JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

WILLIAM W. PATY, CHAIRPERSON
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OFC. OF ENVIRONMENTAL QUALITY CONTROL

JUL 23 1991

FILE NO.: KA-4/26/91-2480
180-Day Exp. Date: 10/23/91
DOCUMENT NO.: 1156E

Ms. Colette Sakoda
Senior Planner
R.M. Towill Corporation
420 Waiakamilo Road #411
Honolulu, Hawaii 96817

Dear Ms. Sakoda:

NOTICE OF ACCEPTANCE AND ENVIRONMENTAL DETERMINATION
After-the-Fact Conservation District Use Application for a
Telecommunication Facility, Kukuiolono, Kauai

This letter serves to amend our letter of May 14, 1991 to you regarding the subject application.

As we have received the required System Master Plan and Property Master Plan for the applicant GTE Mobilnet Hawaii Inc., we have concluded that in conformance with Title 11, Chapter 200 of the Administrative Rules, a negative declaration has been determined for the proposed action.

Staff will be in contact with you regarding specific items included within these reports and the subject application.

Thank you for your attention and cooperation in this matter.

Very truly yours,

William W. Paty

cc: Kauai Board Member
Kauai Land Agent
Dept. of Planning
DOH/OEQC/OSP/OHA

116

1991-08-08-KA FEA

FILE COPY

Application for a
Conservation District Use Permit

*GTE Hawaiian Tel CELLULAR TELEPHONE TRANSMISSION FACILITY, Kukuiolono, Kauai *

APRIL 1991

PREPARED FOR:

GTE Mobilnet of Hawaii, Inc.

RMTC
R. M. Towill Corporation

420 Waiakamilo Rd., Suite 411
Honolulu, Hawaii 96817-4941
(808) 842-1133 • Fax: (808) 842-1937

February 1983

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 621
HONOLULU, HAWAII 96809

DEPARTMENT MASTER APPLICATION FORM

FOR DLNR USE ONLY
Reviewed by
Date
Accepted by
Date
Docket/File No.
180-Day Exp.
EIS Required
PH Required
Board Approved
Disapproved
Well No.

(Print or Type)

I. LANDOWNER/WATER SOURCE OWNER (If State land, to be filled in by Government Agency in control of property)

Name: Hawaiian Trust Co. as Trustee for Walter D. McBryde Trust

✓ Address: P.O. Box 3170
Honolulu, HI 96813

✓ Telephone No. 538-4554

✓ SIGNATURE by [signature] Its Vice President

✓ Date February 8, 1991

II. APPLICANT (Water Use, omit if applicant is landowner)

Name: GTE Mobilnet Hawaii Region

Address: 733 Bishop Street
Suite 1900
Honolulu, Hawaii 96813

Telephone No. 536-4848

Interest in Property: Lessee
(Indicate interest in property; submit written evidence of this interest)

*SIGNATURE [signature]

Date 2/19/91

*If for a Corporation, Partnership, Agency or Organization, must be signed by an authorized officer.

III. TYPE OF PERMIT(S) APPLYING FOR

( ) A. State Lands

(X) B. Conservation District Use (After-the-Fact)

( ) C. Withdraw Water From A Ground Water Control Area

( ) D. Supply Water From A Ground Water Control Area

( ) E. Well Drilling/Modification

IV. WELL OR LAND PARCEL LOCATION REQUESTED

District: Koloa

Island: Kauai

County: Kauai

Tax Map Key: 2-3-05:Por 8 of Por 11

Area of Parcel: 135 sq. ft. (Indicate in acres or sq. ft.)

Term (if lease): 5 to 15-yr lease subject to CDUA approval.

5. ENVIRONMENTAL REQUIREMENTS

Pursuant to Chapter 343, Hawaii Revised Statutes, and in accordance with Title 11, Chapter 200, Environmental Impact Statement Rules for applicant actions, an environmental assessment of the proposed and existing uses is attached as Exhibit 1.

6. DESCRIPTION OF PARCELS

6.1 Existing Structures/Uses

The project site currently contains a microwave repeater housing measuring approximately three feet wide by three feet deep by three feet high. Within the housing is a rack of microwave transceiver equipment. The housing supports a 10-foot high, 4-inch pipe with a 4-foot diameter microwave antenna. Adjacent to this is a battery box measuring approximately 2.5 feet wide by 1.5 feet deep by 1.5 feet high. Power is provided by an adjacent communications equipment building owned by Hawaiian Telephone Company through an underground tap.

The site and the surrounding area is located within Kukuiolono Park, Kalaheo, Kauai, and is generally used for Kauai Cable TV. Other uses in the Park include a golf course, a baseball field and open space. Existing communications equipment includes a 70-foot antenna tower, a single-story communications building, chain link fencing, support equipment and cable TV transmission equipment (Figure 1).

6.2 Existing Utilities

The project area is served by an access roadway and water line situated within a 10-foot wide easement west of the project site and telephone, power and water lines within a 15-foot wide easement south of the project site (Figure 1).

6.3 Existing Access

Access is provided to the project site by the above-mentioned 10-foot wide roadway and water line easement in favor of Hawaiian Telephone Company. This paved roadway is also used for golf play and connects to Papalina Road which connects to Kuhio Highway, the primary State highway for the Island of Kauai (Figure 2).

6.4 Vegetation

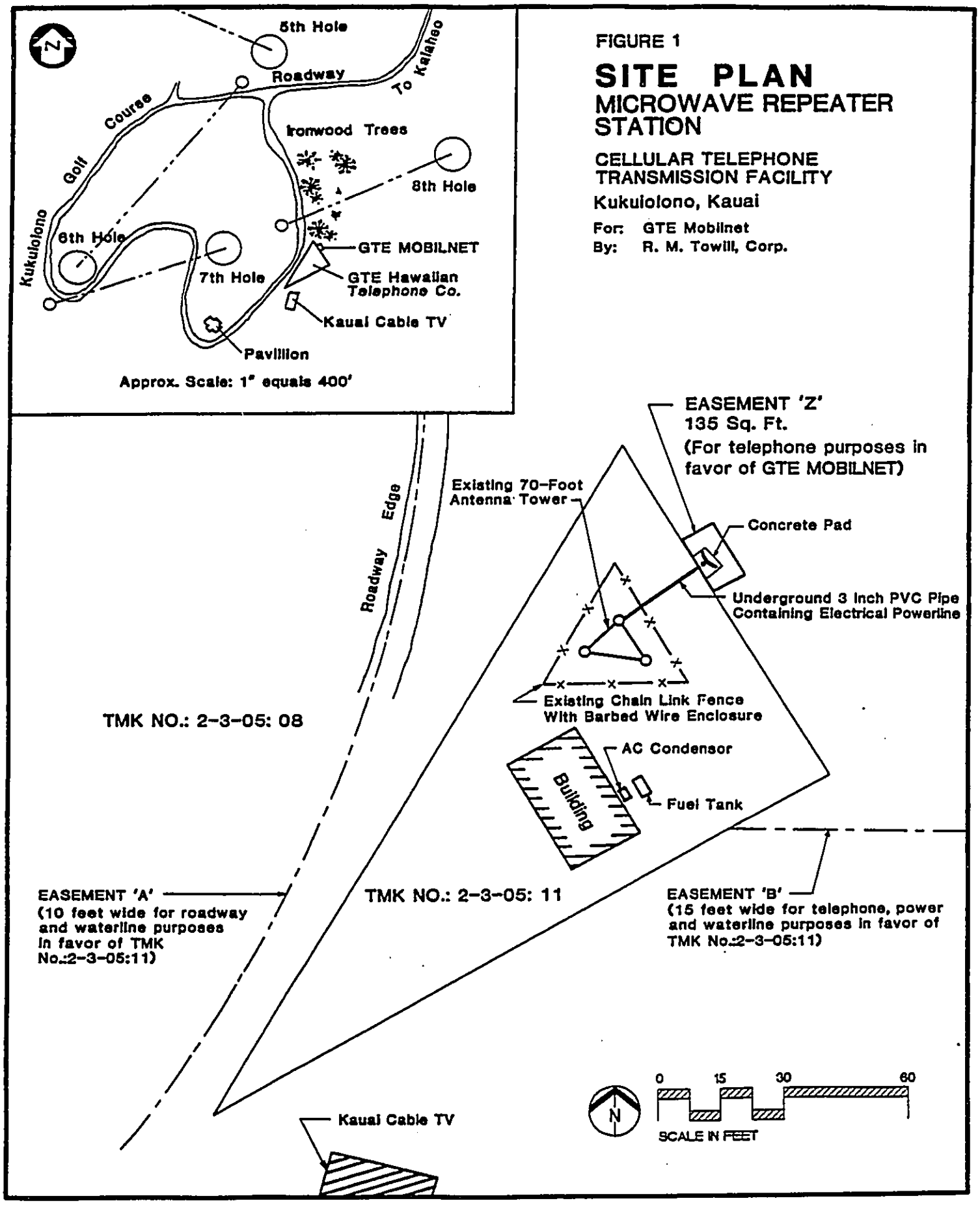
The vegetation at the project site includes ironwood trees, paperbark trees, tiger claw trees and grass ground cover. Norfolk Island pines are planted on the edge of the golf course across the access road from the project site. There are no known rare or endangered plant species associated with the project site.

6.5 Topography

The topography of the site is level to gently sloping. The elevation is about 820 feet above mean sea level. No grading work is being proposed.

6.6 Historic Sites

There are no known archaeological or historic sites or resources located on or near the project site.


5th Hole
Roadway
To Kalaheo
Golf Course
Ironwood Trees
8th Hole
6th Hole
Kukuiolono
7th Hole
GTE MOBILNET
GTE Hawaiian Telephone Co.
Kauai Cable TV
Pavillion
Approx. Scale: 1" equals 400'
FIGURE 1
SITE PLAN
MICROWAVE REPEATER STATION
CELLULAR TELEPHONE TRANSMISSION FACILITY
Kukuiolono, Kauai
For: GTE Mobilnet
By: R. M. Towill, Corp.
EASEMENT 'Z'
135 Sq. Ft.
(For telephone purposes in favor of GTE MOBILNET)
Existing 70-Foot Antenna Tower
Concrete Pad
Underground 3 Inch PVC Pipe Containing Electrical Powerline
Existing Chain Link Fence With Barbed Wire Enclosure
AC Condensor
Building
Fuel Tank
Roadway Edge
TMK NO.: 2-3-05: 08
TMK NO.: 2-3-05: 11
EASEMENT 'A'
(10 feet wide for roadway and waterline purposes in favor of TMK No.:2-3-05:11)
EASEMENT 'B'
(15 feet wide for telephone, power and waterline purposes in favor of TMK No.:2-3-05:11)
Kauai Cable TV
N
0 15 30 60
SCALE IN FEET

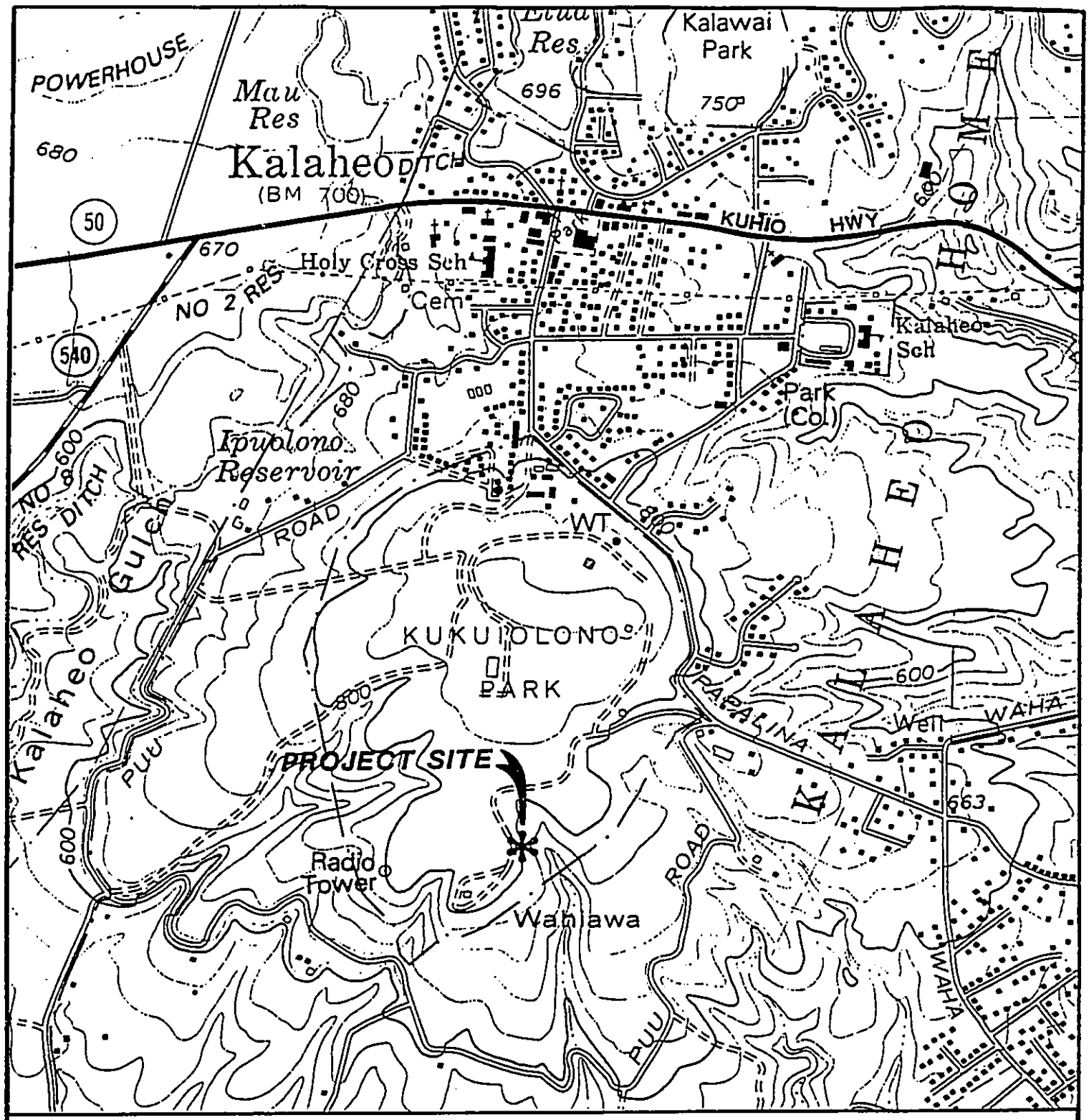


FIGURE 2

VICINITY MAP

CELLULAR TELEPHONE
TRANSMISSION FACILITY

Kukuiolono, Kauai

For: GTE Mobilnet
By: R. M. Towill, Corp.

7. DESCRIPTION OF THE PROPOSED PROJECT

GTE Mobilnet Hawaii region (Applicant) proposes to obtain an after-the-fact Conservation District Use Permit for an existing microwave repeater station to provide cellular telephone service to the Island of Kauai. The improvements, which were installed in April 1989, are used to repeat microwave signals form Kukuiolono to Mount Laukahi, site of the Grove Farm cellular station.

Applicant indicates that the installation of the current facility was expedited to provide immediate service to Kauai and that the facility was intended to be temporary not to exceed 90 days. Therefore, permits were not applied for. Subsequently, the temporary siting of the repeater station was extended because alternative sites were not feasible.

GTE Mobilnet now proposes to convert the existing site and facility into a permanent station for its operations, and indicates that the site needs to be modified to accommodate a portable standby emergency generator and the replacement of the batteries and their housing. In addition, a power box may be necessary before the proposed generator is installed.

Currently, the Applicant has only partial cellular telephone coverage for the Island of Kauai. This coverage is provided by the subject site at Kukuiolono and by another site located near "Tree Tunnel" on property owned by Grove Farm Company. These sites provide cellular service for an area that extends from Kapaa to Hanapepe. In the future, Applicant proposes to improve cellular service in the Princeville and Kapaa areas by installing additional cellular stations.

The existing and proposed improvements are located within a 135 square foot easement in favor of the Applicant except for the underground power line which connects to Hawaiian Telephone Company's communication equipment facilities. The tax map parcel affected by the 135 sq. ft. easement is 2-3-05: portion of parcel 8 and the tax map parcel 11. Both parcels are owned by Walter D. McBryde Trust Estate with parcel 11 being leased to Hawaiian Telephone Company (Figure 1).

The Applicant's existing equipment was established with the permission of Hawaiian Trust Company, Trustee for the Walter D. McBryde Trust, by license agreement on April 24, 1989. The initial period was for 90 days with a provision for a month-to-month extension. One of the conditions of the license agreement requires that the equipment not create any odors or noise and that GTE Mobilnet will make every effort to conceal its pole and microwave dish for view. Upon approval of all necessary permits, Applicant will seek a long term agreement with the property owner to operate the repeater station on the subject property.

Except for an occasional maintenance check every 45-60 days, the station would be unmanned. In addition, a minimal amount of tree trimming will be necessary to maintain a clear line of sight to GTE's Grove Farm cellular site. This will involve trimming lower branches of nearby ironwood trees occasionally grow into the antenna's clear line of sight.

8. SCHEDULE OF IMPROVEMENTS

Applicant's existing equipment was established in April 1989. The additional improvements are proposed for installation as soon as all the necessary permits have been obtained.

9. TYPE OF USE REQUESTED AND SUBZONE OBJECTIVE

The Applicant proposes an after-the-fact conditional use permit and permission to install additional telecommunications equipment. The site is located within the General Subzone (G) of the State Land Use Conservation District. The objective of the General Subzone is "to designate open space where specific conservation uses may not be defined, but where urban use would be premature."

The existing and proposed additions are minimal alterations to the existing telecommunication uses at the site and the surrounding area. There will be no new uses outside of the already constructed areas. Additionally, the improvements are essential for expanding Kauai's mobile cellular telephone service and will directly benefit the public.

ENVIRONMENTAL ASSESSMENT

CELLULAR TELEPHONE TRANSMISSION FACILITY
KUKUIOLONO, KAUAI

PREPARED FOR:

GTE Mobilnet of Hawaii, Inc.

ACCEPTING AUTHORITY:

Dept. of Land and Natural Resources
State of Hawaii

PREPARED BY:

R. M. Towill Corporation
420 Waiakamilo Road, Suite 411
Honolulu, Hawaii 96817

DECEMBER 1990

TABLE OF CONTENTS

LIST OF FIGURES

EXHIBITS

SUMMARY INFORMATION

Applicant:	GTE Mobilnet of Hawaii, Inc.
Consultant:	R. M. Towill Corporation 420 Waiakamilo Road, Suite 411 Honolulu, Hawaii 96817-4941
Location:	Kukuiolono Park, Koloa, Kauai
Tax Map Key:	2-3-05: Portion of 8 and Portion of 11
Land Area:	135 square feet
State Land Use Designation:	Conservation, General Subzone
Koloa-Poipu-Kalaheo General Plan:	Public Facility
Existing Zoning:	State Land Use Conservation
Existing Land Use:	Microwave Repeater Station
Landowner:	McBryde Trust Estate
Accepting Authority:	Dept. of Land and Natural Resources

SECTION 1

INTRODUCTION AND SUMMARY OF THE PROPOSED ACTION

GTE Mobilnet proposes to obtain an after-the-fact Conservation District Use Permit for an existing microwave repeater station to provide cellular telephone service to the Island of Kauai. The improvements, which were installed in April 1989, currently consist of a three-foot by three-foot by seven-foot high housing supporting a four-foot diameter microwave antenna (dish type) and an adjacent battery box measuring 2.5 feet wide, 1.5 feet deep, and 1.5 feet high. The microwave repeater station is used to repeat microwave signals from Kukuiolono to Mount Laukahi (site of the Grove Farm cellular station).

GTE Mobilnet (the Applicant) indicates that the installation of the current facility was expedited to provide immediate service to Kauai and that the facility was intended to be temporary not to exceed 90 days. Therefore, permits were not applied for. Subsequently, the temporary siting of the repeater station was extended because alternative sites were not feasible.

GTE Mobilnet now proposes to convert this temporary site and facility into a permanent station for its operations, and indicates that the facilities need to be modified to accommodate a portable standby emergency generator and the replacement of the batteries and battery housing. In addition, a power box may be necessary before the proposed generator is installed.

Currently, GTE Mobilnet has only partial cellular telephone coverage for the Island of Kauai. This coverage is provided by the subject facilities at Kukuiolono (Figure 1) and by a transmitter station located near "Tree Tunnel" on property owned by Grove Farm Company. These sites provide telephone service for an area that extends from Kapaa to Hanapepe. In the future, the Applicant proposes to improve service in the Princeville and Kapaa areas by installing additional stations.

The project site is designated within the Conservation District, General Subzone. This environmental assessment evaluates the impacts of the existing facility and the proposed improvements which require a Conservation District Use Permit.

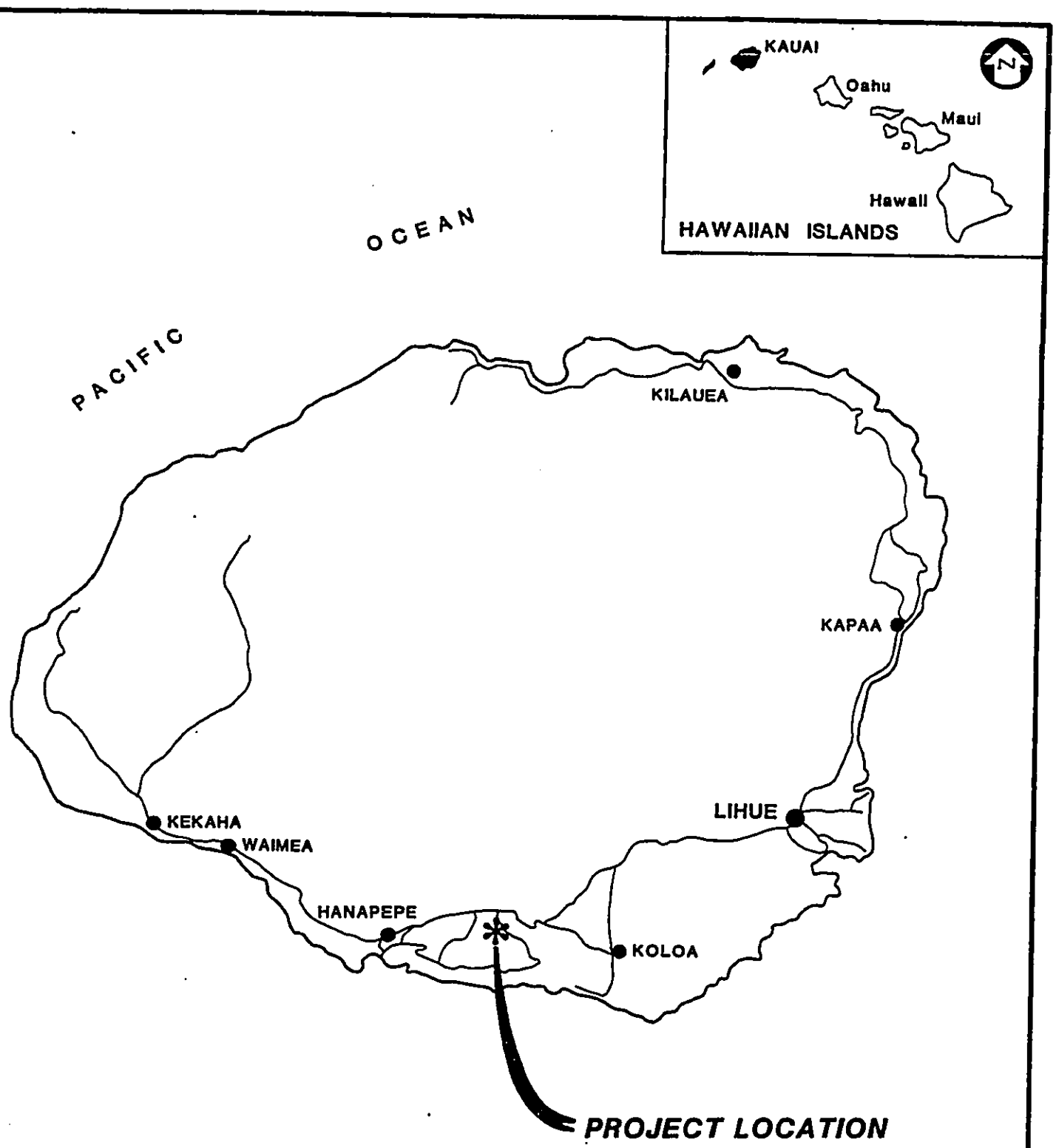


FIGURE 1

LOCATION MAP

CELLULAR TELEPHONE
TRANSMISSION FACILITY
Kukuiolono, Kauai

For: GTE Mobilnet
By: R. M. Towill, Corp.

SECTION 2

DESCRIPTION OF PROPOSED ACTION

2.1 LOCATION OF PROJECT SITE

The project site is located within Kukuiolono Park, Koloa, Island of Kauai, Tax Map Key 2-3-05:portion 08 and portion 11. The project site is a 135 square foot area abutting an 8,148 square foot parcel owned by Walter D. McBryde Trust and leased to Hawaiian Telephone Company for use as a microwave radio station. The Hawaiian Telephone site currently contains a communications building and a 70-foot antenna tower. The project site is accessible through a gated private road off of Papalina Road and over a 10-foot wide easement through Kukuiolono Golf Course. Adjacent to the project site also are the facilities of the Kauai Cable Television Company, which includes a large satellite earth station antenna (Figures 2 and 3).

2.2 BACKGROUND INFORMATION

GTE Mobilnet provides portable and mobile telephone service to various areas in the State. Headquartered within Grosvenor Center in Honolulu, communication signals are sent to Hawaiian Telephone Company for transmission to its antenna at Kukuiolono which is then sent by cable to the subject microwave repeater station for transmission to GTE Mobilnet's Grove Farm cellular site.

The project was planned and installed in April 1989. The project was expedited to provide cellular service to Kauai. The Kukuiolono site was intended as a temporary site not to exceed 90 days and therefore permits were not applied for. However, the project was made permanent because alternative sites were found to be unfeasible. This site was selected because it offers essential line-of-sight microwave transmission paths needed to receive and transmit signals to the Grove Farm cellular site.

2.3 TECHNICAL CHARACTERISTICS

The project site currently contains a microwave repeater housing measuring approximately three feet wide by three feet deep by seven feet high. Within the housing is a rack of

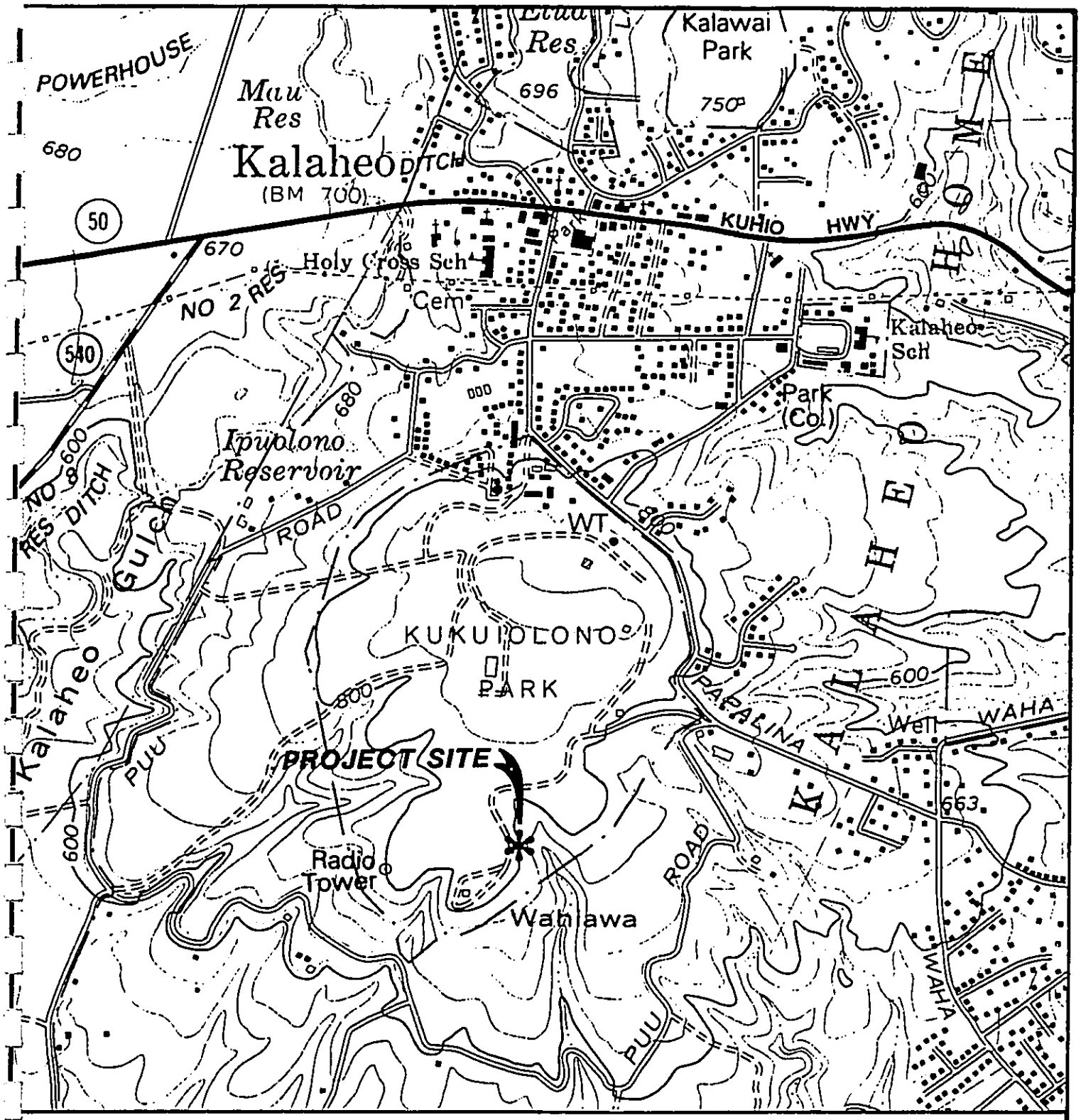


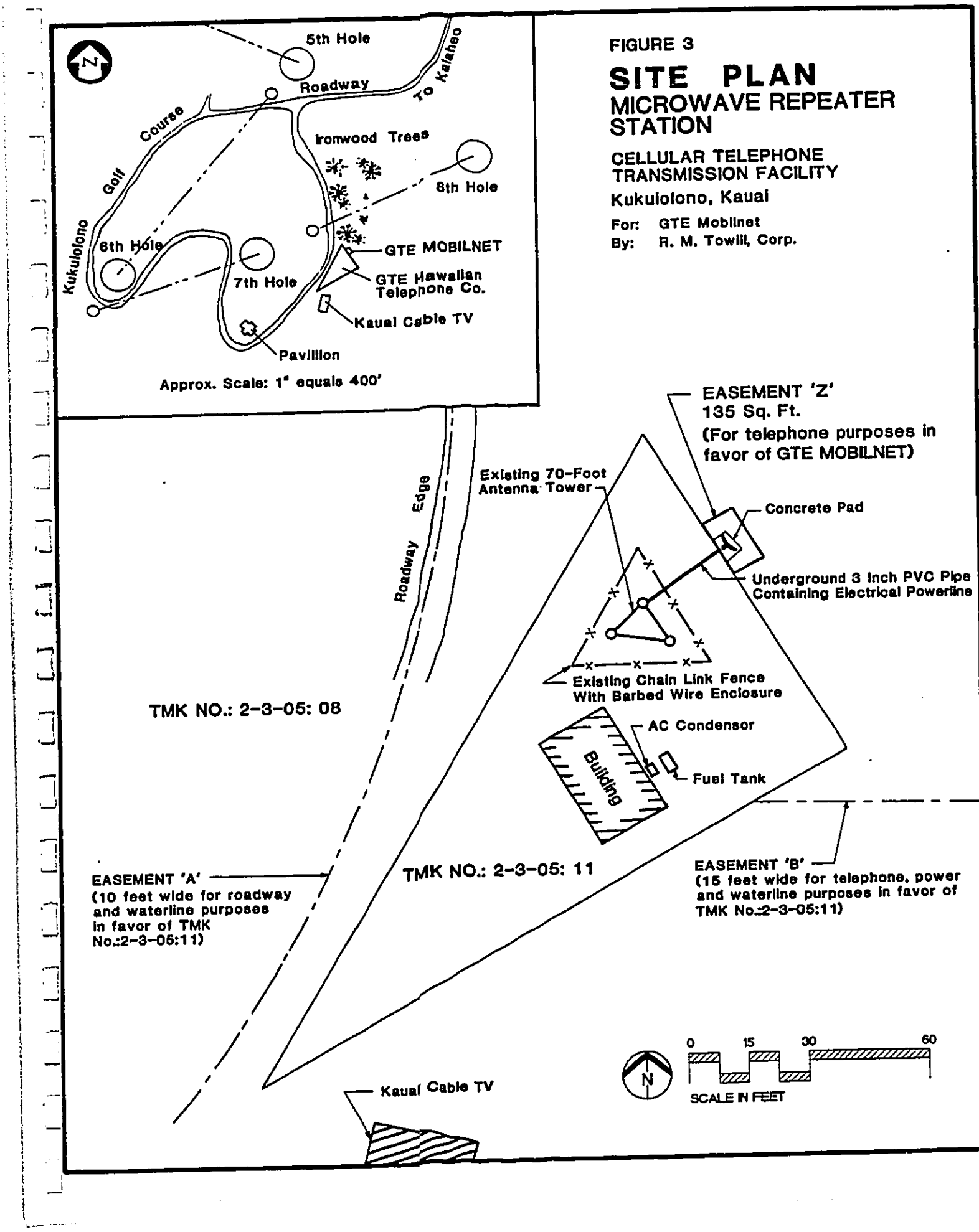
FIGURE 2

VICINITY MAP

CELLULAR TELEPHONE TRANSMISSION FACILITY

Kukuiolono, Kauai

For: GTE Mobilnet
By: R. M. Towill, Corp.


5th Hole
Roadway
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GTE MOBILNET
GTE Hawaiian Telephone Co.
Kauai Cable TV
Pavillion
Approx. Scale: 1" equals 400'
FIGURE 3
SITE PLAN
MICROWAVE REPEATER STATION
CELLULAR TELEPHONE TRANSMISSION FACILITY
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For: GTE Mobilnet
By: R. M. Towill, Corp.
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Underground 3 Inch PVC Pipe Containing Electrical Powerline
Existing Chain Link Fence With Barbed Wire Enclosure
AC Condensor
Fuel Tank
Building
Edge
Roadway
TMK NO.: 2-3-05: 08
TMK NO.: 2-3-05: 11
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(10 feet wide for roadway and waterline purposes in favor of TMK No.:2-3-05:11)
EASEMENT 'B'
(15 feet wide for telephone, power and waterline purposes in favor of TMK No.:2-3-05:11)
Kauai Cable TV
N
0
15
30
60
SCALE IN FEET

microwave transceiver equipment. The housing supports a 10-foot high, 4-inch pipe with a 4-foot diameter microwave antenna. Adjacent to this is a battery box measuring approximately 2.5 feet wide by 1.5 feet deep by 1.5 feet high. Power is provided by Hawaiian Telephone Company through a tap to Hawaiian Telephone's telecommunications equipment. A copy of the specifications of the antenna and equipment is attached in Exhibit 1.

In addition to the above equipment, GTE Mobilnet proposes to install a portable standby emergency power generator and to replace the existing battery and housing with a larger battery. The maximum size for this new battery housing will be approximately three feet wide by three feet deep by seven feet high. The new batteries are completely sealed gel type batteries. As a backup for temporary emergency service, GTE may need an additional power box before the power generator is installed.

The existing equipment was established with the permission of Hawaiian Trust Company as Trustee for the Walter D. McBryde Trust by license agreement on April 24, 1989. The initial period was for 90 days with a provision for a month-to-month extension. One of the conditions of the license agreement requires that the equipment not create any odors or noise and that GTE Mobilnet will make every effort to conceal its pole and microwave dish from view. Upon approval of all necessary permits, GTE will seek a long term agreement with the property owner to operate the repeater station on the subject property.

Except for an occasional maintenance check every 45-60 days, the station would be unmanned. In addition, a minimal amount of tree trimming will be necessary to maintain a clear line of sight to GTE's Grove Farm cellular site. This will involve trimming the lower branches of nearby ironwood trees that occasionally grow into the antenna's clear line of sight.

SECTION 3

EXISTING CONDITIONS AND PROJECT IMPACTS

3.1 EXISTING USES

The site is used for telecommunications equipment by Hawaiian Telephone Company and Kauai Cable TV. The surrounding area is in open space and includes a golf course and a baseball field. The site contains the GTE Mobilnet repeater station equipment, a 70-foot antenna tower, a single-story communications building, chain link fencing, cable TV transmission equipment, and nearby golf holes and fairways (Figure 3). North of Kukuiolono Park is the town of Kalaheo which consists primarily of rural residential uses with support commercial uses. Additional rural residential uses are located to the southeast. To the west and south are vacant lands that are currently designated for agricultural use and open space (Figure 4).

3.2 SOILS AND TOPOGRAPHY

The project site is characterized by Puhi silty clay loam soils. This soil series consists of well drained soils on uplands of the Island of Kauai. These soils are used for sugarcane, pineapple and other agricultural crops as well as for home sites. The topography of the site is level to gently sloping. The elevation is about 820 feet above mean sea level. No grading work is being proposed.

3.3 ARCHAEOLOGY AND HISTORIC SITES

There are no known archaeological or historic sites or resources located on or near the project site.

3.4 FLORA AND FAUNA

The vegetation at the project site includes iron wood trees, paperbark trees, tiger claw trees and grass ground cover. Norfolk island pines are planted on the edge of the golf course across the access road from the project site. Wildlife species include upland gamebirds.

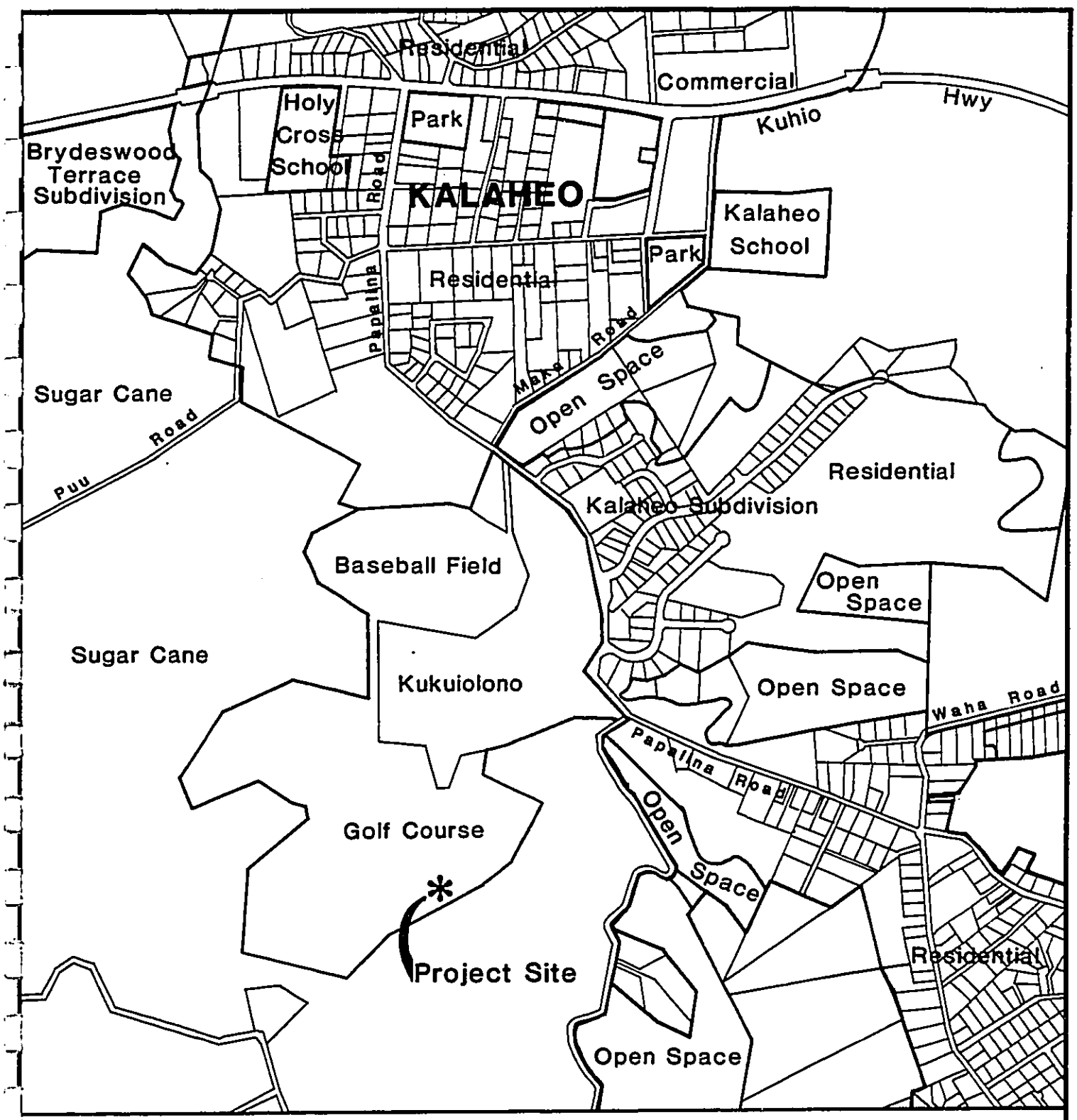


Figure 4

EXISTING USES

CELLULAR TELEPHONE
TRANSMISSION FACILITY

Kukuiolono, Kauai

For: GTE Mobilnet
By: R. M. Towill

There are no known rare or endangered species of plants or animals associated with the project site.

3.5 CLIMATE

The climate of the project site is moist and warm. The average annual temperature is about 75°F and the average annual rainfall is in the range of 50 inches. Winds are usually trades and originate from the northeast.

3.6 VISUAL CHARACTERISTICS

To the southeast of the site is a view of naturally occurring vegetation with low shrubs and trees (Figure 5). The proposed project improvements will not significantly alter the existing visual characteristics of the area. GTE Mobilnet may plant a few shrubs along the entry area to mitigate views from the golf course.

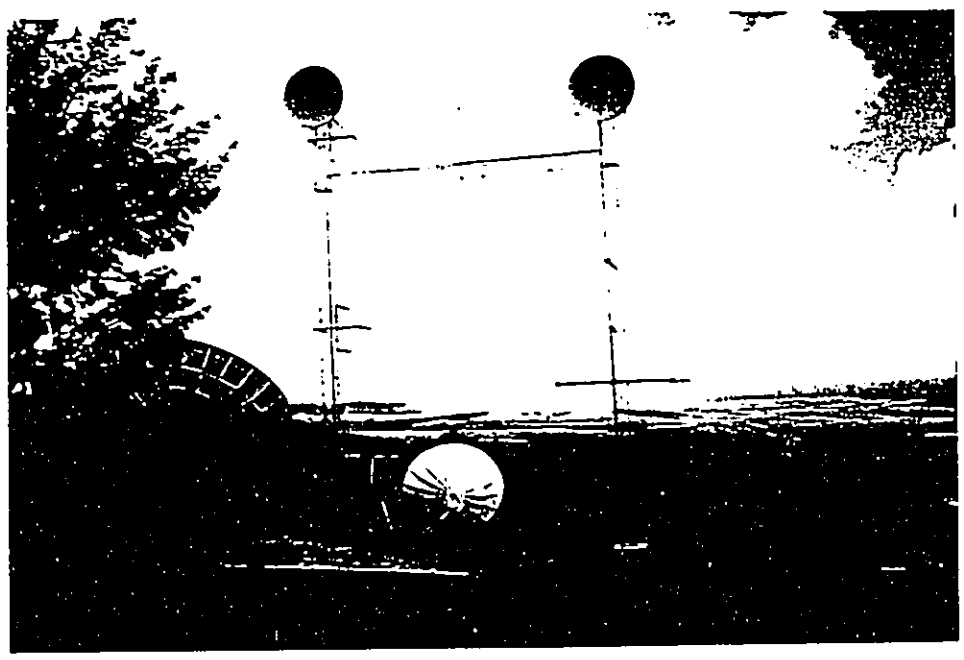
3.7 HAZARDS

The microwave repeater antenna is a low power transmitter with a transmission output equivalent to one watt. This power equates to only one percent of a standard 100-watt household light bulb. In addition, the antenna is located at the edge of Kukuiolono Park and directs the transmission away from park users. There are thus no hazards from microwave radiation.

As indicated previously, the housing for the battery is completely sealed and no adverse impacts are anticipated on the environment.

Microwave repeater station consisting of dish, supporting pole, housing, and battery box. GTE Hawaiian Telephone Company facility in foreground.

Existing 70-foot antenna tower with microwave repeater station at lower left of tower.



Existing GTE Hawaiian Telephone Company equipment building and antennas and Kauai Cable TV facilities.

FIGURE 5

SECTION 4

PUBLIC FACILITIES AND SERVICES AND PROJECT IMPACTS

4.1 ELECTRICITY

Power is presently being provided via an underground tap to the adjacent 70-foot antenna tower.

4.2 VEHICULAR ACCESS AND POLICE PROTECTION

Access to the site is provided by a single-lane paved road which starts at the park's public parking area and winds through the golf course: A short paved driveway extends from the access road to the existing Hawaiian Telephone facility. The repeater station is a short distance from the driveway. The park is locked at the gated entry during the evenings to discourage vandalism.

SECTION 5

SOCIO-ECONOMIC CONDITIONS AND IMPACTS

Current social and economic trends indicate that the Island of Kauai and other neighbor islands will continue to experience fairly rapid population growth, while Oahu's rate of growth will be moderate. This growing population will require expanded services including portable or mobile cellular telephone services.

GTE Mobilnet indicates it has approximately 600-700 customers on Kauai. The repeater station is necessary to continue providing better cellular coverage to its current and future customers.

SECTION 6

LAND USE REGULATIONS AND PROJECT IMPACTS

6.1 STATE LAND USE DISTRICT AND SUBZONE

The site is designated within the Conservation District and within the General Subzone as determined by the State Land Use Commission and the Department of Land and Natural Resources, respectively (Figure 6). The subject telecommunications equipment is of a type that is generally considered to be in conflict with the objectives of the General Subzone.

6.2 COUNTY GENERAL PLAN

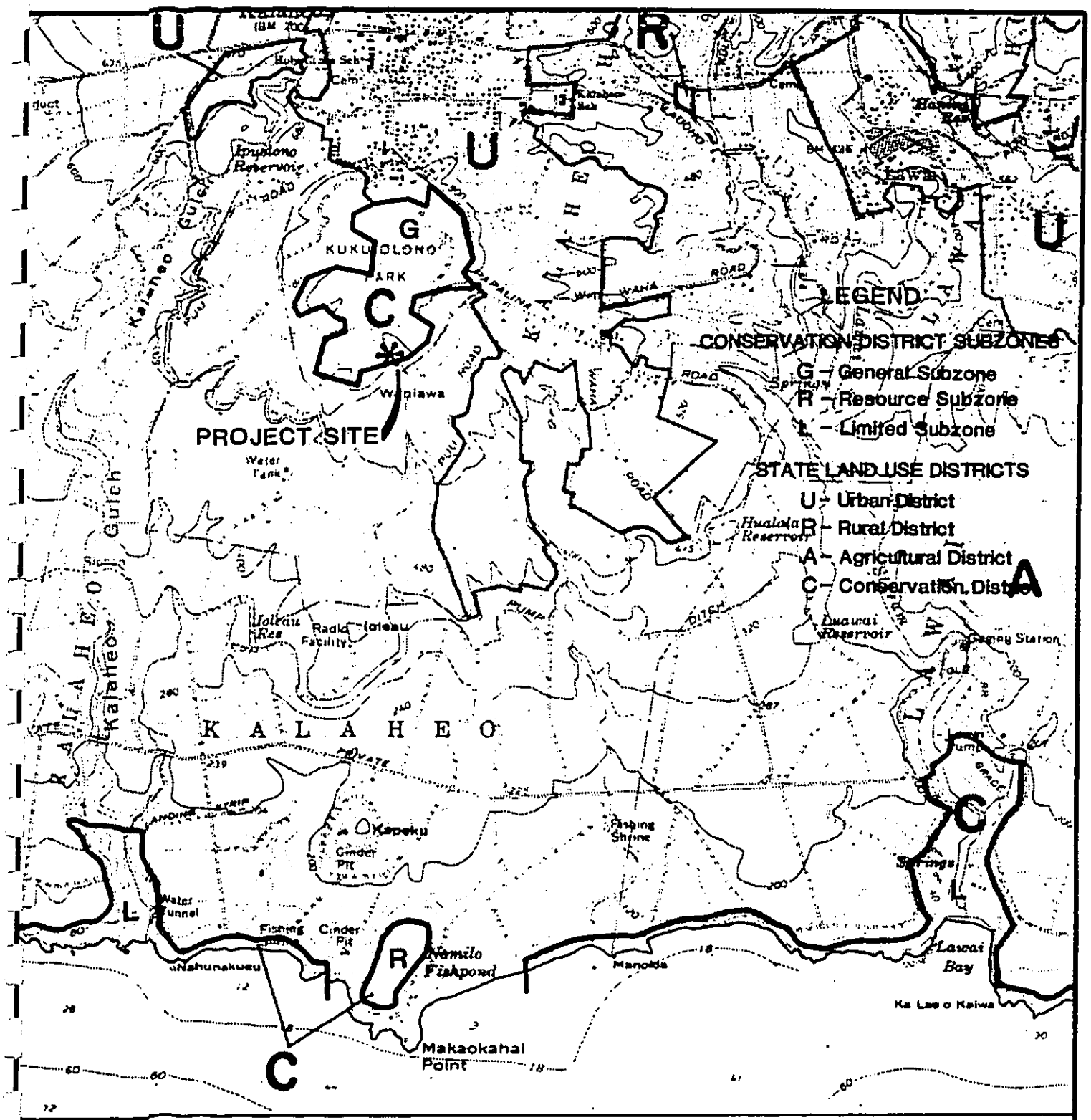
The site is designated as "Public Facility" by the Kauai General Plan as reflected on the Koloa-Poipu-Kalaheo General Plan Map.

6.3 COUNTY ZONING

The project site is designated within the Conservation District and County zoning for the site is not applicable. The relevant zoning map for the area refers to the site as State Land Use Conservation.

6.4 COASTAL ZONE MANAGEMENT (CZM) AND SPECIAL MANAGEMENT AREA APPLICATION (SMA)

The project site is located mauka of the County of Kauai Special Management Area, and thus a Special Management Area permit is not required. No significant adverse impacts are anticipated on the policies and objectives of the Coastal Zone Management program, Chapter 205A, Hawaii Revised Statutes.



STATE LAND USE DISTRICTS AND CONSERVATION SUBZONES MAP

FIGURE 6

CELLULAR TELEPHONE
TRANSMISSION FACILITY
Kukuiolono, Kauai

For: GTE Mobilnet
By: R. M. Towill, Corp.

SECTION 7

ALTERNATIVES TO THE PROPOSED ACTION

7.1 NO PROJECT

If the existing and proposed improvements are not allowed, cellular service to Kauai and its local areas will not be complete and the quality of cellular phone service will be impaired.

7.2 OTHER SITES

GTE Mobilnet considered other sites to locate the repeater station including buildings within Lihue. Most of these sites either did not have a clear line of sight path to the Grove Farm cellular site or had problems with leasing arrangements.

SECTION 8

NECESSARY PERMITS AND APPROVALS

An after-the-fact Conservation District Use Permit is necessary to legitimize the existing improvements and to allow the proposed additional equipment previously described in Section 2, Description of Proposed Action. Subsequently, a building permit will be obtained from the County of Kauai.

SECTION 9

DETERMINATION

In accordance with Chapter 343, Hawaii Revised Statutes, it has been determined that an Environmental Impact Statement is not required for the proposed and existing improvement at the project site. A negative declaration is therefore appropriate since the project is anticipated to have no "significant effect" on the environment in accordance with the EIS Rules. The determination is based on the mitigation of any adverse impacts and that the technical, economic and social benefits far outweigh the minimal adverse environmental impacts.

REFERENCES

1. Hawaiian Telephone Company, Environmental Impact Assessment for the Oahu-Maui Digital Microwave System, Oahu-Hawaii Digital Microwave System, Oahu-Kauai Digital Microwave System, prepared by R. M. Towill Corporation, 1985.

2. State of Hawaii, Data Book 1989, Department of Business and Economic Development, November 1989.

3. State of Hawaii, Chapter 2 of Title 13, Administrative Rules, entitled Conservation Districts.

4. State of Hawaii, Title 11, Chapter 200, Environmental Impact Statement Rules.

5. U.S. Department of Agriculture, Soil Conservation Service, Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii, August 1972.

6. University of Hawaii, Department of Geography, Atlas of Hawaii, 2nd Ed., University of Hawaii Press, 1983.

EXHIBIT 1

F A R I N O N

A FULL SPECTRUM OF PRODUCTS & SERVICES

Urbanet® 10e

Enhanced Light Density Digital Microwave System For 10.5 GHz Common Carrier and Private Applications

With New High Power Option

BENEFITS

- Lower per-mile transmission costs than similar capacity 18 GHz or 23 GHz microwave equipment.
- Equipment investment can be paid back in 1 to 4 years, depending on prevailing T1 lease rates.

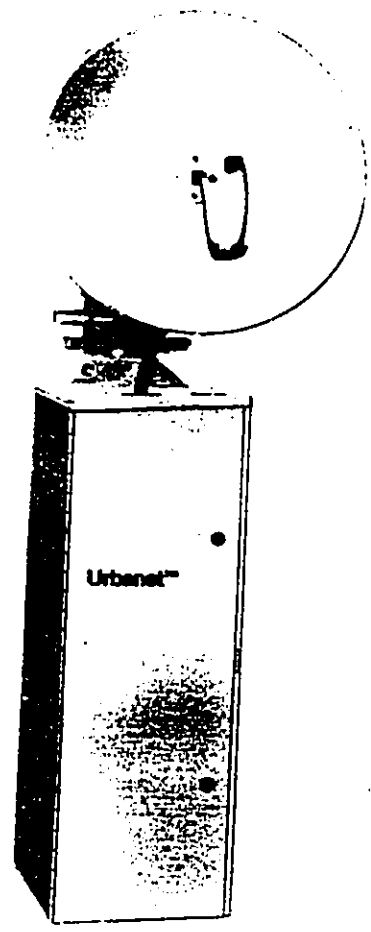
APPLICATIONS

- Provides the "Last Mile" connection for business, industrial, local government and common carrier networks.
- Ideal for intracity communications such as PABX trunk lines, cellular radio systems, video teleconferencing, voice and data distribution.
- Designed for both point-to-point and digital termination systems (DTS) in the 10.55–10.68 GHz frequency band.
- ACCUNET* T1.5 and DDS compatibility.

*ACCUNET is a service mark of AT&T.

FEATURES

- T1, 2 x T1 and 4 x T1 capacity.
- Full duplex point-to-point dedicated digital radio.
- Operates in both the Point-to-Point and Point-to-Multipoint DTS frequency bands.
- Designed for DC operation with indoor or outdoor mounting.
- Highly reliable paths can be configured up to 30 miles.
- High spectral efficiency allows more links in congested areas.
- Companion DVT 4 multiplexer provides standard DSX-1 interface with B8ZS option and remote T1 loopback.
- MHSB protected configuration.
- Digital service channel option.
- Industry leading 2-year warranty.



Typical Urbanet® 10e Digital Microwave Terminal, outdoor cabinet-mounted with 2-foot diameter antenna.

HARRIS
FARINON DIVISION

Urbanet® 10e

The Farinon Urbanet® 10e is an economical light density digital microwave system intended for business, industrial, local government and common carrier applications in the 10.55–10.68 GHz band. The Urbanet® 10e is available in DS1 (T1), 2 x T1 and 4 x T1 capacity versions. Standard DSX-1 interfaces for the 2 x T1 and 4 x T1 versions are provided by the DVT 4 Multiplexer. When used with the DVT 4, the Urbanet® 10e can provide service channel facilities via the Farinon DVS Digital VersaT1lity™ Service channel.

Standard Urbanet® 10e options include MHSB radio protection, space diversity path/receiver protection, DVS orderwire (2 x T1 & 4 x T1 capacity versions only), and a choice of rack, wall or outside cabinet mounting options.

Basic system configurations include a parabolic antenna, transmission line and mounting hardware. Upon installation, no field adjustments are necessary. The Urbanet® 10e system and its accompanying instruction manual permit simple and economical installation, operation and maintenance.

The Urbanet® 10e comes as a self-contained package including all hardware to install and place in service.

Highly reliable path lengths can be configured up to 30 miles depending on climate factors and equipment capacity.

Frequency Allocations

The 10.55–10.68 GHz band (Figure 1) provides allocations for both point-to-point and DTS users.

A total of eight pairs of frequencies, four 2.5 MHz pairs and four 1.25 MHz pairs, may be used for point-to-point applications. These frequencies are shared equally between Part 21 (Common Carrier) and Part 94 (Business, Industrial, Local Government) users. An Urbanet® 10e transmitter can provide a single T1 in a 1.25 MHz channel and either a T1, 2xT1 or 4xT1 in a 2.5 MHz channel. The availability of frequencies in this band combined with good propagation characteristics make the Urbanet® 10e the ideal alternative access microwave system.

The DTS portion of the band provides 5 MHz wide channels for extended service licensees and 2.5 MHz wide channels for limited service licensees. By utilizing multiple transmitters and orthogonal polarization, 2 T1 transmission capacity can be provided in the 2.5 MHz DEMS channels and 4 T1's in the 5 MHz DEMS channels. In a nodal configuration these frequencies can be repeated from 12 to 18 times in the same geographic area by use of antenna directivity and polarization discrimination to provide nodal capacities of up to 36 or 72 T1's.

Urbanet® 10e features quadrature partial response modulation which allows greater than 2.5 bits/sec/Hertz bandwidth efficiency, together with a high tolerance to interference. This radio's unique high bandwidth efficiency allows for denser use of 2.5 and 5 MHz channels since only 800 kHz bandwidth is required for each 1.544 Mb/s DS1 radio, 1600 kHz bandwidth for each 3.347 Mb/s 2 x T1 radio, and 2500 kHz for each 6.437 Mb/s 4 x T1 radio.

A non-protected Urbanet® 10e occupies a volume of only 21" × 10" × 4½". The antenna may be mounted up to 200 feet from the radio depending on required systems configuration.

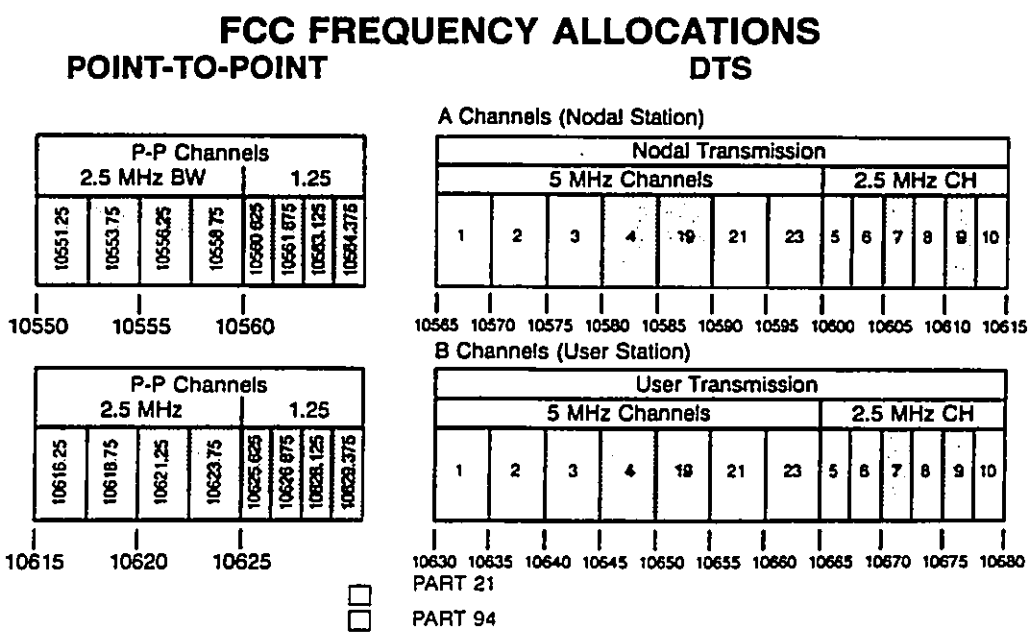


Figure 1. 10.55–10.68 GHz Point-to-point and Digital Termination Systems frequency channel allocations.

Urbanet® 10e Options

Farinon offers a wide range of Urbanet® 10e options to accommodate your specific path and system requirements.

These options include:

- 2 x T1 data rate (3.347 MB/s).
- 4 x T1 data rate (6.437 Mb/s).
- High Power Option
- Indoor or outdoor mounting configurations.
- Monitored hot standby protection.
- Space-diversity receivers.
- DVS orderwire (2 x T1, 4 x T1 versions with DVT 4 multiplex).
- 4 ft., 6 ft., 8 ft. or 10 ft. antennas.
- Low level multiplexers for 24, 48, 72 PCM voice channels and data for 9.6 kb/s to 56 kb/s.
- Additional waveguide and transmission line.
- Waveguide pressurization (for humid environments).
- DVA alarm remote for FARSCAN™ connectivity

SPECIFICATIONS

TECHNICAL SUMMARY

	DS1(T1)	2 x T1	4 x T1
Frequency Range	10.55–10.68 GHz	10.55–10.68 GHz	10.55–10.68 GHz
RF Channel Bandwidth	800 kHz	1600 kHz	2500 kHz
Modulation Type	9QPRS	9QPRS	25QPRS
RF Digital Transmission Rate (nominal)	1.544 Mb/s	3.347 Mb/s	6.437 Mb/s
Radio Interface	DSX-1	DVT 4 bipolar baseband interface	DVT 4 bipolar baseband interface
Multiplex Interface	N/A	2 x DSX-1	4 x DSX-1
Service	Full duplex point-to-point or DTS	Full duplex point-to-point or DTS	Full duplex point-to-point or DTS
Ambient Temperature Range			
RF assembly	−30°C to +55°C	−30°C to +55°C	−30°C to +55°C
DVT Multiplex, DVS	0°C to +50°C	0°C to +50°C	0°C to +50°C
Power Requirement	−24/−48 Vdc	−24/−48 Vdc	−24/−48 Vdc

TRANSMITTER CHARACTERISTICS

RF Power Output (includes branching circulator)	+15 dBm (0.032W)	+15 dBm (0.032W)	+12 dBm (0.016W)
High Power Output	+25 dBm (0.316W)	+25 dBm (0.316W)	+23 dBm (0.200W)

RECEIVER CHARACTERISTICS

Receiver Threshold			
Minimum for 10^{-6}BER	−85 dBm	−81.5 dBm	−78 dBm
10^{-3}BER	−88 dBm	−84.5 dBm	−81 dBm
Receiver RF overload DS1, 2 x T1, 4 x T1 (typical for 10^{-6}BER)	> −30.0 dBm	> −30.0 dBm	> −30.0 dBm

TRANSMISSION CHARACTERISTICS

System Gain (non-protected equipment)			
Minimum for 10^{-6}BER	100 dB	96.5 dB	90 dB
High Power Output	110 dB	106.5 dB	101 dB
Spectral Efficiency	1.9 bits/sec/Hz	1.9 bits/sec/Hz	2.5 bits/sec/Hz
Additional Branching Losses			
Non Protected TX & RX	0 dB	0 dB	0 dB
MHSB Transmitters TX	1 dB	1 dB	1 dB
Receiver Coupler RX Std.	1.5/7.5 dB	1.5/7.5 dB	1.5/7.5 dB
Receiver Coupler RX Opt.	4 dB/4 dB	4 dB/4 dB	4 dB/4 dB
Space Diversity RX	0 dB	0 dB	0 dB