BENJAMIN J. CAYETANO
GOVERNOR

Oahu

BRIAN K. MINAAI
DIRECTOR

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GLENN M. OKIMOTO
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:

HWY-RM
3.78287

June 14, 2001

TO: GENEVIEVE SALMONSON, DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM: BRIAN K. MINAAI, DIRECTOR OF TRANSPORTATION

SUBJECT: FINDING OF NO SIGNIFICANT IMPACT (FONSI) FOR COUNTY OF HONOLULU, KAUAI, AND HAWAII RURAL FIBER OPTIC DUCT LINES PROJECT BY SANDWICH ISLES COMMUNICATION, INC., ON BEHALF OF DEPARTMENT OF HAWAIIAN HOMELANDS

The State of Hawaii, Department of Transportation, has reviewed the comments received during the 30-days public comment period which began on March 23, 2001. The agency has determined that these projects will not have significant environmental effect and have issued a FONSI. Please publish this notice in the June 23, 2001 OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Forms and four copies of the final EA for island of Oahu, Kauai, and Hawaii. Please call Mr. Michael Okamoto of our Highways Division, Right-of-Way Branch at 692-7331 if you have any questions.

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2001-06-23-HI-FEA-

FINAL ENVIRONMENTAL ASSESSMENT

AND FINDING OF NO SIGNIFICANT IMPACT

SANDWICH ISLES COMMUNICATIONS, INC.

COUNTY OF HAWAI`I

RURAL FIBER OPTIC DUCT LINES PROJECT

TMK (3rd District): Various Sections, Zones, Plats, Parcels
Hawai`i Island, State of Hawai`i

June 2001

Prepared for:

Sandwich Isles Communications, Inc.

FINAL ENVIRONMENTAL ASSESSMENT
AND FINDING OF NO SIGNIFICANT IMPACT
SANDWICH ISLES COMMUNICATIONS, INC.
COUNTY OF HAWAI`I
RURAL FIBER OPTIC DUCT LINES PROJECT

TMK (3rd District): Various Sections, Zones, Plats, Parcels
Hawai`i Island, State of Hawai`i

APPLICANT:

Sandwich Isles Communications, Inc.
Pauahi Tower, Suite 2750
1001 Bishop Street
Honolulu HI 96813

ACCEPTING
AUTHORITY:

Hawai`i State Department of Transportation
869 Punchbowl Street
Honolulu HI 96813

CONSULTANT:

Ron Terry, Ph.D.
HC 2 Box 9575
Keaau, Hawai`i 96749

CLASS OF ACTION:

Use of State and County Lands
Use of Land in the Conservation District

This document is prepared pursuant to:
The Hawai`i Environmental Protection Act,
Chapter 343, Hawai`i Revised Statutes (HRS), and
Title 11, Chapter 200, Hawai`i Department of Health Administrative Rules (HAR).

TABLE OF CONTENTS

SUMMARY OF PROJECT, ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

Project Summary. Sandwich Isles Communications, Inc., (SIC) is licensed by the State Department of Hawaiian Home Lands (DHHL) to provide essential communications services to DHHL homestead areas on the island of Hawai'i. As a major component of its mission, SIC plans to construct an underground fiber optic telecommunication network to house telecommunication cables within State and County right-of-ways in order to provide service to homestead areas. The project consists of the installation of a system of about 330 miles of fiber optic duct lines within the shoulder, sidewalk, or paved travel lanes of the right-of-way of various State, County and private roads around the island. Open trenching or trenchless technology will be used, except where fiber optic duct lines will be installed on existing bridges. The project benefits DHHL residents by providing high quality, essential telecommunication services at a cost regulated by the PUC's tariff, which is competitive with comparable outside telecommunication services, with the installation of fiber optic duct line at no cost to DHHL. The project will provide employment training and educational opportunities for beneficiaries. It is scheduled for construction between June 2001 and February 2005, and will cost an estimated $100,000,000.

Short Term Impacts

Construction Impacts: Landclearing, trenching and other construction activities will produce short-term impacts to noise, air quality, access and scenery. Mitigation measures related to traffic control, monitoring for historic sites, lava tube caves, street and driveway access maintenance, and control of air quality, noise, and water pollution will avoid or reduce construction-related adverse impacts.

Areas with sensitive biological or archaeological resources have been identified, and mitigation measures have been recommended to minimize or avoid adverse impacts.

Long Term Impacts

No adverse long term impacts are anticipated. The project will create several positive benefits to residents of Hawaiian Home Lands as identified below:

1. It will provide beneficiaries with high quality, essential telecommunication services at a reasonable cost.
2. The construction, modernization, and operation of this telecommunication infrastructure will be done at no cost to DHHL, thus allowing DHHL to use its funds to develop housing opportunities for its beneficiaries.
3. The project will provide employment training and educational opportunities for beneficiaries.

PART 1: PROJECT PURPOSE AND DESCRIPTION

1.1 Purpose and Need for Project

Sandwich Isles Communications, Inc., (SIC) is a Hawai`i corporation, duly commissioned and regulated by the Federal Communications Commission (FCC), and the State of Hawai`i Public Utility Commission (PUC) as a rural telephone company. SIC was assigned a license agreement by the State Department of Hawaiian Home Lands (DHHL) to provide essential telecommunication services to DHHL homestead areas on the island of Hawai`i. A major component of its mission is to construct underground fiber optic telecommunication cables within State and County right-of-ways (ROWs) to provide service to homestead areas. This will provide beneficiaries and lessees of DHHL with access to cost-competitive telephone service. It will also provide a basis for state-of-the-art telecommunication innovations such as educational programming, internet services, video teleconferencing, and other fiber optic-based services in the future.

An increasing number of native Hawaiians reside in Hawaiian Home Lands. In the early 1900s, Prince Jonah Kuhio Kalaniana`ole and his supporters sought ways to revitalize the Hawaiian people through restoring them to the land. Prince Kuhio's vision of *'aina ho'opulapula* or "rehabilitation through the land" resulted in the passage of the Hawaiian Homes Commission Act of 1920 by the U.S. Congress. The Act reserved 203,500 acres of public lands for homesteading by native Hawaiians and created its governing body, the Hawaiian Homes Commission. Today, the Department of Hawaiian Home Lands (DHHL) is responsible for administering the Hawaiian Home Lands' program.

On the island of Hawai`i, Hawaiian Home Lands comprise 25 distinct tracts with about 115,951 acres (Table 1). As of 1999, about one-third of the acreage was leased for homesteads, with 1,171 residential, 487 agricultural, and 273 pastoral leases. There is a waiting list for almost 5,000 residential leases, more than 5,000 agricultural leases, and about 1,250 pastoral leases (Hawai`i DBEDT 2000). Figure 1 shows how the tracts are located around the island in both rural and urban areas.

The project will create several positive benefits for Hawaiian Home Lands residents:

1. It will provide beneficiaries with high quality, essential telecommunication services at a cost regulated by the PUC's tariff, which is competitive with comparable outside telecommunication services.
2. The construction, modernization, and operation of this telecommunication infrastructure will be completed at no cost to DHHL, thus allowing DHHL to use its funds to develop housing opportunities for its beneficiaries.

Table 1
Hawaiian Home Land Properties

Name	Acreage	Name	Acreage
Honokaia	3,243.040	Honomu-Kahua	765.928
Humuula	48,750.000	Kamaoa-Puueo	11,031.640
Kamoku-Kapulena	3,529.124	Kaumana	13.893
Kawaihae	10,152.701	Keahuolu	150.000
Kealakehe/Laiopua	51.324	Keaukaha	1,670.056
Keoniki	230.127	Makuu	2,000.000
Nienie	7,134.940	Olaa	707.828
Panaewa	2,210.360	Pauahi	557.000
Piihonua	8,965.129	Ponohawai	2.017
Puna	100.000	Puukapu	11,979,409
Waiakea	973.454	Waikoloa-Waialeale	1,205.997
Wailau	64.980	Waimanu	200.000
Waiohinu	261.775		

3. The action will provide DHHL beneficiaries with access to state-of-the-art telecommunication innovations such as educational programming, internet services, video-teleconferencing, and other fiber optic-based services in the future.
4. The project will provide employment training and educational opportunities for beneficiaries.

The project will have the added benefit of allowing more of DHHL's funds to be spent on residential development of homestead properties. To accomplish all these goals, SIC needs access to public roadway rights-of-way to provide telecommunication services between DHHL homestead properties.

1.2 Project Overview and Location

The project will build an underground duct system that will be used for the installation of primarily fiber optic cabling, with some copper cabling. About 330 miles of fiber optic duct line will be installed within the road rights-of-ways, as shown in Figure 1. The majority of roads affected will be State highways, with some County and private roads as well.

The project is scheduled for construction beginning in June 2001, with completion estimated at February of 2005. The project is estimated to cost $100,000,000.

A total of 330 miles of fiber optic duct line will be installed in the rights-of-way of various State, County and private roads, which are listed in Table 2 by jurisdiction (refer to Fig. 1 for road locations).

Table 2
Roadways Affected

Jurisdictional Entity / Road	Approximate Mileage
State of Hawai`i	
Highway 19 (Hawai`i Belt Road)	88.4
Highway 11 (Volcano Highway, Hawai`i Belt Road)	86.9
Highway 270 (Akoni Pule Highway)	20.4
Highway 190 (Mamalahoa Highway)	33.6
Highway 130 (Kea`au-Pahoa Road)	6.6
Kalanianaole Street	1.2
Kealakehe Parkway	1.0
Old Government Road (Keaukaha and Maku`u areas)	1.1
County of Hawai`i	
Saddle Road (County maintained)	48.3
State Highway 19, Waimea (Mud Lane to Waiaka Bridge)	7.0
State Highway 190, Waimea (Lindsey Rd. to Airport)	1.3
State Highway 190, Kona (Holualoa Junction to Hwy. 19)	4.0
Mana Road	0.3
South Point Road	10.7
Upolu Point Road	1.5
Kalanianaole Street	3.8
Kahaopea Street	0.4
Ahuna Road	0.4
Komohana Street	2.5
Kaumana Drive	4.0
Kawailani Street	2.0
Private Roads	4.2
Maku`u Drive	
Owner: (Hawn. Paradise Park Road Maint. Corp.)	
Total	329.6

The contractor will be required to obtain approval from the appropriate State, County and private entities before engaging in work within the right-of-way.

1.3 Detailed Route Descriptions

The fiber optic duct line routes were selected to efficiently connect the Hawaiian Home Lands properties around the island with the minimum degree of disturbance to natural and human resources. The following description of routes begins from Hilo and proceeds clockwise around the island of Hawai`i. The route through the center of the island (Saddle Road) is described last. Refer to Fig. 1 for locations and Fig. 2 for photographs of typical areas along route.

Hilo Area. The Hilo area is a geographic hub that not only connects the Hilo DHHL units of Keaukaha, Waiakea, Kaumana, and Panaewa Home Lands, but also extends north, west and south to the other areas of the island. Beginning at the intersection of State Highways 19 and 11 (Kamehameha Avenue and Kanoelehua Street), the route extends east 1.2 miles along the State-owned portion of Kalanianaole Street through an industrial area towards the port of Hilo. From there the route extends a total of 3.8 miles along the County-owned portion of Kalanianaole Street to the Keaukaha Hawaiian Home Lands, and beyond, past residential and park areas, to the Waiakea Hawaiian Home Lands tract just beyond the end of the paved portion of Kalanianaole Street.

Referencing again the intersection of State Highways 19 and 11, the fiber optic duct line route extends south along Highway 11 (Kanoelehua Avenue) through Hilo's principal commercial and industrial corridor. The route makes a loop through County roads into the Panaewa Hawaiian Home Lands tract, extending east 0.4 miles along Kahaopea Street, then south 0.4 miles along Ahuna Road, and then west 0.5 miles along Kawailani Street back to Highway 11. The area contains a mixture of farm and residential uses.

The route then continues along County roads through basically residential neighborhoods to the Saddle Road, proceeding west 1.5 miles along Kawailani Street (Fig. 2NN) to Komohana Drive, thence 2.5 miles north to Kaumana Drive, and thence 4.0 miles west to Milepost 5.0 on Kaumana Drive, the beginning of the Saddle Road. The fiber optic duct line will serve the Kaumana Hawaiian Home Lands tract off of Kaumana Drive.

Hilo to Lower Puna. From the intersection of Kawailani Street and Highway 11, the route proceeds south following Highway 11 through agricultural land to the junction of Highway 11 and State Highway 130 (which was recently relocated and widened to four lanes along a portion of its length known as the Kea'au Bypass), from where it proceeds east about 6.6 miles along Highway 130 through agricultural, open and residential land to Maku'u Drive, a private road owned and maintained by the Hawaiian Paradise Park Road Maintenance Corporation. The route then proceeds northeast 4.2 miles to the intersection of the Old Government Road, which it follows southeast about 1.1 miles to the Maku'u Hawaiian Home Lands tract.

Lower Puna to Upper Puna. From the junction of State Highway 11 and State Highway 130, the route proceeds southwest along Highway 11 through agricultural, open and residential land about 13.7 miles to the Olaa Hawaiian Home Lands tract.

Ka'u to Kailua-Kona. The route resumes again on Highway 11 at the Wailau Hawaiian Home Lands tract. It then proceeds south, then west, and finally north a total of 66.0 miles along State Highway 11 to Kailua-Kona, connecting the Waiohinu Hawaiian Home Lands tract along the way. The route passes through some residential land and long stretches of agricultural land and open space, some of it (at Manuka and Kipahoehoe) native forest in the Conservation District. The route spurs off onto the County-owned South Point Road, along which it proceeds about 10.5 miles to within about a half-mile of South Point, at which point it bends east to connect to the Kamaoa-Puueo Hawaiian Home Lands tract.

Kailua-Kona to Waimea via State Highway 190. From the junction of State Highway 11 and State Highway 19 in Kailua-Kona the route splits, with an inland route proceeding to Waimea along Highway 190 (Palani Road/Mamalahoa Highway), and a makai route proceeding north along Highway 19 (Queen Kaahumanu Highway). The inland route goes 4.0 miles through open, residential and agricultural land along the County-maintained portion of Highway 190 (Palani Road) to Palani Junction. From there to near Waimea the highway continuing north and northeast 33.6 miles through agricultural and open land is State-maintained, some of which contains valuable native dryland forest at Pu`uwa`awa`a and Pu`uanahulu. The Highway 190 route connects to the Saddle Road about 7 miles south of Waimea, and then proceeds to Waimea, becoming County-maintained north of the entrance road to the Waimea airport, about a mile south of the Lindsey Road Junction at the center of Waimea town.

Kailua-Kona to Waimea (and Upolu Point) via the Queen Kaahumanu Highway. From the junction of State Highway 11 and State Highway 19 in Kailua-Kona the route proceeding north along Queen Kaahumanu Highway connects to the Kealakehe-Lai`opua and Hawaiian Home Lands tracts. The route passes through at first urban, then mostly open space land occupied by barely weathered lava flows in its 30.2 miles to the Kawaihae Junction with Akoni Pule Highway (State Highway 270).

At the Kawaihae Junction the route extends north 20.4 miles to Upolu Point Road along Akoni Pule Highway, serving along the way to the Kawaihae Hawaiian Home Lands tract. The route turns onto the County-owned Upolu Point Road and proceeds approximately 1.5 miles north through agricultural land to connect to the Upolu Hawaiian Home Lands tract.

At the Kawaihae Junction another segment of the State Highway 19 route extends through mostly open or residential land east 8.0 miles to Waiaka Bridge in Waimea, where it intersects the Kohala Mountain Road. From here Highway 19 extends under County maintenance through urban, residential, and agricultural land 2.0 miles to the Lindsey Road Junction, and then another 5.0 miles east to Mud Lane. This segment of the route will provide service to the Pauahi, Keoniki, and Puukapu Hawaiian Home Lands tracts.

Waimea to Hilo. From Mud Lane, the route extends east along State-maintained Highway 19 50.2 miles to the intersection with Highway 11 in Hilo, passing through mostly agricultural land, with some residential and urban land as well. The Hawaiian Home Lands tracts of Honokaia, Waikoloa-Waialeale, and Nienie will be served by fiber optic duct lines in this segment.

Saddle Road. The project proposes to utilize the realigned Saddle Road, which is a joint federal/State project scheduled to be built over the next 10-15 years. Table 2 lists a distance of 48.3 miles, the mileage of the existing Saddle Road between Highway 190 and Milepost 5 on Kaumana Drive in Hilo. The actual distance may be shorter, depending on the final routes chosen in the Saddle Road project and the timing of

segment construction. The Saddle Road passes through areas with agricultural, military and conservation use. This segment will serve the Humuula and Piihonua Hawaiian Home Lands tracts.

1.4 Construction Methods

There are four different duct system design alternatives being considered to contain the fiber optic telecommunication cables. Selection of a particular duct system design will be determined on a case-by-case basis during the design work performed for the various segments associated with this system. These alternative conduit systems are identified below:

1. A single 4-inch diameter duct.
2. Two 4-inch diameter ducts.
3. A single bundle of seven (7) 1¼-inch diameter ducts exposed or encased within a 6-inch pipe sleeve.
4. A combination of two 4-inch diameter ducts along with a single bundle of seven (7) 1¼-inch diameter ducts within a 6-inch pipe sleeve.

The various duct designs will likely be enclosed in a concrete encasement or other approved encasement types. Within roadway pavements, these concrete encasements will generally be situated about 3 feet below the surface, include a sub-base provided under the pavement's aggregate base course, and agency-approved backfill of material on top of the encasement. Within roadway shoulder areas, these encasements will be situated about 2 feet below the surface and will be covered with agency approved backfill material. In addition to these underground ducts, manholes of about 3 feet by 5 feet in size will be installed periodically, typically approximately every 2,000 to 3,000 feet.

All improvements associated with this fiber optic duct line project, including appurtenant pull boxes and switches, are planned to be constructed underground. A few small telephone cabinets necessary for the system may be installed at-grade within either DHHL properties, other privately-owned properties, or within the public right-of-way, as permitted by highway agencies. These telephone cabinets will generally be about 4 feet in height or less.

The planned construction methods for the installation of telecommunication cable will be either open trench work or some type of trenchless method such as horizontal directional drilling or microtunneling. The manholes installed will also be used for the installation of fiber optic duct lines. Trenchless methods will be used where open trench construction methods are not possible or practicable under certain environmental conditions, such as when disturbance associated with open trench methods is excessive.

The specific construction method implemented for a particular section of duct line will be determined on a case-by-case basis during the design of the various segments associated with this project. As a result, important design considerations affecting the selection of construction method will typically include existing geotechnical conditions, present

conditions along the roadway, and construction cost and schedule. One instance where trenchless methods would be considered is at major intersections in order to minimize disruptions to traffic flow.

The open trench method will typically be used where other underground utilities are not present, within rocky soils, or where construction corridors are not restricted. Construction of the duct system using this method will typically involve excavating a trench approximately 1 foot wide and 3 feet deep to allow installation of the various duct systems previously shown. These trenches will be backfilled, and roadway shoulders or pavements resurfaced to meet State or County design standards.

Horizontal directional drilling has been used to construct pipelines and avoid open-cut trench crossings beneath rivers and other waterways along with roadways through favorable geological deposits. This method of constructing pipelines or utility lines involves using sophisticated drilling techniques to drill a pilot hole, which is subsequently enlarged by reaming with various tools to obtain a bore hole of the desired size. Drilling mud is used to flush the cuttings from the bore hole and to stabilize the bore hole by maintaining a slurry-filled pathway for subsequent reaming passes and pipe pullback. When the bore hole has reached the required size, the pipeline (or a casing) is pulled back into the bore hole in a single operation.

Microtunneling is another underground method of constructing pipelines or utilities using a remotely controlled, laser guided, steerable boring machine. The line is installed using pipe-jacking methods from a jacking pit to a receiving pit. The line and grade accuracy of this method is usually good, typically within several inches when properly executed.

At bridge crossings encountered along the planned route, the design for fiber optic duct line crossings will be determined on a case-by-case basis because of differences in the design and materials associated with each bridge. Design crossings will consider either bridge attachments or directional drilling under streams or gulches (if practicable). It is intended that all fiber optic duct lines will be designed to avoid affecting streams or other sensitive environmental resources.

The design of all fiber optic duct lines within State highway facilities and federal-aid County highways will conform with the regulations and will meet or exceed the minimum design standards specified under Title 19, Chapter 105 (Accommodation and Installation of Utilities on State Highways and Federal Aid County Highways) of the State DOT's Administrative Rules. These regulations cover requirements for installation of underground utilities, highway crossings, and attachments to bridges. Similarly, the design of all underground fiber optic duct lines within County roadway facilities will conform with the regulations and will meet or exceed the minimum design standards prescribed in the *Standard Details For Public Works Construction* (DPW 1984). Furthermore, appropriate coordination with the State DOT and County will be conducted during the project's design.

1.5 Future Phases Of The Project

In addition to the underground fiber optic duct line project proposed within existing roadway right-of-ways on the island, future phases of the project will interconnect the island of Hawai`i system with DHHL homestead properties on other islands. A network of submerged cables and coastal landing sites are planned. Landing sites for these underwater cables are planned for the island of Hawai`i; however, no plans or project details have yet been developed concerning their precise number, nature, location, or phasing. Planning work to determine the feasibility or practicability of pursuing specific landing sites will be conducted as the project progresses and the information necessary to determine economic feasibility becomes available. Furthermore, the implementation of these landing sites will be contingent upon the successful development of the underground duct system within roadways connecting DHHL homestead properties. Implementation of the land-based system will have a direct bearing on the planning and development of these future landing sites.

Therefore, discussion associated with the environmental assessment of these landing sites is not appropriate at this time, since sufficient project information is not yet available to conduct an adequate assessment. The project team consulted with OEQC concerning this matter and a mutually agreeable approach was developed. As a result, a separate environmental document will be prepared for these landing sites at the appropriate time, after establishing the feasibility of the land-based phase, identifying practicable landing sites, and developing project details.

1.6 Regulatory Requirements

This Environmental Assessment (EA) process was conducted in accordance with Chapter 343 of the Hawai`i Revised Statutes (HRS). This law, along with its implementing regulations, Title 11, Chapter 200, of the Hawai`i Administrative Rules (HAR), is the basis for the environmental impact process in the State of Hawai`i. According to Chapter 343, an EA is prepared to determine impacts associated with an action, to develop mitigation measures for adverse impacts, and to determine whether any of the impacts are significant according to thirteen specific criteria.

The fiber optic duct line project will involve the use of right-of-way within the State Department of Transportation (DOT) and County of Hawai`i roadway facilities to install the fiber optic duct lines. As a result, this project will involve "use of state or county lands" under Hawai`i EIS law. Portions of certain existing roadways affected by the project are also situated within the State Land Use Conservation District. Hence, this project is subject to the environmental documentation procedures prescribed under Chapter 343, HRS and Title 11, Chapter 200 of the State Department of Health's (DOH) Administrative Rules.

This telecommunication project or portions of it meet the conditions prescribed under Exemption Class No. 3 of Title 11, Chapter 200, of the State DOH's Administrative Rules, which exempt projects from environmental assessment and processing procedures.

This exemption class involves the "Construction and location of single, new, small facilities or structures and the alteration and modification of same and installation of new, small, equipment and facilities and the alteration and modification of same including but not limited to:

(b) Water, sewage, electrical, gas, telephone, and other essential public utility services extensions to serve such structures or facilities.

The State DOT and the Hawai'i County Department of Public Works (DPW) both have approved exemption lists on file with the State Office of Environmental Quality Control (OEQC) for projects that meet this Exemption Class. The State DOT's comprehensive exemption list identifies "Utility service connection and installation along and across State highways or roads" under Exemption Class No. 3, item 7. DPW's exemption list similarly identifies "New installation of water, sewage, electrical, gas, telephone, street light, and other essential public utility service extensions within the County road rights-of-way" under Exemption Class No. 3, item 6.

Although this telecommunication line project appears to meet these exemption conditions, a Draft Environmental Assessment (Draft EA) is being prepared for this project to address the probable impacts associated with the entire route proposed for the island of Hawai'i. Therefore, this project represents an Applicant Action being undertaken by SIC.

Since this project represents an Applicant Action, the Accepting Authority for this environmental document rests with the agency receiving and agreeing to process the request for project approval. This telecommunication line project will require easements and permits for placing the lines within both State and County ROW, therefore, it involves more than one agency with jurisdiction.

To determine the Accepting Authority for this project, consultation with staff from the DPW, DOT, DHHL, and OEQC was conducted. Based upon the consultation, it was determined and agreed that the State DOT would serve as the Accepting Authority for this project. The State DOT was determined to be the most appropriate agency since it: 1) is the agency with the greatest responsibility for approving the action as a whole; 2) can most adequately fulfill the requirements of Chapter 343, HRS; 3) has special expertise and access to information; and 4) would have the most participation in the action since the majority of roads affected are under its jurisdiction. It was also decided that the Hawai'i County DPW would have the opportunity to review the Draft and Final EA prior to the State DOT's approval for publication of these documents. A copy of a letter from the Hawai'i County DPW confirming this authorization is included in Appendix A1.

Section 5 of this EA lists the significance criteria and the preliminary findings made for the State of Hawai'i Department of Transportation, the Accepting Authority for the EA. If no impacts are considered significant, then the proposing or approving agency will issue a Finding of No Significant Impact (FONSI), and the action will be permitted to occur. If this study finds that significant impacts are expected to occur as a result of the proposed action, then an Environmental Impact Statement (EIS) will be prepared.

1.7 Public Involvement and Agency Coordination

The following agencies and organizations have been consulted during the Environmental Assessment Process:

FEDERAL AGENCIES
U.S. Fish and Wildlife Service, Pacific Island Ecoregion
U.S. Army Engineer District, Honolulu, Planning and Operations Division*

STATE AGENCIES
Hawai'i State Dept. of Land and Natural Resources, Land Management Administrator
Hawai'i State Dept. of Land and Natural Resources, State Historic Preservation Division
Hawai'i State Dept. of Land and Natural Resources, Na Ala Hele Program
Hawai'i State Land Use Commission*
University of Hawai'i at Hilo, Chancellor's Office

COUNTY AGENCIES
Hawai'i County Mayor's Office
Hawai'i County Planning Department*
Hawai'i County Council
Hawai'i County Public Works Department
Hawai'i County Civil Defense Agency
Hawai'i County Police Department*
Hawai'i County Fire Department

PRIVATE ORGANIZATIONS
Hawai`i Island Chamber of Commerce
Hawai`i County Advisory Committee on Pedestrian and Bicycle Safety
Sierra Club, Moku Loa Group
Waimea Outdoor Circle
Kona Outdoor Circle
Hilo Outdoor Circle
Malama O Puna*

Copies of communications received during preconsultation, along with responses to these letters, are contained in Appendix 1A. Agencies that responded are noted with an asterisk in the lists above.

[Notice of the availability of the Draft EA was published by the Hawaii State Office of
[Environmental Quality Control (OEQC) in the Environmental Notice of 23 March
[2001. This initiated a 30-day comment period during which the public was invited to
[respond to the Draft EA with comments or questions. Ten comment letters were
[received. The letters and the responses to them are included in Appendix 1B. The
[Final EA has been revised in various sections to incorporate revisions based on
[issues discussed in these letters. Areas where information has been added to Final EA
[are denoted by brackets in the left-hand margin, as in this paragraph.

PART 2: ALTERNATIVES

2.1 Proposed Project

The proposed project is described in Section 1 and depicted in Figures 1 and 2.

2.2 No Action

The No Action Alternative is that SIC would not pursue construction of the fiber optic duct line project within rights-of-way of existing State and County roadways. Thus, essential communication service would not be provided to DHHL homestead properties, and the service benefits potentially available to beneficiaries would not be realized. DHHL would then need to fund the planning, design, and installation of these fiber optic duct lines to serve their homestead properties. Furthermore, not implementing the proposed project would not satisfy the license agreement DHHL issued to SIC to provide the installation of these fiber optic duct lines at no cost to DHHL. This alternative would therefore not meet the project needs and objectives, and will not benefit beneficiaries of DHHL. Conversely, the No-Action Alternative would not induce any short-term impacts to the roadside, such as traffic congestion, noise or air quality impacts, or risk of disturbance of adjacent sensitive sites. This EA considers the No Action Alternative as the baseline by which to compare environmental effects from the project. Because the No Action Alternative would result in no adverse or beneficial impacts in most resource categories, this alternative is not explicitly mentioned in the resource discussions below unless an impact exists.

2.3 Other Alternatives Evaluated and Dismissed from Further Consideration

Various alternatives to the present routes proposed under this project were considered during initial planning phases. These included alternative roadway non-roadway routes.

Given the limited roads present in most districts of the island, there were few other roadway-based alternatives available to feasibly and economically connect the various DHHL home-stead properties. State Highways 19 and 11, which make up much of the project route, are essentially the only roadways connecting most of the island. Alternative routes are available within the urban areas of Hilo and Kailua-Kona. The routes ultimately chosen were selected based on the principle of minimizing the area of disturbance and avoiding environmentally sensitive areas, while efficiently and economically connecting DHHL homestead properties.

Routes that do not use roadways for all or part of their length are also possible, but these will inherently involve disturbance of much previously undisturbed ground surface and will also create access difficulties. Because roadway routes will be far less impactful, non-roadway routes were eliminated from further consideration.

In particular, the use of energy corridors was considered, including: 1) Queen Ka'ahumanu Hwy. (Kawaihae to Airport); 2) Waimea to Honoka'a; and 3) Waimea to Waikoloa. These corridors were evaluated and then dismissed from further consideration for several reasons. First, substantial segments of the energy corridors occupy private land and/or rugged terrain distant from roads. As a result, the installation and future maintenance of underground cables in such areas would be more difficult, less energy efficient, and far less cost effective. Furthermore, the location of the energy corridors in areas of undisturbed terrain would heighten the potential for encountering subsurface cultural resources, and human burials.

PART 3: ENVIRONMENTAL SETTING, IMPACTS AND MITIGATION MEASURES

3.1 General Approach to Environmental Description and Impacts Formulation

Because the fiber optic duct line project will be constructed almost entirely within the right-of-way of existing roads, and will not occur or markedly affect any undeveloped land, it has the potential to impact a relatively limited range of natural, cultural and social resources. Furthermore, some categories of impacts have the potential to occur in only a few locations (e.g., effects to important botanical resources near roadways), whereas some could occur along virtually the entire route (e.g., interference with traffic from construction). Therefore, this EA discusses "Project-Wide" impacts and mitigation measures to be considered in the following section. The succeeding section, "Resource Areas" discusses site-specific resources, impacts and mitigation measures to be considered.

Environmental scientists (and, separately, archaeologists) examined the entire route (Fig. 1) during November and December of 2000, assessing the sensitivity of the roadside in terms of biology, land use, water resources, and potential traffic conditions. Figure 2 is a multi-page photo log of all routes on the island of Hawai'i. The photos have been chosen to illustrate distinct environments - such as urban vs. rural vs. wilderness, or coastal vs. inland – that will present different conditions for contractors engaged in construction. Various photos are referenced in this report to depict conditions or potential impacts.

3.2 Project-Wide Environmental Impacts and Mitigation Measures

Impacts

Construction activities have the potential, if unmitigated, to cause impacts in terms of Traffic, Noise and Air Quality, and Water Pollution. Although the potential for impacts is not uniform in every segment, some potential exists along the entire route.

Traffic and Access Impacts. Lane closures and construction on the sides of roads will cause traffic congestion on a limited scale. As the area of disturbance will essentially be limited to the right-of-way, and the pace of construction along a roadway will be relatively quick, the impacts will be limited in scale and time. Access to properties that adjoin the highways will never be lost, but short delays and detours may be necessary for brief periods of time.

Noise and Air Quality Impacts. Other typical short-term impacts often associated with construction-related activities are fugitive dust emissions and construction noise. Fugitive dust emissions are not expected to cause noticeable disturbance or annoyance to surrounding properties along affected roadways. The installation of the fiber optic duct lines will involve a very narrow trench or trenchless methods that will not result in substantial disturbance to existing pavement and shoulder areas. Similarly, construction activities are not expected to cause excessive construction noise that would significantly

affect surrounding properties along roadways. The great majority of the length of all route segments are within rural areas with few sensitive noise receptors. Activities are planned to be conducted during normal working hours of weekdays, and all work would comply with pertinent regulations.

Water Pollution Impacts. All roadside construction projects that involve excavation have the potential, if unmitigated, for uncontrolled excess sediment discharge from soil erosion during and after excavation and construction. Such discharges may impact natural watercourses and water quality. Contaminants associated with heavy equipment and other sources during construction may also impact receiving stream, ocean and ground water.

Mitigation Measures

These impacts can be avoided or reduced to very minor levels by adherence to mitigation measures, which will be developed in detail during the design phase of the project. The following mitigation measures are to be considered for work along the entire route:

Traffic Control and Access

- Development of a traffic control plan during the design phase of the project that will outline the steps needed to minimize congestion and maintain access to adjacent properties at all times during construction. Implementation of construction will be coordinated with agencies to prevent conflicts in activities.
- Appropriate public notice per County and State requirements for lane closures, as necessary.
- Design specifications that will meet all State and County standards, with plans reviewed by appropriate State and County agencies.

Noise And Air Quality Impacts

- Consultation prior to construction of individual route segments with the Hawai`i Department of Health (DOH) per Title 11, Chapter 46, HAR (Community Noise Control) concerning construction noise permit requirements. If and when permits are necessary, DOH will review the type of activity, location, equipment, project purpose, and timetable in order to decide upon conditions and mitigation measures. Possible measures include restriction of equipment type, maintenance requirements, restricted hours, and portable noise barriers. The precise combination of mitigation measures, if any, shall be specified by HDOH prior to construction.
- Maintenance in good working order of exhaust systems on construction equipment, use of properly designed engine enclosures and intake silencers.
- Implementation of dust control measures, as appropriate, potentially including use of water trucks, stabilization of the surfaces of stockpiled materials, and treatment of unpaved routes with dust suppressants.

Water Pollution

- Development of plans that will specify soil erosion and sedimentation Best Management Practices for areas in which construction may result in substantial surfaces of bare slopes or other denuded areas.
- Development of plans to remove and dispose of unused materials and excess fill in an authorized waste disposal site.
- Development of a plan, as necessary, incorporating involving Best Management Practices that minimize sediment, construction materials, waste materials, or toxic substances falling, leaking, or washing into streams, drainages, wetlands, or coastal waters.

3.3 Resource Areas

3.3.1 Geology, Climate and Hazards

Existing Conditions

The island of Hawai'i is formed from five volcanos (Fig. 3), of which two, Mauna Loa and Kilauea, are still active; large areas of the island are covered by geologically recent lava flows (Wolfe and Morris 1996). This youngest island in the Hawaiian chain is relatively uneroded and has the highest elevations in the State. The landscape varies from highly dissected slopes in the older northwest, to barely weathered plains of lava in the younger southeast. Climate varies widely, from extreme rainforest, where average annual rainfall can exceed 300 inches, to deserts with less than 10 inches of precipitation. Temperatures vary from tropical heat to near-arctic cold on the high mountains. Average wind speeds range from near-calm conditions in Kona, to windy in South and North Kohala, Ka'u and parts of the Saddle (U.H. Hilo-Geography 1998). The highly variable climate and substrate lead to an extremely wide range of soil types (U.S. Soil Conservation Service 1973).

The entire Big Island is subject to geologic hazards, especially lava flows and earthquakes. The U.S. Geological Survey developed a classification of lava flow hazard on a scale of ascending risk, from 9 to 1 (Heliker 1990). The fiber optic duct line project will be built in every zone except Zone 1; i.e., in areas with virtually no risk of lava flows (Zone 9 in North Kohala), to areas where 15-20 percent of the surface has been covered since 1800 (Zone 2 in South Kona and in the Saddle). In terms of seismic risk, the entire Island of Hawai'i is rated Zone 4 Seismic Probability Rating (Uniform Building Code, Appendix Chapter 25, Section 2518). Zone 4 areas are at risk from major earthquake damage, especially to structures that are poorly designed or built.

Lava tubes are often contained within pahoehoe lava flows. Some lava tubes are large and have openings for human entry, and are thus classified as caves. Lava tube caves in Hawai'i may have value as historic sites, recreation areas, unique geological features, or for other reasons.

Impacts and Mitigation Measures

This diverse geographic setting has certain implications for the project. Construction techniques and facility design must cope with a wide variety of climatic conditions, from relatively high to freezing temperatures. Excavation will occur in areas of deep soil and solid rock, and construction crews may encounter both extremely windy and rainy conditions in certain areas.

Otherwise, geologic hazards pose no substantial constraints on the project, because there are no reasonable alternatives that could avoid such hazards, and the project does not present any additional hazard to the public.

Lava tube caves will require special consideration in order to avoid impacts to resources and safety hazards during construction. Highway agencies are aware of most major lava tube caves that have been encountered during construction or maintenance of a highway. As far as unknown lava tube caves, excavation areas will be within the shoulders, or in some cases the sidewalks or paved travelways of existing roads. For the vast majority of the length of the routes, excavation will thus occur within areas that have already been graded and filled for construction of the roadbed. This is especially true of major state highways such as Highway 19 and 11. In such areas, discovery of a significant unknown lava tube cave is highly unlikely. Furthermore, many lengths of the route occur in substrates (e.g., deep soil in Hamakua) where lava tubes are highly unlikely within three feet of the surface. Nevertheless, some well-known lava tube caves exist near roadways and there is at least some chance that unknown caves may be encountered. In order to avoid or minimize impacts to resources of significant lava tube caves, the following mitigation measures should be considered:

- Identification of known significant caves in the area prior to construction, through consultation with highway agencies or other entities with jurisdiction in the area, in order to prevent impact to significant cave resources and safety hazards from caves during construction.
- Incorporation in contract documents of construction specifications that minimize potential hazards of caves to construction workers.
- Development of contingency plans in case a large or otherwise significant lava tube cave is encountered during construction. Such plans will include consultation with appropriate resource or regulatory personnel to ensure that unique biological, cultural, or geological resources associated with these features are adequately protected, or investigated and documented.

3.3.2 Soils and Farmland

Existing Environment

As would be expected on an island with a highly diverse climate and a variety of volcanic material, a wide range of soil types is present on the island of Hawai`i (Fig. 4) (U.S. Soil Conservation Service 1973; UH-Hilo Dept. of Geography 1998). Many of the world's major soil orders are represented. The following groups are present:

Lava Histosols: These organic soils develop when vegetation and its litter alter geologically young lava flows. They generally form a well-drained, thin (1-8-inch) layer on the lava rock, which itself may drain fast or slow depending on structure.

Andisols: These soils often evolve on deep ash in moist to semi-arid conditions and are characterized by the capacity to take up large quantities of phosphorus.

Entisols: These soils are found on geologically very recent deposits, including beach sands, alluvial deposits, and volcanic cinder.

Inceptisols: These weakly to moderately developed soils occur on unstable or relatively young landscapes.

Aridisols: These often fertile soils are derived from volcanic ash in leeward areas where precipitation often limits productivity unless irrigation is employed.

Mollisols: These well-drained and fertile soils develop on a variety of substrates and are important agricultural soils in Hawai`i.

Lava, Cinder or Rubble: This miscellaneous type consists of areas of volcanic deposits that have not weathered sufficiently to form a true soil.

Soil types are distributed as follows along the route segments:

South Hilo and Puna District. The route segments in these districts are dominated by Andisols where thick layers of ash overlie Mauna Kea or very old Mauna Loa lavas, and by Histosols in the younger lava flow areas. The Andisols here have a soil erosion risk from slight to moderate, increasing with slope, and usually have rapid permeability and medium runoff. Histosols have little risk of erosion and vary in permeability and runoff from slight to moderate based on underlying rock structure; pahoehoe masses with few cracks often drain slowly.

Ka`u, South Kona and North Kona Districts. A mixture of lava, Histosols and Andisols is present along the route segments, distinguished from those in South Hilo and Puna by characteristics less influenced by high rainfall.

North and South Kohala Districts. These areas contain large expanses of barely weathered lava, with other, older regions dominated by Andisols, Aridisols and Mollisols.

Hamakua and North Hilo Districts. The Hamakua and North Hilo route segments entirely traverse Andisols.

The agricultural utility of land on the island of Hawai'i was assessed in the 1970s by the U.S. Soil Conservation Service and mapped as part of the *Agricultural Lands of Importance to the State of Hawaii* (ALISH) map series (Baker 1976:4). Three categories of valuable agricultural land are identified: Prime, Unique, and Other. Prime Land "has the soil quality, growing season, and moisture supply needed to produce sustained high yields of crops economically when treated and managed . . . according to modern farming methods" (Ibid:2). Island-wide, Prime Lands constitute about 4 percent of the surface, Unique Lands less than 1 percent, Other Important Lands about 18 percent, and Unclassified the remaining 78 percent.

Although the route segments traverse areas of Prime, Unique and Other Important Farmland in each district of the island, the project occurs entirely within road rights-of-ways, which are not counted as farmland, and often contain imported material rather than native soil.

Impacts and Mitigation Measures

Construction of the underground fiber optic duct line will affect unpaved shoulders, paved shoulders, or paved travel lanes within existing rights-of-way of both State and County roadways. Although many different native soil types are present, the actual soil types encountered would likely consist mainly of structural fill overlying a compacted sub-base associated with the construction of existing roadway facilities. This structural fill could likely consist of crushed basalt, while the sub-base would likely consist of compacted existing, or "in-place" soils or rock. Given this prior disturbance of existing soil composition for roadway construction, the installation of cables should have minimal effect on existing soils and no effect on farmlands

To minimize potential short-term impacts during construction activities, an erosion control plan will be prepared during the design of particular route segments as required. Appropriate coordination and review of design plans will also be performed with pertinent agencies.

3.3.3 Water Features and Aquatic Biological Environment

Existing Environment: Streams and Aquatic Biology

The 330 miles of road segments cross several dozen named permanent and intermittent streams that are bridged or culverted, as well as many unnamed intermittent streams and drainages, mostly culverted. At streams and drainages encountered along the planned

route, the design for fiber optic duct line crossings will be determined on a case-by-case basis, since there are differences in the design and materials associated with each bridge. Design crossings will consider either bridge attachments or directional drilling under streams or gulches (if practicable). The project has been designed specifically to avoid entering or otherwise affecting streams.

The *Hawai'i Stream Assessment* (Hawai'i State CWRM 1990) inventoried State streams for resources, habitat, cultural and recreational value. Over a hundred streams from this inventory would be traversed by the fiber optic duct line route segments. Most have value in one or more resource categories, and about half are considered to have "Outstanding" status in or more categories. Of particular importance are the *Candidate Streams for Protection*, which meet the criteria for either diversity of outstanding resources or "blue-ribbon resources." Four such streams would be crossed by the route segments: Waikoloa, Kolekole, Honoli'i, and Wailuku Streams (see Fig. 1 for location).

The *Hawai'i Stream Assessment* also classifies streams according to their habitat quality for native stream fauna. Hawaiian native stream fauna is often characterized as limited – because it consists of only a few freshwater fish, mollusks, crustaceans and insects – but unique and valuable. Although preservation of all streams is important, those that contain scarce native species that act as indicators of high quality native ecosystems are of the highest priority to protect. A suite of four species commonly used as such indicators comprise a snail, the hihiwai (*Neritina granosa*) and three fishes, the 'o'opu alamo'o *(Lentipes concolor)*, the 'o'opu nopili (*Sicyopterus simpsoni*) and the 'o'opu nakea (*Awaous stamineus*). They are called jointly "Native Species Group One" in the *Hawai'i Stream Assessment*. A number of other important natives including various fish, shrimp, snails and prawns are somewhat more common. In addition to natives, a number of introduced species, some of which are spreading their range and are harmful to native ecosystems, are also present in Hawaiian streams. These include a catfish, a mosquito fish, a clam, a guppy, a prawn, and various others. The Tahitian prawn, (*Macrobrachium lar*) is noxious but virtually ubiquitous in Hawaiian streams.

Existing Environment: Other Aquatic Environments

The project does not directly involve any use other Waters of the U.S, such as wetlands, estuaries, or coastal waters. In general, the route segments do not abut or approach such water features, with several exceptions:

- Kalanianaole Avenue near Reeds' Bay, James Kealoha County Park, and Leleiwi Beach Park (Fig. 2OO-PP), where coastal wetlands or embayments are present.
- The estuaries of the Wailoa, Wailuku, Honolii, and Hakalau Streams, as well as several smaller streams, on State Highway 19.
- The coastal embayment near Wainaku (by Hilo) on Highway 19 (Fig. 2V).

Impacts and Mitigation Measures

An integral goal of project planning, including the rationale for route selection and design details, has been to avoid effects to any Waters of the U.S., including streams, wetlands, estuaries, navigable waters or other sensitive hydrologic resources. In general, standard project construction methods and Best Management Practices can prevent impacts to these resources, but the mitigation measures identified in Section 3.2. should be considered in order ensure that the potential for impacts is recognized and such impacts are avoided. Although the need for permits for Fill in Waters of the U.S. is not anticipated, appropriate coordination will be conducted with the U.S. Army Engineer District, Honolulu Department of the Army, during the design of the various fiber optic duct line route segments, in order to address any applicable permit requirements.

3.3.4. Drainage and Floodplains

Existing Conditions

Floodplain status for the many areas of the island of Hawai`i has been determined by the Federal Emergency Management Agency (FEMA), which produces the National Flood Insurance Program's Flood Insurance Rate Maps (FIRM). Applicable Special Flood Hazard Area (SFHA) designations are as follows:

1. Zone A: SFHAs subject to inundation by the 100-year flood. Because detailed hydraulic analyses have not been performed, no base flood elevation or depths are shown.
2. Zone AE: SFHAs subject to inundation by the 100-year flood determined in a Flood Insurance Study by detailed methods. Base flood elevations are shown within these zones.
3. Zone AH: SFHAs subject to inundation by 100-year shallow flooding (usually areas of ponding where average depths are between 1 and 3 feet). Base flood elevations derived from detailed hydraulic analyses are shown in this zone.
4. Zone VE: SFHAs along coast subject to inundation by the 100-year flood with additional hazards due to velocity (wave action). Base flood elevations derived from detailed hydraulic analyses are shown within these zones.
5. Zone X: Areas identified in the community flood insurance study as areas of moderate or minimal hazard from the principal source of flood in the area. However, buildings in these zones could be flooded by severe, concentrated rainfall coupled with inadequate local drainage systems. In this area, such a zone may be inundated by the 500 year flood.

Flood Insurance Rate Maps (FIRM) for the island of Hawai`i were reviewed in relation to the fiber optic duct line routes. The FIRM maps indicate a number of areas where the routes cross floodplains. The flooding is of two general types, coastal and stream. In coastal areas the principal sources of flooding are high waves and tsunami. The routes

enter several coastal areas that are subject to some flooding since they follow existing coastal highways and roadways. Figure 5 shows the route in relation to the mapped flood zones, summarizing 23 different FIRM maps. It should be noted that not all areas of the island have been systematically studied through FIRM maps, and that the FIRM maps only depict areas where flood potential has been identified and studied. The lack of depiction of a flood zone on a FIRM map does not necessarily mean that flood potential is absent.

South Hilo District. A substantial portion of the coastal area of the city of Hilo is classified within the VE and AE zones. There is a history of tsunami, high wave and stream flooding. Most of the route segment following Highway 19 from its intersection with Highway 11 to the Wailuku River is within a flood zone, as is Kalanianaole Street for most of its length. In addition, route segments include wide (greater than 500 feet in width) areas of flood zone encroachment near the following streets: Kaumana Drive near Kaumana Cave and Waipahoehoe Stream; on Komohana Street near Mohouli Street and at Waiakea Stream at Puainako Street; on Highway 19 near the old Wainaku Mill; and on Highway 11 at one of the locations where Palai Stream crosses the roadway. Narrower flood zone crossings occur on two locations on Komohana Street (one of which, at Alenaio Stream, in 2000 caused flood damage severe enough to cause the closure of Komohana Street for over three months), on Kaumana Drive at Waipahoehoe Stream (which also experienced severe flooding recently), and on Highway 11 at a second crossing of Palai Stream and the Waiakea Uka Flood Control Channel.

Puna and Ka'u Districts. No flood zones are identified on the FIRM maps for the route segments in these districts, although recent heavy rains caused local flooding across the main highways in a number of locations.

North and South Kona Districts. A number of narrow (less than 500 feet wide) flood zone crossings occur on the Highway 11 route segments between the Hookena area and Kailua-Kona.

North and South Kohala Districts. No flood zones are identified on the FIRM maps for the route segments in North Kohala. A number of encroachments are present along on the Kawaihae-Waimea Road (Highway 19) in South Kohala. While many are narrow crossings, wide encroachments of A and AE zones are associated with Lanikepu Gulch, Keanuiomano and Kohakohau Streams. On Highway 19 east of the center of Waimea, wide flood zone crossings are present at Waikoloa and Laniamaumau Streams, along with several narrow encroachments.

Hamakua and North Hilo Districts. Narrow encroachments of A and AE flood zones associated with unnamed drainages occur near Honokaa on Highway 19. Aside from these areas, no flood zones are identified on the FIRM maps for the route segments in the Hamakua or North Hilo Districts, much of which is unmapped.

`Impacts and Mitigation Measures

The proposed underground fiber optic duct lines are not expected to be impacted by the various flood hazards present along certain portions of the routes. Furthermore, the installation of the fiber optic duct lines will not affect developed land uses and structures located within applicable flood areas in such a way as to increase flood hazards. It is common for utilities to be installed in areas that contain intermittent Special Flood Hazard Areas since utilities are generally situated within the rights-of-way of existing roadway facilities.

The fiber optic duct lines will be constructed underground in conformance with State and County design requirements, and are thus not expected to be subject to damage from any flooding which may occur. The majority of flood hazard areas encroaching onto existing State or County roadways are associated with streams or drainage areas present within the area. Consequently, drainage improvements already implemented as part of the roadway construction or development of surrounding buildings and structures have addressed such flood hazards. Installation of the fiber optic duct lines should not impact the design or condition of such drainage facilities. Thus, the project will not alter existing drainage conditions which may impact existing buildings or structures along roadways during periods of flooding. Furthermore, review of construction plans will be coordinated with pertinent State and County agencies during the design of various segments.

3.3.5 Terrestrial Biological Environment

Existing Conditions

The 330 miles of route segments traverse a wide variety of biological environments. Most of the length of the routes involve areas of highly disturbed vegetation associated with urban uses, farming or ranching. A range of weedy communities varying with elevation and rainfall dominate the areas on or near the roadway or shoulders, where activities will mainly be confined. Such areas are also regularly mowed or treated with herbicides as part of road maintenance, and they are generally not biologically sensitive (See photos in Fig. 2 for typical roadsides).

However, there are several sections of route segments where sensitive species or habitat are present immediately adjacent to the roadway, and/or protected areas adjoin the roadway. Figure 8 shows State Forest Reserves, State Wildlife Sanctuaries/Wilderness Preserves, State Natural Area Reserves, and National Parks that are adjacent to/near the route. The route passes through the Hilo Forest Reserve on the Saddle Road; through the Manuka and Kipahoehoe Natural Area Reserves in Ka`u and South Kona (respectively); and adjacent to the Kipuka `Ainahou Nene Preserve on Saddle Road,.

These areas contain valuable ecosystems, sensitive habitats, and/or rare, threatened or endangered species, and will require special care in order to avoid impacts. In particular, the following should be noted:

- Saddle Road from Milepost 8 to Milepost 43. This segment, which spans 4,500 feet in elevational differences and rainfall conditions from extremely wet to dry, contains a variety of fairly intact to nearly pristine native forests and shrublands (Fig. 2A-F), some within the Hilo Forest Reserve and some on the Pohakuloa Training Area. The Saddle in general has one of the highest concentrations of endangered plant and animal species in Hawai'i, and is important habitat for native birds and invertebrate fauna. The Kipuka 'Ainahou Nene Sanctuary is a 40,000-acre sanctuary established in 1974 as part of recovery efforts for the endangered Hawaiian Goose or Nene (*Branta sandvicensis*). A total of 320 birds were released in the early 1970s, but none have been released in the past twenty years because of poor survival rates. It is estimated that there are 16 Nene present in the Saddle area and no more than four in the vicinity of Kipuka 'Ainahou. No successful production has been recorded in the Sanctuary within at least the last ten years (USDOT 1999: Part II, 1.4.4).
- Highway 190 (Kona-Waimea Road) between the Pu'uanahulu area and Kaupulehu, from Milepost 12 through 30. Although no official protected areas are present (the Pu'uwa'awa'a Wilderness Preserve is several miles mauka of the highway), the grassland/remnant dry forest contains a number of rare (and some threatened and endangered) plant species in areas directly adjacent to the road. In particular, individuals from the genera *Erythrina, Diospyros, Reynoldsia* (Fig. 2DD), *Pleomeles, Pouteria, Xylosma,* and *Santalum* are present. *Pleomeles hawaiiensis*, the halapepe, is a listed endangered species, and several individuals are present directly adjacent to the roadway (Fig. 2EE).
- Highway 11 in South Kona, near Milepost 91, in the vicinity of the Kipahoehoe Natural Area Reserve (Fig. 2M), and also in Ka'u, near Milepost 80, Manuka Natural Area Reserve. These protected areas contain a mesic (intermediate between wet and dry) native forest with some rare plant species near the road.

Impacts

The construction activities, of course, will be restricted to the right-of-way, specifically in the shoulders, paved roadway travel lanes, sidewalks and bridge structures. However, indirect effects from construction have the potential to affect adjacent areas. In sensitive areas, extra mitigation measures will be necessary to ensure that adverse impacts are avoided.

During construction, the use of construction equipment will increase the risk of fire ignition. Fire poses a grave threat to Hawaiian ecosystems by converting native habitats into grasslands dominated by nonnative species. As in other tropical areas, fires in Hawai'i are usually caused by human activity. Because few native Hawaiian animals or plants are adapted to wildfires, they generally perish when exposed to fire. Native shrubs and trees may recover from fire to some degree, but native plant communities are often

overwhelmed by more aggressive alien species. Many nonnative species, such as fountain grass (*Pennisetum setaceum*), are *pyrophytic* (fire-adapted) and thrive in the aftermath of fires. Unlike native shrubs and trees, many alien grasses recover quickly, increasing in ground cover and biomass after a fire. Fires encourage nonnative fountain grass, by stimulating growth from the base of clumps and encouraging seed production. The establishment of pyrophytic grasses increases the threat of additional fires. Fire represents a major disturbance, which encourages conversion of native-dominated communities into alien-dominated plant communities. Furthermore, fire has also been identified as the single greatest threat to the continued survival of the endangered Palila (*Loxoides bailleui*), a bird now found only on the western slopes of Mauna Kea above about 7,000 feet in elevation.

The Saddle Road west of the Mauna Kea Access Road and all of Highway 190 are particularly subject to fire hazard that could threaten valuable species and ecosystems. This is true to a lesser degree at Kipahoehoe and Manuka Natural Area Reserves. Wildfire is also threat on Highway 11 near Naalehu, Highway 19 west of Waimea, as well as Highway 270 in North Kohala, although fire in these areas is less of a threat to native ecosystems than to pasture and property.

Mitigation Measures

In order to reduce the minimize the risk of wildfire, it is recommended that contractors engaged in construction in North and South Kohala, Ka`u, and North and South Kona prepare a fire mitigation plan during construction that outlines steps to site staging areas, train personnel and monitor construction sites.

In addition, for the areas listed above, special precautions should be undertaken:

Saddle Road. The Federal Highway Administration (FHWA) conducted a joint federal-state Environmental Impact Statement (EIS) for the Saddle Road Improvement Project (USDOT 1999). Biological surveys undertaken for the EIS surveyed wide corridors around the existing Saddle Road and a variety of other proposed alternatives. A federal Record of Decision (ROD) issued in November 1999 contained an extensive list of mitigation measures designed to avoid and minimize biological impact. These involved specifications on fill type and equipment cleansing to prevent alien species spread, fire prevention measures, biological monitoring for endangered species, construction crew environmental awareness training, and other provisions. Many of the mitigation measures were necessary because of encroachment on critical habitat and construction in undisturbed areas, and will not apply to the proposed project. During project design, consultation with the Hawai`i State DOT and FHWA should occur to determine which mitigation measures specified in the ROD should be implemented for the proposed project.

It should also be noted that the U.S. Fish and Wildlife Service (USFWS) is mandated by court order to list critical habitat during 2001 for a number of

endangered plant species found in the Saddle area. If, prior to project implementation, the USFWS lists critical habitat in areas adjacent to the shoulder that the project will involve, additional consultation between the Hawai`i State DOT and the Hawai`i Department of Land and Natural Resources, the agency entrusted with protecting endangered species under State law, may be required to determine whether further mitigation is necessary or advisable.

Pu`uanahulu to Pu`uwa`awa`a Area. In these areas, special precautions to minimize disturbance should be taken. The project's design plans will be coordinated with DOT to determine necessary mitigation measures. These may include identification and temporary flagging of individuals of rare, threatened and endangered plant species that have at least some risk of being indirectly impacted, delineation of construction work areas within the ROW or clearly marked and approve staging areas, and special precautions to avoid fire. Identification and flagging of sensitive species is not advisable until just prior to construction in order to ensure the security of these plants.

Kipahoehoe and Manuka Natural Area Reserves. These areas are within the State Land Use Conservation District (see Section 3.3.6), and mitigation conditions will be most appropriately be determined in consultation with DLNR. One recommended measure would be to limit construction to the delineated construction work areas within the ROW or clearly marked and approved staging areas.

3.3.6 Social Environment

Existing Conditions

Land use on the Big Island is still mainly rural, with great tracts of open space in farms, ranches, and wilderness, including the majority of the land traversed by the roadways that will be used in the fiber optic duct line project. The population of the Big Island grew from about 92,000 in 1980 to over 130,000 in 1996, and is now estimated at over 140,000. The largest center in East Hawai`i is Hilo (pop. 39,737). West Hawai`i has two large and fast-growing population concentrations, in Kailua-Kona (pop. 9,126), and Waimea (pop. 5,972) (U.S. Bureau of the Census 1991)

Although East Hawai`i still has the majority of the island's population, recent growth has been concentrated in the west, where the visitor industry is centered. On any given day, visitors – most in West Hawai`i – account for over 12 percent of the de facto population. East Hawai`i has lower incomes, a more ethnically diverse population, and larger proportions of disabled, elderly, poorly-educated, non-working and poor individuals. Household incomes, home prices, and rents are lower in East Hawai`i. (Ibid.).

The Big Island's multi-ethnic history has created a strong sense of community evinced in people and landscape. Many native Hawaiian and Asian traditions have been enthusiastically embraced by later arrivals. Most long-time Hawai`i (*kama`aina*) families

trace their roots to such beginnings and share deep and wide-ranging bonds. *Kama`aina* and newcomer alike enthusiastically celebrate this heritage in such events as hula festivals, plantation days and rodeos.

Ethnic native Hawaiians account for about 20 percent of the population on the Big Island. Although they reside in every town and district of the island, 1990 census data showed somewhat higher concentrations in certain areas such as the town of Waimea (31.1%), the Keaukaha neighborhood of Hilo (more than 50%), and the district of South Kona (23.5%) (U.S. Bureau of the Census 1991).

As discussed in Section 1.1, the population of Hawaiian Home Lands, which comprise 25 distinct tracts with more than 115,951 acres on the island of Hawai`i, is growing. Figure 1 shows how the tracts are located around the island in both rural and urban areas.

Impacts and Mitigation Measures

As Hawaiian Home Lands continue to gain population, there will be an increasing need to supply high-quality, essential telecommunications services. It is important to note that Hawaiian Home Lands often include schools, churches, parks, and community centers, all of which can also benefit from these services. Hawaiian Home Lands are in many cases removed from other urban centers with the dense population and business activity that justify installation of advanced telecommunications facilities. Some DHHL areas remain unserved due to the reluctance of the incumbent telephone company to provide telephone infrastructure and service. The fiber optic duct line project will benefit residents of Hawaiian Home Lands areas.

The proposed project is not expected to result in any growth or shifts in population, or any adverse socioeconomic impacts. No significant impacts to the island's existing housing or resident population are expected, as the proposed project does not involve an increase in housing units that could increase the existing resident population. Although the project would provide many short-term construction jobs and some long-term operational jobs (see Section 3.3.7), these would almost certainly be filled by local residents and would not induce in-migration. The fiber optic duct line project is also not expected to significantly disrupt or change the unique characteristics associated with each community. The fiber optic duct lines will be located underground within existing State and County roads and highways. As a result, the duct lines will not be visible or disrupt activities occurring in affected communities.

3.3.7 Economy

Existing Conditions

Agriculture, traditionally the prime economic engine on the Big Island, remains important. Whereas sugar, macadamia nuts, and coffee were historically the major agricultural products, significant and growing contributions are being made in the diversified agriculture sector, which includes papayas, vegetables, cut flowers, and

nursery products. Livestock raising remains important, and timber appears to hold promise for the future.

For most of the 20th century, employment on the Big Island has been linked to agriculture, directly or through services. But in the 1990s, an already weakened sugar industry collapsed, taking with it more than 1,000 jobs. The island was already reeling from the statewide recession, and East Hawai'i's economy became severely depressed, with negative economic growth and high unemployment. Since 1993, over 45,000 acres have been taken out of sugar production. A small portion has been utilized for other purposes, including truck farming, timber, cattle grazing, or other start-up, experimental or low capital requirement activities. Few of these efforts employ meaningful numbers of former sugar workers, and most of the former sugar cane acreage now lies fallow.

With the demise of sugar, tourism, long the dominant industry in West Hawai'i, has become increasingly vital to the economy of the entire island, despite being subject to periodic downturns. Tourism has experienced meaningful recovery since late 1996 and is in a definite upcycle, particularly on the Kona and Kohala coasts. After the relatively quiet 1990s, the visitor industry is booming and conditions are ripe for a period of accelerating growth. In the first half of 2000, State of Hawai'i general excise tax receipts from Hawai'i County rose by 18 percent over the corresponding period in 1999, and the value of private construction permits increased by 54 percent (www.Hawai'i.gov/dbedt/ selected).

The growth in population and the diversification of business over the last ten years has resulted in a multi-faceted and flexible labor pool on the island of Hawai'i. Workers are not always fully employed, as Table 3 indicates. The latest unemployment figures for the island of Hawai'i show a dramatic drop to less than six percent.

Table 3
Unemployment Figures, State and Hawai'i County 1993 to Present

	1993	1994	1995	1996	1997	1998	1999
Hawai'i State	3.8%	5.2%	6.0%	5.7%	6.4%	5.4%	5.6 %
Hawai'i County	5.9%	9.6%	7.8%	8.6%	10.2%	8.0%	9.6%

Source: State of Hawai'i Department of Labor and Industrial Relations. All figures year-end.

Distributing the benefits of a growing economy equitably has been hampered by the great distances and poor road connections between the many corners of the island where the DHHL Homestead areas are located.

Economic Impacts

The economic impacts of the proposed project are highly beneficial. On a long-term basis, the establishment of high quality, essential telecommunication services, along with employment and training opportunities, represents a substantial economic benefit, which will be particularly welcome in the rural, socio-economically disadvantaged Hawaiian Home Lands communities. The establishment of high-speed telecommunications may also foster telecommuting for DHHL residents, increasing employment and productivity, and also saving energy.

On a short-term basis, considerable economic benefits are associated with construction. The preliminary construction budget for the fiber optic duct line project is estimated at $100 million. The project will create construction jobs over the anticipated three and a half-year construction period. Direct construction jobs typically consist of on-site laborers, tradesmen, equipment operators, supervisors, etc. Engineering jobs associated with the design and construction management work typically consist of surveyors, design engineers, and administrative staff. It is anticipated that these project-related jobs will likely be filled by residents from the island of Hawai`i employed within the engineering and construction fields.

It is estimated that several hundred full-time direct construction jobs will be created over the entire construction period. Direct jobs created will also stimulate indirect and induced employment within other industries on the island such as retail, restaurants, material distributors, and other related businesses. This will also generate a substantial number of additional indirect and induced jobs over the three and a half-year construction period resulting from the income spent by direct construction jobs.

Fiscal Impacts

Fiscal impacts would also tend to be also positive. Fiscal impacts associated with this project will mainly involve additional tax revenue generated to the State resulting from the expenditures for project construction. County revenues are primarily derived from property tax revenues, which will change only minimally as a result of the project. However, easement fees for granting the installation of fiber optic duct lines within both State and County rights-of-way will generate some additional income for both the State and County.

Tax revenue sources for State government are composed primarily of general excise taxes (GET) on development costs and construction materials, along with corporate and personal income tax. Direct and indirect sales, profit and income will generate substantial revenues. Based upon the $100 million construction budget estimate, this project will generate, conservatively, several millions of dollars State income tax revenue and State GET tax from direct, indirect and induced business revenues and personal and business sales.

Based on historical unemployment figures and typical employment sources during road construction projects, the fiber optic duct line project construction would not be expected to induce migration from outside the island of Hawai'i. There will thus be negligible additional State and County operational expenditures for public services, and producing a highly beneficial fiscal situation.

3.3.8 Public Services and Facilities

3.3.8.1 Recreational Facilities

Existing Facilities

A number of recreational areas and facilities are located throughout the island of Hawai'i, including beach parks, golf courses, district and neighborhood parks, and community centers. As of 1998, four national parks or historic sites making up 230,621 acres, 19 state parks, recreation areas, or historic sites with 959.6 acres (not including about 380,000 acres of multiple purpose State forest units), and 135 county parks totaling 1,361 acres are present on the island of Hawai'i (Hawaii County R&D 1998).

The following facilities are immediately adjacent to the fiber optic duct line route:

South Hilo District. Six County beach parks front directly on Kalanianaole Avenue: Lehia, Richardson's, Leleiwi (see Fig. 2PP for photo), Lalakea, Kealoha, and Onekahakaha. In addition, the beach recreation area of the Keaukaha Hawaiian Home Lands tract is also present. Bayfront Highway (State Highway 19) in Hilo passes through and/or along the Banyan Golf Course, the Wailoa River State Recreation Area, Bayfront County Park, and Mooheau County Park. Further north along Highway 19 in South Hilo the route passes by Honoli'i and Kolekole County Beach Parks. The route segment that proceeds towards the Saddle Road - along Highway 11, Kahaopea Street, Ahuna Road, Kawailani Street, Komohana Street, and Kaumana Drive - passes the Andrews County Gymnasium Complex, Hilo Municipal Golf Course, and Kaumana Caves County Park. Various units of State land along the Saddle Road are used for recreation, including hiking and hunting. Mauna Kea State Park (actually in the Hamakua District) is currently directly adjacent to the Saddle Road. The new road will avoid the park by several hundred feet.

Puna District. The route through Lower Puna passes no public recreation areas, but does run adjacent to the private Paradise Hui Hanalike Community Center on Maku'u Drive, a private road. In Upper Puna, the route passes by Kea'au, Kurtistown, Mountain View, and Glenwood County Parks.

Ka'u District. In Ka'u, it should be noted that the route does not enter Hawai'i Volcanoes National Park, as it does not extend north of the Ninole area. It does pass by Na'alehu and Wai'ohinu County Parks, as well as the Manuka State Wayside in the Manuka Natural Area Reserve.

CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

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South Kona District. The route passes by the Greenwell County Park and Kona Community Civic Center in Captain Cook.

North Kona District. The route passes by Higashihara County Park near Honalo on State Highway 11. No public parks are present on State Highway 190, but hunting areas are located at Pu`uanahulu and Pu`uwa`awa`a. The private Big Island Country Club is adjacent to Highway 190 as well. On State Highway 19 (Queen Kaahumanu Highway), the route passes by Kaloko-Honokohau National Historical Park and Kekaha Kai State Park.

South Kohala District. The route passes by Hapuna Beach State Recreation Area, Pu`u Kohola National Historic Site, and Samuel Spencer County Beach Park. In Waimea, the route passes by Waimea County Park and the Waimea Civic Center.

North Kohala District. The route passes by Lapakahi State Park.

Hamakua and North Hilo Districts. The route does not pass adjacent to any formal recreation areas in these districts.

Impacts and Mitigation Measures

The fiber optic duct line project should not have any long-term impacts on recreational facilities, since the duct lines will be located underground within the rights-of-way of both State and County roadways. As a result, the project will not restrict access to recreational facilities or the activities conducted there. Construction activities inevitably have some minor short-term impacts on recreational facilities. Such impacts typically involve construction noise, fugitive dust from trenching activities, and temporary closures of lanes.

To address traffic concerns in the area, a traffic monitoring plan will be prepared during the project's design to minimize disruptions to travel lanes and vehicular traffic along roadways. This plan will be coordinated with the applicable State or County agency during the project's design for their review and approval, and will then be implemented by the contractor. In addition, the contractor will be required to comply with other State DOH regulations covering construction noise and fugitive dust emissions. Consequently, the project is not expected to have any substantial impact on recreational facilities.

3.3.8.2 Educational Facilities

Existing Facilities

A total of 57 elementary, intermediate, secondary or combination schools, 40 public and 17 private, were present on the island of Hawai`i as of 1999 (Hawai`i County R&D: 2000). In addition, there are three public colleges in operation, and several small private colleges, and a number of pre-schools.

The following facilities are known to be immediately adjacent to the fiber optic duct line route:

South Hilo District. Highway 11 does not pass by any schools in South Hilo. The route segment that proceeds towards the Saddle Road - along Highway 11, Kahaopea Street, Ahuna Road, Kawailani Street, Komohana Street, and Kaumana Drive - passes Waiakea Waena Elementary School, the University of Hawai`i at Hilo, and Kaumana Elementary School. The route segment extending north along Highway 19 passes by Kalanianaole Elementary School in Papa`ikou. Richardson's Ocean Education Center is located on Kalanianaole Avenue.

Puna District. The route through Lower Puna passes Kea`au High School, and also runs adjacent to Malamalama Waldorf School on Maku`u Drive, a private road. In Upper Puna, the route passes by Mt. View Elementary School.

Ka`u District. The route passes Na`alehu Elementary School.

South Kona District. The route passes Ho`okena and Honaunau Elementary Schools, and Konawaena High School.

North Kona District. On Highway 190 the route passes by the Kona Christian School. No other schools were identified as located adjacent to the route.

South Kohala District. The route passes by Waimea Elementary and Intermediate Schools, as well as the private Parker School, Hawai`i Preparatory Academy, and Hawai`i Montessori School.

North Kohala and Hamakua Districts. The route does not pass by any schools in these districts.

North Hilo District. The route passes by Laupahoehoe Elementary, Intermediate and High School.

Impacts and Mitigation Measures

The fiber optic duct line project should not have any long-term impacts on educational facilities since the duct lines will be located underground within the rights-of-way of both State and County roadways. The project will therefore not restrict access to educational facilities or the activities conducted there, nor will they place additional demands on staff. Construction will inevitably have some minor short-term impacts on educational facilities located near roads. Such impacts typically involve construction noise, fugitive dust from trenching activities, and temporary closures of lanes.

To address traffic concerns in the area, a traffic monitoring plan will be prepared during the project's design to minimize disruptions to travel lanes and vehicular traffic along roadways. This plan will be coordinated with the applicable State or County agency during the project's design for their review and approval, and will then be implemented by the contractor. In addition, the contractor will be required to comply with other State DOH regulations covering construction noise and fugitive dust emissions. Consequently, the project is not expected to have a substantial impact on educational facilities.

3.3.8.3 Medical Facilities

Existing Facilities

There are only two major medical facilities situated along the route: Kona Community Hospital in Kealakekua on State Highway 11, and North Hawai'i Community Hospital on Highway 19 in Waimea.

Impacts and Mitigation Measures

To address traffic concerns in the area, a traffic monitoring plan will be prepared during the project's design to minimize disruptions to travel lanes and vehicular traffic along roadways. This plan will be coordinated with the applicable State or County agency during the project's design for their review and approval, and will then be implemented by the contractor. These medical facilities are also air conditioned which further reduces outside noise sources and minimizes dust or other air pollutants from entering the facility. In addition, the contractor will be required to comply with other State DOH regulations covering construction noise and fugitive dust emissions. Consequently, the project is not expected to have a substantial impact on medical facilities.

3.3.8.4 Electrical, Telephone and Cable Services

Existing Facilities and Services

Electrical power on the island of Hawai'i is provided by Hawai'i Electric Light Company (HELCO), a privately owned utility company regulated by the State Public Utilities Commission, via their island-wide distribution network. As of the beginning of the year 2000, HELCO had a total of 52,277 residential customers and an additional 10,201

General Load, Commercial Cooking and Heating, Large Power Service, and Street Lighting accounts. In 1999, 124,956 megawatt hours were sold to customers (Hawai'i County R&D: 2000). HELCO's distribution system principally of overhead (with limited underground) transmission lines. Overhead lines typically consist of 46 kilovolt (kV) or 12.47 kV primary circuits routed largely along highways and roadways.

Telephone and cable television services are available within various areas of the island. Such services are typically provided by Verizon Hawaii (formerly GTE Hawaiian Tel), and Sun Cablevision (in West Hawai'i) and Hawaiian Cablevision of Hilo (East Hawai'i). Services are distributed via both underground and overhead lines following highways and roadways.

Impacts and Mitigation Measures

The proposed project is not expected to have a significant impact on existing electrical facilities or HELCO's ability to provide electricity. The fiber optic duct lines installed should create minimal additional demands on HELCO's electrical system. In addition, existing underground electrical, communication, and cable television facilities should not be affected by this project. Appropriate coordination with these utility companies will be conducted during the design and construction of this project to minimize disruptions to their services and existing underground lines.

3.3.8.5 Water Supply

Existing Facilities and Service

Potable water on the island of Hawai'i is principally provided by the County of Hawai'i Department of Water Supply (DWS). Various private water systems are also present. Waterlines are generally buried underground and are often routed along roadways. Many areas are not served by public or private municipal water systems and instead rely on water tanks, often fed by rain catchment.

Potential impacts on DWS's and other water facilities associated with the project will be limited to short-term construction related activities. Since the project consists of fiber optic duct lines, this project will not have any long-term impacts on water facilities and supply once constructed.

Impacts and Mitigation Measures

The installation of the fiber optic duct lines will be designed to minimize impacts and disruptions to existing water mains and laterals present within roadways and shoulder areas. The specific location of duct lines within roadway rights-of-way will be determined during the design of each particular route segment. As part of the design work, surveys and coordination with DWS and other pertinent parties will be conducted to determine the locations of existing water mains and laterals so that the design of duct lines will not impact these facilities. Such coordination will also include the DWS

review of construction plans developed. Therefore, the construction of the duct lines should not have a significant impact on water facilities.

3.3.8.6 Wastewater

Existing Facilities

Sanitary sewer systems are present within both State and County roadway rights-of-way in certain areas of urban Hilo and Kailua-Kona, but are not widely distributed around the island. These sewer systems consist of municipal treatment plants in Hilo and at Kealakehe in North Kona, and various sizes of sewer mains and pump stations which are primarily owned and maintained by the Hawai'i County Department of Public Works (DPW). Some private "package" plants and accompanying sewer lines are also present, mainly at resort complexes. Most of the island's rural areas and many urban areas away from the core of Hilo and Kailua-Kona currently depend on cesspools and septic tanks.

Impacts and Mitigation Measures

Potential impacts on DPW and privately-owned wastewater facilities associated with the project will be limited to short-term construction related activities. Since the project consists of fiber optic duct lines, this project will not have any long-term impacts on these wastewater facilities once constructed.

The installation of the fiber optic duct lines will be designed to minimize impacts and disruptions to existing wastewater mains and pump stations present within roadways and shoulder areas. The specific location of duct lines within roadway rights-of-way will be determined during the design of each particular route segment. As part of the design work, surveys and coordination with the County and private sanitary sewer operators will be conducted to determine the locations of existing wastewater facilities so that the design of duct lines will not impact these facilities. Such coordination will also include the review of construction plans developed. Therefore, the construction of the duct lines should not have a significant impact on the County's or other privately-owned wastewater facilities.

3.3.8.7 Drainage Facilities

Existing Facilities

Stormwater conveyance systems including culverts, inlets, catch-basins, and storm sewer lines are present within State and County roadway rights-of-ways.

Impacts and Mitigation Measures

Potential impacts on drainage facilities associated with the project will be limited to short-term construction related activities. Since the project consists of underground fiber

optic duct lines, this project will not have any long-term impacts on these facilities once constructed.

The installation of the fiber optic duct lines will be designed to minimize impacts and disruptions to existing drainage facilities present within roadways and shoulder areas. The specific location of duct lines within roadway rights-of-way will be determined during the design of each particular route segment. As part of the design work, surveys and coordination with the County and State will be conducted to determine the locations of existing drainage facilities so that the design of duct lines will not impact these facilities. Such coordination will also include the review of construction plans developed. Therefore, the construction of the duct lines should not have a significant impact on existing drainage facilities.

3.3.8.8 Solid Waste

Existing Conditions

Residential and commercial solid waste is hauled directly or via transfer stations to landfills at Hilo and Pu`uanahulu in North Kona, both of which are operated by the Hawai`i County Department of Public Works (DPW). In addition, there are several green waste facilities within the County. The Hilo landfill is near capacity and the County of Hawai`i's is exploring options for solid waste disposal in East Hawai`i. At Pu`uanahulu, the initial 30-acre increment of the 300-acre landfill was opened in 1993 with a projected capacity of six to eleven years. Additional 30-acre increments are expected to be required every five years thereafter.

Impacts and Mitigation Measures

The proposed project will not create any long-term increases in the generation or disposal of solid waste. There will be a short-term generation of solid waste in the form of trenching spoils, which may be suitable for use as clean fill for various construction projects. Additionally, small amounts of construction debris in the form of packaging, remnants of conduit and cable material, and removed vegetation will be generated in small amounts throughout the project.

The contractor will be responsible for properly disposing of all solid waste generated from the installation of the fiber optic duct lines. Therefore, although construction of the fiber optic duct line system will generate some solid waste typical of normal construction related activities, there will be no significant impact on existing solid waste disposal facilities.

3.3.8.9 Transportation Facilities

Existing Facilities

The fiber optic duct line routes utilize State, County and private roadway facilities. Figure 1 provides a map of the roadways, Table 2 identifies the roadways by name and maintenance authority and provides mileage for each segment, and Section 1.3 discusses the routes on district-by-district basis.

The majority of the route mileage involves State highways, including Highway 11 (Volcano Highway/Hawai`i Belt Road), Highway 19 (Hawai`i Belt Road/Kawaihae Road/Queen Kaahumanu Highway), State Highway 190 (Mamalahoa Highway), Kealakehe Parkway, and State Highway 130 (Kea`au-Pahoa Road – including the Kea`au Bypass). These highways are mainly two-lane facilities with wide paved shoulders. Portions of Highway 11 between Hilo and Kea`au and in Kailua-Kona, Highway 130 near Kea`au, and Highway 19 in Waimea and Kailua-Kona are four-lane, and a three-mile segment of Highway 11 in Hilo is six-lane. Some segments in rural areas lack wide shoulders. As listed in Table 1, portions of these State highways are under County maintenance, including the Saddle Road and Highways 19 and 190 within the urban area of Waimea.

The fiber optic duct line project uses County roadways in the urban area of Hilo (Kalanianaole Avenue, Kahaopea Street, Ahuna Road, Kawailani Street, Komohana Street, and Kaumana Drive), and also at South Point Road and Upolu Point Road. All are two-lane roads.

Impacts and Mitigation Measures

The fiber optic duct line project will not have any long-term impacts on either State or County transportation facilities since the duct lines will be located underground. As a result, the project will not generate additional traffic volumes along roadways or increased congestion at particular intersections or road segments during the peak commuter periods. SIC will seek necessary approvals and enter into necessary agreements with the County to install their conduits in County roadways.

Potential short-term impacts on transportation facilities will inevitably occur in association with temporary construction activities. Installation of the fiber optic duct lines will create a short-term impact on traffic flow in the limited areas affected by lane closures during construction activities. A traffic monitoring plan will be prepared during the project's design to minimize disruptions to travel lanes and vehicular traffic along roadways. This plan will be coordinated with the applicable State or County agency during the project's design for their review and approval, and will then be implemented by the contractor. Consequently, the project is not expected to have a significant impact on transportation facilities.

3.3.8.10 Police and Fire Services

The Hawai'i County Police Department (HCPD) has law enforcement jurisdiction throughout the entire island of Hawai'i. HCPD is headquartered in Hilo, with stations in Kea'au, Naalehu, Kealakehe, Kapa'au, Waimea and Laupahoehoe, and substations in Waikoloa and Pahoa. Administrative personnel and police officers total over 500.

The Hawai'i County Fire Department (HCFD) has fire protection jurisdiction throughout the entire island of Hawai'i. Firefighters must respond to emergency medical, hazardous condition, rescue, building fires, brush and other outdoor fires, and vehicle fires. Fire stations generally have three 24-hour shifts. HFD currently has a force of over 300 working as administrative personnel or as firefighters throughout the island.

Impacts and Mitigation Measures

The fiber optic duct lines should not have any long-term adverse impacts on the ability of the Police Department or Fire Department to provide protective services on the island of Hawai'i. Once the duct lines are installed, there will be no personal or business activities occurring with these underground duct lines which may require the need for police or fire protection services. Police staff may be hired to assist in conducting temporary traffic control during construction activities, but such services will be short-term, utilizing off-duty police officers. The contractor will be required to comply with applicable regulations and permit conditions governing construction activities to minimize disruptions to nearby residents and complaints to the police department. Best Management Practices will also be implemented to minimize dust, erosion, and other nuisances from short-term construction activities. Therefore, this project should not have a significant impact on the police department's ability to provide protective services.

Fire apparatus access will be provided throughout the construction work installing the fiber optic duct lines. The HCFD will also be notified by the contractor of any interruption to the existing fire hydrant system during construction activities. Thus, construction activities associated with the project should have minimal impact on the HCFD's operations or ability to provide protective services.

3.3.9 Archaeology and Historic Sites

Existing Environment

Cultural Surveys Hawai'i performed an archaeological assessment of the entire 330-mile route in order to identify areas where potential subsurface historic properties — including human burials and cultural deposits — might be encountered during installation of the fiber optic duct line. The report is attached to this EA as Appendix 3, and is summarized below. The assessment involved the following methods:

- Inspection of soil surveys for presence of soils and sands — under or immediately adjacent to the study route — that are more likely to contain cultural deposits.
- Inspection of tax maps and historic maps showing presence of Land Commission Award (LCA) parcels within or adjacent to the study route, which provide clues on historic and pre-contact Hawaiian settlement areas.
- Review of Geographic Information System (GIS) data and archaeological reports at the State Historic Preservation Division.
- Field inspection of the entire study route, in order to identify areas of anomalous sand deposits, streams and wetlands, graded or raised roadbeds, and other areas with implications for the presence of archaeological remains.
- Consultation with the State Historic Preservation Division (SHPD), use of Cultural Survey Hawai'i 's staff experience, and consideration of known community issues.

The entire route was divided into 15 somewhat homogeneous sections, and evaluated on a scale of four levels of potential — low, moderate, high, or very high — for encountering subsurface historic properties during construction. Fourteen of the sections were assessed as having low potential for encountering subsurface deposits in the travelway, shoulders and sidewalk portions of the right-of-way. One section has been *assessed has having moderate potential. None were assessed as having high or very high* potential. In the following district-by-district discussion, all segments have low potential for encountering subsurface historic properties during construction except the one area explicitly noted as having moderate potential.

South Hilo District. Highway 11 from its junction with Highway 19 to Kea'au is a four or six-lane divided highway through urban areas that include business districts, residential subdivisions, and shopping malls on both sides of the roadway. Construction activities related to the highway construction and to the adjacent urban development has likely removed any possibly intact deposits beneath the road surface through this area. The route through the urban County roads of Hilo up to the boundary of the Saddle Road is similarly highly disturbed and is assessed as having low potential.

The route northwest along Highway 19 (Kamehameha Avenue and Bayfront Highway/Hawai'i Belt Road) goes over black sand deposits. However, based on the history of the shoreline — the record of tidal waves, flooding, subsequent reconstructions of the road (including the armor rock placed on the ocean side of the road to retain the road) — it is unlikely that any intact subsurface deposits remain beneath the road itself. There have been no reports of any burials eroding out of the sand in this area. No evidence remains of any of the Land Commission Awards near this route segment. Based on these factors, the potential to encounter historic properties is assessed as low for this area.

Highway 19 from the Wailuku River to the North Hilo District boundary in Hakalau is built on lands that have been disturbed by decades of sugar cane

cultivation. Additionally, the construction of the Hawai`i Belt Road in this area entailed substantial cut and fill as well as construction of many bridges spanning major gulches. No surface archaeological sites or evidence of associated subsurface deposits were observed during the field inspection along any portion of this section. Although numerous Land Commission Awards (LCAs) are identified as located along this portion of the route, no evidence of these LCAs was observed during the field inspection. It is likely that decades of commercial sugar planting and the construction and modernization of the Hawai`i Belt Road have removed all remains associated with these awards.

The route along Kalanianaole Avenue through the industrial area has been highly modified by the road and adjacent industrial uses, and there is little potential for encountering historic sites.

East of the industrial area are the Keaukaha Hawaiian Home Lands tract and the Leleiwi neighborhood. A number of anchialine ponds and coastal-connected ponds, many with traditional names, exist just adjacent to the road. The ponds are surrounded by exposed pahoehoe lava, minimizing the possibility of any subsurface deposits associated with former traditional usage of the ponds. *However, because the ponds were likely an area of traditional usage and because of possible community concerns associated with the Keaukaha area, the potential to encounter historic properties is assessed as moderate here.*

Puna District. The route from Kea`au to Glenwood along Highway 11 is a modern road with wide shoulders, some road cuts, and major drainages on both sides. No surface archaeological sites were observed in proximity to the roadway during the field inspection. The area around Glenwood would have been lightly-used forest area pre-Western Contact.

During the last ten years, Highway 130 between Kea`au and Hawaiian Paradise Park has been widened through various State DOT projects, the most recent of which involved relocation of a substantial segment (the Kea`au Bypass). Plans to widen the segment between Paradise Drive and Pahoa in the next year have been approved. Archaeological inventory was conducted for all these projects, and there is little potential to encounter historic properties on Highway 130. The route down Maku`u Drive in Hawaiian Paradise Park is along a two-lane, paved subdivision road built at grade. There is little likelihood of historic sites here. The archaeologists concluded their field inspection at the intersection of the Maku`u Drive the Old Government Road. Further study may be indicated for areas along this segment of the route that have not been graded or grubbed, where there is a heightened probability of encountering subsurface deposits in undisturbed, ungraded areas.

Ka`u District. Highway 11 in Ka`u from Wailau to South Point Road is a two-lane roadway with wide shoulders. The flats near Honuapo was an important area for traditional and historic activity. Brackish water ponds offering secure canoe

launching areas are present on the makai side. No indications of traditional activities are currently visible. The area was also the site of one of the first major sugar companies in the islands, a remnant of which is present in the form of an abandoned sugar mill. The road itself extends over exposed lavas, and the only site types anticipated in this area would be surface sites, which would long ago have likely been removed from within the road corridor itself.

Through Na'alehu Town on Highway 11, modern road improvements and structures are present, an indication that intact subsurface deposits are unlikely. The road runs through the historic town of Wai'ohinu, a scene of much mid-1800s activity, as evidenced by Land Commission Awards for *kuleana* lands and records of missionary endeavors. Related archaeological concerns in this area would include surface sites or known cemeteries. None were observed in the course of the field inspection. A rock wall associated with a former historic church (since demolished) is present at the main bend in the highway in Wai'ohinu. The wall is unlikely to be impacted by any project activities.

South Point Road is a single-lane paved roadway, with very old asphalt in places, through open pasture lands. There was no cut or fill observed during the field inspection. The road was constructed at grade, exposing ash-derived soils. The *fiber optic duct line route stops short of the South Point area and bends southeast* toward the Kaulana Boat Ramp, avoiding the more sensitive area of South Point near Pu'u Ali'i where a heiau and burial ground are located. Concrete foundations related to a former military installation located in the area were observed on either side of the road during the field inspection. However, these are modern remnants and are not of current historic concern. No evidence remains of any of the Land Commission Awards identified as located along South Point Road.

On Highway 11 north of South Point Road, the route is far inland, on a modern highway built over bare lava, where archaeological sites are unlikely. None were observed during field inspection

South Kona District. Construction and repeated widening of Highway 11 have involved significant cut and fill. As the route progresses into the "coffee belt" of Kona, it passes through the old upcountry towns of Honaunau, Captain Cook, Kealakekua, Kainaliu, and Honalo. Numerous Land Commission Awards have been identified along this portion of the Mamalahoa Highway. Later in the late 19th century and into the 20th century, these were major centers of habitation — related to coffee-growing — as traditional coastal habitation areas were abandoned. No remnant material associated with any of these LCAs was observed within the road corridor during the field investigation. It appears that the modern road work through this area — entailing road cuts and fills, widening, and repaving — has effectively eliminated the possibility that intact deposits, including historic trash pits, remain immediately beneath the road surface.

North Kona District. The historic sites characteristics of the section of Highway 11 within North Kona are similar to those of the adjoining section in South Kona. Queen Ka`ahumanu Highway is a modern roadway built in the early 1970s incorporating a substantial roadbed and wide shoulders. Archaeological investigations were conducted prior to its construction; all identified sites are clearly outside the paved area of the road. Regarding lava tube caves, the shallow excavation planned for the fiber optic duct lines coupled with the generally deeper excavation already conducted for the highway construction itself would tend to preclude impact to these caves.

On Highway 190, modern subdivisions line both sides of Palani Road ,which is demarcated by rock walls on its sides. Farther north the route winds through open pasture land until the vicinity of Pu`uwa`awa`a Ranch. Much evidence of cut and fill associated with road construction was observed during the field inspection. Archaeological sites of concern in this area would have been surface sites, none of which remain within the road corridor or adjacent to it. Lava tubes are possible in this area, but the shallow depth of project excavation for the project precludes any impact to these features.

In the Pu`uanahulu area there are homestead lands and parcels dating from the late 19$^{th}$ century and early 20$^{th}$ century where the crews of Pu`uwa`awa`a Ranch and Pu`uanahulu Ranch lived. There are known family burial plots in this area; however, they are well away from the Mamalahoa Highway. While this is an area of long-term habitation — with sites including historic house sites, burials, and heiau in the vicinity — specific to the Mamalahoa Highway itself, there is no previous archaeological record or evidence identified during the field inspection to indicate that intact subsurface deposits related to any of these sites are present beneath the highway.

South Kohala District. The historic site characteristics of the section of Queen Kaahumanu Highway within South Kohala are similar to those of the adjoining section in North Kona.

Within the Kawaihae area, several archaeological studies have located burial sites on the mauka side of the route. Additionally, there is a modern cemetery where burials — encountered during construction of the Kawaihae Harbor — were relocated on the mauka side of study route. The burials are clearly marked and are separated from the road by the road shoulder and a rock wall. These are all recent reinterments. The cemetery is not an older one where there might be the possibility of burials inadvertently covered by road construction. Two significant archaeological sites are located along the southern end of Section 2: Pu`u Koholā heiau and the residence of John Young. Both are sufficiently distant from the road such that project-related disturbance would not occur. No surface evidence of any identified Land Commission Awards were observed during the field inspection.

On Highway 19 from Kawaihae to Waimea, the dramatic change in climate is also associated with varying archaeological resources. In the lowest elevation areas, not far from the coast, archaeological sites have been reported in the vicinity of the route, but not within the route itself. As Highway 19 ascends through the dry inland area as far as South Kohala View Estates, no habitation sites have been recorded. Near the intersection of Highway 19 with the Kohala Mountain Road, the route goes through the Lalamilo agricultural field system, visible on both sides of the road but not within the road corridor itself. The road itself is fairly winding but has been improved recently with fairly wide shoulders and guard rails, indicating a lessened possibility that any intact subsurface deposits are present environment. Along the Waimea portion of the section were both historic and prehistoric habitation sites. No evidence remains of the Land Commission Awards identified as located west of the Highway 19/Highway 190 intersection. It likely that the construction, reconstruction, maintenance and widening of the road over many decades have completely removed or obliterated evidences of these awards and of subsequent historic habitation, including trash pits, within the corridor.

Adjacent to the route in Waimea Town are several churches. The cemeteries associated with these churches are located behind the churches, away from the route, and are thus not of specific concern. There is a family burial plot in Waimea Town very close to the road. However, it is isolated from the road by a high rock wall, a sidewalk and the road shoulder. No evidence remains of the Land Commission Awards identified as located adjacent to the study route in Waimea Town. Based on the above factors, the potential to encounter historic properties is assessed as low in this area.

On Highway 190 between Waimea and Pu`uanahulu (in North Kona), the route passes through an area where previous archaeological studies have documented the Lalamilo agricultural field system and associated habitation sites. Road construction involved substantiai cut and fill, and a low berm was placed along much of this portion. No field walls or similar constructions abut the road. There is little potential to encounter agricultural deposits or habitation deposits, or other historic sites, in this segment.

Detailed archaeological investigations of the proposed realigned Saddle Road corridor, along which the route would run, have already been conducted (USDOT 1999). Several sites significant for information content only were found, for which data recovery will be conducted as part of the Saddle Road project. All issues related to historic sites will have been dealt with prior to the fiber optic duct line project's implementation.

North Kohala District. The construction of Akoni Pule Highway involved significant cut and fill, and new bridges. Although archaeological sites may be present near the highway, most significant sites documented in previous archaeological studies are located well makai of the highway, along the shoreline

itself. No evidence of subsurface sites in proximity to the route was noted during the field inspection. Upolu Point Road runs through lands disturbed by decades of commercial sugar cultivation over typical ash-derived soils of the Kohala District that are unlikely to contain the intact cultural deposits of concern. Additionally, no surface sites were observed in the vicinity during the field inspection. These areas have low potential to encounter historic sites.

Hamakua District and North Hilo District. Highway 19 along the Hamakua coast is built on lands that have been disturbed by decades of sugar cane cultivation. Additionally, the construction of the Hawai`i Belt Road entailed substantial cut and fill, as well as construction of many bridges spanning major gulches. No surface archaeological sites or evidence of associated subsurface deposits were observed during the field inspection along any portion of this section. Although numerous Land Commission Awards (LCAs) are identified as located along this portion of the route, no evidence of these LCAs was observed during the field inspection. It is likely that decades of commercial sugar planting and the construction and modernization of the Hawai`i Belt Road have removed all remains associated with these awards.

It should be emphasized that the "low potential" assessment does not imply that there is no possibility of encountering subsurface deposits, just a lessened possibility relative to other areas where documented evidence would suggest a heightened potential. It should also be emphasized that the specific focus of this study was a limited portion of road shoulder through areas that have already been altered to varied degrees by construction of the road itself. The majority of the roadways comprising the study route were originally constructed before State and federally mandated protective measures for historic resources were set in place. The result is that for most of the study route no documentation exists of any such resources that may have been encountered during road construction.

[In addition to archaeological resources, the route traverses a number of bridges in the [South Hilo, North Hilo, Hamakua and South Kohala Districts that have been [designated historic bridges and are protected under the National Historic Preservation Act [and Chapter 6E, Hawai`i Revised Statutes. These include bridges at `Ahole, [`Auwaiakeakua, Hakalau, Honoli`i, Kapue, Kealakaha, Kupupa`ulua, Nanue, Pahe`ehe`e [and Umauma Streams.

Impacts and Mitigation Measures

The archaeological assessment recognized only one area with moderate potential for encountering historic site resources. Special mitigation procedures for this area are detailed below. However, excavation during construction work everywhere has at least [some potential to encounter cultural deposits or possibly burials. The Draft EA recommended that prior to construction in all areas, contractors should develop a contingency plan to ensure that if any previously unidentified sites, or remains such as artifacts, shell, bone or charcoal deposits, human burials, rock or coral alignments,

pavings, or walls are encountered, work will stop immediately and the Hawai'i State Historic Preservation Division (SHPD) will be consulted to determine the appropriate mitigation.

For the area along Kalanianaole Avenue to the route terminus at the Waiakea Hawaiian Home Lands (see Fig. 2PP for typical view), which was identified as having moderate potential for encountering historic site resources, it is recommended that during the design phase of the project, a monitoring program should be developed incorporating on-call monitoring or spot checking.

Subsequent to publication of the Draft EA, SIC met with the Hawai'i Island Burial Council on May 16, 2001 in order to discuss burial monitoring and treatment plans. This consultation will continue throughout the construction process.

SIC is developing a Memorandum of Agreement with the Hawai'i State Historic Preservation Division This MOA would have two stipulations addressing proposed mitigative measures that SIC is committed to implementing. The first stipulation would involve archaeological monitoring of cable trenches associated with the project. Continuous on-site monitoring would occur for areas having known burial sites or areas with potential historic properties. On-call monitoring would occur for other areas in case a historic property is encountered during construction activities.

The second stipulation of the MOA would include a contingency plan specifying treatment steps for any burials that might be found. This burial treatment plan will be developed in consultation with the Hawai'i Island Burial Council.

As discussed in Section 1.4, bridge crossings will be addressed on a case-by-case basis, utilizing bridge attachments or trenchless connections. Neither method would produce adverse effects to historic bridges. Bridge attachments installed in accordance with State DOT or County design standards would be located under such bridges and will be out of public view, where applicable. The lines installed would about 8 inches in diameter and located about 12 inches under the bridge deck, an arrangement that is considerably less obtrusive than other utilities often located on historic bridges, such as water mains. Trenchless technology would avoid the vicinity of the bridges altogether. Thus, installation of this fiber optic duct lines would not negatively alter, directly or indirectly, any of the characteristics associated with these historic bridges which qualified them for inclusion on the National Register.

3.3.10 Cultural Impact Assessment

Existing Environment

The archaeological assessment included field inspections along with extensive literature research of areas affected by the proposed cable route. This research provided sufficient information to make a reasonable assessment of the likelihood of traditional Hawaiian or other cultural practices being significantly affected by the project.

There are no known traditional cultural properties or cultural practices occurring within the existing rights-of-way of highways or roadways affected by the project, since such areas are used for travel by vehicles. However, gathering of traditional plant material occurs in the vegetation on the margin of Saddle Road at various locations and times. This is especially common just off the shoulder of the highway between Mileposts 8 and 13 before parties or important ceremonial occasions, such as hula festivals. Maintenance of the corridor of natural vegetation along the road's edge, and access to the road verge, is important to this activity. Similarly, activities in the shoreline areas directly makai of parts of Kalanianaole Avenue in Hilo (Fig. 2OO-PP) are important for traditional cultural reasons, as well as recreation and sustenance.

Impacts and Mitigation Measures

No direct or indirect impact to traditional cultural properties are expected to result from the proposed project. Furthermore, the project will not restrict access to surrounding areas which are used for traditional cultural practices, since the fiber optic duct lines will be installed underground within existing rights-of-way of State highways and County roadways. Construction activities will result in temporary lane closures that will slightly hinder access for brief periods. However, this will not prevent access to shoreline areas or other cultural resources in the area that may be used for traditional gathering or other cultural practices.

The archaeological assessment included research and field inspections of the routes to determine the likely presence of archaeological or cultural resources within existing roadways or adjacent to the rights-of-way. Consequently, the only potential traditional cultural resource that may be affected are burials during construction activities which were addressed in the archaeological assessment. To mitigate potential impacts, Section 106 consultation is being conducted along with consultation with the State Historic Preservation Division (SHPD) and Hawai`i Island Burial Council. In the event burials are encountered, consultation with SHPD and the Hawai`i Island Burial Council would be conducted in compliance with Chapter 6E, HRS. This may include the search for lineal descendants and consultation with the Hawai`i Island Burial Council to address proper treatment.

3.4 Consistency with Land Use Designations and Plans

The consistency of the Fiber Optic project with State and County land use designation, laws, regulations, and plans is discussed within this section.

3.4.1 State Land Use Districts

Because the project spans the entire island, it will involve work within each of the State Land Use Districts (Urban, Rural, Agricultural, and Conservation). Most activity will occur in the Agricultural District, followed by Urban. Areas adjacent to the route that are

classified within the Conservation District, where special rules and procedures may apply, are illustrated in Figure 6.

South Hilo District. An extensive segment of the route on Saddle Road involves Conservation District (CD) lands. Within the city of Hilo itself, CD lands are present at Wailoa Pond, and adjacent to Kalanianaole Avenue at Loko`aka Pond and adjacent ponds. As the road extends beyond the paved portion of Kalanianaole Avenue to the Waiakea Hawaiian Home Lands tract, it crosses into CD land.

On State Highway 19, Hakalau Gulch (half in South Hilo District, half in North Hilo), Kawainui Gulch and Honoli`i Gulch are all within the Conservation District. A small area of CD land is also present near the old Wainaku sugar mill. On State Highway 11, a tract of CD land surround the highway between about Makalika Street and the Puna District Boundary.

Puna District. Conservation District land is present adjoining the route makai of the Old Government Road near Maku`u. Another set of discontinuous blocks of CD land surround Highway 11 between Mt. View and the end of the route in Glenwood.

Ka`u District. The route crosses Conservation District land in the Manuka Natural Area Reserve, and is adjacent to CD lands near from Ninole to Honuapo. Highway 11 intrudes into the CD near the scenic lookout just south of Honuapo.

South Kona District. The route crosses Conservation District land in the Kipahoehoe Natural Area Reserve.

North Kona. Most of the route between along Queen Kaahumanu Highway (Highway 19) between one mile north of Kailua-Kona and Honokohau is in the Conservation District. From here the north until Keawaiki in South Kohala the route is entirely within the CD. On Highway 190, CD land is crossed from the village of Pu`uanahulu north to the South Kohala District Boundary.

South Kohala District. Small areas of Conservation District Land are present just makai and mauka of the highway in areas of historic importance in Kawaihae.

North Kohala and. Conservation District land is crossed near Lapakahi State Park, and the route enters into (or possibly stays just outside) CD land near the end of the Upolu Point Road.

Hamakua Districts. A small tract of Conservation District Land is crossed at Honokaia, a few miles west of Honokaa town.

North Hilo District. The route passes through Conservation District lands at Ka`awali`i, Laupahoehoe, Maulua, Nanue, and Hakalau gulches.

Discussion: Public utility construction and operation are permitted uses within all State Land Use districts. For the Conservation District, consultation with the Hawai`i State Department of Land and Natural Resources (DLNR) will be required. Public utilities are defined as a Public Purpose Use in Hawaii Administrative Rule 13-5-22 (P-6, D-2), and are an identified land use in the Protective, Limited, Resource and General subzones per Sections 13-5-22, 23, 24 and 25. Furthermore, underground utilities may be considered an accessory use to existing roadways. During final design, when the exact placement within the right-of-way and the precise construction methods for individual segments are determined, the State Land Use Commission will be consulted for boundary determinations. For any potential use of land in the Conservation District, DLNR will be consulted. DLNR will then determine the level of approval required. Such projects may be accommodated under various procedures, including a Site Plan Review and Approval, or a Conservation District Use Permit. Appropriate coordination will be conducted with DLNR to address permit requirements and other coordination matters.

3.4.2 Hawai`i County Zoning

The route segments will involve work in a wide variety of County zoning districts, including Residential, Commercial, Agricultural, Open and Industrial. County ordinances allow installation of underground public utilities in all zoning districts with proper permits and approvals. Chapter 22-69 of the Hawai`i County Code recognizes that utilities' respective franchise to occupy the rights-of-ways of federal aid Secondary County Highways in order to provide essential services and commodities to the public. The code specifies that utilities may be accommodated provided that the use and occupancy does not interfere with the free and safe flow of traffic, or otherwise impair the highway or its visual quality, and does not conflict with other federal, State or County laws.

The underground fiber optic duct line will include mitigation measures for traffic and access control and other to ensure that it does not interfere with traffic, impair visual quality, or violate any laws.

3.4.3 Hawai`i County General Plan

The *General Plan* for the County of Hawai`i is a policy document expressing the broad goals and policies for the long-range development of the island of Hawai`i. The plan was adopted by ordinance in 1989. The County of Hawai`i is currently undertaking a mandatory review of the General Plan. A draft of the *County of Hawai`i General Plan Revision Program* was released in January 2001. The Planning Department is currently in the process of making its final recommendations. Any proposed revisions to the *General Plan* must be adopted by Ordinance, which will require public hearings and action by the Hawai`i County Planning Commission and the Hawai`i County Council.

The currently adopted *General Plan* is organized into thirteen elements, with policies, objectives, standards, and principles for each. There are also discussions of the specific

applicability of each element to the nine judicial districts comprising the County of Hawai'i. Section 4 of the *General Plan* includes a discussion of general goals. In Section 5 courses of action for individual districts are proposed.

The elements of the *General Plan* most applicable to the project are the following:

Economic Element

Goals

The County shall provide an economic environment which allows new, expanded, or improved economic opportunities that are compatible with the County's natural and social environment.

Policies

The County of Hawai'i shall strive for diversification of its economy by strengthening existing industries and attracting new endeavors.

Environmental Quality Element

Goals

Maintain and, if feasible, improve the existing environmental quality of the island.

Historic Sites Element

Goals

Protect and enhance the sites, buildings and objects of significant historical and cultural importance to Hawai'i.

Policies

The County of Hawai'i shall require both public and private developers of land to provide a historical survey prior to the clearing or development of land when there are indications that the land under consideration has historical significance.

Natural Beauty Element

Goals

Protect scenic vistas and view planes from becoming obstructed.

Public Utilities Element

Goals

Ensure that adequate, efficient and dependable public utility services will be available to users.

To have public utility facilities which are designed to fit into their surroundings or concealed from public view.

Policies

Utility facilities shall be designed so as to minimize conflict with the natural environment and natural resources.

Discussion: The project is highly consistent with the goals and policies of *the General Plan*, in that economic vitality and diversification is encouraged, natural and cultural resource are protected, and the use of underground construction maximizes preservation of scenic views.

3.4.4 Special Management Area

Some of the route will involve use of land in the Special Management Area (SMA). Those areas will require an assessment in accordance with the Hawai`i County Planning Commission's SMA Rule 9. The Hawai`i County Planning Department will determine whether the project is a "development", pursuant to Rule 9-4(10), thus requiring a permit. The project may be determined exempt from the SMA definition of development, per 9-4(10)(B)(XIV), which generally excludes from the definition of development: "Installation of underground utility lines and appurtenant aboveground fixtures less than four feet in height along existing corridors." An SMA Assessment Application will be submitted to the Planning Department along with this EA prior during the final design phase.

The next section provides detailed discussion of the geographic association of the proposed project with the Special Management Area, followed by an evaluation of the project's conformance with the County of Hawai`i's Special Management Area objectives and policies as prescribed under the Hawaii Revised Statutes, Chapter 205A, Special Management Area.

3.4.4.1 Fiber Optic Duct Line Routes and SMA Locations

Under Chapter 205A (Coastal Zone Management), HRS, the County of Hawai`i is given the responsibility to regulate land uses located within the established Special Management Area (SMA) for the island of Hawai`i. Various segments of the fiber optic duct line route fall within, or directly adjacent to, the SMA. These areas are identified in Figure 7 and discussed below:

South Hilo District. Most of the route along Highway 19 and Kalanianaole Avenue is either adjacent to or encroaches within the SMA. Only a short segment between Papaikou and about two miles southeast of Hakalau is well outside the SMA. A few hundred feet south of its intersection with Highway 19, Highway 11 leaves the SMA, and there is no other approach or encroachment into the SMA on Highway 11 or any other road in the South Hilo District.

Puna District. The Old Government Road at the foot of Maku`u Drive forms the boundary of the SMA. According to County maps, a small (less than a tenth of an acre) encroachment into the SMA appears to occur near the project terminus at the boundary of the Maku`u Hawaiian Home Lands tract on the Old Government Road.

Ka`u District. Highway 11 forms the boundary for the SMA on a several-mile segment near Honuapo. Also, the route encroaches slightly into the SMA near just south of Honuapo and near South Point.

North and South Kona Districts. No approach or encroachment occurs in South Kona. In North Kona, Highway 19 forms the SMA boundary from near Kahalu`u (south of Kailua-Kona) to Holualoa in the area south of Kailua-Kona. From about one mile north of Kailua-Kona to the edge of the North Kona District near Kiholo Bay, Queen Kaahumanu Highway forms the boundary of the SMA.

South Kohala District. As in North Kona, the Queen Kaahumanu Highway forms the SMA boundary until its intersection with the Waimea-Kawaihae Road. At Kawaihae, the route encroaches on the SMA as it proceeds through Kawaihae town, from which point Akoni Pule forms the SMA boundary.

North Kohala District. As in North Kona, the Akoni Pule Highway forms the SMA boundary until about one mile north of Mahukona. The route also encroaches on the SMA on a short segment Upolu Point road.

Hamakua and North Hilo Districts. No approach or encroachment occurs in Hamakua. The SMA is directly adjacent to Highway 19 in most of the North Hilo District, and in several places (notably Laupahoehoe and Ninole), the SMA crosses the highway.

3.4.4.2 Conformance with SMA Objectives and Policies

Special Management Area objectives and policies as prescribed under the Hawaii Revised Statutes, Chapter 205A Special Management Area. All objectives are listed below, followed by applicable policies.

A. Objectives:

1. Provide coastal recreational opportunities accessible to the public.
2. Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.
3. Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources.
4. Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.
5. Provide public or private facilities and improvements important to the State's economy in suitable locations.
6. Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.
7. Improve the development review process, communication, and public participation in the management of coastal resources and hazards.

B. Policies:

1. Recreational resources:

b. Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area.

2. Historic Resources:

a. Identify and analyze significant archaeological resources.

b. Maximize information retention through preservation of remains and artifacts or salvage operations.

3. Scenic and Open Space Resources:

a. Insure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views along the shoreline.

c. Encourage those developments which are not coastal dependent to locate in inland areas.

4. Coastal Ecosystems:

b. Preserve valuable coastal ecosystems of significant biological or economic importance.

5. *Economic uses:*
a. Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy.

6. *Coastal hazards*:
b. Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazard.
c. Ensure that developments comply with requirements of the Federal Flood Insurance Program.

7. *Managing Development*:
c. Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life-cycle and in terms understandable to the general public to facilitate public participation in the planning and review process.

Discussion: The proposed project involves underground or bridge-fastened installation of fiber optic duct lines implemented along State and County roadways and highways. The proposed project is located within existing State and County right of ways in order to minimize environmental impacts, including impacts to coastal zone resources. The use is coastal dependent to some degree because the duct lines must utilize the existing roadways, which in some areas are located in the SMA, in order to interconnect DHHL properties, some of which are also located within the SMA.

In general, the project is highly consistent with objectives and policies of the Special Management Area. In particular, the project: 1) will not adversely affect coastal recreation, natural resources of the coastline, public views, historic site resources, or coastal ecosystems; 2) will promote public facilities important to the State's economy in a suitable location; and 3) will not increase hazard to life and property from tsunami, storm waves, stream flooding, erosion, or subsidence. There are no known rare, threatened or endangered species or habitats within the fiber optic duct line alignment. Construction activities will be conducted utilizing Best Management Practices to minimize construction-related impacts. As a result, this project should not impact coastal water ecosystems and streams. The project is expected to have no impact on existing coastal ecosystems of significant biological importance. The fiber optic duct lines will be buried about three feet underground, and will therefore not impact any coastal hazards to life or property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution. The project is not expected in any way to adversely impact the shoreline, or the surrounding environment, as discussed in this policy. The route of the fiber optic duct line system utilizes existing transportation corridors to provide high-speed telecommunications capabilities to DHHL properties throughout the island of Hawai'i. The proposed system will allow for internet education, health care, telecommuting, and state of the art technological capabilities to areas of the island with low incomes and high unemployment rates, thus improving the State's economy.

Early consultation with review agencies and publication of this applicant action will improve the development review process, communication, and public participation in the management of coastal resources.

The project does has essentially negligible impacts to any resources of the coastal zone and Special Management Area, and is not expected to interact with any other known projects in such a way as to produce adverse cumulative impacts to such resources.

3.5 Permits and Approvals Required

State Department of Health

National Pollutant Discharge Elimination System Permit

State Department of Land and Natural Resources

Department Site Plan Approval or Conservation District Use Permit

State Department of Transportation

Permit to Perform Work Inside State Highway Right-of-Way

County Department of Public Works

Permits for Excavation of Public Highway, Grading, Grubbing, and Stockpiling

3.6 Secondary and Cumulative Impacts

3.6.1 Interaction with Other Planned Projects

Several major planned construction projects have implications for the planning and construction of the proposed project. In particular, the Saddle Road Improvements Project, the Mohouli Street Extension, the Puainako Widening and Extension Project, and Queen Kaahumanu Widening Project could all conceivably be under construction during the construction period (2001-2005) of the fiber optic duct lines project (See Fig.1 for locations of these road projects).

SIC is planning to use the route of the realigned Saddle Road, and has reserved this segment of the project as the last phase in order to accommodate the project, which has finished the EIS phase and is scheduled for construction over the next 10 to 15 years. The Puainako Extension (mauka of Komohana Street, which has finished the EIS phase and is currently pending funding) and the Mohouli Extension (currently under construction) offer shorter and more favorable routes for the fiber optic duct line installation. The Puainako Widening project (makai of Komohana Street) and the Queen Kaahumanu Highway Widening will not affect route selection, but rather the schedule of

construction. In addition to these projects, other smaller road and other construction projects may be implemented during the construction period.

Therefore, SIC will consult regularly with the Hawai`i DOT and the Hawai`i County Department of Public Works to determine whether portions of the project should be re-routed or re-scheduled in order to minimize disruption and maximize efficiency of construction and operation of both the fiber optic and road facilities. SIC will also explore any opportunity to coordinate construction with the highway agencies to minimize disruption of recently paved road segments. SIC representatives have already been attending meetings by DOT concerning coordination of various projects involving highways.

3.6.2 Secondary Impacts

The proposed project will not involve any secondary impacts, such as population changes or effects on public facilities. The proposed project does not involve an increase in housing units that could increase the existing resident population. Although the project would provide many short-term construction jobs and some long-term operational jobs, these would almost certainly be filled by local residents and would not induce in-migration.

A comment letter to the Draft EA from the Hawai`i State Office of Environmental Quality Control (see App. 1B) questioned whether the project might induce secondary impacts through the rapid, unplanned emergence of high tech centers on or off Hawaiian Home Lands as a result of fiber optic service suddenly becoming available. Such an outcome appears highly unlikely. The feasibility of establishing such high-tech centers depends upon a complex of factors such as business climate, education and labor force. The proposed fiber optic service represents only one very small component – and one which in the future may be insufficient, given the rapid changes in technology. Other major companies installing similar fiber optic projects elsewhere in Hawai`i do not appear to have induced any noticeable economic stimulus on the communities through which the cables have been routed.

The ambitions of, and any reasonable expectations for, the Rural Fiber Optic Duct Lines Program are limited to providing beneficiaries with high quality, essential telecommunication services at a cost regulated by the PUC's tariff. SIC has indicated that it hopes that some increased educational and home business opportunities will ensue. However, it would not be reasonable to predict that the project will involve noticeable secondary impacts such as population changes or effects on public facilities.

3.6.3 Cumulative Impacts

Cumulative impacts result when implementation of several projects that individually have limited impacts combine to produce more severe impacts or conflicts in mitigation measures. Although several large-scale development projects are in progress or planned for various segments of the routes (see above), the modest scale and temporary nature of construction-related impacts of the fiber optic duct line project are not expected to combine with the effects of other projects to adverse cumulative effects, when mitigated as planned through Best Management Practices and other measures.

PART 4: DETERMINATION

The proposed project will not significantly alter the environment and impacts will be minimal. Therefore, a Finding of No Significant Impact (FONSI) will be filed, and an Environmental Impact Statement is not warranted.

PART 5: FINDINGS AND REASONS

Chapter 11-200-12, Hawai'i Administrative Rules, outlines those factors agencies must consider when determining whether a project has significant effects:

1. *The proposed project will not involve an irrevocable commitment or loss or destruction of any natural or cultural resources.* No valuable natural or cultural resource will be involved, committed or lost. The fiber optic duct lines will be installed almost entirely within the disturbed portions of existing road right-of-ways.

2. *The proposed project will not curtail the range of beneficial uses of the environment.* No restriction of beneficial uses will occur.

3. *The proposed 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, HRS. The broad goals are to conserve natural resources and enhance the quality of life. The project is a relatively minor action and basically environmentally beneficial (see No. 4 below), and is thus consistent with all elements of the State's long-term environmental policies.

4. *The proposed project will not substantially affect the economic or social welfare of the community or State.* The project will have a positive effect on the economic and social welfare of the residents of Hawaiian Home Lands by providing high-quality, essential telecommunications services. It will also generate short-term construction jobs, long term operation jobs, and additional tax revenues.

5. *The proposed project does not substantially affect public health in any detrimental way.* The project will not affect public health and safety in any adverse way. The project will provide vital emergency communication to rural and urban areas, thus enhancing public health and safety.

6. *The proposed project will not involve substantial secondary impacts, such as population changes or effects on public facilities.* No population changes or other effects will occur. The project will benefit Hawaiian Home Lands residents, but not in such a manner as to cause unforeseen social or economic growth. The proposed project will not involve any secondary impacts, such as population changes or effects on public facilities. The proposed project does not involve an increase in housing units that could increase the existing resident population. Although the project would provide many short-term construction jobs and some long-term operational jobs, these would almost certainly be filled by local residents and would not induce in-migration.

7. *The proposed project will not involve a substantial degradation of environmental quality.* The project is a relatively minor action and is environmentally benign, and it will thus not contribute to environmental degradation.

8. *The proposed project will not substantially affect any rare, threatened or endangered species of flora or fauna or habitat.* On the areas directly affected (roadways, shoulders, and sidewalks), no rare, threatened or endangered species of flora or fauna are present. Limited areas adjacent to certain segments of the road may contain such resources, which can be protected through adherence to precautionary mitigation measures.

9. *The proposed 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 is not related to other activities in the region in such a way as to produce adverse cumulative effects or involve a commitment for larger actions. Although several large-scale development projects are in progress or planned for various segments of the routes, the modest scale and temporary nature of construction-related impacts of project are not expected to combine with the effects of other projects to adverse cumulative effects, when mitigated as planned through Best Management Practices and other measures.

10. *The proposed project will not detrimentally affect air or water quality or ambient noise levels.* No substantial effects to air, water, or ambient noise will occur. Brief, temporary effects will occur during construction and will be mitigated.

11. *The project does not affect nor will it likely to be damaged as a result of being located in environmentally sensitive area such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal area.* Although the project is located in areas exposed to some hazard from lava flows, earthquakes, stream and coastal flooding, and landslide hazard, the project presents no additional hazard to the public and is not imprudent for the utility.

12. *The project will not substantially affect scenic vistas and viewplanes identified in county or state plans or studies.* As the project is underground, it will not impair any views.

13. *The project will not require substantial energy consumption.* Some energy input will be required for construction, but the establishment of high-speed telecommunications may foster telecommuting and thus save energy. In addition, modern telecommunications equipment is generally energy-efficient during normal operation.

For the reasons above, the proposed project will not have any significant effect in the context of Chapter 343, Hawai'i Revised Statues and section 11-200-12 of the State Administrative Rules.

REFERENCES

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APPENDIX 1A

COMMENT LETTERS

FROM AGENCIES AND ORGANIZATIONS

IN RESPONSE TO PRE-CONSULTATION

Harry Kim
Mayor

Jiro A. Sumada
Deputy Director

County of Hawaii

DEPARTMENT OF PUBLIC WORKS

25 Aupuni Street, Room 202 · Hilo, Hawaii 96720-4252
(808) 961-8321 · Fax (808) 961-8630

December 8, 2000

Ronald A. Sato, AICP
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

SUBJECT: ENVIRONMENTAL ASSESSMENT
Sandwich Isles Communication, Inc.
Underground Fiber Optic Telecommunication Cables
Location: Island of Hawaii

We concur with your request (letter dated November 22, 2000) of having the State DOT serve as the Accepting Authority for the subject Environmental Assessment.

We will require Sandwich Isles Communication to obtain easements for all fiber optic cables and appurtenant structures within the County right-of-way. An easement may be granted by the Hawaii County Council through a request made to the Department of Finance.

A permit shall be obtained from the Department of Public Works for any work within the County right-of-way.

JIRO A. SUMADA
Deputy Director

c: SUR
ENG
Dept. of Finance
State DOT
Ron Terry, Ph.D.
ControlPoint Surveying, Inc.

Stephen K. Yamashiro
Mayor

James S. Correa
Deputy Police Chief
Acting Police Chief

County of Hawaii

POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-8869

November 26, 2000

Mr. Ron Terry, Ph.D.
Geo Metrician
HC 2 Box 9575
Keaau, HI 96749

Dear Mr. Terry:

SUBJECT: SANDWICH ISLES COMMUNICATION, INC. UNDERGROUND FIBER OPTIC CABLES – ISLAND OF HAWAII EARLY CONSULTATION FOR DRAFT ENVIRONMENTAL ASSESSMENT

This acknowledges your letter of November 16, 2000, requesting our comments on the above-referenced project.

Staff has reviewed your request and has no comments or objections to offer at this time.

Thank you for the opportunity to comment.

Sincerely,

WAYNE G. CARVALHO
POLICE CHIEF

THOMAS J. HICKCOX
ASSISTANT POLICE CHIEF
FIELD OPERATIONS BUREAU

TJH:lk

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

February 7, 2001

Mr. Thomas J. Hickcox, Assistant Police Chief
Field Operations Bureau
Police Department
County of Hawaii
349 Kapiolani Street
Hilo, Hawaii 96720-3998

Dear Mr. Hickcox:

Subject: **Sandwich Isles Communication, Inc.; County of Hawaii Rural Fiber Optic Duct Lines Project, Early Consultation For Draft Environmental Assessment**

Thank you for your letter dated November 26, 2000 regarding the subject project. We note that your department does not have any objections to the project or comments to offer at this time.

Thank you for your time and interest on this important project. Please give me a call at (808) 982-5831 should you have any other further questions.

Sincerely,

Ron Terry

NA ALA HELE
Hawai'i Trail & Access System

November 28, 2000

Ron Terry
Geo Metrician
HC 2 Box 9575
Keaau, HI 96749

Dear Mr. Terry:

SUBJECT: Sandwich Isles Communication, Inc. Underground Fiber Optic Cables - Island of Hawaii, Early Consultation for Draft Environmental Assessment

A major component of this project is the construction of underground fiber optic telecommunication cables within State and County right-of-ways (ROW's) to provide service to homestead area. Na Ala Hele does not anticipate any negative impact on its trails and access program. We are interested, however, in receiving a copy of the draft EA.

Sincerely,

RODNEY T. OSHIRO
Na Ala Hele

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

February 7, 2001

Mr. Rodney T. Oshiro
Na Ala Hele
Division of Forestry and Wildlife
Department of Land and Natural Resources
State of Hawaii
P.O. Box 4849
Hilo, Hawaii 96720-0849

Dear Mr. Oshiro:

Subject: **Sandwich Isles Communication, Inc.; County of Hawaii Rural Fiber Optic Duct Lines Project, Early Consultation For Draft Environmental Assessment**

Thank you for your letter dated November 27, 2000 regarding the subject project. We note your statement that no impacts to your trails and access program is anticipated from this project. A copy of the Draft Environmental Assessment will be distributed to your office as part of the 30-day public comment period.

Thank you for your time and interest on this important project. Please give me a call at (808) 982-5831 should you have any other further questions.

Sincerely,

Ron Terry

BENJAMIN J. CAYETANO
GOVERNOR

ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

November 27, 2000

Mr. Ron Terry, Ph.D.
Geo Metrician
HC 2 Box 9575
Keaau, Hawaii 96749

Dear Mr. Terry:

Subject: Early Consultation for Draft Environmental Assessment (DEA): Sandwich Isles Communication, Inc., Underground Fiber Optic Cables-Island of Hawaii

We have reviewed the description of the subject project provided by your letter dated November 16, 2000, and find that the alignment of the proposed cables, as represented on the map exhibits, will traverse through areas designated within the State Land Use Urban, Agricultural, Rural, and Conservation Districts.

We suggest that the DEA include a map showing the alignment of the cables in relation to the State land use districts.

We request that a copy of the DEA be provided to our office for review and comment as soon as it becomes available.

We have no further comments to offer at this time. We appreciate the opportunity to comment during the early consultation period.

Should you have any questions, please feel free to call me or Bert Saruwatari of our office at 587-3822.

Sincerely,

ESTHER UEDA
Executive Officer

EU:aa

c: OEQC

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

February 7, 2001

Mr. Bert Saruwatari, Acting Executive Officer
Land Use Commission
Department of Business, Economic Development & Tourism
State of Hawaii
P.O. Box 2359
Honolulu, HI 96804-2359

Dear Mr. Saruwatari:

Subject: **Sandwich Isles Communication, Inc.; County of Hawaii Rural Fiber Optic Duct Lines Project, Early Consultation For Draft Environmental Assessment**

Thank you for your letter dated November 27, 2000 regarding the subject project. Since the fiber optic duct lines would be constructed within the rights-of-way of both State highway facilities and County of Hawaii roadways, the proposed route would traverse through areas designated within the Urban, Agricultural, Rural and Conservation Districts.

The Draft Environmental Assessment will discuss the proposed route in relation to the State Land Use District. A figure showing the alignment of the fiber optic cables in relation to applicable Conservation District areas traversed will be provided. A copy of the Draft Environmental Assessment will be distributed to your office as part of the 30-day public comment period.

Thank you for your time and interest on this important project. Please give me a call at (808) 982-5831 should you have any other further questions.

Sincerely,

Ron Terry

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO
ATTENTION OF

November 28, 2000

Regulatory Branch

Mr. Ron Terry
Geo Metrician
HC 2 Box 9575
Keaau, Hawaii 96749

Dear Mr. Terry:

This responds to your request dated November 16, 2000 regarding a request for written comments for a Draft Environmental Assessment (dEA) which will address activities proposed for the Underground Fiber Optic Telecommunication Cables Project, Island of Hawaii. The information provided with your Exhibit identifies a general study corridor from Glenwood to Honuapo within State highway right-of-way. No specific locations of alternative realignment routes for the primary study corridor is indicated, nor are locations of waters of the U.S. such as streams, wetlands and navigable waters identified. Until more detailed information is provided we can only offer general comments at this time.

Our records indicate that waters of the United States, as represented by perennial or intermittent streams and wetlands may occur within the general study area. It also appears that navigable waters spanned by road crossings occur. The dEA should address the potential for waters of the U.S. and navigable waters of the U.S. to be affected, or not be impacted by construction and use of the proposed underground duct system. Finally, if studies for the dEA should identify that other waters of the U.S. (special aquatic sites) are present and will be affected by the proposed project, consultation should take place with the Corps to determine whether a Department of Army permit application shall be submitted for the Least Environmentally Damaging Project Alternative (LEDPA) of the project that will entail ground disturbance, construction, and alteration as well as the placement of fill material within the limits of jurisdictional waters.

Please contact Ms. Lolly Silva of my staff at (808) 438-7023 or by fax at (808) 438-4060 if you have any questions or need additional information. Please refer to File Number 200100063 in any future correspondence with us.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

February 7, 2001

Mr. George P. Young, P.E., Chief
Regulatory Branch
U.S. Army Engineer District, Honolulu
Department of the Army
Ft. Shafter, Hawaii 96858-5440

Dear Mr. Young:

Subject: **Sandwich Isles Communication, Inc.; County of Hawaii Rural Fiber Optic Duct Lines Project, Early Consultation For Draft Environmental Assessment**

Thank you for your letter dated November 28, 2000 regarding the subject project. Appropriate coordination would be conducted with your department during the design of the various cable segments to address applicable permit requirements. The installation of fiber optic duct lines at stream crossings would be designed to minimize impacts and alterations to existing stream beds and banks. Such installation methods considered would include directional drilling under stream beds or attaching the conduit system cables to existing bridges in accordance with State and County design requirements. The Draft Environmental Assessment will address the potential project impact on waters of the U.S. and navigable waters of the U.S.

Thank you for your time and interest on this important project. Please give me a call at (808) 982-5831 should you have any other further questions.

Sincerely,

Ron Terry

P. O. Box 1520, Pahoa, HI 96778
(808) 965-9254
"mop"punaoc@exclte.com

November 21, 2000

Ron Terry, Ph.D.
GEO METRICIAN
HC2 Box 9575
Kea'au, HI 96749

RE: SANDWICH ISLES COMMUNICATION, INC. UNDERGROUND FIBER OPTIC CABLES – ISLAND OF HAWAII EARLY CONSULTATION FOR DEA.

Aloha, Ron:

Thanks for copying me on this. Since all the construction is to be within the ROWs and on the mauka side of the roads, we probably don't have to worry about endangered species or cultural sites. That's a plus.

Frankly, I do not have the technical expertise to understand such niceties as the distinction between open trench and static plow placement, but I do know about directional drilling from my studies on geothermal. I am glad that we will not have to be exposed to another utility eyesore, and that these cables will be laid underground. Helco has been telling us for years that they cannot do it and that is way too expensive. Maybe they should farm out to this company, which is obviously finding it possible and, I assume, cost-effective. I would be very much interested, somewhere down the line, of seeing a cost estimate for this work, possibly broken down on a per mile basis. It would be a wonderful statistic to throw in at a PUC hearing.

I'm glad the Hawaiian Homes Lands will be brought into the 21st century by this project. I am still interested in seeing the Draft EA when it is ready, so please keep me on your list.

Once again, mahalo for actively seeking public input (mine, anyway).

with aloha aina,

René Siracusa, President

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

February 7, 2001

Ms. Rene Siracusa, President
Malama O Puna
P.O. Box 1520
Pahoa, Hawaii 96778

Dear Ms. Siracusa:

Subject: **Sandwich Isles Communication, Inc.; County of Hawaii Rural Fiber Optic Duct Lines Project, Early Consultation For Draft Environmental Assessment**

Thank you for your letter dated November 21, 2000 regarding the subject project. The fiber optic duct lines will be installed within the rights-of-way of existing State highways and County roadways. As a result, the project should not have significant impacts to endangered species or cultural sites. The fiber optic duct line would be located underground due to design requirements and to minimize visual impacts associated with overhead utilities. A construction cost estimate will be provided in the Draft Environmental Assessment. A copy of the Draft Environmental Assessment will be distributed to you as part of the 30-day public comment period.

Thank you for your time and interest on this important project. Please give me a call at (808) 982-5831 should you have any other further questions.

Sincerely,

Ron Terry

Harry Kim
Mayor

Christopher J. Yuen
Director

County of Hawaii

PLANNING DEPARTMENT
25 Aupuni Street, Room 109 • Hilo, Hawaii 96720-4252
(808) 961-8288 • Fax (808) 961-8742

December 18, 2000

Mr. Ron Terry
HC 2 Box 9575
Keaau, HI 96749

Dear Mr. Terry:

Comments on the Preparation of a Draft Environmental Assessment (early consultation)
Project: Construction of underground fiber optic telecommunication cables
TMK: Various

Thank you for your memo dated November 21, 2000, requesting comments regarding the preparation of a draft environmental assessment for the proposed construction of underground fiber optic telecommunication cables within State and County right-of-ways for Department of Home Lands (DHHL) homestead areas.

In reviewing your proposal, we note that no tax map key numbers are identified for the project. Without the appropriate TMK numbers, we are unable to provide a complete analysis and assessment of your request, and thus reserve our comments at this time. Please provide the appropriate TMK numbers relative to this project.

We would appreciate a copy of the Draft EA upon completion. If you have any questions, please call Phyllis Fujimoto of this office at 961-8288.

Sincerely,

CHRISTOPHER J. YUEN
Planning Director

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cc: Ms. Genevieve Salmonson, Office of Environmental Quality Control

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

December 23, 2000

Christopher J. Yuen, Director
Hawaii County Planning Department
25 Aupuni Street
Hilo, Hawaii 96720
Attn: Phyllis Fujimoto

Dear Mr. Yuen:

Subject: **Sandwich Isles Communication, Inc. Underground Fiber Optic Cables – Island of Hawaii Early Consultation For Draft Environmental Assessment (EA)**

Thank you for your letter of December 18, 2000, responding to my request for early consultation comments. As I discussed with Phyllis Fujimoto of your staff in a phone conversation on December 22, it would be impractical to provide TMKs for the areas the project will pass by. As the maps we sent in the consultation letter illustrate, the project involves over 600 miles of State and County roadways, and therefore several thousand TMKs. For the great majority of the route the existing right-of-way for the roads will be used, with perhaps an occasional minimal extension into other property where terrain allows no alternative.

I would also like to inform you that since I sent you the letter of November 21, 2000, we have received confirmation that, in consultation with the Hawaii County Department of Public Works, the Hawaii State Department of Transportation has agreed to serve as the Accepting Authority for the EA.

If you have any questions or require further clarification, please call me at 982-5831. We look forward to receiving your comments on the Draft EA.

Sincerely,

Ron Terry

APPENDIX 1B

COMMENT LETTERS

FROM AGENCIES AND ORGANIZATIONS

IN RESPONSE TO DRAFT EA

AND RESPONSES

Harry Kim
Mayor

James S. Correa
Police Chief

County of Hawaii

POLICE DEPARTMENT
349 Kapiolani Street • Hilo, Hawaii 96720-3998
(808) 935-3311 • Fax (808) 961-8869

March 27, 2001

Mr. Ron Terry, Ph. D.
Geo Metrician
HC 2 Box 9575
Keaau, HI. 96749

Dear Mr. Terry:

SUBJECT: SANDWICH ISLES COMMUNICATION, INC. UNDERGROUND FIBER OPTIC CABLES - ISLAND OF HAWAII DRAFT ENVIRONMENTAL ASSESSMENT

This acknowledges receipt of the above-referenced draft environmental assessment requesting our comments on the project.

Other than impact on traffic during the construction phase of the project, we have no further comments or objections to offer at this time.

Thank you for the opportunity to respond.

Sincerely,

JAMES S. CORREA
POLICE CHIEF

Thomas J. Hickcox

THOMAS J. HICKCOX
ASSISTANT POLICE CHIEEF
FIELD OPERATIONS BUREAU

cc: Director, Office of Environmental Quality Control
Michael Amuro, Hawaii State Department of Transportation

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Mr. Thomas J. Hickcox, Assistant Police Chief
Field Operations Bureau
Hawaii County Police Department
349 Kapiolani Street
Hilo, Hawaii 96720-3998

Dear Mr. Hickock:

Subject: Sandwich Isles Communications, Inc., County of Hawai`i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of March 27, 2001, in which you state that the other than the impact on traffic during the construction period, your department has no comments or objections to offer at this time. Please be assured that, as outlined in the EA, the project will include development of a traffic control plan during the design phase of the project that will outline the steps needed to minimize congestion and maintain access to adjacent properties at all times during construction. Implementation of construction will be coordinated with agencies, including the Police Department, in order to prevent conflicts in activities

Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely

Ron Terry

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES
P.O. BOX 119, HONOLULU, HAWAII 96810

LETTER NO. (P)1212.1

MAR 28 2001

Mr. Ron Terry
GeoMetrician Associates
HC 2 Box 9575
Keeau, HI 96749

Dear Mr. Terry:

Subject: Sandwich Isles Communications, Inc.
Fiber Optic Duct Lines Project
Draft Environmental Assessment (DEA)
Island of Hawaii

Thank you for the opportunity to review the subject DEA. The proposed project does not impact any of our facilities. Therefore, we have no comments.

If there are any questions regarding the above, please call Mr. Tyler Fujiyama of the Planning Branch at 586-0492.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

TF/JNN:mo
c: Ms. Genevieve Salmonson, OEQC
Mr. Michael Amura, DOT

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Mr. Gordon Matsuoka, Public Works Administrator
Hawaii Department of Accounting and General Services
P.O. Box 119
Honolulu HI 96810

Dear Mr. Matsuoka:

Subject: Sandwich Isles Communications, Inc., County of Hawai'i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of March 28, 2001, in which you state that the project does not impact on your facilities, and that you therefore have no comment.

Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely

Ron Terry

Harry Kim
Mayor

Christopher J. Yuen
Director

Roy R. Takemoto
Deputy Director

County of Hawaii

PLANNING DEPARTMENT
25 Aupuni Street, Room 109 • Hilo, Hawaii 96720-4252
(808) 961-8288 • Fax (808) 961-8742

March 30, 2001

Mr. Ron Terry
HC 2 Box 9575
Keaau, HI 96749

Dear Mr. Terry:

Comments on a Draft Environmental Assessment
Project: Sandwich Isles Communications, Inc., Rural Fiber Optic Duct Lines
TMK: Various

Thank you for transmitting the above-described draft environmental assessment for our review and comment. We have no objections to the document's assessment of the proposed project against the State's environmental impact statement requirements (Title 11, Chapter 200, HAR) and concur with its anticipated Finding of No Significant Impact.

We appreciate the opportunity to participate in the preparation of the draft environmental assessment. We would appreciate receiving a copy of the Final Environmental Assessment - Notice of Determinations upon completion. Please call Phyllis Fujimoto of this office at 961-8288 if you have any questions.

Sincerely,

CHRISTOPHER J. YUEN
Planning Director

PF:pak
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cc: Genevieve Salmonson, Office of Environmental Quality Control
Michael Amuro, Hawaii State Department of Transportation

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Christopher J. Yuen, Director
Hawaii County Planning Department
25 Aupuni Street
Hilo, Hawaii 96720

Subject: Sandwich Isles Communications, Inc., County of Hawai`i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of March 30, 2001, in which you state that you have no objections to the assessment and concur with the FONSI. As requested, we will send you a copy of the Final EA.

Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely,

Ron Terry

Harry Kim
Mayor

Dennis K. W. Lee
Director

Jiro A. Sumada
Deputy Director

County of Hawaii
DEPARTMENT OF PUBLIC WORKS
25 Aupuni Street, Room 202 • Hilo, Hawaii 96720-4252
(808) 961-8321 • Fax (808) 961-8630

April 5, 2001

RON TERRY
GEO METRICIAN ASSOCIATES
HC 2 BOX 9575
KEAAU HI 96749

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT REVIEW
RURAL FIBER OPTIC DUCT LINES PROJECT
ISLAND OF HAWAI`I, COUNTY OF HAWAI`I

Thank you for allowing us to review the above subject.

The Department cannot fully assess the project without detailed routes, including tax map keys to identify the properties involved in this project. Despite that, the Department supports the purpose and need for this project. This project will provide several benefits to the Hawaiian Homes Lands beneficiaries now where otherwise may never be realized at all.

Sandwich Isles Communications will need easements by the Hawaii County Council or seek a utility indemnity agreement. Other issues include establishment of a franchise agreement, restoration work on DHHL lands conforming to County standards with paid fees, and review of construction plans by County staff. Also, will a detailed environmental assessment be made especially where government lands are involved?

Dennis K. W. Lee

DENNIS K. W. LEE, P. E.
Director

DKWL:vmht

cc: ENG

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Mr. Dennis K.W. Lee, P.E., Director
Hawai'i County Public Works Department
25 Aupuni Street
Hilo, Hawaii 96720

Dear Mr. Lee:

Subject: Sandwich Isles Communications, Inc., County of Hawai'i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of April 5, 2001. Following are our responses to your individual comments.

1. *Cannot Assess Without Detailed Routes and TMKs.* The EA did not list TMKs for the properties potentially crossed by or directly adjacent to the proposed duct lines because they will be so numerous. During final design, when the exact placement within the right-of-way and the precise construction methods for individual segments are determined, the design engineers and construction contractors will coordinate with your department to ensure that all requirements are met and concerns addressed.
2. *Concurrence with Purpose and Need.* We appreciate your recognition of the need for the project and your support of its implementation.
3. *Need for Easements, etc.* The Final EA will contain a statement in Section 3.3.8.9 that "SIC will seek necessary approvals and enter into necessary agreements with the County to install their conduits in County roadways."
4. *Restoration Work on DHHL Lands Conforming to County Standards with Paid Fees.* This issue will be addressed during final design of the project.
5. *Review of Construction Plans by County Staff.* The need for review of construction plans by County staff is acknowledged, and is noted in several locations in the Draft EA.
6. *More Detailed Environmental Assessment.* As the essential environmental character and potential impacts were fully outlined in the Draft EA, and the remaining issues are essentially procedural and unrelated to environmental impacts, we do not expect to prepare another EA. SIC will continue to coordinate closely with appropriate agencies during the design and construction phases of the project in order to address all concerns.

Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely,

Ron Terry

BENJAMIN J. CAYETANO
GOVERNOR

PAUL G. LeMAHIEU, Ph.D.
SUPERINTENDENT

STATE OF HAWAI'I
DEPARTMENT OF EDUCATION
P.O. BOX 2360
HONOLULU, HAWAI'I 96804

OFFICE OF THE SUPERINTENDENT

April 6, 2001

Mr. Ron Terry
GeoMetrician Associates
HC 2 Box 9575
Keaau, Hawai`i 96749

Dear Mr. Sato:

Subject: Sandwich Isles Communication
County of Hawai`i Rural Fiber Optic Duct Lines
Draft Environmental Assessment

The Department of Education requests that two-weeks advance notice be provided to any school in the immediate vicinity of construction. The advance notice will allow the affected school to prepare for possible noise and traffic disruptions.

Thank you for the opportunity to comment.

Very truly yours,

Paul G. LeMahieu, Ph.D.
Superintendent of Education

PLeM:hy

cc: P. Yoshioka, DAS
M. Amuro, DOT
G. Salmonson, OEQC

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Dr. Paul LaMahieu, Superintendent
Hawai'i State Department of Education
P.O. Box 2360
Honolulu HI 96804

Dear Mr. La Mahieu:

Subject: Sandwich Isles Communications, Inc., County of Hawai'i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of April 6, 2001, in which you request that two-weeks advance notice be provided to any school in the immediate vicinity of construction.

The applicant will require the contractor to provide at least two weeks advance notice to schools in the immediate vicinity of construction activities.

Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely

Ron Terry

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

April 13, 2001

REPLY TO
ATTENTION OF

Regulatory Branch (1145-b)

Mr. Ron Terry
Geo Metrician
HC 2 Box 9575
Keaau, HI 96749

Dear Mr. Terry:

This responds to your request for written comments to the Draft Environmental Assessment (dEA) prepared for Sandwich Isles Communication, Inc. which addresses activities proposed for the County of Hawaii Rural Fiber Optic Duct Lines Project, Hawaii Island. Based on a review of the dEA, a considerable amount of the project will not be located in waters of the U.S. However, for those areas which may impact streams or wetlands, the dEA correctly notes that for each potential crossing, coordination will take place with the Corps on a case-by-case basis to determine whether a Department of Army (DA) permit will, or will not be, required. We look forward to assisting you with these jurisdictional determinations when engineering design solutions become available.

Please contact Ms. Lolly Silva of my staff at 438-7023 if you have any questions or additional information. Please refer to File Number 200100063 in any future correspondence with us.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Mr. George P. Young, P.E., Chief
Regulatory Branch
U.S. Army Engineer District, Honolulu
Department of the Army
Ft. Shafter, Hawaii 96858-5440

Dear Mr. Young:

Subject: Sandwich Isles Communications, Inc., County of Hawai`i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of April 13, 2001, in which you affirmed the statement in the Draft EA that coordination related to your agency's jurisdictional concerns regarding potential impacts on stream crossings or wetlands should take place on a case-by-case basis.

In general, the crossing of streams would be either via bridge attachments or using directional drilling under such streams to minimize impacts to beds and banks. Therefore, in many cases, a Department of the Army permit may not be required, since construction activities may not affect jurisdictional waters. Nevertheless, appropriate consultation and coordination with your agency will be conducted during the design of the project to address the applicability of Department of the Army permits. We appreciate your stated willingness to assist in making these determinations.

If you have any questions, please give me a call at 982-5831. Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely

Ron Terry

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

April 23, 2001

Mr. Larry Fukunaga
Sandwich Isles Communications, Inc.
Pauahi Tower, 27th Floor
1001 Bishop Street
Honolulu, Hawai'i 96813

Mr. Raymond Soon, Chairperson
Department of Hawaiian Home Lands, State of Hawai'i
1099 Alakea Street, Suite 2000
Honolulu, Hawai'i 96813

Mr. Brian Minaai, Director
Department of Transportation, State of Hawai'i
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

Dear Messrs. Fukunaga, Soon and Minaai:

This letter is written with respect to your filings of anticipated findings of no significant impact and draft environmental assessments for rural fiber optic duct lines projects in the counties of Honolulu, Maui, Hawai'i and Kaua'i. Please instruct your consultants to include a copy of this letter and your responses to these questions in each of the four environmental assessments being processed.

1. Cumulative Impacts Must Be Assessed: One draft environmental assessment cites the provisions of section 11-200-8(a), item 3(d), Hawai'i Administrative rules, stating that "construction and location of single, new, small facilities or structures and the alteration and modification of the same and installation of new, small, equipment and facilities and the alteration and modification of same including but not limited to : ... (b) [w]ater, sewage, electrical, gas, telephone, and other essential public utility services extensions to serve such structures or facilities..." is exempt from the preparation of an environmental assessment. We do not believe that the exemption applies at all due to the many cumulative impacts of the project which have yet to be assessed. We respectfully call to your attention the language of section 11-200-8(b), which states in pertinent part that "[a]ll exemptions under the classes ... are inapplicable when the cumulative impact of planned successive actions in the same place, over time, is significant, or when an action that is normally insignificant in its impact on the environment may be significant in a particularly sensitive environment" [underscoring supplied] and request that your consultants review the overall statewide project and in each draft environmental assessment discuss the cumulative impacts of the overall project. Some questions to guide you in assessing the cumulative impacts of the project include the following:

   a. We understand that a primary component of the project is to link the various properties of the Hawaiian Homes Land Trust. Once such a land-based fiber optic trunk has been established, to what extent will persons or entities proximal to the network and who are not beneficiaries of the Hawaiian Homes Land trust be allowed to use the fiber optic network?

   b. Interisland cable landings which fall in the shoreline setback area (under County jurisdiction) and submerged lands (under the jurisdiction of the Department of Land and Natural Resources) will eventually connect the statewide system. Although the project is focusing on the land based components under the jurisdiction of

the Department of Transportation, what possible sites will SIC use to connect the system? Will new sites be used? Has SIC spoken to utilities Verizon and GST for the possiblity of collocation? What kinds of impacts (i.e., cultural, archaeological, historical, biological) will result from the use of existing as opposed to new sites? What mitigative measures will be taken? What alternatives are available?

2. Use of Federal Funds and Compliance with Federal Requirements: We understand that the project will be making use of federal funds through the Rural Utilities Service of the United States Department of Agriculture. Please provide documentation of compliance with section 106 of the National Historic Preservation Act. Please also provide documentation that the disbursement of funds for this purpose has been categorically exempted or issued a finding of no significant impact under the National Environmental Policy Act.

3. Interaction with Other Planned Projects: Each environmental assessment must discuss the project's interaction with other planned projects along the corridor routes for each island (see page 52 of the DEA for the County of Hawai'i Rural Fiber Optic Duct Lines project for an example).

4. Secondary (or Indirect) Impacts: Chapter 343 Hawai'i Revised Statutes and its implementing administrative rules define three types of impacts: direct, indirect and cumulative. While direct impacts are normally discussed, the latter two are often neglected or given cursory review in environmental documents. It should be realized that actions that involve the construction of highways, airports, utility corridors, water resource projects, etc., may well stimulate or induce secondary or indirect effects. These indirect effects may be equally important as, or more important than direct impacts. Discuss the indirect impacts of the project using the following question as a guide: will development (such as high-tech parks) grow as a result of this project? What impacts will such growth and development have? We are aware of one such case - Sandwich Isles Network Operation Center on 100 + acres of land (zone agricultural) in Waikakalua, Oahu.

5. Cultural Impact Requirements of Act 50, SLH 2000: Act 50 of the Session Laws of Hawai'i for 2000 require that projects subject to Chapter 343, Hawai'i Revised Statutes assess the impact of project on cultural practices. The inclusion of an archaeological assessments with no reference to current cultural practices or resources does not fulfill the requirements of Act 50. The environmental assessment for the Hawaii County Fiber Optic Line Project was the only one of the four that actually attempted to assess cultural impacts. Please advise your consultants to comply with Act 50, if they have not done so already, in light of the new information you will obtain in response to our requests above which you should transmit to them for their use in revising your documents. A copy of the cultural impact assessment guidance is enclosed.

Thank you for the opportunity to comment. If you have any questions, please call Mr. Leslie Segundo of my staff at (808) 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director of Environmental Quality Control

Enclosures
c: Mr. Michael Amuro, Department of Transportation, State of Hawai'i
Munekiyo & Hiraga, Inc.
Ron Terry, Ph.D.
Mr. Ronald Sato, AICP, SSFM International, Inc.

GUIDELINES FOR ASSESSING CULTURAL IMPACTS

Adopted by the Environmental Council, State of Hawaii
November 19, 1997

I. INTRODUCTION

It is the policy of the State of Hawaii under Chapter 343, HRS, to alert decision makers, through the environmental assessment process, about significant environmental effects which may result from the implementation of certain actions. An environmental assessment of cultural impacts gathers information about cultural practices and cultural features that may be affected by actions subject to Chapter 343, and promotes responsible decision making. Articles IX and XII of the State Constitution, other state laws, and the courts of the state require government agencies to promote and preserve cultural beliefs, practices, and resources of native Hawaiians and other ethnic groups. Chapter 343 also requires environmental assessment of cultural resources, in determining the significance of a proposed project.

The Environmental Council encourages preparers of environmental assessments and environmental impact statements to analyze the impact of a proposed action on cultural practices and features associated with the project area. The Council provides the following methodology and content protocol as guidance for any assessment of a project that may significantly affect cultural resources.

II. CULTURAL IMPACT ASSESSMENT METHODOLOGY

Cultural impacts differ from other types of impacts assessed in environmental assessments or environmental impact statements. A cultural impact assessment includes information relating to the practices and beliefs of a particular cultural or ethnic group or groups.

Such information may be obtained through scoping, community meetings, ethnographic interviews and oral histories. Information provided by knowledgeable informants, including traditional cultural practitioners, can be applied to the analysis of cultural impacts in conjunction with information concerning cultural practices and features obtained through consultation and from documentary research.

In scoping the cultural portion of an environmental assessment, the geographical extent of the inquiry should, in most instances, be greater than the area over which the proposed action will take place. This is to ensure that cultural practices which may not occur within the boundaries of the project area, but which may nonetheless be affected, are included in the assessment. Thus, for example, a proposed action that may not physically alter gathering practices, but may affect access to gathering areas would be included in the assessment. An ahupua'a is usually the appropriate geographical unit to begin an assessment of cultural impacts of a proposed action, particularly if it includes all of the types of cultural practices associated with the project area. In some cases, cultural practices are likely to extend beyond the ahupua'a and the geographical extent of the study area should take into account those cultural practices.

Primary source materials reviewed and analyzed may include, as appropriate: Mahele, land court, census and tax records, including testimonies; vital statistics records; family histories and genealogies; previously published or recorded ethnographic interviews and oral histories; community studies, old maps and photographs; and other archival documents, including correspondence, newspaper or almanac articles, and visitor journals. Secondary source materials such as historical, sociological, and anthropological texts, manuscripts, and similar materials, published and unpublished, should also be consulted. Other materials which should be examined include prior land use proposals, decisions, and rulings which pertain to the study area.

III. CULTURAL IMPACT ASSESSMENT CONTENTS

In addition to the content requirements for environmental assessments and environmental impact statements, which are set out in HAR §§ 11-200-10 and 16 through 18, the portion of the assessment concerning cultural impacts should address, but not necessarily be limited to, the following matters:

1. A discussion of the methods applied and results of consultation with individuals and organizations identified by the preparer as being familiar with cultural practices and features associated with the project area, including any constraints or limitations which might have affected the quality of the information obtained.

2. A description of methods adopted by the preparer to identify, locate, and select the persons interviewed, including a discussion of the level of effort undertaken.

3. Ethnographic and oral history interview procedures, including the circumstances under which the interviews were conducted, and any constraints or limitations which might have affected the quality of the information obtained.

4. Biographical information concerning the individuals and organizations consulted, their particular expertise, and their historical and genealogical relationship to the project area, as well as information concerning the persons submitting information or interviewed, their particular knowledge and cultural expertise, if any, and their historical and genealogical relationship to the project area.

5. A discussion concerning historical and cultural source materials consulted, the institutions and repositories searched, and the level of effort undertaken. This discussion should include, if appropriate, the particular perspective of the authors, any opposing views, and any other relevant constraints, limitations or biases.

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, HI 96813

Dear Ms. Salmonson:

Subject: Sandwich Isles Communications, Inc., County of Hawai'i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of April 23, 2001. Following are our responses to your individual comments.

1. *Cumulative Impacts Must Be Assessed.* As you point out in your letter, the Hawai'i County EA did consider interaction with other current or upcoming projects the impacts of which might have the potential to interact with those of the proposed project and produce cumulative impacts. In our view, the principal, and only non-negligible, adverse *impacts* associated with the fiber optic project are related to construction of the project: traffic, access, dust, excavation, etc. Therefore, the cumulative impacts section was framed by discussing major projects that have the potential to generate similar impacts (that could thus *accumulate*) or induce conflicts during construction.

We note that your letter also raised certain issues that you argued were relevant to an expanded discussion of cumulative impacts. In particular, you mentioned the potential for other non-Hawaiian Home Land entities to use the fiber optic network, and the fact that inter-island cable landings for interconnection of the separate island systems were contemplated. With all due respect, we do not believe that either of these topics are pertinent to any reasonable discussion of cumulative impacts.

The issue of non-beneficiary users more properly pertains to the subject of secondary impacts. The project objective is to provide emergency, basic, and advanced telecommunication services to State Department of Hawaiian Home Land (DHHL) parcels, and this fiber optic duct line would allow Sandwich Isles Communications, Inc. (SIC) to provide such service. SIC has not developed any plans for services outside of DHHL.

As for the potential inter-island cable system: that project, if it is indeed undertaken, would not produce impacts that would *accumulate* with the construction-related impacts

of the proposed project. It would involve a different set of impacts, which might include marine and nearshore ecosystems, preservation of coastal values, and similar issues. We interpret your concern as deriving from the potential issue of segmentation, and welcome this opportunity to explain that the separation of the island-wide systems from the inter-island cables is not an example of segmentation. If the inter-island cable were integrally related to the provision of services to Hawaiian Home Land tracts around the island of Hawai'i, then omitting its discussion would be improper segmentation of the project. In fact, however, the proposed project on the island of Hawai'i is completely independent of the inter-island cable project. The land-based fiber optic duct lines constitute an independent system intended to provide basic essential telecommunication service to DHHL properties. The landing sites would connect DHHL properties statewide to give SIC an opportunity to provide inter-island service for beneficiaries instead of using more costly existing carriers. Furthermore, it is important to recognize that the inter-island cable project may not actually be undertaken; technologies other than cables may be developed to connect the islands, or some other form of networking may be used. Therefore, in the context of §11-2007, the Hawai'i island project is not necessarily a component of a larger undertaking, it is not a necessary precedent for a larger action, it does not commit to any larger project (specifically, cables to connect the islands), and is not identical to other projects. It is important to note that this issue was discussed at the initiation of the EA process with OEQC, and the environmental review process involving separate EA's for each independent project on each island was approved, with the understanding the a document covering their connection would be developed if and when the method and timing of connection was finalized. It is premature to consider specific details of a proposal whose general outlines are not yet established.

In conclusion, we would argue that the discussion of cumulative impacts contained in the Draft EA is adequate and proper to the scope and scale of impacts.

2. *Use of Federal Funds.* The Rural Utilities Service (RUS) is an agency within the U.S. Department of Agriculture that provides long-term, low interest loans to rural telephone companies like SIC for projects such as that proposed to serve DHHL. Under the RUS's Environmental Policies and Procedures, the proposed project is "Categorically Excluded" under the National Environmental Policy Act. A copy of a letter from RUS confirming this is enclosed with this response letter. SIC is presently conducting a Section 106 consultation review for the project, and has already been coordinating such efforts with the State Historic Preservation Division.

3. *Interaction with Other Planned Projects.* [Please see answer to 1., above]

4. *Secondary (Indirect) Impacts.* The Draft EA discussed secondary impacts in Section 3.6.2. We would point out that the example you cite concerning the Sandwich Isles Network Operation Center is *not* an example of the secondary effect of establishing a fiber optic cable; rather, this is simply the headquarters for the company that wishes to establish such service. Furthermore, in our view, the springing-up of large high-tech centers in Hawaiian Home Lands on the island of Hawai'i as a result of the proposed action is highly unlikely. The feasibility of establishing such high-tech centers depends

upon a complex of factors such as business climate, education and labor force. The proposed fiber optic service represents only one very small component – and one which in the future may be insufficient, given the rapid changes in technology. Other major companies installing fiber optic lines elsewhere on the island of Hawai'i do not appear to have induced any noticeable economic stimulus on the communities through which the cables have been routed.

The ambitions of, and any reasonable expectations for, the Rural Fiber Optic Duct Lines Program are limited to providing beneficiaries with high-quality emergency, basic, and advanced essential telecommunication services at a cost regulated by the PUC's tariff. It is hoped that some increased educational and home business opportunities will ensue. However, as stated in the Draft EA, it would not be reasonable to predict that the project will involve noticeable secondary impacts such as population changes or effects on public facilities. The proposed project does not involve an increase in housing units that could increase the existing resident population. Although the project would provide many short-term construction jobs and some long-term operational jobs, these would almost certainly be filled by local residents and would not induce in-migration.

5. *Cultural Impacts* The Draft EA did address the project's likely impact on traditional cultural practices. The fiber optic cables would be installed within existing roadways and rights-of-way on which no traditional cultural practices are known to occur, since these roadways are actively used for vehicular traffic. The project would also not prevent access to shoreline or other areas that may be used for traditional cultural practices. The archaeological assessment included research and field inspections of the routes to determine the likely presence of archaeological or cultural resources within existing roadways or adjacent to the rights-of-way. Consequently, the only potential traditional cultural resource that may be affected are burials during construction activities, which were addressed in the archaeological assessment. To mitigate potential impacts, Section 106 consultation is being conducted along with consultation with the State Historic Preservation Division (SHPD) and Hawai'i Island Burial Council. In the event burials are encountered, consultation with SHPD and the Hawai'i Island Burial Council would be conducted in compliance with Chapter 6E, HRS. This may include the search for lineal descendants and consultation with the Hawai'i Island Burial Council to address proper treatment.

Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely

Ron Terry

attachment: RUS letter

United States Department of Agriculture
Rural Development

Rural Business–Cooperative Service • Rural Housing Service • Rural Utilities Service
Washington, DC 20250

Mr. Kauhi Keliiaa
Chief Network Officer
Sandwich Isles Communications, Inc.
Pauahi Tower, Suite 2750
1001 Bishop Street
Honolulu, Hawaii 96813

Dear Mr. Keliiaa:

We are sending this in response to your letter of November 13, 2000, requesting confirmation of National Environmental Policy Act (NEPA) procedures under our regulations.

We confirm that your proposed construction of buried telecommunications lines, cables, and related facilities are categorically excluded projects requiring the preparation of an environmental report (ER). These projects require no action under NEPA environmental assessment and environmental impact statement procedures.

As indicated in our letter of September 20, 2000, to your company, we have approved the generic ER submitted in support of your "C" loan application. The environmental assessments that you are preparing under your state requirements will be adequate to serve as the required site-specific ERs for our review and approval prior to the start of construction of each project.

If you should have any questions, please feel free to contact Mr. Randy Jenkins, RUS Field Representative, or this office.

Sincerely,

Peter Aimable

PETER AIMABLE, Chief
Southwest Area Engineering Branch
Telecommunications Program

cc:
Mid-State Consultants, Inc.

Harry Kim
Mayor

Edward Bumatay
Fire Chief

County of Hawaii
FIRE DEPARTMENT
80 Pauahi St • Suite 101 • Hilo, Hawaii 96720
(808) 961-8297 • Fax (808) 961-8296

April 23, 2001

Mr. Ron Terry
GeoMetrician Associates
HC 2 Box 9575
Keaau, HI 96749

Dear Mr. Terry:

Subject: Sandwich Isles Communications, Inc., County of Hawaii
Rural Fiber Optic Duct Lines Project
Island of Hawaii, All Districts
Tax Map Key: (3rd): Various Sections, Zones and Plats

We have no comments on the above-referenced project.

Sincerely,

EDWARD BUMATAY
Fire Chief

EB/mo

cc: Director, OEQC
Michael Amuro, Right-of-Way Branch, State DOT

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Edward Bumatay, Fire Chief
Hawaii County Fire Department
80 Pauahi Street, Suite 101
Hilo, Hawaii 96720

Dear Chief Bumatay:

Subject: Sandwich Isles Communications, Inc., County of Hawai`i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of April 23, 2001, in which you state that you have no comment on the above referenced project.

Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely

Ron Terry

BENJAMIN J. CAYETANO
GOVERNOR

ESTHER UEDA
EXECUTIVE OFFICER

STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
P.O. Box 2359
Honolulu, HI 96804-2359
Telephone: 808-587-3822
Fax: 808-587-3827

April 24, 2001

Mr. Ron Terry
Geo Metrician Associates
HC 2 Box 9575
Keaau, Hawaii 96749

Dear Mr. Terry:

Subject: Draft Environmental Assessment (DEA)
Sandwich Isles Communication, Inc., Underground Fiber Optic
Telecommunication Cables – Island of Hawaii

We have reviewed the subject DEA as transmitted by your letter received on March 22, 2001.

We have no further comments to add to our letter dated November 27, 2000, providing comments during early consultation period for the DEA. We appreciate the opportunity to comment on the subject DEA.

If you have questions regarding this matter, please contact me or Russell Kumabe of our office at 587-3822.

Sincerely,

BERT SARUWATARI
Acting Executive Officer

c: DOT, Highways Division, Right-of-Way Branch
Attention: Mike Amuro
Office of Environmental Quality Control

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Mr. Bert Saruwatari, Acting Executive Officer
Land Use Commission
Department of Business, Economic Development & Tourism
State of Hawaii
P.O. Box 2359
Honolulu, HI 96804-2359

Dear Mr. Saruwatari:

Subject: Sandwich Isles Communications, Inc., County of Hawai`i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of April 23, 2001, in which you state that you have no further comments to add to your letter dated November 27, 2000. We note that your letter requested information on the State Land Use Districts in which the project would occur. This information was provided in the Draft EA.

Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely

Ron Terry

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF HEALTH
P.O. BOX 3378
HONOLULU, HAWAII 96801

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

In reply, please refer to:
File:

01-005/epo

April 25, 2001

Ron Terry, Ph.D.
GeoMetrician Associates
HC 2 Box 9575
Keaau, Hawaii 96749

Dear Dr. Terry:

Subject: Rural Fiber Optics Communication Lines

Thank you for allowing us to review and comment on the subject document. We have the following comments to offer:

Control of Fugitive Dust

There is a significant potential for fugitive dust emissions during the construction activities. Implementation of adequate dust control measures during all phases of construction is warranted.

Construction activities must comply with provisions of Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, Fugitive Dust.

The contractor should provide adequate measures to control dust from the road areas and during the various phases of construction. These measures include, but are not limited to:

1. Planning the different phases of construction, focusing on minimizing the amount of dust generating materials and activities, centralizing on-site vehicular traffic routes, and locating potentially dusty equipment in areas of the least impact;

2. Providing an adequate water source at the site prior to start up of construction activities;

3. Landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;

4. Controlling of dust from shoulders and access roads;

5. Providing adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and

6. Controlling of dust from debris being hauled away from project site.

If you have any questions regarding these issues on fugitive dust, please contact the Clean Air Branch at 586-4200.

Noise, Radiation and Indoor Air Quality Branch

1. The contractor shall obtain a Community Noise Permit and/or Community Noise Variance if the noise levels from the construction activities exceeds or are expected to exceed the maximum permissible sound levels of the regulations as stated in Section 11-46-6(a), Hawaii Administrative Rules, Chapter 11-46, Community Noise Control.

2. Construction equipment and on-site vehicles requiring an exhaust of gas or air shall be equipped with mufflers as stated in Section 11-46-6(b)(1)(A).

3. Community Noise Permits are issued for construction activities that occur between the hours of 7:00 a.m. to 6:00 p.m., Monday through Friday, and 9:00 a.m. to 6:00 p.m. on Saturdays. The contractor shall comply with the requirements pertaining to construction activities as specified in the rules and the conditions issued with the permit as stated in Section 11-46-7(a).

4. Community Noise Variances are issued for construction activities that occur outside of the indicated permit hours. The contractor shall comply with the requirements pertaining to construction activities as specified in the rules and the conditions issued with the variance as stated in Section 11-46-8(c)(6).

If there are any questions, please contact Russell S. Takata, Environmental Health Program Manager, Noise, Radiation and Indoor Air Quality Branch, at 586-4700.

Sincerely,

GARY GILL
Deputy Director
Environmental Health Administration

c Dept. of Transportation
Attn: Mr. Mike Amuro
OEQC

GEO METRICIAN
Ron Terry, Ph.D.

HC 2 Box 9575
Keaau, Hawaii 96749
(808) 982-5831

May 20, 2001

Gary Gill, Deputy Director
Environmental Health Administration
Hawai`i State Department of Health
P.O. Box 3378
Honolulu HI 96801

Subject: Sandwich Isles Communications, Inc., County of Hawai`i Rural Fiber Optic Duct Lines Project Environmental Assessment (EA)

Thank you for your comment letter of April 25, 2001. Following are our responses to your individual comments.

(A1-6) *Construction-Phase Impacts Related to Dust and Soil Erosion.* As mentioned in Section 3.2, along with other areas of the EA, final design will include plans for minimizing soil erosion and dust, including specifications concerning dust minimization during and between construction times, adequate water, dust from shoulders and access roads, dust from hauling vehicles, as well as landscaping and other erosion control measures.

(B1-4) *Noise.* As discussed in Section 3.2, consultation will be undertaken with the Hawai`i Department of Health (DOH) per Title 11, Chapter 46, HAR (Community Noise Control) prior to construction of individual route segments concerning construction noise permit requirements. If and when permits are necessary, DOH will review the type of activity, location, equipment, project purpose, and timetable in order to decide upon conditions and mitigation measures. Possible measures include restriction of equipment type, maintenance requirements, restricted hours, and portable noise barriers. The precise combination of mitigation measures, if any, shall be specified by HDOH prior to construction. Final design specifications will indicate that all activity must comply with the sections of Chapter 11-46 cited in your letter.

Your comment letter, along with this response, will be included in the Final EA for the project.

Sincerely

Ron Terry

APPENDIX 2

FIGURES

Keahuolu

Kailua
Kona

Kealakekua

Saddle Road

Kaumana

Panaewa

Stainback Hwy.

Makuu Dr.

Makuu

Puna

Olaa

Pahoa

Volcano

Wailau

Waiohinu

South Pt. Rd.

Kamaoa/Puueo

Scale (Mi.)

0 .10 20

N

Hilo Detail

Waiuenue

Kilauea Ave.

Kalanianaole Ave.

Mohouli

Komohana

Puainako

Kaharpaa
Ahuna

Kawailani

Scale (Mi.)
.5 1 2

N

Proposed Roads

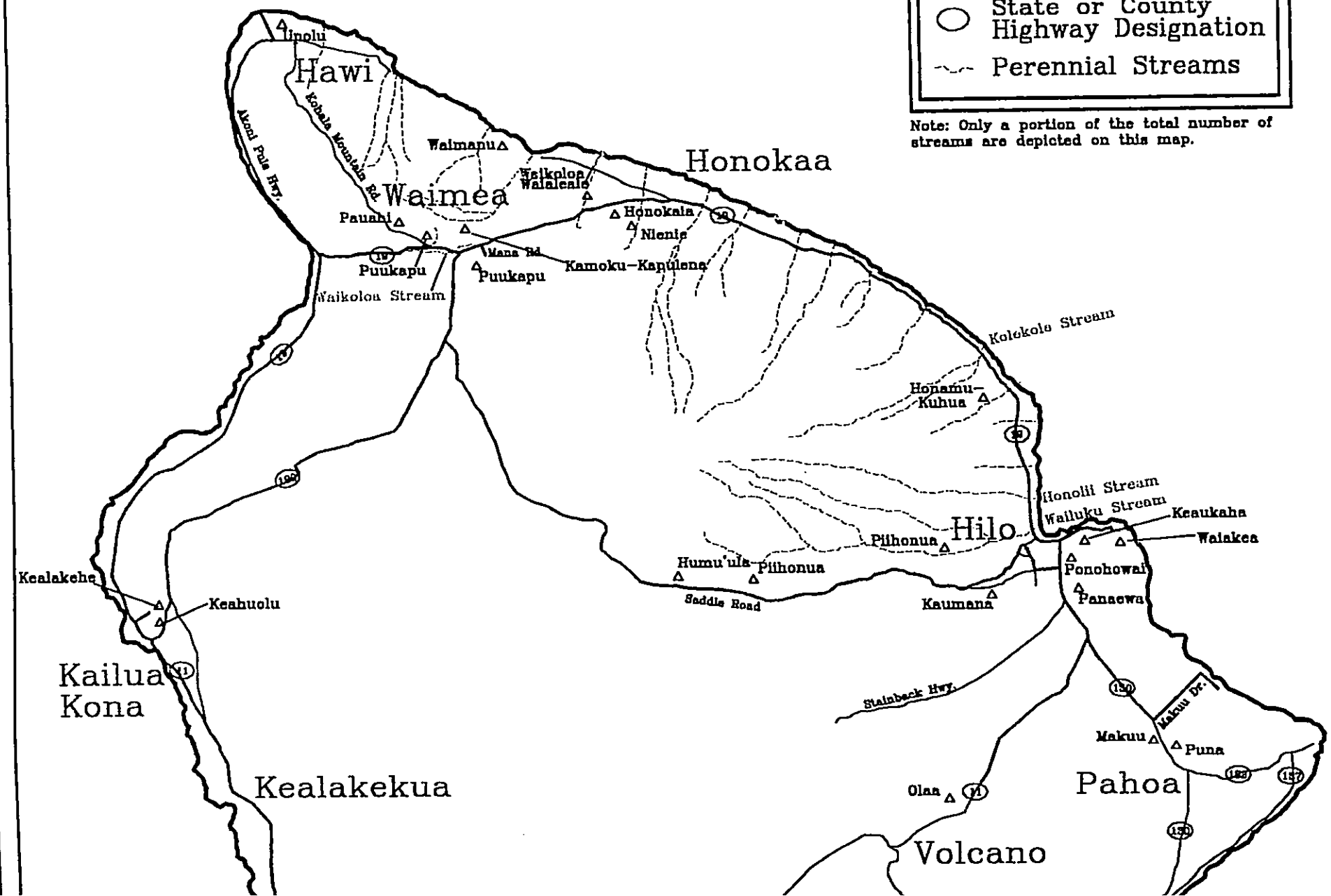
Fiber Optic Route Segments

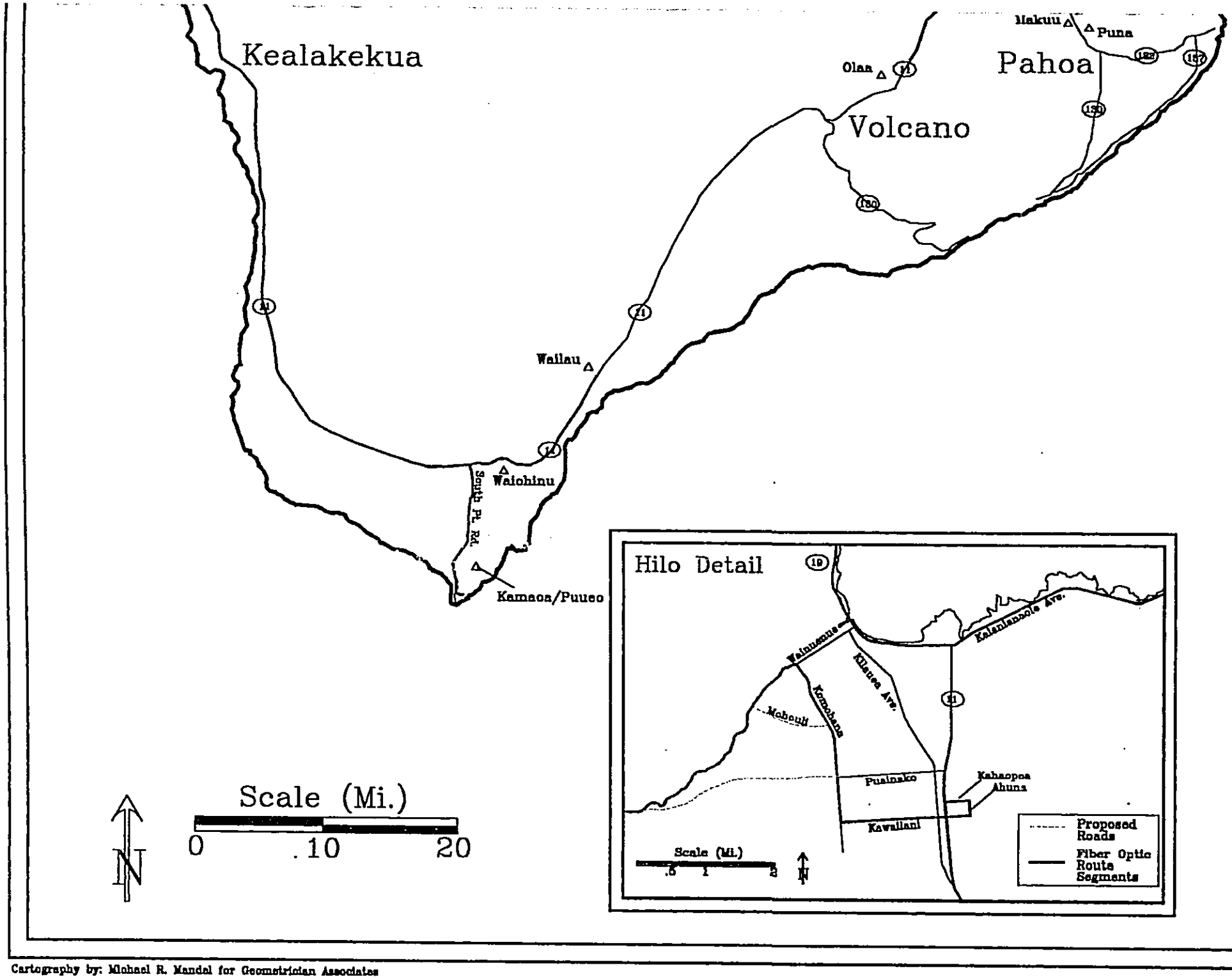
Cartography by: Michael R. Mandel for Geomatrician Associates

CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

Figure #1
Fiber Optic Route Segments





Cartography by: Michael R. Mandel for Geomatrician Associates

Figure 2 Project Area Photographs

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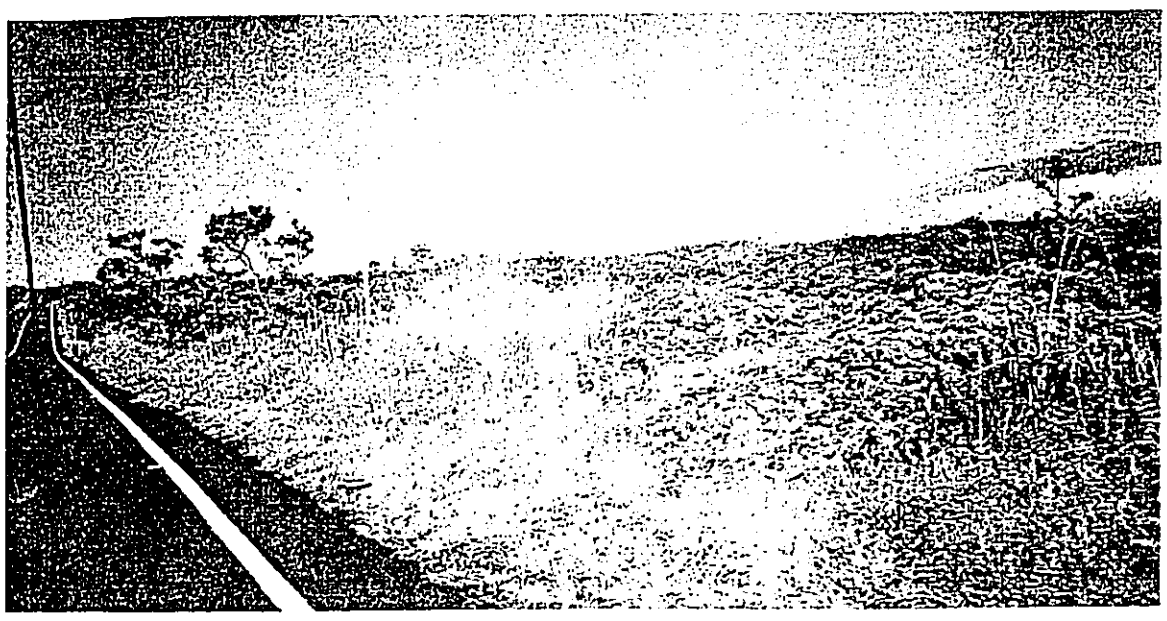

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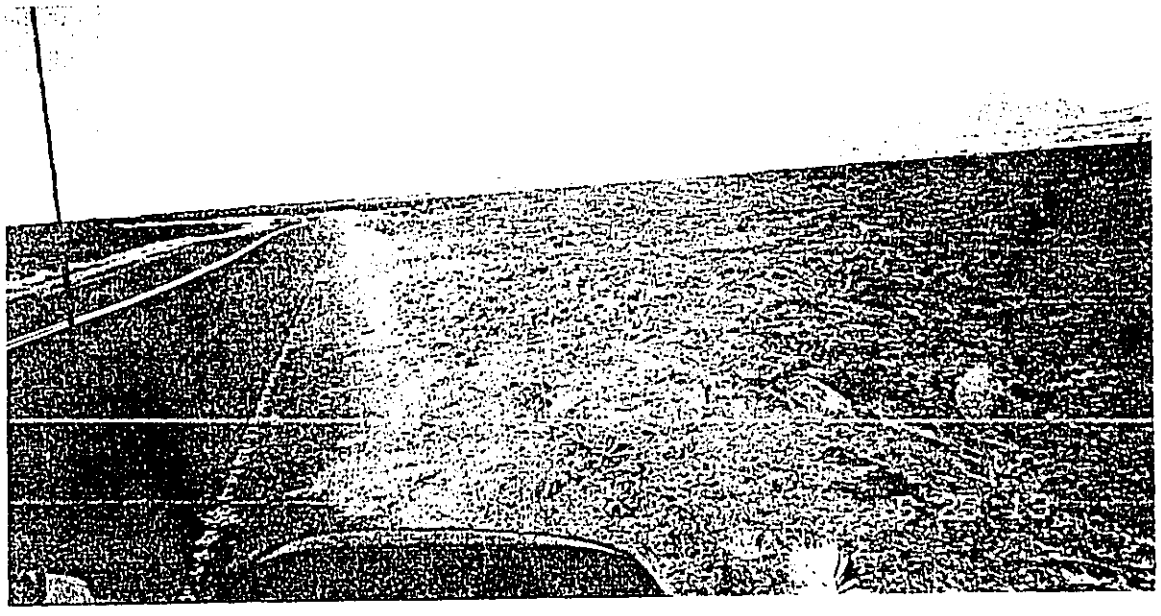

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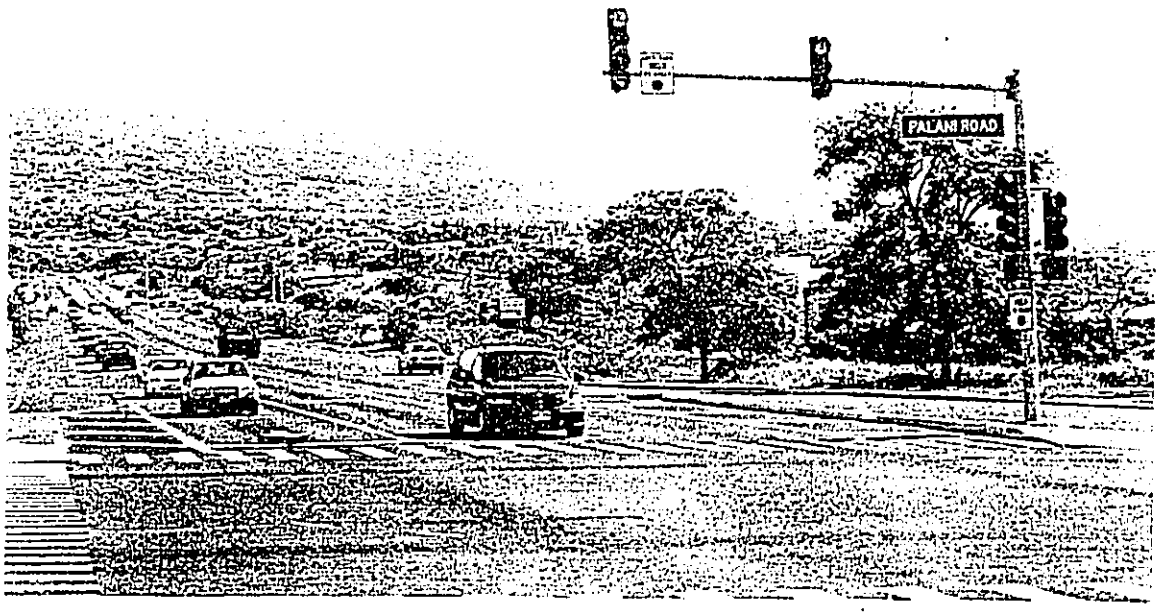

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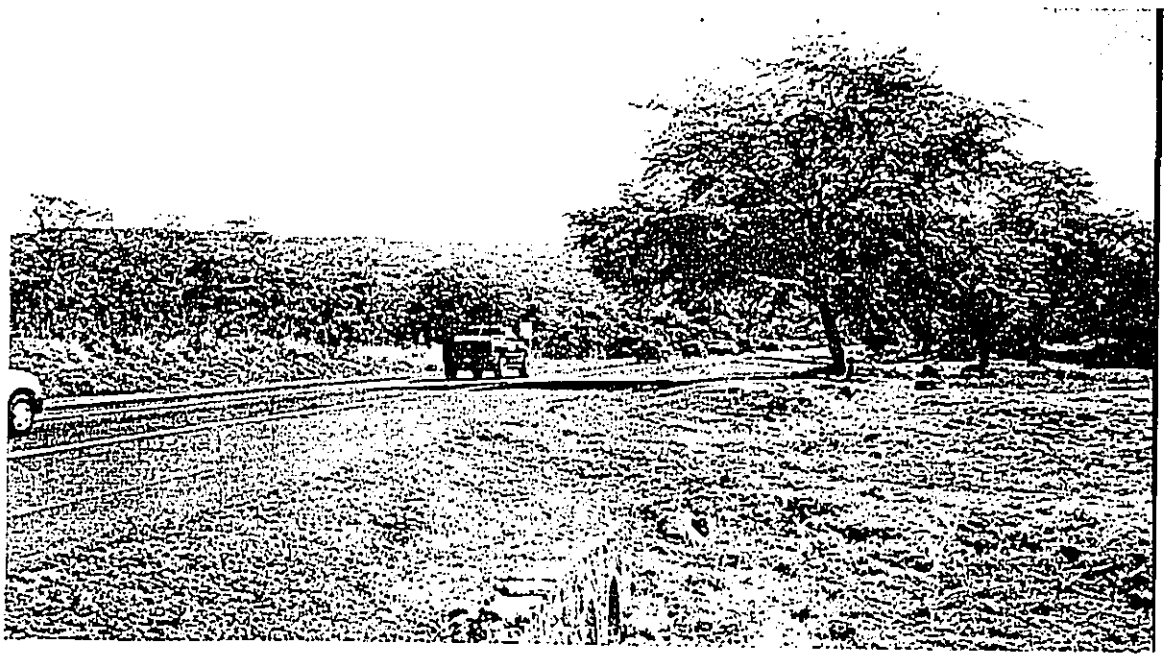

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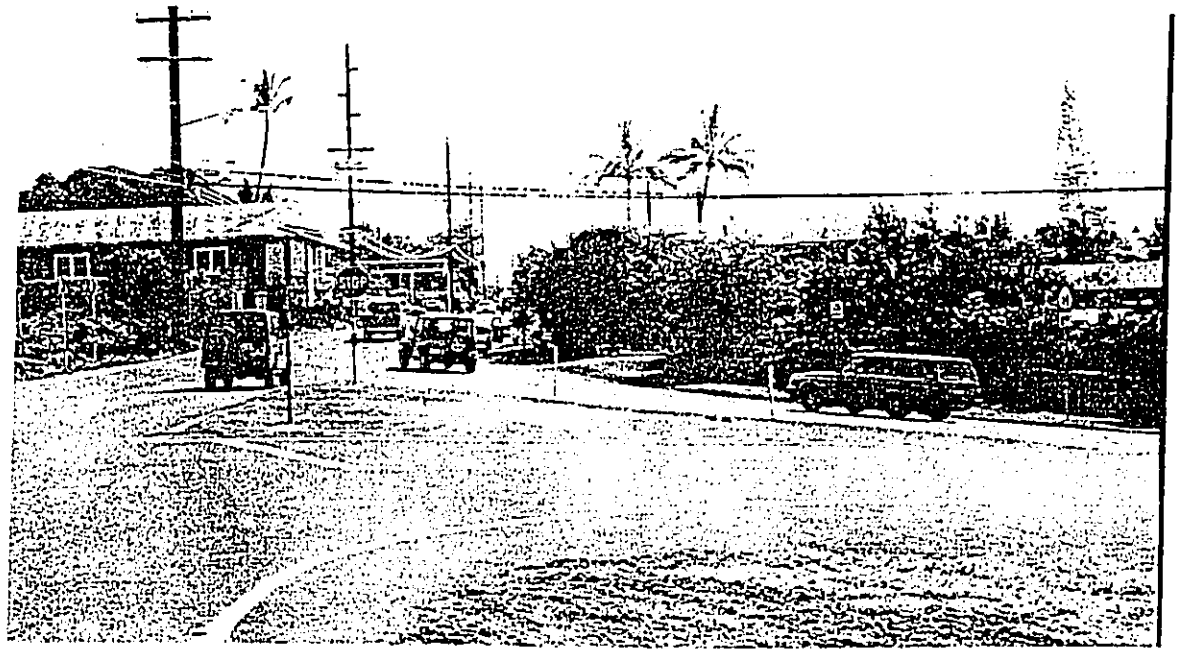

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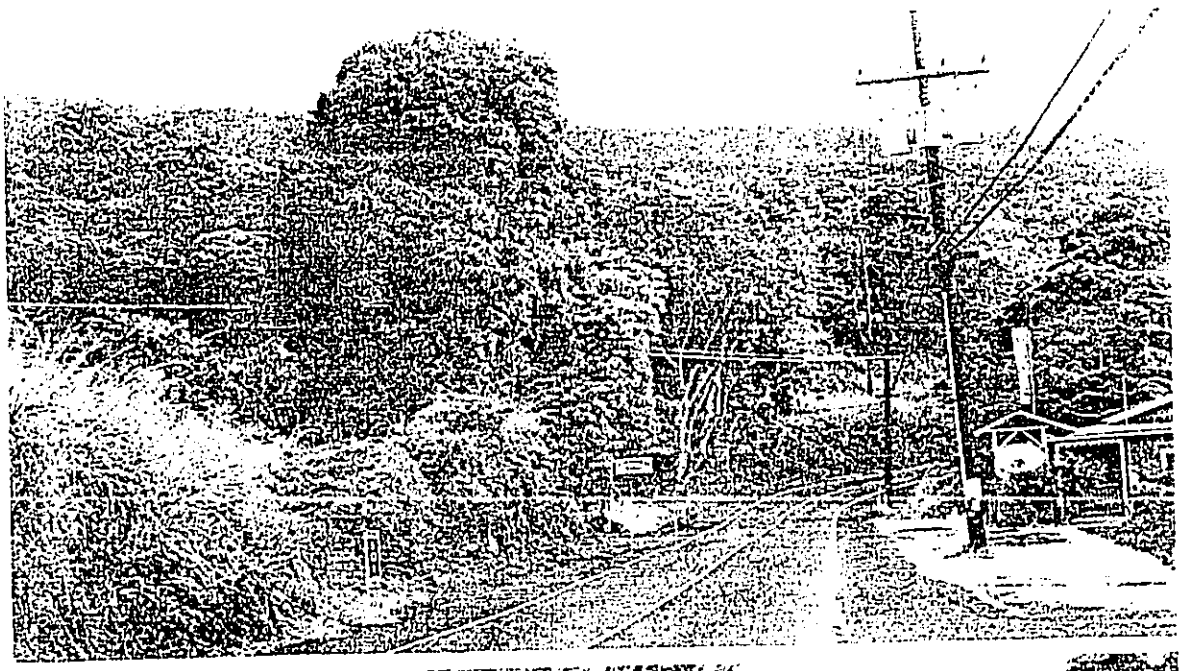

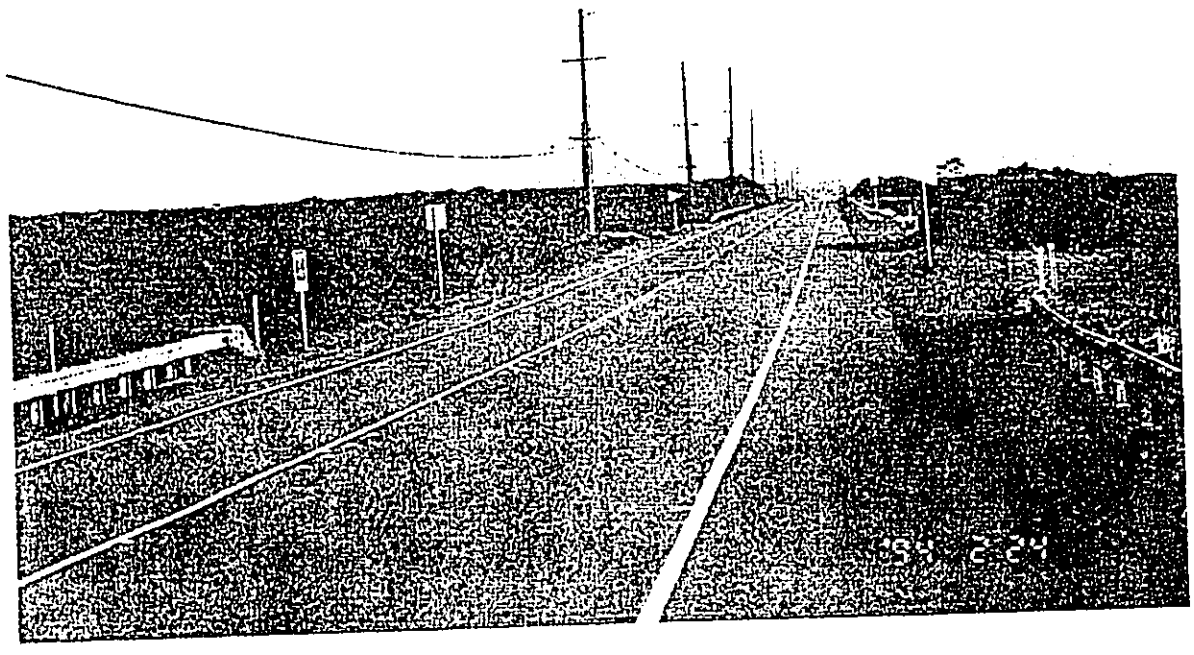

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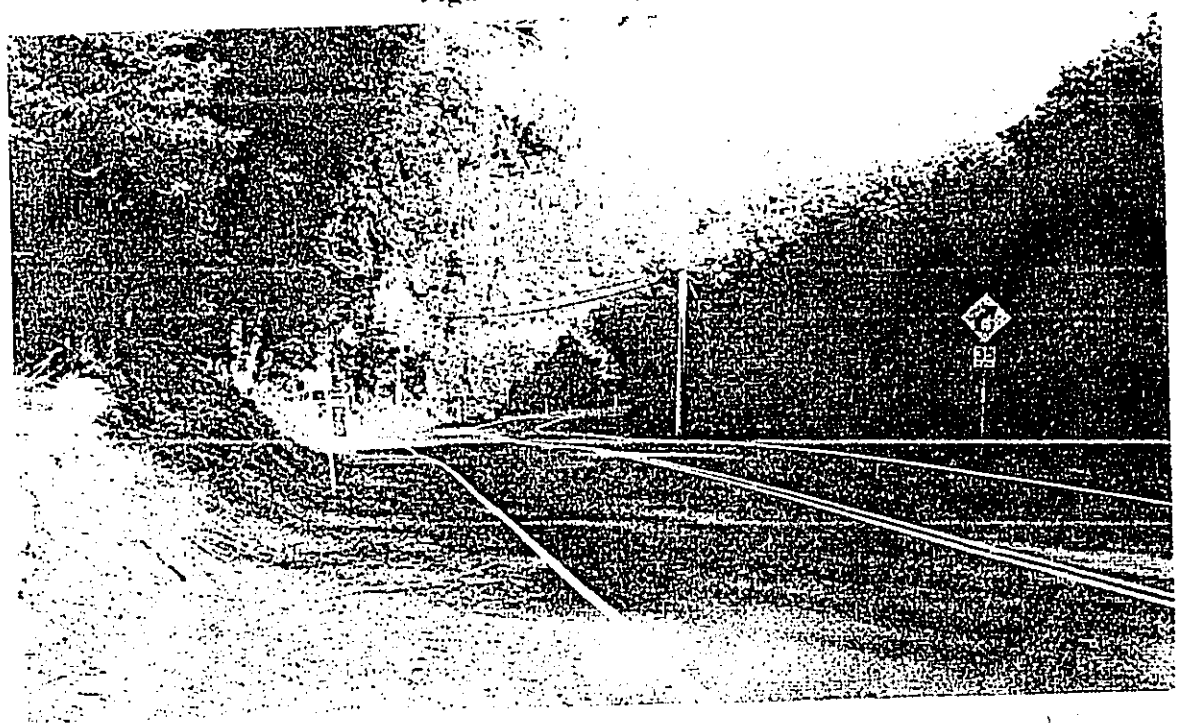

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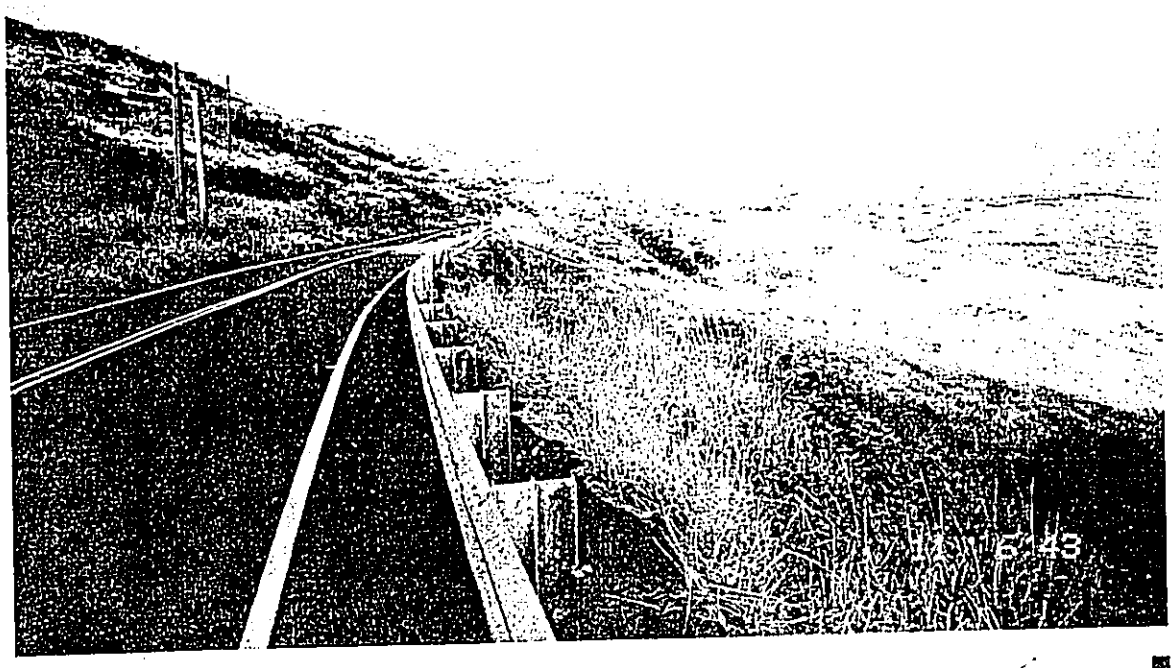

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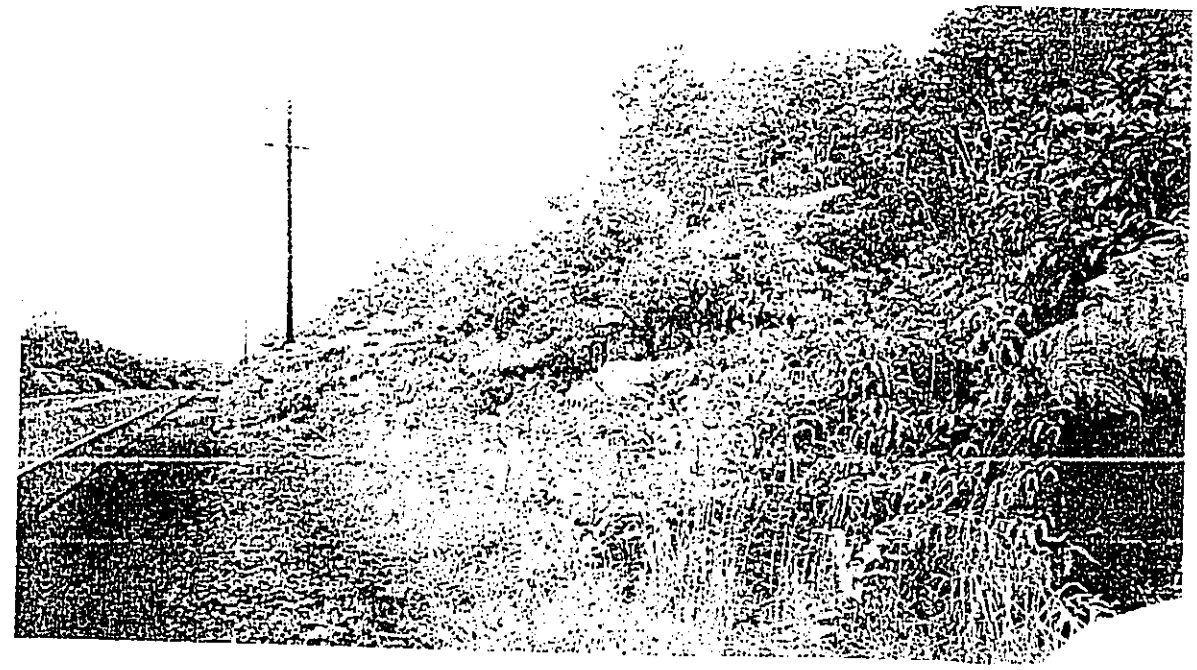

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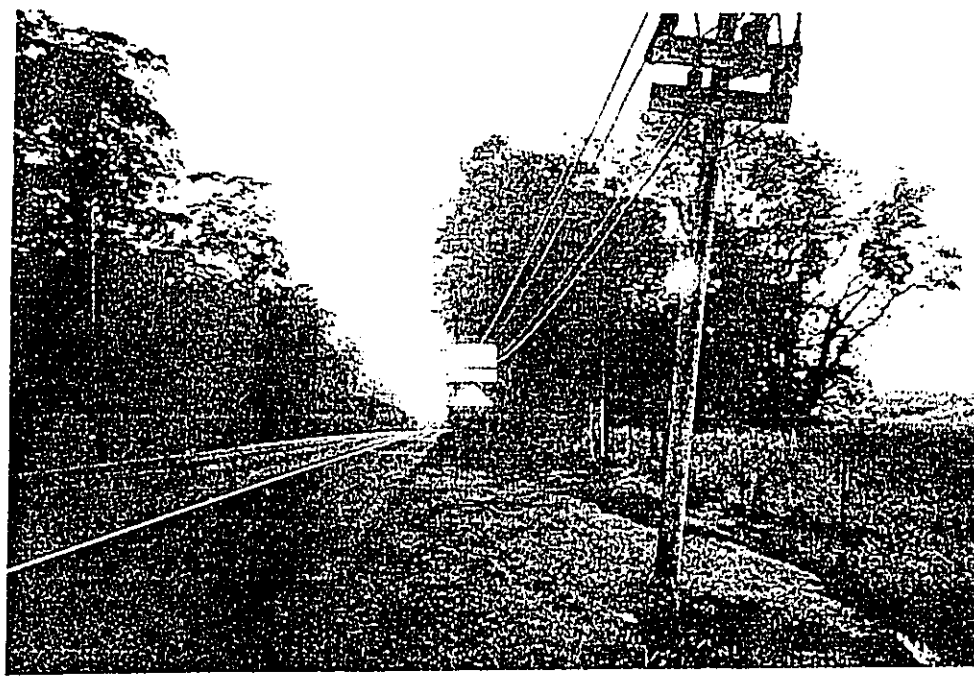

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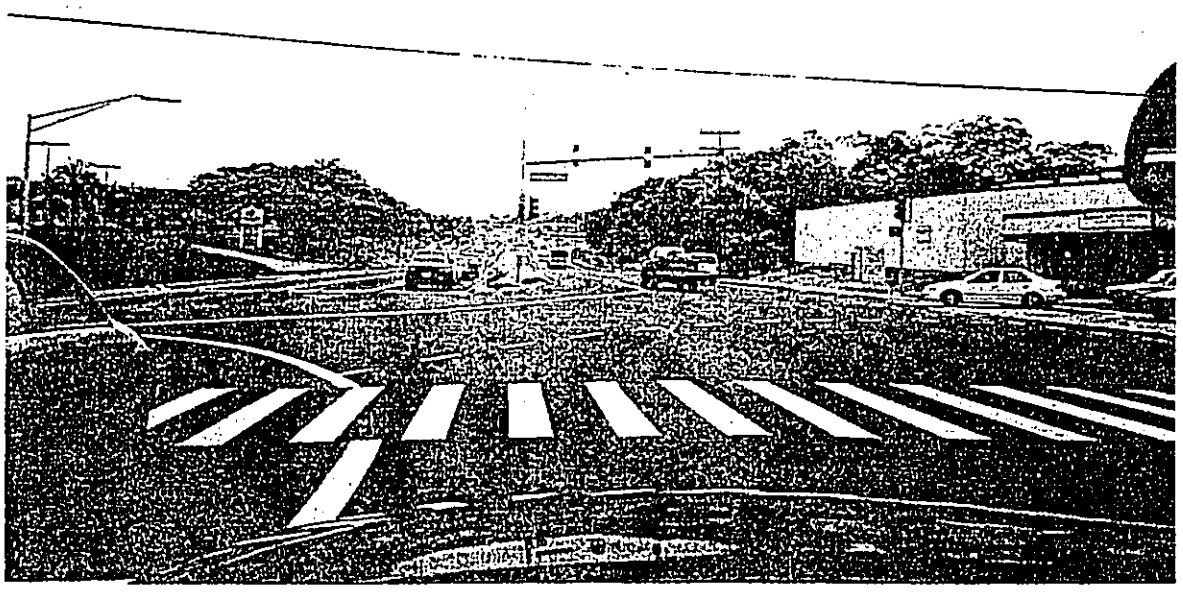

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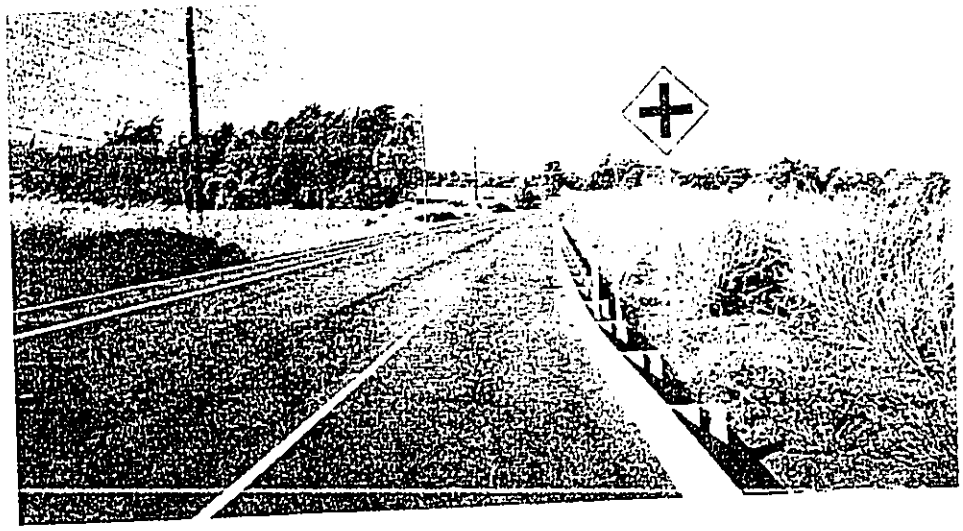

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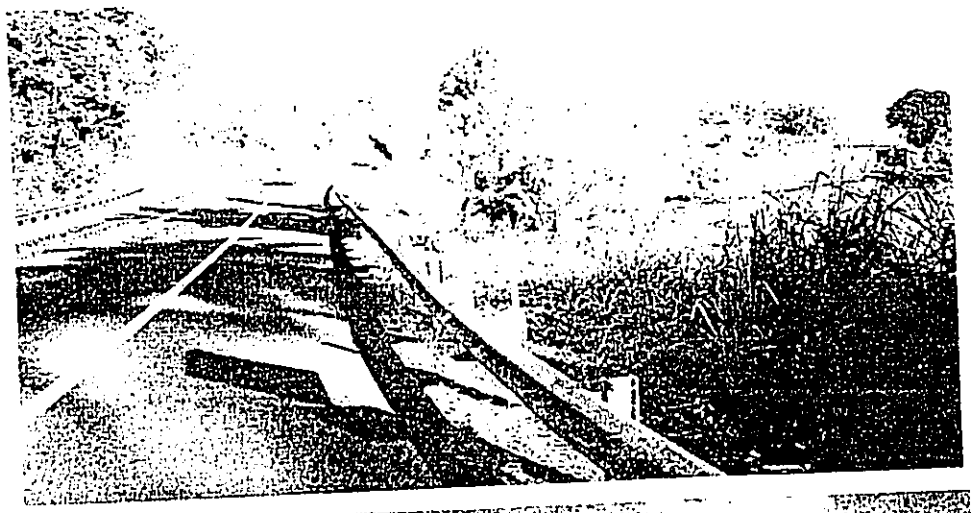

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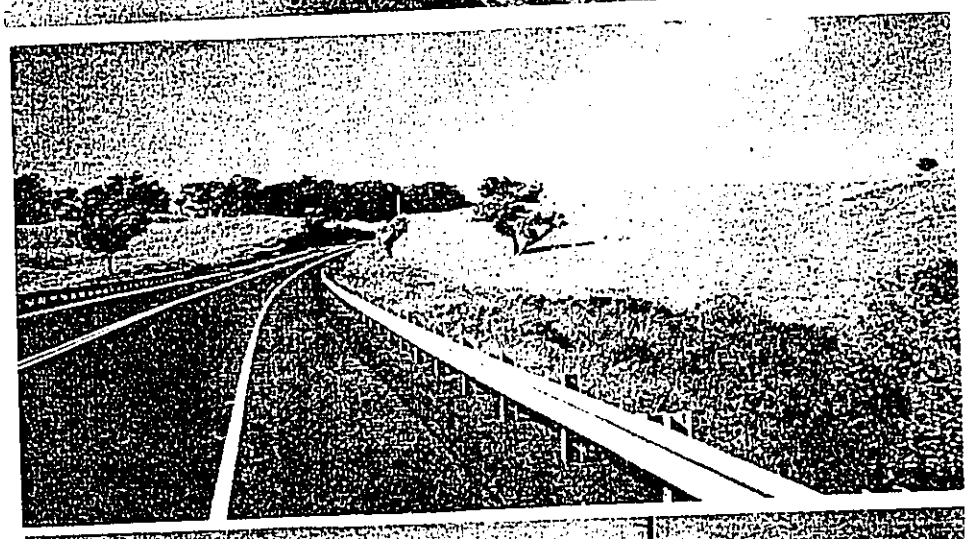

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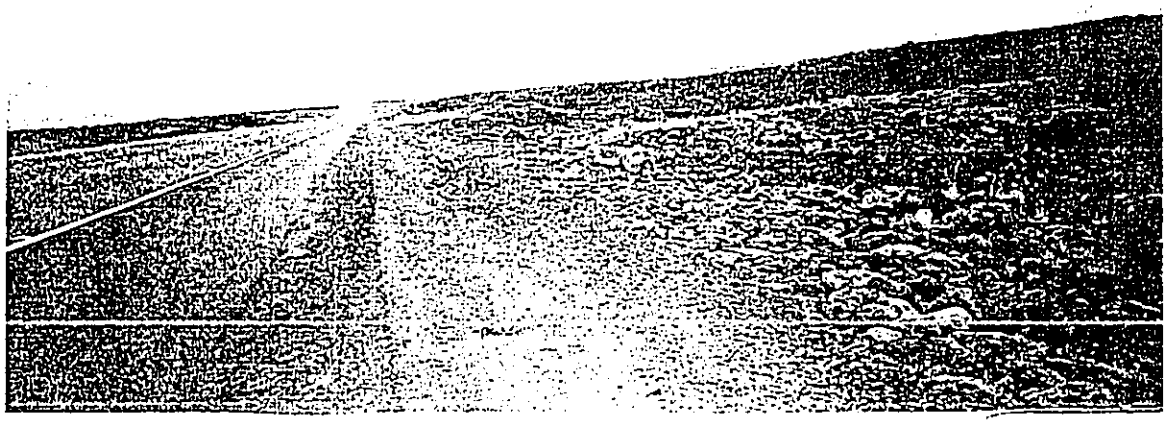

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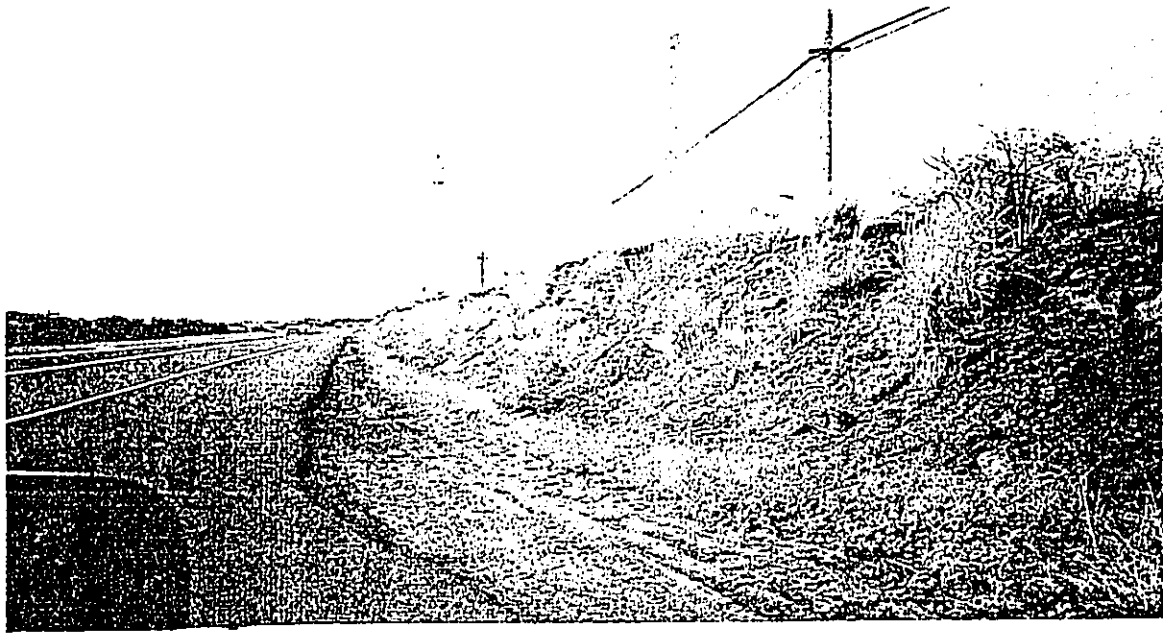

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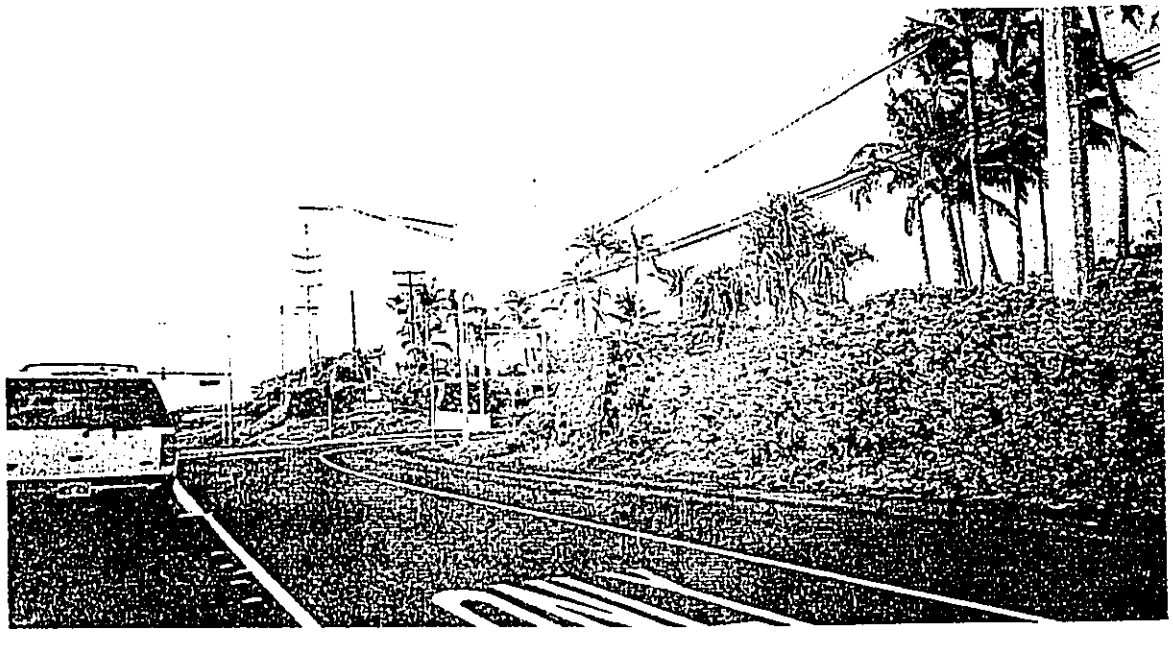

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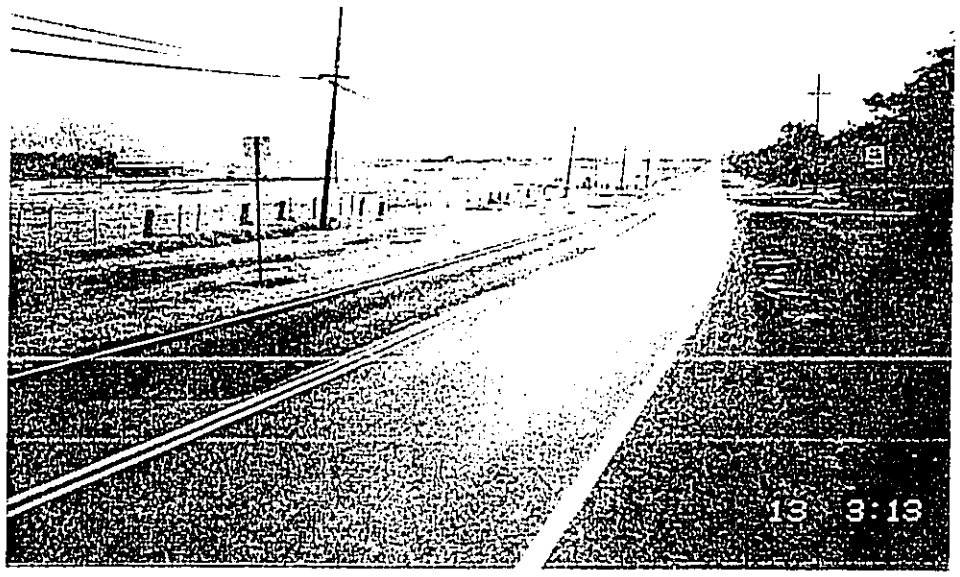

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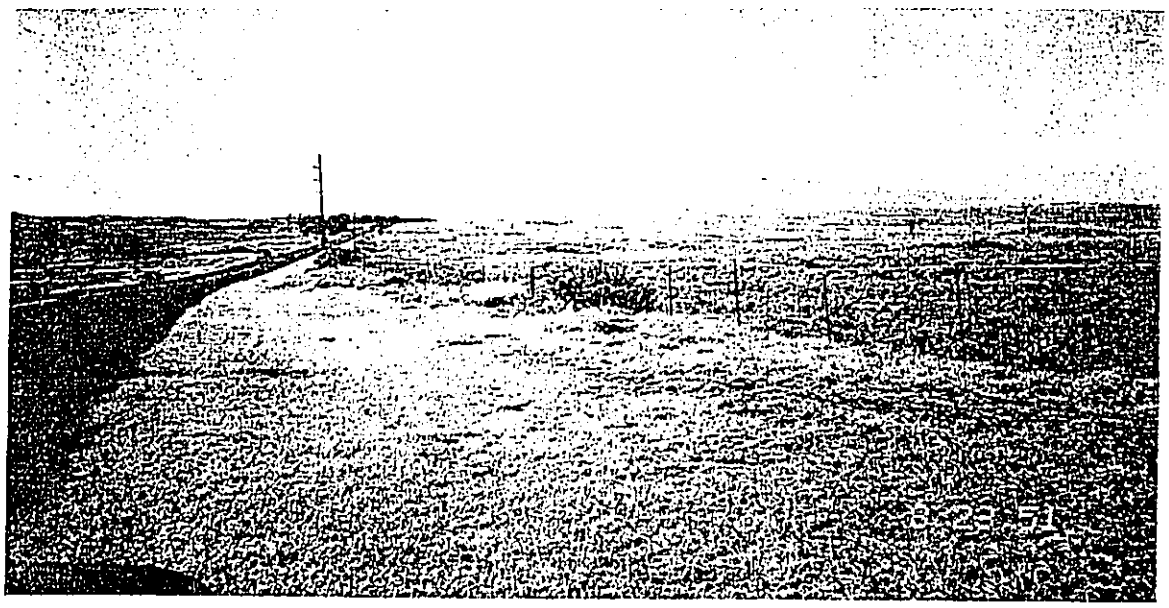

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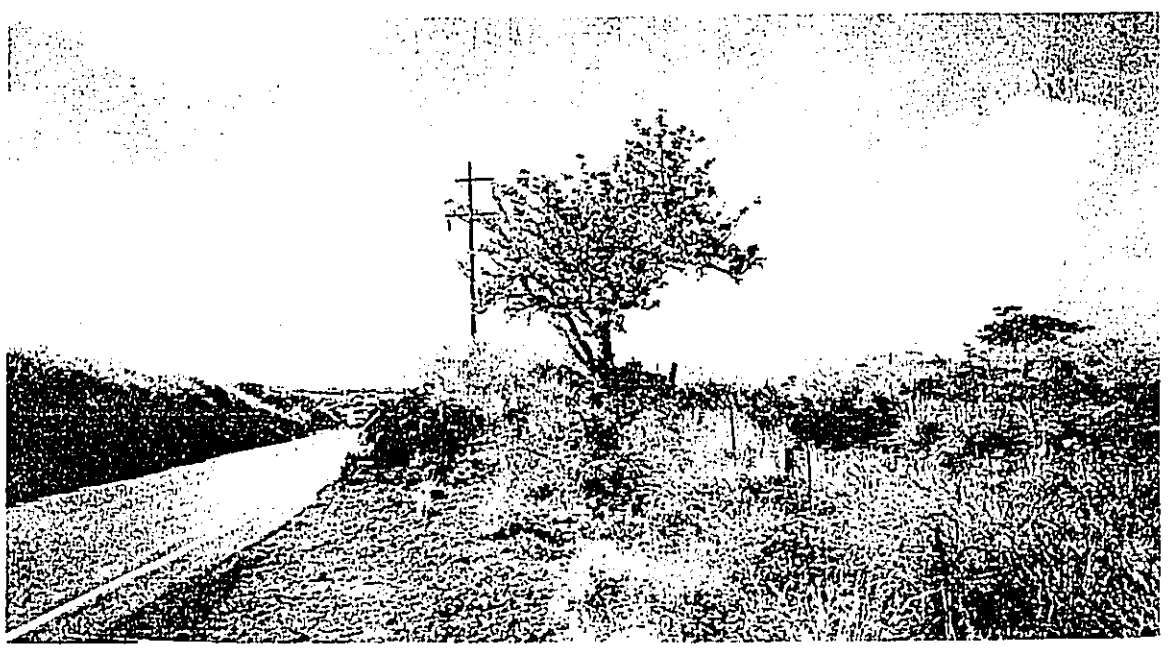

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Figure 2 Project Area Photographs

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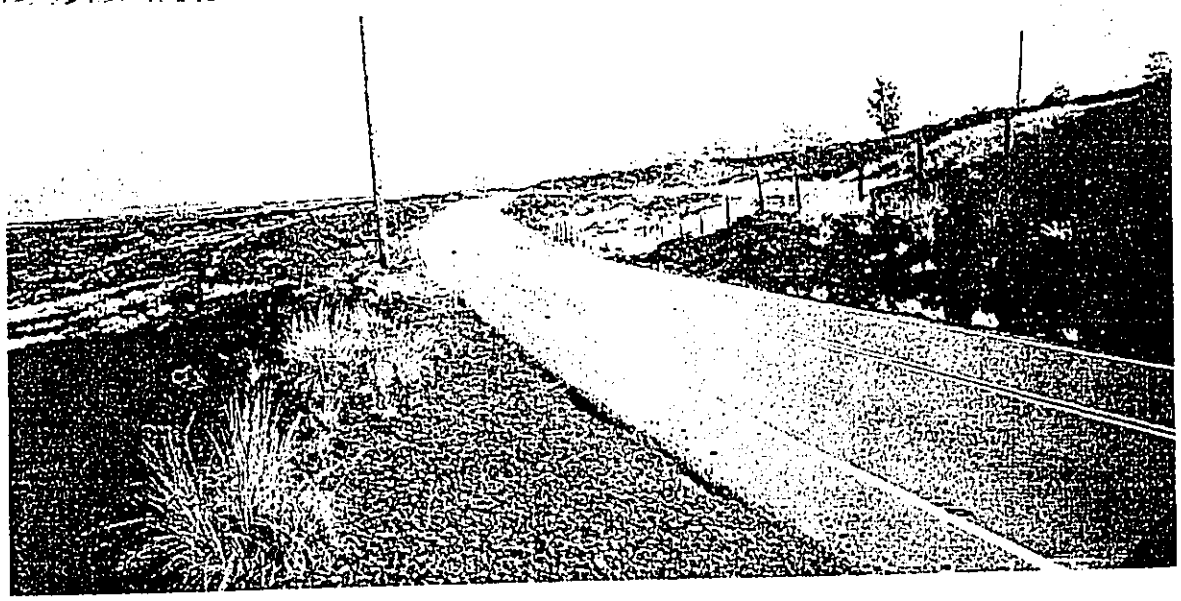

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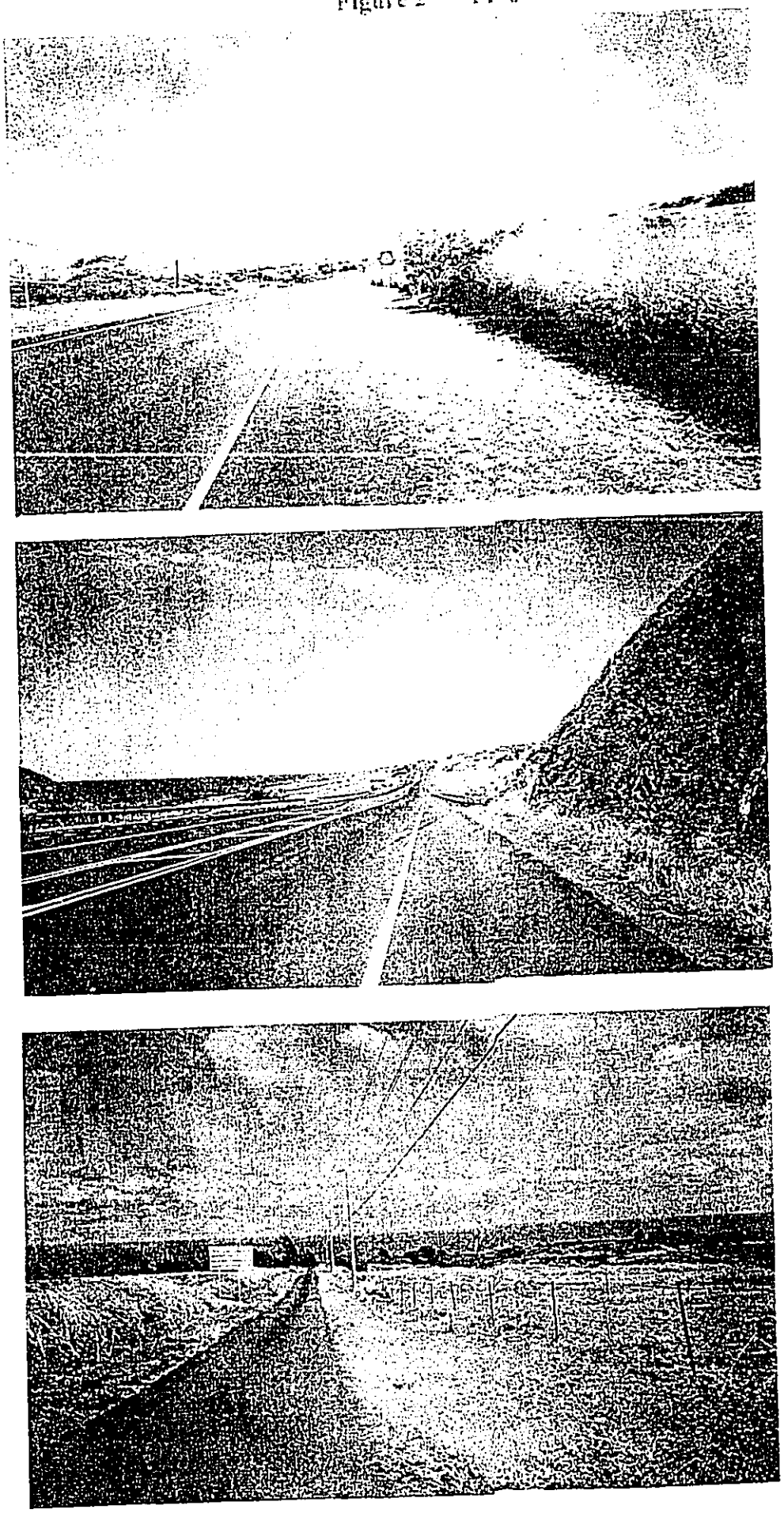

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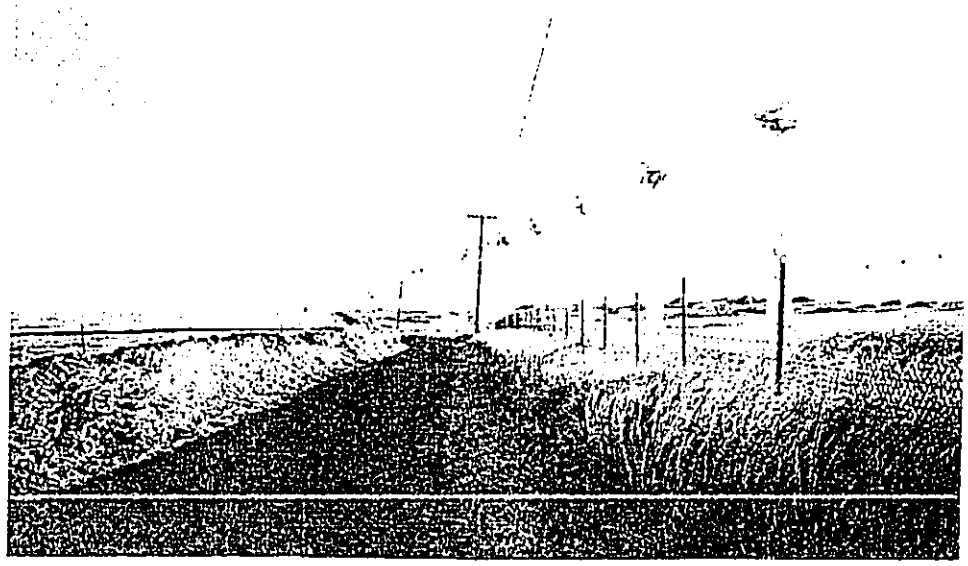

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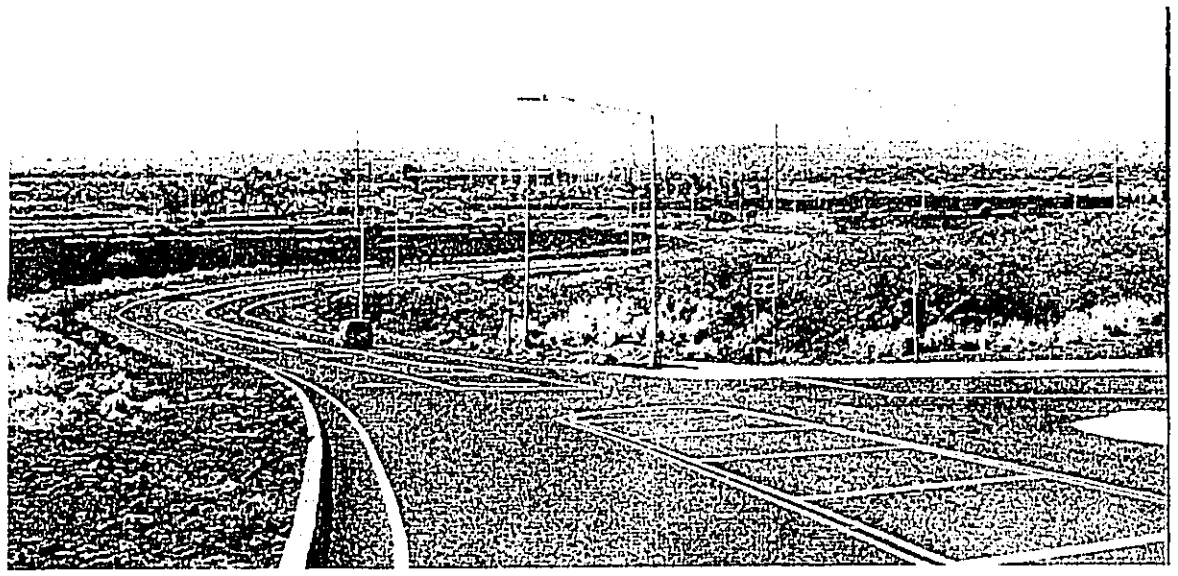

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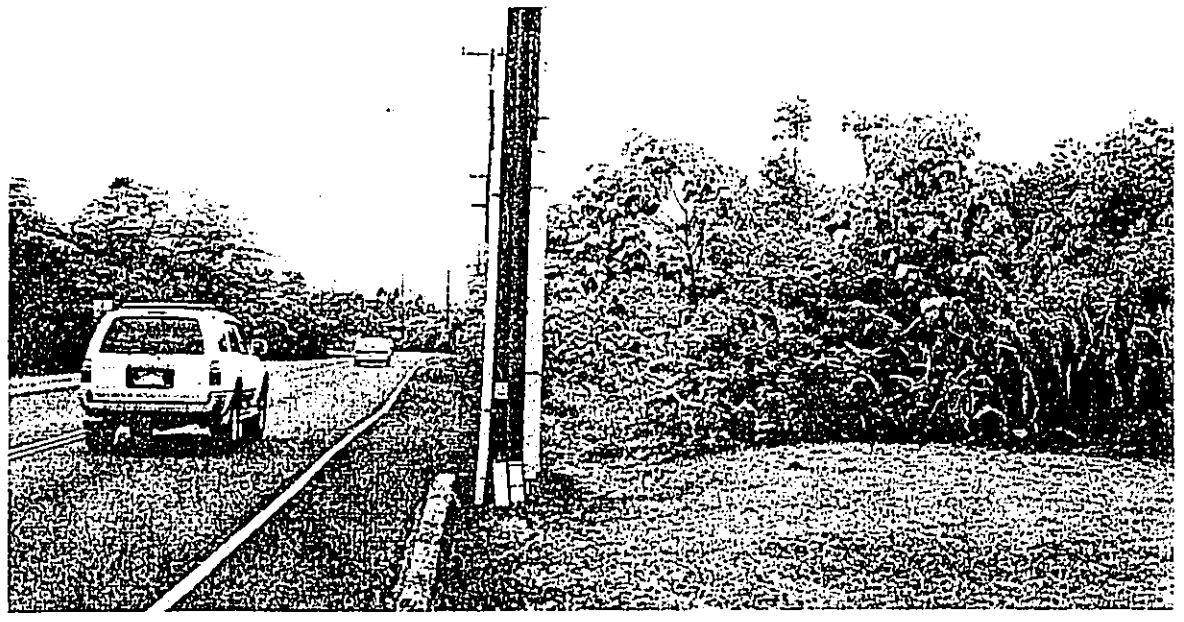

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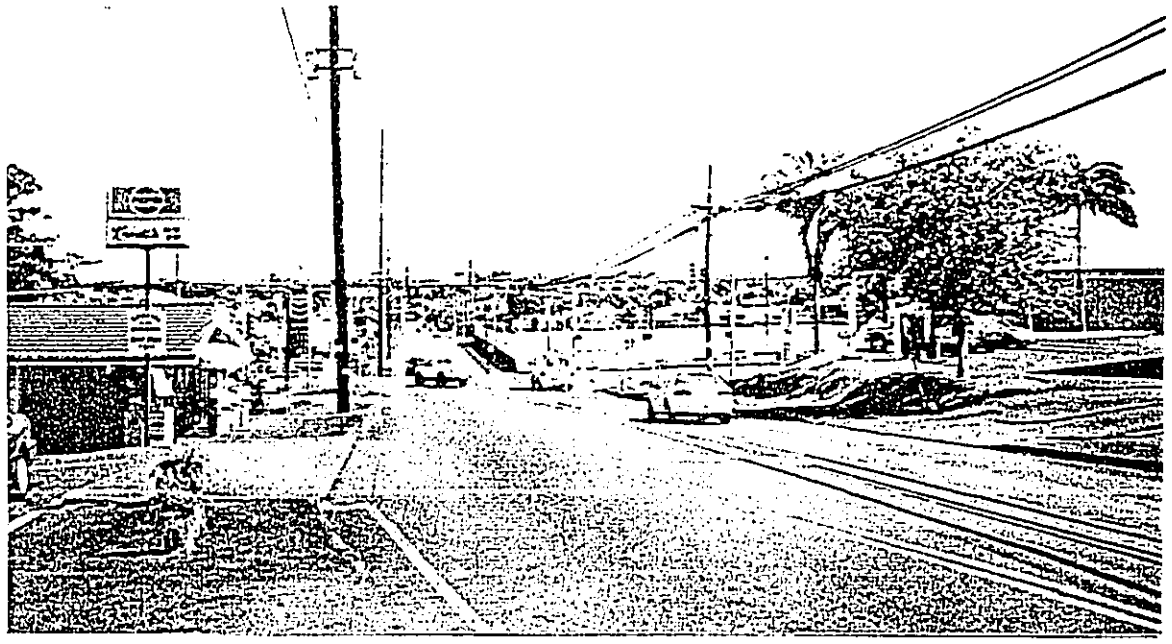


NN

OO

PP

See key to photos at end

Figure 2: Key to Photos

SADDLE ROAD.

A. Near area of rainfall maximum above 2,500 feet. Koa-dominated kipukas with diverse native vegetation present near roadway.
B. In `ohi`a/uluhe forest on 1855 lava flow.
C. At elevation over 5,000 feet, on 1855 lava flow, showing influence of decreased rainfall and temperature on weathering and vegetation. Note weedy road verge.
D. At about 6,500 feet, 1935 lava flow. Note lack of vegetation, and weedy roadside verge where disturbance and roadfill provide adequate substrate. Hills behind are in Hawaiian Home Lands.
E. Near Mauna Kea State Park, showing mamane forest.
F. Near western boundary of Pohakuloa Training Area, where dry conditions lead to a shrubland of mixed natives and aliens.
G. Near Waiki`i Ranch, showing scenic grove of eucalyptus.
H. Makai of Waiki`i Ranch, open range conditions, greened after unusually heavy rainfall.

HIGHWAY 11

I. Kailua-Kona, showing urban roadside, with broad shoulders facilitating construction.
J. Near Kailua-Kona, showing narrowed shoulder and weedy roadside verge.
K. Kona.
L. Rural South Kona, showing shoulders, adjacent ranch and garden uses.
M. Near Kipahoehoe Natural Area Reserve.
N. Near Hawaiian Ocean View Estates, showing recent lava flow.
O. Farming/ranching country near South Point, showing narrow shoulders and alien vegetation.
P. Near Naalehu, scenic view area of windy Ka`u coast, alien grass pastures.
Q. Near Punalu`u, showing wider shoulders and alien vegetation.
R. Mauka of Glenwood, showing disturbed roadside verge but native forest behind.
S. Makai of Glenwood, showing alien broomsedge and eucalyptus, wide shoulders.
T. At Maka`ala Street intersection, showing urban character and wide shoulders.

HIGHWAY 19

U. Near O`okala, showing guinea grass-dominated abandoned canefields in foreground, eucalyptus tree planting in background (on right side of highway)
V. In Wainaku, showing old sugar mill area and proximity of road to ocean.
W. Approaching Waimea, showing pastures of Parker Ranch and wide shoulders.
X. In urban Waimea, where shoulders and sidewalks are present from recent road-widening project.
Y. Along Queen Kaahumanu Highway (QKH), on barely weathered lava with low, weedy roadside verge and wide shoulders, characteristic of most of QKH.
Z. On QKH near Kealakehe Parkway, showing more soil and vegetation development in slightly more humid conditions.
AA. On QKH at Maka`ala Street just outside of Kailua-Kona, where road has urban character.

HIGHWAY 190

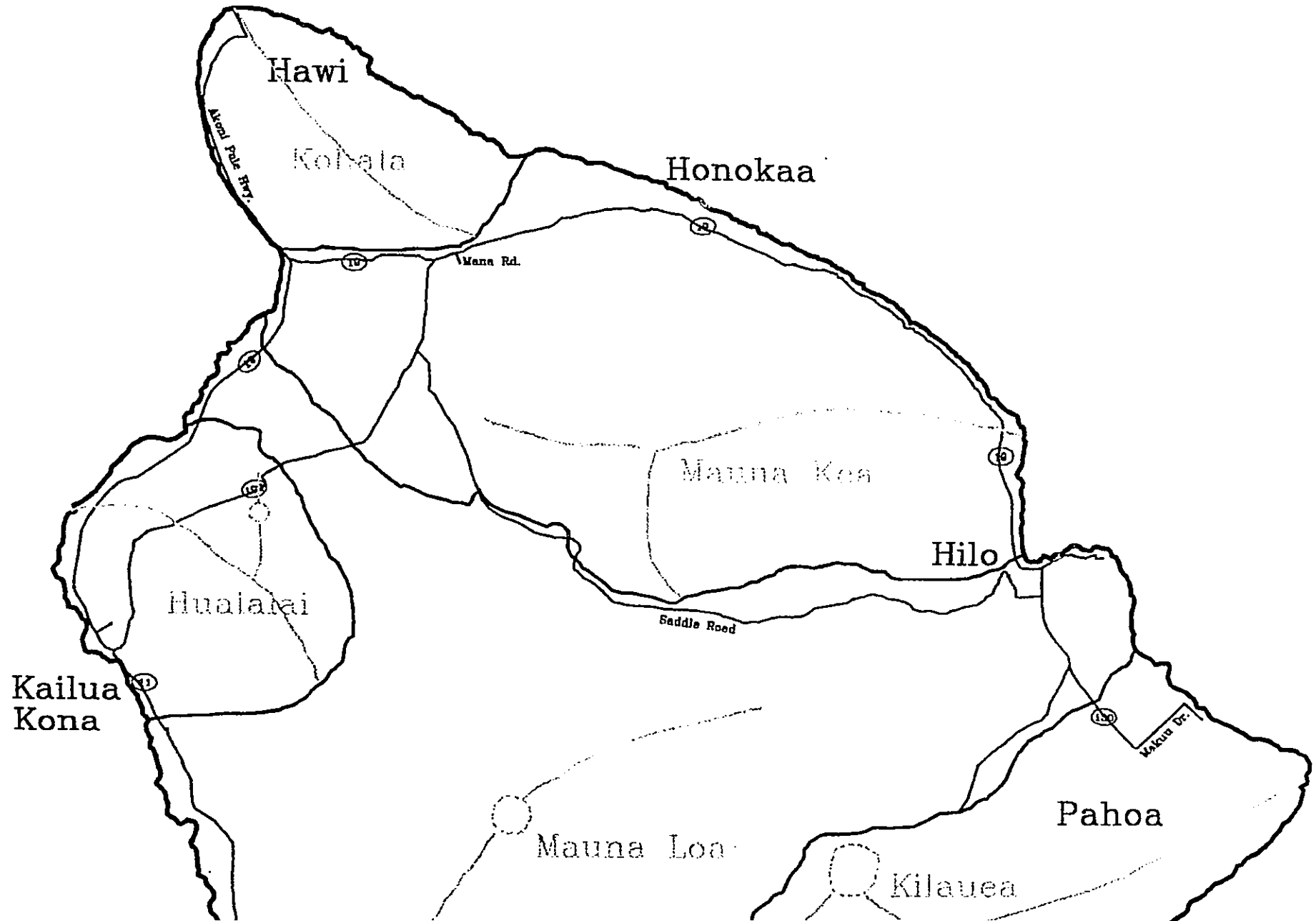
BB. Near Parker Ranch headquarters, area of moist pastures.
CC. In drier portion of Parker Ranch.

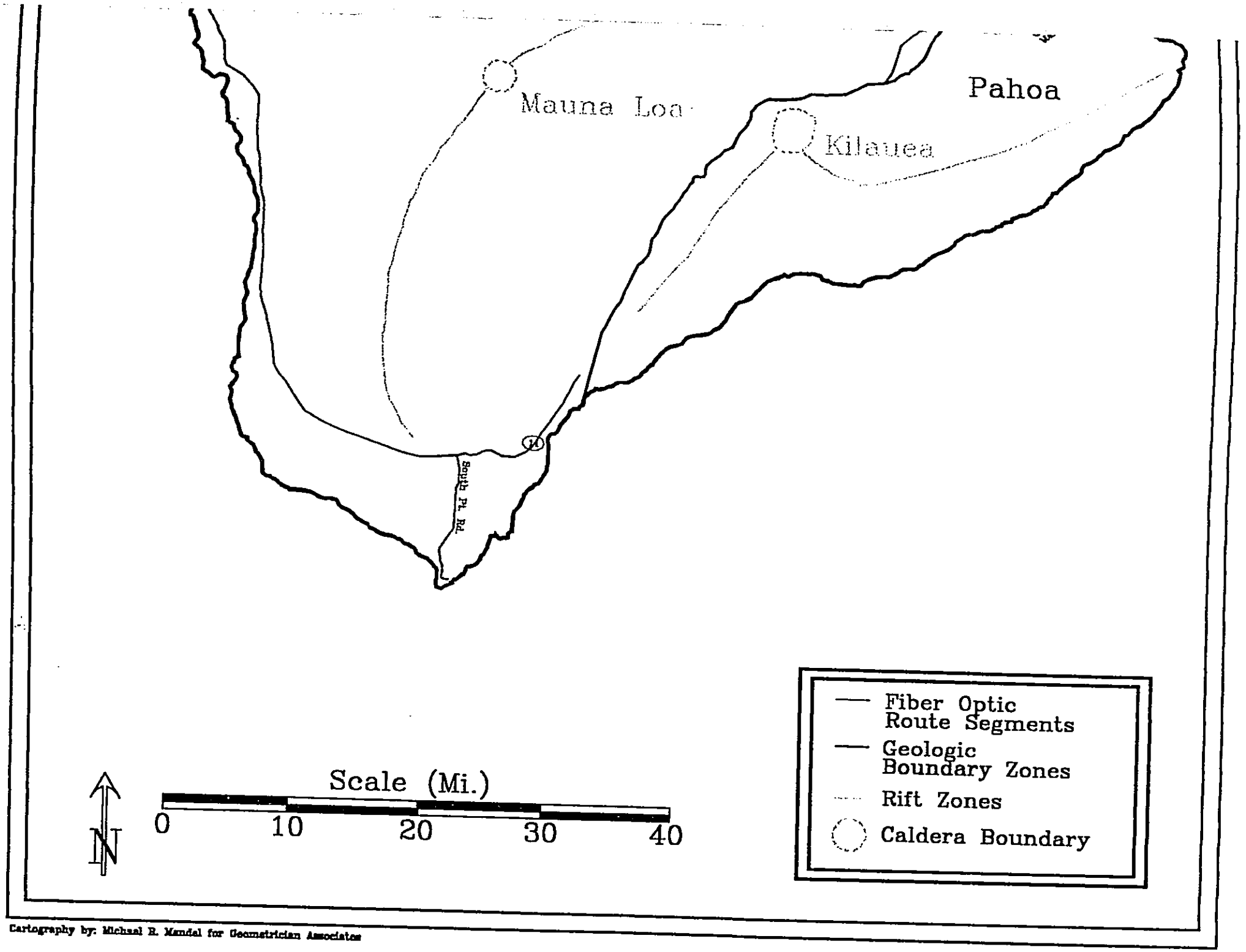
DD. Relatively rare native *`Ohe* tree near Pu`uanahulu.
EE. Endangered *Halapepe* tree directly adjacent to roadway, near Pu`u Wa`awa`a.
FF. Near Kaupulehu, where several native species exclosures are present.
GG. Christmas berry and other alien shrubs dominate roadside vegetation of most of mauka Kona.

OTHER ROADS

HH. Akoni Pule Highway near Puakea Bay, showing alien grass and wide shoulders and verges.
II Akoni Pule Highway closer to Kawaihae, with drier, alien grass vegetation.
JJ. Upolu Point Road, showing vegetation similar to moist parts of Akoni Pule, no shoulders.
KK. Windmill farm o South Point Road. Alien vegetation and no shoulders on roadside.
LL. Kealakehe Parkway in Kona, showing shoulders, areas reserved for sidewalk, and alien fountain grass and kiawe.
MM. Komohana Street in Hilo, which runs through 1881 lava flow with `ohi`a forest but has highly disturbed verges, wide shoulders.
NN. Kawailani Street in Hilo, typical urban road, with relatively narrow shoulders, no sidewalk.
OO. Loko`aka Pond on Kalanianaole Street in Hilo, showing wetland conditions in fishpond adjacent to roadway.
PP. At Leleiwi Park on Kalanianaole Street in Hilo, showing tidal wetlands and native hala trees near roadside.

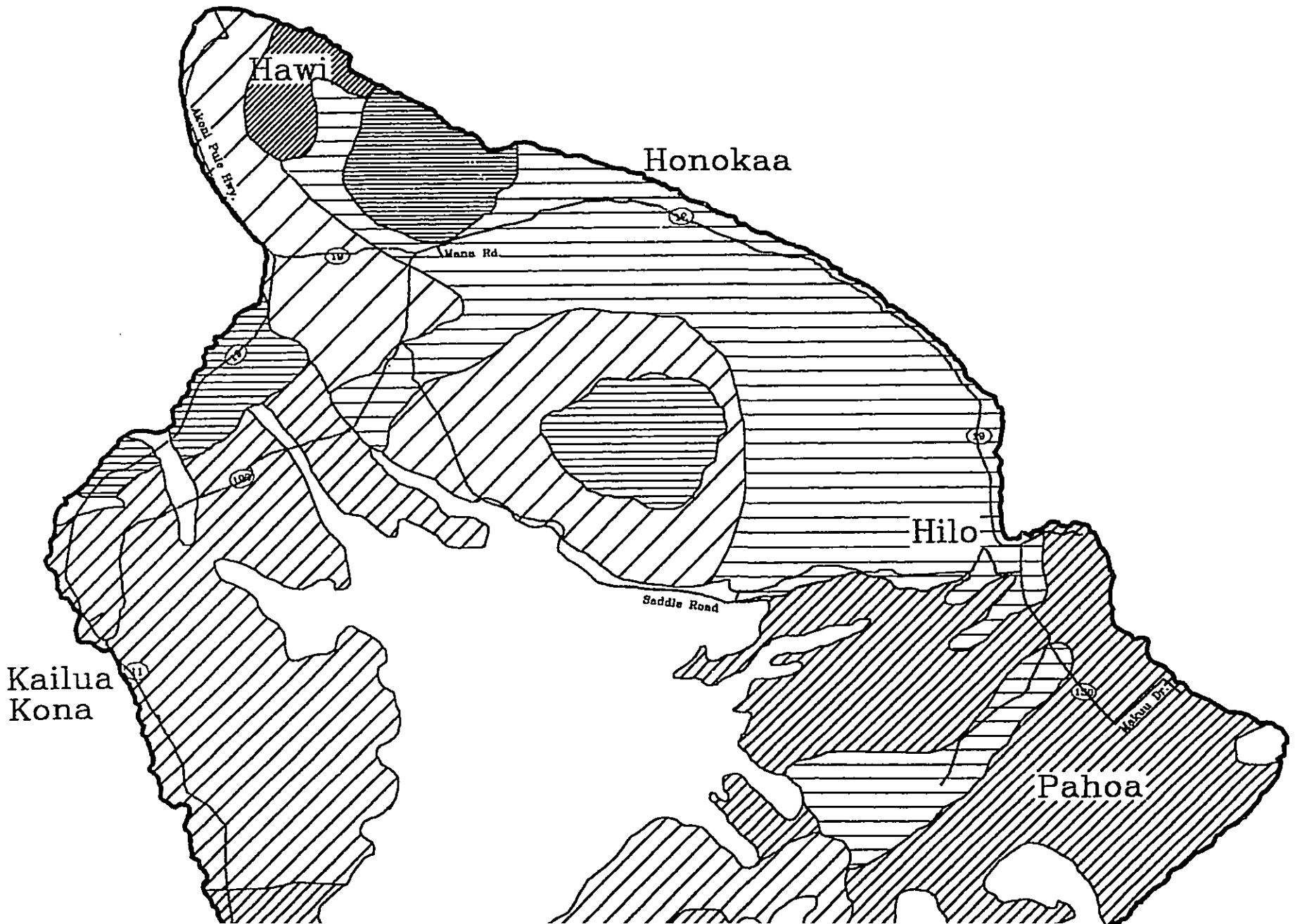
Figure #3
Geologic Areas

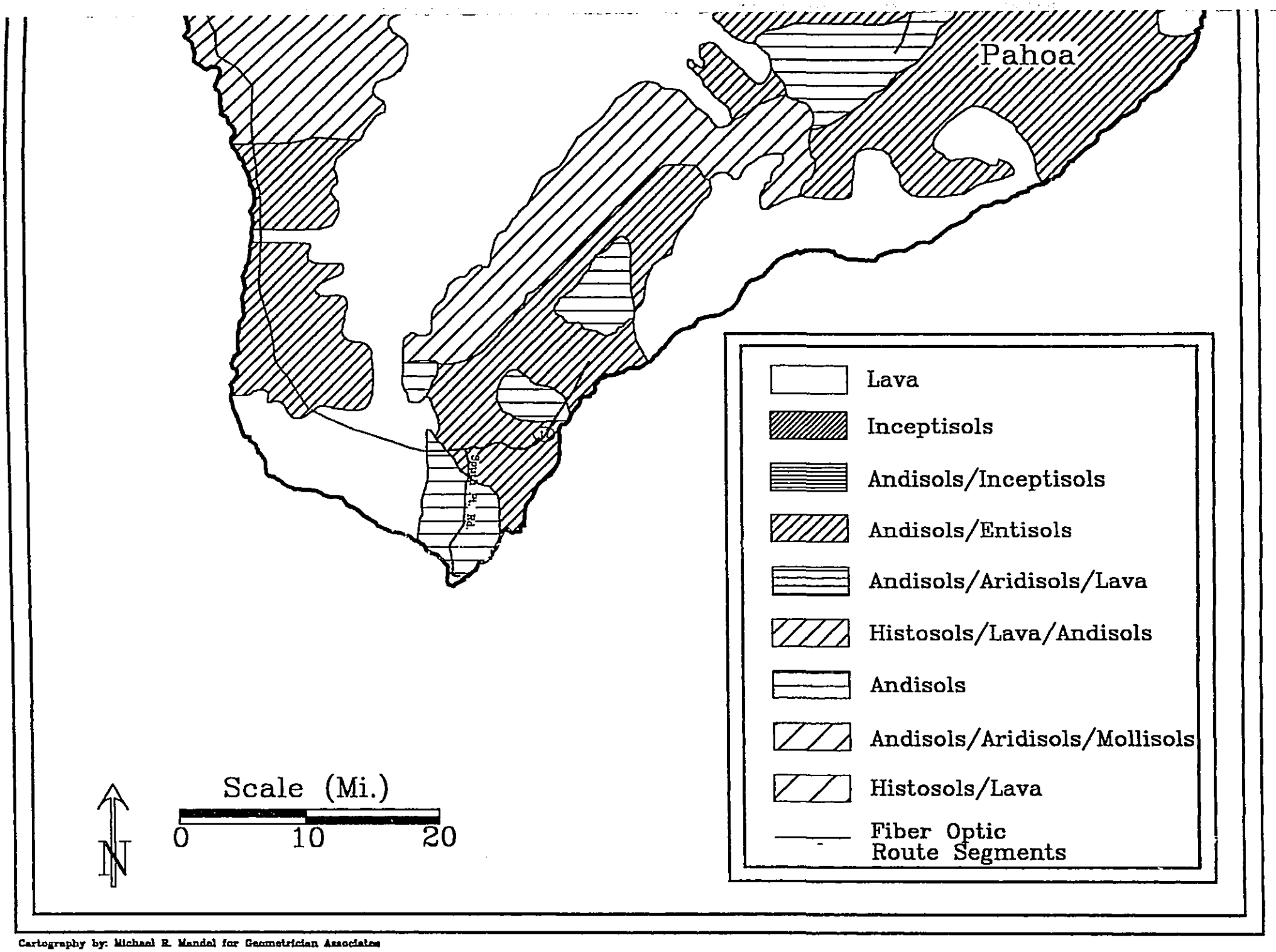




Cartography by: Michael R. Mandel for Geometrician Associates

Figure #4
Soils





Cartography by: Michael R. Mandel for Geometrician Associates

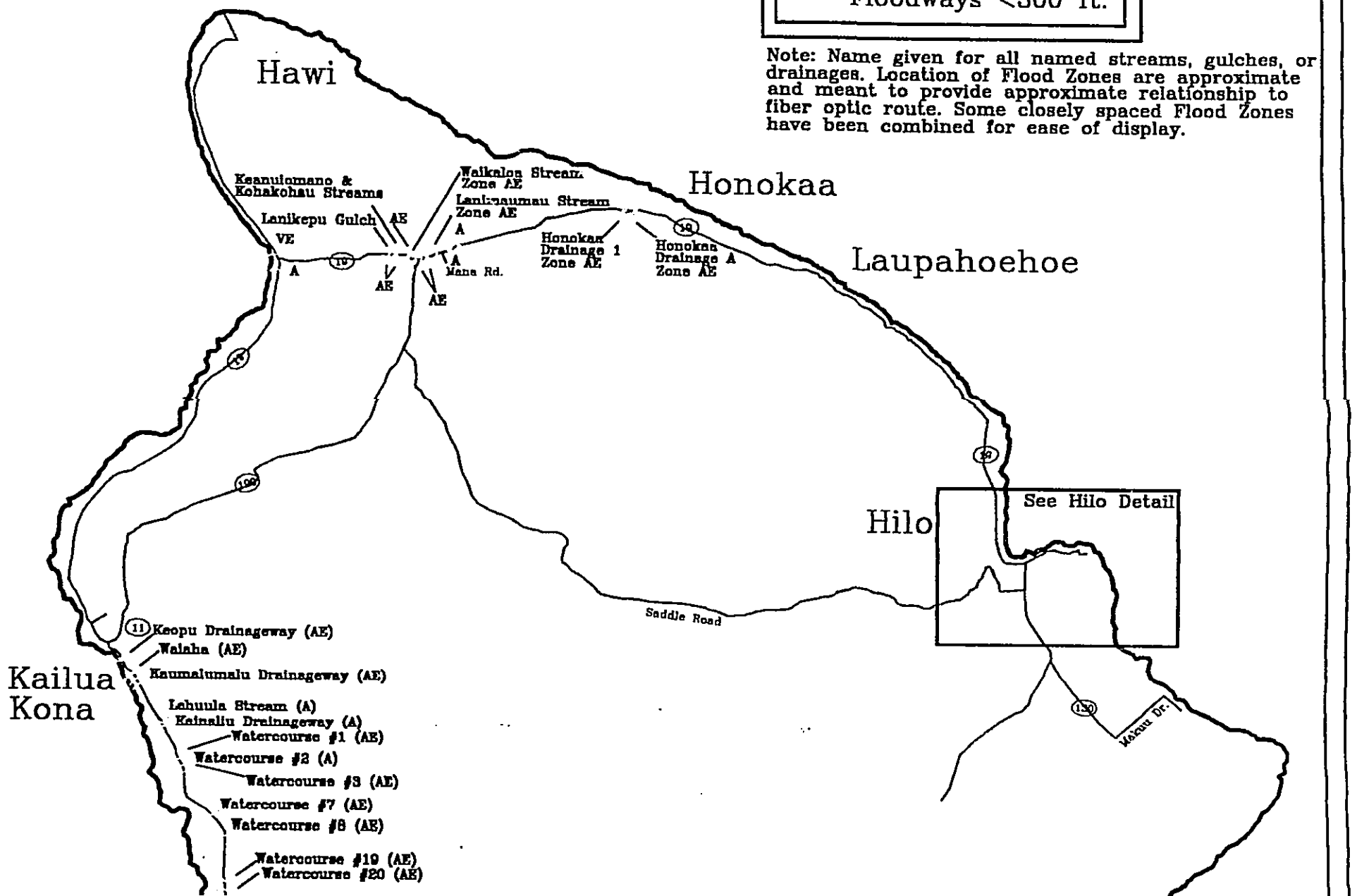
Figure #5
Flood Zones

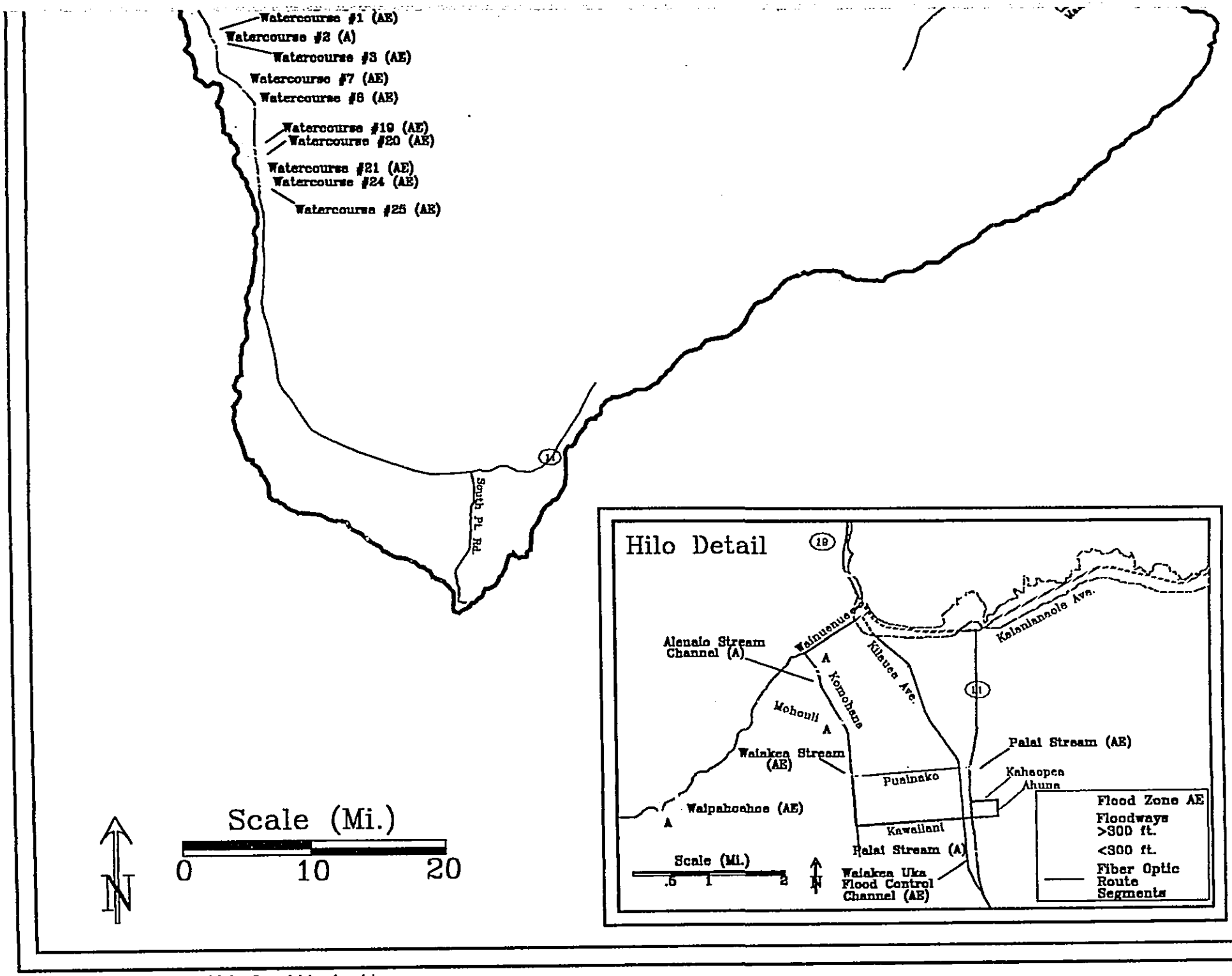
— Fiber Optic Route Segments

Floodways >300 ft.

Floodways <300 ft.

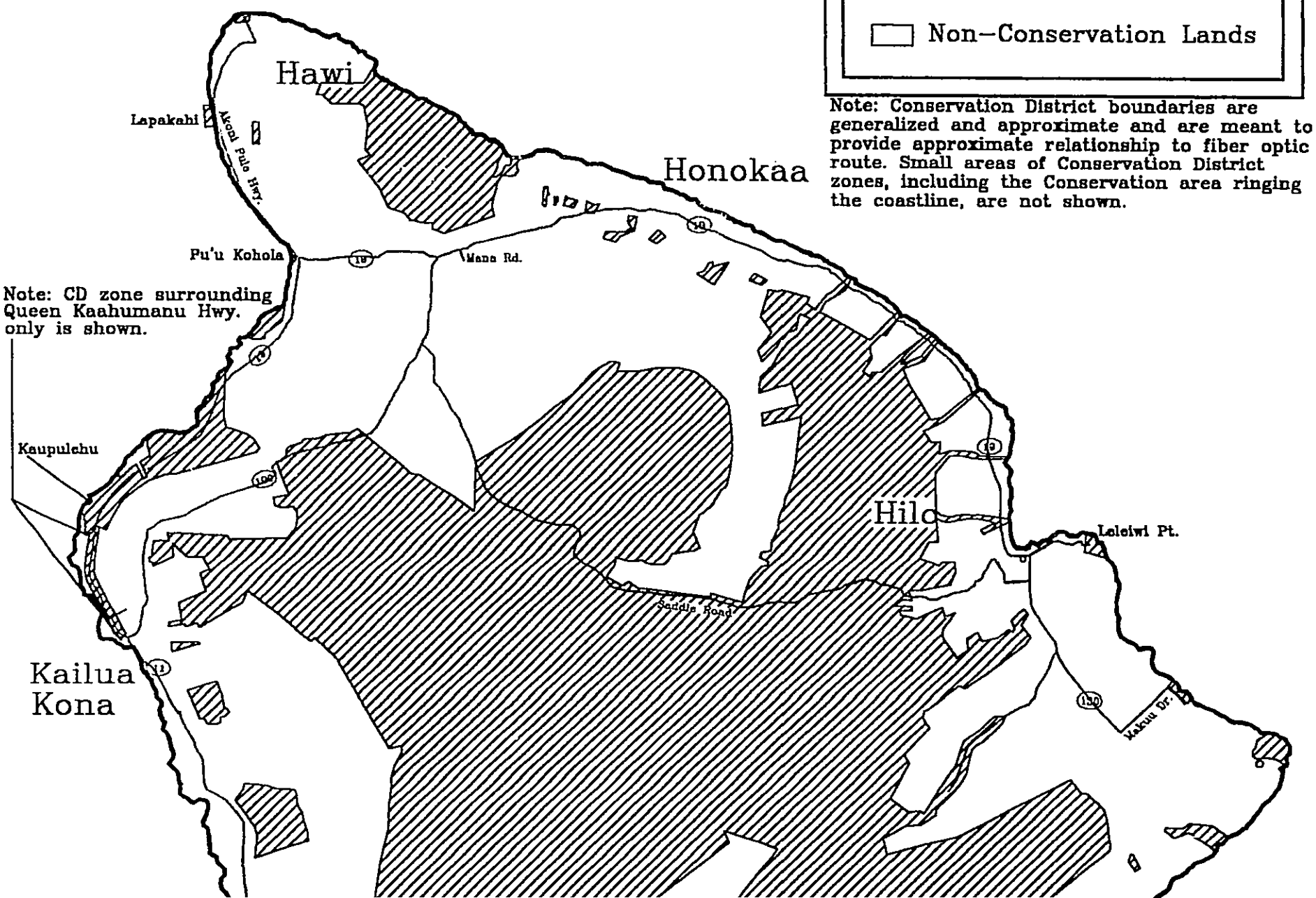
Note: Name given for all named streams, gulches, or drainages. Location of Flood Zones are approximate and meant to provide approximate relationship to fiber optic route. Some closely spaced Flood Zones have been combined for ease of display.



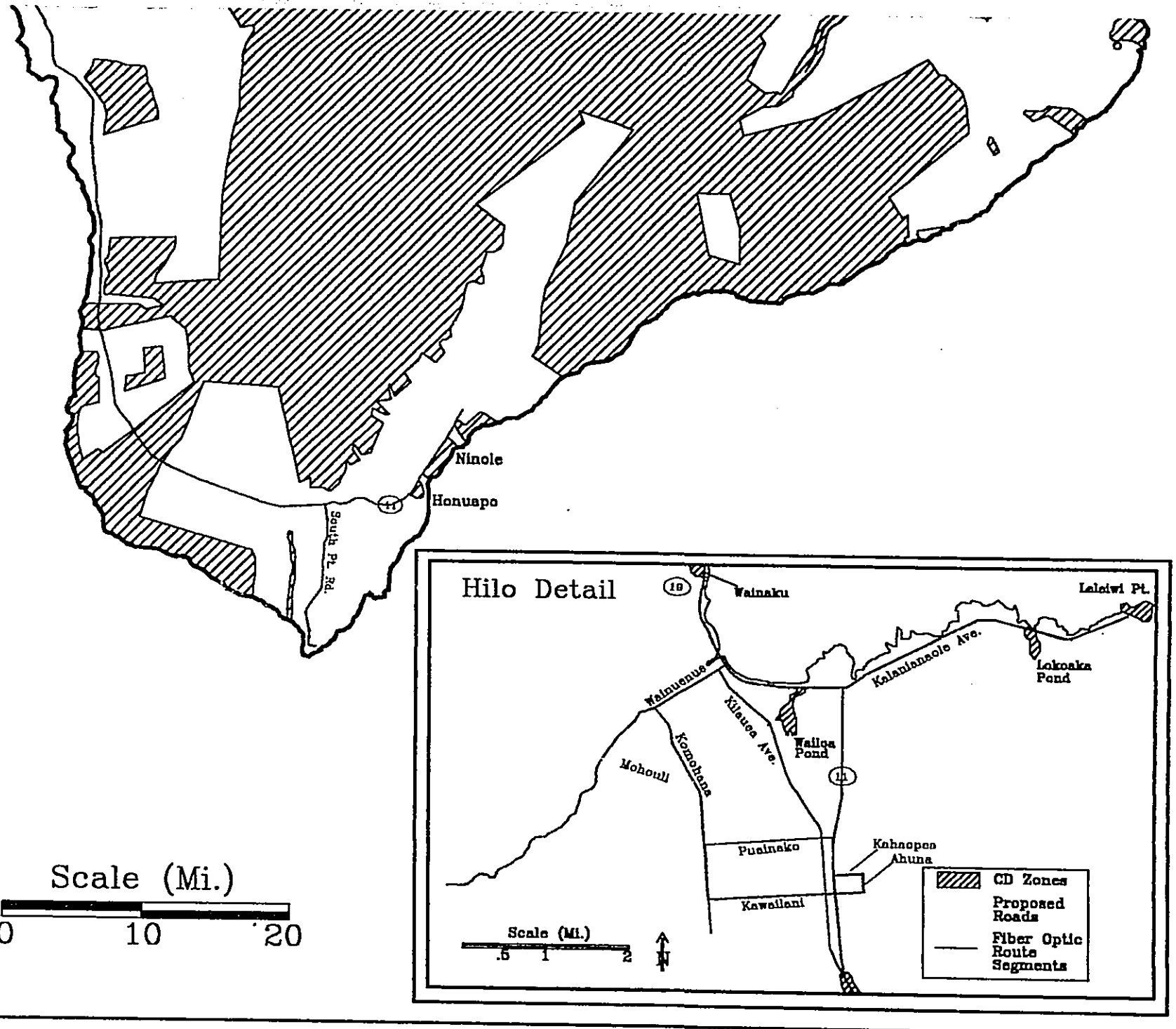


Cartography by: Michael R. Mandel for Geometrician Associates

Figure #6
Conservation Districts

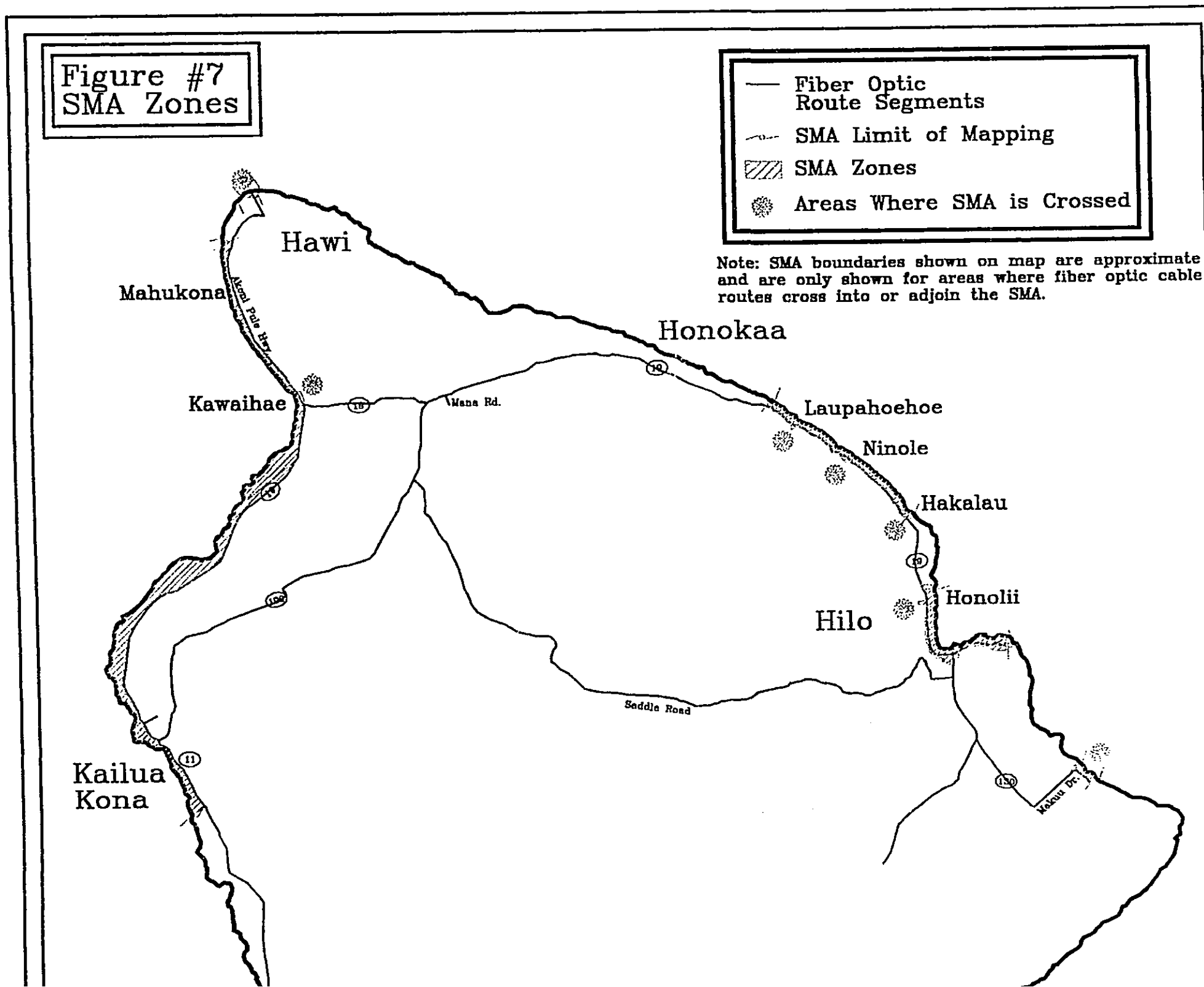


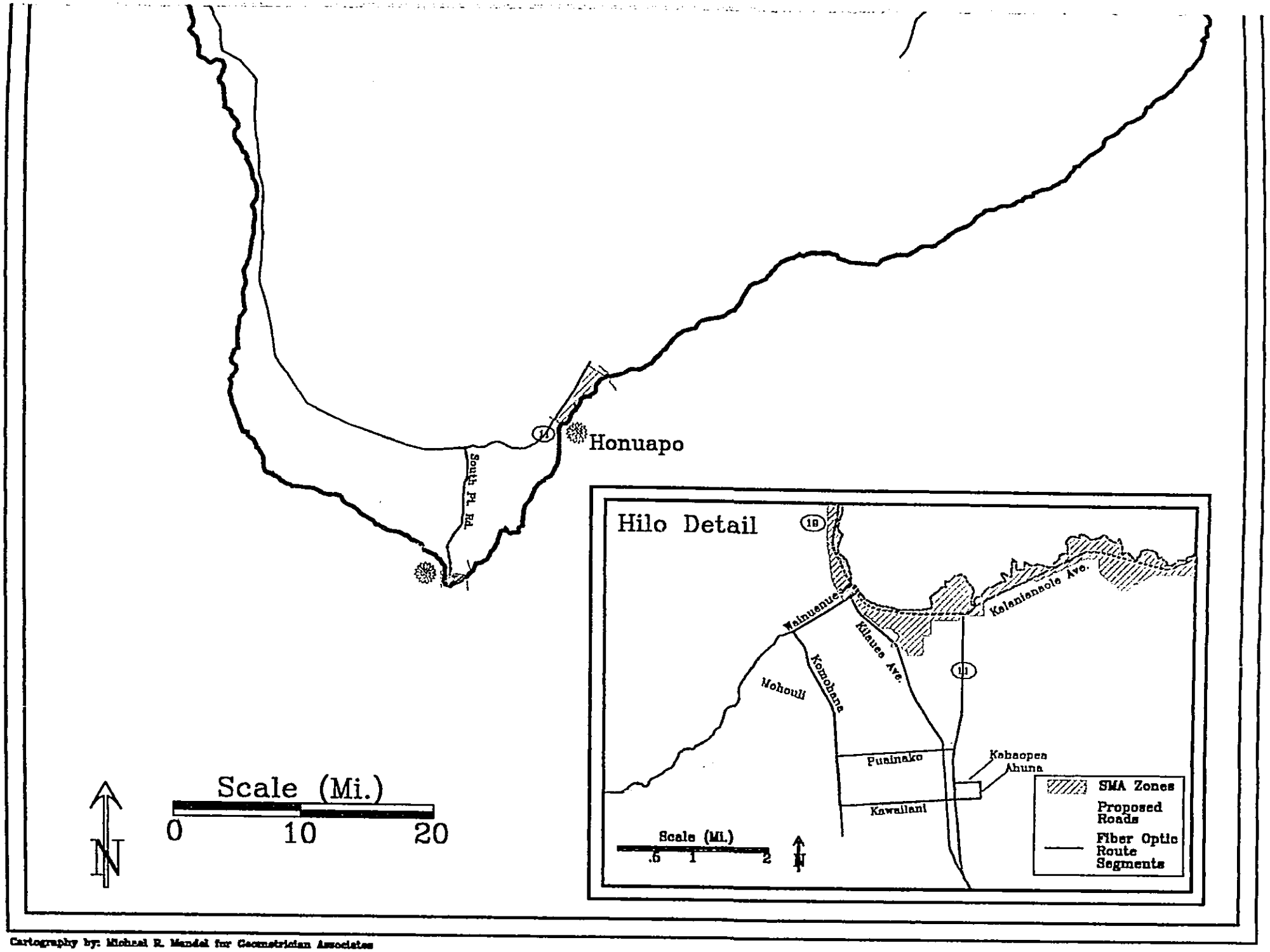
Note: Conservation District boundaries are generalized and approximate and are meant to provide approximate relationship to fiber optic route. Small areas of Conservation District zones, including the Conservation area ringing the coastline, are not shown.



Cartography by: Michael R. Mandel for Geometrician Associates

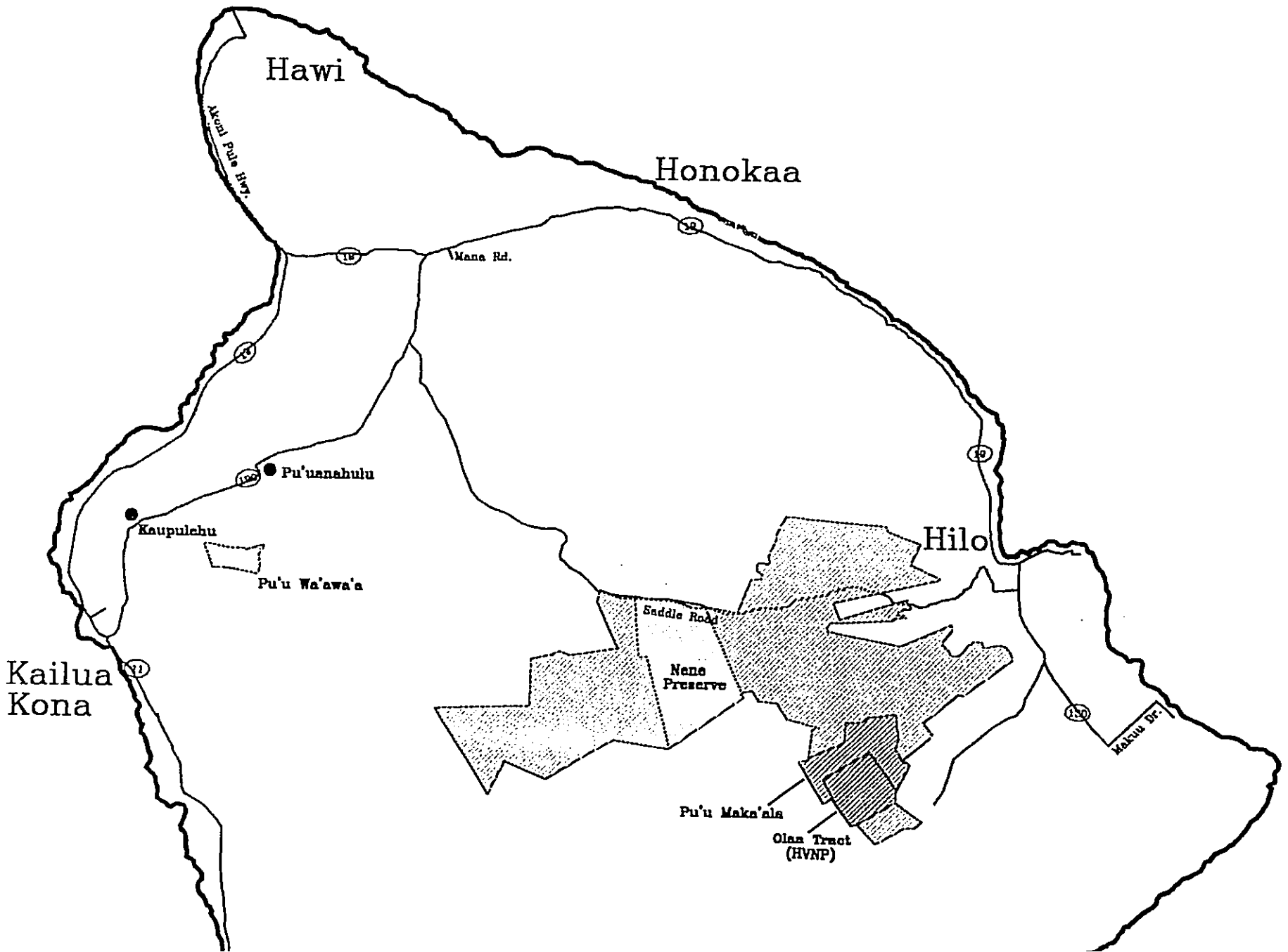
Figure #7
SMA Zones

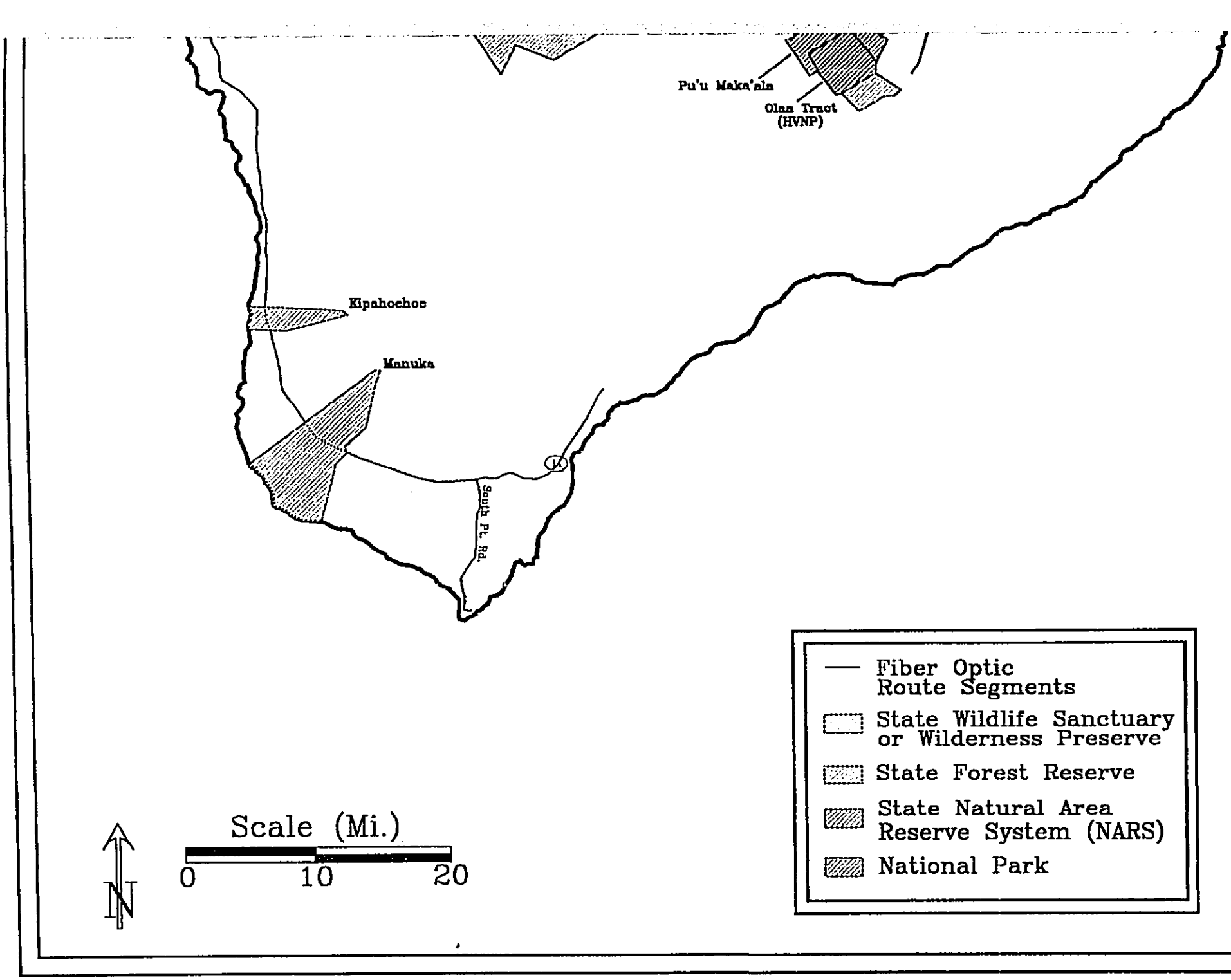




Cartography by: Michael R. Mandel for Geomatrician Associates

Figure #8
Protected Areas





Cartography by: Michael R. Mandel for Geometrician Associates

APPENDIX 3

ARCHAEOLOGICAL ASSESSMENT

ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED SANDWICH ISLES COMMUNICATION FIBEROPTIC CABLE PROJECT WITHIN APPROXIMATELY 335 MILES (540.3 KILOMETERS) OF ROAD CORRIDOR ON THE ISLAND OF HAWAI`I

by

Hallett H. Hammatt, Ph.D.

Prepared for

SSFM INTERNATIONAL, INC.

CULTURAL SURVEYS HAWAII, INC.
January 2001

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LIST OF FIGURES

I. INTRODUCTION

A. Project Background

Cultural Surveys Hawai`i has completed an archaeological assessment of approximately 335 miles (540.3 kilometers) of road corridor on the island of Hawai`i. The road corridors are proposed for the installation of a telecommunications cable system connecting Department of Hawaiian Home Lands (DHHL) properties on Hawai`i Island (Figure 1). The lines are to be installed entirely within state Department of Transportation and Hawai`i County rights-of-way consisting of existing pavements or road shoulders at an average depth of three feet (0.9 meters), typically in the *mauka* shoulder.

The objective of this assessment is to identify areas within the corridors that have potential for subsurface historic properties — including human burials and cultural deposits — which may be encountered during installation of the proposed cable system. The assessment is thus presented for preliminary planning purposes only. Final assessment of the levels of archaeological concern within the project area is the purview of the State Historic Preservation Division which determines necessary mitigation measures prior to and during construction activities.

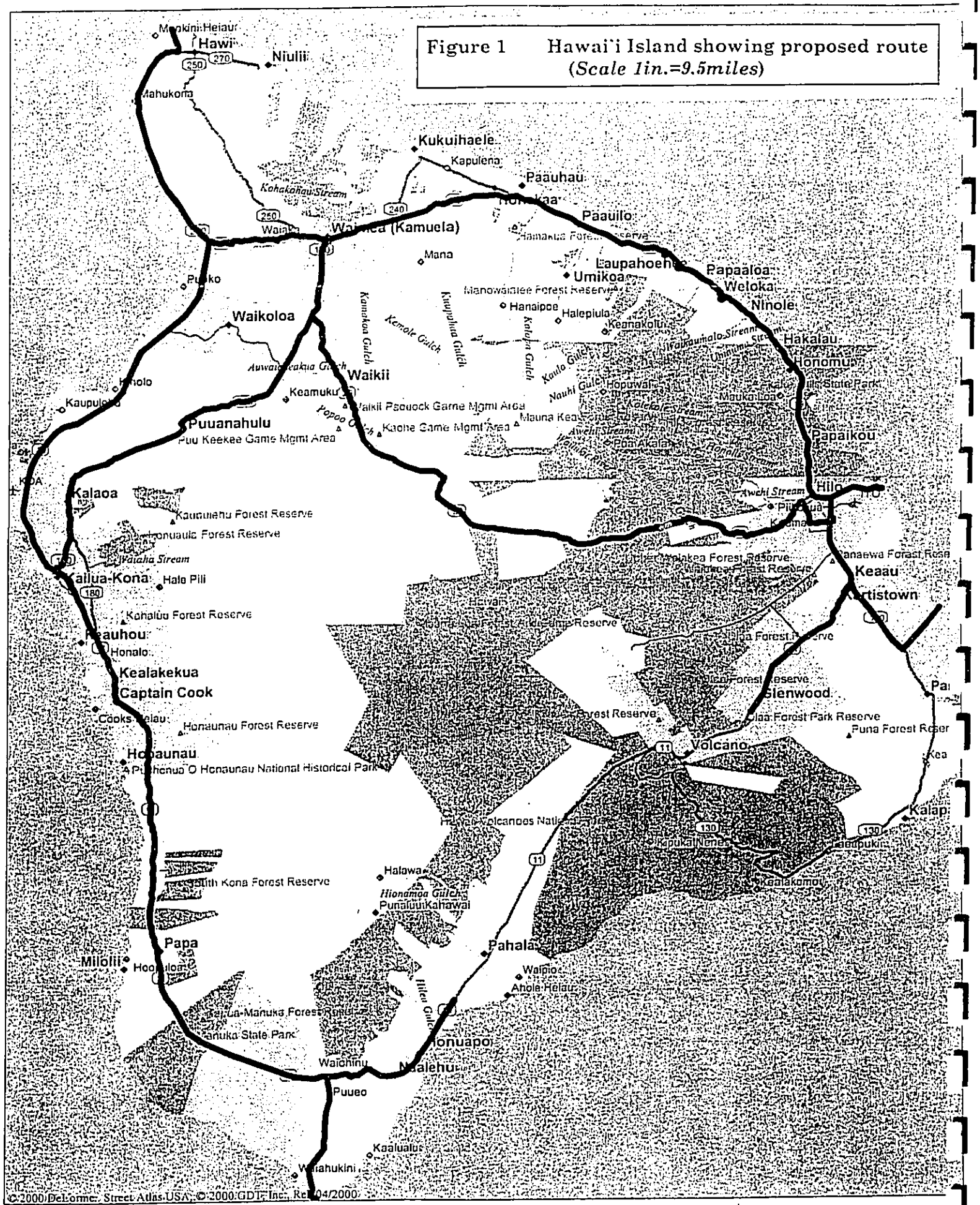
B. Project Area Description

Beginning in North Kohala, the study route commences on Upolu Point Road then continues southwest and south to Kawaihae on Akoni Pule Highway (270). The western-most segment of the route turns onto Queen Ka`ahumanu Highway (19) to Kailua-Kona and continues south on Kuakini Highway (11) and the Mamalahoa Highway/Hawai`i Belt Road (11) to the Ka`u District where a branch of the route extends south on South Point Road. The main segment continues east and northeast on the Mamalahoa Highway/ Hawai`i Belt Road (11) to a terminus at Punalu`u.

At Glenwood, another segment of the route commences on the Mamalahoa Highway/Hawai`i Belt Road/Volcano Road (11), running northeast then north through Mountain View and Kea`au. In Kea`au, a branch of the route extends southeast on Star Route 130 then northeast on Maku`u St. to the intersection with Ala Hele Puna. The main segment continues north on the Hawai`i Belt Road/Volcano Road (11) to the intersection with East and West Kawailani streets. A branch of the route extends west on West Kawailani St., then turns northwest on Komohana St. to the intersection with Kaumana Drive.

The main segment from Hawai`i Belt Road continues east on East Kawailani St., north on Ahuna St., west on East Kahaopea St., then returns to the Kanoelehua Ave./Hawai`i Belt Road (11), proceeding north to the intersection with Kamehameha Avenue in Hilo. At the intersection, a branch of the route extends east on Kamehameha Avenue then northeast on Kalaniana`ole Avenue to a terminus at Kapoho Coast Road. The main segment of the route runs west on Kamehameha Avenue (19) from the intersection with Kanoelehua Avenue/Hawai`i Belt Road (11), then continues west on Bayfront Highway/Hawai`i Belt Road (11). It then runs north on the Mamalahoa Highway/Hawai`i

Figure 1 Hawai'i Island showing proposed route
(*Scale 1in.=9.5miles*)



CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
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I. INTRODUCTION

A. Project Background

Cultural Surveys Hawai`i has completed an archaeological assessment of approximately 335 miles (540.3 kilometers) of road corridor on the island of Hawai`i. The road corridors are proposed for the installation of a telecommunications cable system connecting Department of Hawaiian Home Lands (DHHL) properties on Hawai`i Island (Figure 1). The lines are to be installed entirely within state Department of Transportation and Hawai`i County rights-of-way consisting of existing pavements or road shoulders at an average depth of three feet (0.9 meters), typically in the *mauka* shoulder.

The objective of this assessment is to identify areas within the corridors that have potential for subsurface historic properties — including human burials and cultural deposits — which may be encountered during installation of the proposed cable system. The assessment is thus presented for preliminary planning purposes only. Final assessment of the levels of archaeological concern within the project area is the purview of the State Historic Preservation Division which determines necessary mitigation measures prior to and during construction activities.

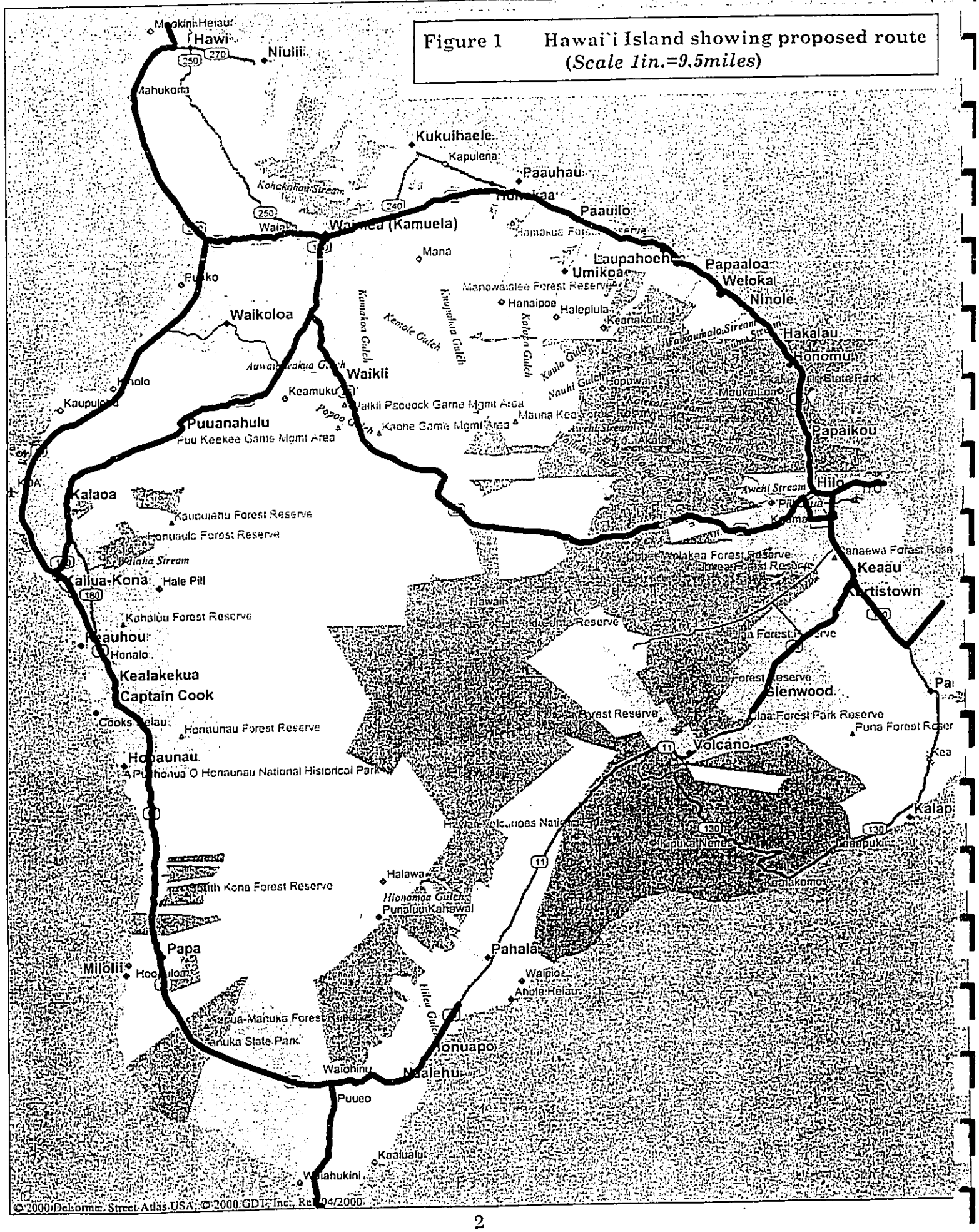
B. Project Area Description

Beginning in North Kohala, the study route commences on Upolu Point Road then continues southwest and south to Kawaihae on Akoni Pule Highway (270). The western-most segment of the route turns onto Queen Ka`ahumanu Highway (19) to.Kailua-Kona and continues south on Kuakini Highway (11) and the Mamalahoa Highway/Hawai`i Belt Road (11) to the Ka`u District where a branch of the route extends south on South Point Road. The main segment continues east and northeast on the Mamalahoa Highway/ Hawai`i Belt Road (11) to a terminus at Punalu`u.

At Glenwood, another segment of the route commences on the Mamalahoa Highway/Hawai`i Belt Road/Volcano Road (11), running northeast then north through Mountain View and Kea`au. In Kea`au, a branch of the route extends southeast on Star Route 130 then northeast on Maku`u St. to the intersection with Ala Hele Puna. The main segment continues north on the Hawai`i Belt Road/Volcano Road (11) to the intersection with East and West Kawailani streets. A branch of the route extends west on West Kawailani St., then turns northwest on Komohana St. to the intersection with Kaumana Drive.

The main segment from Hawai`i Belt Road continues east on East Kawailani St., north on Ahuna St., west on East Kahaopea St., then returns to the Kanoelehua Ave./Hawai`i Belt Road (11), proceeding north to the intersection with Kamehameha Avenue in Hilo. At the intersection, a branch of the route extends east on Kamehameha Avenue then northeast on Kalaniana`ole Avenue to a terminus at Kapoho Coast Road. The main segment of the route runs west on Kamehameha Avenue (19) from the intersection with Kanoelehua Avenue/Hawai`i Belt Road (11), then continues west on Bayfront Highway/Hawai`i Belt Road (11). It then runs north on the Mamalahoa Highway/Hawai`i

Figure 1 Hawai`i Island showing proposed route
(*Scale 1in.=9.5miles*)



Belt Road (19) above the Hamakua Coast to Honoka`a where it turns southwest on the Hawai`i Belt Road (19) into Waimea Town to the intersection with Lindsey Road. At the intersection, a branch of the route runs west on Lindsey Road and Kawaihae Road to the junction with Akoni Pule Highway (270) and Queen Ka`ahumanu Highway (19).

A second branch extends from the Lindsey Road intersection on Mamalahoa Highway (190) south and southwest to the Saddle Road junction. It then travels on Mamalahoa Highway through Pu`uanahulu and Kalaoa to the intersection with Queen Ka`ahumanu Highway in Kailua-Kona. From the Saddle Road junction, the route also has a segment that includes the Saddle Road (20) which extends from the Mamalahoa Highway and runs into Kaumana Drive, terminating at the intersection with Komohana St. in Hilo.

C. Methodology

The following resources and activities were employed to identify areas of archaeological concern within the study route:

1) Inspection of soil surveys for presence of soils and sands — under or immediately adjacent to the study route — which, based on past experience, are more likely to contain cultural deposits.

2) Inspection of tax maps and historic maps showing presence of Land Commission Award (LCA) parcels within or adjacent to the study route.

   Toward the mid-19th century, the Organic Acts of 1845 and 1846 initiated the process of the *Māhele* — the division of Hawaiian lands — which introduced private property into Hawaiian society. In 1848 the crown, the Hawaiian government, and the *ali`i* (royalty) received their land titles. *Kuleana* awards for individual parcels within the *ahupua`a* were subsequently granted in 1850. These Land Commission Awards (LCAs) were presented to tenants — native Hawaiians, naturalized foreigners, non-Hawaiians born in the islands, or long-term resident foreigners — who could prove occupancy on the parcels before 1845.

   Maps and other documents associated with these awards may give clues to settlement areas within and nearby the study route in the mid-1850s. These areas may represent, in turn, traditional Hawaiian settlement areas.

3) Review of Geographic Information System (GIS) data and archaeological reports at the State Historic Preservation Division. The GIS data and archaeological reports may give specific information on the location and distribution of previously-recorded surface sites within or near the study route which may be associated with subsurface historic properties. Additionally, archaeological reports may present results of subsurface testing in proximity to the study route.

4) Field inspection of the entire study route. The primary purpose of the field inspection is to evaluate the relationship of the study route to possible subsurface properties. Areas of anomalous sand deposits are examined to consider their potential for significant subsurface cultural deposits. Also noted are areas of fill and/or road cut in which the alignment has been brought significantly above grade. In many areas of potential archaeological sensitivity, the nature of the road bed — either graded or filled — effectively eliminates archaeological concern, given the shallow penetration of the proposed trenching.

   Areas adjacent to streams and wetlands are examined for possible archaeological potential. These areas, although often undocumented in archaeological literature, are more likely to have been foci of human endeavor. The field inspection also examines urban areas which have the potential for historic deposits over fifty years old.

5) Consultation with the State Historic Preservation Division (SHPD). Resources and expertise of the SHPD will be utilized. However, all evaluations and findings of this assessment report are those of Cultural Surveys Hawai`i, and should not be interpreted as reflecting those of the SHPD.

6) Cultural Surveys Hawai`i staff's past experience of and familiarity with archaeological resources along the study route.

7) Consideration of any known community issues regarding culturally sensitive portions of the study route. Community groups in areas throughout the Hawaiian Islands have voiced concern for cultural resources in specific areas which may have to be addressed during the course of the present project.

This report presents the results of the research conducted by Cultural Surveys Hawai`i, Inc. Section II summarizes findings on soils, Land Commission Awards, and previous archaeological data in the immediate vicinity of the study route. These three research components are the primary basis for determining potential for encountering further subsurface historical properties along the route. Section III presents Cultural Surveys Hawai`i's assessment of archaeological potential for all portions of the route. Finally, based on the background research and the route assessment, Section IV offers recommendations for further archaeological mitigation.

II. SOIL, LAND COMMISSION AWARD AND ARCHAEOLOGICAL DATA

Three research components — soils, Land Commission Awards, and previous archaeological research — are the primary indicators of possible archaeological potential within the study route. Results of the examination of these components are presented below.

Soils

A study of the Hawai`i Island soil survey indicated that, unlike the other Hawaiian islands to the northwest, Hawaii`i has few sand deposits derived principally from calcareous sources. It is within such calcareous sand deposits that intact cultural layers and human burials have been encountered in the islands. The sandy deposits on Hawai`i Island associated with the proposed fiberoptic cable route are derived from volcanic ash. These deposits have not been specifically associated with the presence of intact cultural layers and human burials on the island. Therefore, the soil record for Hawai`i Island was not useful or instructive for the purposes of this assessment. However, a brief discussion of ash-derived sand deposits beneath the proposed route on the island is presented here.

The proposed route runs through three areas of sand deposits: at Kawaihae; in the *Waimea area including Waikoloa* and a portion of the Saddle Road; and at South Point.

The sandy soils of Kawaihae are categorized as Kawaihae very rocky very fine sandy loam (KOC) and are described as very well drained soils derived from volcanic ash (Sato et. al, 1973). This deposit extends from well *mauka* down to the shoreline and from Kawaihae 13 km north along the proposed route to Keawanui Bay.

In the uplands between the Kohala Mountains, Hualalai and Mauna Kea, there are extensive deposits of sandy loam. All are derived from volcanic ash and the main differences between them are their elevations, slope and micro-environmental conditions. The sandy loams include Puu Pa extremely stony very fine sandy loam (PVD, PVF3), Kilohana loamy fine sand (KZD), Waikoloa very fine sandy loam (WLC), Keekee loamy sand (KTB), Kikoni very fine sandy loam (KfA) and Waimea very fine sandy loam (WMC) [Sato et al., 1973). These sandy deposits underlie the proposed alignment for approximately 15 km along Highway 19 including the towns of Waimea and Kuhio Village. Approximately 22 km of proposed route overlies various sandy loam deposits south of Waimea along Highway 190 including a small section at Pu`uanahulu. Saddle Road (Highway 200) parallels the proposed route which overlies approximately 32 km of decomposed volcanic ash or sandy loam.

Finally, the southernmost 10-11 km of the proposed route along South Point Road overlie two different sandy loams. These include Pakini very fine sandy loam (PKB) and Kaalualu extremely stony loamy sand (KBC). Both sand deposits developed in volcanic ash found in coastal areas (Sato et al., 1973).

Land Commission Awards

Inspection of tax maps and historic maps indicated the presence of many Land Commission Awards (LCAs) along the study route in Hawai`i. Concentrations of *kuleana* are located along Highway 11 through Kailua-Kona, Kealakekua, Honaunau (*mauka*), and Kealia, and in the South Hilo District in the vicinity of Hilo Town. Isolated LCAs are located along the study route north of Kalaoa in North Kona. In South Kona District, isolated *kuleana* are present south of Kealia near Papa and *mauka* of Kapua Bay. In Ka`u, although the LCAs along the present study route are separated by 3-5 km, they are relatively near the South Point Road and Na`alehu. The Puna District contains only a few LCAs situated at Kea`au. In the vicinity of Hilo Bay in South Hilo District, clusters of *kuleana* lands are located along the coast between Mokaoku and Puueopaku. On the Hamakua Coast, isolated LCAs are strung out along the study route between Opaeula Gulch and just *mauka* of Paauhau. Clusters of multiple LCAs are situated along the study route in the South Kohala District near the towns of Waimea and Kawaihae. In North Kohala, Hikapoloa is the focal point of a small cluster of LCAs. The locations of these LCAs along the study route are indicated on Figures 2-5.

Previous Archaeological Study

Geographic Information System (GIS) data for Hawai`i Island at the State Historic Preservation Division (SHPD) are not available at the present time. Archaeological reports on file at the SHPD were reviewed for information that may be relevant to the present study route. Locations of areas documented by various levels of archaeological study along the study route are shown on Figures 6-8. Findings of reports specifically indicating possible subsurface properties within the study route corridor were checked during the field investigation of December 9 and 10, 2000.

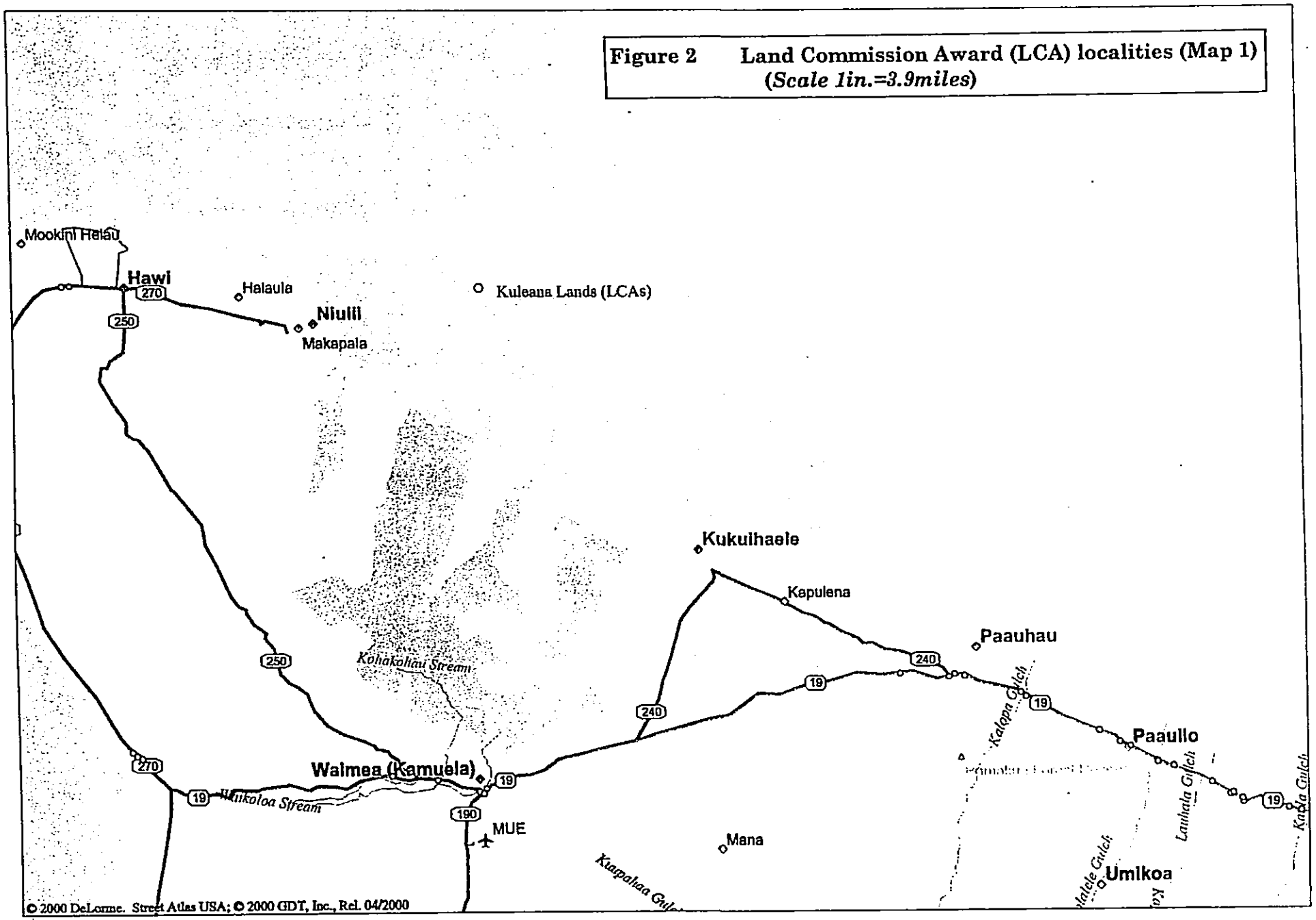
Brief summaries of the material presented in the reports identified on Figures 6-8 are presented below.

Archaeological Inventory Survey for the Kohala Water Transmission System Project North Kohala and South Kohala documented three sites near the road: a temporary habitation, stoned platform, a probable burial and pre-contact burial (Spears and Chaffer 1994).

Archaeological Inventory Survey for the North Hawai`i Community Hospital was conducted adjacent to Route (190) at Waiaka. Waimea and near the Parker Ranch racetrack and the Waimea-Kohala airport. The project area consists of seven different parcels and each parcel has an *`auwai* system associated with it (Thompson, and Rosendahl 1992).

J. Peterson (1968) (State Archaeological Journal) carried out studies of trails within Lapakahi *Ahupua`a*. Most of the trails studied were historic but the (type A) trails were foot trails dating to the pre-historic era.

Figure 2 **Land Commission Award (LCA) localities (Map 1)**
(Scale 1in.=3.9miles)



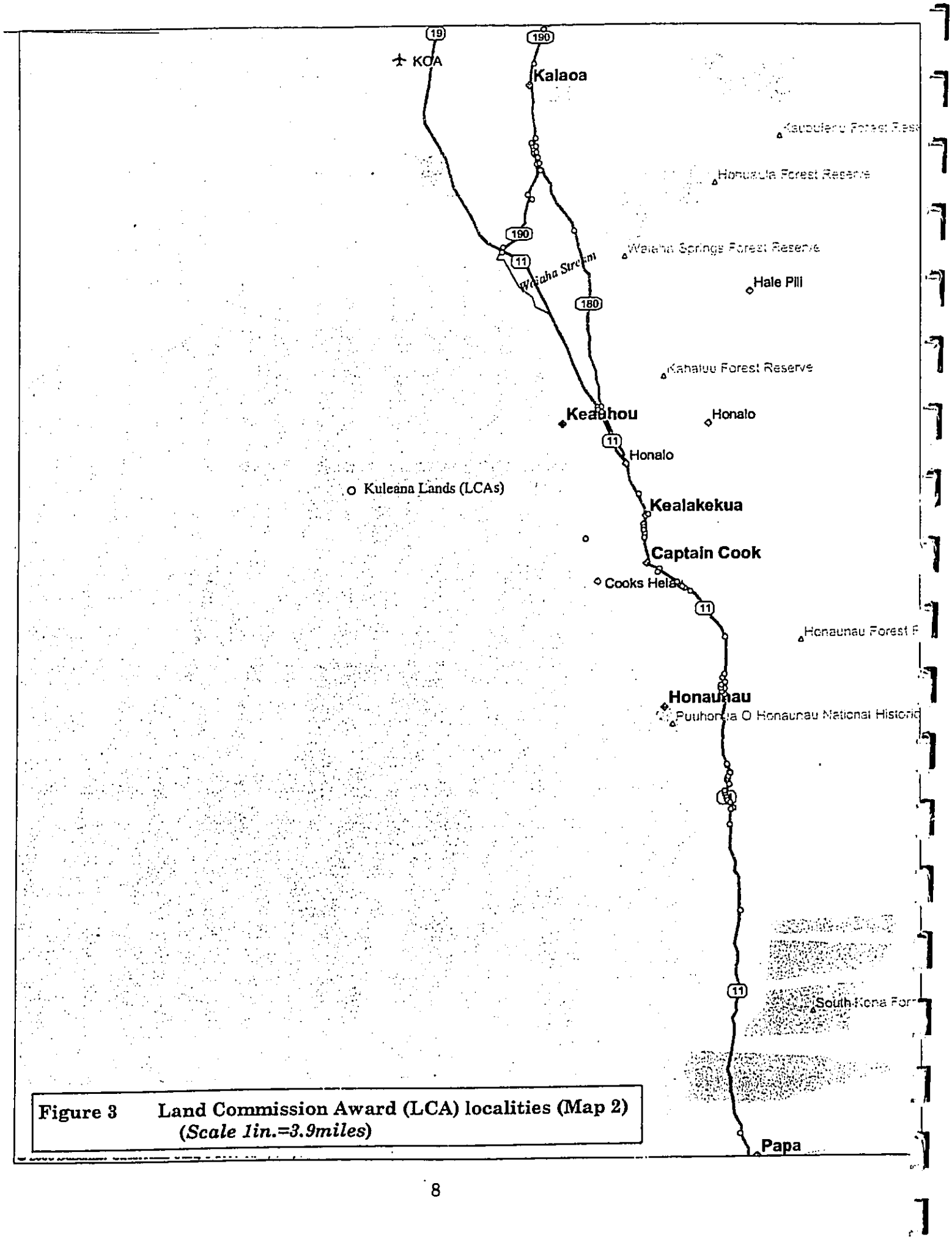


Figure 3 **Land Commission Award (LCA) localities (Map 2)**
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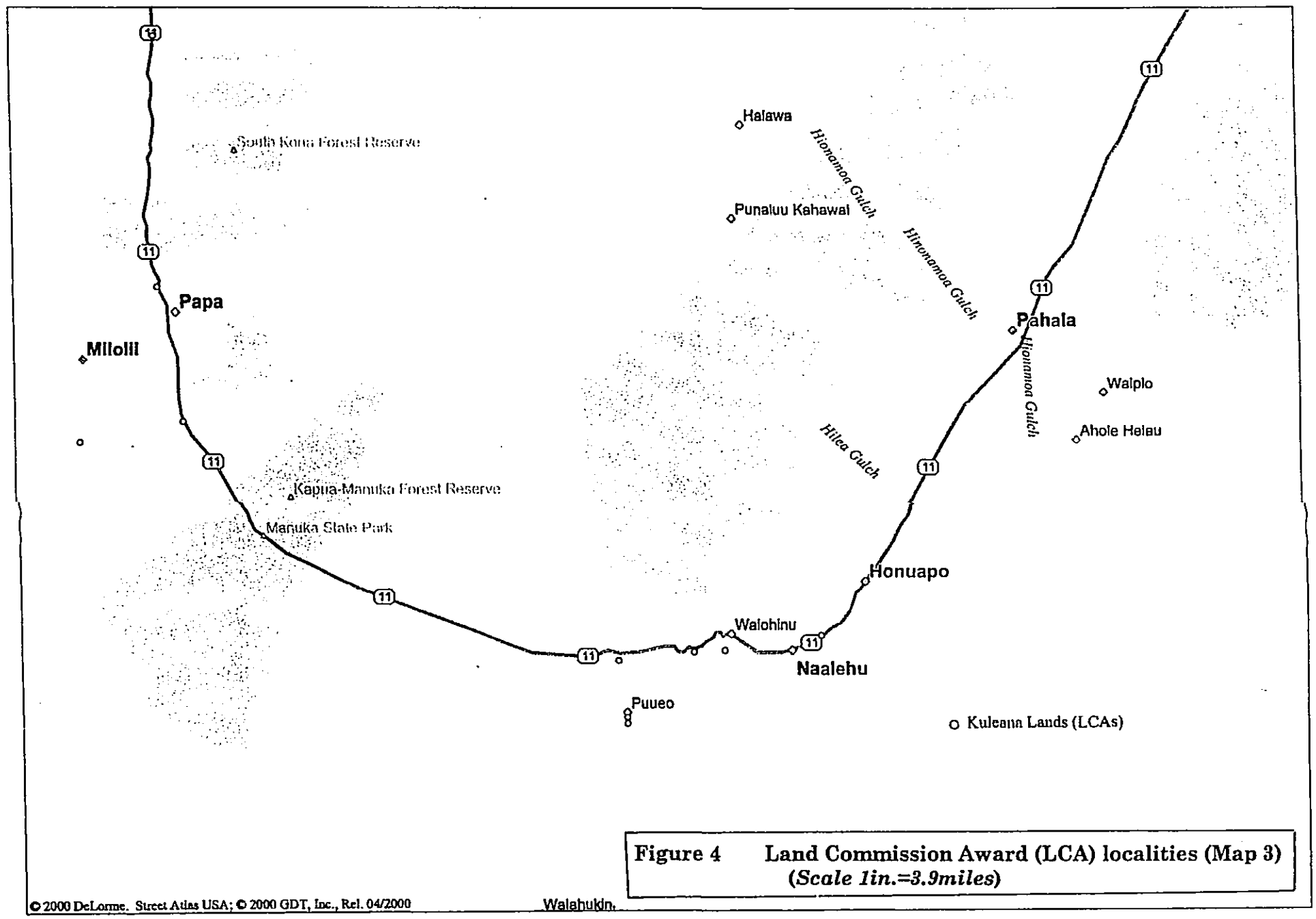


Figure 4 **Land Commission Award (LCA) localities (Map 3)**
(Scale 1in.=3.9miles)

Figure 5 **Land Commission Award (LCA) localities (Map 4)**
(Scale 1in.=3.9miles)

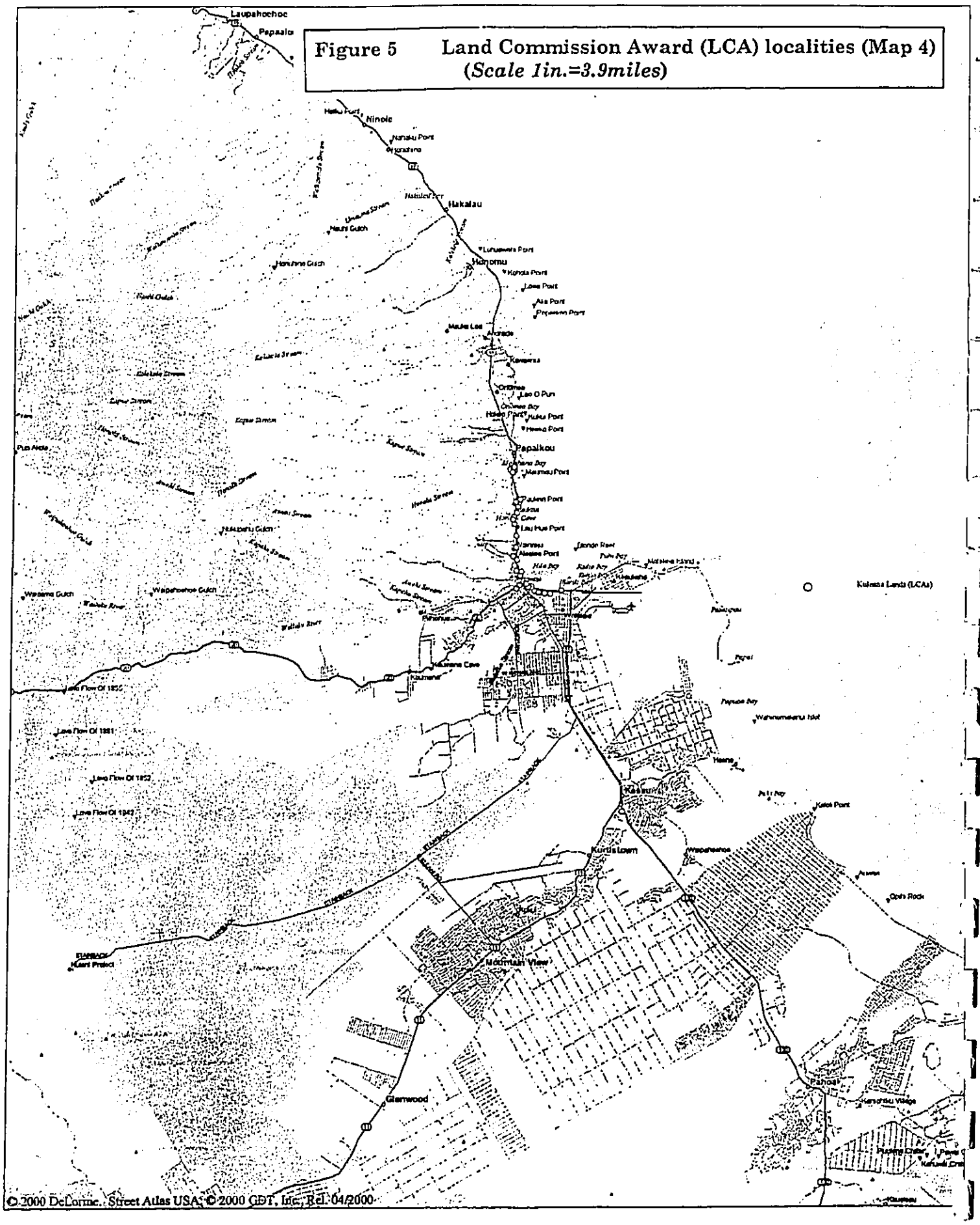
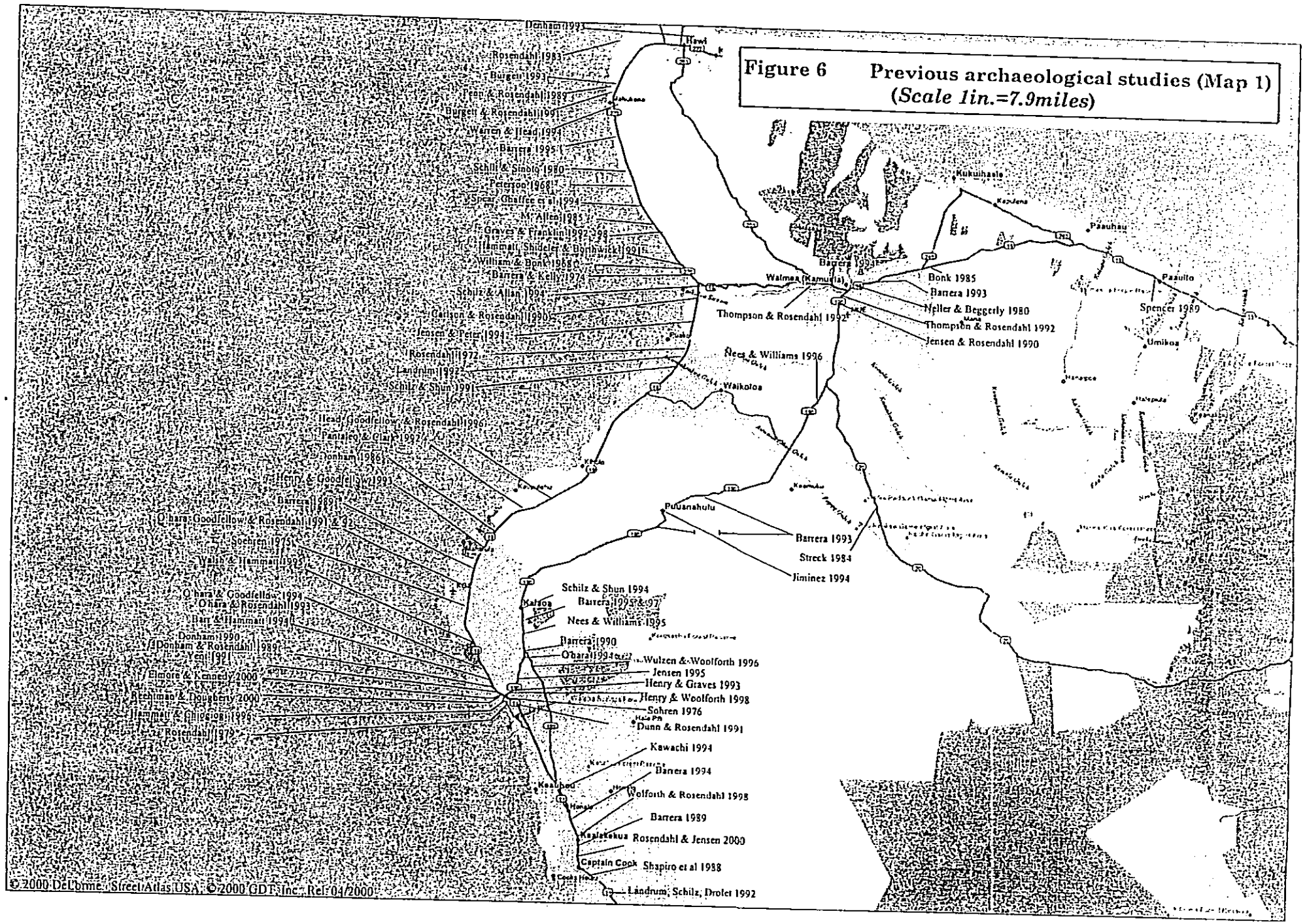


Figure 6 Previous archaeological studies (Map 1)
(*Scale 1in.=7.9miles*)



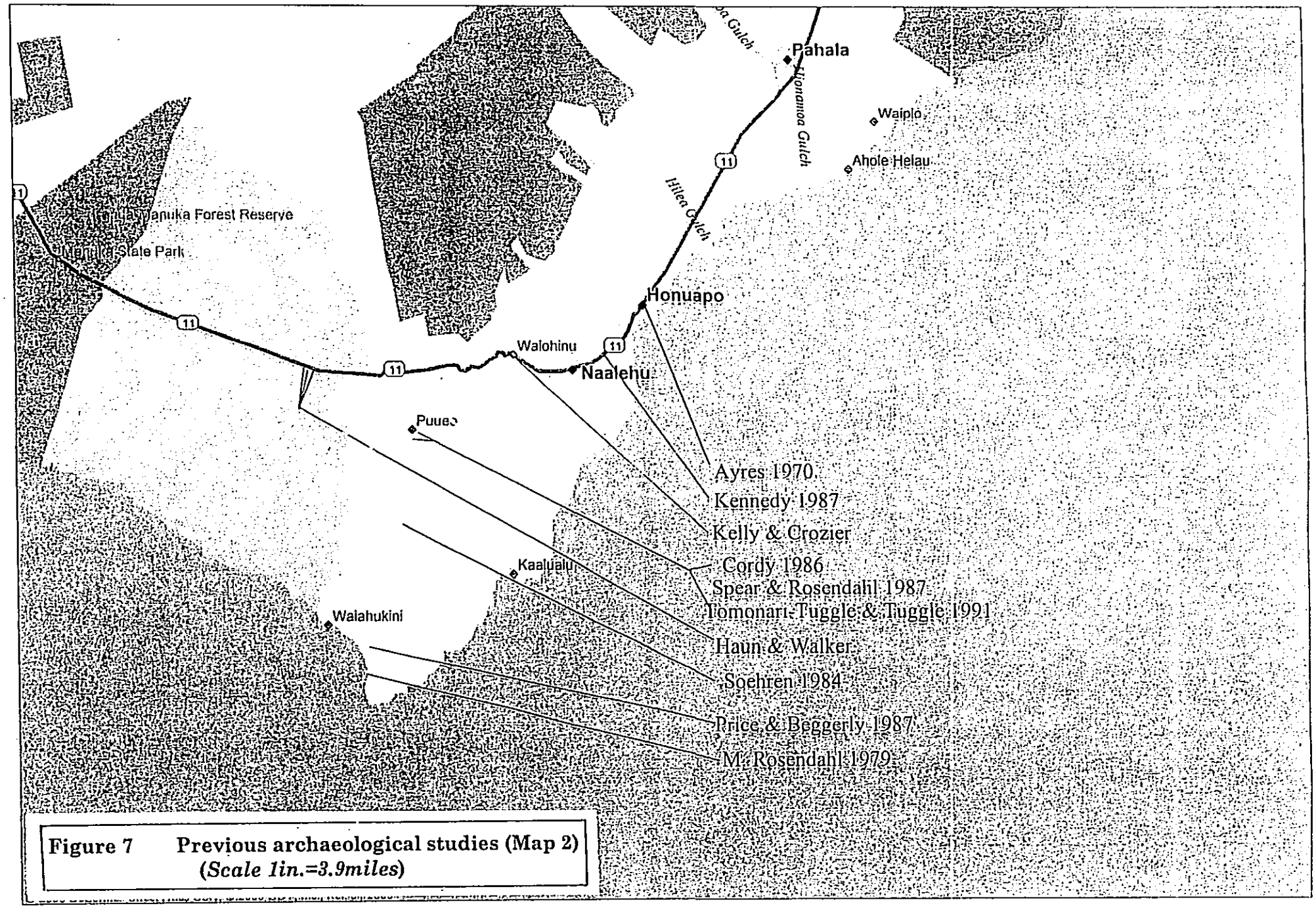
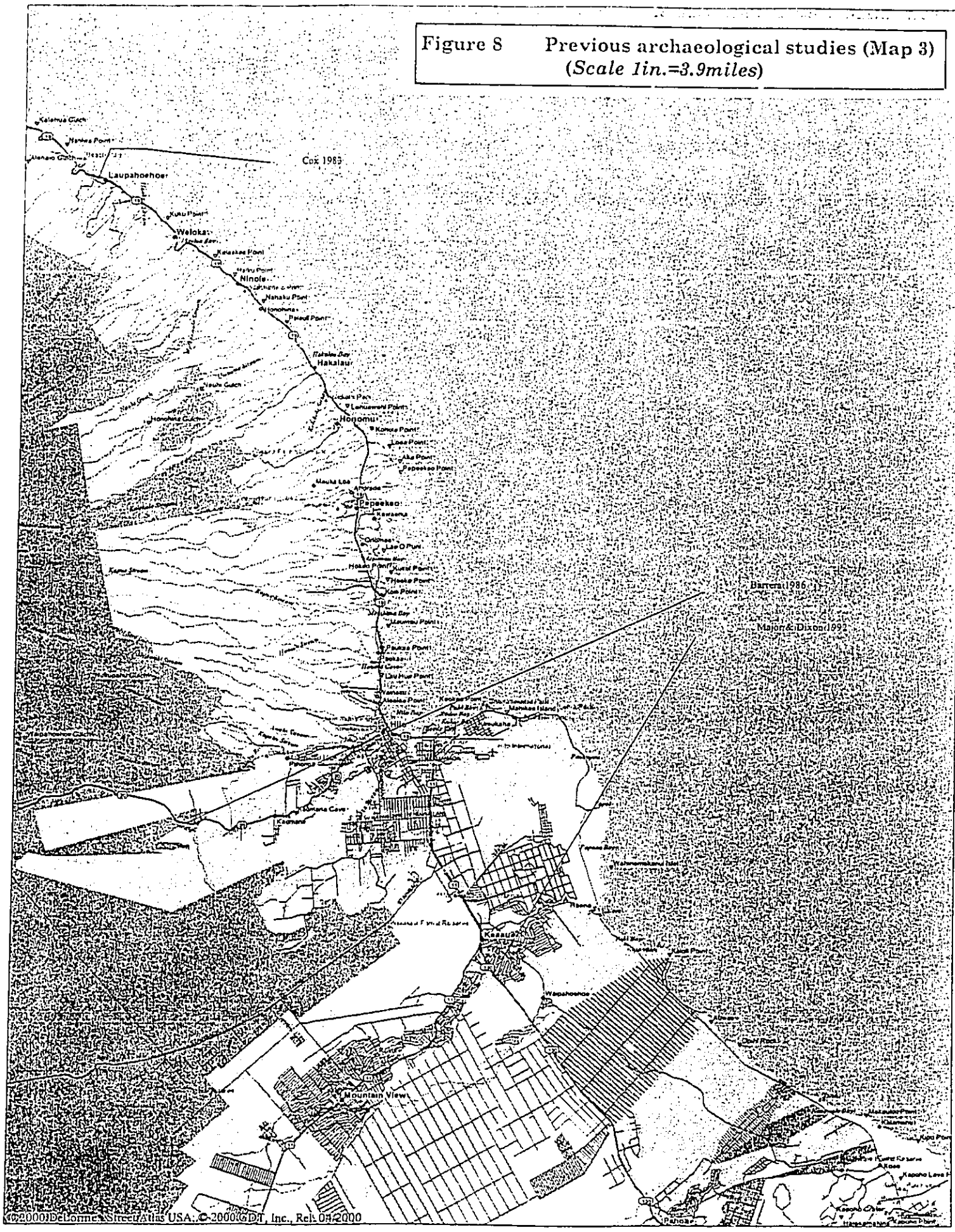


Figure 7 **Previous archaeological studies (Map 2)**
(Scale 1in.=3.9miles)

Figure 8 Previous archaeological studies (Map 3)
(*Scale 1in.=3.9miles*)



During the Archaeological Reconnaissance Survey at Kahua Shores, 27 sites were documented with one site, dating to the mid-1800's, that includes a probable canoe *hale*. A few possible burial features which had been looted were recorded; related material included a canoe, poi board, and several human bones (Allen 1985) .

In the Kapa`a area, Ross Cordy (1991) documented one site: an exposed burial and a modified outcrop near the present study route.

Archaeological Inventory Survey at Lamaloloa, Kaipuhale and Koaeae revealed a number of sites near the present study route including: a cemetery, a few well preserved rock features, and enclosures (Barrera 1995).

An Archaeological Inventory Survey was conducted of Kahua Shores coastal parcels which lies west of Highway 270 and 800 feet north of Kaiopae Point at approximately 150 foot elevation. The survey documented 68 sites including 13 newly-identified sites, four human burials, and seven possible human burials. The burial types included: square mounds covered with capstones, and square placed platforms. The sites included: terraces; enclosures; platforms; mounds and cairns; the functional types were agricultural; habitation; markers; storage; and burials. The sites in the vicinity of the present study route consisted of modified outcrops (Graves and Franklin 1992).

An Archaeological Inventory Survey conducted for Kapa`anui Agricultural sub-division at Mahukona documented 179 sites and 465 features. Typical sites in that project area included habitation, burials, and ceremonials (Burgett 1993).

Archaeological Inventory Survey for the Chalon International Mahukona Mauka Parcel was conducted at elevations between 100 and 200 foot amsl. A total of 25 sites including 53 features were documented. The sites apparently in the vicinity of the present study route consist of a wall and an enclosure/storage; no associated indigenous artifacts were recovered at these sites (Wulzen, Head, and Goodfellow 1994).

An Archaeological Inventory Survey south of Mahukona harbor down to Keawanui Bay documented a total of 45 sites. None of the sites are located in the vicinity of the present study route (Schilz and Sinoto 1980) .

Archaeological Data Recovery for Chalon International, south of Kauli`i Point documented a total of 82 portable artifacts that were recovered from three sites. Sites near the present study route include a site marker trail, type A trail, and a temporary habitation site (Wulzen and Goodfellow 1995).

Archaeological Investigations were conducted for Kawaihae Homelands in South Kohala District to the northwest of the intersection of the Ka`ahumanu Highway and Kawaihae Road, at approximately 170 to 205 foot elevation. No subsurface concerns were noted along the present study route (Schilz, 1991).

Archaeological and Historic Survey south of Kawaihae identified nine sites near Highway 270, including a cemetery, four shelters, one possible burial, one possible *auwai*, and one possible trail (Barrera and Kelly 1974).

Archaeological Inventory Survey and Evaluation for Land of Ouli, South Kohala near Kohakohau Stream on Highway 19. A total of 75 sites were recorded: most of the sites were military, ranching, or otherwise historic; seven sites were traditional. There was one site near the present study route: an historic/road marker. (Schilz 1994).

Archaeological Inventory Survey at Queen's Lands at Maunakea documented a total of 148 sites and 476 features, including C-shapes, platforms, midden cultural deposits, and habitation structures. No sites were noted along the present study route (Carlson and Rosendahl 1990).

Archaeological Inventory Survey was conducted at Ouli and Lanikepu South Kohala, adjacent to the Kawaihae Road (19) at an elevation of 2,200 to 2,700 feet. A total of 12 sites comprising of 22 features, predominantly permanent habitation, were recorded. No sites were located near the present study route (Barrera 1994).

Archaeological Inventory Survey and subsurface testing were conducted near Hapuna Beach north of Puako Bay and west and east of Highway 19. A total of 164 sites was recorded; 156 sites were assessed as being significant. No sites were located near the present study route (Jensen 1994).

Archaeological Investigations were carried out west and east of Paauilo along Highway 19. No subsurface concerns were noted along the present study route (Spencer 1989).

Archaeological investigations during improvements for the Lalamilo Puukapu Irrigation Systems did not indicate the presence of any cultural resources (Neller and Beggerly 1980).

Archaeological Inventory Survey of the south side of the Waimea-Kawaihae Road indicated only historic land use for cattle ranching in the area. Sites noted were all historic agriculture-related. No sites were located near the present study route (Barrera 1993).

An Archaeological Inventory Survey was conducted of Waikoloa *mauka* lands, south of Waimea, along Route 190. No sites were identified along the present study route (Jensen and Rosendahl 1990).

Archaeological salvage was conducted at Hapuna and Anaeho`omalu, along the Kailua/Kawaihae road alignment. A total of 130 archaeological features and 22 unrecorded features were salvaged. The sites on or near the present study route consisted of ahu's, C-shape shelters, rock shelters, walls, and a hunting blind (Rosendahl 1972).

Archaeological Aerial Survey along Queen Ka`ahumanu Highway from Anaeho`omalu to Keahole study recorded a total of eleven sites. Two sites were located near the present study route: a trail and a lava tube (Kirtch 1974) .

Archaeological Inventory Survey was condcuted in Keōpū, Honua, Hienaoli, North Kona, along Highway 19 east of Waimea at approximately 2,500 foot elevation. The sites identified near the present study route include a platform, a modified outcrop, and two incomplete burials (Bonk 1985).

Archaeological Investigations for Defense Environmental Restoration Program were conducted south of Waimea along Highway 190. The sites near the present study route include a few C-shape shelters, and a rock wall (Nees and Williams 1996) .

An Archaeological Inventory Survey was conducted mauka of Queen Ka`ahumanu Highway between Kaniku lava flow and Puako, at approximately 150 to 700 foot elevation. No subsurface concerns were noted along the present study route (Schilz and Shun 1991).

An Archaeological Inventory Survey southwest of Pu`uanahulu at approximately 2,150 to 2,200 foot elevation documented a total of seven sites. No sites were located near the present study route (Jimenez 1994).

Archaeological Inventory Survey was conducted south of Pu`uanahulu just east of the Belt Highway at approximately 2,300 foot elevation. Twenty-two sites were recorded including seven burials. No subsurface concerns were noted near or on the present study route (Barrera 1993).

An Archaeological Inventory Survey was conducted at Manini`ōwali/Kūkio 2 near Kaupulehu on Highway 19 at approximately 200 foot elevation. A total of 25 sites was recorded, comprising 1,305 features including 14 human burials. No subsurface concerns were identified near or on the present study route (Pantaleo and Clark 1992).

Archaeological Inventory Survey was conducted on Ka`upulehu mauka lands, identifying 77 sites and 189 features. The sites included the following formal features types: alignments; C-shape; lava tube caves; cupboards; and enclosures. The functional types are temporary habitation; markers; indeterminate; agriculture; storage; and burials. The sites near the present study route consist of a lava tube; cairn; temporary habitation; modified outcrop; C-shape; terrace; cupboard; and temporary habitation/burial (Head, Goodfellow and Rosendahl 1996).

Archaeological Reconnaissance Survey was conducted of Makalawena coastal development area at an elevation of 600-1,200 foot. The survey encountered 49 sites; half of the sites were associated with the former village of Makalawena. The sites included: historical habitation complexes, high walled enclosures, trails, a cemetery, cairns, complex enclosure/cairn, and a modified pond (Donham and Rosendahl 1986).

Archaeological Survey and Evaluation was conducted of lands of Kau North-Kona at approximately 900 foot elevation. A total of 132 sites were recorded, including 25 previously located sites. The typical site types include: agricultural; habitation; markers; trails; and ceremonial sites (Schilz and Shun 1994).

An Archaeological Inventory Survey was conducted on the Queen Ka`ahumanu Highway right-of-way between Palani Road and Keahole Airport. A total of 17 sites was identified, comprising 29 features. Previously identified sites included: the Mamalahoa trail, temporary habitation, terrace, enclosure, wall, and two trails. Newly identified sites included: trails (seven); modified outcrops (four); cairns (three); walls (two), mounds (three); petroglyphs (two); road; and terrace (Walsh and Hammatt 1995).

Archaeological Reconnaissance Survey was conducted of Honokohau II *ahupua`a*, one mile east from Ka`ahumanu Highway at about 60 to 360 foot elevation. A total of 19 features and 13 burials were recorded. The burial sites and structures included: a pre-habitation lava tube, a monumental structure, and a small stone covering a crack/hole (Soehren 1975).

Archaeological Inventory Survey was conducted at Kalaoa, North-Kona at an elevation of approximately 810 to 930 foot. A total of eight sites were encountered; features recorded included such elements of the Kona field system as a stone mound and a rectangular stone wall. One artifact was recovered: half of a coral file. No sites encountered near the present study route (Barrera 1997).

Archaeological Inventory Survey was conducted of Kaloko *mauka* subdivision in North Kona, east of Mamalahoa Highway at an elevation of 2,100 feet. Site features located include: enclosure, lava tube, human burial, mounds, stone wall, and terracing (Nees and Williams 1995).

An Archaeological Inventory Survey was conducted east of Mamalaloa Highway, 4.5 miles from the ocean at approximately 1,800 foot elevation. The survey area was located within the boundary of the Kona field system. One site consisted of 58 features which included various mounds, free standing walls, lava tubes, pre-house sites, and terraces (Barrera 1995).

A Data Recovery for the Kohanaiki Resort was conducted west of the Queen Ka`ahumanu Highway. Thirty-one sites comprising 224 features were encountered. The typical site types included: rock and cave shelters, alignments, walls, enclosures, midden, platforms, terraces, rock mounds, cairns and petroglyphs. Site functions included temporary habitation, ceremonial, burial, and shelters. There were 8 burials, all concentrated in the south portion of the project area, located in rock mounds, caves, and behind a rock wall in a cave. The artifacts recovered included basalt flakes, volcanic glass, coral abraders, sea urchins abraders and fishooks. Historic artifacts included pots, plates, bottles and glass (O'Hara and Rosendahl 1991).

Archaeological Inventory Survey was conducted of Keekee, South Kona, west of Kealakekua Town at 1,200 to 1,400 feet elevation. A total of 94 sites was located, comprising mostly agricultural features which included crude mounds, linear mounds, regular mounds, regular linear mounds, and crude rectangular walls. Habitation features included shelters and platforms (Barrera 1989).

Archaeological Data Recovery was conducted for the new Konawaena School in ʻĀpaʻa which lies south of Kealakekua. Sites noted were elements of the Kona field system and terraces that date to the 1300's which had been abandoned by the early 1800's (Wolforth and Rosendahl 1998).

An Archaeological Inventory Survey was conducted at Onouli subdivision east of Mamalahoa Highway at approximately 800 to 1,350 feet elevation. A total of 57 historic and prehistoric sites were recorded, including: walls; terraces; mounds; alignments; enclosures; platforms; modified outcrops; stepping stone trails; and kerbstone trails. A cave/burial was also recorded (Rosendahl and Jensen 2000).

An Archaeological Reconnaissance Survey conducted on Saddle Road encountered a total of five sites including a wall, two cairns, a rock ahu, and a C-shaped shelter (Barrera 1986).

Archaeological Reconnaissance Survey was conducted at Pohakuloa Training Area. No historic concerns were noted near the present study route (Streck 1984).

Archaeological Data Recovery was conducted at the Pohakuloa Training Area. A total of eight sites were documented, containing 547 artifacts. One site contained a small ash and charcoal hearth that dated to the 1200's (Reinman and Schilz 1994).

An Archaeological Investigation was conducted of two work areas at Pohakuloa Training Area in the saddle region at an elevation of 4,200 to 6,400 feet. A total of 42 sites were encountered during the survey. No archaeological concerns were noted near the present study route (Shapiro and Cleghorn 1998).

Archaeological Inventory Survey and Sub-Surface Testing were conducted on Saddle Road. Four sites were documented, including three previously-located sites: two rock walls and a lava tube shelter. A test pit in the lava tube uncovered deposits dated to the late prehistoric through modern periods and possible earlier deposits. One new site was recorded: a lithic scatter (Welch 1993).

Archaeological Inventory Survey was conducted for Haumakua, North Hilo and South Hilo. A total of 16 sites was recorded. Site types consisted of trails, fences, walls, caves, cairns, and a historic burial (Rosendahl, Langlas, Wolforth, and Head 1999).

An Archaeological Inventory Survey was conducted of Ponoiki, at Puana, located between Highway 130 and the Keaʻau bypass road. A total of three sites was recorded: an historic wall and two lava tubes with human remains (Major and Dixon 1992).

An Archaeological Inventory Survey was conducted of Kea`au, Puana, *mauka* of the Old Volcano Road. One site was documented, which comprised seven mound and rock features (McGerty and Spears 2000).

In the Ka`ū District, Haun and Walker (1987) conducted a reconnaissance survey in Kahuku *Ahupua`a* which included areas immediately adjacent to the south side of Highway 11. While a number of sites were identified (with PHRI temporary numbers) in close proximity to the highway (including # 355 a trail, # 358 a cairn, # 359 a road, and # 360 a wall segment) these sites are not suggestive of significant subsurface deposits in the vicinity.

The South Point area is well known for a number of important archaeological sites that have been described in several studies (Bonk 1954, Emory *et al.* 1969, Kelly 1969, Ladd & Kelly 1969, Underwood 1969, Sinoto & Kelly 1975) but the sites described do not lie adjacent to the South Point Road. There have however been a number of smaller studies of areas adjacent to the road.

Cordy (1986), Tomonari-Tuggle & Tuggle (1991) and Spear & Rosendahl (1987) carried out studies at the Pu`u`eo Agricultural Lots (Kamaoa Homesteads) adjacent to the east side of the South Point Road at the 1200 foot to 1400 foot elevation but no sites were identified adjacent to the road.

Soehren (1984) carried out a study at the Kamoa Homesteads adjacent to the west side of the South Point Road at the approximately 960 foot elevation identifying numerous features including cattle walls and graves but no sensitive sites were identified adjacent to the road.

Price-Beggerly (1987) studied the Pacific Missile Range Facility on the west side of the South Point Road at 320 foot elevation but no subsurface concerns along the road are indicated.

M. Rosendahl (1979) carried out subsurface testing on the southeast side of the South Point Road at approximately 80 foot elevation just south of the junction with the road to Lua Makalei. No subsurface concerns along the road are indicated.

On Highway 11, Kelly and Crozier (1972) carried out studies in Waiohinu Town documenting the historic importance of this area and the potential for subsurface deposits.

Kennedy (1987) carried out subsurface testing at a parcel on the south side of Highway 11 just east of Na`alehu Town. No subsurface concerns along the present study route are indicated.

Ayres (1970) carried out studies of a coastal area on the southeast side of Highway 11 extending northeast from the Honuapo Bay pier to the Hokukano border identifying over 200 sites. While a site map was unavailable, Ayres work emphasizes the archaeological potential of this area.

III. ASSESSMENT AND DISCUSSION

Based on the research procedures detailed in sections I and II above, and on a field inspection of the study route on December 9 and 10, 2000, all portions of the study route have been evaluated based on four categories representing varied potential for yielding subsurface archaeological resources. The four categories are:

LOW	Low potential for subsurface deposits. This assessment is based on historic and archaeological data, soil survey data, and the absence of Land Commission Award parcels in the vicinity.
MODERATE	Area of known cultural activity but, based on other factors, probability of encountering archaeological resources is only moderate. Other factors include information in the soil survey and the history of ground disturbance in the area.
HIGH	Area contains sand and/or Land Commission Awards. Also present are historic properties, based on historic and archaeological data.
VERY HIGH	Area contains known burials or cultural layers.

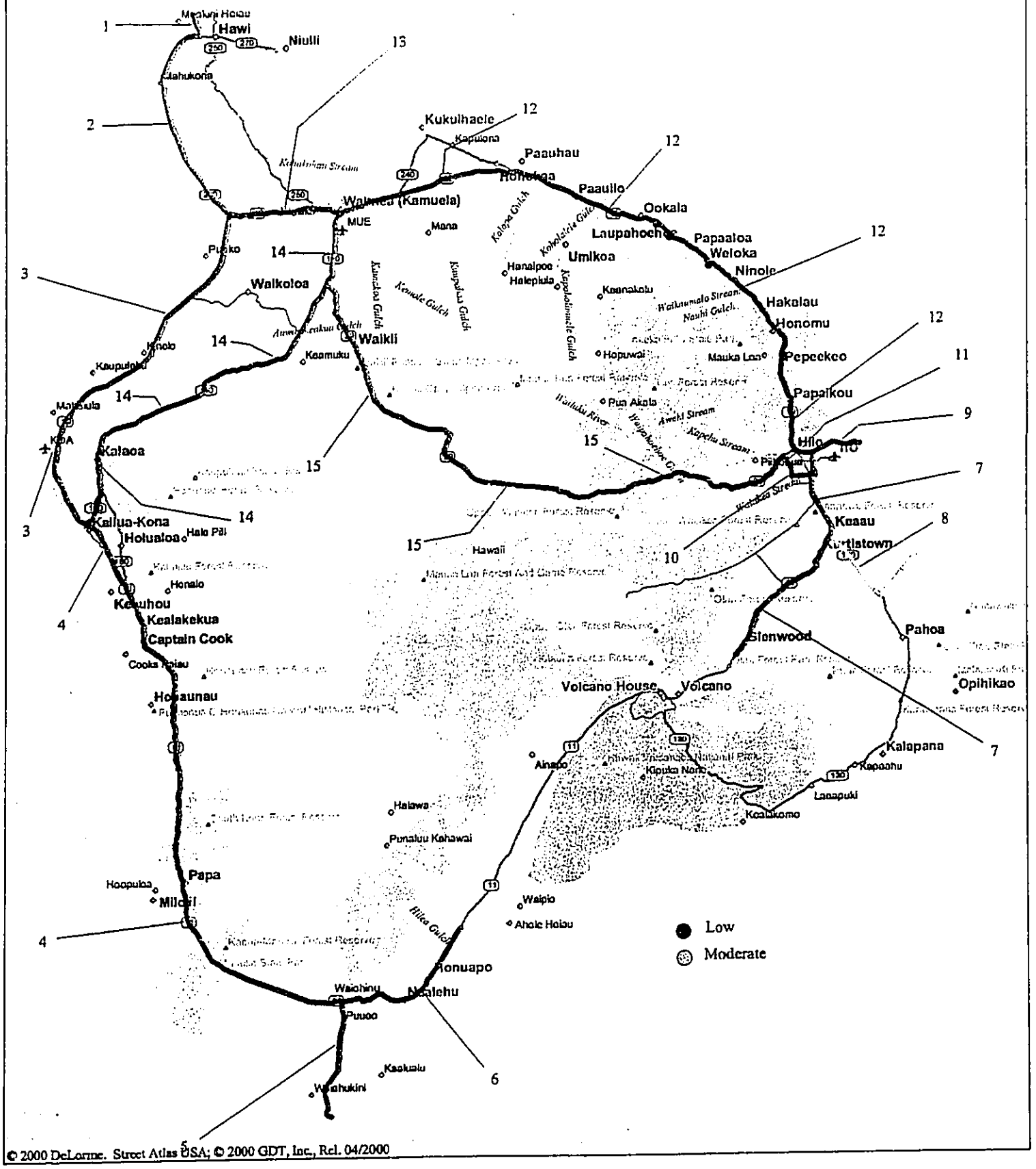
The study route has been subdivided into fifteen sections. Fourteen of the sections have been assessed as having low potential for encountering subsurface deposits. One section has been assessed has having moderate potential. None of the sections of the Hawai`i Island route were assessed as having high or very high potential.

Figure 9 identifies the fifteen sections of the study route that have been identified and assessed. Each of the sections is discussed below.

Section 1 — Commencement of route on Upolu Point Road at the intersection with Hoea Road southeast to the intersection with Akoni Pule Highway (270) — 2.0 miles (3.2 kilometers) — LOW POTENTIAL

The Upolu Point Road is a paved road that extends downhill from Akoni Pule Highway toward Upolu Point. The road runs through lands disturbed by decades of commercial sugar cultivation. The route runs over typical ash-derived soils of the Kohala District that are unlikely to contain the intact cultural deposits that are the specific concern of this study. Additionally, no surface sites were observed in the vicinity during the field inspection. Based on these factors, the potential to encounter historic properties is assessed as low in Section 1.

Figure 9 Hawai`i Island: color-coded sections of route (*Scale 1in.=11miles*)



Section 2 Akoni Pule Highway (270) from the intersection with Upolu Point Road southwest and south to Kawaihae at the junction with Kawaihae Road and Queen Ka`ahumanu Highway (19) — 18.4 miles (29.6 kilometers) — LOW POTENIAL

Throughout Section 2, Akoni Pule Highway is a very wide two-lane roadway with wide road shoulders. It is often fenced off on either side. The northern portion of Section 2 runs through lands disturbed by former commercial sugar cultivation but which have since reverted to pasture land. The highway runs well *mauka* of the coastal areas (where permanent traditional habitation sites would have been located) until Mahukona. No surface archaeological sites were observed in the vicinity of the northern portion of the section during the field inspection.

South past Mahukona toward Kawaihae, the highway runs parallel to the coastline. The highway construction in this area involved significant cut and fill, and new bridges. There has also been recent construction along this portion of Section 2 related to new subdivisions around Kohala Ranch Estates. There may be archaeological sites in the vicinity of the highway in this portion, however most of the significant sites documented in previous archaeological studies are located well *makai* of the highway, along the shoreline itself. The southern portion of Section 2 runs along the interface of the coastal zone (where habitation and related activities were located) and the less intensively utilized intermediate zone. *Mauka* of the highway, surface archaeological site density has been documented as low. No evidence of subsurface sites in proximity to the route was noted during the field inspection.

Section 2 passes through Kawaihae Town where several archaeological studies have been conducted. In this area surface burial sites are located in proximity, on the *mauka* side of the route. Additionally, there is a modern cemetery where burials — encountered during construction of the Kawaihae Harbor — were relocated on the *mauka* side of study route. The burials are clearly marked and are separated from the road by the road shoulder and a rock wall. These are all recent reinterments. The cemetery is not an older one where there might be the possibility of burials inadvertently covered by road construction.

Two significant archaeological sites are located along the southern end of Section 2: Pu`u Koholā *heiau* and the residence of John Young. However both are well away from the road.

No surface evidence of any Land Commission Awards (LCAs) identified as located in proximity to Section 2 were observed during the field inspection.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 2.

Section 3 Queen Ka`ahumanu Highway (19) southwest and south to the intersection with Palani Road (190) in Kailua-Kona — 33.5 miles (53.9 kilometers) — LOW POTENTIAL

Queen Ka`ahumanu Highway in Section 3 is a fairly modern roadway with wide shoulders for which specific archaeological investigations were conducted, related to its construction. There are archaeological sites that have been identified in proximity to road but they are clearly outside the paved area of the road. The highway in this section also has large and well-maintained shoulders, likely necessitated for use during the Kona Ironman Triathalon. Any surface sites formerly within the highway corridor — such as trails, *ahu*, or burial mounds — would already have been dealt with and removed during construction of the highway and the extended road shoulders.

Section 3 runs across fairly young lavas. There are extensive exposures of bedrock — both pahoehoe and`a`a lavas — reducing the concern for subsurface sites through this section. There may be concerns for lava tubes but the shallow excavation indicated for the fiberoptic cable would preclude impact to these tubes.

One of the archaeological sites closest to the highway is in Honokohau where the Mamalahoa Trail gets cut by the present highway. The trail is well off of the road shoulders and fairly recent studies by Cultural Surveys Hawai`i related to the Kaloko-*Honokohau Park entrance* have already documented the trail in this area.

Based on the above factors, the potential to encounter historic properties is assessed ans low in Section 3.

Section 4 South on Queen Ka`ahumanu Highway to the junction with Kuakini Highway then continuing south on Kuakini Highway (11) and the Mamalahoa Highway/Hawai`i Belt Road (11) to the intersection with South Point Road — 52.4 miles (84.3 kilometers) — LOW POTENTIAL

In the northern portion of Section 4, Queen Ka`ahumanu Highway is very recent construction for which two major archaeological reports were generated. A large burial complex was documented immediately adjacent to the *makai* side of the highway at Keopu, just south past Henry Street. The burials — both prehistoric and historic — were in a swale that contained fairly soft ash-derived soils. Prior to the construction of the highway, the burials were removed and reinterred elsewhere. The area was then subjected to much cut and fill activity to create the highway which runs fifteen to twenty feet higher than the original surface where the burials were located. The shallow excavation indicated for the fiberoptic cable would only extend into this cut and fill material, and would not affect the original area where the burials were located.

Cut and fill activity for construction of the route was observed during the field inspection throughout the North and South Kona districts. There are significant cuts on

the upslope side of the route through this portion of Section 4. As the route continues south it passes through the old upcountry towns of Honalo, Kainaliu, Kealakekua and Captain Cook. These were major centers of habitation — related to coffee-growing — through the second half of the 19th century and into the 20th century as traditional coastal habitation areas were abandoned. As noted in the previous section of this report, numerous Land Commission Awards have been identified as located along this portion of the Mamalahoa Highway. No material associated with any of these awards was observed within the road corridor during the field investigation. It appears that the modern road work through this area — entailing road cuts and fills, widening, and repaving — has effectively eliminated the possibility that intact deposits, including historic trash pits, remain immediately beneath the road surface.

South past Honaunau, the Hawai`i Belt Road through South Kona is an older winding roadway but any archaeological concerns in the area are likely to be surface sites and none were observed adjoining any unpaved portions of the road. Historic lava flows are documented to have crossed the road in this section, further lessening the possibility that intact historic deposits are presently located immediately beneath the road surface.

Crossing south into the Ka`u District the route straightens, becoming a wide roadway with wide shoulders. No problems are indicated in this area if excavation for the fiberoptic cable line is confined within the road shoulder. Through Hawaiian Oceanview Estates, Section 4 is a fairly new road over exposed lavas — pahoehoe and `a`a — where no archaeological sites were observed in proximity through to the intersection with South Point Road.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 4.

Section 5 South Point Road from Mamalahoa Highway to southern route terminus — 10.8 miles (17.4 kilometers) — LOW POTENTIAL

South Point Road in Section 5 is a single-lane asphalted roadway, with very old asphalt in places, through open pasture lands. There was no cut or fill observed during the field inspection. The road was constructed at grade which comprises exposed ash-derived soils. As it runs south from the Belt Road, the Section 5 route bends toward the southeast toward Green Sand Beach, avoiding the more highly-sensitive area near Pu`u Ali`i where a *heiau* and burial ground are located. Concrete foundations related to a former military installation located in the area were observed on either side of the road during the field inspection. However, these are modern remnants and are not of current historic concern.

No evidence remains of any of the Land Commission Awards identified as located along South Point Road.

Based on the lack of any evidence of possible subsurface deposits, the potential to encounter historic properties is assessed as low in Section 5.

Section 6 **East and northeast on Mamalahoa Highway/Hawai`i Belt Road (11) from the intersection with South Point Road to the southeastern route terminus at Punalu`u — 12.3 miles (19.9 kilometers) — LOW POTENTIAL**

The Belt Road in Section 6 east of South Point Road is a two-lane roadway with wide shoulders. The road runs through the historic town of Waiohinu, a scene of much mid-1800s activity, as evidenced by Land Commission Awards for *kuleana* lands and records of missionary endeavors. The related archaeological concerns in this area would include surface sites or known cemeteries. None were observed in the course of the field inspection. A large church was noted at the main bend in the highway in Waiohinu. The church is separated from the road by a wide lawn and a rock wall, and is unlikely to be impacted by any activities associated with the fiberoptic installation.

Through Na`alehu Town, modern road improvements and modern houses on both sides of the road were observed, continuing to indicate that intact subsurface deposits are unlikely. Past Na`alehu, Section 6 extends onto the flats near Honoapo. This was an area of major traditional and historic activity. There are brackish water ponds and secure canoe launching areas on the *makai* side. The area was also the site of one of the first major sugar companies in the islands. No indications of traditional activities are currently visible. Modern agriculture — a hay field — still occurs on *mauka* side of the road. The road itself extends over exposed lavas. The only site types anticipated in this area would be surface sites which would have long been removed within the road corridor itself.

No evidence remains of any of the Land Commission Awards identified as located in the vicinity of Section 6.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 6.

Section 7 **Mamalahoa Highway/Hawai`i Belt Road/Volcano Road (11) northeast then north from Glenwood through Mountain View and Keaau, then east on East Kawailani St., then north on Ahuna Rd., then then west on East Kahaopea St., then north on Kanoelehua Ave./Hawaii Belt Road to the intersection with Kamehameha Avenue in Hilo — 36.4 miles (22.6 kilometers) — LOW POTENTIAL**

Section 7 from Glenwood runs along one of the best maintained and most traveled roadways between the volcano area and Hilo Town. The Mamalahoa Highway/Hawai`i Belt Road/Volcano Road is major two-lane roadway through Kurtistown with wide shoulders, some road cuts, and major drainages on both sides.

No surface archaeological sites were observed in proximity to the roadway during the field inspection. The area around Glenwood would have been lightly-used forest area during traditional Hawaiian times.

Past Keaau Town the Belt Road becomes a four-lane divided highway through urban areas that include business districts, residential subdivisions, and shopping malls on both sides of the roadway. Construction activities related to the highway construction and to the adjacent urban development has likely removed any possibly intact deposit beneath the road surface through this area.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 7.

Section 8 In Keaau, southeast on Star Route 130 from the intersection with Volcano Road (11) to Makuu St., then northeast on Makuu St. to the intersection with Ala Hele Puna — 11.3 miles (18.2 kilometers) — LOW POTENTIAL

Section 8 was observed during the field inspection to comprise a brand-new roadway with very large road shoulders, which included a portion that had just recently been opened. The section runs through areas that were formerly in sugar cane cultivation around Keaau Town. Southeast of Keaau, through the Hawaiian Paradise Park subdivision, the route runs through non-cane lands — very rough and rocky. As the route proceeds northeast, it runs on Makuu Street, a two lane, paved subdivision road. There are occasional houses on both sides of the road. No indication of archaeological sites was observed along any portion of Section 6 and there was no evidence to indicate the presence of subsurface deposits.

Based on the above factors, the potential to encounter historic properties is assessed as low for Section 8.

Section 9 East on Kamehameha Avenue from the intersection with Highway 11 to the intersection with Kalaniana`ole Avenue, then northeast on Kalaniana`ole Avenue to the route terminus at Kapoho Coast Road — 4.3 miles (6.9 kilometers) — MODERATE POTENTIAL

Section 9 runs through an area generally referred to as Keokaha where social issues have been well-publicized in the recent past. The western half of Section 9 passes through a light industrial area of Hilo where there is no likelihood of intact deposits beneath the road surface.

Present almost continuously along both sides of Kalaniana`ole Avenue east of the industrial area are brackish water ponds, a number of which have names. The route in this area is a well-paved road with wide shoulders and clearly marked storm drains. The ponds are surrounded by exposed pahoehoe lava, minimizing the possibility of any subsurface deposits associated with former traditional usage of the ponds.

However, because the ponds were likely an area of traditional usage and because of possible community concerns associated with the Keokaha area, the potential to encounter historic properties is assessed a moderate for Section 9.

Section 10 West on West Kawailani St. from the intersection with Kanoelehua Ave./Hawaii Belt Road to the intersection with Komohana St., then northwest on Komohana St. to the intersection with Kaumana Drive — 3.8 miles (6.0 kilometers) — LOW POTENTIAL

Section 10 on West Kawailani Street runs through an older residential area. The street itself is a fairly narrow roadway friged by overhead power lines. No archaeological sites were observed during the field inspection and there was no evidence noted of any possible subsurface deposits beneath the route.

Komohana Drive in Section 10 is a fairly new road with wide shoulders accessing new subdivisions, and new sections of the University of Hawai'i-Hilo. At the time of the field inspection (December 10, 2000) Komohana Drive was blockaded at Mohouli Street, beyond which the road had been cut by recent flooding of Alenaio Stream. However, all indications along the inspected areas of Komohana Drive suggest that no subsurface deposits are present beneath this modern road construction.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 10.

Section 11 West on Kamehameha Avenue (19) from the intersection with Kanoelehua Ave./Hawaii Belt Road (11), then continuing west on Bayfront Highway/Hawaii Belt Road (11) to the Wailuku River Bridge — 1.8 miles (2.8 kilometers) — LOW POTENTIAL

Section 11 on Kamehameha Avenue and Bayfront Highway/Hawai'i Belt Road along the coast *makai* of Hilo Town goes over black sand deposits. However, based on the history of the shoreline — the record of tidal waves, flooding, subsequent reconstructions of the road (including the armor rock placed on the ocean side of the road to retain the road) — it is unlikely that any intact subsurface deposits remain beneath the road itself. Additionally there have been no reports of any burials eroding out of the sand in this area. No evidence remains of any of the Land Commission Awards identified as located *mauka* of Section 11 in Hilo. Based on these factors, the potential to encounter historic properties is assessed as low for Section 11.

Section 12 **Beginning at the Wailuku River Bridge, north and northwest on Bayfront Highway/Hawaii Belt Road (11) and the Mamalahoa Highway/Hawai`i Belt Road (19) above the Hamakua Coast to Honoka`a, the southwest on the Hawai`i Belt Road (19) into Waimea Town to the intersection with Lindsey Road — 54.6 miles (87.9 kilometers) -- LOW POTENTIAL**

The portion of the Section 12 route that runs above the Hamakua coast is constructed on lands that have been disturbed by decades of sugar cane cultivation. Additionally, the construction of the belt road in this area entailed much cutting and filling, and the construction of bridges spanning major gulches. No surface archaeological sites or evidence of associated subsurface deposits were observed during the field inspection along any portion of this section. Although numerous Land Commission Awards (LCAs) are identified as located along this portion of Section 12 no evidence of these LCAs was observed during the field inspection. It is likely that decades of commercial sugar planting and the construction and modernization of the Belt Road have removed all remains associated with these awards.

Past Honoka`a and turning west toward Waimea Town, the Section 12 route continues to be a well-maintained roadway with wide shoulders and culverts. Commercial agriculture or open pasture land was observed. The predominant archaeological concern in this area would be surface sites. Cultural Surveys Hawai`i has completed archaeological inventory surveys in this area; no significant sites were recorded. There are historic water features related to the Hamakua Ditch System in this area but none were observed in any proximity to the route in Section 12.

Adjacent to the route in Waimea Town are several churches. The cemeteries associated with these churches are located behind the churches, away from the route, and are thus not of specific concern. There is a family burial plot in Waimea Town very close to the road. However it is isolated from the road by a high rock wall, and by a sidewalk and the road shoulder.

No evidence remains of the Land Commission Awards identified as located adjacent to the study route in Waimea Town.

Based on the above factors, the potential to encounter historic properties ias assessed as low in Section 12.

Section 13 **West on Lindsey Road and Kawaihae Road from the intersection with the Hawaii Belt Road (19) to the junction with Akoni Pule Highway (270) and Queen Ka`ahumanu Highway (19) — 9.9 miles (15.9 kilometers) — LOW POTENTIAL**

Section 13 of the study route extends into the very dry Kawaihae environment. Along the Waimea portion of the section were both historic and prehistoric habitation sites.

No evidence remains of the Land Commission Awards identified as located in the Waimea portion of Section 13. It likely that the construction, reconstruction, regrading, widening of the road over many decades have clearly removed or obliterated evidences of these awards and of subsequent historic habitation, including trash pits, within the corridor.

Near the intersection with the road to Hawi there have been archaeological sites reported in the vicinity of the route but not within the route itself. Below Waimea, the route goes through the Lalamilo agricultural field system, visible on both sides of the road but not within the road corridor itself. As Section 13 descends through the newer subdivisions of Sandalwood and South Kohala View Estates the environment gets drier and drier. No habitation sites have been recorded in any proximity to the Kawaihae Road in this dry region. The road itself is fairly winding but has been improved recently with fairly wide shoulders and guard rails, indicating a lessened possibility that any intact subsurface deposits are present.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 13.

Section 14 South and southwest on Mamalahoa Highway (190) from the *intersection with Lindsey Road in Waimea Town, past the junction* with Saddle Road, through Pu`uanahulu and Kalaoa, then on Palani Road to the intersection with Queen Ka`ahumanu Highway in Kailua-Kona — 38.7 miles (62.2 kilometers) — LOW POTENTIAL

South of Waimea Town, Section 14 passes through an area where previous archaeological studies have reported on the Lalamilo agricultural field system and associated habitation sites. This portion of Section 14 on Mamalahoa Highway was investigated during the field inspection. Road construction was observed to have involved much cut and fill. There is actually a low berm through much of this portion. No field walls or similar constructions abut the road. There is no concern that the cable project would encounter agricultural deposits or habitation deposits in this portion.

For an extended period, the Section 14 route was the only roadway through this part of the island before the construction of the Queen Ka`ahumanu Highway. The northern portion of the Section 14 route has gone through a number of changes over time. South of the intersection with Saddle Road there are areas where the old macadamized road is visible off the side of the present roadway. Areas were checked to see if any future trenching activities would affect any of the old sections. No places were observed where such activities in the shoulder of the present highway would impact the old road.

There may be surface sites in the vicinity of the north portion of Section 14 between the Saddle Road intersection and Pu`uanahulu but none were observed during the field inspection. The road itself is very well-defined in this area. The road is isolated from the surrounding terrain — rough pasture land and areas of exposed lava — by corridors along both road shoulders that have been graded for the construction of fences or walls to keep

cattle away from the road. These construction activities all lessen the likelihood that intact subsurface deposit are present in this portion of Section 14.

In the Pu`uanahulu area there are homestead lands and parcels where crews of Pu`u Wa`awa`a Ranch and Pu`uanahulu Ranch lived that date to the late 19th century and early 20th century. There are known family burial plots in this area, however they are well away from the Mamalahoa Highway. While this is an area of long-term habitation — with sites including historic house sites, burials, and *heiau* in the vicinity — specific to the Mamalahoa Highway itself, there is no previous archaeological record or evidence identified during the field inspection to indicate that intact subsurface deposits related to any of these sites are present beneath the highway.

South from Pu`uanahulu, Section 14 winds through open pasture land until the vicinity of Pu`uhue Ranch. Much evidence of cut and fill activity for the construction of the road was observed during the field inspection. Along this portion of Section 14, there is typically a cut embankment on the upslope side. Further south through more recent residential subdivisions around Kalaoa, the Mamalahoa Highway becomes a much more modern, improved road with wider shoulders. The highway is similarly modern as the route continues onto Palani Road. Modern subdivisions line both sides of Palani Road which is demarcated by rock walls on its sides. The types of archaeological sites of concern in this area would have been surface sites, none of which remain within the road corridor or adjacent to it. Lava tubes are possible in this area but the shallow depth of project excavation for the fiberoptic project precludes any impact to these features.

No evidence remains of any Land Commission Awards identified as located along the southern portion of Section 14. It is likely that the modern development of the lands surrounding the route and the construction and modernization of the roadway itself have eliminated any intact subsurface remains that may have been associated with these awards.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 14.

Section 15 Southeast and east on Saddle Road from Mamalahoa Highway (11), then onto Kaumana Road to the intersection with Komohana Avenue in Hilo — 52.6 miles (84.7 kilometers) — LOW POTENTIAL

Saddle Road runs through an area that would have been very sparsely populated, if at all, during traditional times. There were trails to and from Mauna Kea and Mauna Loa through the area, and one or more of them may have corresponded to portions of the present Saddle Road alignment. Some surface archaeological sites have been recorded in the vicinity of the state park along the road.

There is an old historic habitation area related to the Parker Ranch's hiring of Russian immigrants to grow corn in Waiki`i. Apparently a few lava tubes in the vicinity of

Waiki`i were used as trash pits. However, these tubes are well off the road and not associated with the road at all.

From the state park east of the Pohakuloa Training Area, toward Hilo through the Kaumana area, much of the Saddle Road has been improved. At the higher elevations the road is constructed on exposed pahoehoe lava. Not until it descends to the Kaumana area does there appear dense vegetation on both sides of the road.

On Kaumana Road the surrounding environment is increasingly urban with residences, schools, and parks along side the road. No extant surface archaeological sites with associated subsurface deposits are likely through any portion of Section 15.

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 15.

IV. RECOMMENDATIONS

As detailed above, the 335-mile study route on Hawai`i Island has been divided into fifteen sections. Each section was assessed, based on a scale of four levels of potential — low, moderate, high, or very high — for presence of subsurface historic properties. As was also detailed above, fourteen of the sections have been assessed as having low potential for encountering subsurface deposits. One section has been assessed has having moderate potential. None of the sections of the Hawai`i Island route were assessed as having high or very high potential.

It should be emphasized that the "low potential" assessment does not imply that there is no possibility of encountering subsurface deposits within a section. This assessment refers only to a lessened possibility relative to other areas where documented evidence would suggest a heightened potential. It should also be emphasized that the specific focus of this study is a limited portion of roadway and shoulders/rights-of-way through areas that have already been altered to varied degrees by construction of the road itself. The majority of the roadways comprising the study route were originally constructed before state and federally mandated protective measures for historic resources were set in place. The result is that for most of the study route no documentation exists of any such resources that may have been encountered during road construction.

The following recommendations are suggested for the two levels of archaeological concern:

LOW

Based on the low potential for subsurface deposits, no further archaeological work is recommended in the following sections of the study route:

Section 1 — Commencement of route on Upolu Point Road at the intersection with Hoea Road southeast to the intersection with Akoni Pule Highway (270)

Section 2 — Akoni Pule Highway (270) from the intersection with Upolu Point Road southwest and south to Kawaihae at the junction with Kawaihae Road and Queen Ka`ahumanu Highway (19)

Section 3 — Queen Ka`ahumanu Highway (19) southwest and south to the intersection with Palani Road (190) in Kailua-Kona

Section 4 — South on Queen Ka`ahumanu Highway to the junction with Kuakini Highway then continuing south on Kuakini Highway (11) and the Mamalahoa Highway/Hawai`i Belt Road (11) to the intersection with South Point Road

Section 5 — South Point Road from Mamalahoa Highway to southern route terminus

Section 6	East and northeast on Mamalahoa Highway/Hawai`i Belt Road (11) from the intersection with South Point Road to the southeastern route terminus at Punalu`u
Section 7	Mamalahoa Highway/Hawai`i Belt Road/Volcano Road (11) northeast then north from Glenwood through Mountain View and Keaau, then east on East Kawailani St., then north on Ahuna Rd., then then west on East Kahaopea St., then north on Kanoelehua Ave./Hawaii Belt Road to the intersection with Kamehameha Avenue in Hilo
Section 8	In Keaau, southeast on Star Route 130 from the intersection with Volcano Road (11) to Makuu St., then northeast on Makuu St. to the intersection with Ala Hele Puna
Section 10	West on West Kawailani St. from the intersection with Kanoelehua Ave./Hawaii Belt Road to the intersection with Komohana St., then northwest on Komohana St. to the intersection with Kaumana Drive
Section 11	West on Kamehameha Avenue (19) from the intersection with Kanoelehua Ave./Hawaii Belt Road (11), then continuing west on Bayfront Highway/Hawaii Belt Road (11) to the Wailuku River Bridge
Section 12	Beginning at the Wailuku River Bridge, north and northwest on Bayfront Highway/Hawaii Belt Road (11) and the Mamalahoa Highway/Hawaii Belt Road (19) above the Hamakua Coast to Honoka`a, the southwest on the Hawaii Belt Road (19) into Waimea Town to the intersection with Lindsey Road
Section 13	West on Lindsey Road and Kawaihae Road from the intersection with the Hawaii Belt Road (19) to the junction with Akoni Pule Highway (270) and Queen Ka`ahumanu Highway (19)
Section 14	South and southwest on Mamalahoa Highway (190) from the intersection with Lindsey Road in Waimea Town, past the junction with Saddle Road, through Pu`uanahulu and Kalaoa, then on Palani Road to the intersection with Queen Ka`ahumanu Highway in Kailua-Kona
Section 15	Southeast and east on Saddle Road from Mamalahoa Highway (11), then onto Kaumana Road to the intersection with Komohana Avenue in Hilo

MODERATE

An area deemed of moderate potential for encountering archaeological resources is recommended for a monitoring program with on-call monitoring. Spot checking or on-call

monitoring with a cultural monitor are other options. The section of the route where this recommendation is applicable is:

Section 9	East on Kamehameha Avenue from the intersection with Highway 11 to the intersection with Kalaniana`ole Avenue, then northeast on Kalaniana`ole Avenue to the route terminus at Kapoho Coast Road

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