Environmental Assessment.

- The Service's action will not result in a significant impact on the quality of the human environment. See the attached "**Finding of No Significant Impact**".
- The Service's action **may significantly affect** the quality of the human environment and the Service will prepare an Environmental Impact Statement.

## **Signatures**

**Submitted By:**

**Project Leader Signature:**

**Date:**

**Concurrence:**

**Refuge Supervisor Signature:**

**Date:**

**Approved:**

**Regional Chief, National Wildlife Refuge System Signature:**

**Date:**

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## **Appendix A – Applicable Statutes**

### **Cultural Resources**

American Indian Religious Freedom Act, as amended, 42 U.S.C. 1996 - 1996a; 43 CFR Part 7

Archaeological Resources Protection Act of 1979, 16 U.S.C. 470aa-470mm; 18 CFR Part 1312; 32 CFR Part 229; 36 CFR Part 296; 43 CFR Part 7

National Historic Preservation Act of 1966, as amended, 16 U.S.C. 470-470x-6; 36 CFR Parts 60, 63, 78, 79, 800, 801, and 810

In accordance with Section 106 of the National Historic Preservation Act, the Service will conduct a cultural resources compliance assessment.

Paleontological Resources Protection Act, 16 U.S.C. 470aaa-470aaa-11

Native American Graves Protection and Repatriation Act, 25 U.S.C. 3001-3013; 43 CFR Part 10

Executive Order 11593 – Protection and Enhancement of the Cultural Environment, 36 Fed. Reg. 8921 (1971)

Executive Order 13007 – Indian Sacred Sites, 61 Fed. Reg. 26771 (1996)

### **Fish and Wildlife**

Endangered Species Act of 1973, as amended, 16 U.S.C. 1531-1544; 36 CFR Part 13; 50 CFR Parts 10, 17, 23, 81, 217, 222, 225, 402, 450

Fish and Wildlife Act of 1956, 16 U.S.C. 742a-m

Migratory Bird Treaty Act, as amended, 16 U.S.C. 703-712; 50 CFR Parts 10, 12, 20, and 21

The proposed action is consistent with the Migratory Bird Treaty Act and Bald and Golden Eagle Act.

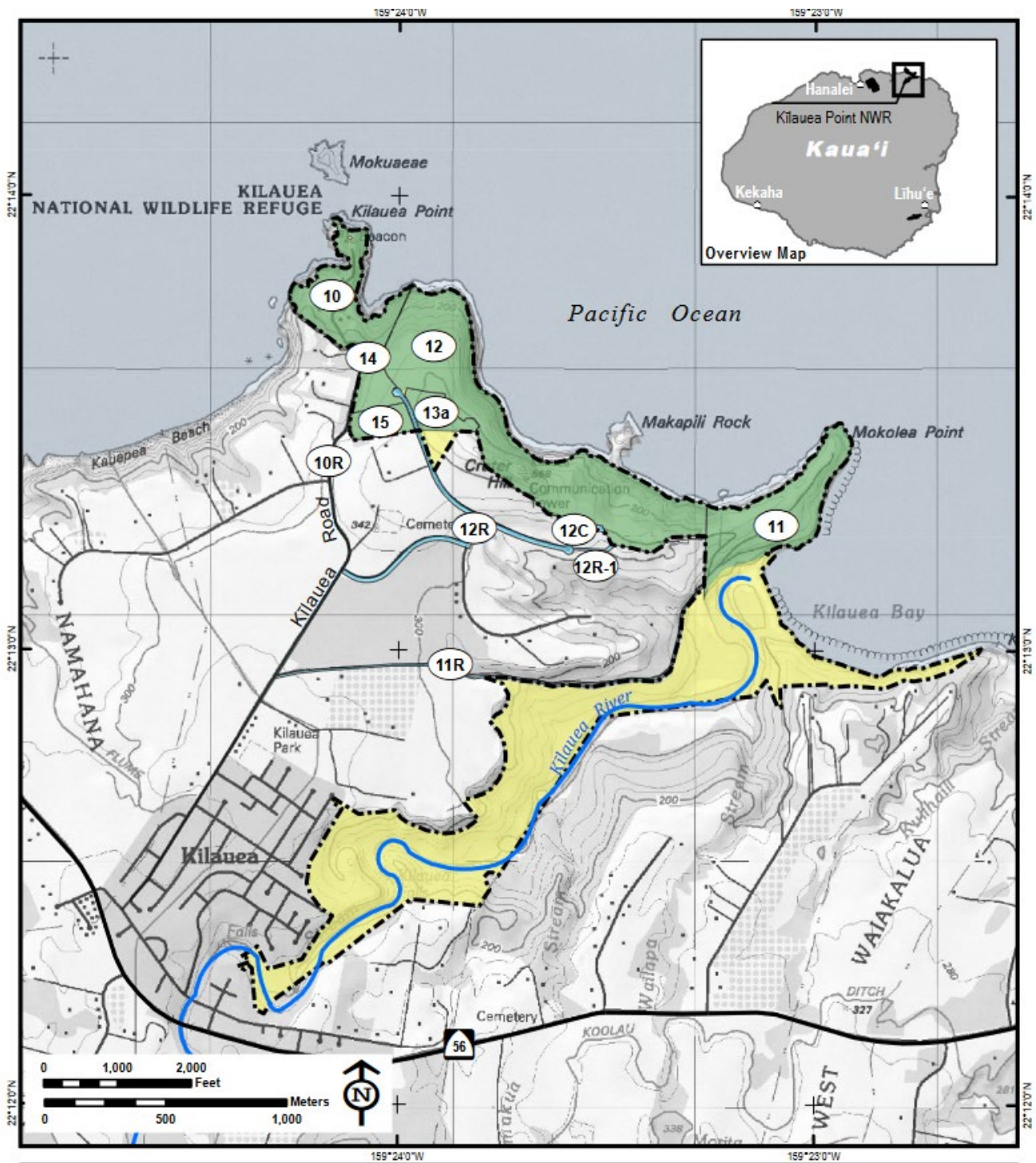
Executive Order 13186 – Responsibilities of Federal Agencies to Protect Migratory Birds, 66 Fed. Reg. 3853 (2001)

### **Natural Resources**

Clean Air Act, as amended, 42 U.S.C. 7401-7671g; 40 CFR Parts 23, 50, 51, 52, 58, 60, 61, 82, and 93; 48 CFR Part 23

The project location and state of Hawai'i are in attainment status. An emissions analysis confirmed that no reporting requirements would exist for the project under the Clean Air Act.

## **Appendix B – Figures and Project Drawings**



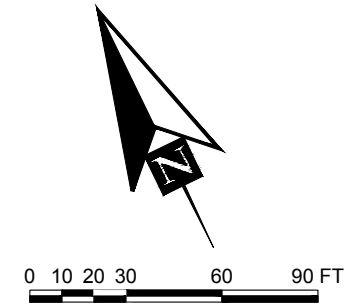
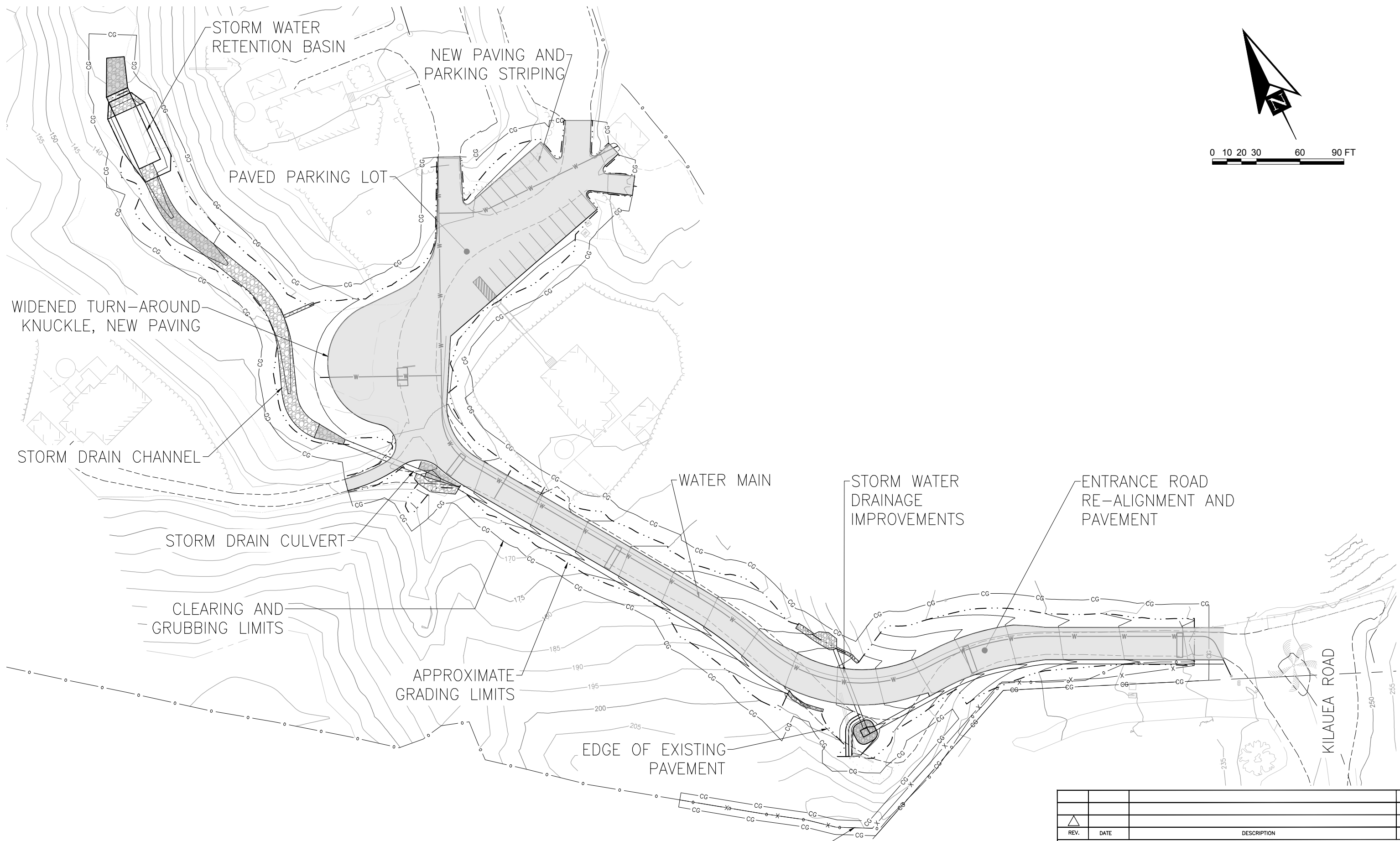
**LEGEND**

Approved Acquisition Boundary	Highways
Inholding	Rivers
Acquired: Fee	
Acquired: Road Easement	

The spatial and positional accuracy of land status features vary depending on the elements of the legal description and the accuracy of the source data. We strive to improve the accuracy of our boundaries and do so when better base data or surveys are available.

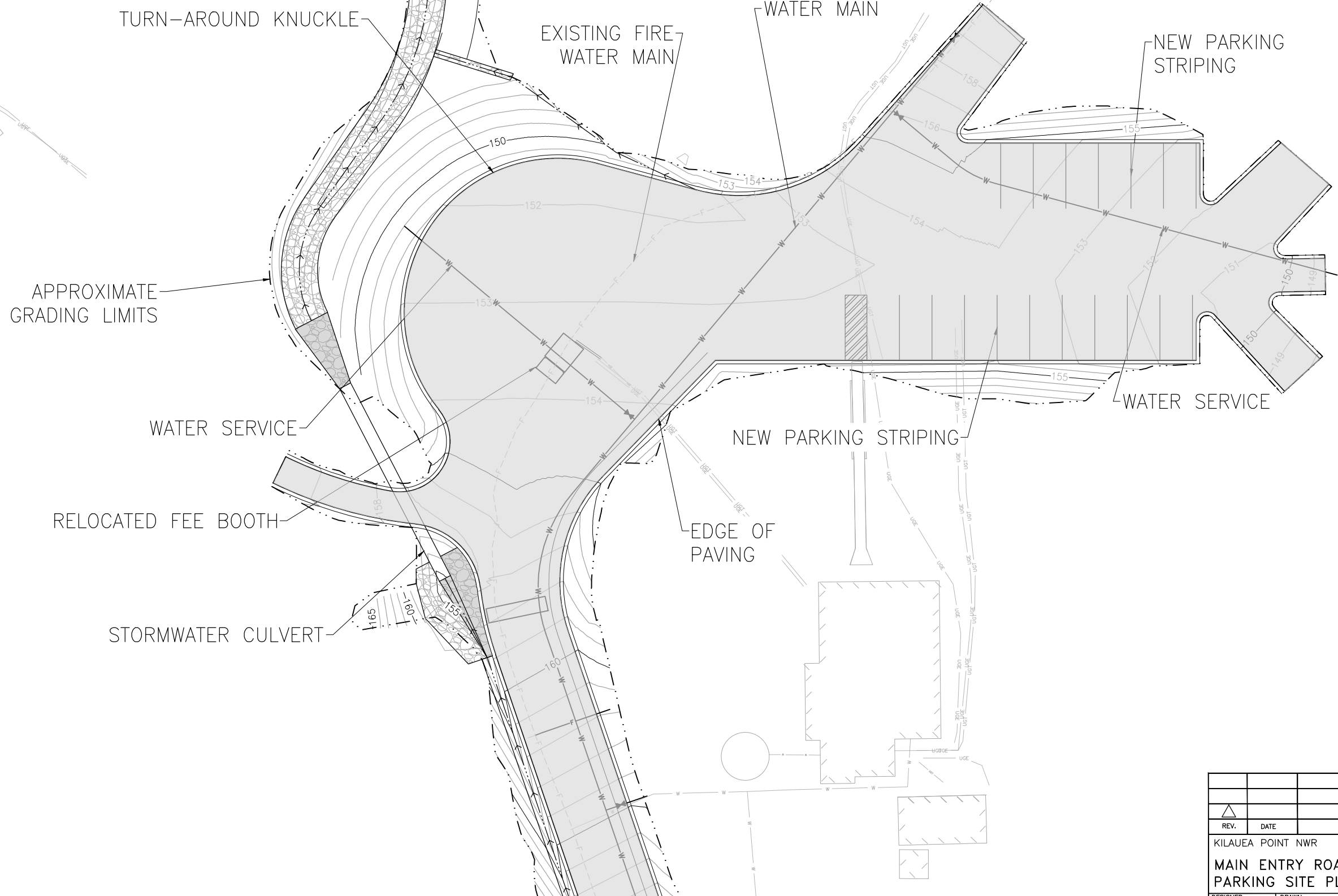
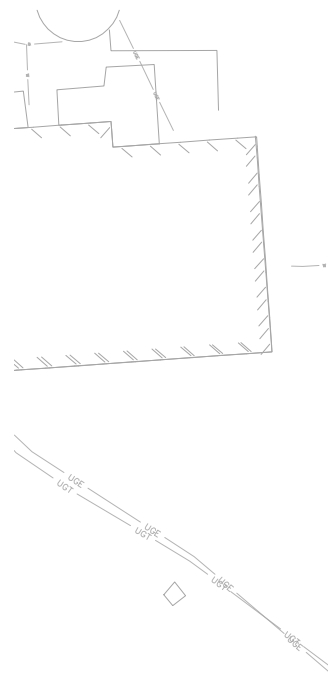
Approved acquisition boundaries represent the extent of lands authorized by Congress for purchase by the USFWS for inclusion into the National Wildlife Refuge System. Inholdings are lands within this boundary that have not been, and might not ever be, acquired.

Map Date: 9/16/2014 File: 11-065-3.mxd Title: Land Status, Kilauea Point  
USFWS R1 Refuge Information Branch



REV.	DATE	DESCRIPTION	BY
KILAUEA POINT NWR			
<b>MAIN ENTRY ROAD</b>			
<b>SITE OVERVIEW PLAN</b>			
DESIGNED	DRAWN	CHECKED	DATE
CCS	MM	DTK	9/13/24
DRAWING NO.			

400 FEET FENCING REPLACED



REV.	DATE	DESCRIPTION	BY

KILAUEA POINT NWR  
**MAIN ENTRY ROAD  
 PARKING SITE PLAN AND WATER SERVICE PLAN**

DESIGNED	CCS	DRAWN	MM	CHECKED	DTK	DATE	9/13/24	DRAWING NO.
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## Appendix C – Biological Resources Assessment

This narrative presents a general discussion of the potentially affected biological resources associated with the Kīlauea Point National Wildlife Refuge (KPNWR; Refuge) Access Repair Project (Project). With the inclusion of avoidance and minimization measures to mitigate impacts to protected species, and through ESA Section 7 consultation with the Pacific Islands Fish and Wildlife Office (PIFWO), we anticipate a “no effect” or “not likely to adversely affect” determination for all threatened and endangered species in the project area. Table 3 identifies Endangered Species Act (ESA) listed species at the Refuge and a summary of anticipated effects determinations.

### Terrestrial Wildlife

Kīlauea Point National Wildlife Refuge (KPNWR; the Refuge) supports a variety of native and introduced wildlife species. Several of the native wildlife species at the Refuge are listed as threatened or endangered under the Endangered Species Act (ESA). Threatened and endangered species are discussed below. Other native wildlife at KPNWR includes several species of breeding and non-breeding seabirds, shorebirds, and waterfowl (USFWS 2016).

Mōlī (*Phoebastria immutabilis*), or Laysan albatross, were first observed breeding at the Refuge in the late 1980s at Mōlī Hill and continue to breed successfully at Mōlī Hill and throughout the eastern portion of KPNWR. Although the largest mōlī breeding colonies in the Northwest Hawaiian Islands are at risk of inundation due to sea-level rise, abandoned colonies in the main Hawaiian Islands (including Kaua‘i) and Western Pacific have been recolonized, and the species’ range has expanded to include islands in the Eastern Pacific off Mexico (Henry et al. 2021). The global population appears to be stable at approximately 1,600,000 breeding adults (International Union for the Conservation of Nature [IUCN] 2024). Because of the threats to their largest breeding colonies, the IUCN has categorized the mōlī as “near threatened” (IUCN 2024). Mōlī are also Federally recognized as a “bird of conservation concern” (USFWS 2021).

The ‘ua‘u kani (*Puffinus pacificus*), or wedge-tailed shearwater, is the most abundant bird species at the Refuge with an estimated 20,988 breeding pairs in 2019 (Felis et al., 2020). They breed throughout the Refuge wherever habitat is suitable, including at Mōlī Hill, near the lighthouse, Crater Hill, and Mōkōlea Point where they nest in earthen burrows dug into slopes. The likely minimum worldwide population of ‘ua‘u kani is 5 million (Felis et al., 2020). The IUCN has categorized the ‘ua‘u kani as “least concern” (IUCN 2024).

The koa‘e kea (*Phaethon lepturus*), or white-tailed tropicbird, nests on steep, mostly inaccessible cliff faces at the Refuge (USFWS 2016). The breeding population of koa‘e kea at the Refuge is relatively small, but the U.S. Geological Survey (USGS) estimated that as many as 719 breeding and non-breeding koa‘e kea were using the Refuge in May 2019 (Felis et al., 2020). Approximately 1,550 koa‘e kea pairs breed in Hawai‘i, primarily in the Main Hawaiian Islands where there is suitable cliff nesting habitat, and the global population is estimated to be less



than 200,000 pairs (Felis et al., 2020). The IUCN has categorized the koa'e kea as "least concern" (IUCN 2024).

Koa'e 'ula (*Phaethon rubricauda*), or red-tailed tropicbird, is a larger cousin of the koa'e kea. Although the global population of koa'e 'ula (30,000 to 40,000 breeding pairs) is significantly smaller than koa'e kea, the former is approximately 10 times more abundant at the Refuge (Felis et al., 2020). On the Main Hawaiian Islands, koa'e 'ula nest where they are protected from predators, such as on islets, on coastal cliff benches, in coastal cliff crevices, or within predator-proof enclosures (USFWS 2016, Felis et al., 2020). At the Refuge, as many as 451 nest sites were identified in 2019, mostly along the tops of bluffs at Mōkōlea Point, Crater Hill, and Kīlauea Point (Felis et al., 2020). The koa'e 'ula is Federally recognized as a "bird of conservation concern," and the IUCN has categorized it as "least concern" (USFWS 2021; IUCN 2024).

Since the 1960s, the 'ā (*Sula sula*), or red-footed booby, population at the Refuge has rebounded from fewer than 100 breeding pairs to more than 5,000 breeding pairs in 2019 (Felis et al., 2020). These 'ā nest in trees and shrubs on the coastal bluffs and cliffs along Crater Hill (USFWS 2016).

'Ā are sensitive to development and human presence and because of this the portion of the Refuge open to the public is sub-optimal habitat, especially with an abundance of suitable breeding habitat in other parts of the Refuge. With as many as 300,000 breeding pairs worldwide, the IUCN has categorized the 'ā as "least concern" (IUCN 2024).

Non-breeding seabirds that visit the Refuge include ka'upu (*Phoebastria nigripes*, black-footed albatross), another species of 'ā (*Sula leucogaster*, brown booby), and 'iwa (*Fregata minor*, great frigatebird)(USFWS 2016). The ka'upu is listed as a "bird of conservation concern" and is categorized by the IUCN as "near threatened" (USFWS 2021; IUCN 2024). They are usually seen offshore from the Refuge or landed at Moku'ae'ae (USFWS 2016). The non-breeding species of 'ā at the Refuge (brown booby) and the 'iwa are frequent aerial visitors and often roost in the area. Both are categorized by the IUCN as "least concern" (IUCN 2024).

Dozens of species of migratory waterfowl and migratory shorebirds visit the Hawaiian Islands annually. Among these, cackling geese (*Branta hutchinsii*), snow geese (*Anser caerulescens*), and greater white-fronted geese (*Anser albifrons*) are the most common waterfowl and kōlea (*Pluvialis fulva*, Pacific golden plover), 'akekeke (*Arenaria interpres*, ruddy turnstone), and 'ulili (*Tringa incana*, wandering tattler) are the most common shorebird visitors to the Refuge (USFWS 2016). Hunakai (*Calidris alba*, sanderling) and kioea (*Numenius tahitiensis*, bristle-thighed curlew) are occasional shorebird visitors to the Refuge (USFWS 2016). Important migratory shorebird habitat at the Refuge includes the shoreline as well as areas of short grass, and migratory geese would be expected to graze throughout the grassy areas. In Hawaii, the USFWS manages shorebirds according to the U.S. Pacific Islands Regional Shorebird Conservation Plan. Under this plan, the kōlea and kioea are categorized as "high concern," the 'ulili as "moderate concern," and the 'akekeke as "low concern" (Engilis and Naughton 2004).

Invasive predators and pests at the Refuge include (past or present) rats (*Rattus spp.*), cats (*Felis catus*), dogs (*Canis lupus familiaris*), feral pigs (*Sus scrofa*), cattle egrets (*Bubulcus ibis*), barn owls (*Tyto alba*), cane toads (*Bufo marinus*), and ants (family Formicidae). An in-depth discussion of invasive predators and pests and control methods can be found in the Refuge's Comprehensive Conservation Plan (USFWS 2016).

## **Threatened and Endangered Species**

### ***Threatened and Endangered Wildlife***

Several species of wildlife listed as either threatened or endangered under the Endangered Species Act occur or have suitable habitat at the Refuge. The threatened 'a'o (*Puffinus auricularis newelli*), or Newell's shearwater, and the threatened nēnē (*Branta sandvicensis*), or Hawaiian goose, nest at Kīlauea Point. Other Hawaiian seabirds at the Refuge include the endangered 'ua'u (*Pterodroma sandwichensis*; Hawaiian petrel), and rarely the Hawai'i distinct population segment (DPS) of 'akē'akē (*Hydrobates castro*; band-rumped storm petrel). The endangered 'ōpe'ape'a (*Lasiurus cinereus semotus*), or Hawaiian hoary bat, has also been seen at the Refuge. Additionally, small numbers of three species of endangered plants have been introduced and remain at the Refuge.

### ***Hawaiian Seabirds***

The breeding population of 'a'o at the Refuge was first established between 1979 and 1982, when eggs were brought to Kīlauea Point and Moku'ae'ae to be fostered by 'ua'u kani pairs (USFWS 2016; Raine et al. 2018). More recently, habitat improvement, translocation, and social attraction projects in the closed area of the Refuge — not at Kīlauea Point proper — have been moderately successful at increasing the population size, with a minimum of nine breeding pairs at the Refuge in 2016 (Raine et al. 2018). 'A'o nest on the Refuge between mid-April and the end of September, during which time ground disturbance and the use of heavy equipment is restricted in the vicinity of 'a'o nests.

The 'ua'u nests at the Nihokū predator exclusion area in the eastern part of the Refuge and could also fly over Kīlauea Point when moving between feeding grounds and breeding colonies. The 'akē'akē has very rarely been observed at the Refuge and has not been observed at Kīlauea Point proper (pers. comm. Heather Abbey, USFWS); however, they reportedly nest on Moku'ae'ae offshore from Kīlauea Point (pers. comm. Christa McLeod, USFWS).

### ***Nēnē***

Nēnē at the Refuge are the result of a reintroduction program in the early 1990s, when 38 captive-bred individuals were released at Crater Hill (USFWS 2016). Since then, Nēnē have continued to utilize habitat within the Refuge during all life stages and their numbers have grown significantly. As early as 2002, the population had grown to approximately 238 and remained relatively stable through at least 2010, when 214 nēnē were counted in July inside the Refuge boundary (USFWS 2016). The population has continued to increase on Kaua'i. The



island accounted for as much as 60% of the statewide nēnē population by 2012, and as of 2022 an estimated 2,430 nēnē of the estimated statewide population of 3,862 (63%) were on Kauaʻi (USFWS 2022). The nēnē was downlisted to threatened in 2019 (84 FR 69918).

Nēnē breed and nest on the Refuge between October and May, molting between March and June (USFWS 2016).

### **‘Ōpe‘ape‘a**

The endangered ‘ōpe‘ape‘a (*Lasiurus cinereus semotus*), or Hawaiian hoary bat, is the only terrestrial mammal native to Hawaiʻi and is endemic to the islands. ‘Ōpe‘ape‘a roost alone in trees with dense foliage and sufficient flight paths, typically in open woodlands or at forest edges in native or non-native trees at least 15 feet tall (USFWS 2024). A single ‘ōpe‘ape‘a was observed at the Refuge in fall, 2010, flying over Crater Hill at sunset and there is suitable forest-edge habitat at Kāhili Beach and at the mouth of the Kīlauea River (USFWS 2016). Vegetation clearing activities are restricted on the Refuge between June and mid-September to avoid disturbing potential ‘ōpe‘ape‘a pupping and rearing.

### **‘Ilio-holo-i-ka-uaua**

‘Ilio-holo-i-ka-uaua (*Neomonachus schauinslandi*), or Hawaiian monk seal, is a critically endangered true seal. ‘Ilio-holo-i-ka-uaua undergo an annual catastrophic molt that requires them to haul out for extended periods when they are vulnerable to predation and disturbance. They also haul out regularly on beaches or rock benches to rest or for pupping. In modern times, the population of ‘ilio-holo-i-ka-uaua was primarily restricted to the Northwest Hawaiian Islands, although they have become increasingly common in the Main Hawaiian Islands while numbers in the NWHI have continued to dwindle (Wilson, Littnan, and Read 2017).

With the demographic shift toward the populated MHI, interactions with humans and introduced predators (e.g., dogs) have become increasingly concerning; however, MHI ‘ilio-holo-i-ka-uaua appear to benefit from reduced competition and better foraging habitat compared to the NWHI (Wilson, Littnan, and Read 2017). ‘Ilio-holo-i-ka-uaua are benthic foragers with a diverse diet that includes reef fish, cephalopods, and mollusks. Increased turbidity and prey impacts from storm water runoff could negatively affect ‘ilio-holo-i-ka-uaua foraging success (NMFS 2015).

‘Ilio-holo-i-ka-uaua are seen in most months in the small cove below the overlook at the Refuge entrance and may occasionally haul out there (USFWS 2016; Friends of Kauaʻi Wildlife Refuges 2024). This area is also designated as marine and terrestrial critical habitat to 5 meters inland from the shoreline and out to the 200-meter depth contour within 10 meters of the seafloor (80 FR 50925).

## **Honu**

Honu (*Chelonia mydas*), or green sea turtles, occur throughout the Hawaiian Islands. The population of honu in Hawai'i does not migrate to other areas of the Pacific. Following a 2015 status review of the species, NMFS determined the Hawai'i, or Central North Pacific, population to be a distinct population segment (DPS) of the species that warranted listing as threatened (81 FR 20057). Then, in 2023, NMFS proposed to designate new areas of critical habitat and modify existing critical habitat that includes all waters surrounding Kaua'i from the mean high-water line out to the 20-meter depth contour. Similarly, USFWS proposed honu critical habitat at many beaches throughout the Hawaiian Islands that possess the physical and biological features essential to the conservation of the species, which includes beaches adjacent to the Refuge (88 FR 46376). Like 'ilio-holo-i-ka-uaua, honu could be affected by impacts from storm water runoff to their habitat (USFWS 2016).

## **Endangered Plants**

Small numbers of the following endangered plant species have been outplanted at the Refuge (USFWS 2016).

### ***Pōkalakala (Polyscias racemosa)***

Pōkalakala, also known as false 'ohe, is a small tree up to 30 feet tall that is endemic to Kaua'i. It generally grows in coastal mesic and mixed-mesic forests on cliffs and ridges from 390 to 1,300 feet elevation in the few locations where wild plants are found (USFWS 2016).

### ***Lo'ulu (Pritchardia aylmer-robinsonii and P. napaliensis)***

Two species of lo'ulu, the common name for palms in the genus *Pritchardia*, are present at the Refuge. *Pritchardia aylmer-robinsonii* was originally a component of the coastal dry forests on Ni'ihau; however, early grazing practices likely greatly restricted the available habitat to areas inaccessible to ungulates, and by 1990 only one known remaining location with wild *P. aylmer-richardsonii* remained (USFWS 2016).

*Pritchardia napaliensis*, a smaller species of lo'ulu, is endemic to the Nā Pali Coast of Kaua'i.

## **Biological Resources References**

- 80 FR 50925. Endangered and Threatened Species: Final Rulemaking to Revise Critical Habitat for Hawaiian Monk Seals. A Rule by the National Atmospheric and Oceanic Administration. 8/21/2015.
- 84 FR 69918. Endangered and Threatened Wildlife and Plants; Reclassifying the Hawaiian Goose From Endangered to Threatened With a Section 4(d) Rule. A Rule by the Fish and Wildlife Service. 12/19/2019.
- 88 FR 46376. Endangered and Threatened Wildlife and Plants; Designation of Critical Habitat for Green Sea Turtle. A Proposed Rule by the Fish and Wildlife Service. 7/19/2023.
- National Marine Fisheries Service (NMFS). 2015. DRAFT Main Hawaiian Islands Monk Seal Management Plan. National Marine Fisheries Service, Pacific Islands Region, Honolulu, HI.
- Friends of Kaua'i Wildlife Refuges. 2024. <https://www.kauairefuges.org/marine-life>. Accessed May 2024.
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- USFWS. 2016. Comprehensive Conservation Plan. Kīlauea Point National Wildlife Refuge. United States Department of the Interior, Fish and Wildlife Service. <https://www.fws.gov/sites/default/files/documents/Kilauea%20Point%20NWR%20fCCP.pdf>
- USFWS. 2022. The Plight of the Nēnē: How the Hawaiian goose went from thriving to near extinction and now recovery. Written by Laurel Smith, 12/02/2022. United States Fish and Wildlife Service. <https://www.fws.gov/story/2022-12/plight-nene>. Accessed September, 2024.
- USFWS. 2024. ECOS Environmental Conservation Online System: Hawaiian hoary bat (*Lasiurus cinereus semotus*). United States Fish and Wildlife Service. Accessed via <https://ecos.fws.gov/ecp/species/770> June, 2024.
- Felis, J. J., E. C. Kelsey, J. Adams, J. G. Stenske, and L. M. White. 2020. Population Estimates for Selected Breeding Seabirds at Kilauea Point National Wildlife Refuge, Kaua'i, in 2019. Data Series. USGS.
- Raine, A. F., M. Vynne, D. Harvey, and S. Driskill. 2018. 2017 Annual Report on Monitoring of Newell's shearwaters and Kīlauea Point National Wildlife Refuge. Kaua'i Endangered Seabird Recovery Project (KESRP), Pacific Cooperative Studies Unit (PCSU), University of Hawai'i and Division of Forestry and Wildlife (DOFAW), State of Hawai'i Department of Land and Natural Resources (DLNR), Hawai'i, USA.

Table 3. ESA-Listed Species at KPNWR and Summary of Anticipated Effects Determinations.

Scientific Name	Common Name	Hawaiian Common Name	ESA Status	Expected ESA Determination
<b>Birds</b>				
<i>Puffinus auricularis newelli</i>	Newell's shearwater	'A'o	Threatened	May affect, not Likely to adversely affect (NLAA)
<i>Pterodroma sandwichensis</i>	Hawaiian petrel	'Ua'u	Endangered	NLAA
<i>Hydrobates castro</i>	Band-rumped storm petrel	'Akē'akē	Endangered	NLAA
<i>Branta sandvicensis</i>	Hawaiian goose	Nēnē	Threatened	NLAA
<b>Mammals</b>				
<i>Lasiurus cinereus semotus</i>	Hawaiian hoary bat	'Ōpe'ape'a	Endangered	NLAA
<i>Monachus schauinslandi</i>	Hawaiian monk seal	'Ilio-holo-i-ka-uaua	Endangered	No effect
<b>Reptiles</b>				
<i>Chelonia mydas</i>	Green sea turtle	Honu	Threatened	No effect
<b>Plants</b>				
<i>Polyscias racemosa</i>		Pōkalakala	Endangered	No effect
<i>Brighamia insignis</i>	Cabbage on a stick	Alula	Endangered	No effect
<i>Scaevola coriacea</i>	Dwarf naupaka		Endangered	No effect
<i>Pritchardia aylmer-robinsonii</i>		Loulu	Endangered	No effect
<i>Pritchardia napaliensis</i>		Loulu	Endangered	No effect

## **Appendix D – Air Quality & Emissions**

### **Overview**

Air and GHG emissions were calculated using an estimate of the number, type, model, and duration (hours) of use for each piece of equipment involved in construction of the proposed project. Analysis included the calculation of criteria air pollutants as established by the EPA, as well as greenhouse gas estimates using carbon dioxide equivalent (CO<sub>2</sub>e). Ozone levels are not directly calculated, as tropospheric ozone is formed from photochemical reactions between volatile organic compounds (VOC) and nitrogen oxides (NO<sub>x</sub>), which are included in Table 5. Sulfur dioxide (SO<sub>2</sub>), carbon monoxide (CO) and particulate matter (PM<sub>10</sub>, PM<sub>2.5</sub>) were also calculated. The analysis provides emissions for the total project as proposed, broken down by type of equipment and pollutant.

### **Methods**

Equipment types were established based on crews and project stages. Equipment hours were estimated according to project plans and specifications at the time of this EA. Total hours were combined for the same type of equipment in different project phases. Contractor standard choices for similar projects in Hawai'i were selected for analysis. Engine type, maximum horsepower (HP), load factors and loaded HP were delineated from equipment manuals and loaded HP calculations.

All emissions were calculated by formulas and emission factors extracted from The Air Emissions Guide for Air Force Stationary Sources (Solutio Environmental 2022a) and Methods for Estimating Emissions of Air Pollutants for Mobile Sources at United States Air Force Installations (Solutio Environmental 2022b). These manuals were utilized for Hawai'i specific data for diesel engines in recent years, and emissions factors were compared against those used in other parts of the country by the EPA. For equipment that did not indicate an established emission factor, calculations used composite values for diesel engines of equivalent size and HP. Methane (CH<sub>4</sub>) emissions are excluded from the table due to being negligible based on equipment use and duration of the project. Fugitive dust calculations also resulted in negligible results, exasperated by high precipitation in the project area during the late winter and early spring.

### **Assumptions**

The results of the analysis are dependent on the following assumptions:

- Selected contractor uses standard commercial equipment with equivalent emission factors, horsepower, and load factor.
- Duration of equipment used is as specified in Table 5. Changes to the project, as proposed, could impact the amount, type, and duration of equipment used in construction.

- Ultra-low sulfur fuel is used in all diesel equipment and vehicles in accordance with federal law.

Additionally, actual emissions will differ based on uncontrollable and unpredictable factors such as precipitation, wind, and ambient temperature. Cooler temperatures and heavy precipitation contribute to less air pollution. All emissions calculations were made with the best available data at the time this EA was prepared.

## **Results**

Results of total air emissions are listed in Table 4. All results are far below annual federal air quality thresholds. Pollutant quantities and thresholds are reported in tons per year (tpy).

Table 4: Total Emission Estimates for Proposed Project Construction

<b>Pollutant</b>	<b>VOC</b>	<b>SO<sub>x</sub></b>	<b>NO<sub>x</sub></b>	<b>CO</b>	<b>PM<sub>10</sub></b>	<b>PM<sub>2.5</sub></b>	<b>CH<sub>4</sub></b>	<b>CO<sub>2e</sub><sup>1</sup></b>
<b>Emissions (tpy)</b>	0.1172	0.0014	0.2984	1.7614	0.0083	0.0078	0	526.4146
<b><i>De minimis</i> thresholds (tpy)<sup>2</sup></b>	50	100	100	100	100	100	N/A	27,500

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<sup>1</sup> CO<sub>2e</sub> breakdown is detailed in the Climate Change section of the EA.

<sup>2</sup> *De minimis* thresholds are only applicable in areas subject to the General Conformity Rule (40 CFR §93.153). Kaua'i is in attainment status for NAAQS and therefore not subject to this rule; however, quantities are included in the table for reference purposes.

Table 5: Emissions Breakdown

Equipment				Criteria Air Pollutants (tpy)						GHG (tpy)
Type	Model	Fuel	Total Hours	VOC	SOx	NO <sub>x</sub>	CO	PM <sub>10</sub>	PM <sub>2.5</sub>	CO <sub>2e</sub>
<b>Rubber-tired dozer</b>	CAT D4	Diesel	24	0.002	0	0.013	0.0123	0.0005	0.0005	2.8735
<b>Skid-steer loader</b>	CAT D3	Diesel	100	0.001	0	0.0068	0.0105	0.0001	0.0001	1.5158
<b>Paver</b>	CAT AP	Diesel	32	0.0009	0	0.0052	0.0064	0.0003	0.0003	1.105
<b>Surfacing equipment</b>	Bergkamp M310E	Diesel	60	0.0019	0.0001	0.0118	0.0108	0.0004	0.0004	4.9835
<b>Excavator</b>	Hitachi ZX450	Diesel	258	0.0072	0.0001	0.0293	0.0657	0.0012	0.0012	15.4419
<b>24" remote compactor</b>	Wacker Neuson Rtsc3	Diesel	15	0	0	0.0002	0.0002	0	0	0.0324
<b>Single drum compactor</b>	Rullo Bomag	Diesel	24	0.0005	0	0.0024	0.0042	0.0001	0.0001	1.4713
<b>Air compressor</b>	Doosan C185	Diesel	6	0.0001	0	0.0006	0.0009	0	0	0.1911
<b>Grader</b>	CAT 16	Diesel	16	0.0005	0	0.0026	0.0046	0.0001	0.0001	1.0632
<b>Dump truck</b>	CAT 740	Diesel	211	0.0009	0	0.0061	0.0033	0.0002	0.0002	0.8065
<b>Small generator set</b>	Doosan G25	Diesel	75	0.0011	0	0.0087	0.01	0.0003	0.0003	2.2897
<b>Pickup truck</b>	F150	Gasoline	675	0.0945	0.001	0.079	1.5458	0.002	0.0017	430.8161
<b>Water truck</b>	F750 2000	Diesel	100	0.0066	0.0002	0.1327	0.0867	0.0031	0.0029	63.8246
<b>Totals</b>	--	--	1596	0.1172	0.0014	0.2984	1.7614	0.0083	0.0078	526.4146

## Appendix E – Conservation Measures

Construction will use the following best management practices (BMPs) to minimize impacts to the Refuge’s resources.

### **Threatened & Endangered Species, Other Special Status Species, & Their Habitat**

- Project personnel and contractors will be informed about the presence of endangered species on-site.
  - A review of best available data on migratory bird nesting will be conducted prior to construction to prevent impacts to protected bird species during clearing (if applicable). If possible, clearing will be performed outside of seasonal nesting windows.
  - Qualified Refuge staff will train project personnel on safe operation of heavy machinery and vehicles during construction to avoid unintentional crushing of nest(s), egg(s), gosling(s), and/or adult(s).
  - Any active nest should be avoided with a suitable buffer of no less than 75 feet with high-visibility temporary flagging until the nest is no longer active.
- All construction and contractor personnel will comply with permit requirements and the project’s ESA consultation.
  - Construction personnel and contractors are not to approach or feed birds and other wildlife.
  - Additional mitigation measures will be updated following completion of the project’s ESA Section 7 Consultation.
- Construction will be scheduled outside of breeding season, to the maximum extent practicable.
- Hawaiian seabirds
  - To avoid and minimize potential project impacts to seabirds:
    - Avoid nighttime construction during the seabird fledging period, September 15 through December 15.
  - Surveys will be conducted throughout the project area during the Hawaiian seabird breeding season (March through November) to determine the presence and location of nesting areas.
  - Additional mitigation measures will be updated following completion of the project’s ESA Section 7 Consultation.
- Nēnē
  - To avoid and minimize potential project impacts to nēnē:
    - Do not approach, feed, or disturb nēnē.
    - If nēnē are observed loafing or foraging within the project area during the peak breeding season (October through March), have a biologist familiar with nēnē nesting behavior survey for nests in and around the



project area prior to the resumption of any work. Repeat surveys after any subsequent delay of work of 3 or more days (during which the birds may attempt to nest).

- Additional mitigation measures will be updated following completion of the project's ESA Section 7 Consultation
- In areas where nēnē are known to be present, post and implement reduced speed limits, and inform project personnel and contractors about the presence of endangered species on-site.
  - Project personnel will immediately cease all work and contact the Service for further guidance if a nest is discovered within a radius of 75 ft (22.86 m) of proposed project, or a previously undiscovered nest is found within the 75 ft (22.86 m) radius after work begins.
    - Based on observations and data from Refuge staff, a 75 ft (22.86 m) buffer was agreed upon for nēnē in the proposed action area based on the frequent human and vehicle interactions the nēnē experience in this area.
- In the event of observation or discovery of an avian injury or mortality, the Refuge Biologist will be notified by telephone and email within 24 hours. The Refuge Biologist will arrange transportation to a permitted rehabilitation facility for injured birds. Construction crews and contractors will not handle dead or injured specimens.
- Hawaiian Hoary Bat ('ōpe'ape'a)
  - To avoid and minimize impacts to the endangered Hawaiian hoary bat:
    - Do not disturb, remove, or trim woody plants greater than 15 feet tall during the bat birthing and pup rearing season (June 1 through September 15).
    - Do not use barbed wire for fencing.

### **Waste Management**

- All trash bins will be properly secured with locked or secured lids that cannot blow open. Ropes, nets, and other materials that could blow away be stored securely, preventing trash from entering nearby waters.
- All materials that form closed loops (e.g., plastic packing bands, rubber bands, and all other loops) will be cut prior to disposal to prevent entanglement hazards.

### **Storm water Run-off Prevention**

- Projects impacting more than one acre will have a Storm Water Pollution Prevention Plan (SWPPP) on file with the State.
- Staking of sensitive areas will be performed prior to construction to identify areas to be avoided, including wetlands without planned development.

- A Stabilized Construction Entrance (a temporary stone-stabilized pad located at points of vehicular ingress and egress on a construction site) will be used to mitigate sedimentation and storm water pollution.
- Silt fences consisting of a geotextile fabric stretched across and attached to supporting posts may be installed to provide a temporary barrier to sediment and reducing the runoff velocities of sheet flow from non-vegetated surfaces.
- Weed-free straw may be utilized to intercept sheet flow and detain small amounts of sediment from disturbed areas.
- A vegetative cover will be established on disturbed areas by seeding per Refuge specifications.

### **Visitor Use and Experience**

- Refuge closures during project construction will be communicated to the public via the Refuge's standard public media platforms.

### **Cultural and Historic Resources**

- If any prehistoric, historic, or other cultural resources are encountered during ground disturbing activity, the ground disturbing activity is to stop immediately and the Refuge Manager is to be notified. The Refuge Manager will contact an archaeologist or paleontologist to review the finding(s) and determine appropriate action to preserve resources. Collecting and removing any prehistoric, historic, or cultural artifact is strictly prohibited.
- If iwi (skeletal human remains) are encountered, the activity will be immediately stopped and the Refuge manager, police, and Hawai'i Department of Land and Natural Resources will be contacted.

### **Hazardous Materials and Contaminants**

- Service staff, contractors, and sub-contractors will exercise every reasonable precaution to protect wildlife and habitat from pollution due to fuel, oil, lubricants, and other hazardous materials.
- All equipment will be inspected for leaks and maintenance issues (such as faulty hydraulic systems) prior to entering the Refuge.
- Plans will be in place for emergency clean-up of any spills of fuel or other hazardous materials. Spill kits and absorbance/containment systems will be readily available on site.

### **Invasive Species**

- Service staff, contractors, and sub-contractors will implement best practices, as appropriate and practicable, described in the U.S. Fish and Wildlife Service Pacific Region Policy on Minimizing the Introduction of Invasive Species by Service Activities (2016, <https://ecos.fws.gov/ServCat/DownloadFile/156813>) to prevent the colonization and spread of invasive plant and animal species.

- Construction equipment will be cleaned of dirt, plants, and foreign material prior to entering the Refuge to help prevent the spread of invasive species.
- If replanting occurs, certified weed-free products should be used when available.

### **Air Quality & Pollution**

- Vehicles and construction equipment will avoid the idling of engines and turn off motors when not in use to minimize emissions.
- In order to reduce nitrogen oxide emissions, ultra-low sulfur fuel will be used in all diesel vehicles and equipment in accordance with federal law.
- Vehicles and construction equipment will stay up to date on maintenance and repairs to maximize engine efficiency and reduce emissions.
- A construction site safety plan will be developed to include, at minimum, delineation of contractor and stakeholder storage, operation, and travel areas; site traffic patterns (with attention to potential blind spots), and safety protocols.
- Required changes to typical Refuge traffic patterns and entrances will be communicated to stakeholders in advance and clearly posted with instructional signage.
- Temporary traffic control devices may be necessary, at times, to prevent impacts to pedestrians and vehicles.

### **Summary of Timing Restrictions**

This section will be updated after ESA consultation.