DAVID Y. IGE
GOVERNOR OF HAWAII

CARTY S. CHANG
INTERIM CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DANIEL S. QUINN
INTERIM FIRST DEPUTY

W. ROY HARDY
ACTING DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

March 25, 2015

Director, Office of Environmental Quality Control
Department of Health, State of Hawai'i
235 S. Beretania Street, Room 702
Honolulu, Hawai'i 96813

Dear Director:

The Department of Land and Natural Resources, Division of Forestry and Wildlife, *Nā Ala Hele* Trail and Access Program has completed and finalized the environmental assessment including finding of no significant impact (FEA-FONSI) for the Nualolo Cliff Trail Reroute situated at TMK (4) 1-4-001:014, in the Waimea District on the island of Kauai. Please include this project in the next Environmental Notice.

DLNR received no responses on the draft environmental assessment during the 30-day public comment period. Enclosed is a completed OEQC Publication Form, two copies of the FEA-FONSI, on Adobe Acrobat PDF file of the same, and an electronic copy of the publication form in MS Word. We have also submitted the summary of the action in a text file by electronic mail to your office.

If there are any questions, please contact Dan Smith at 808-274-3437.

Sincerely,

Nelson L. Ayers
DLNR, Division of Forestry and Wildlife

C: Dan Smith, DOFAW Kauai District

Enclosure

AGENCY ACTIONS
SECTION 343-5(B), HRS
PUBLICATION FORM (FEBRUARY 2013 REVISION)

Nualolo Cliff Trail Reroute
Island: **Kauai**
District: **Waimea**
TMK: **(4) 1-4-001:014**
Permits:
Proposing/Determination Agency:
Department of Land and Natural Resources
Division of Forestry and Wildlife
3060 Eiwa St., Room 306
Lihue, HI 96766-1875
Dan Smith, (808) 274-3433
Accepting Authority:
(for EIS submittals only)
Consultant:
Garcia and Associates
146 Hekili St. Suite 101
Kailua, HI 96734
Huang-Chi Kuo, (808) 262-1387
Status (check one only):

__DEA-AFNSI	Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.
_X_ FEA-FONSI	Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__FEA-EISPN	Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.
__Act 172-12 EISPN	Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov). NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.
__DEIS	The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.
__FEIS	The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__ Section 11-200-23 Determination	The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.
__Section 11-200-27	

Determination	The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.
__Withdrawal (explain)	

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page)**:**

Nualolo Cliff Trail is located on northwestern Kaua‘i within Nā Pali Kona Forest Reserve and is managed by the Division of Forestry and Wildlife’s Nā Ala Hele Trail and Access Program. A 300-foot long section of the Nualolo Cliff Trail was damaged from wear and tear and the hiking tread is worn out to the point that crossing it is unsafe. Weather conditions and unstable soils continuously create small slides making repair of the trail impractical. The trail has been closed since 9 May 2013 due to the unsafe conditions. The Nualolo Cliff Trail Reroute project proposes to bypass the damaged section by constructing and maintaining a 0.3-mile long wildland trail with 2 to 3 foot wide tread. Currently, Nualolo Cliff trail connects with Nualolo Trail between the 3-mile and 3¼-mile markers. The proposed reroute of Nualolo Cliff Trail will connect with Nualolo Trail at approximately the 2.5 mile marker. Construction of the new segment of Nualolo Cliff Trail is the primary action considered in the environmental assessment and involves vegetation clearing, trail construction, and installation of trail signs. Trail design and construction will follow the guidelines of the *Nā Ala Hele Program Plan*.

Final Environmental Assessment

Nualolo Cliff Trail Reroute
Waimea District, Island of Kaua‘i, Hawai‘i

TMK (4) 1-4-001:014

Prepared For:

State of Hawai‘i
Department of Land and Natural Resources
Division of Forestry and Wildlife
1151 Punchbowl St., Room 325
Honolulu, Hawai‘i 96813

Prepared By:

Garcia and Associates
146 Hekili St., Suite 101
Kailua, Hawai‘i 96734

GANDA Report No. 2303-2

GANDA

19 March 2015

PROJECT SUMMARY

Project Name: Nualolo Cliff Trail Reroute

Proposing Agency: Division of Forestry and Wildlife
Department of Land and Natural Resources
State of Hawai‘i

Approving Agency: Department of Land and Natural Resources

Project Location: Waimea District,
Island of Kaua‘i, Hawai‘i
TMK (4) 1-4-001:014

Property Owner: State of Hawai‘i

Land Use Classification: Conservation District Protective Subzone
State of Hawai‘i

Agency Determination: Finding of No Significant Impact (FONSI)

Agencies and Organizations Consulted:

Federal Agency:
U.S. Fish and Wildlife Service
Natural Resource Conservation Service
Pacific Missile Range Facility, Barking Sands

State Agency:
Department of Defense Hawaii Air National Guard
Department of Hawaiian Home Lands
Department of Health
DLNR, Division of Aquatic Resources
DLNR, Division of Conservation and Resources Enforcement
DLNR, Division of State Parks
DLNR, Land Division
DLNR, Office of Conservation and Coastal Lands
DLNR, State Historic Preservation Division
Office of Hawaiian Affairs

County of Kaua‘i:
Department of Water
East Kaua‘i Soil and Water Conservation
East Kaua‘i Water Users Cooperative
Kauai Coffee and Agricultural Business Development Board
Kaua‘i Farm Bureau
Planning Department

Organization:	A & B Properties Inc.
	Conservation Council of Hawaii
	Earth Justice Legal Defense Fund
	Environment Hawaii
	Garden Island Resource Conservation and Development, Inc.
	Gay & Robinson, Inc. c/o Hanalei Land Company
	Grove Farm Land Corp.
	Hanalei Watershed Hui
	Hawaii Audubon Society
	Hawai'i Invasive Species Committee
	Hui O Laka
	KAHEA
	Kamehameha Schools
	Kauai Hunting Association
	Kauai Public Land Trust
	Kauai Watershed Alliance c/o The Nature Conservancy
	Kokee Natural History Museum
	Kokee Resource Conservation Program
	Lihue Land Company
	McBryde Sugar Company, LTD
	National Tropical Botanical Garden
	Native Hawaiian Legal Corporation
	Sierra Club
	Waipā Foundation
	West Kauaʻi Visitor Center

Responses Received during 30-day Comment Period:

No comments were received

CONTENTS

Contents

FIGURE

TABLES

ACRONYMS AND ABBREVIATIONS

AFNSI	Anticipated Finding of No Significant Impact
amsl	above mean sea level
CDUP	Conservation District Use Permit
DEA	Draft Environmental Assessment
DLNR	Hawai‘i State Department of Land and Natural Resources
DOFAW	Hawai‘i Division of Forestry and Wildlife
EA	Environmental Assessment
EECB	Ecology, Evolution and Conservation Biology
ESA	Endangered Species Act
FEA	Final Environmental Assessment
FONSI	Finding of No Significant Impact
HAR	Hawai‘i Administrative Rules
HRS	Hawai‘i Revised Statutes
HTA	Hawai‘i Tourism Authority
m	meters
SHPD	State Historic Preservation Division
SOC	species of concern
TMK	Tax Map Key
USFWS	U.S. Fish and Wildlife Service
USGS	U.S. Geological Survey
WRCC	Western Regional Climate Center
§	Section

1.0 INTRODUCTION

This Environmental Assessment (EA) supports a proposed reroute of Nualolo Cliff Trail to bypass a section of damaged trail at Nā Pali Kona Forest Reserve in Waimea District, Island of Kauaʻi. The proposing agency for this project is the Hawaiʻi State Department of Land and Natural Resources (DLNR), Division of Forestry and Wildlife (DOFAW).

This EA identifies proposed and alternative actions of the planned reroute, describes the existing physical, biological, and socioeconomic environments, and analyzes potential environmental impacts to the existing environment resulting from the proposed action.

1.1 Purpose and Need

The State of Hawaiʻi's Statewide Trail and Access Program, also known as Nā Ala Hele, was established in 1988 in response to public concern about the loss of public access to certain trails and the threat to historic trails from development pressure. Nā Ala Hele is managed under the authority and mandates of Hawaiʻi Revised Statutes (HRS) chapter 198D and Hawaii Administrative Rules (HAR) title 13 chapter 130.

HRS §198D-2 directs the DLNR to "plan, develop, acquire land or rights for public use of land, construct, and engage in coordination activities" to implement the Nā Ala Hele System. The Department is also authorized to regulate trail and access use, to establish standards relating to signs and trail and access design, and to advise and assist other public agencies in matters relating to trails and accesses. In addition, through the various provisions of chapter 198D of HRS, Nā Ala Hele is charged with the general management of the trail and access system. Many specific goals are indicated, including preserving the integrity, condition, naturalness, and beauty of trails and accesses, limiting impacts to endangered or protected species, and protecting public safety.

Nualolo Cliff Trail is one of 34 trails on Kauaʻi managed by Nā Ala Hele. Access to the trail is via Nualolo Trail and Awaʻawapuhi Trail. Nualolo Cliff Trail starts near the 3-mile marker on Awaʻawapuhi Trail and meets Nualolo Trail between the 3-mile and 3.25-mile markers. The trail skirts the upper rim of the precipitous Nualolo Valley and facilitates a loop route from the head of Awaʻawapuhi Trail to the head of Nualolo Trail at Kōkeʻe State Park Headquarters (Figure 1).

A section of the Nualolo Cliff Trail near its western end that connects to Nualolo Trail was damaged from wear and tear and the trail tread is worn out to the point that crossing the damaged section is unsafe. Weather conditions and unstable soils continuously create small slides, making the repair of the trail impractical. The length of the damaged section is about 300 feet. The trail skirts a 1,500- to 2,000-foot drop, making it hazardous for users. The trail has been closed since May 9, 2013, because of these unsafe conditions.

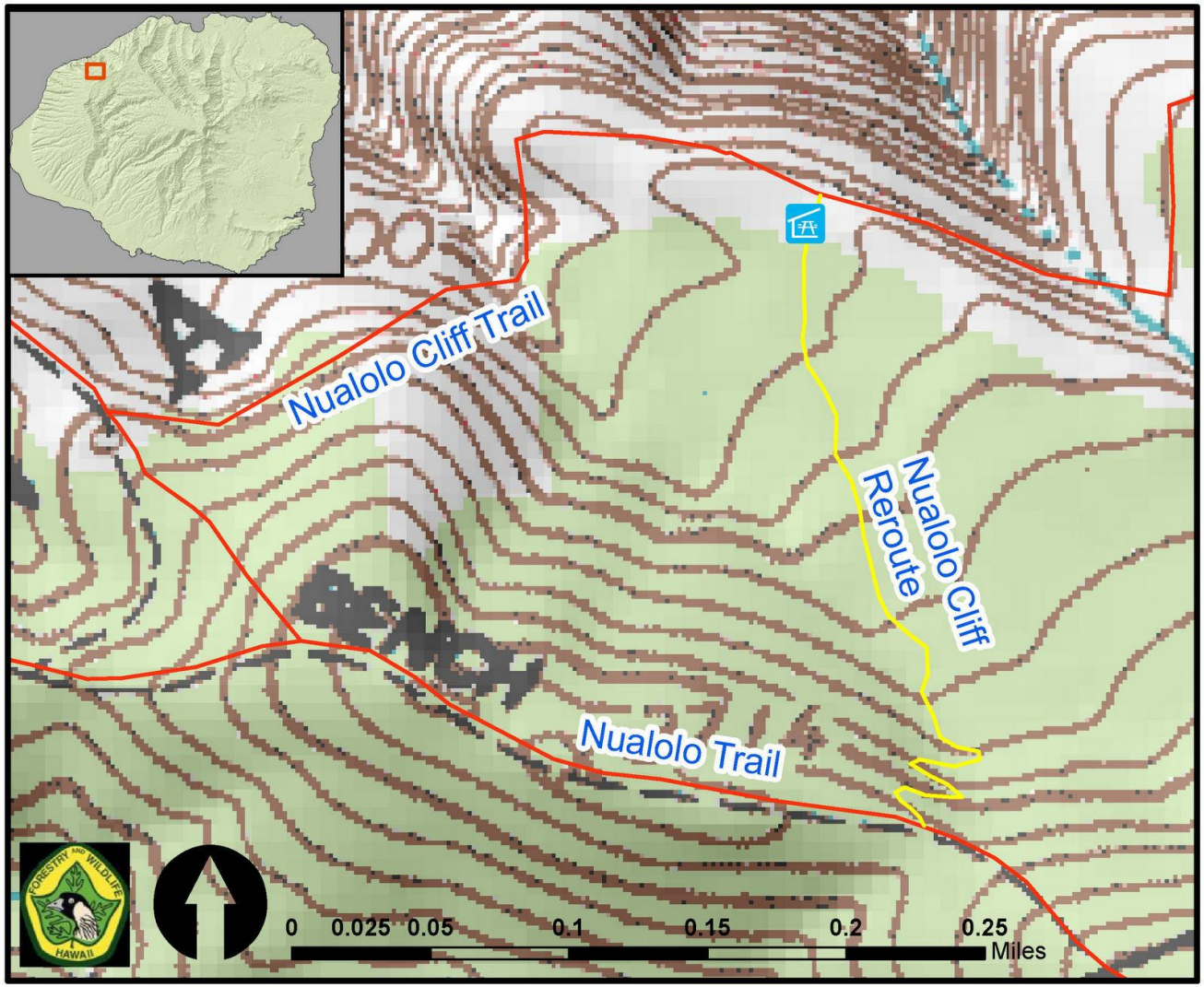

Figure 1. Project location.

Currently, Nualolo Cliff trail connects with Nualolo Trail between the 3-mile and 3¼-mile markers. The proposed reroute of Nualolo Cliff Trail project will connect with Nualolo Trail at approximately the 2.5 mile marker. The proposed reroute is on a gently-sloped ridge currently covered by degraded lowland mesic plant communities that are dominated by non-native species. The length of the proposed reroute trail is about 1,584 feet or 0.3 miles (Figure 1).

HRS §198D-2 mandates that the DLNR shall plan, develop, acquire land or rights for public use of land, construct, restore, and engage in coordination activities to implement the program. Within the DLNR, the DOFAW has been delegated responsibility for management of the program. It is because of this mandate that DOFAW is responsible for planning the Nualolo Cliff Trail reroute project.

Construction of the new segment of trail has been identified by DLNR as an action that has the potential to affect the broader environment at the area. Therefore, in accordance with the Hawai‘i Environmental Policy Act (chapter 343, HRS), this EA has been conducted.

1.2 Proposed Action

The Nualolo Cliff Trail Reroute project proposes to construct and maintain a 0.3-mile-long wildland trail with 2- to 3-foot-wide tread. Trail design and construction will follow guidelines of the *Nā Ala Hele Program Plan* (DOFAW 1991). Construction of the new segment of Nualolo Cliff Trail will be the primary action considered in the EA. Routine trail maintenance is exempted from environmental assessment and is not included in the EA. Activities associated with the project include:

Vegetation Clearing: Vegetation will be cleared from the trail corridor prior to tread construction. Trees and logs on the 2- to 3-foot-wide tread will be removed. Brush, trees, and logs within 2 feet of the tread will be cleared up to 7 to 8 feet high. The total cleared area will be about 0.25 acres, assuming a 7-foot-wide corridor. Manually operated powered and hand tools will be used to clear the vegetation. Removed vegetation will be cut into small pieces and spread on the sides of the trail to decompose naturally as mulch.

Trail Construction: Trail tread is the only construction activity considered. No access structure or facilities will be built. The total area of ground disturbance is about 0.11 acres, assuming a 3-foot-wide tread along the entire length. Trail construction will be performed by the Nā Ala Hele staff and volunteers with manual and powered tools. No heavy machinery will be used. The majority of the reroute is located on a relatively gentle slope. Switchbacks will be built on the steep parts of the trail near Nualolo Trail to minimize erosion.

Trail Signage: Signage will be installed to provide direction to trail users at both ends of the new trail segment. Signage design and installation will follow the *Nā Ala Hele Program Plan* (DOFAW 1991). The trailhead sign will include the Nā Ala Hele logo, a trail name or other identifier, and a directional arrow. Trailside identification consists of posts with information such as the trail name, length, directional arrows, the Nā Ala Hele logo, and prohibited uses or activities.

1.3 Sources of Primary Environmental Impact

Primary impacts are defined in HAR §11-200-1 as "effects which are caused by the action and occur at the same time and place." Primary impacts from the construction of the new segment of the trail may potentially result from physical disturbance during vegetation clearing, trail construction, and installation of trail signage. Potential impacts from these project actions are discussed below.

1.3.1 Vegetation Removal

Vegetation clearing will remove plants growing within the trail corridor. Removal of vegetation has the potential to adversely impact biological resources, including plants and animals that rely on the plants for food or shelter. Reduced plant cover can increase surface water runoff and soil erosion during storm events. Vegetation clearing may also alter the local microclimate by creating opened areas that increase exposure to sunlight, rain, and wind.

1.3.2 Ground Disturbance

Trail construction and the installation of signs both involve ground disturbance activities that will remove or relocate rocks and soils. These activities have the potential to destabilize the soil and change local topography. Ground disturbance may cause loss of soils, increasing the risk of erosion. Eroded soils, transported by wind and water, can potentially affect air or water quality.

1.3.3 Gas-powered Tools

Gas-powered tools, such as chainsaws, will produce minor emissions and localized noise that may have negative effects on air and ambient sound quality. The elevated noise levels, in particular, can temporarily disturb wildlife and disrupt their normal behaviors. Finally, oil and gasoline spills associated with fueling and operating power tools have the potential to negatively impact the environment.

1.4 Sources of Secondary Environmental Impact

Secondary impacts are defined in HAR §11-200-1 as "effects which are caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." The principal sources of secondary impact are the long-term effects of trail use and human traffic in the area.

1.4.1 Trampling

Trampling caused by trail use may seem negligible, but accumulated effects are evident on soils and vegetation. Trampling can compact soil and change soil structure, preventing plant colonization in frequently traveled areas. As a result, trail treads which receive the most traffic are usually void of vegetation. Trampling can select against plants that are intolerant to frequent disturbance and over time change the composition of plant communities along trails. In less traveled areas, plants that are resilient to trampling, such as grasses and herbaceous plants with a low, prostrate growth form, are usually the most abundant while tree populations decline (Cole 1981, 1995). Trampling can also change local topography by compressing or removing soils and, when combined with water, lead to problematic water retention (i.e., puddling) on the trail.

1.4.2 Invasive Species

The Project will create a trail into a natural area that has the potential to increase human traffic and subsequently increase the risk of introducing non-native plants and animals into the area. The opened area created by the trail may provide suitable habitat for invasive plants or animals that prefer disturbed areas. Large invasive animals such as pig and goats may benefit from the trail by using it as a travel corridor.

1.5 Agency Identification

The Hawai‘i State DLNR, DOFAW, is the agency assuming responsibility for this EA in accordance with chapter 343 of HRS. The primary contact is Mr. Dan Smith, Nā Ala Hele Specialist with DOFAW’s Kaua‘i Branch.

1.6 Location

The project area is located in northwestern Kaua‘i on the eastern rim of Nualolo Valley. The proposed reroute of Nualolo Cliff Trail will begin at a trail shelter at the 1.5-mile mark and connect with Nualolo trail at approximately the 2.5 mile marker. The area is classified as a Conservation District Protective Subzone and is within the Nā Pali Kona Forest Reserve (Figure 1).

1.7 Land Ownership

The property is owned by the State of Hawai‘i [TMK (4) 1-4-001:014]. The parcel was included in Nā Pali Kona Forest Reserve by a 1907 Governor’s Proclamation. It is currently managed by DLNR, DOFAW.

1.8 Funding

The project cost will be paid by the general fund allocated to Nā Ala Hele. Trail construction will be performed by Nā Ala Hele staff and volunteers; therefore, there is no added labor cost other than staff salary. Cost for operating and maintaining tools will be covered by the program’s budget.

1.9 Required Approvals

Approval from the Board of Land and Natural Resources is required for this action.

1.10 Alternatives Considered

Alternatives to the proposed action include 1) No Action and 2) Repair Damaged Trail. These alternatives are discussed as follows:

1.10.1 No Action

Under the No Action alternative, the new segment of Nualolo Cliff Trail would not be constructed. The damaged section of the trail will not be repaired. The main implication of this alternative is that Nualolo Cliff Trail will remain closed. The access and recreational values offered by the trail will not be restored. Another significant consequence of the No Action alternative is the continued disconnection between Awa‘awapuhi Trail and Nualolo Trail. The

disconnection will eliminate the option for a loop hike, which is usually preferred by recreational hikers.

The "No Action" alternative is considered undesirable for this project.

1.10.2 Alternative Action: Repair Damaged Trail

In comparison to constructing a new segment of trail, repairing the damaged trail has the advantage of having a smaller footprint on the landscape. Repair of the damaged section of trail will involved cutting into the unstable backslope of the trail. The new cuts will likely create a steeper backslope, leading to increased erosion and high potential for future crumble and slide. This approach, when tried previously by Nā Ala Hele, has been found to provide only a short-term fix due to the erosion-prone soils of the project area.

The "Repair Damaged Trail" alternative is considered undesirable for this project.

A summary of the alternatives considered and their associated advantages and disadvantages are provided in Table 1.

Table 1. Alternatives Considered and Their Associated Advantages/Disadvantages

Alternatives	Actions	Advantages	Disadvantages
Proposed Action	1. Reroute trail to bypass a 0.5-mile section of Nualolo Cliff Trail 2. Connect Nualolo Trail at 2.5-mile mark	• Restore trail function to connect Awa‘awapuhi Trail and Nualolo Trail • Rest the damaged section of trail for recovery • Eliminate potential cost to repair and maintain the section of trail that is prone to future damage	• Cost to construct the new segment of trail • Additional footprint to the area • Affords less of a view than original routing
No Action	1. No reroute or repair 2. Trail remains closed	• No cost to construct and maintain the new segment of trail • No additional trail footprint on landscape	• The trail will remain closed due to safety concerns • Connection between Awa‘awapuhi and Nualolo Trail is eliminated
Repair	1. Repair damaged trail (ca. 300 feet)	• Smaller footprint than the proposed action	• Requires more destructive construction method (i.e., cutting into steep backslope) • Hazard of future crumbling and slides due to steepness and soil characteristics • Higher long-term maintenance and repair cost

2.0 AFFECTED ENVIRONMENT

This section presents an overview of baseline physical, biological, cultural, and socio-economic conditions in the project area. These baseline conditions constitute the "affected environment" that may be impacted by the proposed action.

2.1 Physical Environment

The physical environment of the project area is an amalgam of a diverse set of characteristics ranging from geology and soils to air and viewshed quality. Overall, the physical environment for the proposed reroute consists of a 0.3-mile-long trail in a wildness area between 2,280 and 2,640 feet above mean sea level (amsl). The area of potential effect covers about 0.25 acres.

2.1.1 Geology and Topography

Kauaʻi is the oldest among the main islands and was formed primarily by a single shield volcano. The eruptions that formed the island are estimated to have begun in the late Tertiary and finished before the end of the Pliocene, about 2 to 4 million years ago (MacDonald et al. 1960). The rocks of the major Kauaʻi shield volcano are classified as the Waimea Canyon volcanic series. The Nā Pali cliffs were formed by the weathering and erosion of the thin flows that accumulated on the flanks of the shield, known as the Napali formation. The Napali formation consists of tholeiitic basalt, olivine basalt, and oceanite pāhoehoe. Near the head of Nualolo Valley masses of breccias can be found, which were likely formed by the filling of a pit crater (MacDonald et al. 1983).

2.1.2 Climate

Climate in the Hawaiian Islands is largely affected by the prevailing trade winds, terrain, and seasonal storm systems. **S**even climatic subregions are recognized in Hawaiʻi, defined chiefly by elevation and by location with reference to windward or leeward exposure. The project area is in the subregion of "lower mountain slopes on leeward side." The climate there features greater rainfall than on the adjacent leeward lowlands (less than 2,000 feet amsl), but distinctly less than at the same level on the windward side. Temperature extremes are greater than on the rainy slopes of the windward sides of the mountains and it is significantly cloudier (Juvik et al. 1998; WRCC 2014). The mean annual rainfall is about 47 inches (1,190 mm), concentrated in the wet season between October and April (Giambelluca et al. 2013). The temperature as recorded from the nearby Kanalohuluhulu station (at 3,600 feet amsl) averages between 46.5 to 62.5 degrees Fahrenheit in January and 55.6 to 71.0 degrees Fahrenheit in August (WRCC 2014). The project area is about 1,000 feet lower in elevation, and thus should have a higher average temperature.

2.1.3 Hydrology

The project area is within the headwater of the Nualolo watershed. The proposed reroute will cross a ravine that drains to the northwest and eventually into Nualolo Valley. Surface water may be present during periods of high rainfall. There is probably very little high-level ground water available because dikes and perching beds are scarce or absent in the general area. Basalt groundwater has not been explored but is likely present (MacDonald et al. 1960).

2.1.4 Soils

Soils on the Island of Kauaʻi have been exposed for a longer period of time than most major islands. Soils in the project area are in the "Rough Broken Land-Mahana-Kōkeʻe" association, which includes deep, very steep, rough broken land and deep, moderately sloping to very steep, well-drained soils on uplands that have a medium-textured to fine-textured silty soil. The soils are developed in material weathered from volcanic ash and basic igneous rock (Foote et al. 1972).

Soil survey maps for the project area show two soil types within the "Rough Broken Land-Mahana-Kōkeʻe" association (Soil Survey Staff 2014). These include Rough Broken Land and Badland-Mahana complex and are further described below.

A majority of the project area is on Rough Broken Land, which consists of very steep land broken by numerous intermittent drainage channels. In most places it is not stony. It occurs in gulches and on mountainsides on all of the major Hawaiian islands except Oahu, with slopes ranging from 40 to 70 percent. Runoff is rapid and geologic erosion is active. Soils are 20 to over 60 inches deep over soft, weathered rock. In most places, some weathered rock fragments are mixed with the soil material. Small areas of rock outcrop, stones, and soil slips are common.

Badland-Mahana complex soils are found on the steep slope next to the cliffs. Slopes are steep to very steep. Most of the badland part of this complex is barren. Badland makes up about 60 percent of the acreage; Mahana silt loam, on 20 to 35 percent slopes, makes up about 40 percent. Badlands consist of steep or very steep, mostly stony, barren land. The soil-forming material is generally soft or hard saprolite. Runoff is rapid and the erosion hazard is severe in the Mahana silt loam portion of the complex.

2.1.5 Air Quality

Air quality in the project area is very good. Typical anthropogenic sources of air pollutants, such as automobile emissions, are non-existent in the project area. The nearest paved road is about 2 miles away at the Kōkeʻe State Park.

2.1.6 Noise Levels

Noise is defined as any unwanted sound, typically generated as a by-product of other activities. Acoustically, it may also be understood as an unwanted perturbation of a desired signal, or, alternatively, a meaningless sound of greater than usual volume. Due to its remote location, the project area generally experiences very low sound levels. Ambient sound is dominated by wind, occasionally punctuated by animal calls. These natural environmental sounds are generally not considered to be unwanted or undesirable. Sounds associated with human activities, especially helicopter and firearm discharge during hunting season, are the main source of noise.

2.1.7 Hazardous Substances

The project area is in a remote forest reserve that has no commercial or residential development and a low level of human use. Hazardous substances are unlikely to occur in the project area.

2.1.8 Natural Hazards

Kauaʻi is quite distant from Hawaii's active volcanic areas and therefore has low risk of volcanic or seismic hazard. The Seismic Hazard Map of Hawaiʻi shows a low risk in western Kauaʻi, with a 2 percent in 50 years probability of exceeding 0.08 to 0.1 gravity in peak ground acceleration (USGS 2014).

The project area is located on uplands and is not at risk of tsunami or flooding. Periodic storms, however, can bring strong winds and heavy rainfall that have the potential to cause destruction to the vegetation and cause soil erosion. Four major hurricanes have affected Kauaʻi since 1950, including the 1992 Hurricane Iniki, which caused 2.4 billion dollars in damage statewide (Juvik et al. 1998).

2.2 Biological Environment

2.2.1 Flora

A botanical survey was conducted by DOFAW botanist A.M. Williams on August 14, 2014, to identify any significant botanical resources and to compile a list of species occurring in the project area. A roughly 50-foot corridor was surveyed along the proposed trail reroute to ensure that any rare species that occur in the area would be recorded and could be avoided during future trail clearing/construction activities.

The survey identified 56 vascular plant taxa, including 17 ferns and fern allies, 10 monocots, and 29 dicots. The majority (38 species or 68 percent) are native species. A checklist with an indication on each species' scientific and common name, nativity, and conservation status is provided in Table 2. The following sections discuss the botanical resources in the project area in greater detail.

2.2.1.1 Vegetation

Plant communities along the proposed trail reroute are as follows: Starting from the Nualolo Cliffs Trail, the reroute begins in a bush beardgrass (*Schizachyrium condensatum*) dry grassland. Heading towards Nualolo Trail, vegetation abruptly transitions into a guava (*Psidium cattleianum*) forest. Some native understory plants and occasional native trees persist in openings in the guava forest. As the trail winds up the small gulch, there is a predominance of lantana (*Lantana camara*) in the more open gulch bottom. Gradually, the guava forest gives way to a diverse mesic forest as the reroute approaches Nualolo Trail. The diverse mesic forest accounts for the majority of the species observed and listed in Table 2.

Table 2. Checklist of Vascular Plants of the Project Area

Family	Taxon Name	Common Name	Origin	Status
Pteridophytes				
Athyriaceae	*Deparia petersenii* (Kunze) M. Kato	Petersen's spleenwort	Naturalized	
Blechnaceae	*Blechnum appendiculatum* Willd.	hammock fern, blechnum	Naturalized	
Blechnaceae	*Doodia kunthiana* Gaudich.	*ʻōkupukupu, Pāmoho*	Endemic	
Dennstaedtiaceae	*Microlepia strigosa* var. *strigosa*	*palapalai*	Indigenous	
Dicksoniaceae	*Cibotium glaucum* (Sm.) Hook. & Arn.	*hāpuʻu*	Endemic	
Dryopteridaceae	*Cyrtomium caryotideum* (Wall.) C. Presl	*kāʻapeʻape*	Indigenous	
Dryopteridaceae	*Dryopteris glabra* var. *glabra*	*kīlau, hohiu*	Endemic	
Dryopteridaceae	*Tectaria gaudichaudii* (Mett.) Maxon	*ʻiwaʻiwa lau nui*	Endemic	
Gleicheniaceae	*Dicranopteris linearis* (Burm. f.) Underw.	*ʻuluhe*	Indigenous	
Hymenophyllaceae	*Crepidomanes draytonianum* (Brack.) Ebihara & K. Iwats.		Endemic	
Lomariopsidaceae	*Nephrolepis exaltata* (L.) Schott	*kupukupu*, sword fern	Indigenous	
Polypodiaceae	*Phlebodium aureum* (L.) J. Sm.	rabbit's-foot fern, golden polypody	Naturalized	
Pteridaceae	*Adiantum hispidulum* Sw.	five-fingered maidenhair fern	Naturalized	
Pteridaceae	*Pteris hillebrandii* Copel.	brake fern	Endemic	
Thelypteridaceae	*Cyclosorus dentatus* (Forssk.) Ching	downy woodfern	Naturalized	
Thelypteridaceae	*Cyclosorus parasiticus* (L.) Farw.	parasitic maiden fern	Naturalized	
Thelypteridaceae	*Cyclosorus x_intermedius* W.H. Shieh & J.L. Tsai	hybrid fern	Endemic	
Monocotyledons				
Asparagaceae	*Chrysodracon aurea* (H. Mann) P.-L. Lu & Morden	*halapepe*	Endemic	
Asparagaceae	*Cordyline fruticosa* (L.) A. Chev.	*ki*, ti leaf	Polynesian	
Cyperaceae	*Carex wahuensis* subsp. *wahuensis*	*ʻuki*	Endemic	
Cyperaceae	*Cyperus meyenianus* Kunth	Meyen's flat sedge	Naturalized	
Cyperaceae	*Gahnia beecheyi* H. Mann	*ʻuki*	Endemic	
Liliaceae	*Dianella sandwicensis* Hook. & Arn.	*ʻukiʻuki*	Indigenous	
Pandanaceae	*Freycinetia arborea* Gaudich.	*ʻieʻie*	Indigenous	
Poaceae	*Schizachyrium condensatum* (Kunth) Nees	bush beardgrass	Naturalized	Invasive
Poaceae	*Sporobolus indicus* (L.) R. Br.	smut grass	Naturalized	
Smilacaceae	*Smilax melastomifolia* Sm.	*hoi kuahiwi, Piʻoi*	Endemic	

Table 2. (continued)

Family	Taxon Name	Common Name	Origin	Status
Dicotyledons				
Apocynaceae	*Alyxia stellata* (J.R. Forst. & G. Forst.) Roem. & Schult.	*maile*	Indigenous	
Araliaceae	*Polyscias kavaiensis* (H.Mann) Lowry & G.M. Plunkett	*ʻohe ʻohe*	Endemic	
Asteraceae	*Ageratina riparia* (Regel) R.M. King & H. Rob.	mistflower, spreading snakeroot	Naturalized	Noxious weed
Asteraceae	*Ageratum conyzoide*s L.	billygoat weed	Naturalized	
Celastraceae	*Perrottetia sandwicensis* A. Gray	*olomea*	Endemic	
Elaeocarpaceae	*Elaeocarpus bifidus* Hook. & Arn.	*kalia*	Endemic	
Euphorbiaceae	*Aleurites moluccana* (L.) Willd.	*kukui*	Polynesian	
Euphorbiaceae	*Antidesma platyphyllum* H. Mann	*hame*	Endemic	
Fabaceae	*Acacia koa* A. Gray	*koa*	Endemic	
Flacourtiaceae	*Xylosma hawaiiense* Seem.	*maua*	Endemic	
Lauraceae	*Cryptocarya mannii* Hillebr.	*hōlio*	Endemic	SOC
Myrtaceae	*Metrosideros polymorpha* var. *glaberrima* (H. Lév.) H. St. John	*ʻōhiʻa lehua*	Endemic	
Myrtaceae	*Psidium cattleianum* Sabine	strawberry guava	Naturalized	Invasive
Myrtaceae	*Psidium guajava* L.	common guava	Naturalized	
Myrtaceae	*Syzygium sandwicense* (A. Gray) Müll. Berol.	*ʻōhiʻa hā*	Endemic	
Nyctaginaceae	*Pisonia sandwicensis* Hillebr.	*pāpala kēpau, aulu*	Endemic	
Oleaceae	*Nestegis sandwicensis* (A. Gray) O. Deg., I. Deg. & L.A.S. Johnson	*olopua*	Endemic	
Plantaginaceae	*Plantago lanceolata* L.	narrowleaf plantain	Naturalized	
Rhamnaceae	*Alphitonia ponderosa* Hillebr.	*kauila*	Endemic	SOC
Rosaceae	*Rubus rosifolius* Sm.	thimbleberry	Naturalized	
Rubiaceae	*Bobea brevipes* A. Gray	*ʻahakea lau liʻi*	Endemic	
Rubiaceae	*Coprosma waimeae* Wawra	*pilo, ʻōlena*	Endemic	
Rubiaceae	*Kadua affinis* DC.	*manono*	Endemic	
Rubiaceae	*Psychotria hexandra* subsp. *hexandra*	*kōpiko*	Endemic	
Rubiaceae	*Psychotria mariniana* (Cham. & Schltdl.) Fosberg	*kōpiko*	Endemic	
Sapindaceae	*Dodonaea viscosa* Jacq.	*ʻāʻaliʻi*	Indigenous	
Sapotaceae	*Planchonella sandwicensis* (A. Gray) Pierre	*ʻālaʻa*	Endemic	

Table 2. (continued)

Family	Taxon Name	Common Name	Origin	Status
Verbenaceae	*Lantana camara* L.	lantana	Naturalized	Invasive
Violaceae	*Viola chamissoniana* subsp. *tracheliifolia* (Ging.) W.L. Wagner, D.R. Herbst & Sohmer	*pāmakani*	Endemic	

Invasive species such as beardgrass, lantana, and strawberry guava currently dominate the majority of the project area. The area was classified as Badly Degraded Areas (V-4) according to DOFAW's 2001 Management Guidelines. V-4 units are areas that are severely degraded or highly altered from their natural state (DOFAW 2009).

2.2.1.2 Threatened and Endangered Plants

No threatened or endangered plants were found on the project area during the botanical survey. The project area, however, is on federally designated critical habitat of 28 threatened or endangered plant taxa (Table 3) (USFWS 2003, 2010).

Two Species of Concern (SOC), *hōlio* (*Cryptocarya mannii*) and *kauila* (*Alphitonia ponderosa*), were identified during the botanical survey. Species of Concern is an informal term referring to rare species that are declining or appear to be in need of conservation, but do not receive legal protection by federal or state law. These two trees were observed in low numbers (less than five) in the upper sections of the reroute close to Nualolo Trail.

2.2.1.3 Invasive Plants

Several invasive plants were documented during the botanical survey. These include bush beardgrass, strawberry guava, lantana, and mistflower (*Ageratina riparia*). Mistflower is listed as a noxious weed by the State of Hawai‘i Department of Agriculture.

2.2.2 Fauna

No recent wildlife surveys have been conducted in the project area. The inventory of wildlife in Nā Pali Kona Forest Reserve is the most relevant information available (DOFAW 2009). These data, however, cover a much larger area and habitat diversity, including the upland areas of Waimea Canyon and Alakai Swamp, which support rich native ecosystems. In contrast, the majority of the project area consists of degraded habitats dominated by invasive vegetation. Threatened and endangered wildlife in the Nā Pali Kona Forest Reserve include one mammal, 12 birds, and three invertebrates (Table 4). The majority of these species are either extirpated or limited to montane mesic and montane wet ecosystems and are unlikely to occur in the project area.

Table 3. Threatened or Endangered Plants with Designated Critical Habitat in the Project Area

Scientific name	Common name	Status
Canavalia napaliensis	*ʻawikiwiki*	Endangered
Chamaesyce eleanoriae	*ʻakoko*	Endangered
Chamaesyce remyi var. *remyi*	*ʻakoko*	Endangered
Charpentiera densiflora	*papala*	Endangered
Ctenitis squamigera	*pauoa*	Endangered
Cyperus pennatiformis	none known	Endangered
Diellia pallida	none known	Endangered
Delissea rhytidosperma	none known	Endangered
Delissea undulata	none known	Endangered
Doryopteris angelica	none known	Endangered
Dubautia kenwoodii	*naʻenaʻe*	Endangered
Dubautia latifolia	*naʻenaʻe*	Endangered
Gouania meyenii	none known	Endangered
Isodendrion laurifolium	*aupaka*	Endangered
Kokia kauaiensis	*kokiʻo*	Endangered
Labordia helleri	*kamakahala*	Endangered
Melanthera fauriei	*nehe*	Endangered
Melicope knudsenii	*alani*	Endangered
Munroidendron racemosum	none known	Endangered
Peucedanum sandwicense	*makou*	Threatened
Pittosporum napaliense	*hoʻawa*	Endangered
Platydesma rostrata	*pilo kea lau liʻi*	Endangered
Poa mannii	Mann's bluegrass	Endangered
Poa siphonoglossa	none known	Endangered
Polyscia bisattenuata	none known	Endangered
Psychotria hobdyi	*kopiko*	Endangered
Schiedea kauaiensis	none known	Endangered
Solanum sandwicense	*ʻaiakeakua, popolo*	Endangered

Table 4. Threatened or Endangered Fauna of the Nā Pali Kona Forest Reserve

Scientific name	Common name	Status
Mammal		
Lasiurus cinereus semotus	*ʻōpeʻapeʻa*	Endangered
Birds		
Anas wyvilliana	*koloa*, Hawaiian duck	Endangered
Branta sandvicensis	*nēnē*, Hawaiian goose	Endangered
Buteo solitarius	*ʻio*, Hawaiian hawk	Endangered
*Hemignathus lucidus hanapepe**	Kauaʻi *nukupuʻu*	Endangered
Loxops caeruleirostris	*ʻakekeʻe*	Endangered
*Moho braccatus**	*ʻoʻoʻaʻa*, Kauaʻi *ʻoʻo*	Endangered
*Myadestes myadestinus**	*kamaʻo*, large Kauaʻi thrush	Endangered
Myadestes palmeri	*puaiohi*, small Kauaʻi thrush	Endangered
Oreomystis bairdi	*ʻakikiki*	Endangered
*Psittirostra psittacea**	*ʻoʻu*	Endangered
Pterodroma sandwichensis	*ʻuaʻu*, Hawaiian dark-rumped petrel	Endangered
Puffinus auricularis newelli	*ʻaʻo*, Newell's Townsend's shearwater	Threatened
Invertebrates		
Drosophila musaphilia	picture-wing fly	Endangered
Drosophila sharpi	picture-wing fly	Endangered
*Megalagrion pacificum***	Pacific megalagrion damselfly	Endangered

Data Source: DOFAW 2009 *Nā Pali Kona Forest Reserve Management Plan*

* Historical record, presumed extinct

** Presumed extirpated on Kauaʻi

2.2.2.1 Mammals

Hawaiian hoary bat, or *ʻōpeʻapeʻa* (*Lasiurus cinereus semotus*), is the only land mammal native to Hawaiʻi and is listed as endangered under ESA. The Hawaiian hoary bat is often observed in the general area and can potentially use the habit for foraging and roosting. Introduced mammals in the forest reserve include mice (*Mus musculus*), rats (*Ratus* spp.), feral pigs (*Sus scrofa*), goats (*Capra aegagrus hircus*), black-tailed deer (*Odocoileus hemionus columbianus*), cats (*Felix catus*) and dogs (*Canis familiaris*).

2.2.2.2 Avifauna

Although no avifauna surveys were conducted in the project area for the proposed action, the *Nā Pali Kona Forest Reserve Management Plan* (DOFAW 2009) lists threatened and endangered

birds that are known to be, or have once been, present in the Nā Pali Kona Forest Reserve. Four native forest birds are only known from historic records and presumed extinct. The three extant endangered forest birds, *ʻakikiki*, *ʻakekeke*, and *puaiohi*, are limited to high elevation in Alakai Swamp and not likely to occur in the project area.

The endangered Hawaiian duck, or *koloa* (*Anas wyvilliana*), is a water bird that prefers surface water environment and associated wetlands. The Project area doesn't provide suitable habitat for the Hawaiian duck.

The endangered Hawaiian goose, or *nēnē* (*Branta sandvicensis*), can use a wide range of habitat including shrubland, grassland, coastal dunes, lava plains, and related anthropogenic habitats such as pasture and golf courses from sea level to as much as 8,000 feet. The majority of the project area is forested area that does not provide suitable habitat for *nēnē*. The invasive grassland in the project area is dominated by bush beardgrass, which is too dense and tall to be suitable habitat.

The endangered Hawaiian hawk, or *ʻio* (*Buteo solitaries*), is a wide-ranging bird of prey. It is extremely rare on Kauaʻi with only a handful confirmed sightings. Nesting is only known to occur on the Island of Hawaiʻi (Pyle and Pyle 2009).

Several seabirds, including federally listed endangered *ʻuaʻu* (Hawaiian petrel, *Pterodroma sandwichensis*), threatened *ʻaʻo* (Newell's Townsend's shearwater, *Puffinus auricularis newelli*), , and a candidate species for listing,*ʻakēʻakē* (band-rumped storm-petrel, *Oceanodroma castro*), are known to nest near the *pali* at Nuʻalolo and Awaʻawapuhi (DOFAW 2009). The project area, however, doesn't provide suitable nesting habitat for these seabirds.

A variety of introduced birds are known to inhabit the Nā Pali Kona Forest Reserve. These include common myna (*Acridotheres tristis*), Erckel's francolin (*Francolinus erckelii*), feral fowl (*Gallus gallus*), house finch (*Carpodacus mexicanus*), hwamei (*Garrulax canorus*), Japanese bush-warbler (*Cettia diphone*), Japanese white-eye (*Zosterops japonicus*), northern cardinal (*Cardinalis cardinalis*), nutmeg mannikin (*Lonchura punctulata*), ring-necked pheasant (*Phasianus colchicus*), red-crested cardinal (*Paroaria coronata*), spotted dove (*Streptopelia chinensis*), white-rumped shama (*Copsychus malabaricus*), and zebra dove (*Geopelia striata*).

2.2.2.3 Herpetofauna

No site-specific information is available for herpetofauna in the project area. It likely contains gecko, skink, and amphibian species that were introduced either by Polynesian settlers or after western contact. None of these species are legally protected.

2.2.2.4 Invertebrates

Three federally listed endangered invertebrates were known to occur in Nā Pali Kona Forest Reserve. These include Pacific Hawaiian damselfly (*Megalagrion pacificum*) and two Hawaiian picture-wing flies (*Drosophila musaphilia* and *Drosophila sharpi*) (DOFAW 2009; Table 3). Pacific Hawaiian damselfly is presumed extirpated on Kauaʻi. *Drosophila musaphilia* and *Drosophila sharpi* occur in montane mesic/wet ecosystems and are unlikely to be found in the project area. Introduced invertebrates that are considered pests in the area include mosquitoes, *koa* seed predator insects, and slugs, to name a few (DOFAW 2009).

2.3 Socio-economic Environment

2.3.1 Population

The project area is in an undeveloped wilderness area. The population within the project area is currently zero. The nearest residence is at Kōkeʻe State Park, which is accessed via a 2.5-mile wildland trail, and has a population of six according to 2010 census data. In contrast, an estimated 303,900 people visited Kōkeʻe State Park in 2007, and 263,400 (87 percent) were out-of-state visitors (HTA 2007). Users of the Nualolo Cliff Trail include hikers, hunters, gatherers, researchers, conservationists, and land managers. Intensity of use is relatively light in comparison to other more accessible trails in the area.

2.3.2 Existing Land Use

Land use in Hawaiʻi is regulated by chapter 205 of HRS. Under this law, all state land is classified into one of four land use districts: urban, agricultural, rural, and conservation. The conservation district lands are further divided into five subzones based on environmental sensitivity and intended use. The project area is in Conservation District, Protective Subzone. Currently, land use in the project area is controlled by DOFAW and managed as part of the Nā Pali Kona Forest Reserve and as a public hunting area.

According to DLNR policy, "Forest Reserves are multi-use land areas that encompass and incorporate a variety of public uses and benefits and include lands set aside for watershed protection, forest products, forest recreation, protection of native plants, and maintenance of fish and wildlife habitat." Each forest reserve within the Forest Reserves System has differing management and use goals associated with it, depending on the nature of the resources found within the reserve. Access to the project area is currently restricted to off-trail hiking. Conservation, hunting, and gathering of forest products are the few land use activities that are permitted to occur in the project area. The following sections describe these land uses. The proposed reroute is expected to improve accessibility to the project area as well as the rest of Nualolo Cliff Trail, and would support other land uses, such as recreation, education, and ecotourism.

2.3.2.1 Conservation

The project area supports a lowland mesic ecosystem and was designated as "critical habitat" for 28 federally listed endangered plants. Although the ecosystem has undergone significant historical transformation and is now dominated by invasive spaces, a significant number of native plants still persist and provide potential habitat for recovery of the listed species.

2.3.2.2 Hunting

The project area is within Unit H of Kauaʻi's public hunting area, and game mammal and game bird hunting is permitted. Game mammals hunted in the area include feral pigs, feral goats, and black-tailed deer. Game birds hunted include ring-necked pheasant, Erckel's francolin, black francolin (*Francolinus francolinus*), chukar (*Alectoris graeca*), spotted dove, and zebra or barred dove. Hunting is regulated through permitting, bag limits, seasonal restrictions, and hunting methods. Regulations follow chapters 13-122 and 13-123, HAR and DLNR's periodic public announcements.

2.3.3 Recreation

The project area currently offers little recreational value due to its remoteness and lack of access. Hunting is likely the only recreational activity that is performed regularly in the project area. The Project will reopen Nualolo Cliff Trail, which offers recreational opportunities for hiking and ecotourism.

2.3.4 Scenic and Visual Resources

The scenic and visual landscape of the project area is mostly limited to where the proposed reroute connects to the Nualolo Cliff Trail. This section of the Nualolo Cliff Trail offers a scenic view into Nualolo Valley and along Nā Pali Coast, which is the main attraction of Nualolo Cliff Trail. It is therefore a valuable visual resource. The majority of the proposed reroute, conversely, consists of degraded forests and doesn't provide significant scenic value.

2.3.5 Infrastructure and Utilities

The project area currently contains no infrastructure or utilities. The nearest facility is a trail shelter with picnic table located on Nualolo Cliff Trail, where the proposed reroute will connect to the original Nualolo Cliff Trail.

2.3.6 Cultural Resources

The Nualolo Cliff Trail reroute corridor is located on the northwestern side of Kauaʻi within the remote mountainous uplands of the Nā Pali Kona Forest Reserve. Other than the complex network of manmade trail systems that skirt along the steep ridges and mountains, these upland areas have been practically untouched by historic and modern activities that would have otherwise impacted and altered the natural landscape. Because of the remote nature of the project area, traditional and pre-Contact Hawaiian use likely consisted of limited resource procurement activities.

There are no previously documented cultural resources in the vicinity of the Nualolo Cliff Trail reroute corridor. The closest known cultural sites are located in Nualolo ʻAina and Nualolo Kai on the valley floor, which were inhabited by Hawaiians until the early 1900s. The archaeological resources located within Nualolo ʻAina and Nualolo Kai are well-known and archaeological studies have been conducted there for over 80 years. Archaeological resources documented in Nualolo Valley include a *heiau*, habitation complexes, trails, agricultural systems, and burial mounds and caves. These sites are virtually inaccessible from the trail reroute.

2.3.6.1 Archaeological Survey

The Nualolo Cliff Trail reroute corridor was surveyed for archaeological resources on July 11, 2014, by archaeologist Patrick O'Day, M.A., of Garcia and Associates (Hawaii State Historic Preservation Division (SHPD) Permit 14-12). Dan Smith and Jason Omick from DOFAW provided support for the archaeological survey. The survey corridor measured 20 meters in width and extended from the existing Nualolo trail to the Nualolo cliff trail rest stop. Terrain ranged from level ground to 45-degree slopes in some areas. The archaeological survey transects covered 100 percent of the 20-meter-wide corridor, with a special focus on the anticipated seven-feet-wide trail corridor.

The archaeological survey produced no evidence of traditional Hawaiian or early historic cultural resources. Furthermore, the potential for buried cultural resources is considered very low in this remote upland area.

2.3.6.2 Cultural Practice

The project area provides forest resources that can be gathered for traditional or cultural use. Permits are required to gather *maile* (*Alyxia stellata*), ferns, dead wood, and other plant materials.

3.0 ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

This section evaluates the potential environmental impacts of the Proposed Action and suggests avoidance, minimization, and mitigation measures for potential adverse impacts. As discussed in Sections 1.2 and 1.3, impacts may be either direct or indirect. Impacts may also be of short-term or long-term duration, and may furthermore have cumulative effects that must be considered. This analysis examines impacts to resource classes in proportion to the magnitude of the potential effects. More detailed consideration is given to classes more susceptible to adverse effect.

3.1 Physical Environment Impact Analysis

3.1.1 Geology and Topography

The major project activity with potential for geological impact is trail construction and the installation of trail signage. The proposed action will not significantly affect the underlying geologic substrate of the project area, nor impact the broader landscape. Topographic alterations associated with the new trail will be highly localized. The proposed action therefore will not have a significant impact on geology and topography.

3.1.1.1 Soil

Construction of the trail and the installation of trail signage are anticipated to have a short-term, direct impact on project area soils. Ground disturbance associated with trail construction and the installation of trail signage will disturb the shallow soils or rocks on the trail tread.

While the project will involve ground disturbance activities, the disturbance will be limited to hand tools and manual labor for creating a level trail tread two to three feet in width. The footprint of the disturbance will be relatively small (4,752 square feet or 0.11 acres, assuming a three-foot width).

3.1.1.2 Minimization and Mitigation Measures

The Nā Ala Hele program provides guidelines in trail development, design, and construction (DOFAW 1991). The following guidelines will be followed to minimize and mitigate soil erosion.

> Initial Construction and Ongoing Maintenance – Routes should be designed to require minimal future maintenance. The need for vegetation removal, grading, and other modifications should be minimized. Trails should be located where the soil is stable and well-drained.
>
> Erosion – Routes should conform to the natural terrain. Long, straight sections, sudden, abrupt changes in direction, and steep grades should be avoided. Switchbacks, waterbars, and steps should be used to promote erosion control.

Under these provisions, the project is expected to have a less than significant impact on soils.

3.1.2 Water Resources

The project area is at the headwaters of the Nualolo watershed. Construction of the new trail segment may increase the rate of soil erosion, which may affect water quality downstream. The best management practices and mitigation as described in Section 3.1.1.2 will minimize soil erosion. The Project therefore is expected to have less than significant impact on water resources.

3.1.3 Climate

The construction of the new trail segment will have no effect on large-scale climate. Removal of vegetation, however, is expected to affect the microclimate in a local scale. Opened canopy following trail construction is expected to increase sun exposure, wind speed, and surface temperature fluctuation, and decrease soil moisture. These changes may affect the biological community on and adjacent to the newly constructed trail. The scale of impact, however, is highly localized and not significant.

3.1.4 Air Quality

The proposed actions will have no significant short or long-term effect on air quality. Gas-powered tools, such as chainsaws, will emit small quantities of exhaust during vegetation clearing and trail construction. The exhaust, however, is expected to quickly disperse and is not anticipated to significantly affect air quality.

3.1.5 Noise Levels

Although long-term use of the hiking trail will have no significant acoustic impact, there may be short-term impacts during trail construction. Localized noise levels will increase if gas-powered tools such as chainsaws and brush cutters are used. These noises will be of short duration and are unlikely to cause lasting effects on humans or wildlife. Temporarily elevated noise levels from the proposed action will therefore have no significant effect on the environment.

3.1.6 Hazardous Substances

No hazardous substances are known to occur in the project area. The proposed action is therefore unlikely to increase the risk of exposure to existing hazardous substances.

Trail construction using power equipment can potentially expose limited areas to hazardous substances such as oil and fuel. Care will be taken to prevent the release of any oil or fuel and DOFAW will employ best management practices for fuel handling at all times.

Herbicide applications may be required for treating stumps of invasive trees, such as strawberry guava, to prevent re-sprouting. Herbicide usage will be limited to licensed herbicides that are approved for use in natural areas. Application methods will strictly follow label directions. Any unused pesticide will be stored or disposed of as hazardous materials. Under these provisions, the use of pesticides is not expected to cause adverse impact to the environment.

3.1.7 Natural Hazards

The proposed action will not increase risks associated with natural hazards such as volcanism, earthquakes, or storms. In the event of a rare severe storm, the proposed trail reroute

may be damaged by erosion or landslide. The trail reroute is designed to bypass the most erosion-prone section of the original trail, thereby reducing this risk.

3.2 Biological Environment Impact Analysis

This section presents an assessment of anticipated environmental impacts to biological resources resulting from the proposed actions. Avoidance, minimization, and mitigation measures are proposed for potential adverse impacts.

3.2.1 Flora

A majority of the project area consists of degraded lowland mesic ecosystem and is currently dominated by invasive species such as bush beardgrass, lantana, and strawberry guava. No threatened or endangered species were identified in the trail corridor during the botanical survey. The two species of concern, *Alphitonia ponderosa* and *Cryptocarya mannii*, are large tress that will not be harmed during vegetation clearing and trail construction.

During vegetation clearing, all removed invasive species will be left in the area to prevent dispersal. All clothing and tools will be cleaned before they are used in a new area. Invasive plants will be monitored during routine trail maintenance and controlled when necessary.

Under these provisions, the project is expected to have less than significant impact on botanical resources.

3.2.2 Fauna

The following sections discuss potential impact and avoidance measures for potential protected animal species in the project area. The project area currently does not provide suitable habitat for a majority of threatened or endangered species known to occur in the Nā Pali Kona Forest Reserve. Considering the small footprint of the proposed trail in relation to the landscape, and given the degraded state of its vegetation, habitat alteration associated with the proposed action is negligible.

3.2.2.1 Mammals

Vegetation clearing has the potential to negatively affect the Hawaiian hoary bat by disturbing its roosting sites, especially during its nursing period. Prior to vegetation clearing, a qualified wildlife biologist will survey the trail corridor to ensure no bats roost on the trees that will be felled. With this provision, the project action is not expected to significantly impact the Hawaiian hoary bat.

The project action may disturb introduced game mammals; the effects, however, will be temporary and negligible due to the small project footprint.

3.2.2.2 Avifauna

The project area currently doesn't provide suitable habitat for protected avian species and therefore is not expected to cause significant impact to protected avian resources.

The project action may disturb introduced game birds; the effects, however, will be temporary and not significant due to the limited nature of the project.

3.2.2.3 Herpetofauna

Herpetofauna, such as geckos, may be temporarily disturbed by vegetation clearing. These species, however, are not legally protected. The effects of habitat alteration will be minimal due to the small project footprint.

3.2.2.4 Invertebrates

The project area doesn't provide suitable habitat for any extant threatened or endangered invertebrates. The proposed action is therefore unlikely to significantly impact invertebrate resources.

3.3 Socio-economic Environment Impact Analysis

This section presents assessments of the impact of the proposed action on various elements of the socio-economic environment. Mitigation measures are proposed for elements that may incur significant impacts from the project or for which there is insufficient data to make a firm determination. Implementation of the proposed mitigation measures will result in a "less than significant" impact determination for these elements.

3.3.1 Population

The proposed action does not involve development that would affect local or regional population levels in proximity to the Kōkeʻe and Waimea Canyon State Parks. The restoration of pedestrian access to a remote wildness area is not expected to have an effect on population.

3.3.2 Land Use

The proposed action would result in some change to current land use in the immediate vicinity of the trail, which is predominantly an undeveloped forested area. The project will provide pedestrian access for the various uses historically associated with the trail. The reroute restores the trail's original function and maintains the same land use activities associated with the trail. The project is expected to have a less than significant effect on land use.

3.3.2.1 Conservation

Conservation, research, education, and public service activities will be enhanced by restoring access to Nualolo Cliff Trail. The project is expected to have a positive effect on these activities.

3.3.2.2 Hunting

The proposed action will restore accessibility to the public hunting area previously accessed by Nualolo Cliff Trail. The project is expected to have a positive effect on hunting.

3.3.2.3 Resource Gathering

The proposed action will restore accessibility for the gathering of forest resources previously provided by Nualolo Cliff Trail. The Project is expected to have a positive effect on traditional and cultural use of forest resources.

3.3.3 Recreation

Recreational use of the project area is currently restricted due to the trail closure. The proposed reroute will increase accessibility and provide recreational opportunities for the general public. This includes the direct area accessed by the reroute, as well as the loop route created by connecting Nualolo Trail and Awa‘awapuhi Trail. The proposed project is expected to have a positive effect on recreation.

3.3.4 Scenic and Visual Resources

The proposed reroute will not significantly affect the scenic value of the project area. The project area consists of a gently sloped ridge that is mostly forested. There are no distinctive land features in the project area. The major aesthetic value of the project area lies in its unbroken foliage within the larger landscape. Because a majority of the proposed reroute will be in a forested area, tree cover is expected to obscure the trail and making it imperceptible from a distance.

The proposed project will restore accessibility to Nualolo Cliff Trail, which provides a significant vista to the Nā Pali Coast and Nualolo Valley. Although the proposed reroute will cut out a small section of the original Nualolo Cliff Trail that offered a good vista, the remaining Nualolo Cliff Trail and nearby Nualolo Trail provide a similar scenic viewing experience for trail users.

Based on this analysis, the proposed action is expected to have a less than significant impact on scenic and visual resources.

3.3.5 Infrastructure and Utilities

The project area is in a remote natural area and contains no infrastructure or utilities. The proposed action will therefore not impact infrastructure or utilities.

3.3.6 Cultural Resources

3.3.6.1 Archaeological Resources

Because no archaeological resources are present on the proposed trail corridor, the proposed reroute is not expected to affect archaeological resources. In the unlikely event any historic artifact or human remain is discovered during ground-disturbing activities, DOFAW will cease work in that area immediately, secure the site, and consult with SHPD and Office of Hawaiian Affairs to determine proper treatment measures. The trail route will be modified to avoid any archaeological resources, if necessary. Under these provisions, the project is expected to have a less than significant impact on archaeological resources.

3.3.6.2 Cultural Practices

The project will restore access to Nualolo Cliff Trail and provide access for traditional and cultural use of the area. It is expected that the project will encourage cultural practices and traditional use of forest resources by providing access to the area.

3.4 Growth-inducing Impacts

Growth-inducing impacts involve the potential for a project to induce unplanned development, substantially accelerate planned development, encourage shifts in growth from other areas in the region, or intensify growth beyond the levels anticipated and planned for without the project. No aspect of the proposed action has the potential to encourage growth.

3.5 Cumulative Impacts

Cumulative impacts result when implementation of several projects that individually have minor impacts combine to produce more severe impacts or conflicts among mitigation measures.

All potential adverse impacts of the proposed action are either negligible, extremely restricted in geographic scale, or are amenable to mitigation through design or best management practices. There are thus few, if any, appreciable adverse impacts that might accumulate with those of other past, present, and future actions to produce more severe impacts.

In the context of the large extent of the existing Nā Pali Kona Forest Reserve, the small area lost to new trail construction does not represent a substantial loss, particularly when the damaged section of the trail will be closed for recovery. The project will therefore have no significant cumulative environmental impact.

3.6 Consistency with Government Plans and Policies

The proposed action is consistent with all government plans and policies, especially those that encourage outdoor recreational use of nature areas.

3.6.1 Hawai‘i State Plan

The Hawai‘i State Plan was adopted in 1978. It was revised in 1986 and again in 1991 (chapter 226 of HRS as amended). The Plan establishes a set of goals, objectives and policies that are meant to guide the State’s long-run growth and development activities. The proposed project is consistent with State goals and objectives by restoring access to Nualolo Cliff Trail, which encourages ecotourism, outdoor recreation, hunting and resources gathering, and cultural practices. It also promotes prudent use of inland areas for education, scientific research, and conservation.

HRS §226-4 sets forth goals associated with the *Hawai‘i State Plan*:

> 1. A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai‘i’s present and future generations.

> 2. A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.
>
> 3. Physical, social, and economic well-being, for individuals and families in Hawai‘i, that nourishes a sense of community responsibility, of caring, and of participation in community life.

The aspects of the plan most pertinent to the proposed action are the following:

> HRS §226-11 Objectives and policies for the physical environment—land-based, shoreline, and marine resources. Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of prudent use of Hawai‘i's land-based, shoreline, and marine resources and effective protection of Hawai‘i's unique and fragile environmental resources.
>
> HRS §226-23 Objective and policies for socio-cultural advancement—leisure. Planning for the State's socio- cultural advancement with regard to leisure shall be directed towards the achievement of the objective of the adequate provision of resources to accommodate diverse cultural, artistic, and recreational needs for present and future generations.

The proposed action is consistent with the goals, objectives, and policies of the *Hawai‘i State Plan*. Specifically, it is an appropriate use of an isolated area that will promote increased accessibility and prudent use of inland areas for public recreational, educational, and scientific purposes.

3.6.2 Conservation District

The project area is in the State Land Use Conservation District Protective Subzone. Any proposed use in such areas must undergo an examination for consistency with the goals and rules of this district and subzone. According to DLNR policy, divisions within DLNR that are proposing to conduct land uses on their own managed lands inside the Conservation District are not required to apply for a Conservation District Use Permit (CDUP) when, 1) a management plan is already in place for the specified land use, and 2) the proposed land use is consistent with that specific divisions management objectives for the project area. However, those divisions must adhere to the criteria and guidelines of chapter 183C, HRS and chapter 13-5 of HAR.

Because the project area is managed by DOFAW and the proposed project is consistent with the objectives of the *Nā Ala Hele Program Plan* and the *Nā Pali Kona Forest Reserve Management Plan*, DOFAW will not be required to obtain a CDUP for the project. Actions to affirmatively manage the forest reserve and trail system are viewed as "operation and maintenance" of an existing use and thus exempt from requirement for a CDUP. Nevertheless, it should be noted that the project is entirely consistent with the criteria of the Conservation District, as listed in chapter 13-5 of HAR:

- The proposed land use complies with provisions and guidelines contained in chapter 205A, HRS, titled *Coastal Zone Management*.

- The proposed land use will not cause substantial adverse impact to existing natural resources within the surrounding area, community or region, and in fact will result in substantial environmental benefit.
- The proposed land use is compatible with the locality and surrounding areas, appropriate to the physical conditions and capabilities of the specific parcel or parcels.
- The existing physical and environmental aspects of the land, such as natural beauty and open space characteristics, will be preserved and made available for public enjoyment.
- Subdivision of land will not be utilized to increase the intensity of land uses in the Conservation District. The proposed action will not subdivide the property and will not lead to any increase in intensity of use.

4.0 DETERMINATION

Section 11-200-12 of the HAR sets forth the criteria by which the significance of environmental impacts shall be evaluated. The following discussion restates these criteria individually and evaluates the project's relation to each.

1. *The project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.*

The proposed trail reroute will not result in the loss or destruction of any significant natural or cultural resources. No legally protected fauna and flora and cultural resources were identified during field surveys. The project will not cause irrevocable commitment or destruction of any natural or cultural resources.

2. *The project will not curtail the range of beneficial uses of the environment.*

No future beneficial use of the environment will be curtailed by the proposed project actions. Trail use, hunting, gathering of forest products for cultural use, ecotourism, research, and education are expected to benefit from the restoration of access to Nualolo Cliff Trail.

3. *The project will not conflict with the State's long-term environmental policies.*

The State's long-term environmental policies are set forth in chapter 344 of HRS. The broad goals of this policy are to conserve natural resources and enhance the quality of life. A number of specific guidelines support these goals. No aspect of the proposed project conflicts with these guidelines.

4. *The project will not substantially affect the economic or social welfare of the community or State.*

The community and general public will benefit from the restoration of access to Nualolo Cliff Trail, which provides a unique outdoor recreation experience. The project will also enhance the social and economic welfare of Hawai‘i by supporting beneficial uses of the remote inland forest.

5. *The project does not substantially affect public health in any detrimental way.*

No adverse effects to public health are anticipated.

6. *The project will not involve substantial secondary impacts, such as population changes or effects on public facilities.*

No adverse secondary effects are expected. The project will not enable or encourage development.

7. *The project will not involve a substantial degradation of environmental quality.*

The project will not degrade environmental quality in any substantial way.

8. *The project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat.*

No endangered flora or fauna will be significantly affected by the project. Restoration of access will instead support conservation and research activities that benefit native fauna and flora.

9. *The project is not one which is individually limited but cumulatively may have considerable effect upon the environment or involves a commitment for larger actions.*

The project does not involve a commitment for any further actions. Anticipated impacts from this project are quite minor and will therefore not tend to accumulate in relation to this or other projects.

10. *The project will not detrimentally affect air or water quality or ambient noise levels.*

The project will have negligible effects on water quality, air quality, and noise levels.

11. *The project will not affect or will not likely be damaged by being located within an environmentally sensitive area such as flood plains, tsunami zones, erosion-prone areas, geologically hazardous lands, estuaries, fresh waters or coastal waters.*

The project area is not an environmentally sensitive area. The proposed reroute will avoid a section of the trail that was erosion-prone.

12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.*

No scenic vistas or viewplanes will be impacted by the project. Instead, the project will restore access to Nualolo Cliff Trail, which offers scenic vistas.

13. *The project will not require substantial energy consumption.*

Construction of the reroute trail will not involve substantial energy consumption.

4.1 Conclusion

For the reasons above, and in consideration of the comments received, the State of Hawai‘i, DLNR, DOFAW has determined that the proposed project will not have a significant impact in the context of chapter 343, HRS and Section 11-200-12 of the HAR, and determined a Finding of No Significant Impact (FONSI) with the Final Environmental Assessment (FEA).

5.0 AGENCIES, ORGANIZATIONS, AND INDIVIDUALS CONSULTED

The following agencies, organizations, and businesses received a letter inviting their participation in the preparation of the DEA. The comments received are provided in Appendix A.

Federal Agency:	U.S. Fish and Wildlife Service
	Natural Resource Conservation Service
	Pacific Missile Range Facility, Barking Sands
State Agency:	Department of Defense Hawaii Air National Guard
	Department of Hawaiian Home Lands Department of Health
	DLNR, Division of Aquatic Resources
	DLNR, Division of Conservation and Resources Enforcement
	DLNR, Division of State Parks
	DLNR, Land Division
	DLNR, Office of Conservation and Coastal Lands
	DLNR, State Historic Preservation Division
	Office of Hawaiian Affairs
County of Kauaʻi:	Department of Water
	East Kauaʻi Soil and Water Conservation
	East Kauaʻi Water Users Cooperative
	Kauai Coffee and Agricultural Business Development Board
	Kauaʻi Farm Bureau
	Planning Department
Organization:	A & B Properties Inc.
	Conservation Council of Hawaii
	Earth Justice Legal Defense Fund
	Environment Hawaii
	Garden Island Resource Conservation and Development, Inc.
	Gay & Robinson, Inc. c/o Hanalei Land Company
	Grove Farm Land Corp.
	Hanalei Watershed Hui
	Hawaii Audubon Society
	Hawai'i Invasive Species Committee
	Hui O Laka
	KAHEA
	Kamehameha Schools
	Kauai Hunting Association
	Kauai Public Land Trust
	Kauai Watershed Alliance c/o The Nature Conservancy
	Kokee Natural History Museum
	Kokee Resource Conservation Program
	Lihue Land Company
	McBryde Sugar Company, LTD

National Tropical Botanical Garden
Native Hawaiian Legal Corporation
Sierra Club
Waipā Foundation

No responses were received during the 30-day public comment period after the draft environmental assessment and anticipated finding of no significant impact (DEA-AFNSI) was published in the *Environmental Notice* on January 23, 2015.

6.0 DOCUMENT PREPARERS

This FEA was prepared for the State of Hawai'i, DLNR, DOFAW. Agencies, firms and individuals involved included the following:

Hawai'i Division of Forestry and Wildlife:

Nelson Ayer, M.S., Nā Ala Hele Trail and Access Program Manager
M.S. 1984, Forest Resource Management, California Polytechnic State University, San Luis Obispo, California
B.S. 1977, Horticulture, University of Hawaii at Hilo, Hilo, Hawai'i

Jason Omick, Wildlife Biologist and Procurement and Contract Specialist
B.A. Studies 1994-1996 St. Charles Community College, Cottleville, Missouri
B.A. Studies 1992-1994 Art Institutes of Chicago, Chicago, Illinois

Dan K. Smith, Trails & Access Specialist
B.S. 2000, Forestry Management, Colorado State University, Fort Collins, Colorado

Garcia and Associates, (Consultant for EA):

Huang-Chi Kuo, Ph.D., Project Manager
Ph.D., 2010, Botany/ EECB, University of Hawai'i at Mānoa, Honolulu, Hawaii
M.S. 1996, Botany, National Taiwan University, Taipei, Taiwan
B.S. 1994, Botany, National Taiwan University, Taipei, Taiwan

Patrick O'Day, Ph.D. candidate, Senior Archaeologist
Ph.D. Candidate (ABD), Anthropology, University of Florida, Gainesville, Florida
M.A. 2002, Anthropology, University of Florida, Gainesville, Florida
B.A. 1993, Anthropology, Fort Lewis College, Durango, Colorado

7.0 REFERENCES

Cole, D.N.

1981. Vegetational changes associated with recreational use and fire suppression in the Eagle Cap Wilderness, Oregon: Some management implications. *Biological Conservation*, 20(4): 247–270.

1995. Experimental trampling of vegetation. I. Relationship between trampling intensity and vegetation response. *Journal of Applied Ecology*, 32(1): 203–214.

Division of Forest and Wildlife Resources (DOFAW)

1991. *Nā Ala Hele Hawai'i Trail and Access System Program Plan*. State of Hawai'i, Department of Land and Natural Resources, Honolulu, Hawai'i.

2009. *Nā Pali Kona Forest Reserve Management Plan*. State of Hawai'i, Department of Land and Natural Resources, Honolulu.

Foote, D.E., E.L. Hill, S. Nakamura, and F. Stephens

1972. *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. U.S. Government Printing Office, Washington, D.C.

Giambelluca, T.W., Q. Chen, A.G. Frazier, J.P. Price, Y.-L. Chen, P.-S. Chu, J.K. Eischeid, and D.M. Delparte

2013. Online Rainfall Atlas of Hawai'i. *Bulletin of American Meteorological Society* 94:313–316, doi: 10.1175/BAMS-D-11-00228.1. Accessed 8/18/2014. Available at http://rainfall.geography.hawaii.edu/

Hawaii Tourism Authority (HTA)

2007. *2007 Hawaii State Parks Survey*. Prepared by OmniTrack Group. Inc., Hawaii Tourism Authority, Honolulu.

Juvik, S.P., J.O. Juvik, and T.R. Paradise (editors)

1998. *Atlas of Hawai'i*. University of Hawaii Press, Honolulu.

Macdonald, G.A., A.T. Abbott, and F.L. Peterson

1983. *Volcanoes in the Sea: the Geology of Hawaii*. University of Hawaii Press, Honolulu.

Macdonald, G.A., D.A, Davis, and D.C. Cox

1960. *Geology and Ground-water Resources of the Island of Kauai, Hawaii*. Bulletin No. 13. State of Hawai'i, Division of Hydrography.

Pyle, R.L. and P. Pyle.

2009. *The Birds of the Hawaiian Islands: Occurrence, History, Distribution, and Status*. Version 1. B.P. Bishop Museum, Honolulu, Hawai'i. Accessed 9/2/2014. Available at http://hbs.bishopmuseum.org/birds/rlp-monograph

Soil Survey Staff

2014. *Keys to Soil Taxonomy*. Twelfth edition. United States Department of Agriculture, Natural Resources Conservation Service, Washington, D.C.

U.S. Fish and Wildlife Service (USFWS)

2003. Endangered and Threatened Wildlife and Plants; Final Designation or Nondesignation of Critical Habitat for 95 Plant Species From the Islands of Kauai and Niihau, HI. 39 *Federal Register* 68 (February 27, 2003) pp. 9116–8479.

2010. Endangered and Threatened Wildlife and Plants; Determination of Endangered Status for 48 Species on Kauai and Designation of Critical Habitat. 70 *Federal Register* 75 (April 13, 2010) pp. 18960–19165.

U.S. Geological Survey (USGS)
2014. *Earthquake Hazards Program*. Accessed 9/8/2014. Available at http://earthquake.usgs.gov/

Western Regional Climate Center (WRCC)
2014. *Climate of Hawaii*. Accessed 9/3/2014. Available at http://www.wrcc.dri.edu/narratives/HAWAII.htm

APPENDIX A: WRITTEN COMMENTS RECEIVED DURING EARLY CONSULTATION

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

JESSE K. SOUKI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

DIVISION OF STATE PARKS
POST OFFICE BOX 621
HONOLULU, HAWAII 96809

July 28, 2014

MEMORANDUM

To: Dan K. Smith, Kaua'i DOFAW Nā Ala Hele Program Manager
Division of Forestry and Wildlife

From: Daniel S. Quinn, Administrator

Subject: Pre-Consultation for an Environmental Assessment of the Nu'alolo Cliff Trail Reroute, Waimea, Kaua'i

We have reviewed the subject document and concur that the new route is the best solution for this situation.

We appreciate being given the opportunity to comment on the proposed project. Should you have questions, please contact Lauren Tanaka by phone at 587-0293 or email to: Lauren.A.Tanaka@hawaii.gov.

NEIL ABERCROMBIE
GOVERNOR OF HAWAII

WILLIAM J. AILA, JR.
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

JESSE K. SOUKI
FIRST DEPUTY

WILLIAM M. TAM
DEPUTY DIRECTOR - WATER

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
BUREAU OF CONVEYANCES
COMMISSION ON WATER RESOURCE MANAGEMENT
CONSERVATION AND COASTAL LANDS
CONSERVATION AND RESOURCES ENFORCEMENT
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE COMMISSION
LAND
STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

POST OFFICE BOX 621
HONOLULU, HAWAII 96809

Date: 07-29-14
DAR #4999

MEMORANDUM

TO: Frazer McGilvray, Administrator
DATE: 7-31-14
FROM: Alton Miyasaka, Aquatic Biologist
Jo-Anne Kushima, Aquatic Biologist
SUBJECT: Pre-consultation for EA
Reroute Nualolo Trail on Kauai

Comment	Date Request	Receipt	Referral	Due Date
	07-24-14	07-25-14	07-26-14	08-25-14

Requested by: DLNR/DOFAW (Nelson Ayers for Dan K. Smith)

Summary of Proposed Project

Title: Pre-consultation for EA for Reroute Nualolo Cliff Trail, Kauai

Project by: DLNR/DOFAW
Na Ala Hele Trails and Access Program

Location: Nualolo Trail, Waimea, Kauai, Hawaii

Brief Description:
The Nualolo Cliff Trail in the Waimea Ahupua'a is located on the north-western part of the Island of Kauai. The trail is managed and maintained under the Na Ala Hele Trails and Access Program for public use and is within Conservation District, Conservation Subzone, and in the Na Pali Kona Forest Reserve.

A section of the Nualolo Cliff Trail near the western end connects to Nualolo Trail. There is a 300 foot section of the trail that has been damaged from wear and tear. The result is that the hiking thread is worn out to the point that crossing it is unsafe. The trail is above a 1,500 to 2,000 foot drop which is also hazardous for users. Weather conditions and unstable soil in the area along with continuous small slides make repairs of the trail impractical. The trail has been closed since May 9, 2013.

The proposed reroute of Nualolo Cliff Trail is between the 3 mile and 3-1/4 mile markers and will connect with Nualolo trail at approximately the 2.5 mile marker. The proposed reroute is on a

gently-sloped ridge currently covered by degraded lowland mesic plant communities that are dominated by non-native species. The length of the proposed reroute trail is about 1,584 feet or 0.3 miles.

DLNR's proposed Nualolo Cliff Trail Reroute includes actions that have the potential for impacting the local environment. Activities associated with the project include: vegetation clearing, trail construction and trail signage. Manually operated powered and hand tools will be used to clear vegetation along the trail reroute. The removed vegetation will be cut into small pieces and spread on the sides of the trail to decompose naturally as mulch. Trail construction will be done with manual tools. No heavy machinery will be used. Most of the reroute is located on gentle slopes. Switchbacks will be built on the steep parts of the trail to minimize erosion.

Trail signage will be installed to provide direction to trail users at both ends of the new trail segment.

Comments:
The vegetation clearing and construction activities for the proposed reroute of the Nualolo Cliff Trail occurs on primarily on terrestrial habitat. A table listing the threatened or endangered plants, mammal, birds, and invertebrates that exist in the Na Pali Kona Forest Reserve and adjacent Kuia Natural Area Reserve was provided by the applicant. There were no aquatic resources listed in the Table of Threatened or Endangered Fauna of the Na Pali Kona Forest Reserve.

DAR has no comments to provide on the proposed Nualolo Cliff Trail Reroute project.

Thank you for providing DAR the opportunity to review and comment on the proposed project. Should there be any changes to the project plans, DAR requests the opportunity to review and comment on those changes.

PHONE (808) 594-1888

FAX (808) 594-1865

STATE OF HAWAI'I
OFFICE OF HAWAIIAN AFFAIRS
560 N. NIMITZ HWY., SUITE 200
HONOLULU, HAWAI'I 96817

HRD14/7229

September 2, 2014

Dan K. Smith
Nā Ala Hele Program Manager
Department of Land and Natural Resources
Division of Forestry and Wildlife – Kaua'i Branch
650 South King Street, 7th Floor
Honolulu, HI 96813

Re: Pre-Consultation on Environmental Assessment
Nu'alolo Cliff Trail Reroute Project
Nu'alolo 'Ili, Waimea Ahupua'a
Tax Map Key: (4) 1-4-001:014

Aloha e Mr. Smith:

The Office of Hawaiian Affairs (OHA) is in receipt of your July 24, 2014 letter, pre-consultation on a draft environmental assessment (DEA), seeking comments for the proposed reroute of Nu'alolo Cliff Trail ("the project"). The project will take place over a 0.3 mile long section of the Nu'alolo Trail and will protect it from trail damage from hikers and hunters. According to your letter, the total cleared area will be about 0.14 acres and the trail clearance will be maintained at 3 to 4 feet wide. Manual hand tools will be used to clear the vegetation and improve the conditions of the trail. Trail design, construction, and signage will follow the Nā Ala Hele Program Plan. OHA applauds the use of manual tools for the construction of the project, which will result in significantly less damage on the surrounding environment.

As mentioned in your letter, rich biological resources exist in the Nā Pali Kona Forest Reserve area. This includes endangered and threatened wildlife and plants. However, many of these endangered plants and wildlife are not likely to be found in the project area. Although archaeological and cultural sites, such as terraces, house sites, heiau, burial caves, trails, and irrigation systems, are found in the valley floor of Nu'alolo 'Āina, no archaeological or historic sites are anticipated to be affected within the project area.

OHA does request assurances that should iwi kūpuna or Native Hawaiian cultural deposits be identified during any other ground altering activities, all work will immediately cease and the appropriate agencies, including OHA, will be contacted pursuant to applicable law.

Thank you for initiating consultation and for the opportunity to provide comments. Should you have any questions, please contact Kathryn Keala, at (808) 594-1848 or kathyk@oha.org.

'O wau iho nō me ka 'oia'i'o,

Kamana'opono M. Crabbe, Ph.D.
Ka Pouhana, Chief Executive Officer

KMC:kk

C: Kaliko Santos, OHA Kaua'i COC (*via email*)