JOSH GREEN, M.D.
GOVERNOR | KE KIAʻĀINA

SYLVIA LUKE
LIEUTENANT GOVERNOR | KA HOPE KIAʻĀINA

STATE OF HAWAIʻI | KA MOKUʻĀINA ʻO HAWAIʻI
DEPARTMENT OF LAND AND NATURAL RESOURCES
KA ʻOIHANA KUMUWAIWAI ʻĀINA

P.O. BOX 621
HONOLULU, HAWAII 96809

DAWN N.S. CHANG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

RYAN K.P. KANAKAʻOLE
FIRST DEPUTY

CIARA W.K. KAHAHANE
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

November 1, 2024

Mary Alice Evans, Director
Office of Planning and Sustainable Development
State of Hawai‘i
P.O. Box 2359, Honolulu, Hawaii
96804-2359

Dear Director:

With this letter, the Department of Land and Natural Resources hereby transmits the final environmental assessment and finding of no significant impact (FEA-FONSI) for the “Manuka Natural Area Reserve Fenceline Clearing and Access” project situated at TMK 9-1-01-2; 8-9-06-01, in the South Kona District on the island of Hawaii for publication in the next available edition of the Environmental Notice. The Department of Land and Natural Resources did not receive any public comments during the 30-day public comment period on the draft environmental assessment and anticipated finding of no significant impact (DEA-AFONSI). If there are any questions, please contact Emma Yuen at (808) 366-4788 or Emma.Yuen@hawaii.gov.

Sincerely,

DGS

DAWN N. S. CHANG
Chairperson

From: webmaster@hawaii.gov
To: DBEDT OPSD Environmental Review Program
Subject: New online submission for The Environmental Notice
Date: Thursday, October 31, 2024 9:43:47 AM

Action Name

Manuka Natural Area Reserve Fenceline Clearing and Access

Type of Document/Determination

Final environmental assessment and finding of no significant impact (FEA-FONSI)

HRS §343-5(a) Trigger(s)

- (1) Propose the use of state or county lands or the use of state or county funds
- (2) Propose any use within any land classified as a conservation district

Judicial district

South Kona, Hawai‘i

Tax Map Key(s) (TMK(s))

(3) 9-1-001:002; (3) 8-9-006:001

Action type

Agency

Other required permits and approvals

Conservation District Use Permit

Proposing/determining agency

Department of Land and Natural Resources

Agency jurisdiction

State of Hawaii

Agency contact name

EMMA YUEN

Agency contact email (for info about the action)

EMMA.YUEN@HAWAII.GOV

Email address for receiving comments

EMMA.YUEN@HAWAII.GOV

Agency contact phone

(808) 366-4788

Agency address

1151 Punchbowl St
Rm 325
Honolulu, HI 96813
United States

Map It

Is there a consultant for this action?

No

Action summary

The overall purpose of the road and grubbing project is to facilitate native ecosystem preservation of the Manuka Natural Area Reserve. To gain access and clear for the construction of a hooved-animal-proof fence, the Division proposes creating a road using a bulldozer to improve access to a proposed fenceline and also serve as a firebreak. The Division is avoiding impact to sensitive ecosystems by primarily locating the proposed activities on disturbed areas or areas with low biodiversity. An existing bulldozed road exists for approximately 1 mile, and this project proposes to widen that existing road from 8’ to 16’ and extend that road an additional approximately 1.1 miles. The road is proposed to be situated to avoid kipuka of native vegetation as much as possible, and portions will be sited on barren lava or pioneer vegetation from relatively recent lava flows. The fenceline is approximately 2.9 miles. Lengths are approximate and subject to change.

Reasons supporting determination

Significance Criteria

HAR Section 11-200.1-13 requires an agency to determine whether an action may have a significant effect on the environment, by considering every phase of a proposed action, the expected impacts, and the proposed mitigation measures, including:

(1) Irrevocably commit a natural, cultural, or historic resource;

This project avoids significant natural, cultural, or historic resources by siting the project primarily on a lava flow or previously disturbed areas that have less diversity and vegetation.

(2) Curtail the range of beneficial uses of the environment;

This project will not curtail beneficial uses such as watershed values or native habitat because it is a relatively small area and is sited in an area with less biodiversity. Instead, this project is meant to improve beneficial uses of the environment by improving access for natural resource management crews.

(3) Conflict with the State's environmental policies or long-term environmental goals established by law;

This project does not conflict with the State’s environmental policies or goals, rather it supports the goal to protect and manage watershed forests.

(4) Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State;

This project will not have an adverse effect on the economic welfare, social welfare or cultural practices. Rather, it seeks to improve welfare and cultural practices by protecting watershed forests which provide many economic services and also contain plants and animals important to the perpetuation of cultural practices.

(5) Have a substantial adverse effect on public health;

This project will benefit public health because it will facilitate a project to remove hooved animals from watershed forests. These hooved animals are known to carry and spread various diseases such as Leptospirosis and nontuberculous mycobacterial lung disease.

(6) Involve adverse secondary impacts, such as population changes or effects on public facilities;

This project is in a remote location and will not impact populations or facilities.

(7) Involve a substantial degradation of environmental quality;

This project will help natural resource managers improve environmental quality by responding to wildfires and removing invasive species.

(8) Be individually limited but cumulatively have substantial adverse effect upon the environment or involves a commitment for larger actions;

This is a small and independent project that does not affect or commit larger actions.

(9) Have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat;

The location of this project seeks to avoid rare, threatened, or endangered species, or their habitat and will include biological surveys to confirm that no rare species will be impacted.

(10) Have a substantial adverse effect on air or water quality or ambient noise levels;

This project does not affect air or water quality or ambient noise levels as it is in a remote location.

(11) Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

This project will not have a substantial adverse effect on or likely to suffer damage by being located in an environmentally sensitive area because it is located in an area the is primarily a low-biodiversity lava flow.

(12) Have a substantial adverse effect on scenic vistas and view planes, during day or night, identified in county or state plans or studies;

This project is very remote and will not be visible from any important view planes.

(13) Require substantial energy consumption or emit substantial greenhouse gases.

This project will use negligible amounts of energy and will emit negligible greenhouse gases where small amounts of vegetation will be cleared.

Attached documents (signed agency letter & EA/EIS)

- FEA-Manuka-.pdf
- FEA-Publication-Form-Manuka-part-1-signed.pdf

Shapefile

- The location map for this Final EA is the same as the location map for the associated Draft EA.

Action location map

- SleepyDozer_16ftBuff.zip

Authorized individual

Emma Yuen

Authorization

- The above named authorized individual hereby certifies that he/she has the authority to make this submission.

FINAL ENVIRONMENTAL ASSESSMENT

MANUKA NATURAL AREA RESERVE

FENCELINE CLEARING AND ACCESS PROJECT

In accordance with

CHAPTER 343, HAWAII REVISED STATUTES

Proposed by:

State of Hawaii
Department of Land and Natural Resources
Division of Forestry and Wildlife
Natural Area Reserves System

November 1, 2024

Project Name Manuka Natural Area Reserve
Fenceline Clearing and Access

Project Location Manuka, South Kona, Hawai‘i
TMK: 9-1-01-2; 8-9-06-01

Applicant State of Hawai‘i
Department of Land and Natural Resources
Division of Forestry and Wildlife
Natural Area Reserves System

Approving Agency State of Hawai‘i
Department of Land and Natural Resources

Parties Consulted

Federal: U.S. Department of Interior
Fish and Wildlife Service
National Park Service
USGS, Biological Resources Division

State: Department of Land and Natural Resources
Historic Preservation Division
Natural Area Reserve System Commission
‘Aha Moku Hawaii Island Councilmember
Office of Hawaiian Affairs
Senator Dru Kanuha
Representative Jeanne Kapela

County: Planning Department

Private: Bishop Museum
Conservation Council for Hawai‘i
Earthjustice Legal Defense Fund
Hawai‘i Audubon Society
Native Hawaiian Legal Corporation
Sierra Club, Moku Loa Group
The Nature Conservancy of Hawai‘i
Three Mountain Alliance Watershed Partnership

Permits Required Conservation District Use Permit
HRS Section 6E Consultation

Project Description

Summary:

The overall purpose of the road and grubbing project is to facilitate native ecosystem preservation of the Manuka Natural Area Reserve. To gain access and clear for the construction of a hooved-animal-proof fence, the Division proposes creating a road using a bulldozer to improve access to a proposed fenceline and also serve as a firebreak. The Division is avoiding impact to sensitive ecosystems by primarily locating the proposed activities on disturbed areas or areas with low biodiversity. An existing bulldozed road exists for approximately 1 mile, and this project proposes to widen that existing road from 8’ to 16’ and extend that road an additional approximately 1.1 miles. The road is proposed to be situated to avoid kipuka of native vegetation as much as possible, and portions will be sited on barren lava or pioneer vegetation from relatively recent lava flows. The fenceline is approximately 2.9 miles. Lengths are approximate and subject to change.

In addition to saving time for conducting natural resource management such as invasive species control and tree planting, this road will reduce the amount of time needed to respond to emergencies like wildfires in this area. The road would also serve as a firebreak. Positive social impacts from this project include protection and restoration of a unique Hawaiian forest; and the preservation of a remnant of our rapidly disappearing natural heritage.

The project area is located entirely within the boundaries of the Manuka Natural Area Reserve. All project lands are State owned. The portion of the project on TMK 9-1-01-2 is within the Conservation District, Resource Subzone.

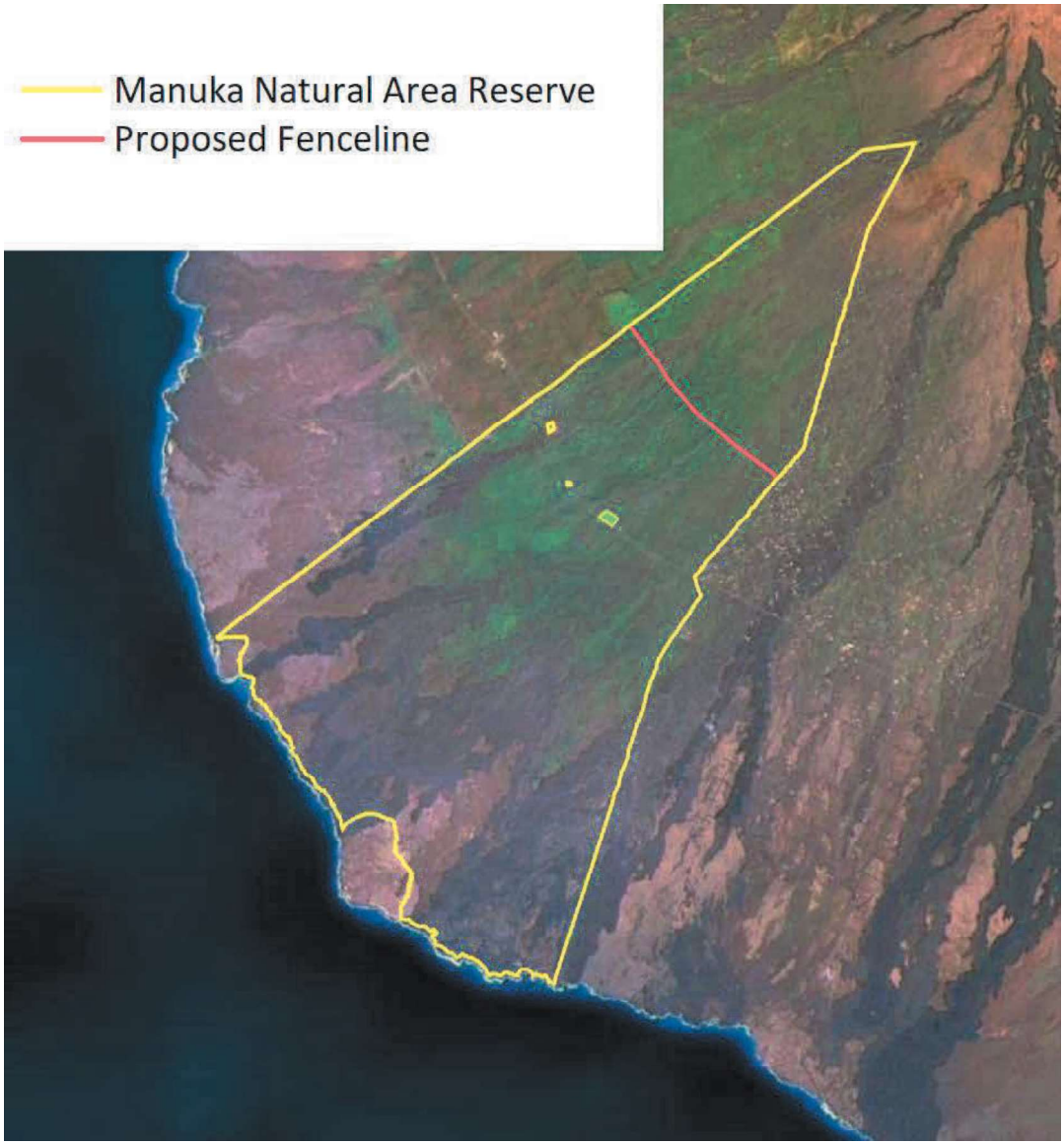

Figure 1. Location of the Manuka Natural Area Reserve (boundary in yellow) and location of proposed road and fence (red). To the east is Hawaiian Ocean View Estates.

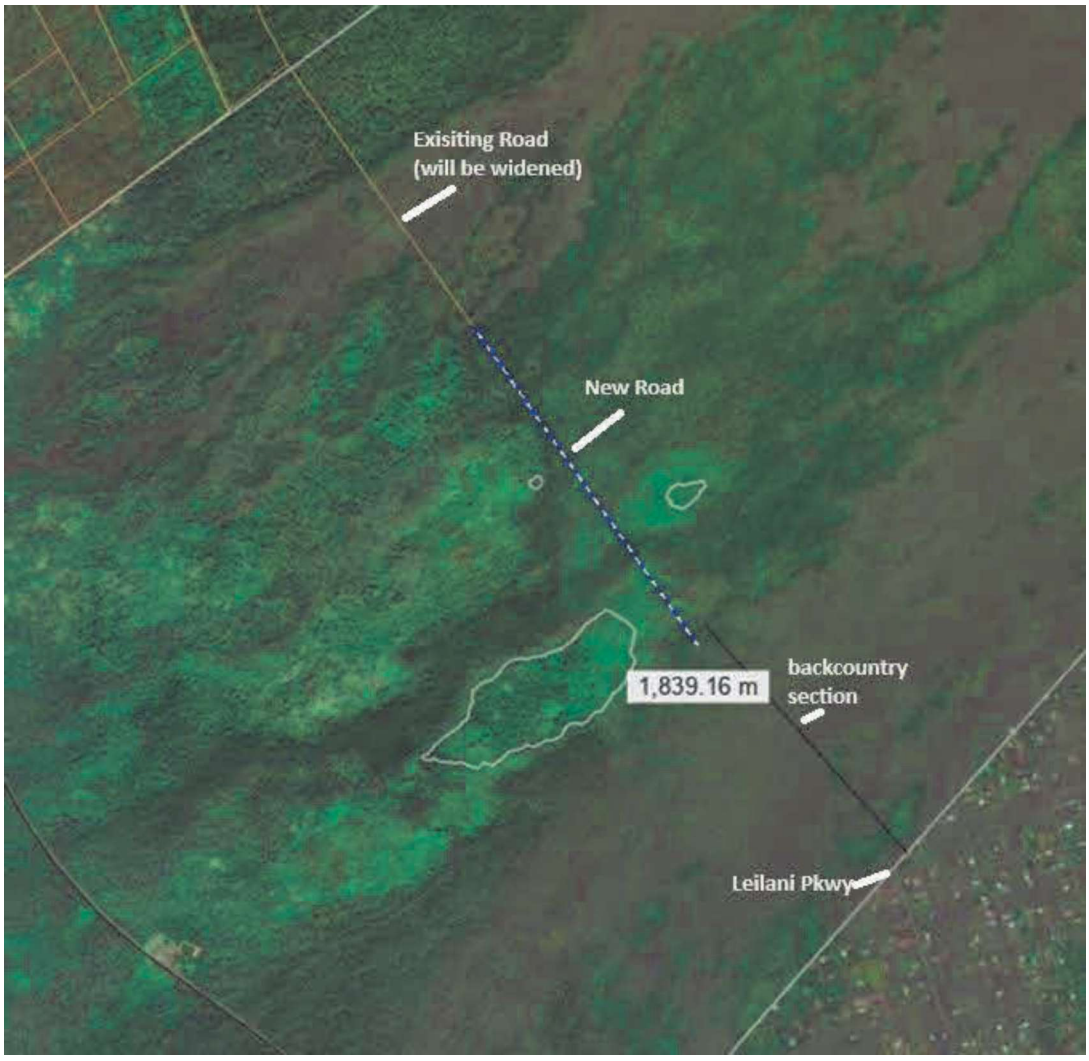

Figure 2. Closer view of the proposed road within the Manuka Natural Area Reserve. The fenceline will follow the existing road, new road, and the area indicated as "backcountry section."

The publication of an environmental assessment is triggered by the proposed grubbing activity to bulldoze an area to clear for a fenceline. Only grubbing projects that disturb less than an acre are candidates to be exempt from the preparation of an environmental assessment, per the DLNR exemption list reviewed and concurred by the Environmental Council on November 20, 2020. Constructing fences is included in the exemption list.

The proposed activities are anticipated to occur in the 2025 and into 2026. Funding for this project comes from existing general funds allocated to the salaries of the Division's heavy equipment operators.

Affected Environment

Manuka Natural Area Reserve occupies 25,550 acres on the south slope of Mauna Loa, a wedge-shaped parcel that corresponds to the traditional *'ahupua'a* of Manuka. The Reserve extends from sea-level to 5524' elevation. Rainfall in the *mauka* Reserve averages 60 to 100 inches a year. Most of the Reserve is vegetated by a mosaic of different aged stands of *'ōhi'a* (Metrosideros polymorpha) forest on a substrate of young (<2000 years) *'a'a* lava flows.

Flora:

The vegetation in the area proposed to be cleared via bulldozer is predominantly composed of *uluhe*- and ʻōhiʻa-dominated mesic forest. The proposed road and fence is designated critical habitat for *Pleomele hawaiiensis, Neraudia ovata, Gouania vitifolia, Flueggea neowawraea, Diella erecta, and Columbrina oppositifolia.* While no rare species are known from the project site, Appendix A lists rare species that are extant or recoverable in the entire Reserve, which will benefit from the facilitated access for natural resource management.

Fauna:

The project will avoid damage to native birds by avoiding destruction of large native trees. See Appendix B for a list of bird species recorded from the Reserve. *ʻElepaio* (Chasiempis sandwicensis), *ʻamakihi* (Hemignathus virens), *ʻapapane* (Himatione sanguinea) and *ʻiʻiwi* (Vestiara coccinea) are common throughout the Reserve. *ʻIʻo* (Buteo solitarus) are frequently seen in the area, and nests have been observed in native trees. The endangered *ʻakepa* (Loxops coccineus) and Hawaii creeper (Oreomystis mana) are known from similar habitat in the vicinity.

Although little is known about them, the ʻ*opeapea*, or Hawaiian bat (Lasiurus cinereus semotus), is common in the vicinity of Highway 11, and undoubtedly uses trees within the Reserve as roosting sites. The proposed bulldozing of the fenceline section will occur outside of bat pupping season (April to June) to avoid damaging roosting trees.

Little is known regarding invertebrates in Manuka. However, due to the fact that the affected area is sited to avoid native vegetation as much as possible, the affect on native invertebrates is anticipated to be minimal.

Feral pigs are common throughout the NAR, especially in *kipuka* with well-developed soils. At higher elevations, feral goats are fairly common and small herds periodically move through the area. Feral, Mouflon and hybrid sheep are also present.

Feral dogs and cats, rats, mice, and mongoose are also found in the Reserve.

Significant & Sensitive Habitats:

The areas proposed for road building and grubbing avoid significant or sensitive habitats.

Many other locations within the Reserve that this project will benefit can be considered a sensitive habitat, particularly for native forest birds, the Hawaiian bat, and a variety of native invertebrates. Endangered species known to be present in the Reserve are listed in Appendices A and B.

Archaeological Sites:

No archaeological sites have been observed in the areas where the proposed activity would take place. The road construction proposed will predominantly take place on recent lava flows, minimizing the likelihood that historic sites will be affected. A review of historical literature does not indicate the area proposed for bulldozing contains any historic features as it is a remote wilderness area. This project proposal has been sent to the State Historical Preservation Division to concur with the Division's recommendation that no historic properties will be impacted. This review may include an archeological field survey.

Impacts Resu1ting from Project

Short Term Impacts:

The primary short-term environmental impacts from this project will be those associated with improvement of roads and grubbing. This project requires the widening of a 0.9-mile existing road and

construction of approximately 1.1 miles of road to clear a path 16 feet wide, which will amount to approximately 3 acres of disturbance. This will include the use of a bulldozer, with a blade of 16 feet wide, to assist with the grubbing. This clearing will cause soil disturbance and include vegetative clearing, digging, noise disturbance from machines and power tools. The crew will be required to follow the contract sanitation protocol which requires dedicated gear to prevent the spread of alien plant species and rapid *ʻōhiʻa* death Ceratosystis fungus. Increased human activity in the area, such as from work crews camping on site, will be necessary. This increase in activity may disturb native birds and/or bats in the immediate vicinity.

The area proposed to be grubbed contains sparsely situated *ʻōhiʻa* trees. This project may increase the spread of rapid *ʻōhia* death if trees are wounded or their roots are crushed by heavy machinery. The project will minimize this damage by avoidance of trees and sanitizing machinery to reduce spread of the fungus.

Long Term Impacts:

Proceeding with the activities proposed in this plan will likely lead to an increase in human traffic in this remote area. This, and the unavoidable disturbance associated with fence and road construction create the potential for negative effects. Most significant are greater potential for inadvertent introduction of new weed species, and further spread of non-native plants already present in the Reserve.

Constructing new roads and cleared areas may affect the "wilderness" character of this remote area. However, a new road may be beneficial by increasing the ability to manage this area for native ecosystem protection. In addition to saving time for routing natural resource management such as invasive species control and tree planting, this road will reduce the amount of time needed to respond to emergencies like wildfires in this area.

Constructing a new access road will be an open invitation for the public to visit the upper Reserve. Even though a locked gate will be placed on the road, pedestrian access will be open. This unsupervised use of the area could create a greater risk of fire, weed introduction and damage to rare plants.

Long-term benefits of this project include improved access to manage the fenced area. The fenced area is anticipated to have high levels of regeneration. Grazing within this area has resulted in the destruction of much of the natural forest understory. Native tree seedlings, herbaceous ground cover and ferns have been largely extirpated. The result has been an increase in sunlight reaching the forest floor. These conditions have favored the establishment of non-native grasses, which compete with and prevent the establishment of native plant seedlings. Long term studies of similar areas (particularly in Hawaii Volcanoes National Park) show that native plants can often reestablish themselves and shade out non-native competitors if animal disturbance is removed.

Additionally, the fenced, animal free areas will be available as outplanting sites for rare and endangered species. At present, efforts to reintroduce and enhance populations of species appropriate to this area have been hampered by the presence of pigs, sheep, and goats.

Excluding pigs will also remove the primary vector by which seeds of the most invasive weeds are being spread. Some of the most invasive weed threats are species which are readily distributed in the droppings of pigs that have eaten the fallen fruit.

Climate change impacts:

The main climate change impact will be the disturbance of approximately 3 acres through bulldozing to clear a fenceline corridor. The overall project is anticipated to reduce the amount of loss of native forest from feral hooved animals and wildfires, potentially offsetting the loss of carbon being stored by cleared vegetation.

The project will result in minimal emissions from the operation of heavy machinery during the course of approximately six weeks. However, it is anticipated that the project will overall reduce emissions because it will create a more direct access to manage the Reserve, and there will be a reduced reliance on helicopters to ferry staff and materials to the region.

In Hawaii, "The rain follows the forest". Protecting forest watersheds is the most cost effective and efficient way to absorb rainwater and replenish ground water. Robust watersheds also reduce anthropogenic impacts by absorbing greenhouse gases and reducing flooding, erosion, and siltation of reefs and fisheries. The forests and their ability to capture water depend on the protection provided by protecting watersheds. Building this road will enable more efficient management of this reserve. It will also help DLNR reach its 30 by 30 watershed target of protecting 30% of Hawaii's priority watershed forests by 2030. Additionally this project could greatly reduce greenhouse gas emissions if a wildfire breaks out in the region, and crews are able to respond to it faster because there is road access.

Socio-economic impacts:

Minimal costs are associated with this project. They include paying bulldozer operators and vehicle operating expenses. These monies will come from normal operating funds, which have already been obligated.

Cultural impact assessment:

Pre-contact Hawaiian use of upland forests such as those in Manuka was likely limited to activities such as gathering plant materials, and bird-catching. A cultural study has been prepared and is included in this Environmental Assessment as Appendix C. Based on the study, this project is not anticipated to have any negative effects on cultural activities. This determination was made by analyzing the ethnographic and oral history interviews, as well as historical cultural source materials listed in the cultural study. The project is anticipated to benefit the native Hawaiian plants and birds traditionally gathered in this region.

Mitigation Measures

As stated earlier, the major impacts from this project are vegetation related. Damage to living native plants will be restricted to within the road/clearing corridors, and no living trees greater than 12 inches diameter will be cut. No legally protected plant species have been observed near the proposed road or clearing corridor, but an additional reconnaissance of all corridors will be made before work begins. Significant plants will be marked with flagging, and/or alignments will be shifted to avoid damage.

Weed and rapid ʻōhiʻa death introduction will be minimized by ensuring that all heavy equipment, tools, boots, etc. have been cleaned before entering the project area. The long-term management plan for the Reserve includes regular monitoring and control of newly introduced species of non-native plants along fence lines and access roads.

No archaeological sites have been seen within the area to be disturbed by this project. Road and clearing alignments are chosen to utilize previously disturbed or barren areas where ever possible. Should any sites be discovered during construction, work will be halted and the proper authorities notified.

Alternatives to Project

Alternative #1:

Proceed with the project. This would have multiple benefits for natural resource management of the Reserve. In addition to saving time for routing natural resource management such as invasive species control and tree planting, this road will reduce the amount of time needed to respond to emergencies like wildfires in this area. This road would significantly decrease staff time and cost to access this area, therefore increasing capacity for natural resource management crews to dedicate to protecting this area.

Clearing a section of the fenceline with a bulldozer will also reduce the difficulty and cost of fence construction, as well as aid the ongoing maintenance of these fences.

This is the preferred alternative, as it the most feasible, and in keeping with the Natural Area Reserve Law and the Management Policies of the Natural Area Reserves System. (Chapter 195, HRS)

Alternative #2:

Construct the fenceline, but do not bulldoze the road. Without the option of clearing a section of fenceline via bulldozer, the Division would incur greater costs for fence installation, as well as incur greater ongoing management costs to maintain the fence and conduct invasive plant control. This would also eliminate the benefits of the road to serve as a firebreak in this region. Without the road, there would be significantly higher costs to the management of the Reserve. Staff and contractors may need to rely more heavily on helicopters, increasing use of fuel and greenhouse gas emissions, noise disturbance, and further exposing staff to safety risks of aviation. Staff would not be able to quickly access this area to respond to wildfires, which are a priority threat to the forests of South Kona.

Alternative #3:

No action. The area would not be able to be adequately protected from hooved animals, resulting in cumulative, ongoing losses of native ecosystems.

The impacts of not using a bulldozer to clear the fenceline are discussed in Alternative #2.

Significance Criteria

HAR Section 11-200.1-13 requires an agency to determine whether an action may have a significant effect on the environment, by considering every phase of a proposed action, the expected impacts, and the proposed mitigation measures, including:

(1) Irrevocably commit a natural, cultural, or historic resource;

This project avoids significant natural, cultural, or historic resources by siting the project primarily on a lava flow or previously disturbed areas that have less diversity and vegetation.

(2) Curtail the range of beneficial uses of the environment;

This project will not curtail beneficial uses such as watershed values or native habitat because it is a relatively small area and is sited in an area with less biodiversity. Instead, this project is meant to improve beneficial uses of the environment by improving access for natural resource management crews.

(3) Conflict with the State's environmental policies or long-term environmental goals established by law;

This project does not conflict with the State’s environmental policies or goals, rather it supports the goal to protect and manage watershed forests.

(4) Have a substantial adverse effect on the economic welfare, social welfare, or cultural practices of the community and State;

This project will not have an adverse effect on the economic welfare, social welfare or cultural practices. Rather, it seeks to improve welfare and cultural practices by protecting watershed forests which provide many economic services and also contain plants and animals important to the perpetuation of cultural practices.

(5) Have a substantial adverse effect on public health;

This project will benefit public health because it will facilitate a project to remove hooved animals from watershed forests. These hooved animals are known to carry and spread various diseases such as *Leptospirosis* and nontuberculous mycobacterial lung disease.

(6) Involve adverse secondary impacts, such as population changes or effects on public facilities;

This project is in a remote location and will not impact populations or facilities.

(7) Involve a substantial degradation of environmental quality;

This project will help natural resource managers improve environmental quality by responding to wildfires and removing invasive species.

(8) Be individually limited but cumulatively have substantial adverse effect upon the environment or involves a commitment for larger actions;

This is a small and independent project that does not affect or commit larger actions.

(9) Have a substantial adverse effect on a rare, threatened, or endangered species, or its habitat;

The location of this project seeks to avoid rare, threatened, or endangered species, or their habitat and will include biological surveys to confirm that no rare species will be impacted.

(10) Have a substantial adverse effect on air or water quality or ambient noise levels;

This project does not affect air or water quality or ambient noise levels as it is in a remote location.

(11) Have a substantial adverse effect on or be likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, sea level rise exposure area, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters;

This project will not have a substantial adverse effect on or likely to suffer damage by being located in an environmentally sensitive area because it is located in an area the is primarily a low-biodiversity lava flow.

(12) Have a substantial adverse effect on scenic vistas and view planes, during day or night, identified in county or state plans or studies;

This project is very remote and will not be visible from any important view planes.

(13) Require substantial energy consumption or emit substantial greenhouse gases.

This project will use negligible amounts of energy and will emit negligible greenhouse gases where small amounts of vegetation will be cleared.

Expected Determination

The Department proposes a Finding of No Significant Impact for this project.

Findings and Reasons Supporting Expected Determination

The intent of this project is to benefit native species in the project area. Staff will carefully survey the road and areas proposed to be cleared to prevent destruction of rare species. Additionally, the area proposed to be cleared is already primarily non-native forest and will be routed to prevent damage to the remaining native trees present in that section.

The short-term damage to vegetation as a result of clearing will be offset by the improved management access for natural resource crews. These actions will enable the crews to benefit the native ecosystems by implementing the management plan of the Manuka Natural Area Reserve.

Environmental Assessment Prepared By:

Emma Yuen
Native Ecosystems Program Manager
Division of Forestry and Wildlife
1151 Punchbowl St. Honolulu, HI 96813
E-mail: Emma.Yuen@hawaii.gov
Phone: (808) 587-4170

Sources of Information:

Manuka Natural Area Reserve Management Plan, prepared by DLNR/DOFAW, 1992.

He Mo'olelo 'Aina: A Cultural Study of the Manuka Natural Area Reserve Lands of Manuka, District of Ka'u, and Kaulanamauna, District of Kona, Island of Hawaii – prepared for the Division of Forestry and Wildlife by Kumu Pono Associates, 2004.

Appendix A

Endangered and/or rare plant species historically and/or currently found in or near Manukā NAR

Taxon	Common Name	Status*	NAR is Critical Habitat	Location**
Alphitonia ponderosa	kauila	SOC		Manukā
Bobea timonioides		SOC		Manukā
Capparis sandwichiana	maiapilo	SOC		Manukā
Chamaesyce olowaluana	ʻakoko	SOC		HOVE
Colubrina oppositifolia	kauila	E	Critical habitat	Manukā
Cyrtandra menziesii	haʻiwale	SOC		Manukā
Diellia erecta		E	Critical habitat	Manukā
Eragrostis deflexa		SOC		
Fimbristylis hawaiiensis		SOC		Manukā
Flueggea neowawraea	mēhamehame	E	Critical habitat	Manukā

Gouania vitifolia		E	Critical habitat	Manukā
Labordia tinifolia	kāmakahala	E		Manukā
Melicope hawaiensis		SOC		Manukā
Neraudia ovata		E	Critical habitat	Manukā
Pittosporum hawaiiense		SOC		Manukā
Pleomele hawaiiensis	hala pepe	E	Critical habitat	Manukā
Pritchardia schattaueri	loulu	E		Kapua, outplanted in NAR
Reynoldsia sandwicensis				Manukā
Sesbania tomentosa	ʻohai	E		South Point, outplanted in NAR
Scaevola kilaueae	naupaka kauhiwi	SOC		HOVE
Sisyrinchium acre	mauʻu lāʻili	SOC		Kahuku, South Kona
Solanum nelsonii	pōpolo	C		Manukā (historically), outplanted in NAR
Stenogyne macrantha		SOC		outplanted in NAR
Zanthoxylum dipetalum var. *dipetalum*	aʻe	SOC		Manukā
* E = endangered; T = threatened; C = candidate for listing; SOC = species of concern ** Species with populations historically/currently known from Manukā NAR or nearby locations are noted.				

Appendix B

Manukā Birds

(Birds historically/currently found in or near the Reserve)

Taxon	Common Name	Status
Forest birds		
Acridotheres tristis	common myna	non-native
Cardinalis cardinalis	northern cardinal	non-native
Carpodacus mexicanus	house finch	non-native
Cettia diphone	Japanese bush warbler	non-native
Chasiempis sandwichensis	Hawaiʻi ʻelepaio	endemic
Columba livia	rock dove	non-native
Corvus hawaiiensis	ʻalala, Hawaiian crow	endemic - endangered
Garrulax canows	hwamei, melodious laughing thrush	non-native
Geopelia striata	zebra dove	non-native
Hemignathus munroi	ʻakiapōlāʻau	endemic - endangered
Hemignathus virens	Hawaiʻi ʻamakihi	endemic
Himatione sanguinea	ʻapapane	endemic
Leiothrix lutea	red-billed leoithrix	non-native

Lonchura punctulata	nutmeg mannikin	non-native
Oreomystis mana	Hawai`i creeper	endemic - endangered
Paroria capitata	yellow-billed cardinal	non-native
Serinus mozambicus	yellow-fronted canary	non-native
Alauda arvensis	Eurasian skylark	non-native
Sicalis flaveola	saffron finch	non-native
Streptopelia chinensis	spotted dove	non-native
Vestiaria coccinea	‘i‘iwi	endemic
Zosterops japonicus	Japanese white-eye	non-native
Raptors, open country birds		
Alectoris chukar	chukar	non-native
Asio flammeus sandwichensis	pueo, short-eared owl	indigenous
Buteo solitarius	‘io, Hawaiian hawk	endemic - endangered
Callipepa californica	California quail	non-native
Francolinus erckelii	Erckel’s francolin	non-native
Lophura leucomelanos	kalij pheasant	non-native
Meleagris gallopavo	wild turkey	non-native
Phasianus colchicus	ring-necked pheasant	non-native
Tyto alba	common barn-owl	non-native
Waterbirds, migratory birds and seabirds		
Arenaria interpres	‘akekeke or ruddy turnstone	indigenous
Branta sandvicensis	nēnē, Hawaiian goose	endemic - endangered
Heteroscelus incanus	‘ūlili, or wandering tattler	indigenous
Pluvialis fulva	kōlea, Pacific golden plover	indigenous
Nycticorax nycticorax	‘auku‘u, black-crowned night heron	indigenous
Phaethon lepturus	koa‘e kea, white-tailed tropicbird	indigenous

Appendix C

Cultural Study
Links to the Cultural Study are available at:
Division of Forestry and Wildlife: Native Ecosystems Protection & Management | Manukā (hawaii.gov)
http://www.Dlnr.hawaii.gov/ecosystems/nars/hawaii-island/manuka-2

Appendix D

Environmental Assessment Comments Received and Agency Responses

No comments were received.

Signature:

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