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MEMORANDUM

TO: The Honorable Brian J. J. Choy
Office of Environmental Quality Control

FROM: William W. Paty, Chairperson
Board of Land and Natural Resources

SUBJECT: Document for Publication in the OEQC Bulletin
Environmental Assessment for After-the-Fact Conservation
District Use Application OA-2501 for a Telecommunication
Facility, Honouliuli Forest Reserve, Oahu
TMK: 9-2-05: 13

The above mentioned Chapter 343 Document was reviewed and a negative declaration was declared based upon the environmental assessment provided with the CDUA.

Please feel free to call me or Ed Henry of our Office of Conservation and Environmental Affairs, at 548-7837, if you have any questions.

WILLIAM W. PATY

194

1991-11-08-OA-FEM

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ENVIRONMENTAL ASSESSMENT REPORT
CDUA APPLICATION NO. OA 7/22/91-2501

PROPOSED TELECOMMUNICATIONS FACILITIES

HONOULIULI FOREST RESERVE, OAHU, STATE OF HAWAII
TMK: 9-2-05: Por. 13

Prepared by:
Tyrone T. Kusao, Inc.
1188 Bishop Street, Ste. 2202
Honolulu, Hawaii 96813

October, 1991

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ENVIRONMENTAL ASSESSMENT REPORT
CDUA APPLICATION NO. OA-7/22/91-2501
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HONOULIULI FOREST RESERVE, OAHU, STATE OF HAWAII
TMK: 9-2-05: Por. 13.

I. INTRODUCTION.

Pursuant to Chap. 343, Hawaii Revised Statutes, and in accordance with Title 11, Chap. 200, Environmental Impact Statement Rules for applicant actions, this environmental assessment report is prepared and presented in connection with State Conservation District Use Application No. OA-7/22/91-2501 for Telecommunication Facility at Honouliuli Forest Reserve, Oahu, Hawaii.

II. BACKGROUND.

In July, 1991, an after-the-fact CDUA permit application (OA-7/22/91-2501) was submitted on behalf of applicants McCaw Telepage, Hawaii Public Radio and KFVE-TV for the installation and operation of communication equipment at the existing KFVE-TV transmitter building and tower in the State Conservation District (Subzone: Resource). The application was accepted for processing by the State Department of Land and Natural Resources (DLNR) in August, 1991.

The land in question is owned by Campbell Estate, is within the Honouliuli Forest Reserve and is identified as TMK 9-2-05: Por. 13. The existing use is a Conditional Use within the Resource Subzone of the Conservation District.

Western System, Inc. (KFVE-TV), McCaw Telepage (McCaw) and Hawaii Public Radio (KHPR) jointly shared the expense of constructing the existing transmitter building, tower, and emergency generator installed in late 1987, early 1988 for joint use. Each entity entered into leases with Campbell Estates (the land owner).

KFVE-TV was granted a Conditional Use Permit (File No. OA-6/22/87-2047). A 560 square foot building and a 200-foot tower were constructed. Shortly thereafter a generator was installed at the site. The Permit allowed for, "the co-location, when possible, of other users" and the assumption was made by McCaw and KHPR that the Permit additionally covered McCaw's and KHPR's use of the site and facilities.

After the completion of construction, KFVE-TV began broadcast operations with the installation of equipment and antennas within the project site. McCaw followed in November 1988-89 by installing several antennas. KHPR also installed antennas in October, 1989. In 1990, the DLNR notified Campbell Estates, KFVE-TV, McCaw and

KHPR that McCaw and KHPR were not authorized to operate their aforementioned equipment within the project site under the KFVE-TV CDUA Permit No. OA 6/22/87-2047. Application No. OA 7/22/91-2501 was submitted to obtain the necessary CDUA permit for McCaw's and KHPR's equipment and to obtain the approval of future anticipated additional use of the facilities.

McCaw and Hawaii Public Radio and KFVE-TV serve the public by providing communications related services. KFVE-TV is a voluntary participant in the State's Emergency Broadcast System to provide Civil Defense Bulletins to the public.

McCaw Telepage is a Radio Common Carrier, Public Utilities Commission regulated, Federal Communication Commission licensed subsidiary of McCaw Cellular Communication, Inc. The services provided include Mobile Radio, Paging and a Marine Operator to the public of the State of Hawaii. Paging has become the major emphasis and serves the federal, state and counties of Hawaii, as well as every professional and business endeavor. To provide such services requires a system to control the many transmitters located throughout the islands which only provide coverage in a limited area. In the majority of instances, a direct line-of-site between the control transmitters and remote paging transmitters is necessary to allow reception of the control signal. The location of the KFVE site is one of the key points to establishing such a system.

Hawaii Public Radio is a private (not-for-profit) corporation chartered under Hawaii's law to own, administer and operate non-commercial, educational radio stations licensed by the Federal Communications Commission (FCC). Oahu's growing population and restrictions in the City's Land Use Ordinance make the Palehua site one of the few places on the island suitable for the installation of new radio transmitters. FM radio, like television, can achieve maximum coverage of its service area from placement of the transmitter in elevated locations. The elevation at the site, over 2,000 feet, is ideally suited for FM operation.

The location of the facilities was chosen for broadcast effectiveness. The specific site was selected for several reasons, including:

- * On-site power via an existing HECO overhead line and the generator which was installed.
- * Remoteness from residential districts, enabling security and public safety.
- * Presence of an existing, graded road, building, and tower.
- * A location that allows the maximum amount of unrestricted

coverage of Oahu and the neighboring islands.

- * Established use of the area for communications facilities.

Existing communications towers and other facilities are already concentrated in the vicinity.

III. ESSENTIAL INFORMATION.

Applicant:

McCaw Telepage, Hawaii Public Radio and KFVE-TV.

Landowner:

James Campbell Estate.

General Site Information:

Location:	Honouliuli Forest Reserve, Waianae Mountains. (See Exhibit 1).
Tax Map Key:	TMK: 9-2-05: Parcel 13.
Parcel Area:	Approximately 17,600 square feet.
Conservation Subzone:	Resource.
City Development Plan Designation:	Preservation.
Existing Easements & Restrictions:	Hawaiian Electric Company power line and GTE Hawaiian Tel. telephone easements.
Nearest Landmark:	Mauna Kapu (Approx. 0.5 mi. north)
<u>Permit Application:</u>	Conservation District Use Application (CDUA).
<u>Type of Use Requested:</u>	Conditional Use.
<u>Term of License:</u>	June 1987-June 1997, with option for renewal.
<u>Proposed Use:</u>	Operation of Radio Frequency Communications and Radio/TV Broadcast equipment.

Approving Agency: Department of Land and Natural Resources, State of Hawaii.

Agencies Consulted:

The reported results of KFVE-TV's existing CDUA were reviewed. As the facilities (building, tower, and generator) already exist and no additional new construction is being requested, no agencies were consulted.

Compliance With Hawaii Coastal Zone Management (Special Management Area) Requirements:

Discussion between the Applicant's agent and the City Department of Land Utilization staff confirm that the site is outside the Special Management Area (SMA) and, therefore, is exempt from the provisions of the SMA ordinance and regulations. Formal confirmation has been requested from the Department of Land Utilization by letter dated October 2, 1991.

IV. GENERAL DESCRIPTION OF PROJECT'S TECHNICAL, ECONOMIC, SOCIAL AND ENVIRONMENTAL CHARACTERISTICS.

The following discussion summarizes the proposed project, its related actions, the physical environment in which they will occur, and the project technical characteristics. Exhibit 2 shows (1) existing antennas on the KFVE TV transmitter tower which already have the required government approvals; (2) all existing antennas on the tower; and (3) proposed future antennas on the tower.

KFVE TV

KFVE TV - proposes to expand its coverage to the outer islands. This expansion project involves two microwave radio relay facilities between islands. These microwave relay points will hub through the Palehua transmission tower. Additionally, KFVE TV desires to add a news gathering system capability for the production of live television news, both locally and eventually a state-wide news gathering capability.

The construction of this system involves the addition of four antennas on the existing communication tower on Palehua Ridge (See Exhibit 2). Two of the antennas will be of standard parabolic design (dishes). One will point toward the island of Kauai and another will be directed towards Honolulu. The antenna directed towards Honolulu will be a steerable receive only antenna. In addition to the microwave relay antennas two small 2-way radio communication antenna will be installed. These 2-way radio system will enable all of the news gathering vehicles to communicate with each other.

MCCAW TELEPAGE

MCCAW TELEPAGE - proposes to install equipment necessary (receivers, transmitters, combiners, multicouplers and associated antennas) for the reception and re-transmission of: (1) radio frequency control signals to the Paging transmitters located on the island of Oahu and Kauai, (2) Paging transmitters located on the site providing coverage to the south-west portion of Oahu. This will be accomplished by installing the equipment in the west room of the existing KFVE site building and the antennas on the tower at location shown in Exhibit 2.

The specific frequencies (in megahertz) to be operated:

	Receive	Ante.#	Transmit	Ante#
Control	1) 959.8625	6	75.42 & 75.78	1 & 2
	2) 459.250	4	75.84	2
	3) 459.175	4	75.92	2
	4) 928.8625	6	75.94	2
Paging	1) 72.68	3	152.120	8
	2) 959.8625	6	152.240	8
	3) 75.94	3	158.700	7
	4) 459.175	4	454.115	5

Note: Many of the antennas are shared.

The following are requested for future use to: 1). provide control of transmitter on the islands of Maui and Hawaii, 2). Expand paging coverage to the south-west of Oahu, and 3). re-locate the Marine Operator system for improved coverage.

Control	1) 75.XX	3	72.XX	9
	2) 75.XX	3	72.XX	11
Paging	1) 459.250	4	454.250	4
Marine	1) 156.800	10	156.800	10
	2) 157.350	10	161.950	10

Note: Frequencies identified as "75.XX" and "72.XX" have been requested but not yet determined by the FCC.

The facilities will operate automatically without human supervision. Although this will be an un-staffed facility, monthly inspection of equipment and an alarm system will monitor operation continuously and notify maintenance personnel of any irregularities.

HAWAII PUBLIC RADIO

HAWAII PUBLIC RADIO - proposes to install equipment necessary (broadcast antennas, transmitter, STL receiver antenna, telemetry return transmitter and other associated equipment) for radio broadcasting.

The radio station to be operated at this site is KIPO-FM, authorized by the FCC to broadcast on 89.3 MHz with an effective radiated power of 3,258 watts. Programming for the station will originate in studios at 738 Kaheka Street, Honolulu. It will reach the transmitter via a microwave studio-transmitter link for which a four-foot diameter grid parabolic antenna will be mounted on the tower. A telemetry return link will send information on the performance of the transmitter back to the studio. This is to be accomplished with the use of a small Yagi antenna also to be mounted on the tower. The equipment for these antennas will be housed in the central room of the building.

The antennas to be mounted on the tower are:

- * Six-Bay Directional Panel FM Broadcast Antenna.
- * Four-foot Grid Parabolic Studio-Transmitter Link Receiving antenna.
- * Yagi antenna (Net dimensions 27" X 13" X 5") Telemetry Return Link.

The following antennas are requested for future use:

- * Six-foot Grid Parabolic Antenna to serve as an STL Antenna for a Future Station on Kauai.
- * Mini-Parabolic to serve as an STL for KIPO-AM at Waiawa.
- * Six-foot solid Parabolic Dish to serve as a Microwave Relay to the Studio.

The transmitter is remote-controlled from the studio. A weekly maintenance check will be made on-site. Equipment malfunctions are automatically communicated to the operator at the studio.

V. SUMMARY DESCRIPTION OF AFFECTED ENVIRONMENT.

1. Project Site and Surrounding Area:

The project site is located at about the 2,500 foot elevation in the Honouliuli Forest Reserve (TMK: 9-2-05: por. 13) along the east edge of Palehua Road. Palehua Road forms its mauka (northwest and southwest) edge, while a steep slope forms its eastern or downhill edge. An existing residence stands toward its southern extremity.

ince the early 1950s, government and commercial communications users have needed sites along Palehua Ridge for antenna towers. Campbell Estate has accommodated those needs. Today, there are 14 tower facilities along Palehua Road. There is a continuing demand for broadcasting antennas to be relocated from urban areas and for antenna sites from new telecommunications users.

Palehua Ridge lies within the Waianae Mountain range, Ewa, Oahu. It extends 3.6 miles from its low point near Makakilo to the summit of Mauna Kapu in the Honouliuli Forest reserve at an elevation of about 2,700 feet.

The area was purchased by James Campbell in 1877 and shortly thereafter, great numbers of cattle were removed to avoid deforestation. In the 1920s, Campbell Estate joined with the State of Hawaii to establish a Forest Reserve in Honouliuli to protect the important watershed areas.

The State proceeded to reforest areas with a variety of non-native tree species, with the last plantings occurring in the 1950s. These plantings and the growth of the sugar and pineapple industries resulted in the current land cover seen in the lower sections of Honouliuli today. The native forests were pushed back to the higher summits beyond Mauna Kapu where remnant stands persist today.

In 1936, the United States was granted a perpetual easement to construct a road and to lay communications cables for military purposes along lower Palehua Ridge. In 1952, it was extended to the summit of Mauna Kapu. Throughout the 1950s, the military's use of the ridge for telecommunications increased significantly. By the 1970s, use of the ridge expanded to other non-military government agencies and it became an integral part of the government's telecommunications infrastructure on Oahu. Today the ridge is used by the following government agencies:

- United States Army
- United States Navy
- United States Coast Guard
- Federal Communications Commission
- Federal Aviation Administration
- National Weather Service
- Department of Energy
- State Forestry Division
- State Department of Budget and Finance
- City and County of Honolulu (various departments)

In the late 1970s, with road access and utilities in place, the first commercial and public telecommunications facilities were erected on the ridge. Today, the ridge supports equipment for television and radio broadcasting, cellular telephone, microwave links, telepaging, mobile radio and satellite earth stations.

These users are listed in Appendix "A". Many of the uses are critical to telecommunications on Oahu and the neighbor Islands.

2. Project Site Suitability:

The subject property is located within an area where communications facilities have already been concentrated and are the predominant use. FAA, U.S. Navy and other communications towers and buildings are located immediately across the road from the site. To the north are communications facilities for Oceanic Cablevision, the U.S. Coast Guard, FAA, Tel-Net, Motorola, Delta Communications and the Amateur Radio Relay League. To the south are FAA, U.S. Navy and the now KCCN/KHFX FM radio tower.

This concentration, is essentially a communications facilities colony near the top of the Waianae Mountain Range. The project site is located in the midst of this colony.

As described previously, the project site contains an existing building, tower, electrical power, roadway, and is already cleared for telecommunications use. Its location enables optimum line-of-site broadcasting to the greater area of Oahu and the Outer-islands, far from any residential concentration maximizing broadcast effectiveness and public safety. By locating their facilities there, McCaw Telepage and Hawaii Public Radio accomplish the following:

- * Effective public services with minimum use of human and natural resources, by avoiding the needs for multiple transmitting sites.
- * Facilities installation with the least amount of environmental modification.
- * Location of their facilities where similar uses now concentrate, thus helping to contain the area of such facilities and avoiding further proliferation of such sites.

Location of the proposed facilities within the project site allows continued conservation and recreational use of the major portion of lands in the immediately surrounding areas. This approach minimizes further environmental disturbances, particularly in view of the fact that the subject site was intended to accept additional usage from similar, compatible users.

3. Topography:

The project site slopes downward and eastward from Palehua Road. East of the site, the land slopes downward at about a 1:4 gradient. Gullies are located north and south of the site, directing drainage away from and to either side of it.

4. Access:

The project site is reached via Palehua Road through the upper reaches of Makakilo. This road provides the only vehicular access to facilities in the vicinity of the site. Access to the site is by a graded gravel drive from Palehua Road.

5. Flora and Fauna:

A site specific biological reconnaissance was conducted in June, 1987 as a part of the initial CDUA permit application for the project site. A copy of the report is attached as Appendix "B".

6. Historical/Archaeological Sites:

As reported in the initial, accepted KFVE-TV Conservation District Use Application for the project, no such sites were revealed.

7. Existing On-Site Structures and Uses:

A 560 square-foot transmitter building (divided into three rooms, each containing equipment for KFVE TV, McCaw Telepage and Hawaii Public Radio, respectively), 200 foot tower, and diesel generator exist at the site providing the facilities for KFVE-TV broadcast system. Overhead power and telephone utilities lines are connected into the west end of the building. Easements for these lines follow their alignments.

8. Relationship To "Resource Subzone" Objective:

The Resource subzone objective is to develop, with proper management, areas to ensure sustained use of the natural resources of those areas. The proposed action will not substantively interfere with this objective.

VI. POTENTIAL IMPACTS.

1. Physical Impacts.

The proposed project involve the placement of electronic equipment within an existing building and the attachment of a number of relatively small antennas to an existing 200-foot tower within the project site. Therefore, the project involves no alteration of the land, no erection of any other permanent structure and no clearing of any existing vegetation or other natural growth within the project site. As a result, the project will not have any impact on the existing natural setting within the project site.

2. Socio-Economic Impacts:

The proposed co-location of equipment will have positive effects on the community at large. This will help avoid a proliferation of telecommunication facilities in State Conservation Districts.

The Hawaii State government has realized the importance of telecommunications to our Island state. First, as a necessity brought by our geographic situation as a remote island state. Second, and more recently, as an opportunity for supporting the diversification of our economy. Third, as an opportunity to move into a leadership position in the Pacific Rim via telecommunications.

In 1978, the Hawaii State Plan established a goal to "Facilitate the development and use of improved communications technology." In 1985, telecommunications emerged in the State Plan as a separate and distinct item of concern and, while changes in this area were slight in the 1985 Plan revisions, it was recognized that infrastructure maintenance and development will likely be a more active concern in the coming years.

The 1985 Plan states:

"With respect to telecommunication resources, the implications of technological as well as federal policy changes point to the need to establish more comprehensive telecommunication policies at the State level to respond to recent concerns, e.g., maintaining universal telephone service; options regarding management and use of new telecommunication resources in light of deregulation; and opportunities to develop telecommunication resources for Hawaii as well as for the Pacific region. Telecommunication resources and systems are constantly changing with technological improvements and advancements.

Decision-makers need to be more sensitive to the ever changing resource technologies and regulations. As a State strategically located in the center of the Pacific Basin and geographically separated from any other land masses, the availability of telecommunication resources can affect the quality of Hawaii's political, social and economic life. Telecommunication services can promote or facilitate the accomplishment of objectives in other key sectors. For example, tourism, transportation, business/commercial development, government operations, etc., all benefit from a well-developed and integrated telecommunication infrastructure.

In addition, because telecommunication resources are not confined to areas of particular natural resources, they offer attractive and cost-effective solutions to emerging energy, employment and other socio-economic problems. Conversely, inaccessible, expensive, or poorly developed and maintained telecommunication resources can be costly with limited benefits. Scarcity of telecommunication resources can inhibit Hawaii's future growth just as the lack of a seaport or airport would have in earlier times."

As Hawaii's economy continues to grow and diversify there is an increasing need for telecommunications sites. At the same time there is a need to locate antenna towers outside of urban areas. Palehua Ridge is, and will continue to be strategically important to the Island of Oahu and the State of Hawaii.

Telecommunications use of Palehua Ridge is beneficial to the public, to businesses, and to the government. Government agencies are one of the primary users of Palehua Ridge by providing services such as air traffic control, police and military communications. Continued use of Palehua for telecommunications is important for maintaining these critical services and, therefore, has a positive impact on city, state, and federal government.

Continued use of Palehua Ridge for telecommunication purposes will also have a positive impact on the general public. Because of the wide variety of its telecommunications uses, a great deal of public information originates or passes through facilities on Palehua Ridge. Additionally, sites on Palehua help the telecommunications utilities, Hawaiian Telephone and Honolulu Cellular Telephone provide telephone services that are critical to our island existence.

Businesses are becoming increasingly dependent on telecommunications and information. The strategic location, high elevation and Palehua Ridge's telecommunication infrastructure are necessary for telecommunications companies to provide essential services to the business community. Telecommunications is a key part of the State's strategy to diversify our economy and take a leadership role on the Pacific Rim. Continued use of Palehua Ridge for telecommunications will have a positive impact on the business community and the State's economy.

3. Natural Environment Impacts:

In March 1987, the Nature Conservancy of Hawaii prepared the Historical Record of Rare Species & Natural Communities in Honouliuli for The Estate of James Campbell. The report was a compilation and map of all available biological data in a comprehensive assessment of the historical presence of rare or significant plants, animals and natural communities on the upland portion of the Estate lands in Honouliuli. Its purpose was to provide an overview of the unique biological resources known or reported to occur in the Honouliuli area.

Quoting from the summary of the report: "Biologically, the richest zones encompass the summits, ridges and slopes surrounding Palikea, Puu Kaua, Puu Hapapa and Puu Kanehoa. More than 80 percent of the 492 reported occurrences were in the steep uplands and gulches of the Honouliuli Forest Reserve, between Palikea, and Puu Hapapa and above the Contour Trail.

A list of species contained in Appendix "B" of this report and initially prepared by the Nature Conservancy, is a checklist of biological species that should be looked for before developing sites within and near the project site. The list is not based on an actual survey, but is a compilation of reported sightings over the past 75 years. Many of the species were last reported decades ago and because of subsequent development, fires, and the action of non-native animals, these species may no longer occur in the area.

Environmental impacts generated from the proposed new antennas will be minimal. Co-location of facilities and equipment within the project site with other nearby telecommunication sites, facilities and equipment will help to contain and consolidate this type of usage on Oahu.

The physical characteristics of the site require a minimum of environmental modifications. The only noticeable external change will be the mounting of antennas on the tower.

In addition, the applicant must conform with and implement Campbell Estate's Palehua Ridge Communication Facilities Master Plan. The strategic location, developed infrastructure and high elevation

make Palehua Ridge uniquely suitable for telecommunications use. This Master Plan seeks to make the best use of this strategic resource in an environmentally sensitive way.

Campbell Estate has sought to protect the special resources in the area from Mauna Kapu north to Puu Hapapa. Its Master Plan proposes telecommunication sites only to the south of Mauna Kapu point. This southerly area with existing roads, telephone service, and electricity is expected to accommodate planned communications uses while avoiding environmental impact to areas with heavy concentrations of rare plants and animals.

The Master Plan requires telecommunication applicants to:

- * Have a qualified professional inspect the site to determine if rare plant or animal species occur.
- * Include an assessment of the impact on occurring species as part of the CDUA to the DLNR.

Campbell Estate also requires such applicants, including the applicants herein, to re-landscape their sites and stabilize slopes to prevent soil erosion. Specifically:

- * Before construction begins, applicants must note the approximate number and types of trees that must be removed and the amount of land that must be cleared of undergrowth.
- * After construction, applicants must replace similar numbers and types of trees as space allows. Litter shall be removed and the site restored in such a way to allow natural undergrowth to regenerate. Removal of vegetation, except where essential to development or safety and prudent maintenance, and topping of trees shall be done only with approval of the Campbell Estate and the Department of Land and Natural Resources, Forestry Division, State of Hawaii.
- * Applicants must initiate and maintain good soil conservation practices to prevent or arrest loss of soil by erosion and shall not excavate or grade the premises except with the prior written approval of Campbell Estate and, if required, the Department of Land and Natural Resources.

The Master Plan identifies 14 existing sites, the tenants, and the telecommunication uses. New requests will be directed to five of these sites suitable for additional uses. Ten new sites have been identified that are suitable for future use. Only requests proven technically incompatible with existing sites will be directed to new sites.

Site developers must submit tower and building plans specifying the type and number of users that can be accommodated. Campbell Estate encourages multiple users on each tower with exception only by permission of Campbell Estate.

4. Electro-Magnetic Environmental Impact:

The American National standards Institute (ANSI) has published recommendations concerning safety levels with respect to human exposure to electromagnetic fields in the frequency range from 300 kHz to 100 GHz. The proposed antennas and facilities will operate well under this range.

The proposed telecommunication equipment will operate in the radio frequency range commonly referred to as microwave. Transmission of communications traffic from one point to another is the primary use of these frequencies. Microwave is utilized for its high reliability and cost effectiveness. Microwave communications have been used by telephone companies and governmental agencies for 30 years. During this time it has proven to be reliable and safe.

American standards are that 0.010 watt of energy per square centimeter is the maximum amount of power which can be radiated into an area and not create biological hazards, and that 0.001 watt of energy per square centimeter is the maximum amount of power which can be radiated into an area for no longer than 1/10 of an hour and not cause mental hazards.

ANSI standards reduce the acceptable governmental standards by a factor of 10 to 1mW/cm squared. It should be noted that the microwave density in a typical microwave oven used for cooking is 1.2 W/cm squared or over 10,000 times greater than the maximum density allowed under the safety standards for microwave radio.

Another important factor in energy density is that there is a dramatic decrease in energy density with distance from the source. At microwave frequencies, energy density will fall below background levels within about 1000 feet from the transmitter. This is important to remember due to the fact that most microwave facilities are installed well above ground level to clear surrounding obstructions.

With respect to the project site and proposed antennas, microwave antennas will be high above average terrain in an unpopulated area. Also, the antennas proposed will concentrate the radio frequency energy into a narrow beam, focused well above ground level, at a height above that at which persons or animals will be present.

The proposed equipment involved in this application include a radio communications system. Such radio communications systems users include two-way radio systems and radio paging systems.

Two-way radio systems and radio paging systems typically operate on an intermittent transmitting cycle at frequencies below 1 GHz. Effective radiated power of these facilities is below 1,000 watts, which does not produce energy densities in excess of ANSI standards, even at close distances to the antenna.

The potential power density exposure levels of the proposed facilities are well below the most stringent guidelines and well below the threshold at which biological effects have been reported. Any other radio communications facilities proposed to share the facility will be subjected to an electromagnetic energy study to ensure that the ANSI safety standard is met. No significant impact on public health and safety is anticipated as a result of the proposed antennas.

5. Visual Impacts:

The geographic characteristics of Palehua reduces the visual impact of antenna towers. A visual survey of the Ridge from the surrounding low elevations shows that many of the towers are not visible from Mililani, Waipio, Waipahu, Waianae, and Kapolei. Visual impact is further reduced by Palehua's distance from the major population center in Honolulu. Shared-use towers reduce the overall number of towers and, therefore, reduce the cumulative visual impact. In some cases, towers are placed at sites where the mountain background further reduces the visual impact.

Appendix "C" contain recently-taken photographs of the project site taken from several cross-viewpoints: (1) Mililani High School in Central Oahu (from the north looking south); (2) the Intersection of Kunia Road and the H-1 Freeway (from the east looking west); (3) within Makakilo (from the south looking north); and (4) from Nanakuli High School (from the west looking east). The project site is not visible to the public from the latter two viewpoints. It is barely visible from the north and east. As the photographs show, the project site is miles away from all settled areas within the surrounding regions and site almost 2,000 feet above all such areas atop Palehua Ridge.

Moreover, the proposed antennas are attachments to an existing 200-foot transmitter tower which already has all required government approvals. The antennas will not add to the height of the tower; nor will they significantly add to the bulk or mass of the tower since they will be relatively small appendages to the tower when considered in the context of the distances from settled areas and tower elevation atop Palehua Ridge.

KFVE TV will add four (4) antennas to the tower; two will be of standard parabolic design (dishes) and two will be small 2-way radio communication antennas.

McCaw Telepage will add three (3) receiving antennas towards the lower portions of the tower (below the 125-foot level) and four (4) transmitting antennas at points within the 150-200 foot level of the tower.

Hawaii Public Radio will add a 6-bay FM broadcast antenna; a 4-foot parabolic receiving antenna; and a Yagi antenna (27" x 13" x 5" dimensions). In the future, it plans to add a 6-foot parabolic antenna; mini-parabolic antenna; and a 6-foot solid parabolic dish relay antenna.

The distances and elevations cited above render these antennas virtually invisible to the public from the four directions cited above.

VII. ALTERNATIVE SITES AND PROPOSED MITIGATION MEASURES.

Although alternative sites were considered by the applicant, the suitability of the property from the standpoint of operational requirements was the key factor in its selection. The availability of space in an existing building for equipment storage and the existence of electrical power source also contributed to its selection.

Since the proposed antennas will have virtually no significant environmental impact within the project site and surrounding areas, no mitigation measures are proposed by the applicant herein.

VIII. DETERMINATION AND SUPPORTING RATIONALE.

In view of the fact that the site exists and no substantive negative environmental impacts will be incurred in the installation of equipment in the building and antennas on the tower at the facility, the applicants propose that a negative declaration be issued for this application. This determination is based on the findings and analyses contained hereinabove.

PROJECT EXHIBITS

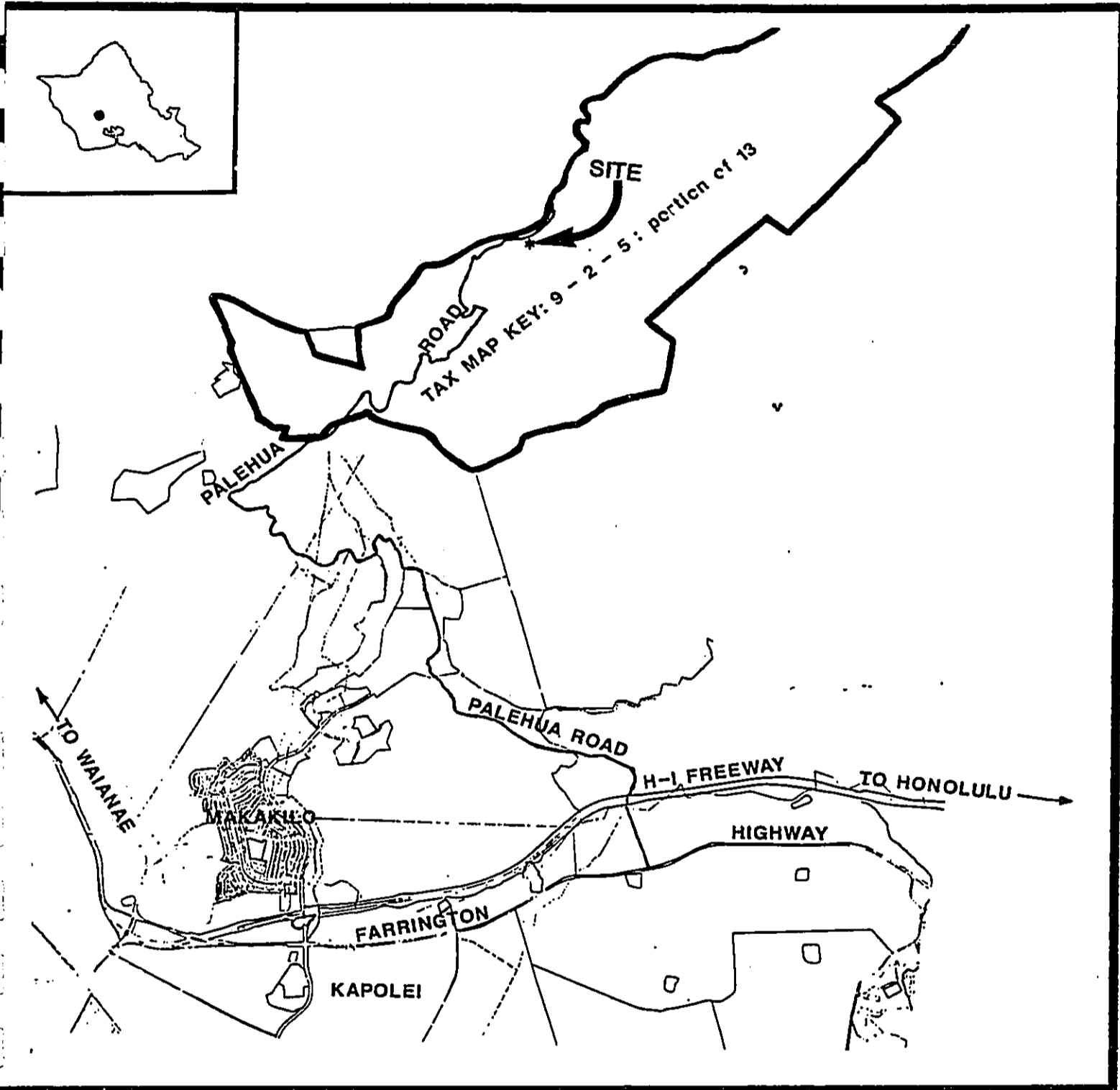


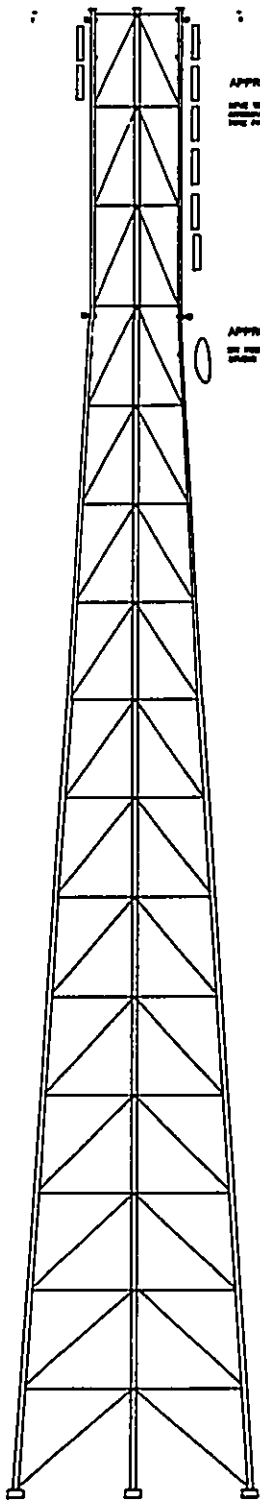
Exhibit 1

LOCATION MAP



DATE: OCTOBER 1991

SCALE: 1" = 4000'

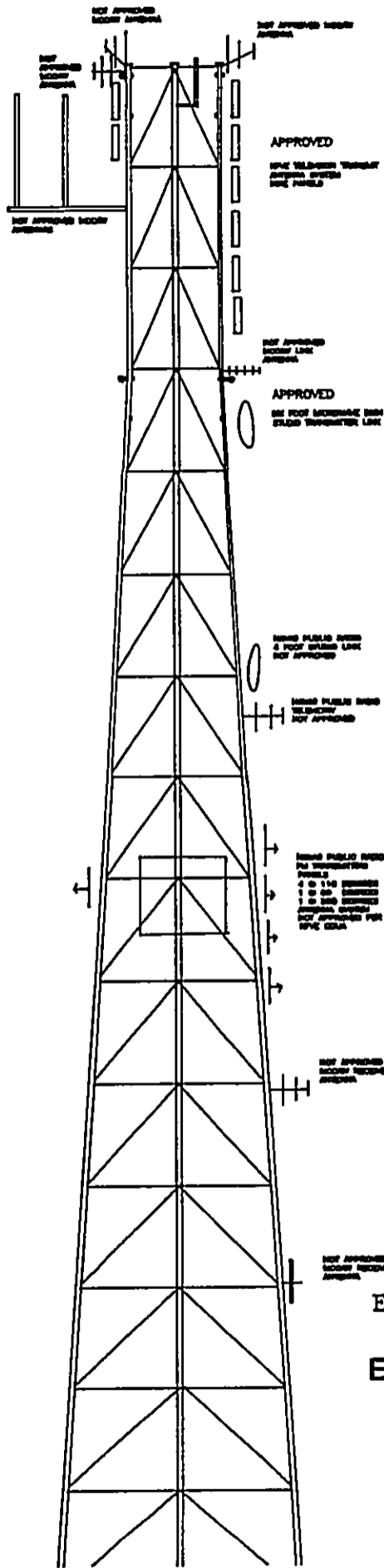


APPROVED
 THE DESIGNER'S NAME
 AND ADDRESS
 AND DATE

APPROVED
 BY THE ENGINEER OR
 OTHER LICENSED PERSON

THE DESIGNER'S NAME	
ALL ANTENNAS MUST BE EXACTLY AS APPROVED FOR STATE'S RECORD AND APPLICATION.	
FILE NO.	
DATE APPROVED BY, 1951	
REV. ORIGINAL	1"=10'

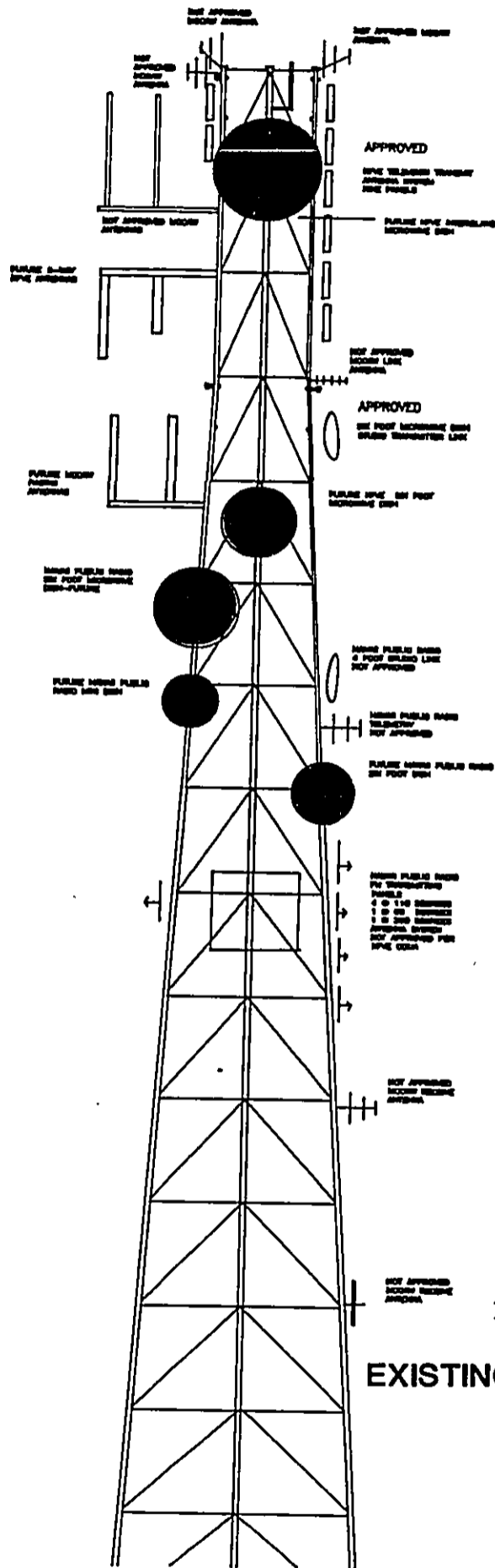
Exhibit 2
APPROVED KFVE ANTENNAS



MOBILE PLASMA BOND TOWER DRAWING NUMBER 1. ONE APPROVED ANTENNA SYSTEM 2. MOBILE PLASMA BOND NOT APPROVED 3. MOBILE TELEPHONE NOT APPROVED ANTENNA SYSTEM	
FILED	
DATE NOVEMBER 10, 1951	
REVISION ORIGINAL	1"=10'

Exhibit 2

EXISTING ANTENNAS ON TOWER



WPC FELDPA HOME TOWER	
SHOWN BY:	
1. WPC ANTENNA SYSTEMS	
2. WPC FELDPA HOME TOWER ANTENNA SYSTEM	
3. WPC FELDPA HOME TOWER ANTENNA SYSTEM	
4. PULSAR ANTENNAS FOR ALL COMPANIES	
FILED	
SEP 12 1991	
REC'D ORIGINAL	

Exhibit 2

EXISTING & FUTURE ANTENNAS

APPENDICES:

**Appendix "A": Palehua Ridge Communication
Facilities -- Existing Sites.**

**Appendix "B": Palehua Biological Reconnaissance
and Biological Species Checklist.**

**Appendix "C": Photographs of Project Site From
North, South, East and West Directions.**

APPENDIX "A"

PALEHUA RIDGE COMMUNICATION FACILITIES--EXISTING SITES

SITE 1: U.S. ARMY, VARIOUS GOVERNMENT SUBTENANTS (SEPTEMBER 1952)

This site, located at the summit of Mauna Kapu, the end point of Palehua Road, is part of the land included in the perpetual easement agreement of 1952 with the U. S. Army. The site has two permanent buildings, one mobile trailer and numerous wooden poles. Antennae at the site are generally whip or small gauge installed on the wooden poles. The Estate is not aware of any U. S. Army plans for additional towers or buildings.

SITE 2: TEL-NET (MARCH 1986), MOTOROLA (JANUARY 1987), DELTA COMMUNICATIONS (MARCH 1987)

This multi-use site occupies land that was originally part of the U. S. Army site noted above. The site contains a tower and a two-story building. No additional towers or buildings are planned after this second tower. Whip and microwave antennae are mounted on the tower.

SITE 2A: HONOLULU CELLULAR (JULY 1990), RAM PAGING (JULY 1990), MOBILE DATA (JULY 1990)

A second tower adjacent to the Tel-Net building was built by Honolulu Cellular Telephone. Whip and microwave antennae are installed on the tower. No new building was built as the existing Tel-Net building is being shared. There is additional space for whip and microwave antennae.

SITE 3: OCEANIC CABLE (MAY 1972)

This site contains a tower and a building. No additional towers or buildings are planned. Antennae used at the site are microwave dishes.

SITES 4 AND 5: GTE HAWAIIAN TELEPHONE (JULY 1978)

Site 4 is located on State of Hawaii land and contains a tower and building. Site 5 is on Campbell Estate land and contains a tower and a building. No new buildings or towers are planned for the Campbell Estate site. Antennae on the tower are all for microwave use.

SITE 6: FEDERAL AVIATION ADMINISTRATION (JULY 1978)

This site contains a building and about seven wooden poles distributed in the immediate area. There are transmission wires between the poles that cross Palehua Road several times. The Federal Aviation Administration has plans to remove the poles and relocate its antennas to Federal Aviation Administration site 8. No additional towers or buildings are planned for this site.

SITE 7: KFVE TV (JUNE 1978), MCCA W TELEPAGE (MARCH 1988), KHPR (JULY 1988)

This site contains a tower and a building that are designed for multiple users. The planned FM radio and two-way radio users indicated on the master plan will be placed on the existing tower. No additional towers or buildings are planned for this site. The building may be enlarged for additional KHPR transmitters in the next 3-5 years. Currently, there is one TV antennae, one FM antennae, and numerous whip antennae.

SITE 9: U. S. NAVY (JULY 1963)

This site contains a wooden tower structure and a building. Campbell Estate is not aware of any plans to add towers or buildings to this site. Antennae information is not available to Campbell Estate.

SITES 8 AND 10: FEDERAL AVIATION ADMINISTRATION (JULY 1987)

Sites 8 and 10 each contain a building and site 8 contains a tower. There are no additions planned for these sites. Antenna information is not available to Campbell Estate.

SITE 11: RLS RADIO (JANUARY 1988), HONOLULU BROADCASTING CORP. (KCCN) (JANUARY 1989), INTERCONTINENTAL TELEVISION GROUP (KHAI) (JUNE 1991)

This site contains a tower and building designed for multiple users. The planned FM Radio and two-way radio users will be placed on the existing tower. No additional towers or buildings are planned for this site. One multiplexed FM antennae and one TV antennae are located on the tower.

SITE 12: BEDFORD BROADCASTING (DECEMBER 1973), KDEO FM (SEPTEMBER 1988), COMMUNICATION SITES (APRIL 1986)

This site contains two towers and a building. A second building with an adjacent wooden pole is planned by General Telecourier

behind the existing building. A third tower might be feasible southwest of the existing building. Two FM antennae are located on the first tower and numerous whip antennae are mounted on the second tower.

SITE 13: KING BROADCASTING (AUGUST 1978)

This site contains two satellite earth stations and a building. No additional earth stations, towers or buildings are planned for this site.

SITE 14: AERONAUTICAL RADIO (MARCH 1958), U. S. NAVY (SEPTEMBER 1983)

This site contains a guyed antenna, a building and a passive microwave reflector. This site is suitable for additional microwave towers to serve the new Kapolei Town Center.

APPENDIX "B"
PALEHUA BIOLOGICAL RECONNAISSANCE

Prepared by: Kenneth M. Nagata

For: Western System, Inc.

15 June 1987

INTRODUCTION

The project site, occupying approximately 17,600 square feet, is situated at approximately 1500' elevation on Palehua ridge on the Honouliuli side of Palehua Road in the southern Waianae Mts. Palehua Road forms two boundaries of the site; a steep slope of a major gulch forms the east boundary and an existing residence marks the south boundary. A minor gully obliquely transects the site.

A walk-through survey was conducted during June, 1967 to determine the faunal and floral composition of the study site. Special attention was paid to rare and endangered species.

FLORA

The vegetation in the site is typical of the upper portion of the ridge along Palehua Road. It is a mixed forest of strawberry guava (Psidium cattleianum Sabine), black wattle [Acacia decurrens (Wendl.) Willd.] and swamp mahogany (Eucalyptus robusta Sm.) with remnant common native species, primarily koa (Acacia koa Gray) and maile (Alivxia olivaeformis Gaud.). The vegetation is often dense, consisting mostly of strawberry guava 15-25 feet tall and festooned with huehue-haole (Passiflora suberosa L.) with emergent swamp mahogany, black wattle and koa. Leaf litter is often thick. The herb layer when present is dominated by two introduced grasses, Festuca dertonensis (All) Aschers. & Graebn., and perennial foxtail [Setaria geniculata (Poir.) Beauv.]. A native fern, Doodia kunthiana Gaud., is also common in the site. Other native species in the site include naupaka (Scaevola gaudichaudiana Cham.), uki (Dianella sandwicensis E. & A.), uluhe [Dicranopteris linearis (Burm.) Underw.], hame (Antidesma platyphillum Mann), olopua [Osmanthus sandwicensis (Gray) Knobl.], and 'ohi'a-lehua [Metrosideros collina subsp. polymorpha

(2)

(Gaud.) Rock]. Native species in the surrounding vegetation (primarily in the large gulch which forms the east boundary) which are not present in the site include Pelea oahuensis Levi., kalia (Elaeocarpus bifidus H. & H.), kawa'u (Ilex anomala H. & A.) and Coccoloba foliosa Gray.

Native species comprise only a minor fraction of the total vegetation cover in the study site. Most of the native vegetation cover is formed by three large koa trees which are found in and around the site. All of the native species in and around the site are considered common; no rare and endangered species were found. The nomenclature for angiosperms follows that of St. John (1973).

FAUNA

Only one bird, the shama thrush (Copsychus malabaricus), was observed at the site. Two common native species, alaiala (Chasiempis sandwichensis) and apapane (Himatione sanguinea sanguinea), were observed near Mauna Kapu and it is probable that these species also frequent the region around the site. No nests were seen at the site. No mammals were seen although it is possible that rats (Rattus spp.) and or mice (Mus musculus) are found in the region. The avifauna nomenclature follows that of Berger (1972).

Of critical importance are the achatinellid land shells which are considered rare and endangered. One taxon, Achatinella mustalina russi, is known to have been found in the immediate vicinity (Welch, 1938). Despite a concerted effort to locate any Achatinella in and around the site, none were found. Neither were any dead shells found. The species still can be found between Mauna Kapu and Palikea, approximately one mile away but it appears to have been extirpated from the southernmost portion of its range where land and vegetational modification has been substantial.

APPENDIX "B"

BIOLOGICAL SPECIES CHECKLIST

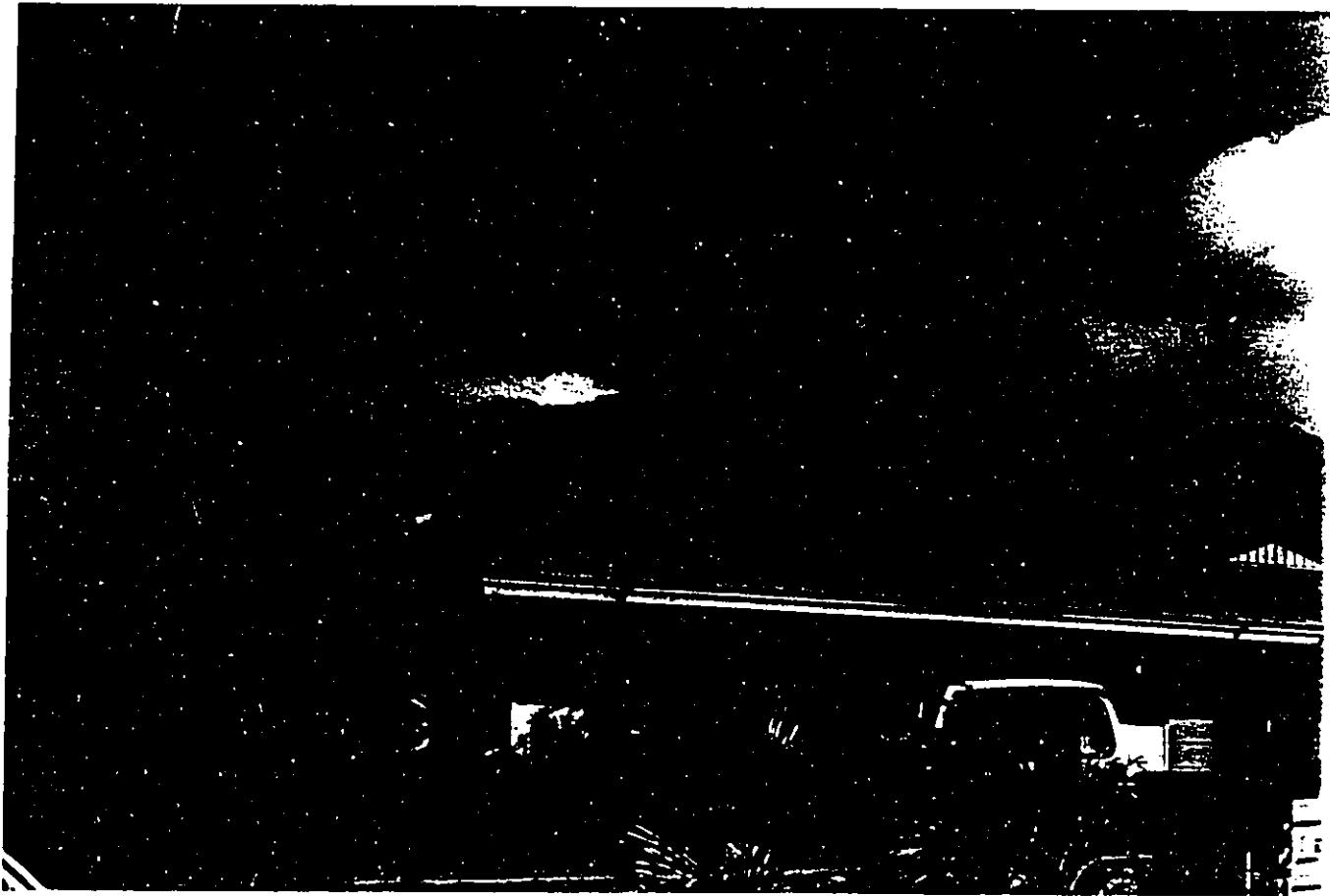
<u>Last Seen</u>	<u>Element Name</u>	<u>Common Name</u>	<u>Affected Sites</u>
19?? 1950	DIELLIA FALCATA ALSINIDENDRON OBOVATUM		All
1946 -	ALSINIDENDRON TRINERVE		
1935	SCHIEDEA LIGUSTRINA	MA'OLI'OLI	
1922	SOLANUM SANDWICENSE	POPOLO-'AI-A-KE-AKUA	
1911	LEPIDIUM BIDENTATUM VAR O-WAIHENSE	`ANAUNAU, NAUNAU KUNANA	
1964 1950	VESTIARIA COCCINEA SCHIEDEA LIGUSTRINA	`I'IWI MA'OLI'OLI	
1922	EXOCARPUS GAUDICHAUDII	HEAU	
1961	ACHATINELLA CONCAVOSPIRA	OAHU TREE SNAIL, PUPU KANIOE, PUPU KUAHIWI	
1952	AURICULELLA AMBUSTA	ACHATINELLID LAND SNAIL	
1948	LEPTACHATINA	AMASTRID LAND SNAIL	
1979	TETRAMOLOPIUM LEPIDOTUM SSP LEPIDOTUM		
1948	PELEA SAINT-JOHNII VAR SAINT-JOHNII	ALANI	
1966	SCHIEDEA PUBESCENS VAR PURPURASCENS	MA'OLI'OLI	

<u>Last Seen</u>	<u>Element Name</u>	<u>Common Name</u>	<u>Affected Sites</u>
1960	ACHATINELLA MUSTELINA	OAHU TREE SNAIL, PUPU KANIOE, PUPU KUAHIWI	
1966	ROLLANDIA CALYCINA	`OHA, HAHA, `OHAWA	B, 7, 11, 12
1929	LOBELIA YUCCOIDES	PANAUNAU HEAU	E, F, G, H, 1
1950	NERAUDIA ANGULATA VAR DENTATA	MA'ALOA, MA'OLOA, `OLOA	
1959	NESOLUMA POLYNESICUM	KEAHI	14, H, J

By program policy, the following statement must accompany all Nature Conservancy reports to assure the proper uses of Heritage information:

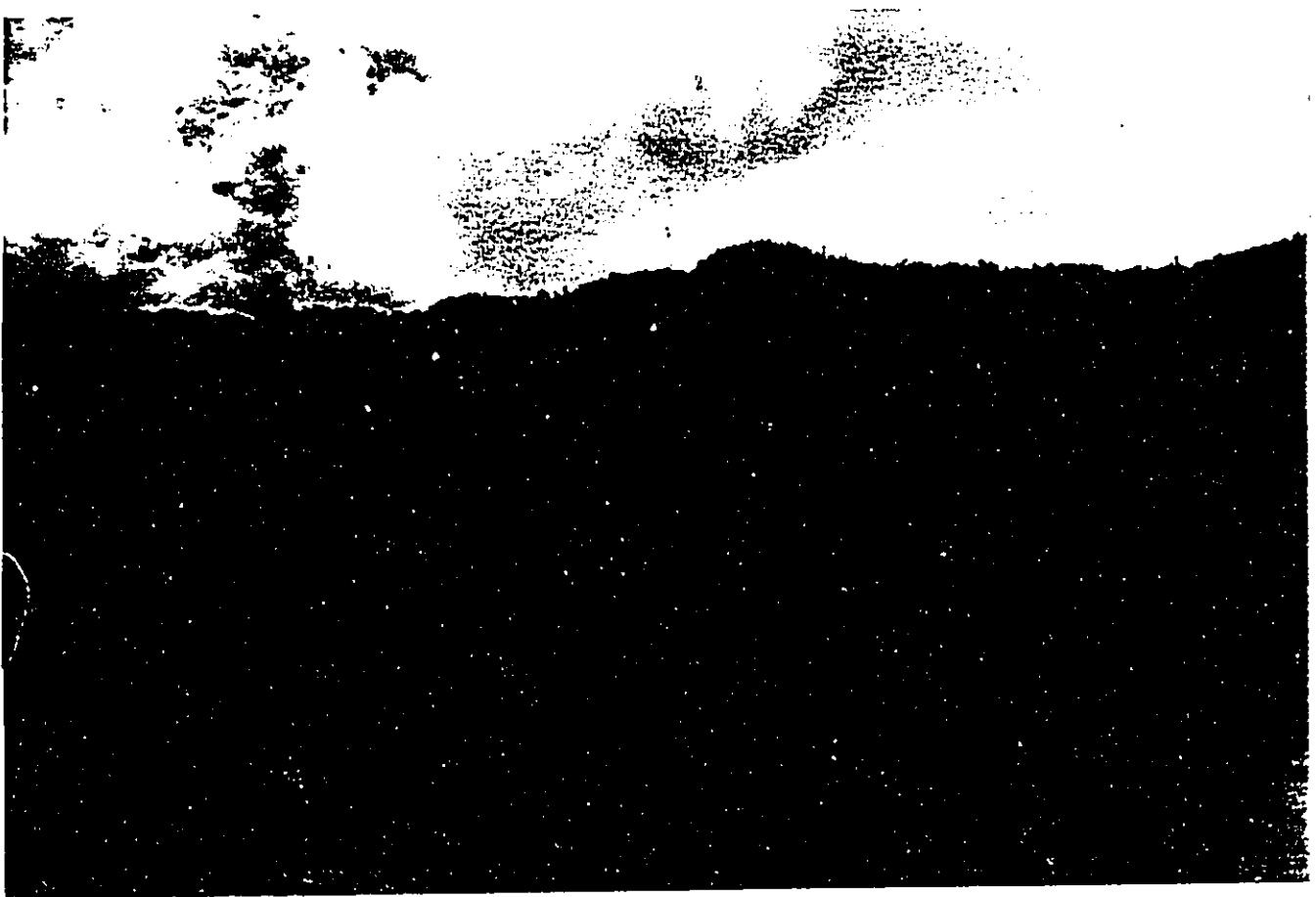
The quantity and quality of data collected by the Heritage Program are dependent on the research and observations of many individuals and organizations. In most cases, this information is not the result of comprehensive or site-specific field surveys; many natural areas in Hawaii have never been thoroughly surveyed, and new species of plants and animals are still being discovered. For these reasons, the Heritage Program cannot provide a definitive statement on the presence, absence or condition of biological elements in any part of Hawaii. Heritage reports summarize the existing information known to the program at the time of the request regarding the biological elements or locations in question. They should never be regarded as final statements on the elements or areas being considered, nor should they be substituted for on-site surveys required for environmental assessments.

APPENDIX "C"
PHOTOGRAPHS OF PROJECT SITE FROM NORTH, SOUTH, EAST AND WEST
DIRECTIONS



3. View of site taken from Kanehoa Loop,
Makakilo.

Site not visible from this location.



4. View of site from Nanakuli High and Intermediate School.

Site not visible from this location.

DOCUMENT CAPTURED AS RECEIVED



1. View of site taken from Mililani High School, Mililani Town.



2. View of site from Intersection of Kunia Road and H-1 Freeway.