BENJAMIN J. CAYETANO
GOVERNOR

BRIAN K. MINAAI
DIRECTOR

DEPUTY DIRECTORS
GLENN M. OKIMOTO
JADINE Y. URASAKI

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.

77

Entering downtown Honolulu, the route runs south on North King Street, southeast on River Street, south on Nimitz Highway past Aloha Tower and onto Ala Moana Boulevard up to the intersection with Punchbowl Street. A branch of the route runs to Papakōlea on Alakea Street (from Nimitz Highway), Queen Emma Street, Lusitania Street, Puowaina Avenue, Puowaina Drive, and Tantalus Drive to the bend in the road just past Kanaha Stream.

The main route proceeds through the Kaka`ako area north on Punchbowl Street (from Ala Moana Boulevard), then turns southeast on Pohukaina Street, north on Kamani Street, southeast on Halekauwila Street, north on Ward Avenue, southeast on Waimanu Street, north on Kamake`e Street, and southeast on Kona Street *mauka* of Ala Moana Shopping Center. Proceeding toward Waikīkī the route turns northeast on Atkinson Drive, east on Kapi`olani Boulevard, and southeast on Kalākaua Avenue over the Ala Wai Canal to the intersection with Ala Wai Boulevard. The route turns east and southeast along Ala Wai Boulevard on the *makai* side of the Ala Wai Canal to the intersection with Kapahulu Avenue.

Off Ala Wai Boulevard, a branch of the route extends *mauka* (north) on McCully Street across the Ala Wai Canal, then east on Citron Street, and north on Isenberg Street, terminating at the site of the former Stadium Bowl-O-Drome.

The main route continues northeast onto Kapahulu Avenue from Ala Wai Boulevard, then east on Herbert Street into Kaimukī, then southeast and northeast on Kilauea Avenue through Waialae-Kahala. The study route turns east on Kalaniana`ole Highway (72) to Hawaii Kai where it continues northeast on Lunalilo Home Road, southeast and northeast on Hawaii Kai Drive around the *mauka* side of Koko Crater, then south and east on Kealahou Street to the intersection with Kalaniana`ole Highway near Sandy Beach. The route follows Kalaniana`ole Highway (72) north around Makapu`u, through Waimānalo and Olomana to intersection with Kailua Road/Kalaniana`ole Highway (61) at Castle Memorial Hospital. The route turns southwest on Kailua Road/Kalaniana`ole Highway (61) to the intersection with Kamehameha Highway (83, and continues northwest on Kamehameha Highway into Kāne`ohe where it turns west on Likelike Highway to the junction with Kahekili Highway (83). On Kahekili Highway the route runs through `Āhuimanu to Kahalu`u Regional Park, then follows Kamehameha Highway (83) north to the intersection with Waiāhole Valley Road, then west on Waiāhole Valley Road to the study route terminus near the junction of the North and South Branches of Waiāhole Valley Road.

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

There are two general areas on O`ahu along the study route containing sands or sandy soils. Locations of these areas are shown on Figures 2 & 3.

The first area is on the west side of the island in Nānākuli. Soils maps indicate the proposed route intersects a pocket of Beach Sand just northwest of Nānākuli Stream drainage. Beach Sand is described as sand derived from coral and seashells (Foote et al., 1972). Although this is the only area where sands actually underlie the proposed route, Beach Sands lie adjacent to and *makai* of the proposed route from Wai`anae to Kahe Point.

The second area is on the east side of the island starting in Waimānalo, continuing with isolated pockets on either side of Makapu`u Point and ending with deposits at the base of several valleys draining into Maunalua Bay. In Waimānalo, the proposed route runs *mauka* of and adjacent to a large deposit of Jaucus Sands (JaC) which begins just northwest of the main gate into Bellows Air Force Base. The proposed route intersects with this Jaucus sand deposit at approximately Aloiloi Street and the deposit underlies the proposed route until approximately where the houses end in Waimānalo. Jaucus Sands (JaC) are characterized as well-drained calcareous soils developed from coral and seashells found on coastal plains near the ocean (Foote et al., 1972). On several Hawaiian islands, Jaucas sands are known to contain burials. In addition to the Jaucus Sands, there is a small section of Mokuleia loam underlying the proposed route directly *mauka* of Waimānalo Bay State Recreation Area. The Mokuleia soils are well-drained soils formed in alluvium overlying coral sand (Foote et. al, 1972). Although not sand, the Mokuleia soil series has a unique relationship to coral sand and is linked to burials on Kaua`i.

A small pocket of Beach Sand underlies the proposed route *makai* of Sea Life Park. This extends for no more than ½ km. Similarly, on the south side of Makapu`u Point just back of Sandy Beach Park, a pocket of Jaucus Sand underlies the proposed route.

Larger deposits of Jaucus Sands (JaC) are found at the edges of Kuapa Pond, in the areas of Portlock and at the base of Kuli`ou`ou Valley. At Portlock, a portion of the Jaucus Sand deposit runs adjacent to and *makai* of the prcposed route starting from the Koko Marina Shopping Center and ending near the pier. A small fragment of the deposit extends across Kalaniana`ole Highway and the proposed route right near the Koko Marina Shopping Center. In Kuli`ou`ou, a large deposit of Juacus Sand encompasses the proposed route from just *mauka* of Kuli`ou`ou Beach Park to *mauka* of Paiko Lagoon. From here the Jaucus sands run adjacent to and *makai* of the proposed route until Halemaumau Road on the east side of Niu Valley.

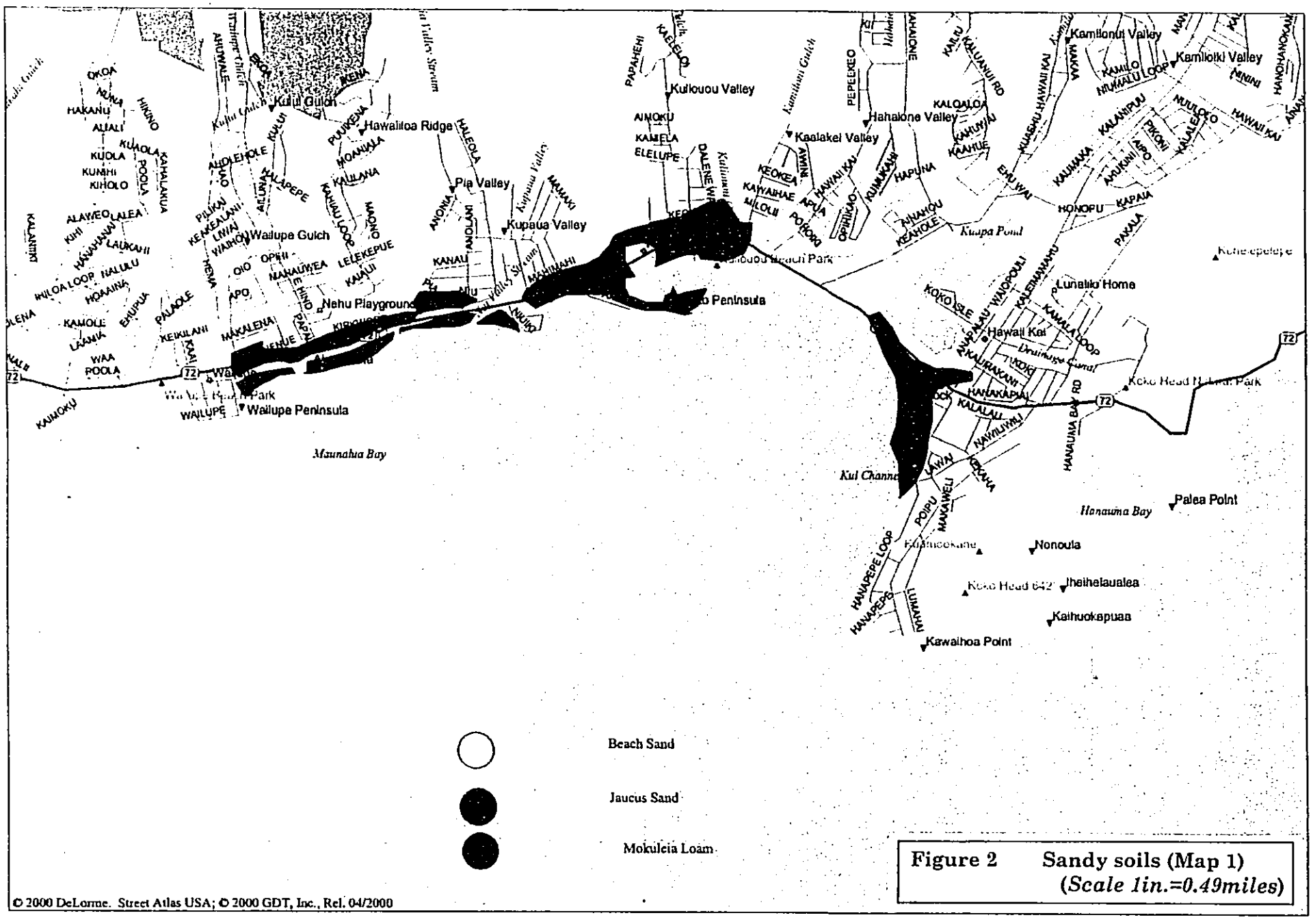
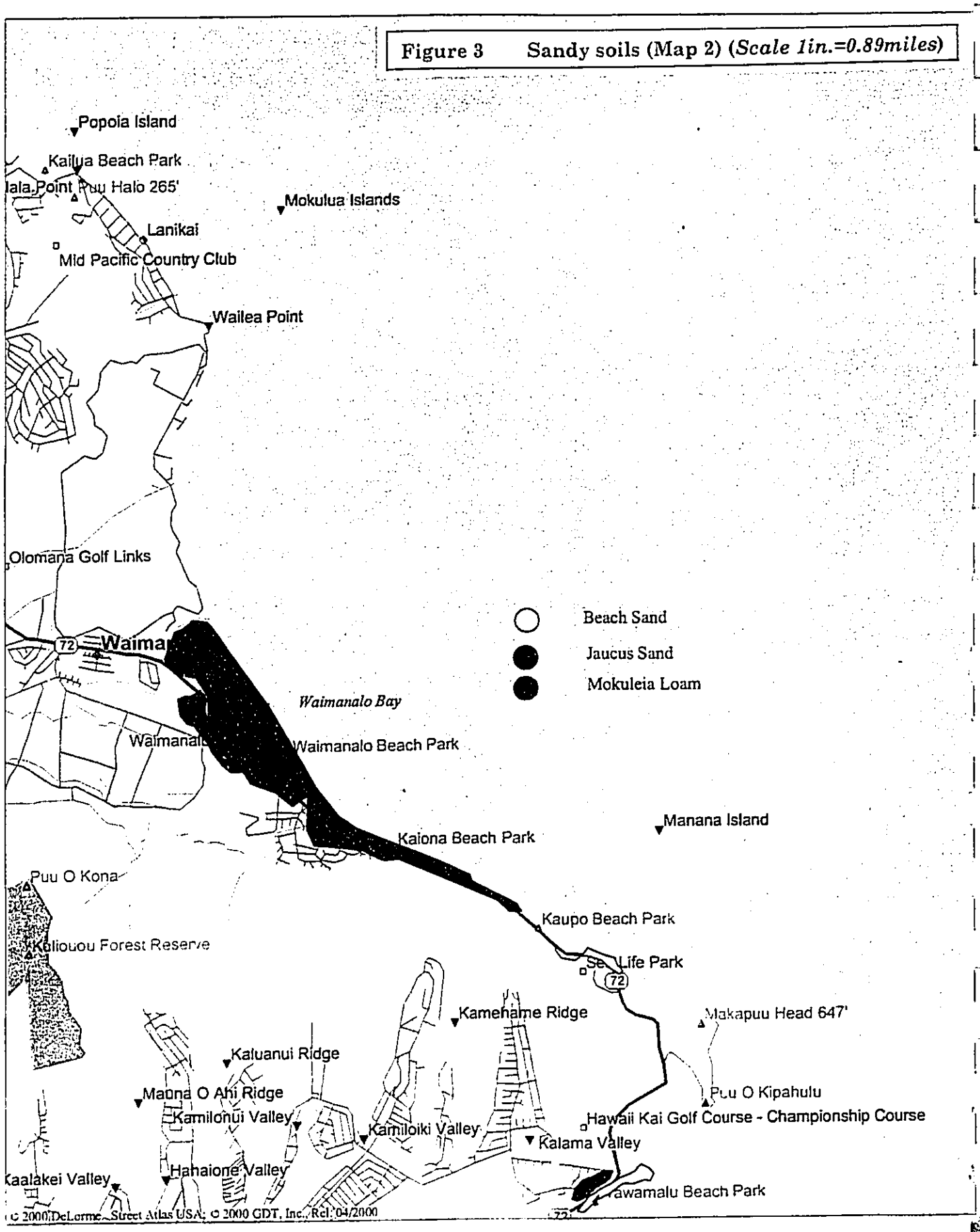


Figure 2 **Sandy soils (Map 1)**
(Scale 1in.=0.49miles)

Figure 3 Sandy soils (Map 2) (*Scale 1in.=0.89miles*)



Moving west through Niu Valley and Aina Haina, Jaucus sand deposits continue. However, they are well *makai* of the proposed route. *Mauka* of the Jaucus sands in both valleys is Mokuleia clay loam (Mt), a soils associated with coral sands. In Niu Valley, the proposed route intersects Mokuleia clay loam beginning just west of Niu Stream Drainage extending to Puuikena Drive at Hawaii Loa Ridge. The proposed route intersects the Mokuleia clay loam at several locales in Aina Haina, the most substantial extending from just west of Kirkwood to Wailupe Place.

Land Commission Awards

Inspection of tax maps and historic maps indicated the presence of Land Commission Awards (LCAs) for *kuleana* parcels along the study route on O`ahu. The highest distribution of *kuleana* lands situated in the vicinity of the proposed route occur on the fringes of Pearl Harbor in the south and near Kahalu`u in the north. Two clusters of LCAs are present along the proposed route near Hale`iwa in the north, one near the coast and one further *mauka* near Opaeula Stream. In western O`ahu at Wai`anae, all the known LCAs are located *mauka* along Wai`anae Valley Road. A cluster of three is situated near Mauna Kuwale with three more separate LCAs located near present-day Wai`anae Homesteads. Several *kuleana* surround Pearl Harbor along the study route which parallels Farrington Highway. Concentrations of LCAs begin just west of Waipahu and continue east at Waipahu, west of Pearl City with multiple LCAs at Waimalu, Kalauao and an isolated LCA near Makalapa Park on the east side of Pearl Harbor. East of Honolulu, there are two *kuleana* at the intersection of Kalaniana`ole Highway and Kalaniiki Street. On the windward side, three large concentrations of LCAs are present between `Āhuimanu and Kahalu`u along the proposed route. A cluster of LCAs occurs in the vicinity of the study route at the entrance of the Maunawili Drainage into Kawainui Marsh. Near the present day Pohakupu Subdivision, there are two LCAs. An LCA is located near the eastern intersection of the Old Kalaniana`ole Road and the present day Kalaniana`ole Highway, just *mauka* of the Olomana Golf Course. The locations of these LCAs along the study route are indicated in Figure 4.

Archaeological Sites

The GIS files at the State Historic Preservation Division were reviewed to determine locations of archaeological sites in the general vicinity of the proposed route. These sites are shown on Figures 5-7.

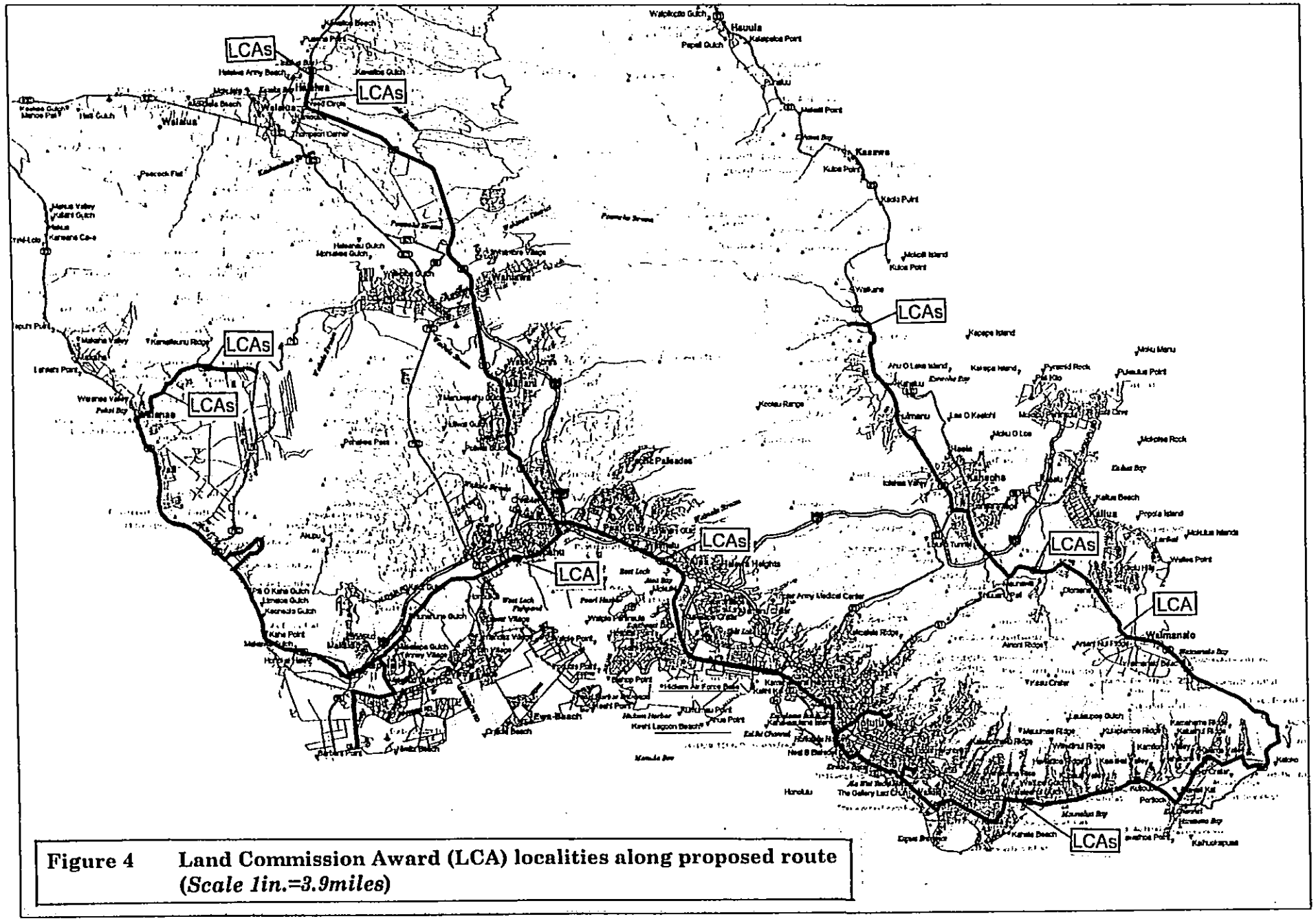


Figure 4 **Land Commission Award (LCA) localities along proposed route (*Scale 1in.=3.9miles*)**

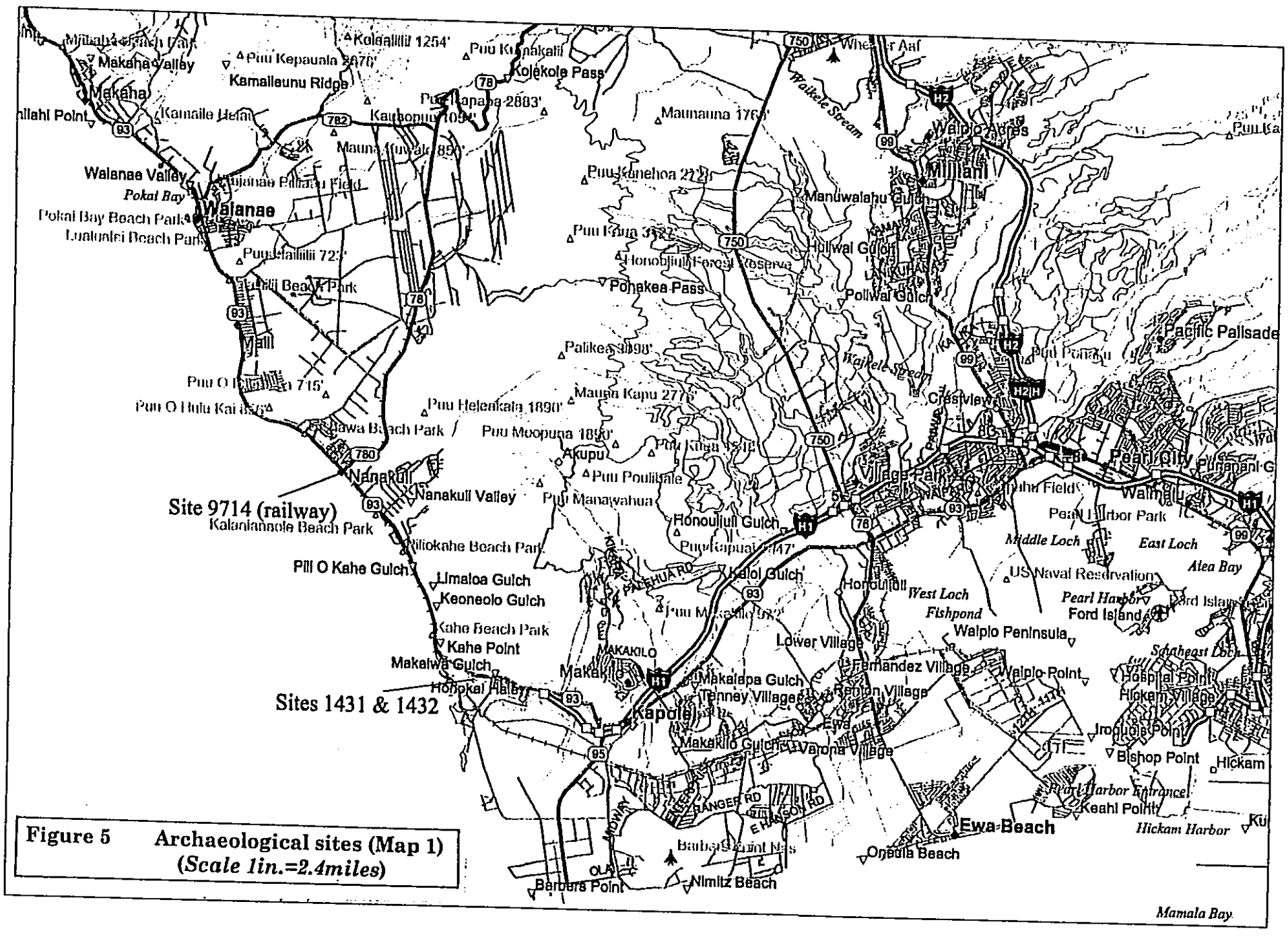


Figure 5 **Archaeological sites (Map 1)**
(Scale 1in.=2.4miles)

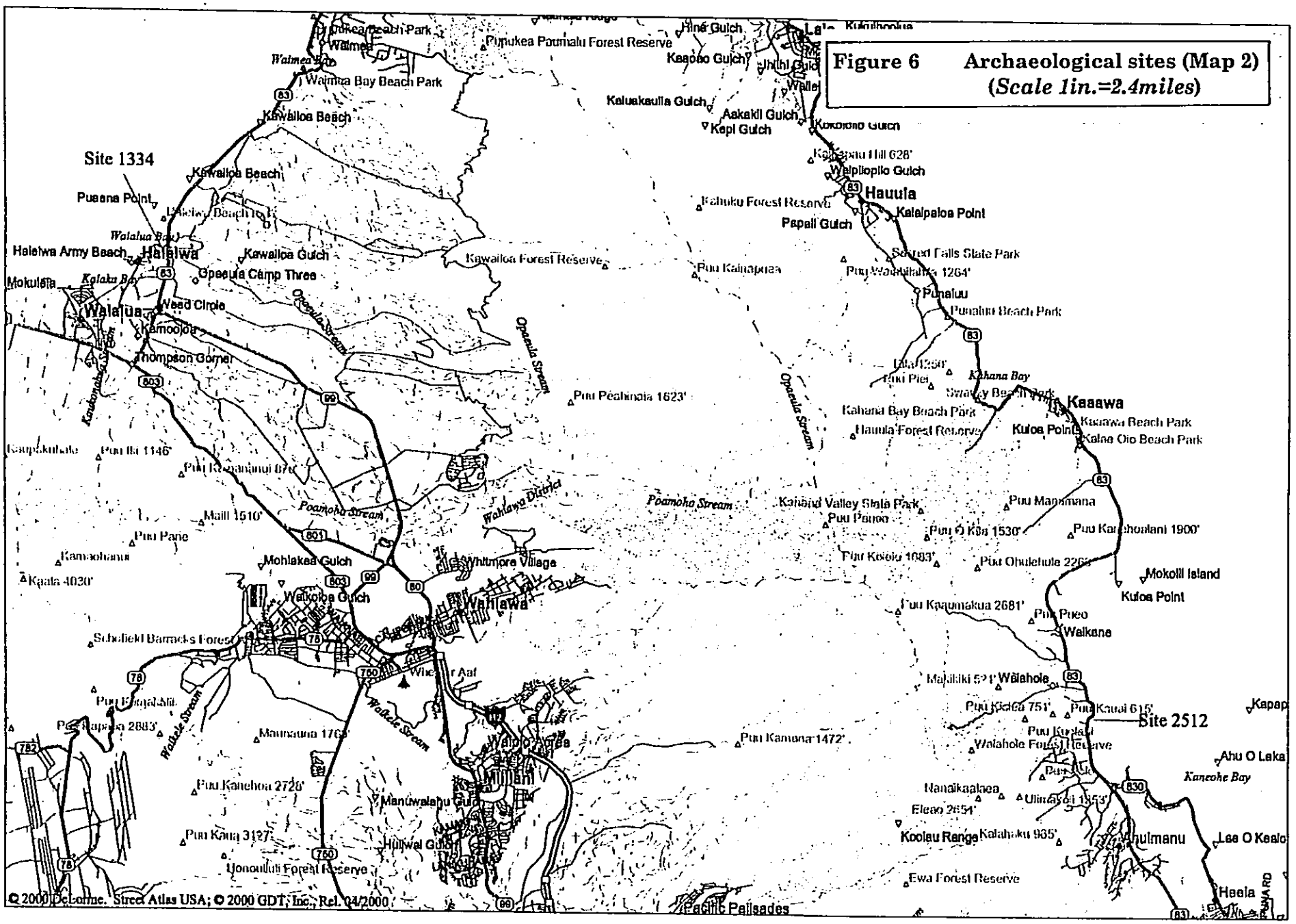


Figure 6 Archaeological sites (Map 2)
(Scale 1in.=2.4miles)

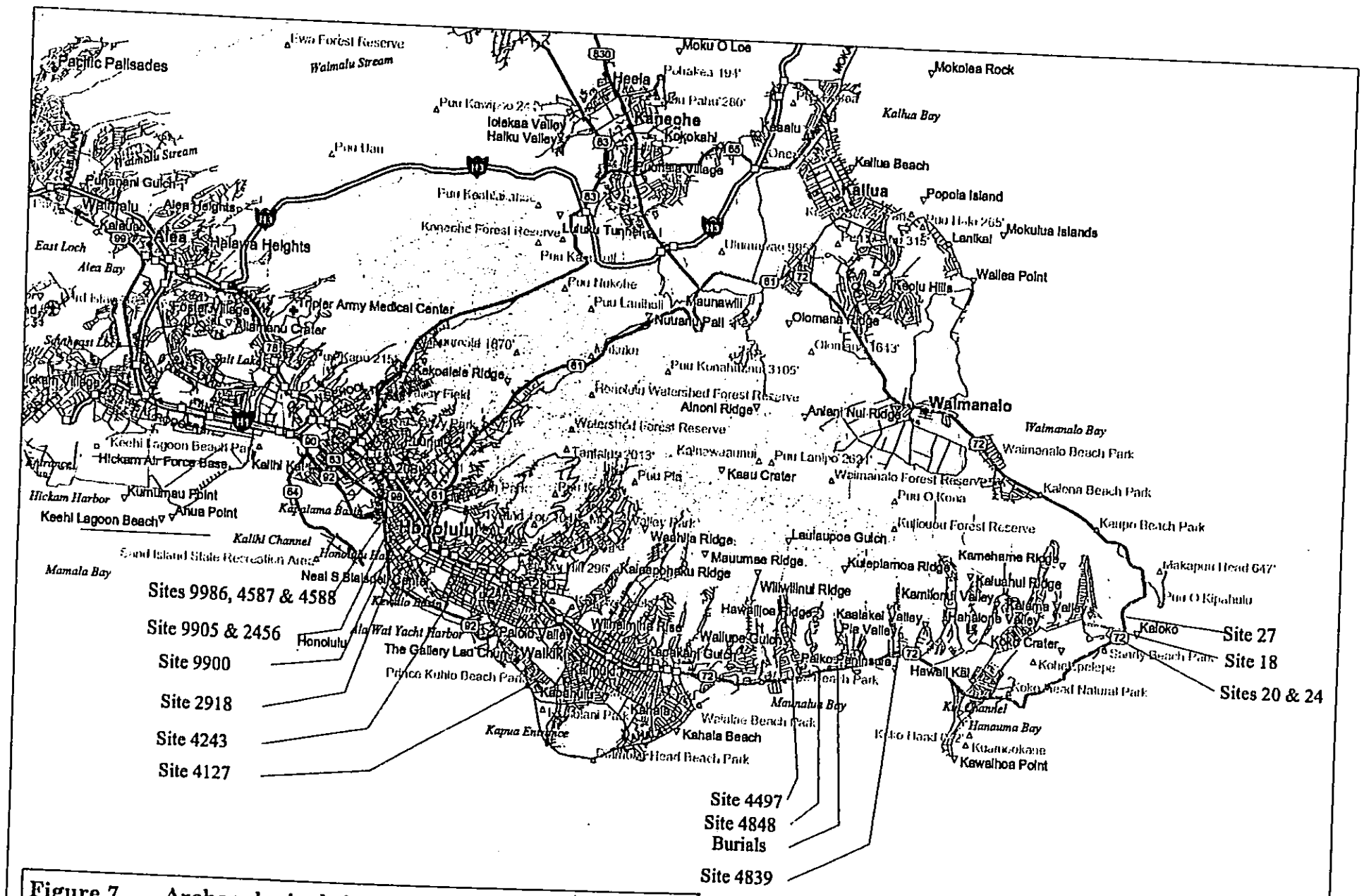


Figure 7 **Archaeological sites (Map 3) (*Scale 1in.=2.4miles*)**

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, 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.

Figures 8-10 present the archaeological assessment of the study route on O`ahu Island. The route has been subdivided into twenty-nine sections based on the four categories of archaeological potential. Each section is discussed below.

Section 1 **Commencement of route on Wai`anae Valley Road at Haleahi Road southwest to the intersection with Farrington Highway (93) — MODERATE POTENTIAL**

The study route portion of Wai`anae Valley Road and Old Plantation Road runs through areas where clusters of Land Commission Awards (LCAs) were recorded. The roads today are generally older two-lane, asphalt-paved roadways with older residences and agricultural lands lining both sides. Based on the presence of the LCAs and the apparent age of the roads, the potential to encounter historic properties is assessed as moderate in Section 1.

Section 2 **Farrington Highway (93) from the intersection with Old Government Road south to the intersection with Kaukama Road — HIGH POTENTIAL**

According to the soil survey of O`ahu, Farrington Highway in Section 2 runs immediately adjacent to and *makai* of beach sand deposits. Additionally, the soil survey indicates that, although immediately beneath the highway surface is road fill comprising

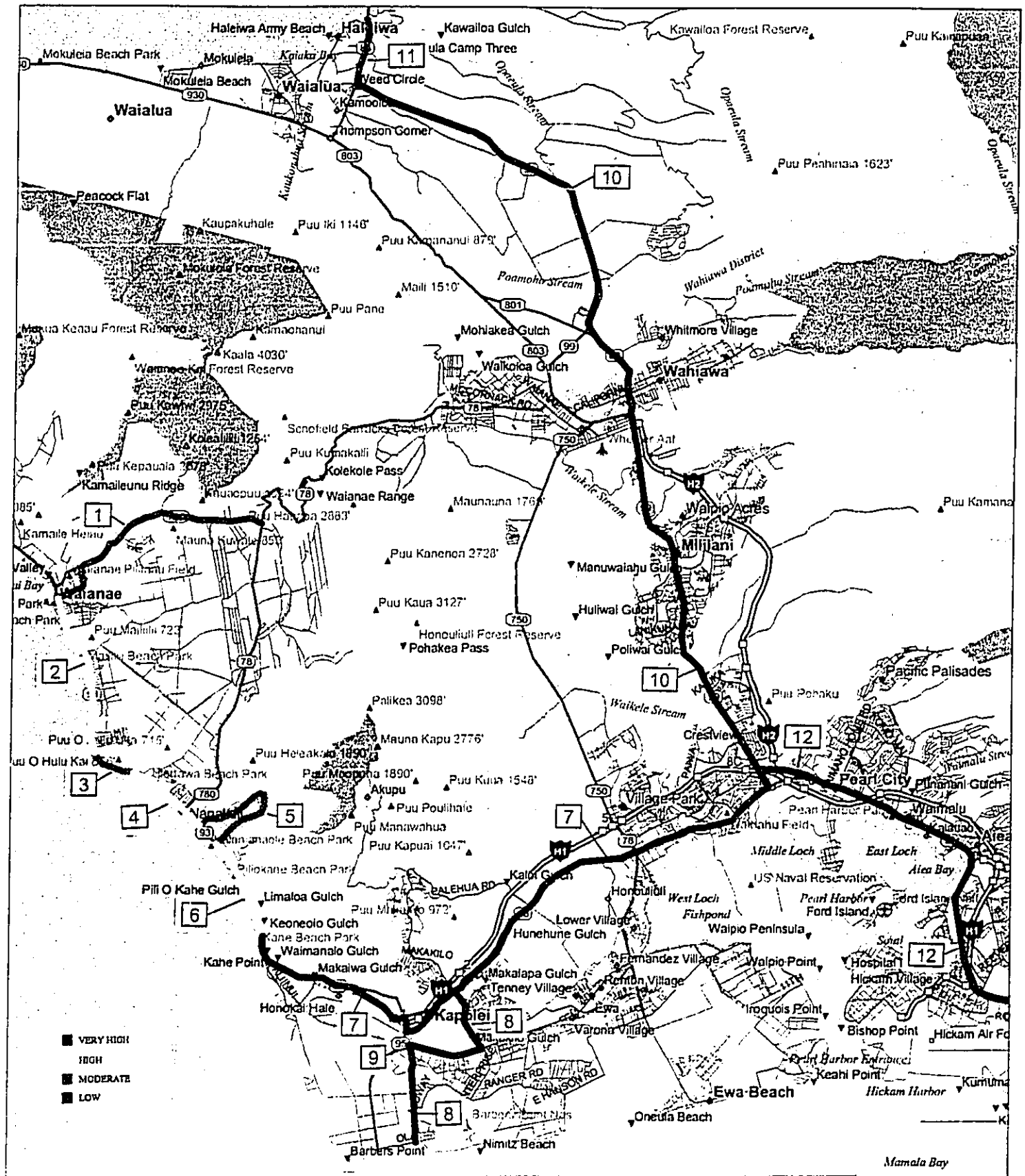
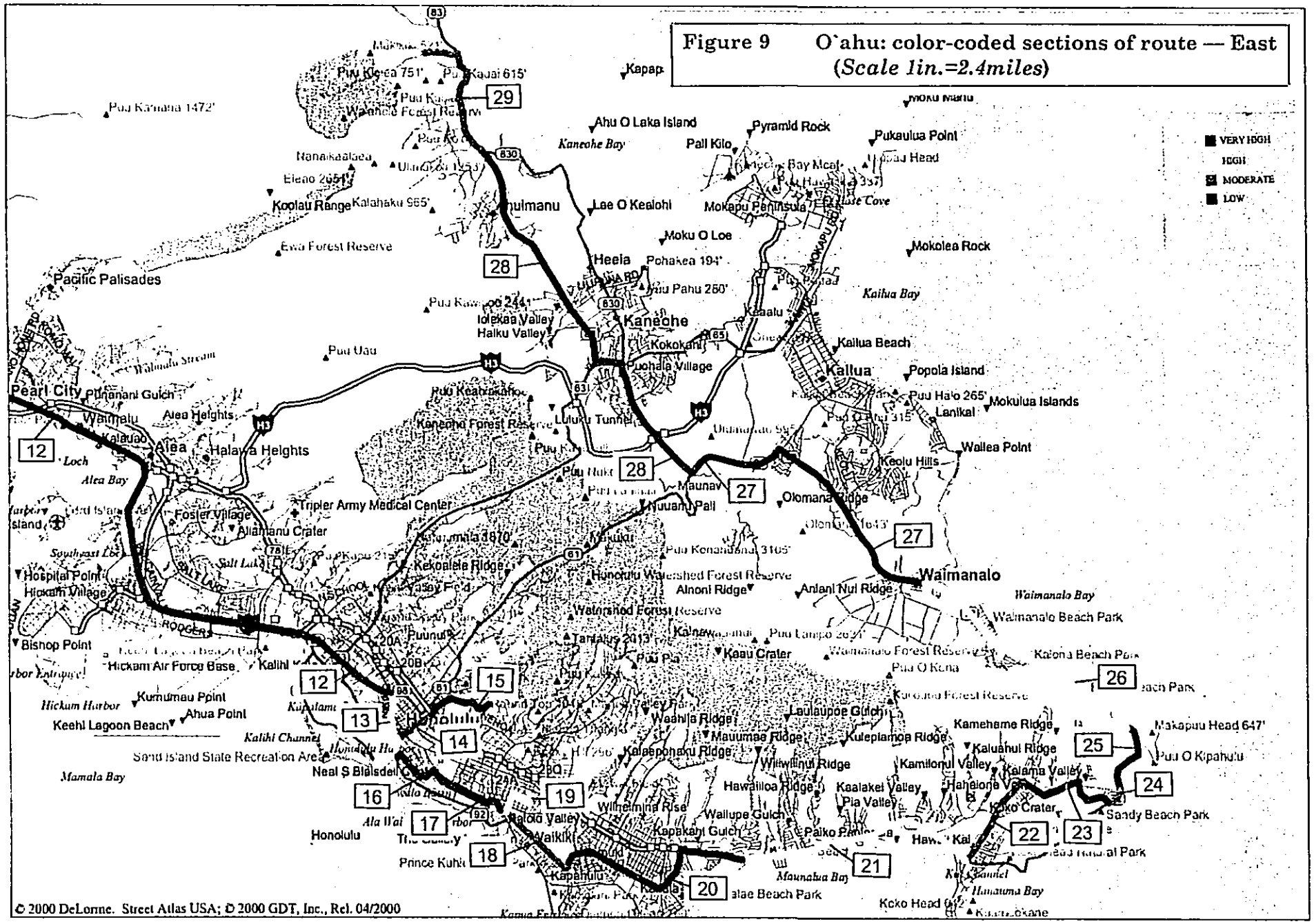


Figure 8 O`ahu: color-coded sections of route — West (*Scale 1in.=2.4miles*)

Figure 9 O`ahu: color-coded sections of route — East
(*Scale 1in.=2.4miles*)



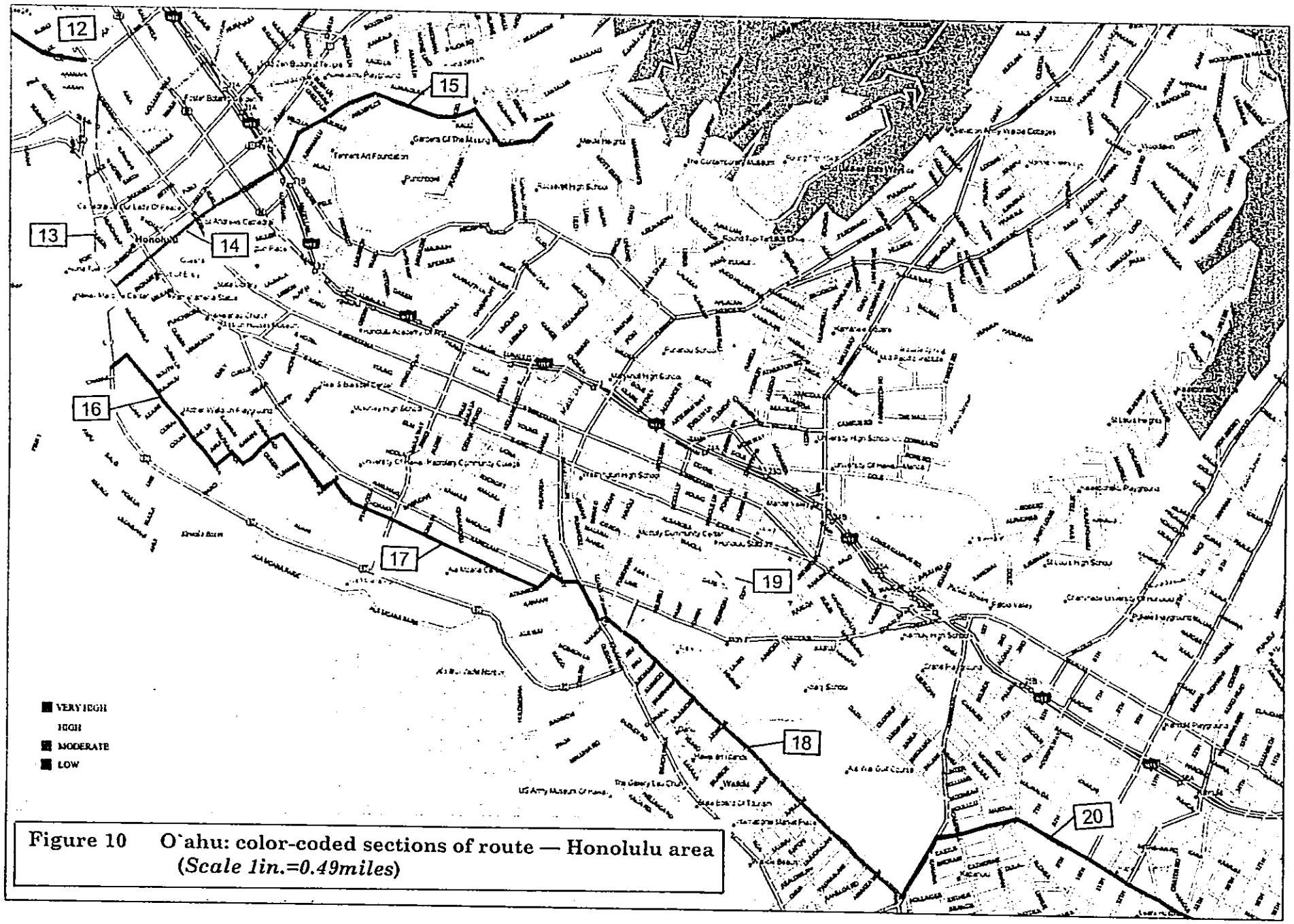


Figure 10 O`ahu: color-coded sections of route — Honolulu area (*Scale 1in.=0.49miles*)

Mokuleia soils, beneath the road fill is loose sand at a depth of 20 inches. Cultural Surveys Hawai`i is aware that human burials have been encountered in sand deposits adjacent to the *mauka* side of Farrington Highway in this area. Because of these factors, the potential to encounter historic properties is assessed as high in Section 2.

Section 3 Farrington Highway (93) from the intersection with Kaukama Road southeast around Pu`u o Hulu Kai to the intersection with Akowai Road — MODERATE POTENTIAL

Farrington Highway in Section 3 runs above a rocky shoreline and was constructed by cutting and grading the original ground surface. Intact cultural layers within sand deposits do not appear to be an issue here. However, because of the relative proximity to the shoreline and the presence of sand deposits in the near vicinity, the potential to encounter historic properties is assessed a moderate in Section 3.

Section 4 Southeast on Farrington Highway (93) from the intersection with Akowai Road to the intersection with Haleakalā Avenue, then northeast on Haleakalā Avenue to the intersection with Mano Avenue — HIGH POTENTIAL

Farrington Highway in Section 4 runs parallel to beach and Beach Sands in Section 4. These sand deposits, which in areas of the adjacent `Ulehawa Beach Park have been documented to contain intact cultural layers, may extend beneath the highway in portions of Section 4. Additionally, towards its southern end, Section 4 runs over Coral Outcrop, ancient coral reef material or cemented calcareous sand underlying a very thin cap of friable, red soil. In the former Camp Andrews parcel adjacent to the *makai* end of Haleakalā Avenue a human burial was documented during archaeological investigations conducted by Cultural Surveys Hawai`i. Based on these factors, the potential to encounter historic properties is assessed as high in Section 4.

(An historic site, the Oahu Railway and Land Co. right-of-way which has been placed on the National Register of Historic Places (Site 50-80-12-9714), runs parallel to and on the *makai* side of Farrington Highway through Lualualei and Nānākuli. Excavation for the cable system project in Section 4, if confined to the *mauka* side of Farrington Highway, should have no adverse impact upon the rail line.)

Section 5 Northeast on Haleakalā Avenue from the intersection with Mano Avenue to the intersection with Nanakuli Avenue, then southwest on Nānākuli Avenue to the intersection with Mano Avenue — MODERATE POTENTIAL

Section 5 circles into Nānākuli *mauka* of the sand deposits near Farrington Highway. Historical documents give few clues to the specific traditional land usages in the

area through which Section 5 runs. However, no Land Commission Awards were recorded in the area in the mid-19th century and the area remained ranch pasture land until the late 1890s when government acts opened Nānākuli lands for homesteading. Haleakalā Avenue and Nānākuli Avenue currently run through decades-old residential lots throughout their lengths. No surface archaeological sites and no indication of the possible presence of intact subsurface deposits were noted during the field inspection. Based on these factors, the potential to encounter historic properties is assessed as moderate in Section 5.

Section 6 **Nānākuli Avenue from the intersection Mano Avenue southwest to Farrington Highway, then south and southeast on Farrington Highway around Kahe Point to the western side of Waimānalo Gulch — HIGH POTENTIAL**

At the northern end of Section 6, the route runs over coral outcrop in which, as noted in Section 4 above, a human burial has been documented in a parcel adjacent to the study route. Toward the southern portion of Section 6, a human burial (Site 50-80-12-4061) was documented in Kahe Beach Park. At the bend around Kahe Point, Section 6 runs through an area in which several surface archaeological sites, both historic and prehistoric, have been documented — including walls, a fishing shrine, rockshelters, platforms, and midden scatters. Based on these factors, the potential to encounter historic properties is assessed as high in Section 6.

(As noted in the discussion of Section 4 above, an historic site, the Oahu Railway and Land Co. right-of-way which has been placed on the National Register of Historic Places (Site 50-80-12-9714), runs parallel to and on the *makai* side of Farrington Highway through Lualualei and Nānākuli. Excavation for the cable system project in Section 6, if confined to the *mauka* side of Farrington Highway, should have no adverse impact upon the rail line.)

Section 7 **From the western side of Waimānalo Gulch, southeast and northeast on Farrington Highway (93), H-1 Freeway, Kalaeloa Boulevard, Kapolei Parkway, and Kamokila Boulevard through Honokai Hale and Kapolei; then continuing on Farrington Highway through Honouliuli and Waipahu to the interchange *mauka* of Leeward Community College — LOW POTENTIAL**

The Section 7 portion of the route turns inland from the coastal areas of Wai`anae where underlying sandy soil deposits were a concern. Through most of its length, Section 7 runs through lands that were formerly in sugar cane cultivation. Ground disturbance and alteration caused by decades of commercial agricultural activities have probably eliminated any archaeological deposits beneath the route associated with former habitation.

Portions of Section 7 — on Kalaeloa Boulevard, Kapolei Parkway, and Kamokila Boulevard — extend through areas that have been extensively urbanized. In the newly-developed Kapolei area, the study route is a major recent road construction, four lanes wide in some portions. Because of the significant ground disturbance necessitated by the road's construction there is virtually no possibility that intact deposits remain immediately beneath the road surface.

In the older Waipahu Town, the study route runs over lands that, as indicated by Land Commission Award documents, were formerly taro *lo`i* (irrigated fields) as late as the mid-19th century. However, these fields were filled with the expansion of Waipahu Town in the early 20th century. Modernization of Farrington Highway through Waipahu Town in the 1930s entailed the importation of additional fill material to create a raised route over the Waipahu Drainage Canal and a then-operating O.R.&L. railway line.

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

Section 8 **Fort Barrette Road from the intersection with Farrington Highway (93) southeast to Renton Road, then west on Renton Road, connecting to Saratoga Road and running south on Saratoga Road toward the shoreline — LOW POTENTIAL**

Section 8 is a branch of the route extending south *(makai)* from Farrington Highway toward the coast at Kalaeloa. Between Renton Road and Saratoga Road, Section 8 crosses the Oahu Railway and land Co. right-of-way. This is a specific area of concern and is discussed in Section 9 below.

The *mauka* portion of Section 8 runs through Kapolei lands that were formerly in sugar cane cultivation. Ground disturbance and alteration caused by decades of commercial agricultural activities have probably eliminated any archaeological deposits beneath the route associated with former habitation. The *makai* portion of Section 8 enters onto areas of the former Barbers Point Naval Air Station that are underlain by alluvial and/or fill soils which are unlikely to contain significant subsurface historic sites.

No evidence of any surface archaeological sites or indications of possible subsurface deposits were noted during the field inspection of Section 8. Based on these factors, the potential to encounter historic properties is assessed as low in Section 8.

Section 9 **Portion of route between Renton Road and Saratoga Road crossing over the Oahu Railway and Land Company right-of-way — VERY HIGH**

As noted in the discussion of Section 8 above, that portion of the study route comprises the branch extending *makai* from Farrington Highway to Kalaeloa which,

overall, is evaluated as having low potential to encounter historic properties. However, within this branch, in order to connect the line between Renton Road and Saratoga Road, the route crosses a known historic site: the Oahu Railway and Land Co. right-of-way which has been placed on the National Register of Historic Places (Site 50-80-12-9714). Because excavation for the project would have an impact on this site, preliminary review and consultation with the State Historic Preservation Division and other agencies will be necessary. Because of this factor, the potential to encounter historic properties is assessed as very high in Section 9.

Section 10 Kamehameha Highway (99) northwest from the interchange *mauka* of Leeward Community College through Waipi`o, Mililani, and Wahiawa to Weed Circle — LOW POTENTIAL

Kamehameha Highway through most of Section 10 was observed during the field inspection to comprise a major modern thoroughfare with wide shoulders running across lands that have been disturbed by decades of sugar cane and pineapple cultivation. Through Waipi`o and Mililani the highway is bordered by major residential developments that have further disturbed the former agriculture lands. North of Mililani, the highway is less modern and winds through gulches where the highway's construction entailed much cutting and filling.

In Wahiawa Town, the route passes through a century-old urban area originally created by settlers from California which does not represent a traditional Hawaiian settlement area. North past Wahiawa, the highway descends through lands still in agriculture. The highway appears to have been constructed on a berm raised above the surrounding landscape for much of its length until Weed Circle.

No indication of archaeological sites was observed along any portion of Section 10 during the field inspection 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 in Section 10.

Section 11 Kamehameha Highway north through Haleiwa Town to the terminus of the study route at the intersection with Haleiwa Road — MODERATE POTENTIAL.

Section 11 runs through an area that was a focus of habitation and agriculture in pre-contact times. That focus continued into the nineteenth century as indicated by the extensive, continuous network of Land Commission Award parcels which the study route crosses through. The area continued to be a focus of activity in the historic period with the development of Hale`iwa Town. The historical importance of Hale`iwa Town and the cultural sensitivity that importance necessitates is a consideration in Section 11.

Additionally, it is Cultural Surveys Hawai`i's understanding that this area has been of concern to the State Historic Preservation Division. Based on these factors, the potential to encounter historic properties is assessed as moderate in Section 11.

Section 12 Kamehameha Highway (99) from the interchange *mauka* of Leeward Community College southeast through Pearl City, Waimalu, and Aiea to Aloha Stadium, then south and southeast past the Makalapa Naval Housing and continuing east on Nimitz Highway (near Valkenburgh Street) under the H-1 Freeway to Kamehameha Highway (near Middle Street) and Dillingham Boulevard to the intersection with North King Street — LOW POTENTIAL

Section 12 runs for its entire length through areas that have been impacted by urban and military-associated development through most of the 20th century. During the field inspection the study route was observed to have been constructed by major cutting and filling to create the level surface over which it runs. As was noted earlier in this report, concentrations of Land Commission Awards — mostly for taro *lo`i* (irrigated fields) were recorded in the vicinity of the study route above Pearl Harbor through Pearl City Waimalu and Aiea. However, it was noted during the field inspection that Kamehameha Highway runs well *mauka* and is elevated above the low-lying lands where the irrigated fields would have been located. These lands have long been filled-in and have been thoroughly urbanized. Urban development is especially evident at the Honolulu end of Section 12 where Nimitz Highway and Dillingham Boulevard extend through long-established industrial and commercial areas. Because of the significant ground disturbance necessitated by the construction of Kamehameha Highway and Nimitz Highway in Section 12, there is virtually no possibility that intact deposits remain immediately beneath the road surface.

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

Section 13 South on North King Street from the intersection with Dillingham Boulevard to the intersection with River Street, then southeast on River Street to the intersection with Nimitz Highway, then south on Nimitz Highway past Aloha Tower and onto Ala Moana Boulevard up to the intersection with Punchbowl Street — HIGH POTENTIAL

Adjacent to the northwestern portion of Section 13 on North King Street, human remains were encountered during archaeological investigations in a parcel — former site of a fishpond — between Iwilei Road, Kaaahi Place, and North King Street North.

The portion of Section 13 that includes River Street and South Nimitz Highway is at the periphery of the Chinatown Special District which was placed on the National Register of Historic Places in January 1973 (Site 50-80-14-9927). Under Chapter 6E of the Hawai`i

Revised Statutes, special procedures may be mandated for this portion of the study route. Consultation with the State Historic Preservation Division is recommended. During archaeological investigations in 1992 of the Marin Tower parcel on the *mauka* side of Nimitz Highway, within the Chinatown Special District, significant historic sites, including human burials, were documented.

Further southeast on Nimitz Highway and Ala Moana Boulevard, recent archaeological monitoring by Cultural Surveys Hawai`i of excavations for utilities projects has documented the presence of historic properties — including former tram lines — beneath fill layers.

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

Section 14 **Alakea Street from the intersection with Nimitz Highway northeast to the intersection with South Beretania Street, then Queen Emma Street to the H-1 overpass — MODERATE POTENTIAL**

No historic documentation records any traditional land usages in the immediate vicinity of the Alakea Street portion of Section 14 prior to the development of Honolulu Town during the early decades of the 19th century. By the mid-1800s Alakea Street was primarily in residential use. Throughout the decades of the 20th century, residential use gave way to professional offices and finally to high-rise buildings. Successive construction activities adjacent to Alakea Street and modernization of the street itself have diminished but not totally eliminated the possibility that intact historic deposits remain immediately beneath the road surface.

Further *mauka* on the Queen Emma Street portion of Section 14, less intensive building activities for urban Honolulu heighten the possibility that intact historic deposits associated with 19th century Honolulu may remain beneath the road surface. Archaeological investigations by Cultural Surveys Hawai`i in the municipal parking lot between Queen Emma Street and the Pali Highway have documented the presence of intact historic sites — including 19th century trash pits — in the near vicinity of Section 14.

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

Section 15 **Lusitania Street (from the H-1 overpass) north to Puowaina Drive around the the *mauka* side of Punchbowl Crater, then onto Tantalus Drive to the route terminus at the bend just past Kanaha Stream — LOW POTENTIAL**

Section 15 around the *mauka* side of Punchbowl Crater is little documented in previous archaeological investigations. This portion of the study route currently comprises

older streets through older residential neighborhoods. The development of modern roadways have cut into the cinder of Punchbowl making it very unlikely that subsurface historic properties would be encountered. The development of the Chinese Christian Cemetery, on the downslope side of Puowaina Drive, was likely contemporaneous with the construction of Puowaina Drive, making it unlikely that any burials have been covered inadvertently by road construction.

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

Section 16 Punchbowl Street (from Ala Moana Boulevard) north to Pohukaina Street, then southeast on Pohukaina Street to Kamani Street, then north on Kamani Street to Halekauwila Street, then southeast on Halekauwila Street to Ward Avenue, then north on Ward Avenue to Waimanu Street, then southeast on Waimanu Street to Kamake`e Street, then north on Kamake`e Street to Kona Street, southeast on Kona Street to the intersection with Pi`ikoi Street — VERY HIGH POTENTIAL

Section 16 enters into the Kaka`ako district which is well-documented as an area where numerous human burials, both historic and prehistoric, have been encountered during excavations for various construction projects up to the very recent past. For example, in the 1980's and 1990's, in the course of archaeological monitoring, data recovery, and excavation services conducted by Cultural Surveys Hawai`i during construction within the Hawai`i Community Development Authority's Kaka`ako Improvement District 1, four burial site areas were encountered: two cemeteries and two isolated burials. The cemeteries recorded on Queen Street (State site 50-80-14-4534-[A-I, 1-107]) and on South Street/Quinn Lane (State site 50-80-14-3712-[A-U]) contained 116 and 31 sets of remains, respectively. These two areas comprise the 1853 Honuakaha Cemetery established during the smallpox epidemic. Two isolated burial sites - on Punchbowl Street (State site no. 50-80-14-4532-1) and Halekauwila Street (State site no. 50-80-14-4533-1) - each contained one set of remains. A variety of other archaeological and historical features were noted, excavated and recorded during the monitoring process, including historic trash layers, historic cultural features, and fill layers associated with the urbanization of the Kaka`ako area.

Also relevant to the present study route, burials have been encountered recently during excavation activities along Kamake`e Street. Additionally, the Kaka`ako district was the site, in historic times, of ethnic camps and a leprosy hospital. Intact subsurface deposits related to these entities may be present beneath the modern fill layers.

Based on these factors, the potential to encounter historic properties is assessed as very high in Section 16.

Section 17 **Kona Street from the intersection with Pi`ikoi Street southeast along the *mauka* side of Ala Moana Shopping Center to the intersection with Atkinson Drive, then northeast on Atkinson Drive to the intersection with Kapi`olani Boulevard, then east on Kapi`olani Boulevard to the intersection with Kalākaua Avenue, then southeast on Kalākaua Avenue over the Ala Wai Canal to the intersection with Ala Wai Boulevard — LOW POTENTIAL**

The Kona Street portion of Section 17 runs across lands that were extensively filled prior to the construction of the Ala Moana Center in the 1960s. Along the Atkinson Drive, Kapi`olani Boulevard and Kalākaua Avenue portions of Section 17, previous archaeological studies of the Honolulu Convention Center site and historical research on the construction of the Ala Wai Canal have not indicated the presence of three to six feet of fill immediately beneath the present road surface in the area. Based on these factors, the potential to encounter historic properties is assessed as low in Section 17.

Section 18 **Ala Wai Boulevard from the intersection with Kalākaua Avenue east then southeast along the *makai* side of the Ala Wai Canal to the intersection with Kapahulu Avenue — MODERATE POTENTIAL**

Ala Wai Boulevard was created in the 1920s with the construction of the Ala Wai Drainage Canal—begun in 1921 and completed nine years later. Waikīkī lands adjacent to the canal were drained and filled, and the present-day grid of streets between the canal and Kalākaua Avenue was laid out. Waikīkī is an especially sensitive area as multiple burials have been encountered during construction projects in the area up to the very recent past. Burials have been documented in the vicinity of Ala Wai Boulevard on parcels fronting Liliuokalani Avenue and Paoakalani Avenue. Although the boulevard's location along the *makai* raised embankment of the canal suggests a diminished likelihood of intact historic deposits immediately beneath the road surface, because Waikīkī is a culturally sensitive area, the potential to encounter historic properties is assessed as moderate in Section 18.

Section 19 **McCully Street from the intersection with Ala Wai Boulevard, north over the McCully Street Bridge to the intersection with Citron Street, then southeast on Citron Street to the intersection with Isenberg Street; then north on Isenberg Street to the site of the former Stadium Bowl-O-Drome — HIGH POTENTIAL**

Section 19 of the study route runs through an extensive, continuous network of former taro *lo`i* beneath the present-day McCully and Moiliili neighborhoods. It is likely that material related to traditional agriculture and habitation remain intact beneath portions of this section. Additionally, a human burial was encountered and the intersection

of Citron Street and Pumehana Street during excavations for a utilities project in January 1998. Because of these factors, the potential to encounter historic properties is assessed as high in Section 19.

Section 20 Kapahulu Avenue from the intersection with Ala Wai Boulevard northeast to the intersection with Herbert Street, then east on Herbert Street to the intersection with Kilauea Avenue, then southeast and northeast on Kilauea Avenue through Kaimukī and Waialae-Kahala to the intersection with Kalaniana`ole Highway(72), then east on Kalaniana`ole Highway to the intersection with Anali`i Street — LOW POTENTIAL

Nineteenth-century maps and visitors accounts suggest that the Kapahulu portion of Section 20 runs through an area removed from the agricultural abundance and dense population that otherwise characterized Waikīkī in pre-contact Hawai`i. These documents describe a "plain" and a "wide extent of dark lava." No Land Commission Awards were recorded along the length of the route. Throughout its length the route runs through decades-old commercially and residentially developed areas where intact subsurface deposits are highly unlikely. Additionally, the Kalaniana`ole Highway portion of Section 20 is constructed on more than 40 inches of dirt and boulder fill (indicated on trench profiles drawn in 1946 for a 24-inch water main installation project).

Based on the above factors, the potential to encounter historic properties is assessed as low in Section 20.

Section 21 Kalaniana`ole Highway (72) from the intersection with Anali`i Street east through Wailupe, Niu, Kuli`ou`ou and Hawaii Kai to the intersection with Lunalilo Home Road — HIGH POTENTIAL

Kalaniana`ole Highway in Section 21 crosses over or through sandy soils of the Coral Reef formation in which it is likely that significant historic sites, including human burials, may be encountered during excavation procedures associated with the cable project. Multiple human burials have been previously documented along portions of Section 21 in archaeological investigations related to road widening projects of the 1980s and 1990s. Because of this factor, the potential to encounter historic properties is assessed as high in Section 21.

Section 22 Lunalilo Home Road from the intersection with Kalaniana`ole Highway (72) northeast to the intersection with Hawaii Kai Drive — MODERATE POTENTIAL

The present Hawaii Kai development through which Section 22 runs was created in the 1960s. Prior to that development Lunalilo Home Road ran along the eastern side of

Kuapa Pond, a traditional Hawaiian fishpond of littoral water. The eastern shoreline of the pond is shown on historic maps to roughly parallel the alignment of Lunalilo Home Road (as it was later named). It is possible that subsurface deposits associated with the fishpond are intact beneath the present road surface. Based on this factor, the potential to encounter historic properties is assessed as moderate in Section 22.

Section 23 Hawaii Kai Drive from the intersection with Lunalilo Home Road southeast and northeast around the *mauka* side of Koko Crater to the intersection with Kealahou Road, then south and east on Kealahou Road to the intersection with Kalaniana`ole Highway (72) — LOW POTENTIAL

The roads comprising Section 23 are all modern constructions associated with the development of the Hawaii Kai and Kalama Valley residential areas that commenced in the 1960s. Evidence of cutting and grading, and modern landscaping was noted along all portions of Section 23 during the field inspection. No Land Commission Awards and no previously-recorded archaeological sites are located along any portion of Section 23. Based on the above factors, the potential to encounter historic properties is assessed as low in Section 23.

Section 24 Kalaniana`ole Highway (72) from the intersection with Kealahou Road northeast to the Wāwāmalu Bridge — MODERATE POTENTIAL

Kalaniana`ole Highway in Section 24 runs above the coastline just northeast of Sandy Beach. Sandy deposits are indicated immediately adjacent to the highway in this area. However, the highway itself was observed during the field inspection to have been constructed by cutting and filling an embankment immediately *mauka* and above of the original roadway which had been constructed at grade. Because of this factor, the potential to encounter historic properties is assessed as moderate in Section 24.

Section 25 Kalaniana`ole Highway (72) from the Wāwāmalu Bridge to the entrance to Sea Life Park — LOW POTENTIAL

Kalaniana`ole Highway in Section 25 runs inland from the coastline on rocky soils — unlikely to contain subsurface deposits — between the Hawaii Kai Golf Course and the currently undeveloped Queen's Beach parcel. Additionally, historic research conducted by Cultural Surveys Hawai`i has documented that the Queen's Beach parcel was extensively impacted by bulldozing in the 1960s. Between Makapu`u Head and Sea Life Park, the highway is a major cut into a cliff face. Based on these factors, the potential to encounter historic properties is assessed as low in Section 25.

Section 26 Kalaniana`ole Highway from the entrance to Sea Life Park northwest into Waimānalo to Waimānalo Elementary and Intermediate School — HIGH POTENTIAL

As noted above in the soil survey summary, in Waimānalo, the study route in Section 16 runs *mauka* of and adjacent to a large deposit of Jaucus Sands (JaC). Additionally, there is a section of Mokuleia loam underlying a portion of the route in Waimānalo. Although not sand, the Mokuleia soil series has a unique relationship to coral sand and is linked to burials on Kaua`i. A human burial was recently encountered during excavation into sandy soil deposits in a parcel immediately *mauka* of Kalaniana`ole Highway, near Waimānalo Beach Park. Additionally, burials and cultural layers have been encountered in archaeological investigations within the Bellows Air Force Station, *makai* of Section 26. Because of these factors, the potential to encounter historic properties is assessed as high in Section 26.

Section 27 Kalaniana`ole Highway (72) from Waimānalo Elementary and Intermediate School northeast through Waimānalo and Olomana to Castle Memorial Hospital, continuing southwest on Kailua Road/Kalaniana`ole Highway (61) to the intersection with Kamehameha Highway (83) at Castle Junction — LOW POTENTIAL

As Kalaniana`ole Highway runs northeast through Waimānalo Town in Section 27, it moves beyond the sandy soil deposits noted in Section 26. While Land Commission Award parcel were recorded in the vicinity of the study route in this portion of Waimānalo no evidences of these parcels and associated land usages were noted during the field inspection. Northwest of Waimānalo, Kalaniana`ole Highway is a modern four-lane thoroughfare with wide shoulders whose construction entailed extensive cutting and grading all the way through to the junction fronting Castle Memorial Hospital. No evidences of archaeological sites and no indications of intact subsurface cultural deposits were observed along any portion of the study route in this area. Similarly, Kailua Road/Kalaniana`ole Highway to Castle junction evidenced much cutting and filling to construct the roadway. Although Land Commission Award parcels were indicated in this area, it is likely that these parcels were associated with the wetlands of Kawainui Marsh through which the highway runs on a raised berm. Based on these factors, the potential to encounter historic properties is assessed as low in Section 27.

Section 28 Kamehameha Highway (83) from the intersection with Kailua Road/ Kalaniana`ole Highway (61) northwest into Kāne`ohe to the intersection with Likelike Highway, then west on Likelike Highway to the junction with Kahekili Highway (83), then north on Kahekili Highway through `Āhuimanu to Kahalu`u Regional Park — LOW POTENTIAL

The roadways that comprise Section 28 are all very modern constructions created by

extensive cutting and grading through lands almost totally developed for commercial and residential use. No Land Commission Awards or previously-located archaeological sites were recorded adjacent to any portion of Section 28, nor were any sandy soil deposits indicated in the vicinity. Based on these factors, the potential to encounter historic properties is assessed as low in Section 28.

Section 29 Kamehameha Highway (83) from Kahaluʻu Regional Park north to the intersection with Waiāhole Valley Road, then west on Waiāhole Valley Road to the study route terminus near the junction of the North and South Branches of Waiāhole Valley Road — MODERATE POTENTIAL

Kamehameha Highway in Section 29 parallels the coastline which was likely a focus of habitation and agriculture in traditional Hawaiian times. Evidence that this habitation and related activities continued into post-contact times is suggested by the Land Commission Award (LCA) parcels that were recorded near Kahaluʻu and at Waiāhole. It is possible that cultural deposits associated with these LCAs and earlier habitation are present beneath the road surface. Based on these factors, the potential to encounter historic properties is assessed as moderate in Section 29.

IV. RECOMMENDATIONS

As detailed above, the 112.6-mile study route on O`ahu Island has been divided into twenty-nine sections. Each section was assigned one of four levels of potential — low, moderate, high, or very high — for presence of subsurface historic properties. 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 road shoulder through areas that have already been altered to varied degrees by construction of the road itself.

The following recommendations are suggested for each level:

LOW

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

Section 7 — From the western side of Waimānalo Gulch, southeast and northeast on Farrington Highway (93), H-1 Freeway, Kalaeloa Boulevard, Kapolei Parkway, and Kamokila Boulevard through Honokai Hale and Kapolei; then continuing on Farrington Highway through Honouliuli and Waipahu to the interchange *mauka* of Leeward Community College

Section 8 — Fort Barrette Road from the intersection with Farrington Highway (93) southeast to Renton Road, then west on Renton Road, connecting to Saratoga Road and running south on Saratoga Road toward the shoreline

Section 10 — Kamehameha Highway (99) northwest from the interchange *mauka* of Leeward Community College through Waipi`o, Mililani, and Wahiawa to Weed Circle

Section 12 — Kamehameha Highway (99) from the interchange *mauka* of Leeward Community College southeast through Pearl City, Waimalu, and Aiea to Aloha Stadium, then south and southeast past the Makalapa Naval Housing and continuing east on Nimitz Highway (near Valkenburgh Street) under the H-1 Freeway to Kamehameha Highway (near Middle Street) and Dillingham Boulevard to the intersection with North King Street

Section 15 — Lusitania Street (from the H-1 overpass) north to Puowaina Drive around the the *mauka* side of Punchbowl Crater, then onto Tantalus Drive to the route terminus at the bend just past Kapahu Stream

Section 17 Kona Street from the intersection with Pi`ikoi Street southeast along the *mauka* side of Ala Moana Shopping Center to the intersection with Atkinson Drive, then northeast on Atkinson Drive to the intersection with Kapi`olani Boulevard, then east on Kapi`olani Boulevard to the intersection with Kalākaua Avenue, then southeast on Kalākaua Avenue over the Ala Wai Canal to the intersection with Ala Wai Boulevard

Section 20 Kapahulu Avenue from the intersection with Ala Wai Boulevard northeast to the intersection with Herbert Street, then east on Herbert Street to the intersection with Kilauea Avenue, then southeast and northeast on Kilauea Avenue through Kaimukī and Waialae-Kahala to the intersection with Kalaniana`ole Highway(72), then east on Kalaniana`ole Highway to the intersection with Anali`i Street

Section 23 Hawaii Kai Drive from the intersection with Lunalilo Home Road southeast and northeast around the *mauka* side of Koko Crater to the intersection with Kealahou Road, then south and east on Kealahou Road to the intersection with Kalaniana`ole Highway (72)

Section 25 Kalaniana`ole Highway (72) from the Wāwāmalu Bridge to the entrance to Sea Life Park

Section 27 Kalaniana`ole Highway (72) from Waimānalo Elementary and Intermediate School northeast through Waimānalo and Olomana to Castle Memorial Hospital, continuing southwest on Kailua Road/Kalaniana`ole Highway (61) to the intersection with Kamehameha Highway (83) at Castle Junction

Section 28 Kamehameha Highway (83) from the intersection with Kailua Road/ Kalaniana`ole Highway (61) northwest into Kāne`ohe to the intersection with Likelike Highway, then west on Likelike Highway to the junction with Kahekili Highway (83), then north on Kahekili Highway through `Āhuimanu to Kahalu`u Regional Park

MODERATE

Areas deemed of moderate potential for encountering archaeological resources are recommended for a monitoring program with on-call monitoring. Spot checking or on-call monitoring with a cultural monitor are other options. Sections of the route where this recommendation is applicable are:

Section 1 Commencement of route on Wai`anae Valley Road at Haleahi Road southwest to the intersection with Farrington Highway (93)

Section 3	Farrington Highway (93) from the intersection with Kaukama Road southeast around Pu`u o Hulu Kai to the intersection with Akowai Road
Section 5	Northeast on Haleakalā Avenue from the intersection with Farrington Highway (93) to the intersection with Nanakuli Avenue, then southwest on Nānākuli Avenue to the intersection with Farrington Highway
Section 11	Kamehameha Highway north through Haleiwa Town to the terminus of the study route at the intersection with Haleiwa Road
Section 14	Alakea Street from the intersection with Nimitz Highway northeast to the intersection with South Beretania Street, then Queen Emma Street to the H-1 overpass
Section 18	Ala Wai Boulevard from the intersection with Kalākaua Avenue east then southeast along the *makai* side of the Ala Wai Canal to the intersection with Kapahulu Avenue
Section 22	Lunalilo Home Road from the intersection with Kalaniana`ole Highway (72) northeast to the intersection with Hawaii Kai Drive
Section 24	Kalaniana`ole Highway (72) from the intersection with Kealahou Road northeast to the Wāwāmalu Bridge
Section 29	Kamehameha Highway (83) from Kahalu`u Regional Park north to the intersection with Waiāhole Valley Road, then west on Waiāhole Valley Road to the study route terminus near the junction of the North and South Branches of Waiāhole Valley Road

HIGH

Areas deemed of high potential for encountering archaeological resources — based on presence of sand, Land Commission Awards, or historic properties — are recommended for a monitoring program with continual on-site monitoring. Sections of the route where this recommendation is applicable are:

Section 2	Farrington Highway (93) from the intersection with Old Government Road south to the intersection with Kaukama Road
Section 4	Southeast on Farrington Highway (93) from the intersection with Akowai Road to the intersection with Haleakalā Avenue
Section 6	Farrington Highway (93) from the intersection with Nānākuli Avenue southwest to Kahe Point Beach Park

Section 13 South on North King Street from the intersection with Dillingham Boulevard to the intersection with River Street, then southeast on River Street to the intersection with Nimitz Highway, then south on Nimitz Highway past Aloha Tower and onto Ala Moana Boulevard up to the intersection with Punchbowl Street

Section 19 McCully Street from the intersection with Ala Wai Boulevard, north over the McCully Street Bridge to the intersection with Citron Street, then southeast on Citron Street to the intersection with Isenberg Street; then north on Isenberg Street to the site of the former Stadium Bowl-O-Drome

Section 21 Kalaniana`ole Highway (72) from the intersection with Anali`i Street east through Wailupe, Niu, Kuli`ou`ou and Hawaii Kai to the intersection with Lunalilo Home Road

Section 26 Kalaniana`ole Highway from the entrance to Sea Life Park northwest into Waimānalo to Waimānalo Elementary and Intermediate School

VERY HIGH

Based on the known presence of burials and cultural layers, areas assessed "very high" in this report may merit more detailed investigation and/or consultation before any determination is made on the specific archaeological mitigation steps to be followed.

In "very high"-designated areas, the client should anticipate delays and/or changes in excavation technique, based on likelihood of encountering burials, cultural layers.

We recommend that consultation with the archaeology and burial staffs of the State Historic Preservation Division and the O`ahu Island Burial Council be conducted during the project's design phase when more design details and construction methods are developed. Such consultation efforts would be intended to develop appropriate mitigative measures needed to address potential impacts on historic resources.

The sections of the study route for which these considerations apply are:

Section 9 Portion of route between Renton Road and Saratoga Road crossing over the Oahu Railway and Land Company right-of-way

Section 16 Punchbowl Street (from Ala Moana Boulevard) north to Pohukaina Street, then southeast on Pohukaina Street to Kamani Street, then north on Kamani Street to Halekauwila Street, then southeast on Halekauwila Street to Ward Avenue, then north on Ward Avenue to Waimanu Street, then southeast on Waimanu Street to Kamake`e Street, then north on Kamake`e Street to Kona Street, southeast on Kona Street to the intersection with Pi`ikoi Street

V. REFERENCES

Foote, Donald E., Elmer L. Hill, Sakuichi Nakamura, and Floyd Stephens
1972 *Soil Survey of the Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii*. Soil Conservation Service, U.S. Department of Agriculture.

CULTURAL SURVEYS HAWAII

Archaeological Studies
Hallett H. Hammatt, Ph.D.
733 N. Kalaheo Avenue
Kailua, Hawaii 96734
FAX: (808) 262-4950, Bus: 262-9972
e-mail csh@dps.net

January 2001

ARCHAEOLOGICAL ASSESSMENT OF AN ALTERNATE ROUTE IN DOWNTOWN HONOLULU: AN ADDENDUM TO AN ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED SANDWICH ISLES COMMUNICATION FIBEROPTIC CABLE PROJECT WITHIN APPROXIMATELY 112.6 MILES (181.6 KILOMETERS) *OF ROAD CORRIDOR ON THE ISLAND OF O`AHU*

I. Introduction

Cultural Surveys Hawaii has completed an archaeological assessment of a section of road corridor in downtown Honolulu. At its north end, the corridor commences on North Beretania Street at A`ala Triangle Park. The corridor proceeds southeast on North and South Beretania Streets to the intersection with Punchbowl Street. The corridor continues southwest on Punchbowl Street to the terminus at the intersection with Pohukaina Street.

This corridor is an alternate route being considered as part of a proposed Sandwich Isles Communication fiberoptic cable project within approximately 112.6 miles of road corridor on the island of O`ahu for which Cultural Surveys Hawai`i has already completed an archaeological assessment report. A description of the cable system project and the methodology for the assessment are presented in that report. This addendum report assesses the alternate route following the methodology outlined in the O`ahu island-wide report.

II. Soil, Land Commission Award and Archaeological Data

No sandy soils are indicated beneath any portion of the alternative route. Along much of Beretania Street the soil matrix, beneath modern fill layers, is classified as Makiki clay loam (MkA) with 0 to 2 percent slopes, which overlays black cinder. This soil type is found on smooth fans and terraces in the Honolulu area. This soil profile continues *makai* down Punchbowl Street until approximately Halekauwila Street where the black cinder layer is generally replaced by sand or other marine deposits.

Land Commission Award (LCA) parcels are located along both sides of the alternate route along most of North and South Beretania Streets and Punchbowl Street. These parcels are generally house sites associated with the development of Honolulu Town through the first half of the 19th century.

Archaeological studies within parcels along South Beretania Street and Punchbowl Street have indicated the presence of historic trash pits dating to the 19th and 20th centuries (Chiogioji *et al.*, 1991; Denham and Kennedy, 1993; Perzinski *et al.*, 2000). Additionally, studies along Punchbowl Street *makai* of South King Street have noted human burials within and adjacent to Punchbowl Street.

III. Assessment and Discussion

The alternate route has 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.

Figure 1 presents the archaeological assessment of the alternate route. The route has been subdivided into two sections — designated A and B — which have been assessed as having high and very high potentials, respectively. Each section is discussed below.

Section A **North Beretania Street southeast from A`ala Triangle Park, continuing on South Beretania Street to the intersection with Punchbowl Street, then proceeding southwest on Punchbowl Street to the intersection with South King Street — HIGH POTENTIAL**

The portion of Section A between River Street and Bethel Street is at the periphery of the Chinatown Special District which was placed on the National Register of Historic Places in January 1973 (Site 50-80-14-9927). Under Chapter 6E of the Hawai`i Revised

Statutes, special procedures may be mandated for this portion of the alternate route. Consultation with the State Historic Preservation Division is recommended.

The portion of Section A which includes South Beretania Street — southeast of Alakea Street — and Punchbowl Street is within the Hawai`i Capitol Historic District which has been placed on the National Register of Historic Places. Under Chapter 6E of the Hawai`i Revised Statutes, special procedures may be mandated for this portion of the alternate route. Consultation with the State Historic Preservation Division is recommended.

Archaeological studies in the vicinity of Nu`uanu Stream (though not immediately adjacent to Beretania Street) have indicated the presence of deposits associated with the village of Kou. Additionally, archaeological studies for the Kekaulike redevelopment area along River Street have indicated a long history of habitation in the area, both pre-contact and post-contact. It is likely that deposits associated with that habitation extend into the Beretania Street area.

As noted above, Land Commission Award (LCA) parcels were located along both sides of Beretania Street and Punchbowl Street. It is likely that historic trash pits associated with these residential parcels remain intact within or adjacent to road corridors in this area. As also noted above, previous archaeological studies have documented that such deposits are indeed present.

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

Section B Punchbowl Street between South King Street and Pohukaina Street — VERY HIGH

In Section B, as in Section A, there is a potential for encountering historic trash pits associated with the development of Honolulu Town beginning in the 19th century. Additionally in Section B burials have been recorded in archaeological studies for the redevelopment of the Kaka`ako area. On Punchbowl Street, burials in cinder deposits related to the Kawaiahao Cemetery have been encountered at the intersection with Queen Street. *Makai* of Queen Street, burials in marine sand deposits have been reported within parcels adjacent to Punchbowl Street.

In Section B, as in Section A, Punchbowl Street is within the Hawai`i Capitol Historic District which has been placed on the National Register of Historic Places. Under Chapter 6E of the Hawai`i Revised Statutes, special procedures may be mandated for this portion of the alternate route. Consultation with the State Historic Preservation Division is recommended.

Based on the above factors, the potential to encounter historic properties is assessed as very high in Section B.

IV. Recommendations

The following recommendations are made for the two sections comprising the alternate route:

Section A **North Beretania Street southeast from A`ala Triangle Park, continuing on South Beretania Street to the intersection with Punchbowl Street, then proceeding southwest on Punchbowl Street to the intersection with South King Street — HIGH POTENTIAL**

Because of the high potential for encountering archaeological resources — based on presence of Land Commission Awards and historic properties — and because of its inclusion in the Chinatown Special District and the Hawai`i Capitol Historic District, Section A is recommended for a monitoring program with continual on-site monitoring.

Section B **Punchbowl Street between South King Street and Pohukaina Street - - VERY HIGH**

Because of the known presence of burials and because of its inclusion in the Hawai`i Capitol Historic District, Section B may merit more detailed investigation and/or consultation before any determination is made on the specific archaeological mitigation steps to be followed.

We recommend that consultation with the archaeology and burial staffs of the State Historic Preservation Division and the O`ahu Island Burial Council be conducted during the project's design phase when more design details and construction methods are developed. Such consultation efforts would be intended to develop appropriate mitigative measures needed to address potential impacts on historic resources.

V. References

Chiogioji, Rodney, Matthew M. McDermott, Douglas Borthwick, and Hallett H. Hammatt
1991 *Archaeological Investigations at the Hawai'i State Public Library Addition Site (State Site No. 50-80-14-9959).* Cultural Surveys Hawaii: Kailua, HI.

Denham, Tim and Joseph Kennedy
1993 *Monitoring Report for Excavations Associated with the State Capital Complex Telecommunication Conduits, Phase III, Kona District, Honolulu Ahupua`a, Island of O`ahu.* ARCH, Inc.: Haleiwa, HI.

Perzinski, Mary, Matt McDermott, David W. Shideler and Hallett H. Hammatt
2000 *Archaeological Inventory Survey Report for the "Block J" Redevelopment Project located at the Corner of Pali Highway and Beretania Street, Honolulu, Ahupua`a of Nu`uanu, Island of O`ahu, TMK 2-1-09:18 (State Site Number 50-80-14-5760).* Cultural Surveys Hawaii: Kailua, HI.

2001-06-23-OA-FEA-

FINAL ENVIRONMENTAL ASSESSMENT

FOR

SANDWICH ISLES COMMUNICATION, INC.

OAHU RURAL FIBER OPTIC DUCT LINES PROJECT

OAHU, HAWAII

MAY 2001

Sandwich Isles Communications, Inc.
A Waimana Company

FINAL ENVIRONMENTAL ASSESSMENT

FOR

SANDWICH ISLES COMMUNICATION, INC.

OAHU RURAL FIBER OPTIC DUCT LINES PROJECT

OAHU, HAWAII

MAY 2001

PREPARED FOR:

Sandwich Isles Communications, Inc.
A Tamura Company

PREPARED BY:

SSFM INTERNATIONAL

TABLE OF CONTENTS

TABLE OF CONTENTS

TABLE OF CONTENTS

LISTING OF FIGURES

LISTING OF FIGURES (CONTINUED)

LISTING OF TABLES

LISTING OF APPENDICES

CHAPTER 1
INTRODUCTION

1.1 PURPOSE FOR ENVIRONMENTAL ASSESSMENT

Sandwich Isles Communications, Inc. (SIC) is proposing the Oahu Rural Fiber Optics Duct Lines Project for the Island of Oahu. SIC is proposing to install a total of approximately 113.1 miles of underground fiber optic telecommunications cable within existing rights-of-way (ROW) of both State highway facilities and City and County of Honolulu (City) roadway facilities throughout the island. The purpose of the project is to link State of Hawaii (State) Department of Hawaiian Home Lands (DHHL) homestead properties on the island with a modern high speed telecommunications system.

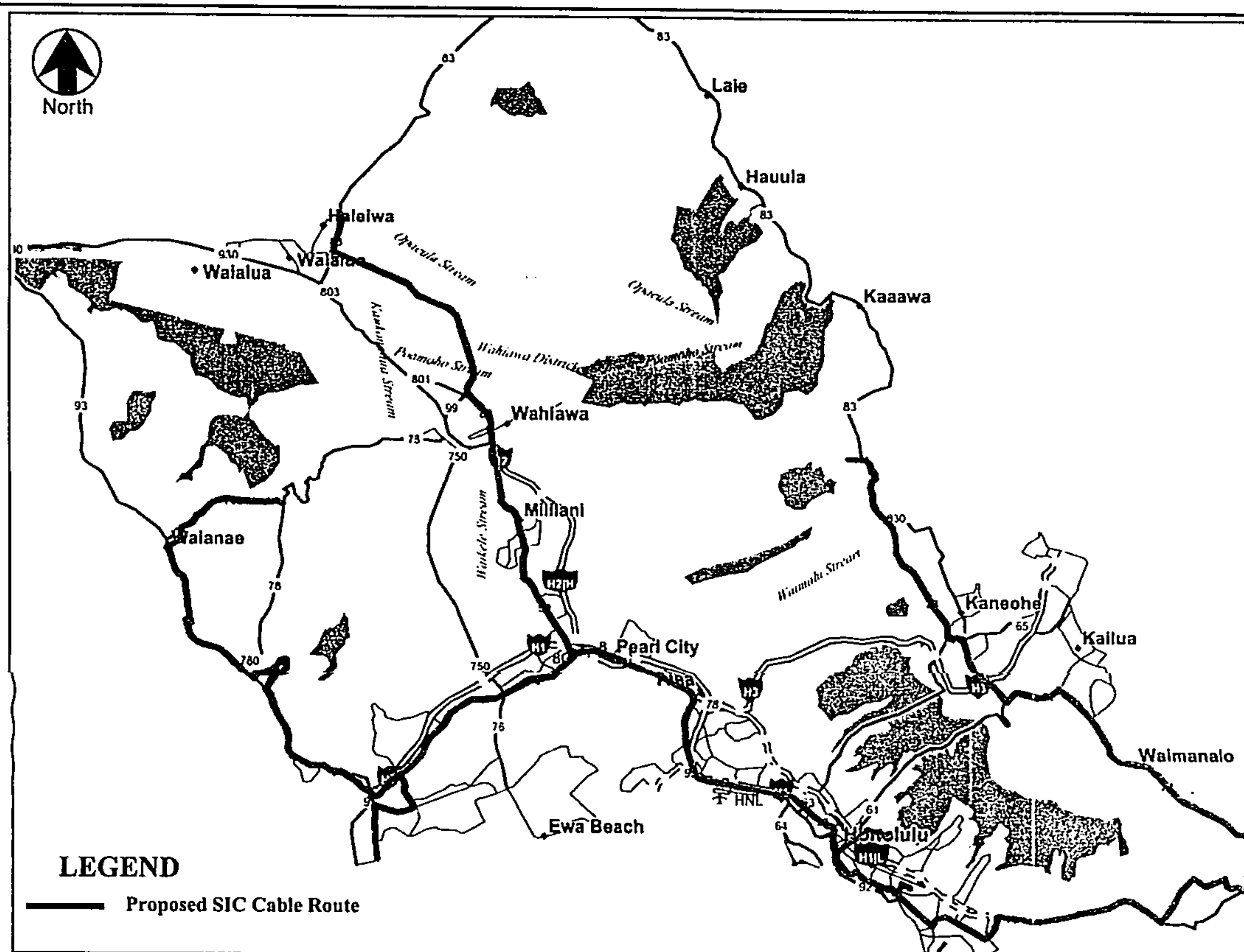
The majority of these roadway facilities affected would be State highways (about 85%), and the preferred conduit alignment within these rights-of-way would be on the mauka side of the roadway. About 2,000 feet of roadways owned by DHHL would also be involved with this project. Construction of this project would generally involve installing this duct system within an excavated trench approximately 1 foot wide and 2 to 3 feet deep. Figure 1.1 shows the general location of routes planned for the island. Table 1.1 provides a summary of pertinent information associated with this project.

Background On Sandwich Isles Communication, Inc.

Sandwich Isles Communications, Inc. is a native Hawaiian-owned corporation that was incorporated in 1995, and has been serving native Hawaiians since 1998. SIC is duly commissioned and regulated by the Federal Communications Commission and the State of Hawaii Public Utility Commission as a rural telephone company.

The mission of SIC is to provide state-of-the-art, competitively priced, broad band telecommunications services to DHHL homestead properties. This would provide beneficiaries and lessees of DHHL with access to cost-competitive telephone service. It would also allow for providing state-of-the-art telecommunication innovations such as educational programming, internet services, video tele-conferencing, and other fiber optic-based services in the future.

To meet this mission, SIC was assigned a State DHHL license agreement to provide the installation of essential communications services to homestead properties on the Island of Oahu at no cost to DHHL. This would allow more funds from DHHL to be put into residential development of homestead properties. Consequently, SIC needs expedient, consistent, and equal access to public roadway rights-of-way to construct telecommunication services to State DHHL homestead properties.



SIC FIBER OPTIC CABLE ROUTE LOCATION MAP

Figure 1.1

Source: Delrome Street Atlas

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

Table 1.1 Summary Information

Project Name:	Sandwich Isles Communication, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Applicant Identification:	Sandwich Isles Communication, Inc. Pauahi Tower, 27th Floor 1001 Bishop Street Honolulu, Hawaii 96813 Contact: Mr. Larry Fukunaga
Authorized Agent:	SSFM International, Inc. 501 Sumner Street, Suite 502 Honolulu, Hawaii 96817 Contact: Mr. Ronald A. Sato, AICP
Accepting Authority:	Right-of-Way Branch, Highways Division Department of Transportation, State of Hawaii
Project Description:	This project involves the installation of about 113.1 miles of fiber optic telecommunications cable to be buried within the rights-of-ways of existing State highways and City roads throughout the island of Oahu. The purpose of this project is to link all State DHHL homestead areas with fiber optic cables to provide beneficiaries with modern essential high speed and competitively priced communication services.
Project Location:	The fiber optic cables would be routed through the general areas of Waianae through Pearl City, Kapolei, Ewa, Kalihi, Downtown Honolulu, Kakaako, Kahala, Hawaii Kai, Waimanalo, Kailua, Kaneohe, Waiahole; through Central Oahu, Wahiawa and Haleiwa.
Land Ownership:	Roadway rights-of-way affected the jurisdiction of both State of Hawaii, Department of Transportation, and the City and County of Honolulu.
Tax Map Key:	State and City rights-of-way are not identified by Tax Map Key.
State Land Use:	Roadway facilities run through Conservation, Agricultural, and Urban Districts.
City Development Plan:	Project occurs within the Waianae, Ewa, Central Oahu, Primary Urban Center, East Honolulu, Koolaupoko, and North Shore Development Plan Areas.
City Zoning:	The proposed fiber optic cable alignment occurs within several zoning districts.
SMA Designation:	Portions of the proposed fiber optic cable alignment are located within the Special Management Area.

Discussion Of Applicant Action

The telecommunication line project would involve the use of rights-of-way within the State Department of Transportation (DOT) and City roadway facilities to install the fiber optic cables. As a result, this project would involve the "use of state or county lands" under Chapter 343, Environmental Impact Statements, Hawaii Revised Statutes (HRS). Portions of certain existing roadways affected by the project are also situated within the State's "Conservation District" and Waikiki Special 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 project represents an Applicant Action being undertaken by SIC, and a Draft Environmental Assessment (Draft EA) was published in the March 23, 2001 issue of *The Environmental Notice* in conformance with these regulatory requirements. This Draft EA addressed the probable impacts associated with the entire route proposed for the island of Oahu. Subsequently, this Final Environmental Assessment (Final EA) was prepared after review of the Draft EA during the 30-day comment period. A Finding of No Significant Impact (FONSI) is consequently being issued for this project.

Identification Of Accepting Authority

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 would require easements and permits for placing the lines within both State and City rights-of-way, therefore, it involves more than one agency with jurisdiction.

To determine the Accepting Authority for this project, consultation with staff from the City Department of Planning and Permitting (DPP), DOT, DHHL, and OEQC was conducted. Subsequently, a meeting was held with representatives from SIC, OEQC, DHHL, and DOT to discuss determination of the appropriate Accepting Authority. A representative from the City DPP was not able to attend. However, prior consultation with DPP staff indicated their willingness to have the State DOT serve as the Accepting Authority since the vast majority of roadways affected would be under their jurisdiction.

Based upon this meeting, 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 they are: 1) 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 their jurisdiction. It was also decided that the City DPP 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 City DPP confirming this authorization is included in Appendix A.

1.2 BACKGROUND ON EXISTING LAND USE DESIGNATIONS

1.2.1 State Land Use Districts

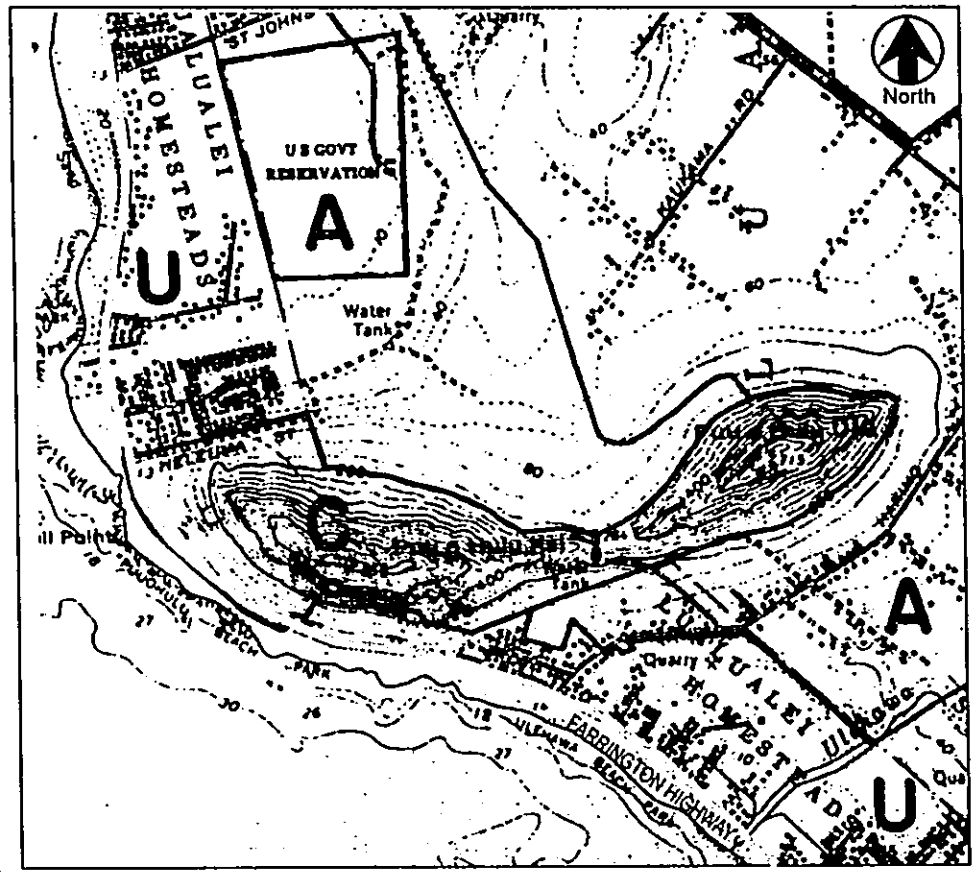
Under Chapter 205, HRS, all lands in the State of Hawaii are classified into four major land use districts (State Land Use Districts) which are the Urban, Rural, Agricultural, and Conservation districts. The boundaries of these districts are shown on maps referred to as State Land Use District Boundary Maps.

The telecommunication lines are to be constructed within the rights-of-way of existing State highway and City roadway facilities. These lines involve about 113.1 miles of fiber optic cable to be installed underground within roadway shoulder areas or paved travel lanes. Consequently, the majority of existing highway or roadway facilities affected are located primarily within the State's "Urban District" classified lands. However, there are a few roadway segments that are situated within the State's "Agricultural District" and "Conservation District" lands. The routes located within these various State land use districts are discussed.

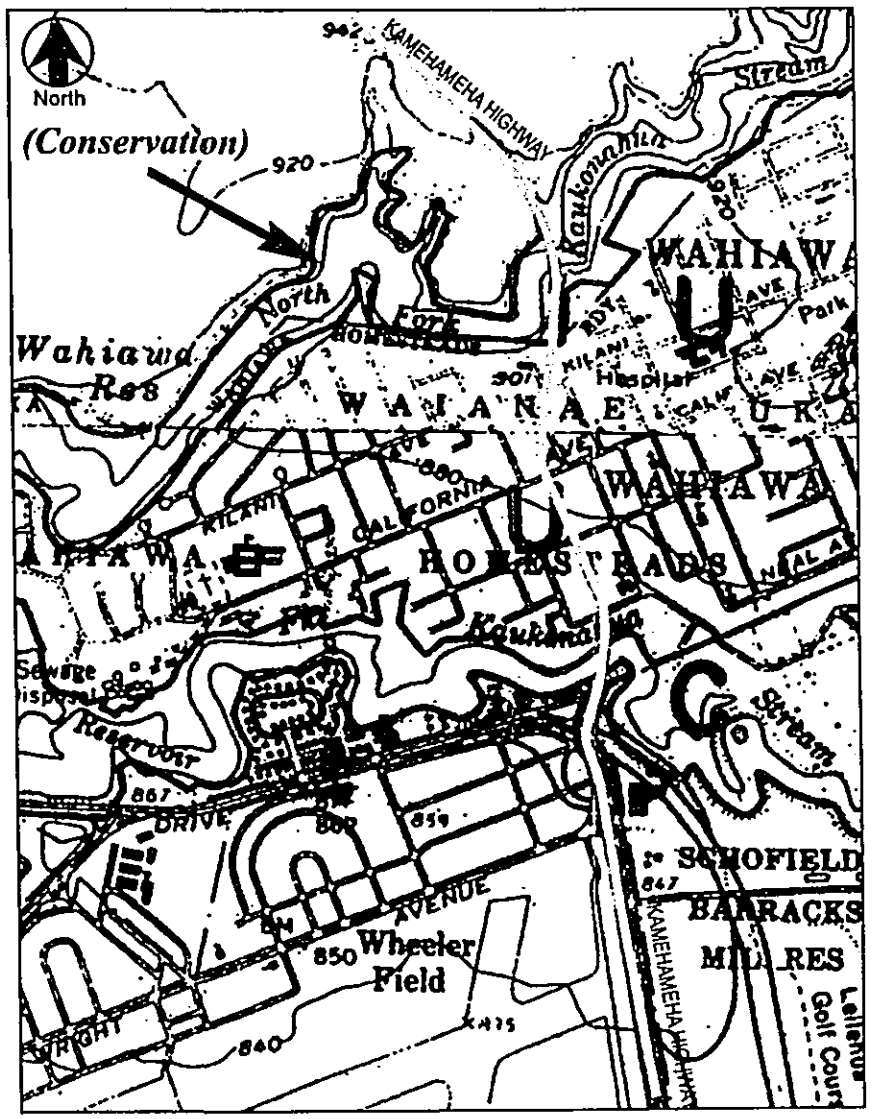
Conservation Districts

Several small segments of the proposed fiber optic route within State highway rights-of-ways are situated within the State Conservation District. The installation of the underground fiber optic duct lines within the rights-of-way of existing roadways within this Conservation District is permitted as a public use that is generally considered an accessory use to existing roadway facilities. Greater discussion of the project's consistency within Conservation District lands is provided in Chapter 7. These areas are shown on Figures 1.2 and 1.3 and include:

1. Maili Point – Figure 1.2 shows that approximately 2,500 linear feet of Farrington Highway (Route 93) passes through Conservation District lands in the area known as Maili Point, near Nanakuli.
2. Kamehameha Highway (Route 99) crosses Kaukonahua Stream over a distance of about 500 feet, and crosses the North Branch Kaukonahua Stream over a distance of about 1,000 feet in the town of Wahiawa (Figure 1.2).
3. Kalanianaole Highway (Route 72) is situated within the Conservation District beginning at Makapu'u Head, continuing in a northwesterly direction for approximately 2.3 miles to Kaupo Beach Park as shown in Figure 1.3.
4. Kalanianaole Highway (Route 83) is situated within the Conservation District beginning near Hawaii Pacific University, and proceeding approximately 1 mile in a northwesterly direction past the H-3 interchange to the Urban District boundary of Kaneohe as shown in Figure 1.3.
5. Kamehameha Highway (Route 83) runs through the Conservation District for about 1,300 feet just south of the Valley of the Temples, as shown on Figure 1.3.



Land Use District Boundary Map
Waianae District



Land Use District Boundary Map
Central Oahu District

Legend

Proposed Cable Route

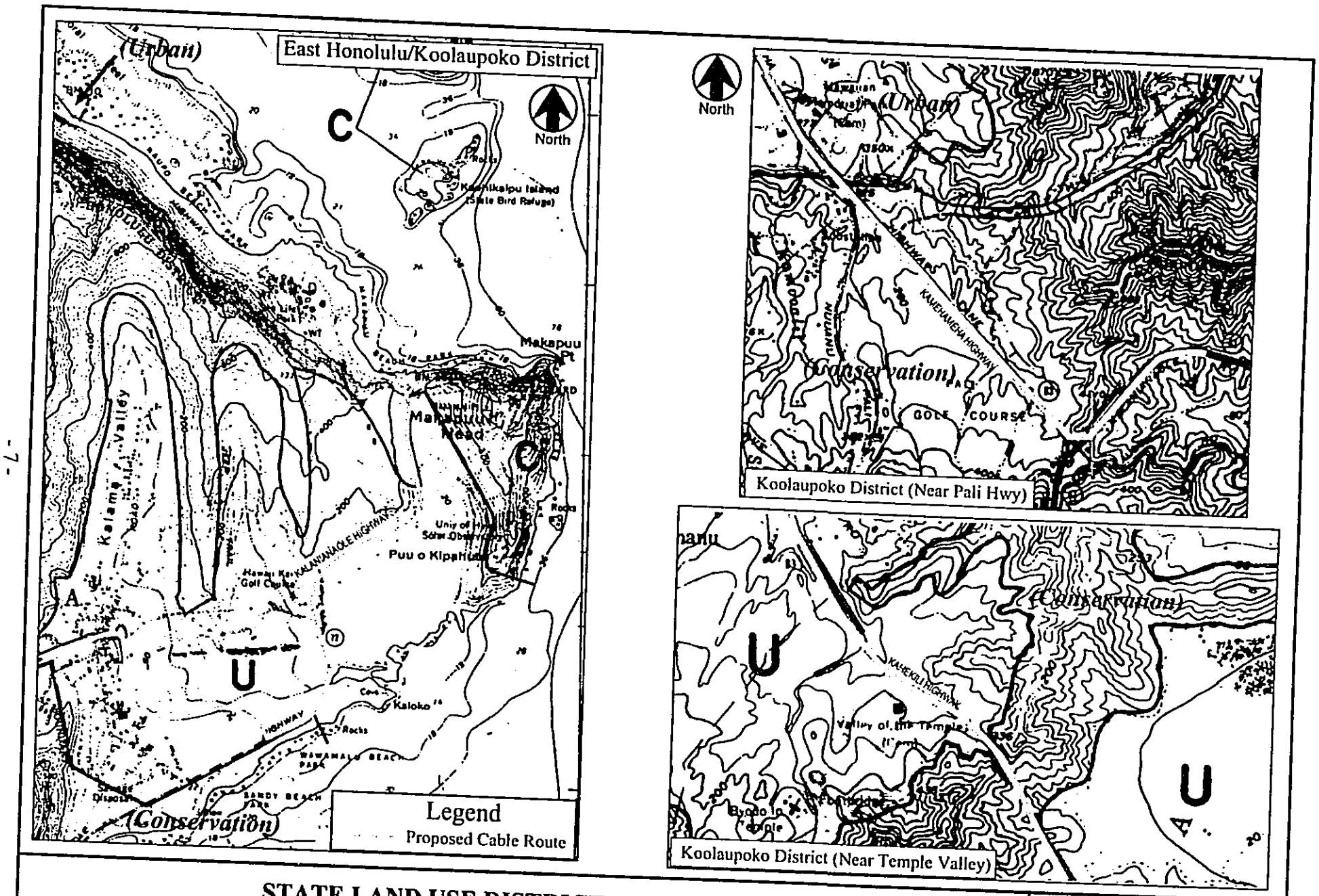
STATE LAND USE DISTRICT BOUNDARY MAP
Waianae And Central Oahu Districts

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
State Land Use Commission

Figure 1.2

SSFM INTERNATIONAL



STATE LAND USE DISTRICT BOUNDARY MAP
East Honolulu And Koolaupoko Districts

Figure 1.3

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
State Land Use Commission

SSFM INTERNATIONAL

There are also a few segments of the fiber optic route to be installed within State highway which border State Conservation District lands. These areas are identified below:

1. Kalanianaole Highway (Route 72) in Hawaii Kai, runs parallel to the Conservation District at the eastern end of Sandy Beach for approximately 1,100 feet (Figure 1.3).
2. Kalanianaole Highway (Route 72) borders approximately 650 linear feet of Conservation District area just northwest of Olomana Golf Course in Waimanalo.
3. Kalanianaole Highway (Route 61) borders approximately 1,200 linear feet of Conservation District associated with Kawainui Marsh.
4. Kamehameha Highway (Route 83) borders Conservation District beginning at Iolekaa Valley on the northwest boundary of Kaneohe. The highway borders the Conservation District for approximately 3,000 feet.

Agricultural Districts

Segments of the proposed fiber optic route would also be situated within State Agricultural Districts lands since existing State highways or City roads occur within this district. The installation of these fiber optic duct lines are a permitted use within the Agricultural District and is discussed in more detail in Chapter 7. These route segments are discussed below.

1. Waianae Valley Road beginning at Haleahi Road heading southwest for approximately 2 miles, then along Plantation Road up to Waianae Pililaau Field.
2. Farrington Highway (90) passes through an Agricultural District beginning in the area known as Makalapa Gulch, proceeding in a northeasterly direction for an approximate distance of 2.5 miles to Fort Weaver Road.
3. Kamehameha Highway (99) in the area formerly known as "Crestview," and more recently referred to as Waipio, enters an Agricultural District near the intersection of Waipio Uka, and proceeds in a northwesterly direction for approximately 2.5 miles to what is now the southern boundary of Mililani Town.
4. Kamehameha Highway (80) at the intersection of Whitmore Avenue (804) in the town of Wahiawa enters an Agricultural District in a northwesterly direction for approximately 8 miles, past Weed Circle, and in northerly direction to the town of Haleiwa.
5. Kalanianaole Highway (72) passes through an Agricultural District for about 2,600 feet located northwest of the town of Waimanalo near the Olomana Golf Course.
6. Kamehameha Highway (83) passes through an Agricultural District at the Waiola Stream crossing near Ahuimanu Elementary School for approximately 2,900 feet.

1.2.2 City Development Plans

The island of Oahu is divided in eight planning areas for which each planning area has a Development Plan, or DP. These DPs consisted of conceptual schemes for implementing the development objectives and policies of the City's *General Plan.* Together with this *General Plan,* these Plans were intended to guide public improvements and zoning. These Development Plans were initially adopted in the 1980s, and consisted of detailed land use maps which were amended annually.

The City is currently undergoing a revision program for these Development Plans to implement a 1992 Charter Amendment. These revised Plans are to be visionary and conceptual plans without the parcel specific detail associated within the initial Development Plans. Presently six of the eight DP areas have been adopted with the Primary Urban Center and Central Oahu DP areas remaining. Six of these updated Plans have been renamed "Sustainable Communities Plans" to highlight the intent that these areas not intended to be heavily developed, but that existing communities and special qualities of the area be sustained and improved.

Due to the different areas of the island covered by the proposed fiber optic route, this project would be located within all of the different Development Plan areas with the exception of Koolauloa. The project would be consistent with the conceptual land use plans along with the visionary policies and objectives associated with each Development Plan or Sustainable Communities Plan. This consistency is discussed in greater detail later in this document.

1.2.3 City Zoning Districts

All lands within the City and County of Honolulu are categorized, or zoned into specific districts. These districts and permitted uses within them are described under the City's *Land Use Ordinance* (City 2000), and are delineated on zoning maps. The purpose of the *Land Use Ordinance* is to regulate land use in a manner which encourages orderly development in accordance with adopted land use policies, and to protect and promote public health, safety, and welfare. The *Land Use Ordinance* is a very detailed document which addresses a wide range of development and design standards, permitted uses, administration, and procedures for zone changes or other approvals.

The proposed fiber optic route would be located within the rights-of-way of both State highways and City roadways. As a result, these roadway facilities are located within several different types of zoning districts. The various zoning districts of which the fiber optic routes are located within are identified on Table 1.2.

Table 1.2 Summary Of Zoning Districts Associated With Routes

Route Description By Development Plan Area	Zoning Districts
Waianae Development Plan Area	
1. Haleahi Road (Lualualei Naval Reservation Gate), Kaneaki Street, Waianae Valley Road, and Plantation Road up to Farrington Highway	AG-2, Country, R-5, B-2
2. Farrington Highway from Waianae Valley Road to Haleakala Avenue	P-1, P-2, B-1, B-2, R-5, I-2
3. Haleakala Ave. and Nanakuli Ave. back to Farrington Highway	R-5
4. Farrington Highway (at Nanakuli Ave.) to Waimanalo Stream	R-5
Ewa Development Plan Area	
1. *Farrington Highway, H-1 Freeway, and Kalaeloa* Boulevard	AG-1, AG-2,
2. Kapolei Parkway and Kamokila Boulevard up to Farrington Highway	AG-1, B-2,
3. Farrington Highway (at Kamokila Blvd.) up to Ft. Weaver Road (interchange)	AG-1
4. Ft. Barrette Road, Renton Road, and Saratoga Road	AG-1, Kalaeloa Special District (Former Barbers Point Naval Air Station)
Central Oahu Development Plan Area	
1. Farrington Highway (at Ft. Weaver Road) to Kamehameha Highway intersection	AG-2, B-2, R-5, R-7.5
2. Kamehameha Highway (from Farrington Highway) to Wilikina Drive intersection	AG-1, AG-2, R-5, B-1, F-1
3. Kamehameha Highway, Route 80 (at Wilikina Drive) up to Kamehameha Highway change to Route 99	P-1, P-2, AG-1, B-2
North Shore Development Plan Area	
1. Kamehameha Highway, Route 99 (at Kamananui Road) up to Kamehameha Highway, Route 83 (Weed Junction)	AG-1
2. Kamehameha Highway, Route 83 (Weed Junction) to Haleiwa Boat Harbor	AG-1, R-5, P-2, B-1, Haleiwa Special District
Primary Urban Center Development Plan Area	
1. Farrington Highway (in Waipahu) and Kamehameha Highway eastbound (Route 99) to Nimitz Highway	AG-2, R-5, B-2
2. Nimitz Highway (near Valkenburgh St.) to Kamehameha Highway (near Middle Street)	R-5,
3. Kamehameha Highway (near Middle Street) and Dillingham Boulevard to North King Street	I-2, IMX-1
4. North King Street (at Dillingham Blvd.) and River Street (at Nimitz Highway)	BMX-3, China Town Special District
5. Nimitz Highway (from River St.) and Ala Moana Boulevard up to Punchbowl Street	B-2, Hawaii Capital Special District

Table 1.2 Summary Of Zoning Districts Associated With Routes (continued)

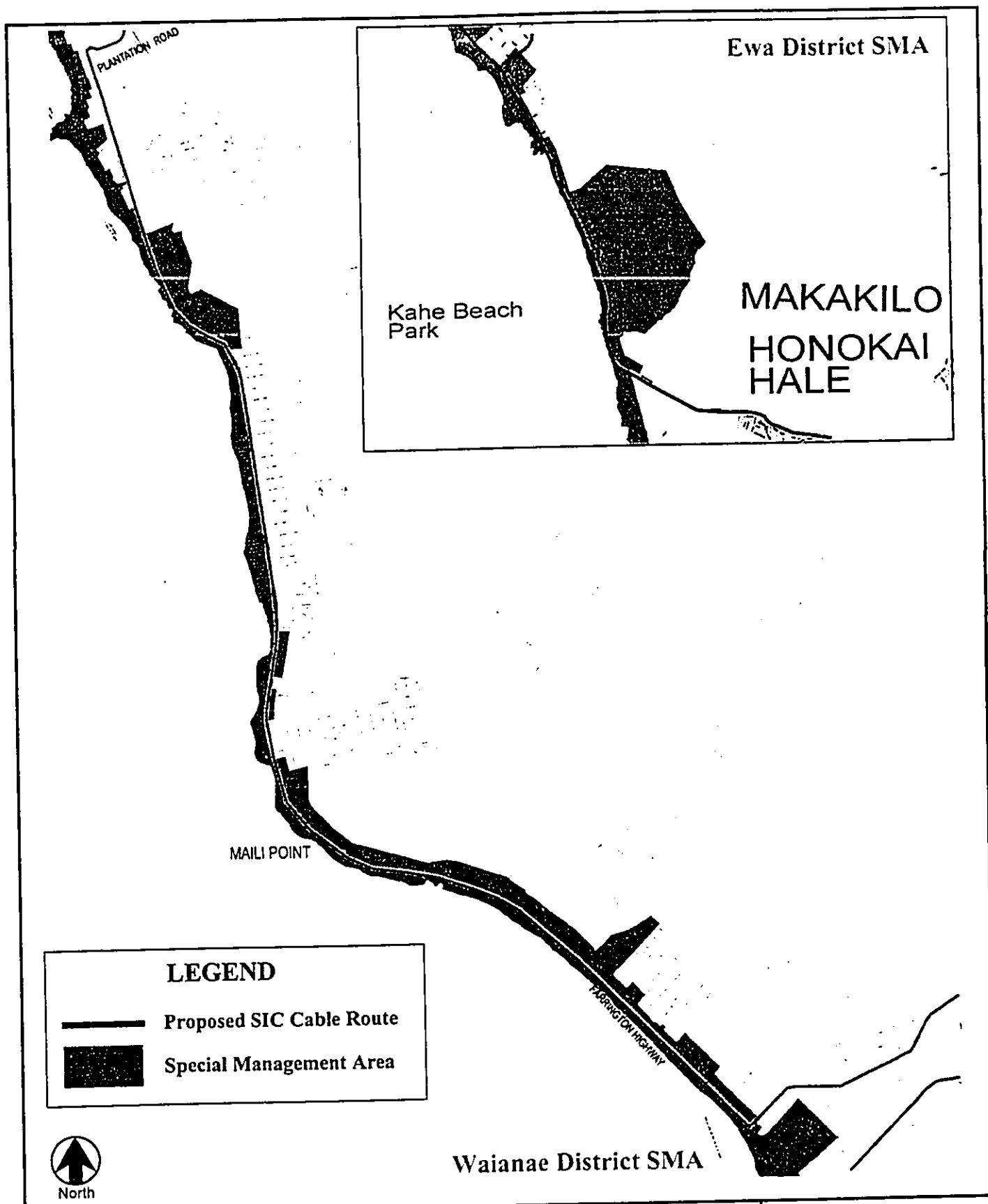
Route Description By Development Plan Area	Zoning Districts
6. (Papakolea Segment) Alakea Street (from Nimitz Hwy.), Queen Emma Street, Lusitania Street, Puowaina Drive, and Tantalus Drive	BMX-4, Hawaii Capital Special District, A-2, Punchbowl Special District, R-3.5, R-5,
7. Punchbowl Street (at Ala Moana Blvd.), Pohukaina Street, Kamani Street, Halekauwila Street, Ward Avenue, Waimanu Street, Kamakee Street, Kona Street, and Atkinson Drive (at Kapiolani Blvd.)	B-2 and Hawaii Capital Special District (portion of Punchbowl Street), Kakaako Community Development District (under State jurisdiction), BMX-3
8. Kapiolani Boulevard (from Atkinson Dr.), Kalakaua Avenue, and Ala Wai Boulevard (to Kapahulu Avenue)	BMX-3, B-2 Waikiki Special District (portion of Ala Wai Blvd), Apartment, Public Precinct
9. Kapahulu Avenue (from Ala Wai Blvd.), Herbert Street, and Kilauea Avenue (up to on-ramp to Lunalilo Freeway)	P-2, B-2, Diamond Head Special District, R-3.5, R-5, R-7.5, R-10
East Honolulu Development Plan Area	
1. Kalanianaole Highway from Kilauea Ave. up to Lunalilo Home Road	R-5, R-10, P-1, P-2
2. Lunalilo Home Road, Hawaii Kai Drive, Kealahou Street (up to Kalanianaole Highway)	R-5, P-2
3. Kalanianaole Highway from Kealahou Street to Makapuu Point Lookout	P-1, P-2
Koolaupoko Development Plan Area	
1. Kalanianaole Highway from Makapuu Point Lookout to Kailua Road	P-1, P-2, R-5, R-7.5, R-10, AG-1, AG-2, B-1, F-1, Country
2. Kalanianaole Highway from Kailua Road on to Kamehameha Highway up to Likelike Highway	R-5, AG-2, P-1, P-2, B-2
3. Likelike Highway from Kamehameha Hwy. on to Kahekili Highway up to Kamehameha Hwy. (Kahuluu)	R-5, R-7.5, R-10, P-1, P-2, Country
4. Kamehameha Highway to Waiahole Homestead Road	R-5, R-10, AG-2, P-1, P-2, B-1
5. Waiahole Homestead Road to North/South Fork	AG-2

1.2.4 Special Management Area

Under Chapter 205A (Coastal Zone Management), HRS, the City is given authorization to regulate land uses located within the established Special Management Area (SMA) for the Island of Oahu. Review of the City's SMA maps indicates that there are a few sections of the proposed fiber optic route which fall within this SMA. These areas are identified below in further detail.

Waianae and Ewa Districts

Within this district, the SMA boundary generally follows the coastline along Farrington Highway. However, this SMA boundary varies at several locations ranging from the highway to areas a considerable distance inland. The fiber optic route along Farrington Highway is situated within the SMA from the area just before Leihoku Street up to about Milikami Street. Figure 1.4 shows the route's location within the SMA boundary. From Milikami Street, the boundary



SPECIAL MANAGEMENT AREA MAP
Waianae And Ewa Districts

Figure 1.4

Source: City Department of Planning & Permitting

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

SSFM INTERNATIONAL

extends up to the center line of the highway to Manununu Street. From this point, the entire highway is essentially situated within the SMA boundary up through the Kahe Power Plant at the end of this district.

In the Ewa District, the SMA boundary affecting the fiber optic route would only be applicable from the Kahe Point to Ko Olina Resort area. Figure 1.4 showed this SMA boundary in this district. As shown, the SMA boundary extends along Farrington Highway from the end of the Waianae DP area past the Kahe Power Plant up to an area just before Aliinui Drive which enters the Ko Olina Resort.

Central Oahu and North Shore Districts

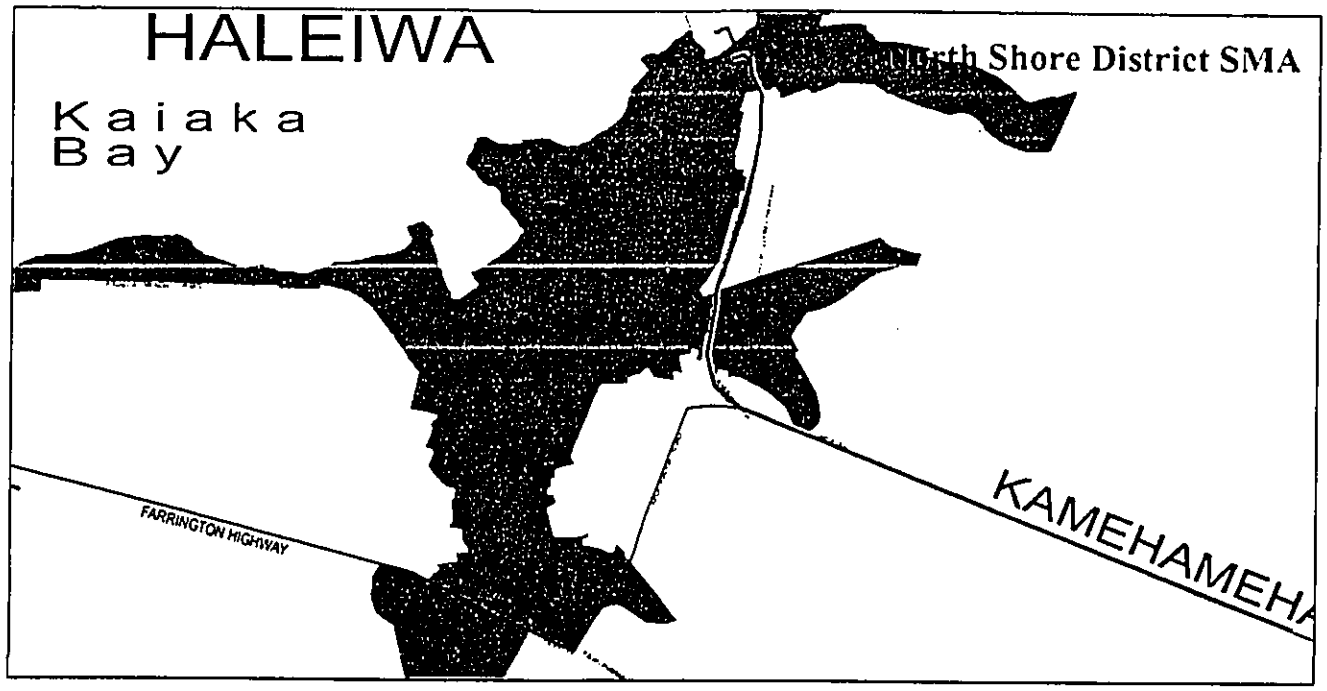
The fiber optic's route within the SMA area associated with the Central Oahu DP area is shown on Figure 1.5. As shown, the SMA boundary extends up to the centerline of Farrington Highway for a short section in the Waipahu Intermediate School area. Within the North Shore District, the proposed fiber optic cable would follow Kamehameha Highway which encroaches into the SMA boundary near Haleiwa as shown on Figure 1.5. This figure shows the project being located within the SMA boundary for a short stretch in an area just past Weed Junction, and then in the area near the Haleiwa Boat Harbor.

Primary Urban Center

In the western portion of this Primary Urban Center DP area, the SMA boundary generally follows Kamehameha Highway from Pearl City to the Pearl Harbor area. Figure 1.6 shows this SMA boundary in relation to the proposed fiber optic route that would follow along Kamehameha Highway. As shown, the SMA boundary generally extends up to the makai boundary of the highway from just past Waimano Home Road and continues eastbound to Aloha Stadium. From this point, it includes the highway up to Halawa Drive near the Halawa Gate to Pearl Harbor.

The next section where the SMA boundary becomes applicable is in the lower Kakaako area. The boundary extends from the shoreline up to the center line along Ala Moana Boulevard from the Federal Building on Punchbowl Street towards the Ala Wai Yacht Harbor. As a result, a very short section of the fiber optic route planned along Ala Moana Boulevard may encroach within this SMA area if located on the makai side of the roadway in the area fronting this Federal Building up to Punchbowl Street. The specific location of the fiber optic route in this area would be determined during the project's design.

The last section of this district that has the SMA boundary encroaching onto the fiber optic route is on the eastern end of this DP area along the Waialae Golf Course. As shown on Figure 1.6, the boundary extends up to the centerline of Kalanianaole Highway from Kilauea Avenue eastbound. Thus, this section of the fiber optic route may be situated within the SMA area if located on the makai end of this highway.



LEGEND

Proposed SIC Cable Route **Special Management Area**

North

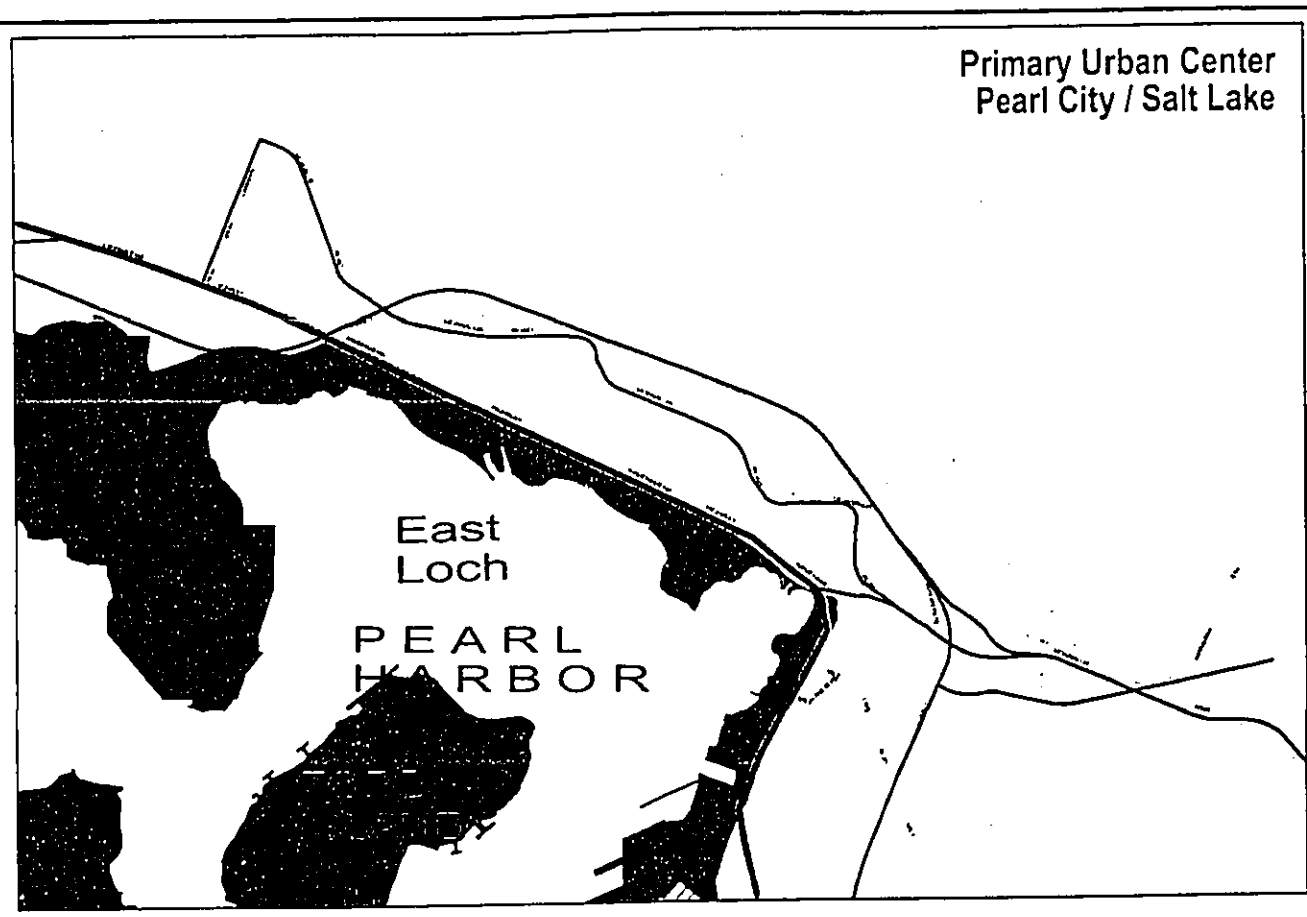
SPECIAL MANAGEMENT AREA MAP
Central Oahu And North Shore Districts

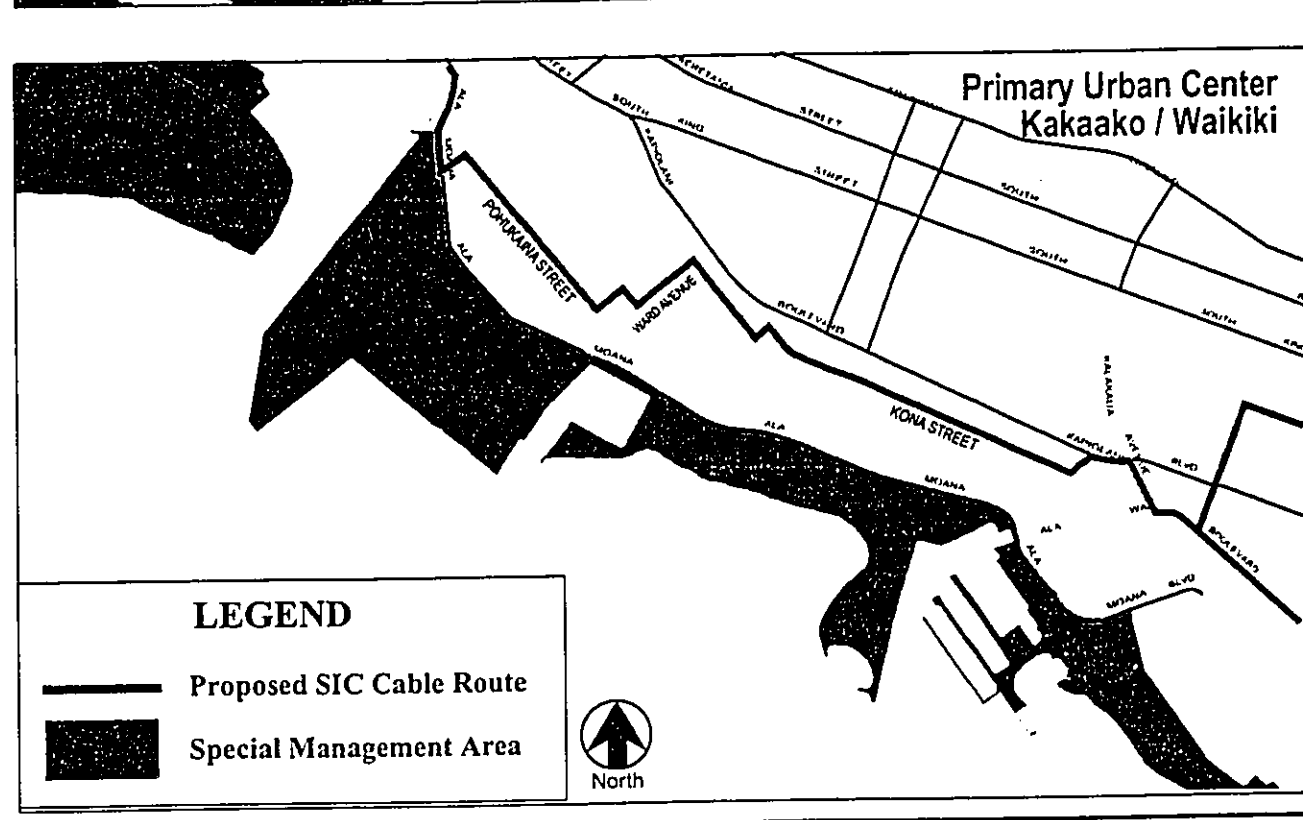
Figure 1.5

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
City Department of Planning & Permitting

SSFM INTERNATIONAL





SPECIAL MANAGEMENT AREA MAP
Primary Urban Center

Figure 1.6

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
City Department of Planning & Permitting

SSFM INTERNATIONAL

East Honolulu District

Within this district, the SMA boundary generally extends up to the centerline of Kalanianaole Highway from Ainakoa Street to Kawaihae Street in Hawaii Kai. Figure 1.7 shows this SMA area in relation to the fiber optic route. Thus, the route would be situated within this SMA area if located on the makai side of the highway. From Kawaihae Street, the fiber optic route would be within the SMA area because it includes the entire highway up to Portlock Road.

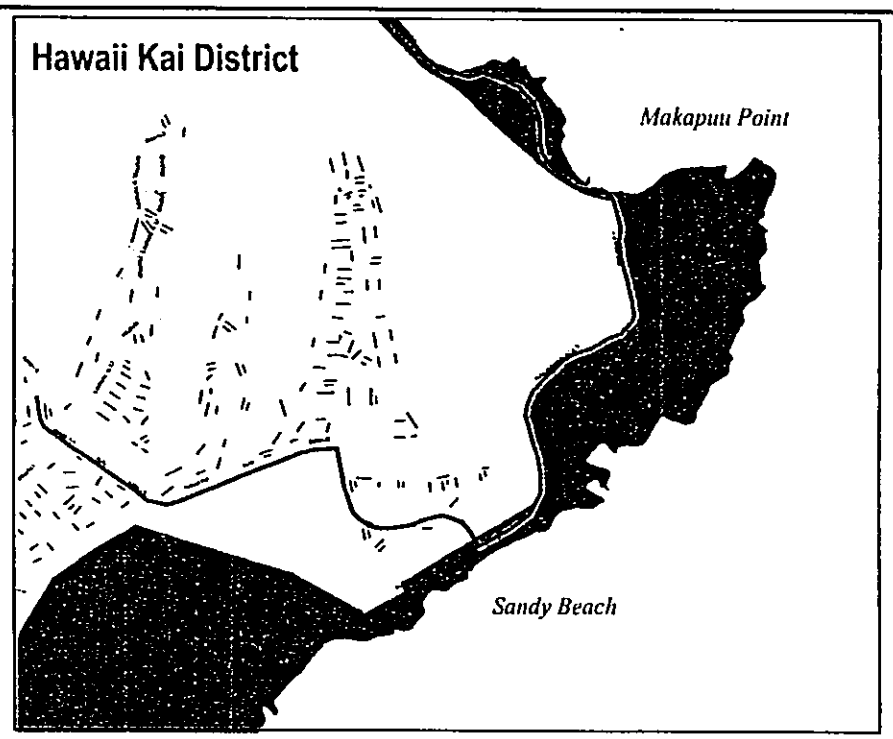
Finally, the fiber optic route along Kalanianaole Highway from the general area of Kealahou Street towards the Hawaii Kai Golf Course would be situated within the SMA area since the boundary extends above the highway rights-of-way. As shown on Figure 1.7, the SMA boundary extends only up the centerline of the highway from the Hawaii Kai Golf Course up to Makapuu Lookout. Thus, the fiber optic route may be situated within the SMA area is located on the makai side of this highway.

Koolaupoko District

The Koolaupoko District includes two major coastal areas for which the fiber optic route would be located within the SMA area. The first area is in Waimanalo, and the fiber optic route in relation to the SMA boundary is shown on Figure 1.8. The SMA boundary extends inland past Kalanianaole Highway from Makapuu Lookout to the town of Waimanalo at Waimanalo Beach Park. Consequently, the fiber optic route would be situated within this SMA area since it would be located within the highway.

The next area is near Waimanalo Bay State Recreational Area at Aloiloi Street where the SMA boundary extends up to the centerline of the highway. This section where the fiber optic route may be situated within the SMA area generally extends from Aloiloi Street up to the Olomana Golf Course as shown on Figure 1.8.

In Kailua, there is only a short section of the fiber optic route along Kalanianaole Highway that would be situated within the SMA area from Castle Medical Center to an area past the Kapaa Quarry Road as shown on Figure 1.9. In Kaneohe, there is a short section of the fiber optic route along Kahekili Highway that would be located within the SMA area. This short stretch of highway area is near the Valley of the Temples Memorial Park as shown on Figure 1.9. Finally, from Ahuimanu Road, the SMA boundary generally includes the entire highway and inland properties as it proceeds northbound to the fiber optic route end point in Waiahole.

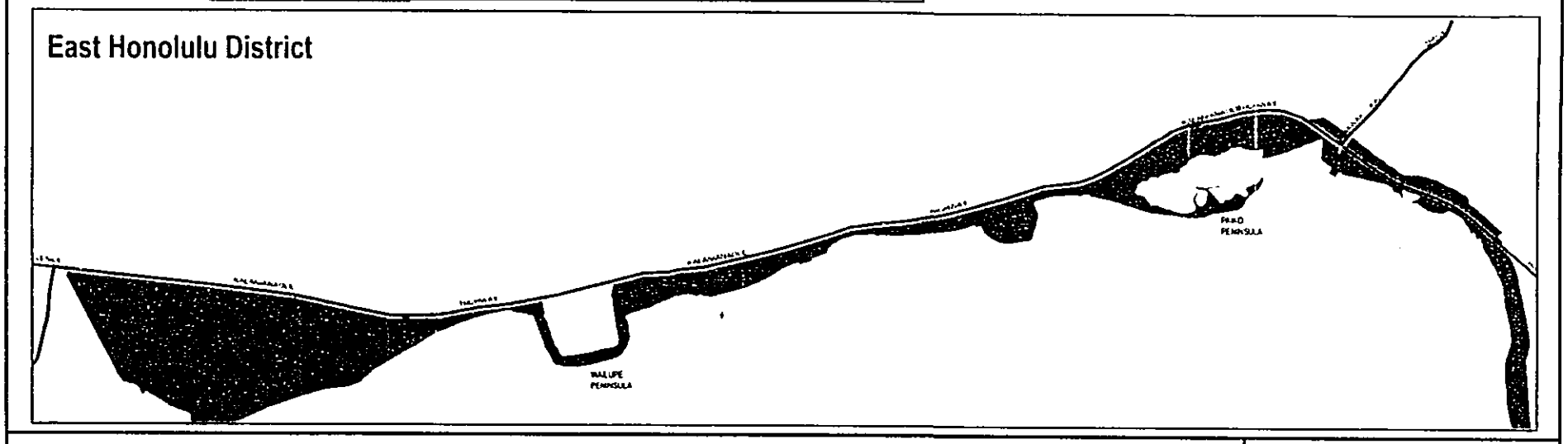


LEGEND

Proposed SIC Cable Route

Special Management Area

North



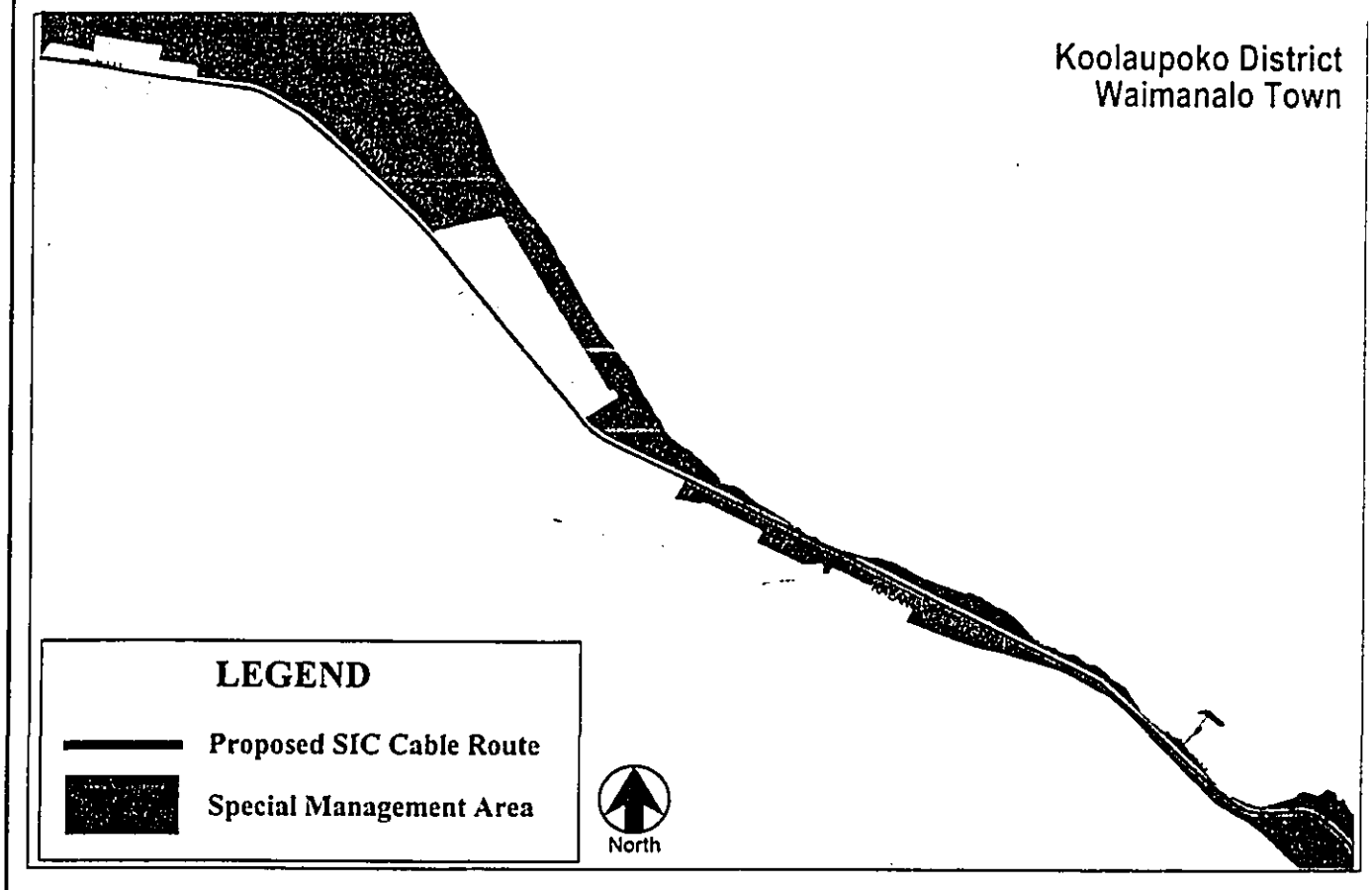
SPECIAL MANAGEMENT AREA MAP
East Honolulu District

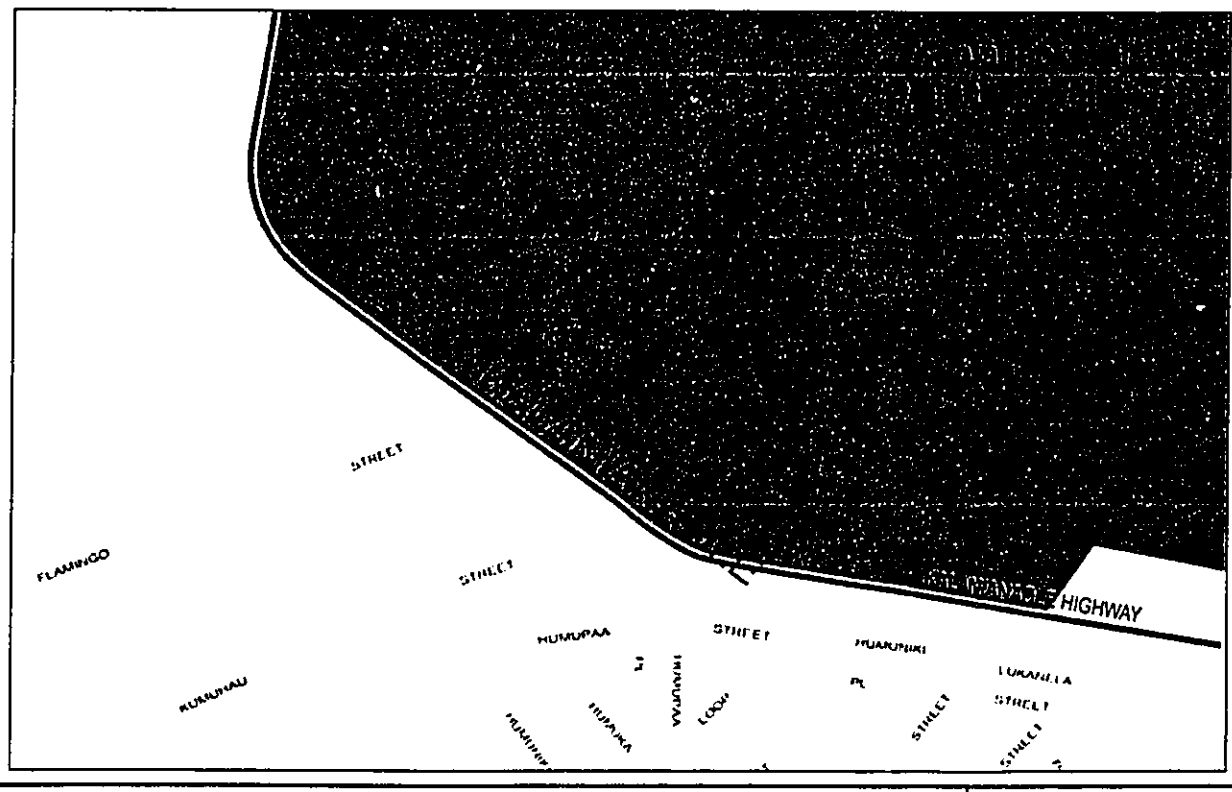
Figure 1.7

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
City Department of Planning & Permitting

SSFM INTERNATIONAL



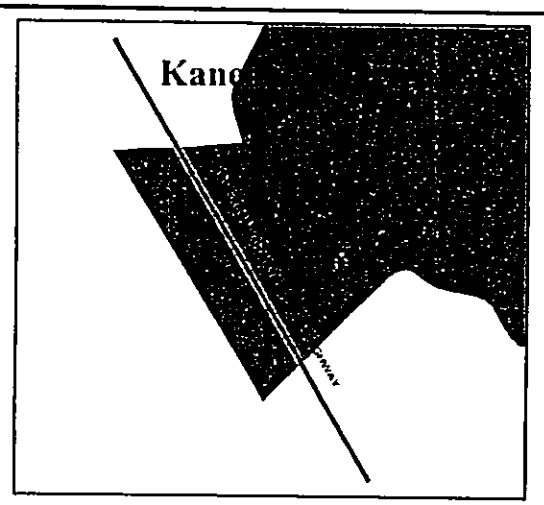


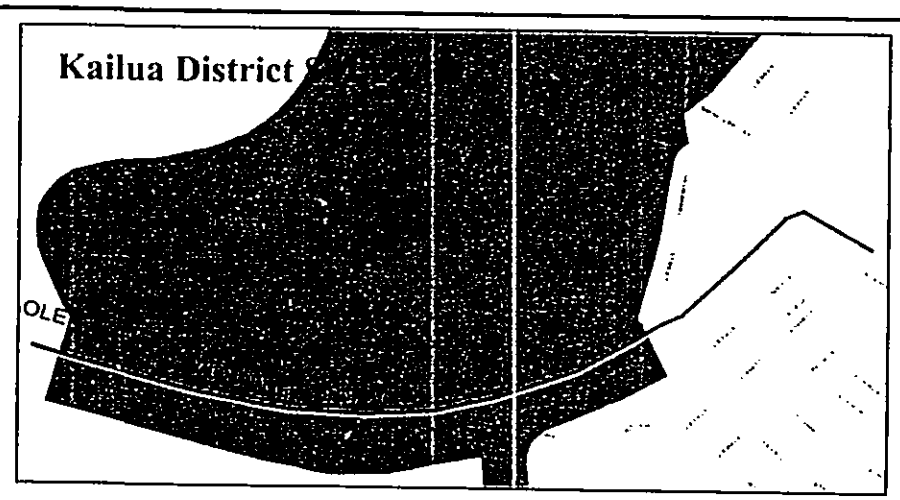
SPECIAL MANAGEMENT AREA MAP
Koolaupoko District

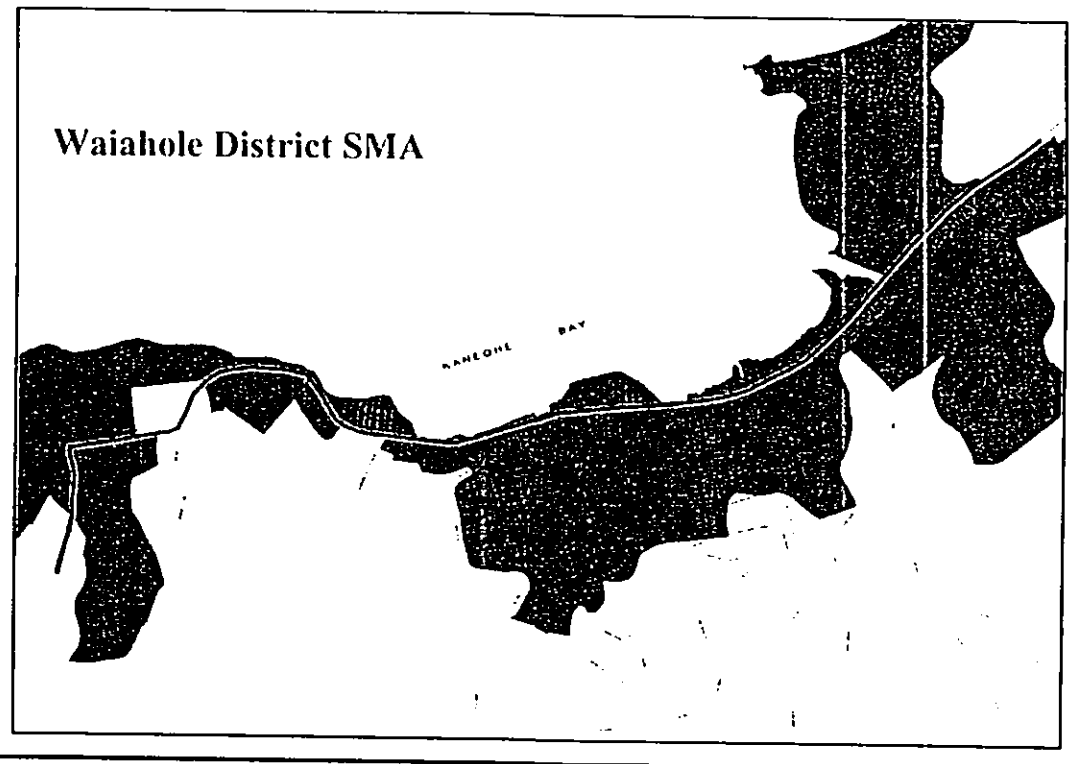
Figure 1.8

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
City Department of Planning & Permitting







North

LEGEND

Proposed SIC Cable Route

Special Management Area

SPECIAL MANAGEMENT AREA MAP
Koolaupoko District (Continued)

Figure 1.9

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
City Department of Planning & Permitting

SSFM INTERNATIONAL

CHAPTER 2
PROJECT DESCRIPTION

2.1 PROJECT LOCATION AND VICINITY

The underground fiber optic telecommunication system proposed for the Island of Oahu would be constructed within about 113.1 miles of roadway facilities under the jurisdiction of either the State or City. This is due to the presence of several DHHL homestead areas located in various areas of the island ranging from Waianae to Waimanalo and to Waiahole. As a result, this fiber optic system would extend through several communities present within the various districts making up this island. A brief description of these affected communities is generally discussed by City Development Plan areas. Figures provided later in this chapter show the proposed routes in relation to the various districts.

Waianae Area

One end of this telecommunication fiber optic system starts from the Waianae Development Plan Area since there are DHHL homestead properties in the Waianae, Lualualei, and Nanakuli communities. The route begins in Waianae Valley primarily travelling along Waianae Valley Road and then predominantly follows Farrington Highway as it proceeds eastward toward the Ewa district.

This Waianae district area involves a more arid coastal environment bound by the Waianae mountain range. This region is generally the driest on the island, and has good beaches and other ocean-oriented recreational resources along the coastline. This district is comprised of four main communities which are Makaha, Waianae, Maili, and Nanakuli. Between these communities are small farms and scattered residences. Farrington Highway is the main arterial highway running along the coastline providing vehicular access into and out of this area.

Ewa Area

From the Waianae district, the fiber optic route then travels into the Ewa Development Plan area which generally begins just before the Kahe Power Plant eastward to the beginning of Waipahu. The general route through this region has the fiber optic predominantly following Farrington Highway. There is a segment breaking off from this highway travelling southbound (makai) into Kalaeloa (former Barbers Point Naval Air Station) since there are some DHHL properties located within that area along within the Villages of Kapolei.

This Ewa region is very different in character from Waianae because it is comprised of several large commercial, industrial, and residential developments. Being designated as the secondary urban center for the island, this region is the focus of major economic development, the establishment of government services, and various forms of housing development for the leeward side of the island.

There are several communities and large urban centers located within this Ewa district which are in the immediate vicinity of the proposed fiber optic route. Proceeding eastbound from the Kahe Power Plant, these communities and urban centers include the Ko Olina Resort, Honokai Hale, the City of Kapolei, Makakilo community located north (mauka) of the H-1 Freeway, Villages of Kapolei, and West Loch situated on the eastern boundary of this district. The fiber optic segment travelling makai from Farrington Highway enters Kalaeloa which is planned to be redeveloped as a mixed use area by several different government agencies as part of the recent closure of Barbers Point Naval Air Station.

The H-1 Freeway serves as the main State highway facility providing vehicular access into and through this Ewa DP area. Another major State facility is Farrington Highway which provides an alternative roadway travelling in an east to west direction through this district. Other major roadways providing access from these highway to shoreline areas are Kalaeloa Boulevard (to Campbell Industrial Park), Fort Barrette Road (to Kalaeloa), and Ft. Weaver Road (to Ewa Beach).

Central Oahu Area

North of this Ewa area is the area referred to as Central Oahu which is comprised of a wide plateau between the Waianae and Koolau mountain ranges. This area generally extends in a north south direction from Waipahu to Wahiawa. The proposed fiber optic route through this Central Oahu area would be primarily on Kamehameha Highway from Waipahu up through Wahiawa.

The dominant land uses in this Central Oahu DP area are agriculture, military facilities, and a growing residential and commercial component. This district includes several large communities which are Waipahu, Waikele, Crestview, Kunia, Waipio, Mililani (town and mauka), and Wahiawa. Adjacent to Wahiawa are the Schofield Barracks and Wheeler Air Force Base military reservations.

The main highway facilities through this district are the H-2 Freeway, Kamehameha Highway, and Kunia Road. Other major roadways are primarily arterial roads serving the various communities located along these highway facilities.

North Shore Area

The final section of fiber optic routed toward the northern end of this island is through the North Shore DP area. This Development Plan area extends from Waialee Gulch near Kawela Bay (outside of Kahuku) to Kaena Point. This area has a distinct rural character that is dominated primarily by agricultural land. The two larger established communities in this North Shore area are Waialua and Haleiwa while smaller coastal residential strips are present at Mokuleia, Waimea, Pupukea, Sunset Beach, and Kawailoa.

The proposed fiber optic route would travel along Kamehameha Highway the entire route from Wahiawa to Haleiwa Boat Harbor in this North Shore area. Kamehameha Highway and Kaukonahua Road serve as the main State highway facilities providing vehicle access to Haleiwa and Waialua from Wahiawa.

Primary Urban Center

Honolulu's Primary Urban Center, or PUC, encompasses the predominantly urbanized area from Pearl City on the leeward side to Kahala on the eastern end of this DP area. This region is the most populated area of the State and is Oahu's largest employment center. The proposed fiber optic route through this PUC involves both State highway facilities and City roadways. The routes include connections to a few DHHL homestead parcels within this PUC in Ft. Shafter, Papakolea, and near Honolulu Stadium State Park.

The PUC includes many large and smaller communities such as Pearl City, Aiea, Halawa, Salt Lake, Kalihi, Nuuanu, downtown Honolulu, Kakaako, Kapahulu, Waikiki, Palolo, Kaimuki, and Kahala. This region includes many established military bases along with associated support facilities and residential communities such as those at Pearl Harbor, Hickam Air Force Base, and Fort Shafter. The downtown Honolulu area serves as the center for both State and City government facilities, and includes the high density downtown central business district.

Other major employment centers include Kakaako which is a mixed-use district undergoing redevelopment, and the Honolulu International Airport and associated industrial area which includes Kalihi, Iwilei, Mapunapuna, and Sand Island. The established Waikiki Resort district is the State's main visitor destination with many hotels and commercial centers located along this shoreline area.

The H-1 and Lunalilo Freeways are the State's main highway facilities providing vehicular access through this PUC corridor. Other State arterial roadways include Nimitz Highway and portions of Ala Moana Boulevard which provide access along the coastline. However, the majority of roadways serving the various communities within this PUC corridor are City facilities.

East Honolulu Area

The East Honolulu Development Plan area includes the valleys and coastline areas from Aina Koa Ridge to Makapuu Point. The majority of fiber optic would be routed within Kalanianaole Highway since this State highway facility is the only major transportation corridor serving this coastal area from Kahala to Hawaii Kai. In Hawaii Kai, this route would travel inland along the major City arterial roads of Lunalilo Home Road, Hawaii Kai Drive, and Kealahou Street before connecting back with Kalanianaole Highway. This route through the East Honolulu area is being taken to connect leeward area DHHL properties to those in Waimanalo.

This East Honolulu area has a firmly established suburban character essentially consisting of a string of residential communities along Kalanianaole Highway clustered within valleys and ridge tops. These valley and ridge top communities include Waialae Iki, Aina Koa, Niu Valley, and Kuliouou. This portion of East Honolulu is predominantly comprised of residential subdivisions with some commercial uses concentrated along the highway.

Hawaii Kai is a large district encompassing a major portion of this East Honolulu area located east of Kuliouou. This district includes the communities of Portlock, Kaalakei Valley, Hahaione Valley, Mariner's Ridge, Hawaii Kai, Queen's Gate, and Kalama Valley. This community also has unique amenities which include a 260-acre private inland marina (Hawaii Kai Marina) that provides protected water for small sail and motor craft and other recreational activities. A concentration of commercial uses is generally established around the highway between Keahole Drive and Lunalilo Home Road.

Koolaupoko Area

The last area of the island where the proposed fiber optic route would be located is the Koolaupoko Development Plan area. This area spans the windward coastal and valley areas of the island from Makapuu Point to Waiahole-Waikane at the northern end of Kaneohe Bay. The fiber optic route through this Koolaupoko area predominantly involves mainly State highway facilities. The fiber optic route proposed through this area would connect DHHL homestead properties in Waimanalo and Waiahole.

This Koolaupoko DP area includes the two larger suburban communities of Kailua and Kaneohe. The other communities associated with this region are more rural and agricultural in character, and include Waimanalo, Kahaluu, Waiahole-Waikane, and Kualoa. The Kaneohe Marine Corps Base Hawaii is a large military base situated at the point separating Kailua and Kaneohe Bay. Kailua is comprised of several smaller residential communities that include Keolu Hills, Lanikai, Enchanted Lake, Kailua, Kalaheo, and Aikahi. Kaneohe is comprised of the smaller communities of Waikalua, Mahinui, Puohala, Kaneohe, Halekou, Castle Hills, Haiku, Alii Shores, Club View Hills, and Ahuimanu.

Kalanianaole Highway serves as the main coastal highway providing vehicular access to areas from Makapuu Point through Waimanalo and to Kailua. At Castle Junction, this highway terminates and splits into Pali Highway heading towards the PUC and Kamehameha Highway heading towards Kaneohe (northbound). The Likelike Highway runs in an east to west direction connecting Kaneohe with the PUC. Finally, Kamehameha Highway and Kahekili Highway provide vehicular access through Kaneohe before joining together at Kahaluu.

2.2 DESCRIPTION OF PROJECT

This project consists of the construction of underground fiber optic duct lines within the rights-of-ways of both State DOT highway facilities and City roadway facilities to provide service to DHHL homestead areas on the Island of Oahu. DHHL has about 11 major homestead locations on the island which total about 6,476 acres. A total of approximately 113.1 miles of roadway would be affected of which the large majority would be State highway facilities.

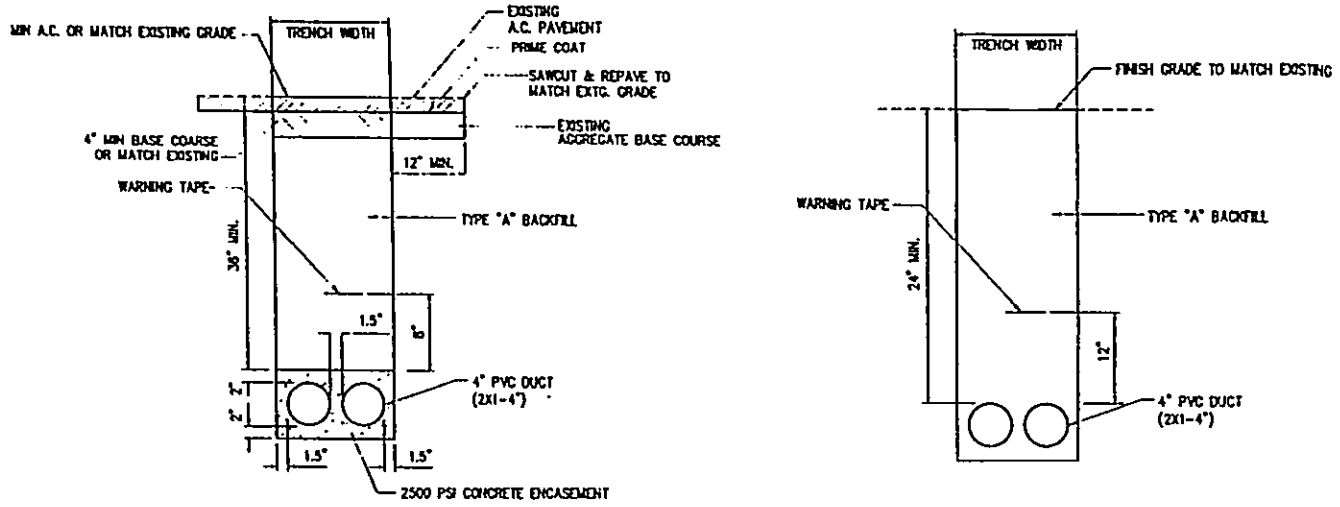
About 83.2 miles (74%) would be constructed within State DOT right-of-ways while the remaining approximately 29.4 miles would be within City right-of-ways. About 2,000 feet of roadway in the Waianae district are owned by the State DHHL. These underground fiber optic duct lines would be constructed within either existing roadway pavements or shoulder areas. The preferred conduit alignment within these rights-of-way would be on the mauka (inland) side of roadways. However, the specific location of conduit alignments would be determined on a case by case basis during the design of this project. The preferred location within roadway right-of-ways would be first unpaved shoulders, then paved shoulders, and finally paved travel lanes.

2.2.1 Design Information For Duct System

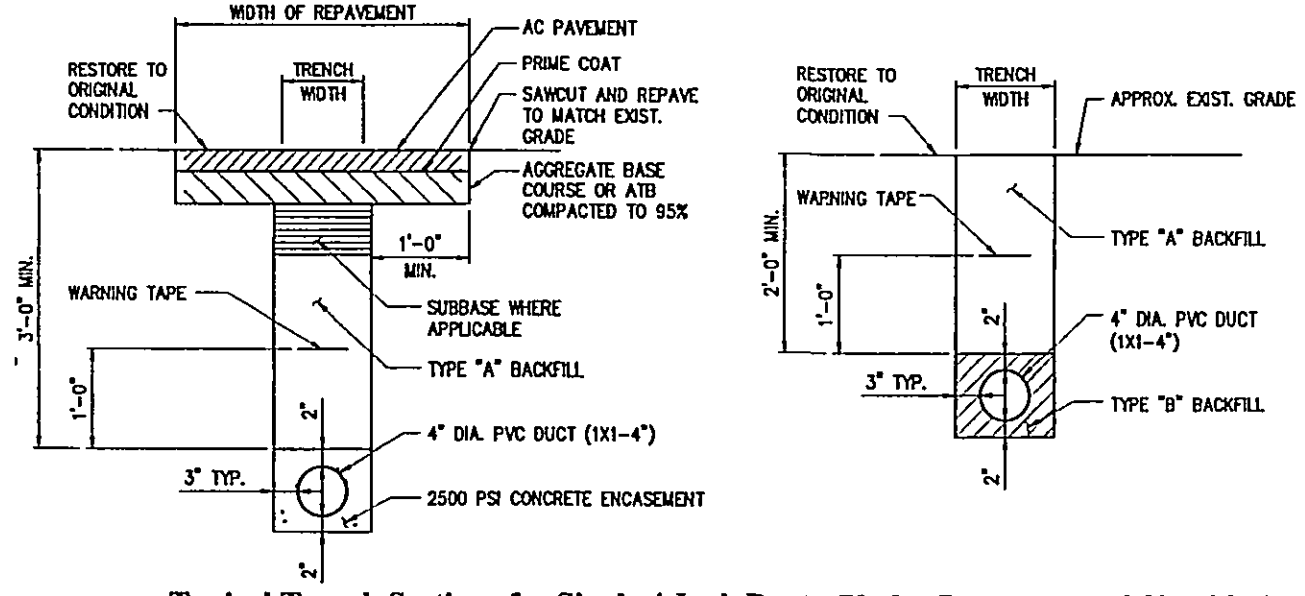
An underground duct system would be constructed within roadways that will be used for the installation of fiber optic cabling and/or copper cabling. There are four different duct system design alternatives being considered to contain the fiber optic telecommunication cables. Selection of a particular duct system design would 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, and preliminary drawings of typical trench sections which may be associated with these duct system designs are provided in Figures 2.1 and 2.2.

1. A single 4-inch diameter duct;
2. Two 4-inch diameter ducts;
3. A single bundle of seven (7) 1¼-inch diameter ducts within a 6-inch pipe sleeve; and
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 would likely be enclosed in a concrete encasement or other approved encasement types. Within roadway pavements, these concrete encasements would 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 would be situated about 3 feet below the surface and would be covered with agency approved backfill material. In addition to these underground ducts, manholes of about 3 feet by 5 feet in size would be installed approximately every 2,000 to 3,000 feet or less if necessary.



Typical Trench Sections for Two 4-Inch Ducts (Under Pavement and Shoulder)



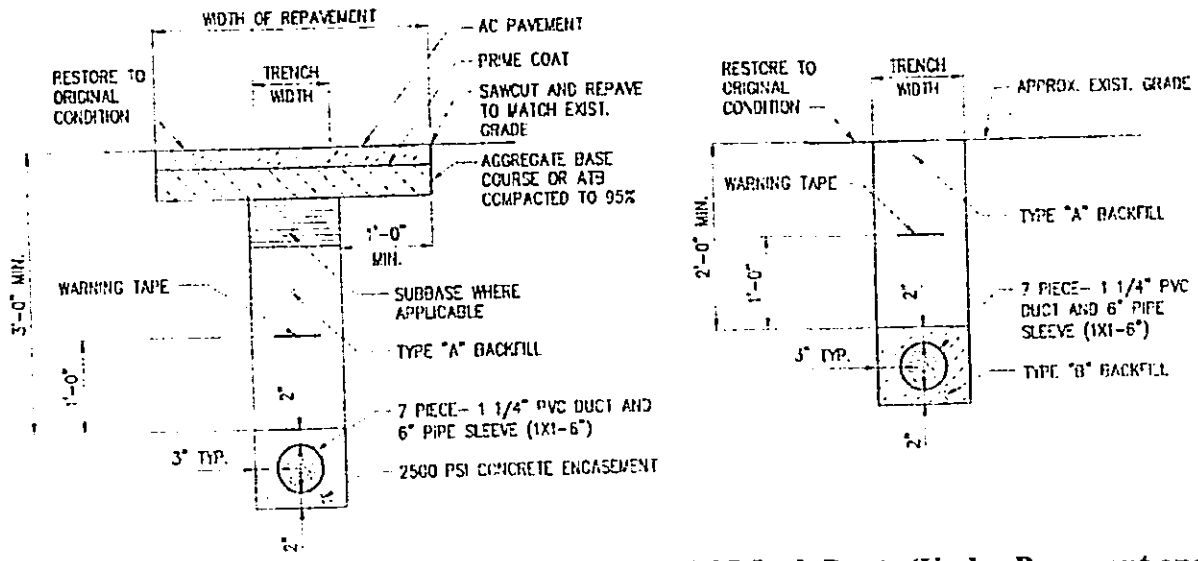
Typical Trench Sections for Single 4-Inch Ducts (Under Pavement and Shoulder)

PRELIMINARY TYPICAL TRENCH DESIGN

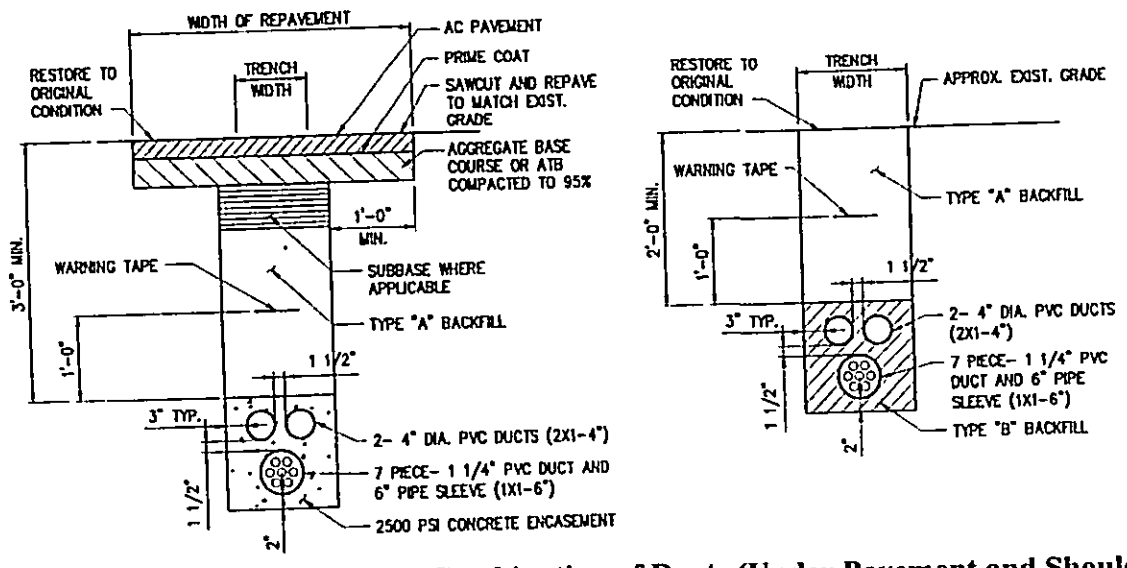
Figure 2.1

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
SSFM International, Inc.



Typical Trench Sections for Single Bundle of Seven 1.25-Inch Ducts (Under Pavement and Shoulder)



Typical Trench Sections for Combination of Ducts (Under Pavement and Shoulder)

PRELIMINARY TYPICAL TRENCH DESIGN

Figure 2.2

Source: SSFM International, Inc.

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Construction Methods

All improvements associated with this rural fiber optic duct lines project, including appurtenant pull boxes and switches, are planned to be constructed underground. Preliminary design indicates that no above ground appurtenances should be necessary. However, if a few small above ground telephone equipment are necessary, they are planned to be located within either DHHL properties, public rights-of-way as permitted by agencies, or other privately-owned properties. Necessary telephone cabinets would generally be about 4 feet in height or less.

The planned construction methods for the installation of fiber optic cables would be either open trench work or some type of trenchless method such as horizontal directional drilling or microtunneling. The handholes and manholes installed would also be used for the installation of fiber optic cables. Trenchless methods would be used where open trench construction methods are not possible or practicable under certain existing conditions. For example, trenchless methods have been used to construct lines where the disturbance associated with open trench methods is not acceptable.

The specific construction method implemented for a particular section of fiber optic cable would be determined on a case-by-case during the design of the various segments associated with this project. As a result, important design considerations affecting the selection of construction method would typically include existing geotechnical conditions, present conditions along the roadway, and construction cost and schedule. One instance where a trenchless method would be considered is at major intersections to minimize disruptions to traffic flow.

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

Horizontal directional drilling methods have 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 reaming 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 bored hole has reached the required size, the pipeline (or a casing) is pulled back into the bored 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 cable crossings would be determined on a case-by-case basis since there are differences in the design and materials associated with each bridge. Design crossings would consider either bridge attachments or directional drilling under streams or gulches if practicable. It is intended that all fiber optic cables would be designed to avoid affecting streams or other sensitive environmental resources.

The design of all fiber optic cables within State highway facilities and Federal aid City highways would be in conformance to or exceed the regulations and minimal design requirements 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 (DOT 1981). These regulations cover requirements for the installation of underground utilities, highway crossings, and attachments to bridges. Similarly, the design of all underground fiber optic cables within City roadway facilities would be in conformance with or exceed the minimal standards prescribed under the *Standard Details For Public Works Construction* (DPW 1984). Furthermore, appropriate coordination with the State DOT and City would be conducted during the project's design.

2.2.2 Planned Fiber Optic Cable Line Routes

A description of the routes planned throughout the island is provided below in more detail by various Development Plan areas. Table 2.1 provides a summary along with other information associated with the various fiber optic route sections through all of these regions.

Table 2.1 Summary Of Fiber Optic Routes

Route Description By Development Plan Area	Estimate Mileage	Roadway Jurisdiction
Waianae Development Plan Area 14.2 Miles		
1. Haleahi Road (Lualualei Naval Reservation Gate), Kaneaki Street, Waianae Valley Road, then Plantation Road up to Farrington Highway	2.8	State DHHL (Portion of Haleahi and Kaneaki); City
2. Farrington Highway from Waianae Valley Road to Haleakala Avenue	5.4	State DOT
3. Haleakala Ave. and Nanakuli Ave. back to Farrington Highway	3.2	City & County of Honolulu
4. Farrington Highway (at Nanakuli Ave.) to Waimanalo Stream	2.8	State DOT

Table 2.1 Summary Of Fiber Optic Routes (continued)

Route Description By Development Plan Area	Estimate Mileage	Roadway Jurisdiction
Ewa Development Plan Area 15.1 Miles		
1. Farrington Highway, H-1 Freeway, and Kalaeloa Boulevard	3.6	State DOT
2. Kapolei Parkway and Kamokila Boulevard up to Farrington Highway	1.6	City
3. Farrington Highway (at Kamokila Blvd.) up to Ft. Weaver Road (interchange)	4.9	State DOT
4. Ft. Barrette Road, Renton Road, and Saratoga Road	5.0	State DOT City (Renton Road)
Central Oahu Development Plan Area **13.7 Miles**		
1. Farrington Highway (at Ft. Weaver Road) to Kamehameha Highway intersection	2.8	State DOT
2. Kamehameha Highway (from Farrington Highway) to Wilikina Drive intersection	8.1	State DOT
3. Kamehameha Highway, Route 80 (at Wilikina Drive) up to Kamehameha Highway change to Route 99	2.8	State DOT
North Shore Development Plan Area 8.6 Miles		
1. Kamehameha Highway, Route 99 (at Kamananui Road) up to Kamehameha Highway, Route 83 (Weed Junction)	6.8	State DOT
2. Kamehameha Highway, Route 83 (Weed Junction) to Haleiwa Boat Harbor	1.8	State DOT
Primary Urban Center Development Plan Area 26.6 Miles		
1. Farrington Highway (in Waipahu) and Kamehameha Highway eastbound (Route 99) to Nimitz Highway	7.0	State DOT
2. Nimitz Highway (near Valkenburgh St.) to Kamehameha Highway (near Middle Street)	3.2	State DOT
3. Kamehameha Highway (near Middle Street) and Dillingham Boulevard to North King Street	1.9	State DOT (portion of Kam Hwy.) City
4. North King Street (at Dillingham Blvd.) and River Street (at Nimitz Highway)	0.5	City
5. Nimitz Highway (from River St.) and Ala Moana Boulevard up to Punchbowl Street	1.1	State DOT
6. Papakolea Segment. Alakea Street (from Nimitz Hwy.), Queen Emma Street, Lusitania Street, Puowaina Drive, and Tantalus Drive	3.4	City
7. Punchbowl Street (at Ala Moana Blvd.), Pohukaina Street, Kamani Street, Halekauwila Street, Ward Avenue, Waimanu Street, Kamakee Street, Kona Street, and Atkinson Drive (at Kapiolani Blvd.)	2.8	City
8. Kapiolani Boulevard (from Atkinson Dr.), Kalakaua Avenue, and Ala Wai Boulevard (to Kapahulu Avenue)	2.1	City
9. Kapahulu Avenue (from Ala Wai Blvd.), Herbert Street, and Kilauea Avenue (up to on-ramp to Lunalilo Freeway)	4.6	City

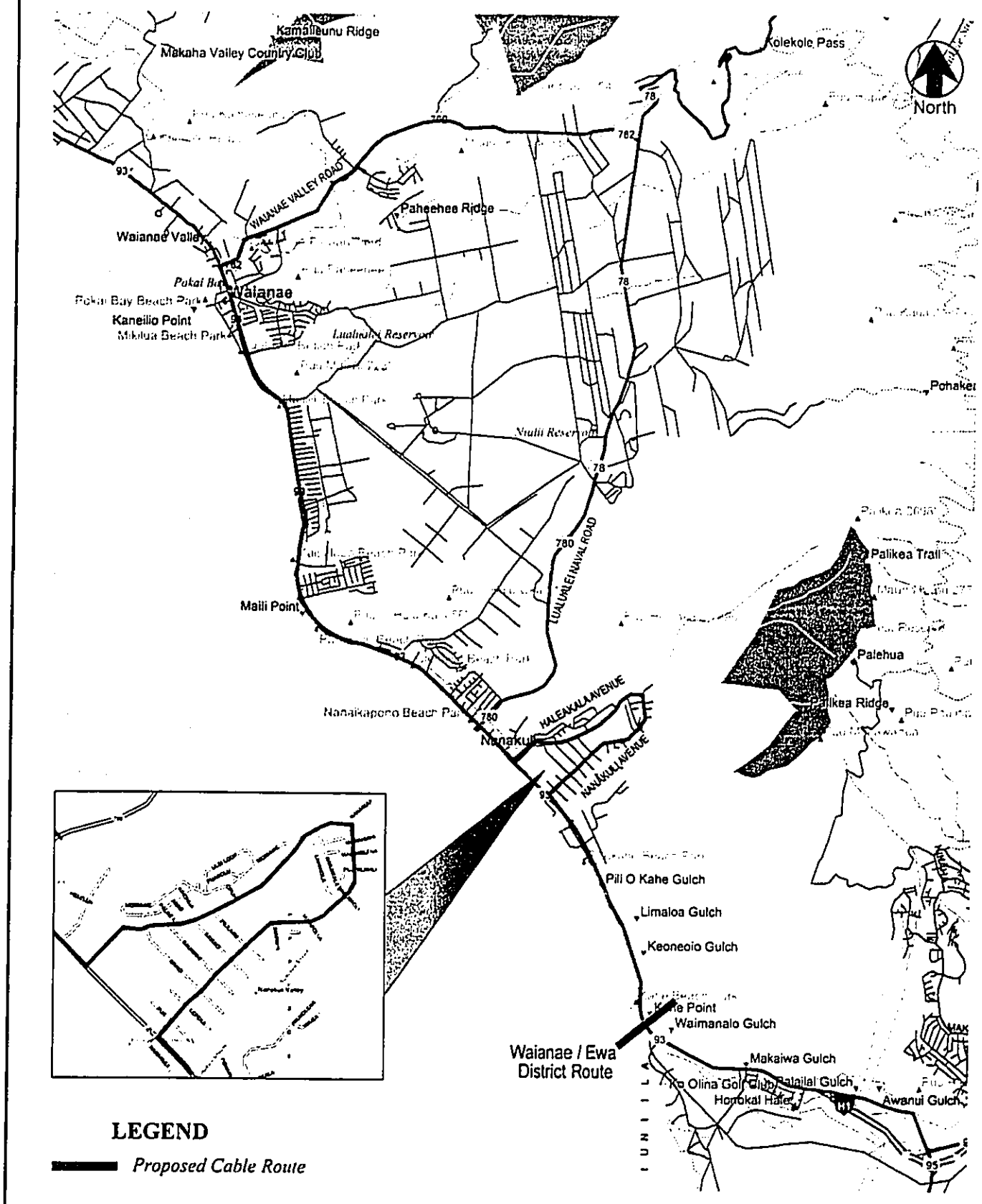
Table 2.1 Summary Of Fiber Optic Routes (continued)

Route Description By Development Plan Area	Estimate Mileage	Roadway Jurisdiction
East Honolulu Development Plan Area 12.2 Miles		
1. Kalanianaole Highway from Kilauea Ave. up to Lunalilo Home Road	5.8	State DOT City (Kalanianaole Hwy from Kilauea Ave. to Ainakoa Avenue)
2. Lunalilo Home Road, Hawaii Kai Drive, Kealahou Street (up to Kalanianaole Highway)	4.1	City
3. Kalanianaole Highway from Kealahou Street to Makapuu Point Lookout	2.3	State DOT
Koolaupoko Development Plan Area 22.7 Miles		
1. Kalanianaole Highway from Makapuu Point Lookout to Kailua Road	8.9	State DOT
2. Kalanianaole Highway from Kailua Road on to Kamehameha Highway up to Likelike Highway	4.5	State DOT
3. Likelike Highway from Kamehameha Hwy. on to Kahekili Highway up to Kamehameha Hwy. (Kahuluu)	5.2	State DOT
4. Kamehameha Highway to Waiahole Homestead Road	2.6	State DOT
5. Waiahole Homestead Road to North/South Fork	1.5	City
Route Summary		
A. State Highway Facilities	**83.2**	**74% of Total**
B. City Roadway Facilities	**29.9**	**26% of Total**
C. Total Roadway Facilities	**113.1**	
Note: About 2,000 feet (<0.4 miles) are DHHL owned		

Waianae District Route

The fiber optic route in this district generally starts from the State DHHL's various Waianae and Lualualei homestead properties. These homestead properties are partially developed and encompass large land areas totaling about 360 acres in Waianae and 1,966 acres in Lualualei. Figure 2.3 shows this fiber optic route through the Waianae district.

This fiber optic route begins along Haleahi Road from the entrance into the Lualualei Naval Reservation in Waianae valley, and proceeds makai (westbound) where it connects with Waianae Valley Road. The route then follows Waianae Valley Road and then connects onto Plantation Road until it finally intersects Farrington Highway. A short segment also extends onto Kaneaki Street into the DHHL subdivision from Waianae Valley Road. About 1,000 feet of Haleahi Road from this naval reservation entrance along with Kaneaki Street are owned by the State DHHL. The remaining section of Haleahi Road, Waianae Valley Road, and Plantation Road are owned by the City.



WAIANAE DISTRICT FIBER OPTIC ROUTE

Figure 2.3

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
Delorme Street Atlas USA (2000)

SSFM INTERNATIONAL

From the intersection of Waianae Valley Road with Farrington Highway, the fiber optic route would then travel eastbound along the State highway until it reaches Haleakala Avenue in Nanakuli. As shown on Figure 2.3, the route would then follow the City's Haleakala Avenue inland into the valley where it intersects with Nanakuli Avenue. It would then follow Nanakuli Avenue makai where this road connects back with Farrington Highway. This particular route segment is intended to serve the various DHHL Nanakuli homestead properties along the highway and in the valley which encompasses about another 2,311 acres. This route then continues along Farrington Highway in an eastbound direction through the remainder of this district when ends before reaching the Kahe Power Plant.

Ewa District Route

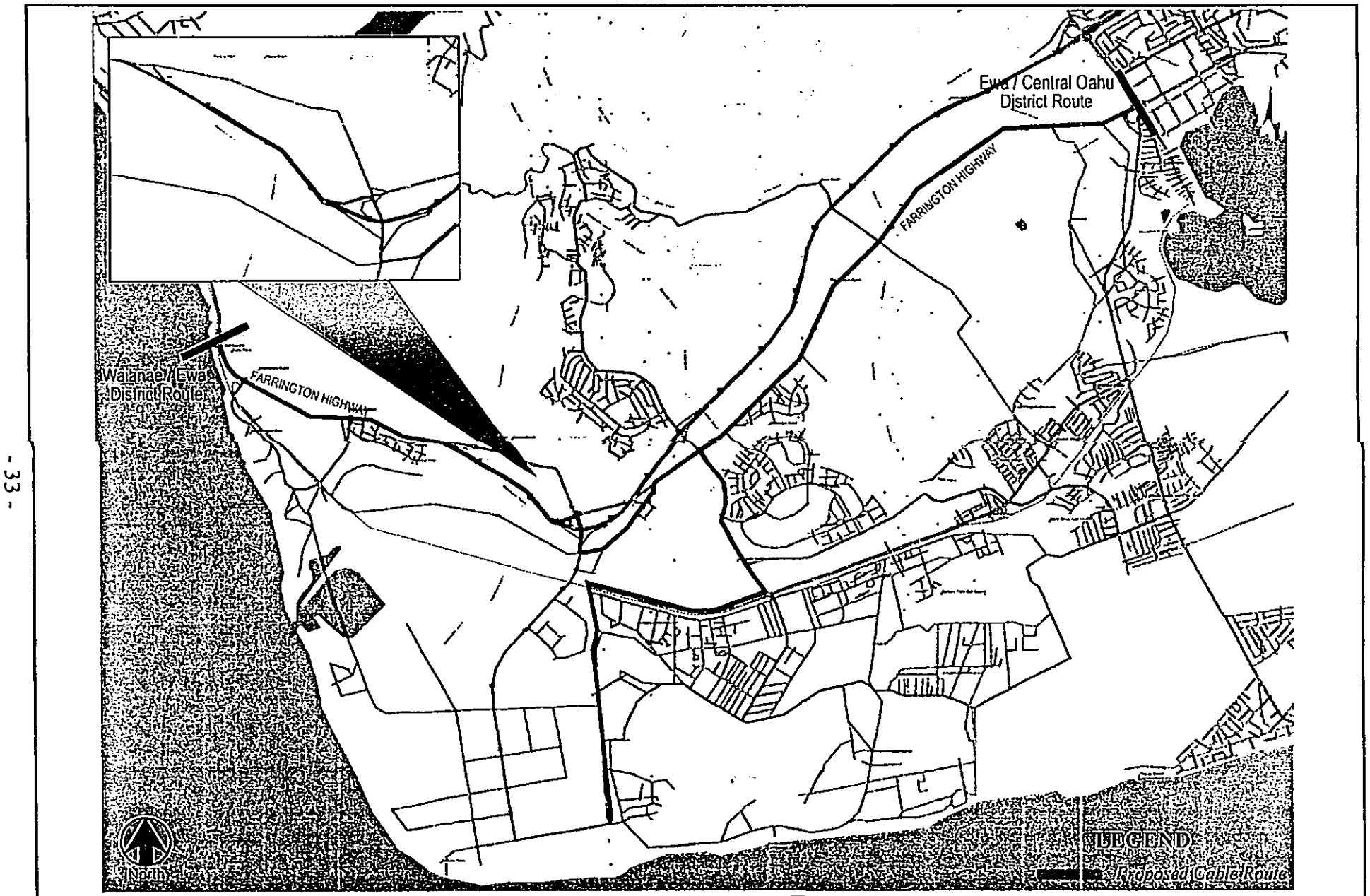
The fiber optic route continues eastbound along the State-owned Farrington Highway from the Waianae district passing the Ko Olina Resort area and Honokai Hale subdivision. Figure 2.4 shows the fiber optics route through this Ewa DP area. As shown on this figure, the route then travels onto the H-1 Freeway as this freeway approaches the Palailai Interchange. At this interchange, the fiber optic would travel onto the H-1 West on-ramp which connects with Kalaeloa Boulevard.

On Kalaeloa Boulevard, the route would travel in a makai (southbound) direction before turning eastbound along the Kapolei Parkway. The route would then connect onto Kamokila Boulevard as it passes through the existing City of Kapolei commercial area before connecting back to Farrington Highway a the Kapolei Regional Park. As shown on Figure 2.4, this route would then travel along Farrington Highway past the Villages of Kapolei through the remaining Ewa district where this highway eventually intersects with Ft. Weaver Road.

From the intersection of Farrington Highway with Ft. Barrette Road, a fiber optic cable section would travel makai along Ft. Barrette Road towards Kalaeloa. This route would serve DHHL properties located in the Villages of Kapolei (about 38 acres) and in Kalaeloa which were recently established as part of the closing of Barbers Point Naval Air Station. As shown on Figure 2.4, this route would travel from Ft. Barrette Road onto Renton Road in a western direction. It would then head makai connecting onto Saratoga Road as it proceeds towards its termination point nearer the coastline.

Central Oahu District Route

The fiber optic route in the Central Oahu district generally begins from the Farrington Highway intersection with Ft. Weaver Road as shown on Figure 2.5. This route would proceed in the eastbound direction along Farrington Highway through the town of Waipahu until the intersection with Kamehameha Highway.



EWA DISTRICT FIBER OPTIC ROUTE

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
Delorme Street Atlas USA (2000)

Figure 2.4

SSFM INTERNATIONAL

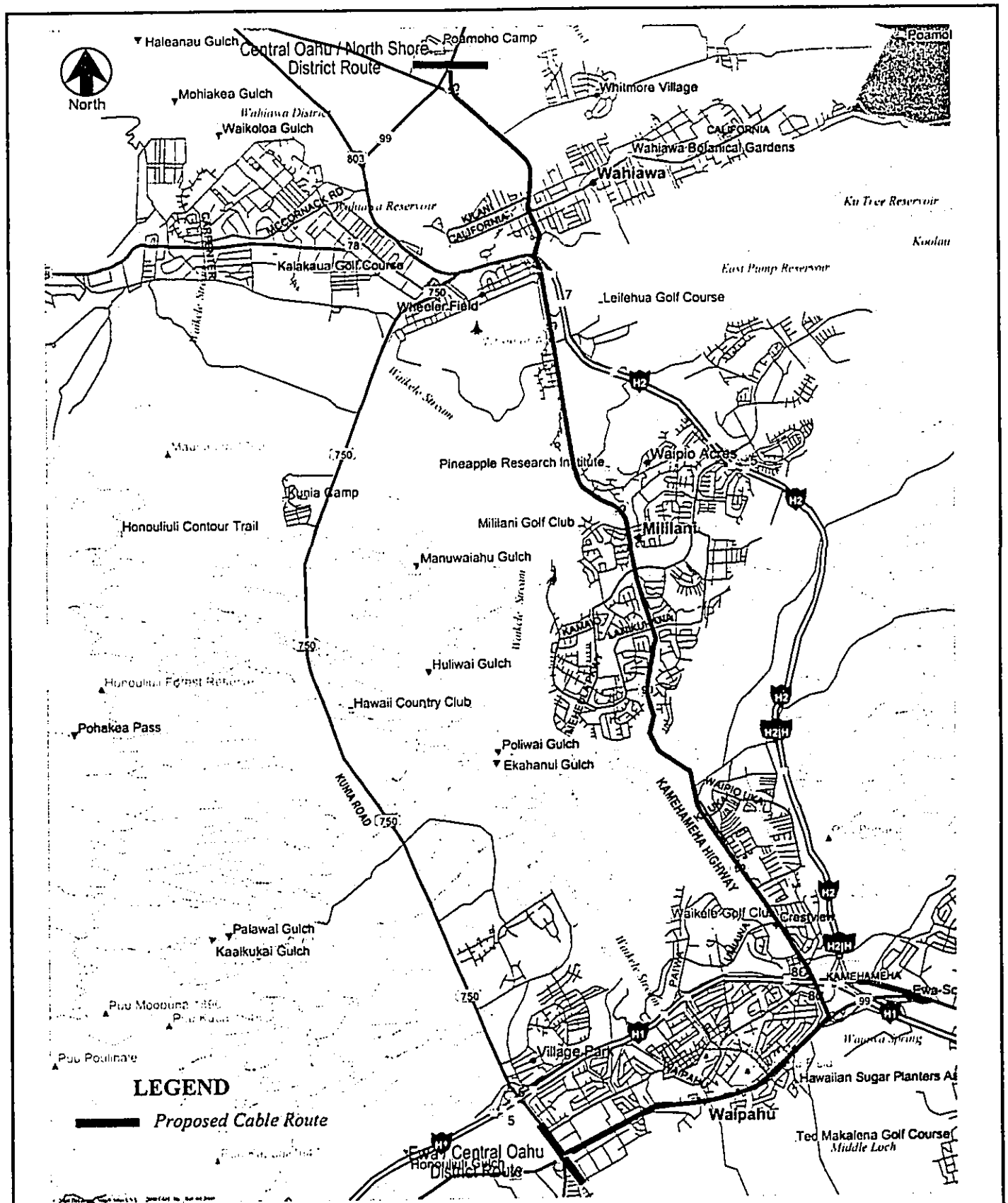


Figure 2.5

CENTRAL OAHU FIBER OPTIC ROUTE

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
Delorme Street Atlas USA (2000)

SSFM INTERNATIONAL

It would then travel in a northbound direction along Kamehameha Highway through the entire Central Oahu district into Wahiawa. This route would travel past the communities of Waikele, Waipio, Mililani, and Wheeler Army Airfield before going through Wahiawa town where this highway changes from Highway Route 99 to Highway Route 80 at the intersection of Wilikina Drive. The final section of this route in the Central Oahu district travels past Wahiawa town to the highway's intersection with Kamananui Road and Kaukonahu Road where it changes back to Highway Route 99 as it heads towards the north shore.

North Shore District Route

Entering the North Shore district, the fiber optic route would travel along Kamehameha Highway (Highway Route 99) the entire length. Figure 2.6 shows the route from this highway's intersection with Kamananui Road and Kaukonahu Road up to Haleiwa Boat Harbor. As shown on this figure, the route would travel along Kamehameha Highway northbound until this highway reaches Weed Junction. The route would then travel northeast on Kamehameha Highway (changes to Highway Route 83) to its end point in this district near the entrance of the Haleiwa Boat Harbor.

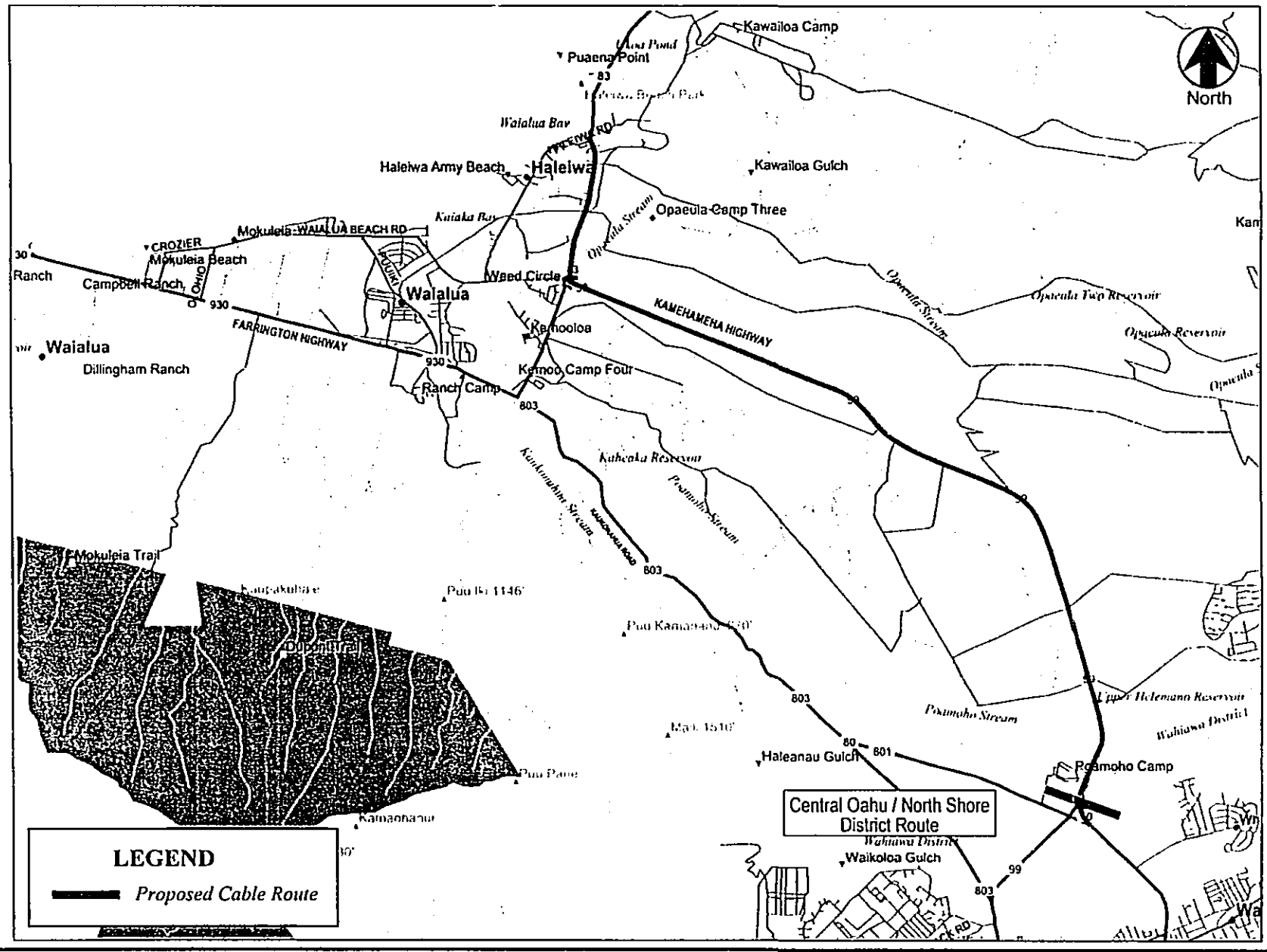
Primary Urban Center Route

The telecommunication cable route through the City's Primary Urban Center Development Plan Area would involve both State highways and City roadways. Figures 2.7, 2.7A, and 2.7B show the route through three sections of this PUC to provide greater detail of roadways affected.

PUC Section 1

The route within this PUC district as shown on Figure 2.7 generally begins along Farrington Highway at its junction with Kamehameha Highway in Waipahu. From this junction, the route would travel along Farrington Highway eastbound past Leeward Community College about 2,000 feet where it connects to Kamehameha Highway via the westbound Highway Route 90 lanes.

The route would then travel along Kamehameha Highway eastbound over several miles around Pearl Harbor serving a DHHL Waiawa homestead location (about 20 acres) until it reaches Nimitz Highway (Highway Route 92). As shown on Figure 2.7, this route would travel through the commercial areas of Pearl City and Waimalu, past the Aloha Stadium, and through the Pearl Harbor Naval Shipyard area. At the H-1 Freeway's interchange at Hickam Air Force Base and Pearl Harbor, the route would connect from Kamehameha Highway to Nimitz Highway. The fiber optic route would follow the Nimitz eastbound on-ramp which connects to Nimitz Highway heading towards downtown Honolulu.



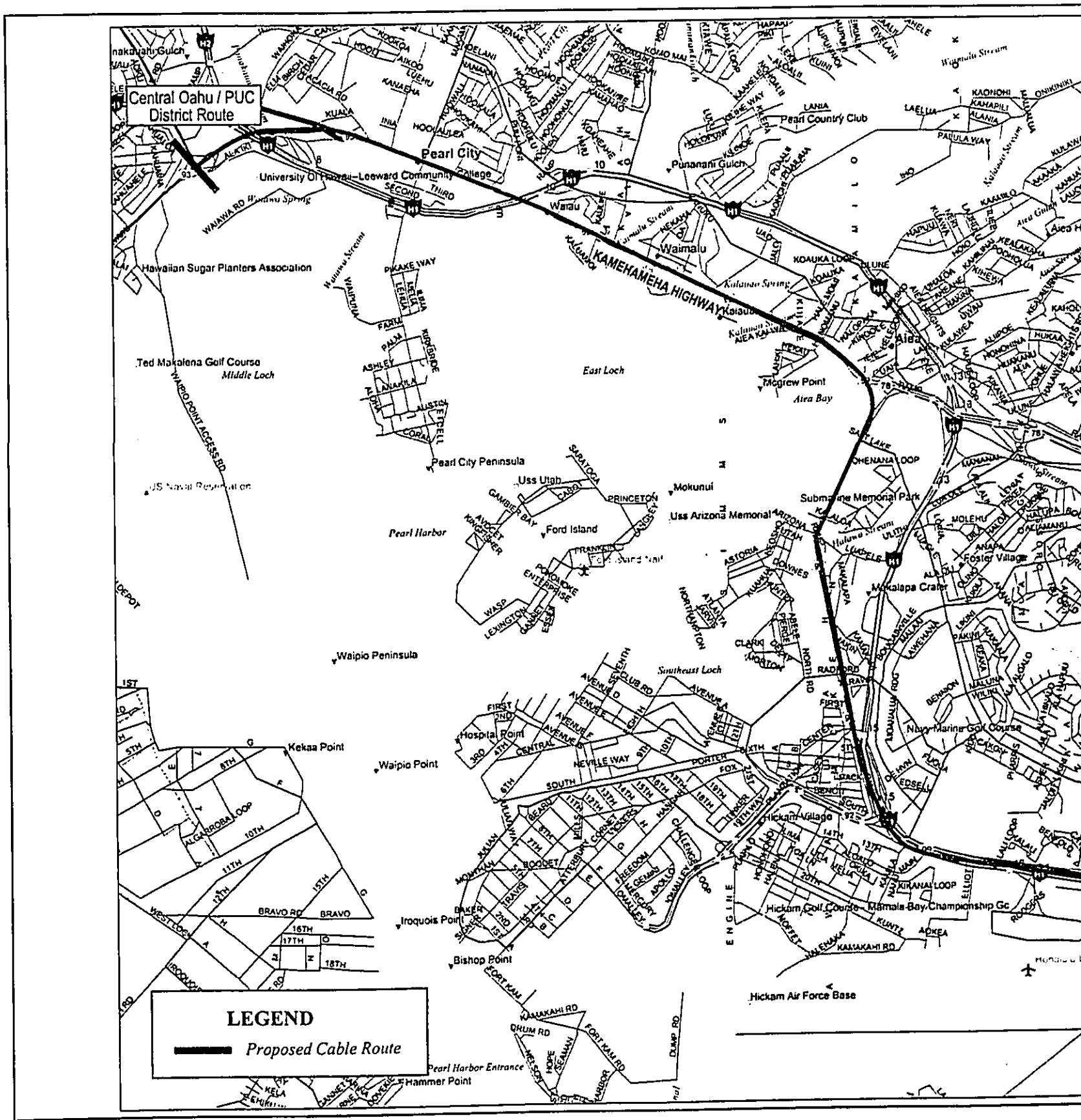
NORTH SHORE DISTRICT FIBER OPTIC ROUTE

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

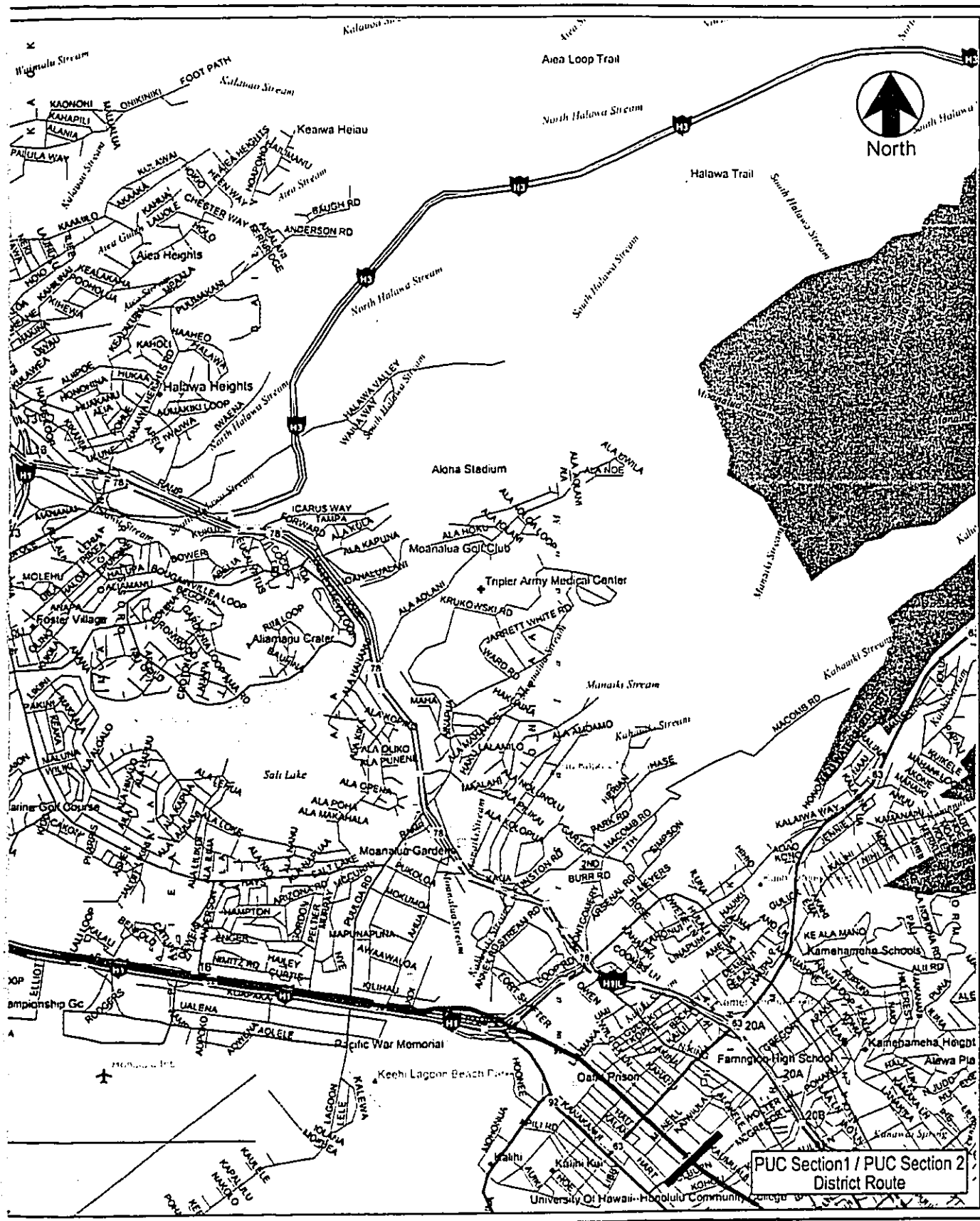
Source:
Delorme Street Atlas USA (2000)

Figure 2.6

SSFM INTERNATIONAL



PRIMARY URBAN CENTER (SECTION 1) FIBER OPTIC



FIBER OPTIC ROUTE

Figure 2.7

Source:
Delorme Street Atlas USA (2000)

SSFM INTERNATIONAL

The fiber optic route would then travel along Nimitz Highway under the H-1 Freeway until it reaches H-1 Exit 18 at the Kamehameha Highway with Middle Street junction. This route would pass by a 13-acre DHHL homestead parcel (referred to as Shafter Flats) located along Kilihau Street just mauka (north) of Nimitz Highway. This route would run past the short section of Kamehameha Highway which changes to Dillingham Boulevard (Highway Route 90) near the Oahu Community Correction Center. The route would then travel along Dillingham Boulevard through the Kalihi commercial area and past Honolulu Community College up to the intersection with North King Street. This route would pass near a Kapalama DHHL homestead property of about 4 acres in the vicinity.

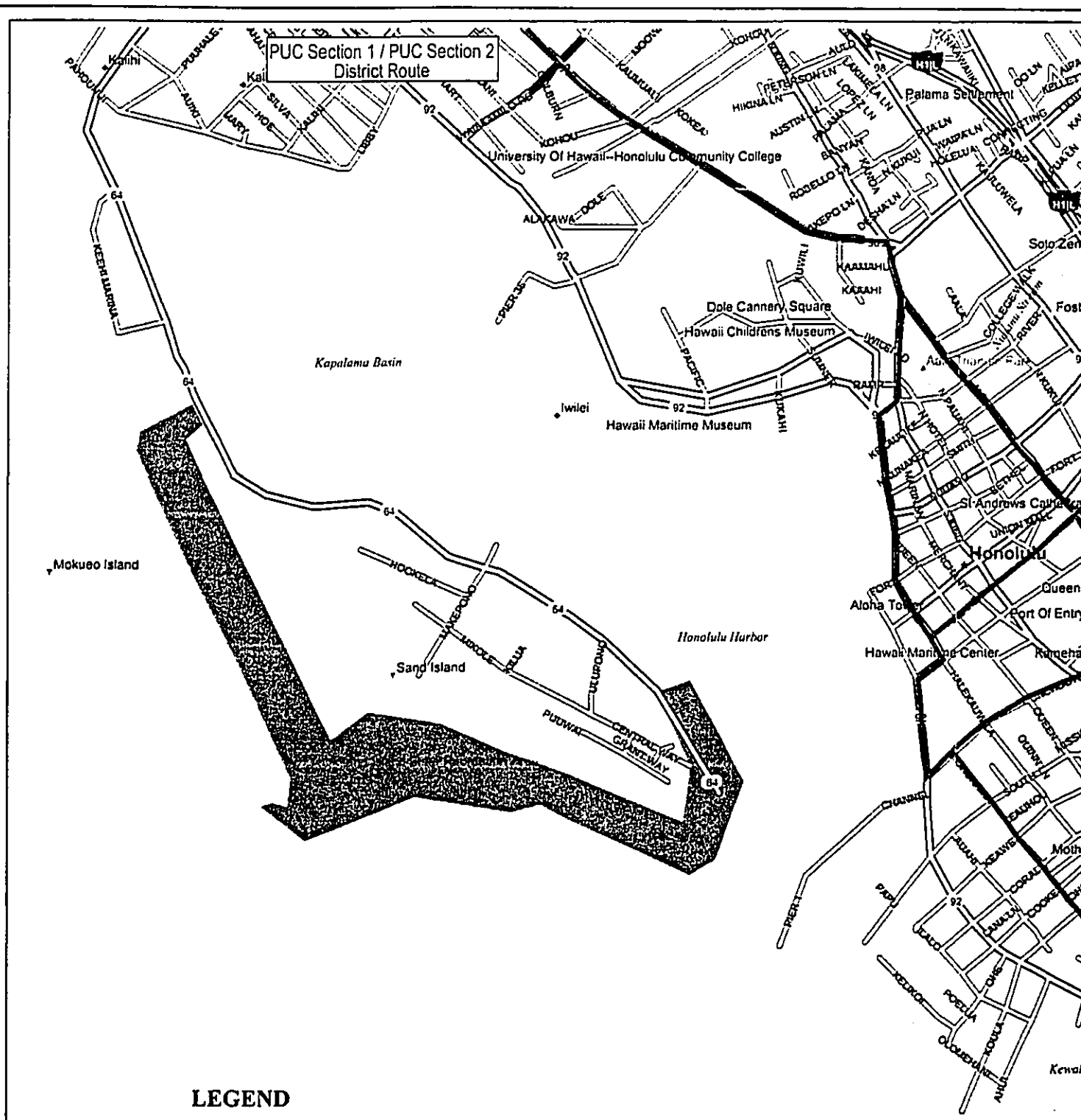
PUC Section 2

Figure 2.7A shows the next section of the route through the PUC which generally includes the area from Kalihi to Makiki. From the intersection of Dillingham Boulevard with North King Street, the route would turn onto and travel toward downtown Honolulu along North King Street up to Aala Park. It would then turn onto River Street heading makai where it would then travel eastbound along Nimitz Highway past Aloha Tower Marketplace.

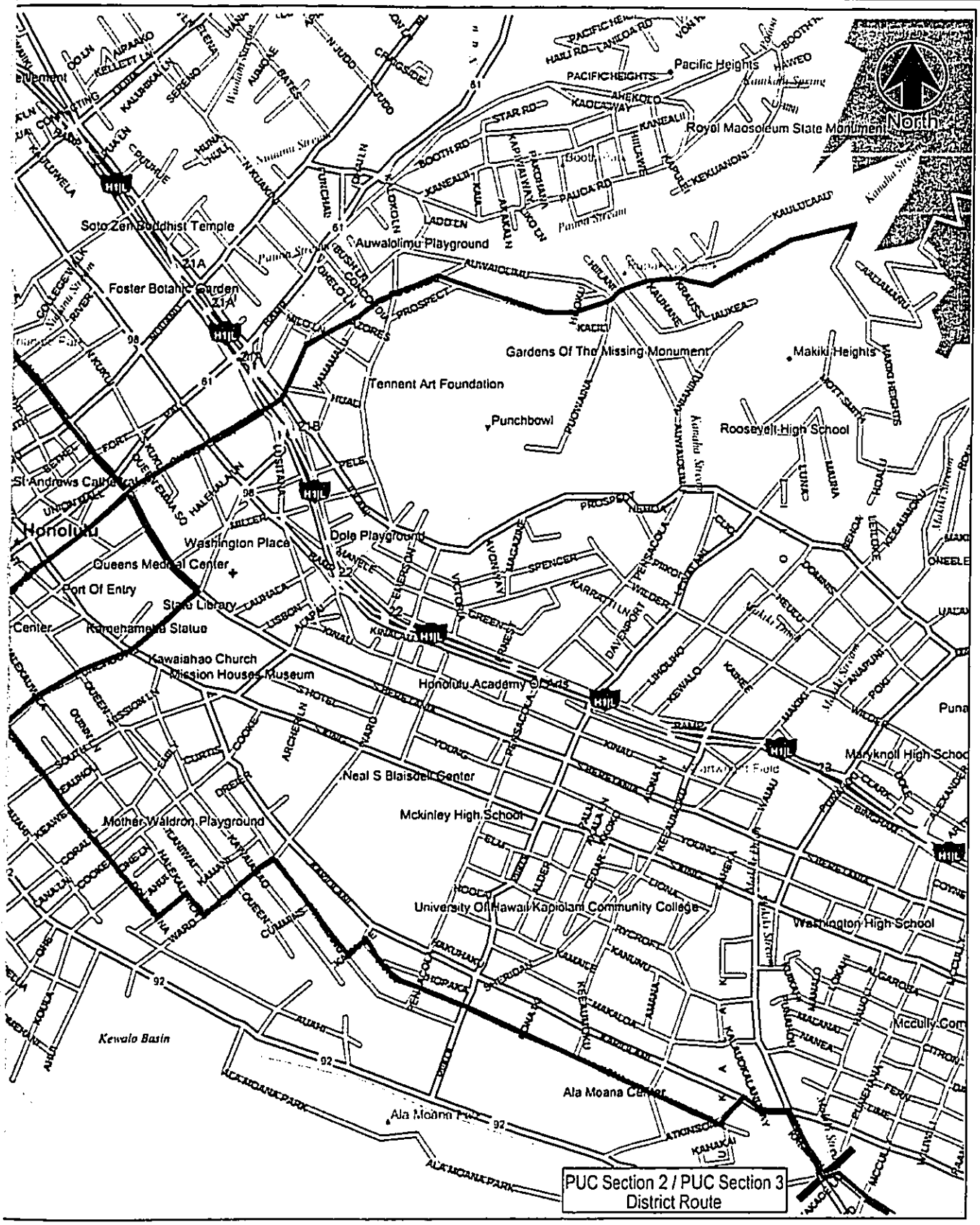
A short alternative segment also being considered is shown on Figure 2.7A. This route would start from the Beretania Street and North King Street junction at Aala Park and travel eastbound along Beretania Street. This fiber optic route would continue along Beretania Street until reaching Punchbowl Street where it would then travel makai. The last section of this alternative route would be along Punchbowl Street until it intersects with Pohukaina Street.

At the intersection of Nimitz Highway with Alakea Street, a fiber optic segment would head mauka (northeast) along Alakea Street towards the National Memorial Cemetery of the Pacific (Punchbowl). The DHHL has their Auwaiolimu, Kalawahine, Kewalo, and Papakolea properties (about 177 acres) located just north of Punchbowl in Pauoa. As shown on Figure 2.7A, this route would travel from Alakea Street onto Queen Emma Street, and under the H-1 Freeway where it connects with Lusitana Street. Just past the H-1 Freeway, the route would travel onto Puowaina Drive as it makes its way around Punchbowl. Along Puowaina Drive, the route would then cross Auwaiolimu Street onto Tantalus Drive where it would finally terminate near the bend about 0.5 miles up this road.

Back on the Nimitz Highway at Alakea Street intersection, the route would continue proceeding eastbound by travelling onto Ala Moana Boulevard fronting the Federal Building. It would then turn mauka on Punchbowl Street and then eastbound onto Pohukaina Street. The fiber optic route would then turn onto Kamani Street and Halekauwila Streets for short segments before connecting onto Ward Avenue heading mauka.



PRIMARY URBAN CENTER (SECTION 2) FIBER OPT



IBER OPTIC ROUTE

Figure 2.7A

Source:
Delorme Street Atlas USA (2000)

SSFM INTERNATIONAL

From Ward Avenue, the route would turn onto Waimanu Street heading eastbound, then Kamakee Street, and onto Kona Street as it passes by Ala Moana Center. Past this shopping center, this route would turn onto Atkinson Drive and Kapiolani Boulevard for short segments before turning onto Kalakaua Avenue heading into Waikiki.

PUC Section 3

The last section of this route through the eastern end of the PUC is shown on Figure 2.7B and generally includes the area from Waikiki to Kahala. This section of the route continues from Kalakaua Avenue across the Ala Wai Canal before turning onto Ala Wai Boulevard. This route would run along the entire stretch of Ala Wai Boulevard past Waikiki before turning mauka (northbound) on Kapahulu Avenue.

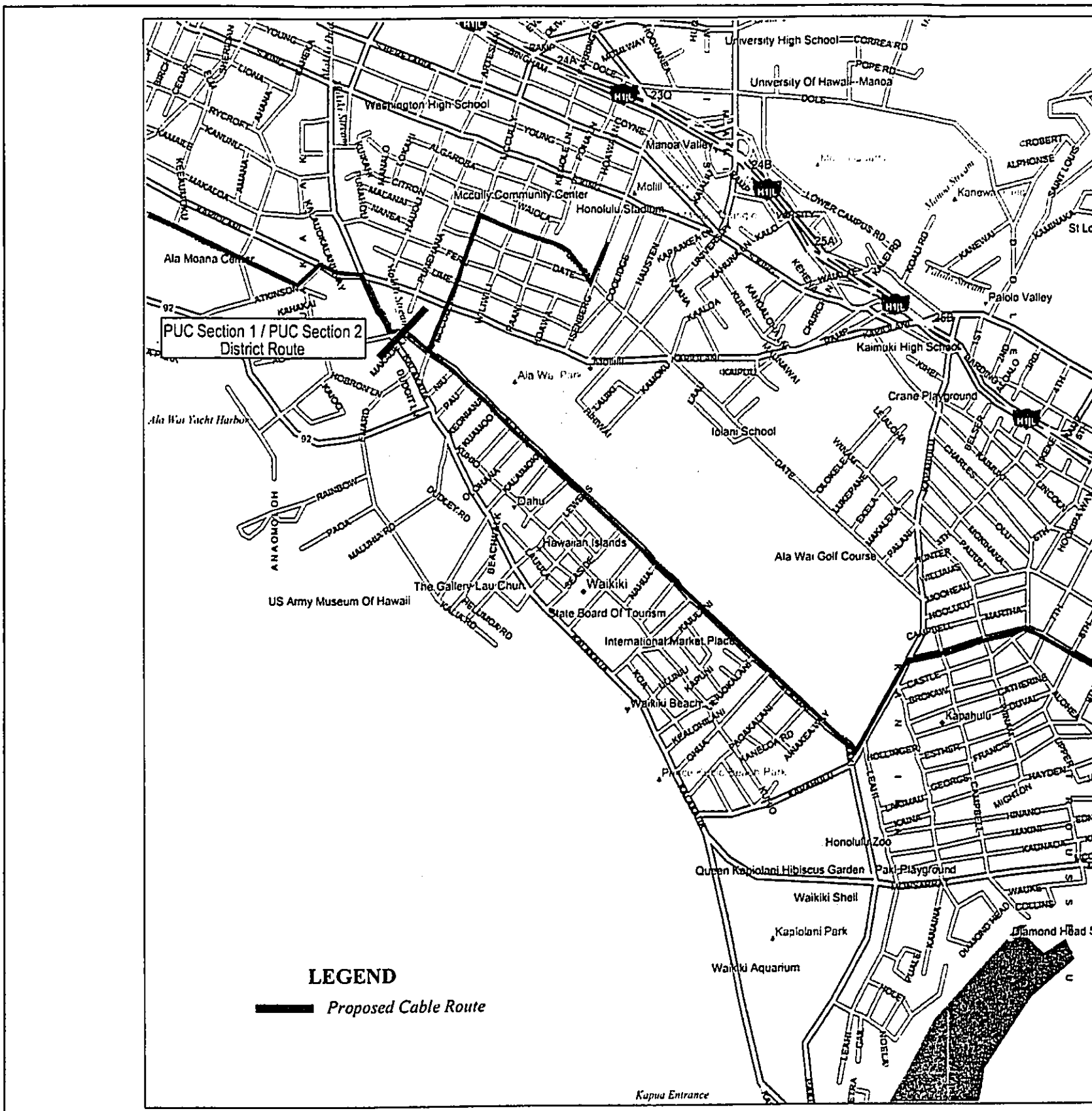
A short segment would turn off from Ala Wai Boulevard heading towards the McCully community. This segment would serve a DHHL Moiliili property of about 2 acres on Isenberg Street. As shown on Figure 2.7B, this route would travel along McCully Street mauka, then turn onto Citron Street before finally turning onto Isenberg Street where this DHHL property is located.

From Kapahulu Avenue, the main route would turn onto Herbert Street, cross 6th Avenue, and then proceed on Kilauea Avenue. This route would continue along this road the rest of the way until it reaches the Lunalilo Freeway travelling past the Kapiolani Community College and Kahala Mall. This route would then turn onto the Lunalilo Freeway heading eastbound where it changes to Kalanianaole Highway (Highway Route 72).

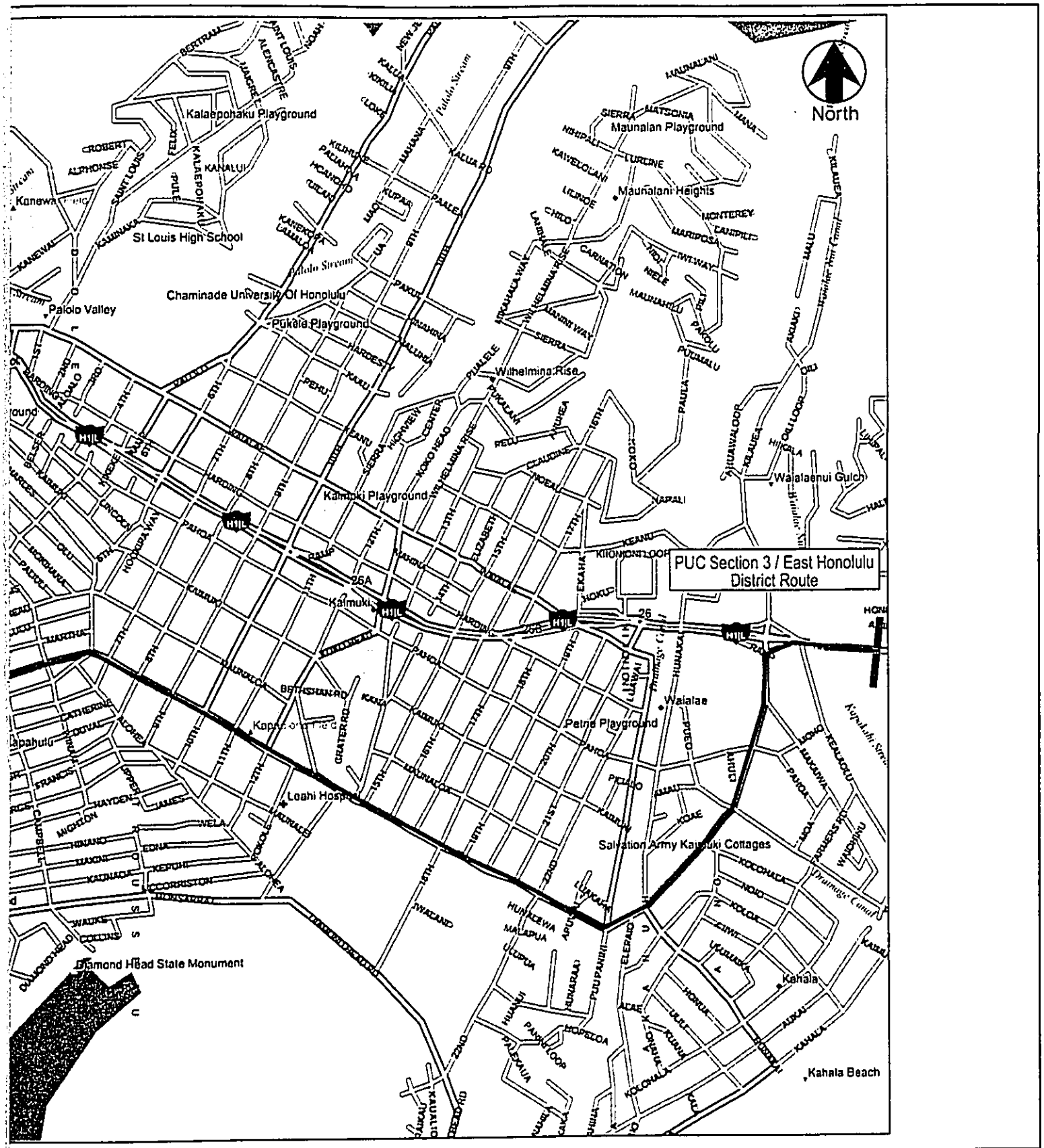
East Honolulu District Route

From the PUC's Kahala community, the telecommunication cable route would enter the East Honolulu district and follow the path shown on Figure 2.8. This route would run along Kalanianaole Highway from the communities of Aina Haina to Kuliouou as shown on the figure. From Kuliouou, the route would enter the Hawaii Kai community and proceed along this highway until the intersection with Lunalilo Home Road.

This route would then travel in the mauka direction along Lunalilo Home Road past Kaiser High School until it meets with Hawaii Kai Drive. It would then travel in an eastbound direction along Hawaii Kai Drive up to the intersection with Kealahou Street near the Kalama Village Shopping Center. It would then follow along Kealahou Street through the Queen's Gate subdivision before connecting with Kalanianaole Highway. From this highway, the route would proceed towards the Makapuu Lookout where this East Honolulu district ends.



PRIMARY URBAN CENTER (SECTION 3) FIBER OPTIC

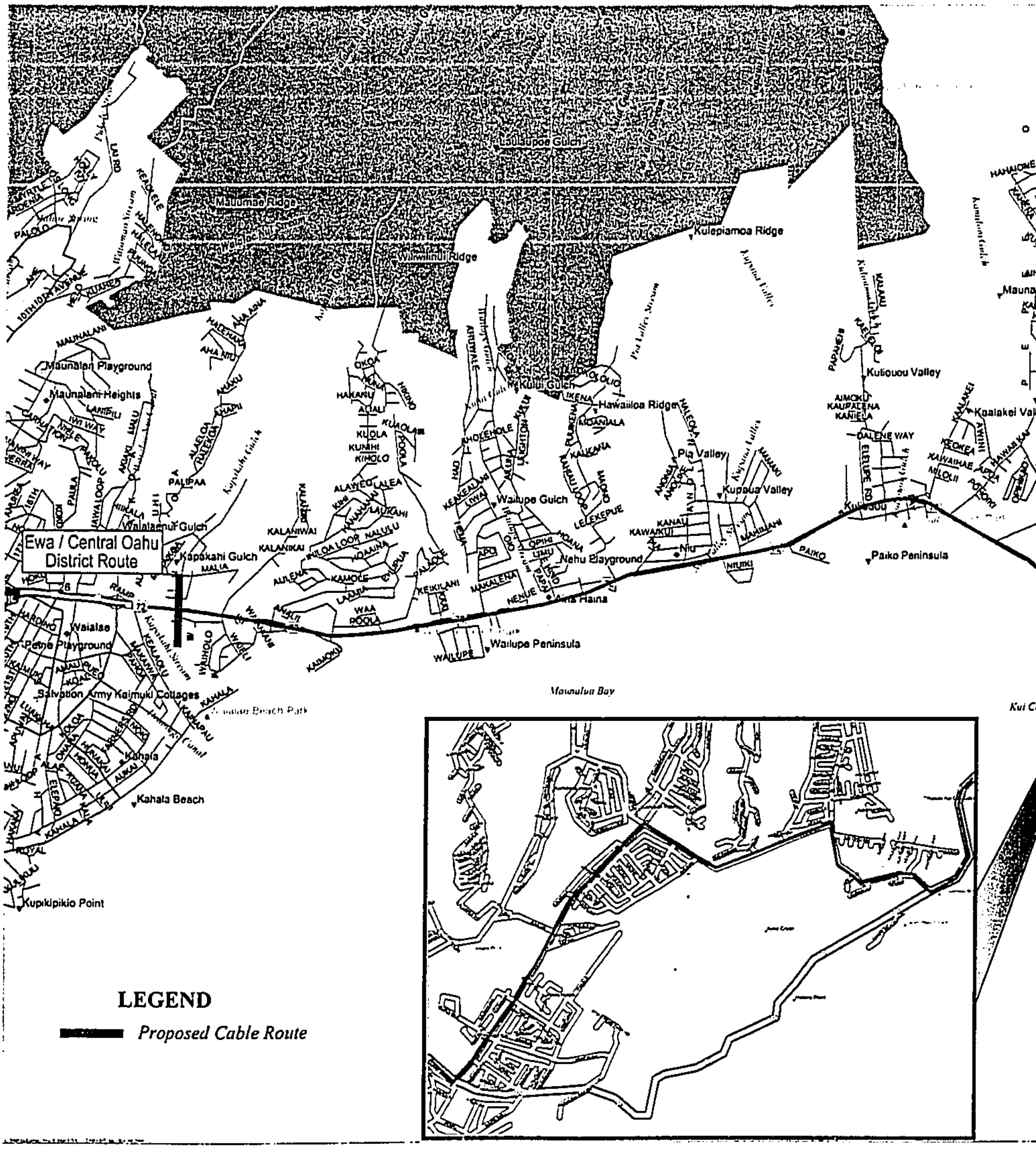


FIBER OPTIC ROUTE

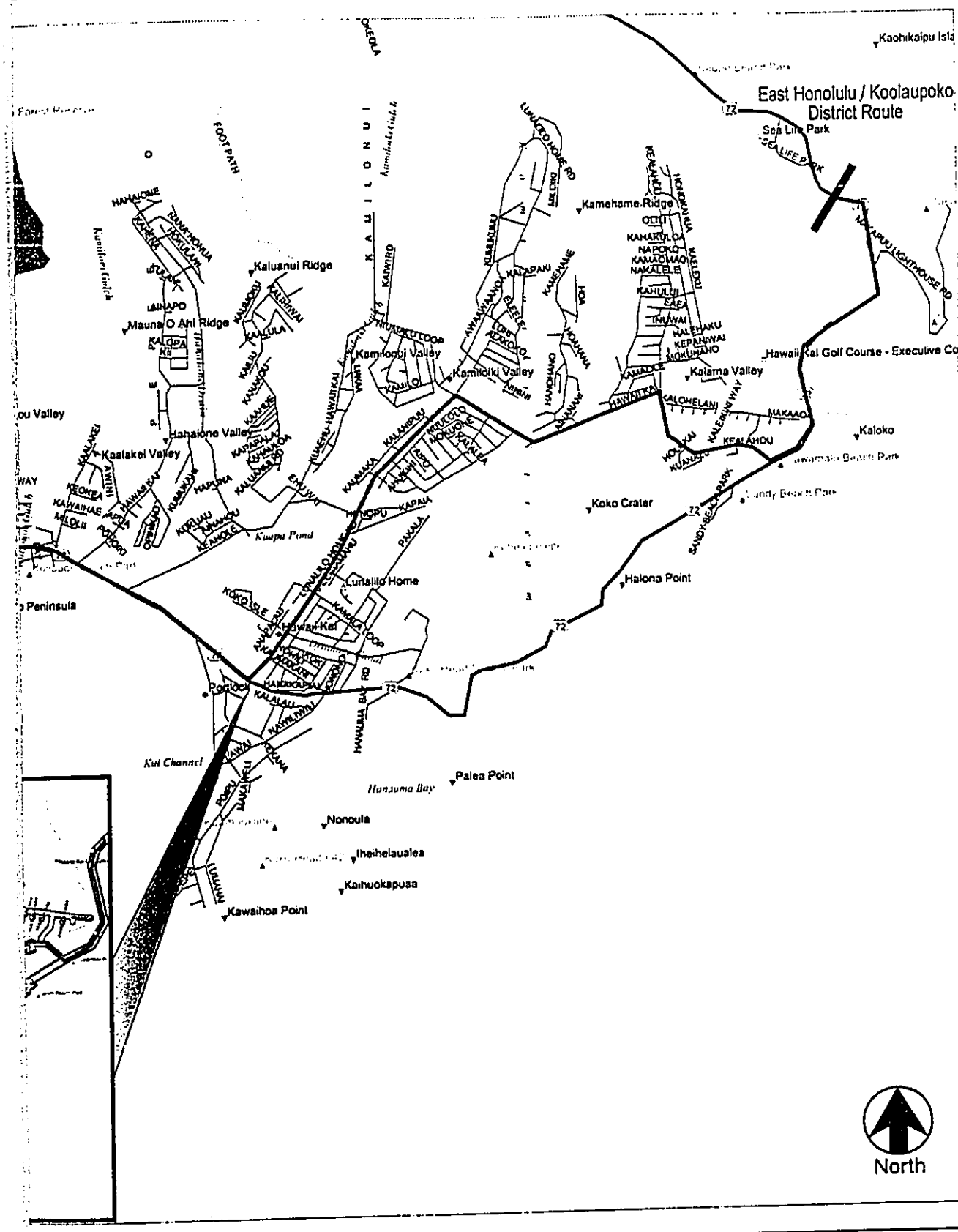
Figure 2.7B

Source:
Delorme Street Atlas USA (2000)

SSFM INTERNATIONAL



EAST HONOLULU DISTRICT FIBER OPTIC



ER OPTIC ROUTE

Figure 2.8

Source:
Delorme Street Atlas USA (2000)

SSFM INTERNATIONAL

Koolaupoko District Route

The route in this Koolaupoko district begins from the Makapuu Lookout area where the fiber optic cable would travel along Kalanianaole Highway past Sea Life Park towards Waimanalo. Figures 2.9 and 2.9A show the fiber optic cable route through this large district which extends from Makapuu to the Waihole-Waikane area. This route would connect leeward DHHL properties with the large homestead areas in Waimanalo which total about 1,907 acres.

From Waimanalo, the fiber optic cable route would continue along Kalanianaole Highway (Route 72) past the community of Kailua until it meets the intersection with Kailua Road as shown on Figure 2.9 (Section 1). This route along Kalanianaole Highway (changes to Route 61) would then travel town-bound towards the Pali Highway at Castle Junction where it then turns northbound and changes to Route 83 heading towards Kaneohe.

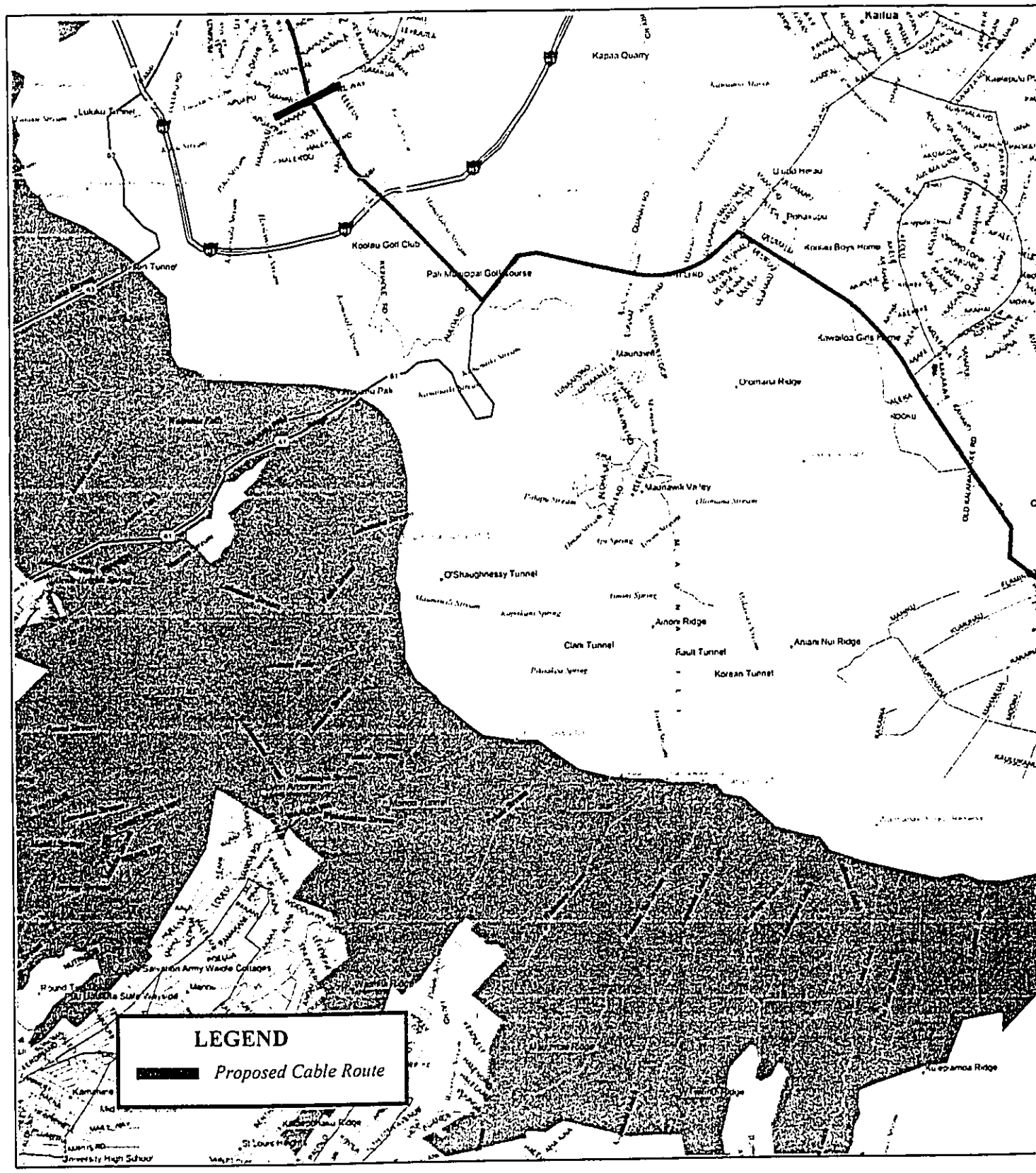
The second section of the route through this district (Figure 2.9A) continues along the highway from Mokulele Road heading towards Kaneohe. At this highway's intersection with Likelike Highway and Kaneohe Bay Drive, the route would turn onto Likelike Highway and proceed towards its intersection with Kahekili Highway (Highway Route 83). It would then travel along Kahekili Highway past Kaneohe towards Kahaluu. Near Kahaluu Pond, Kahekili Highway merges into Kamehameha Highway (Highway Route 83) where the fiber optic route would travel along this highway to Waiahole. This route would then turn off from the highway onto Waiahole Valley Road and proceed inland to serve a DHHL Waiahole property of about 18 acres where the route terminates near the North and South Waiahole Valley Road fork.

2.2.3 Other Development Phases

In addition to the fiber optic cable route planned for the Island of Oahu, SIC is proposing other fiber optic cables within existing rights-of-way of both State and County roadways on the other islands in the State. The purpose for these duct lines is to provide basic essential telecommunication services to DHHL properties located on each particular island.

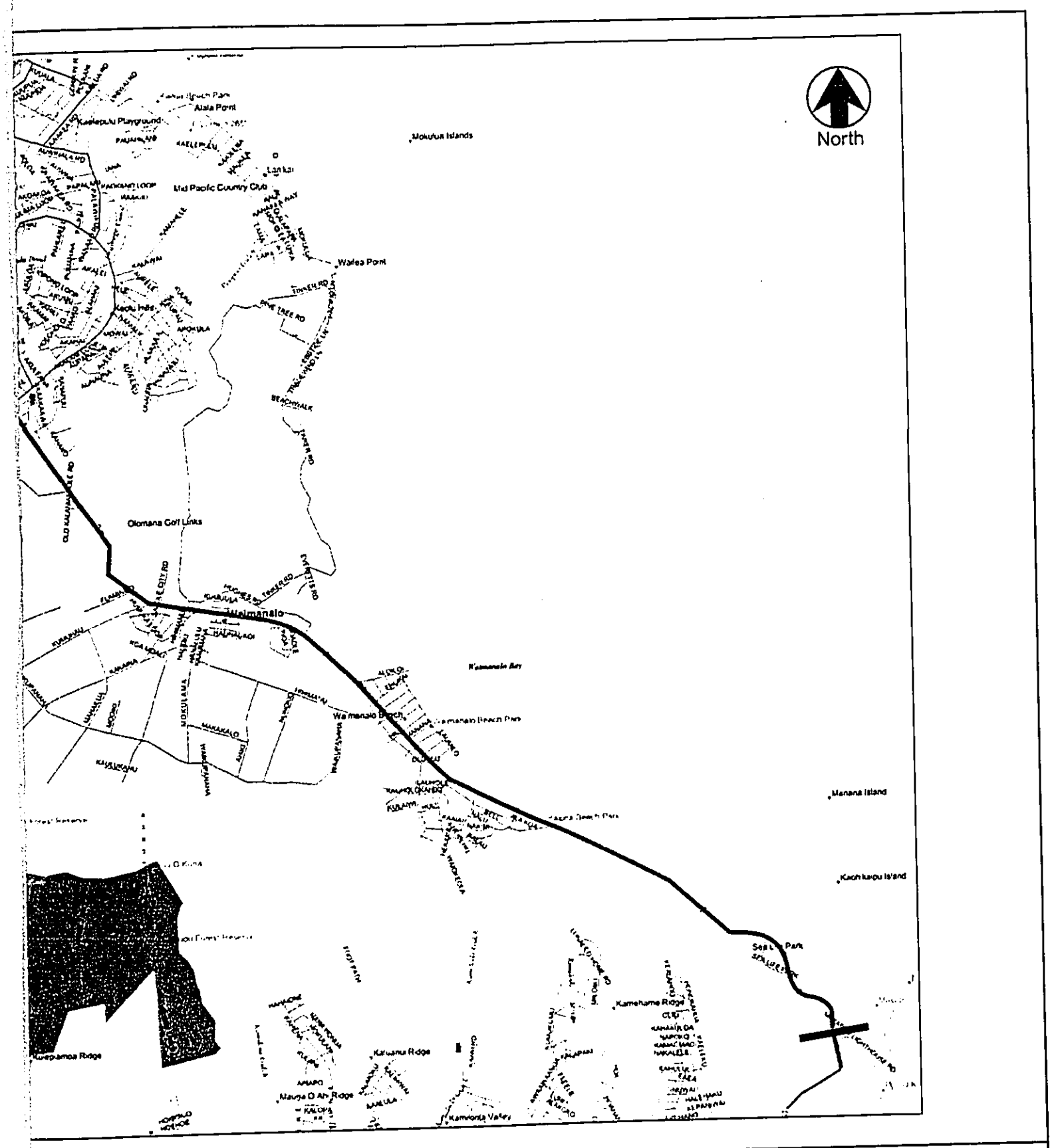
Based upon meetings held with the State OEQC in May and October of last year, it was agreed that separate environmental documents were appropriate for each county to address the probable impacts resulting from these fiber optic routes. The principal, and only non-negligible, impacts associated with the fiber optic duct line project would be related to construction activities such as traffic congestion, dust, noise, etc. Thus, construction related impacts were more appropriately addressed at the individual county level. Environmental assessments for each county were prepared and published for public review.

A network operations center is also being planned by SIC in Mililani. This operations center is planned to serve as the company headquarters for SIC. A separate environmental document has been prepared to address the probable impacts resulting from this project.



KOOLAUPOKO DISTRICT (SECTION 1) FIBER OPT

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

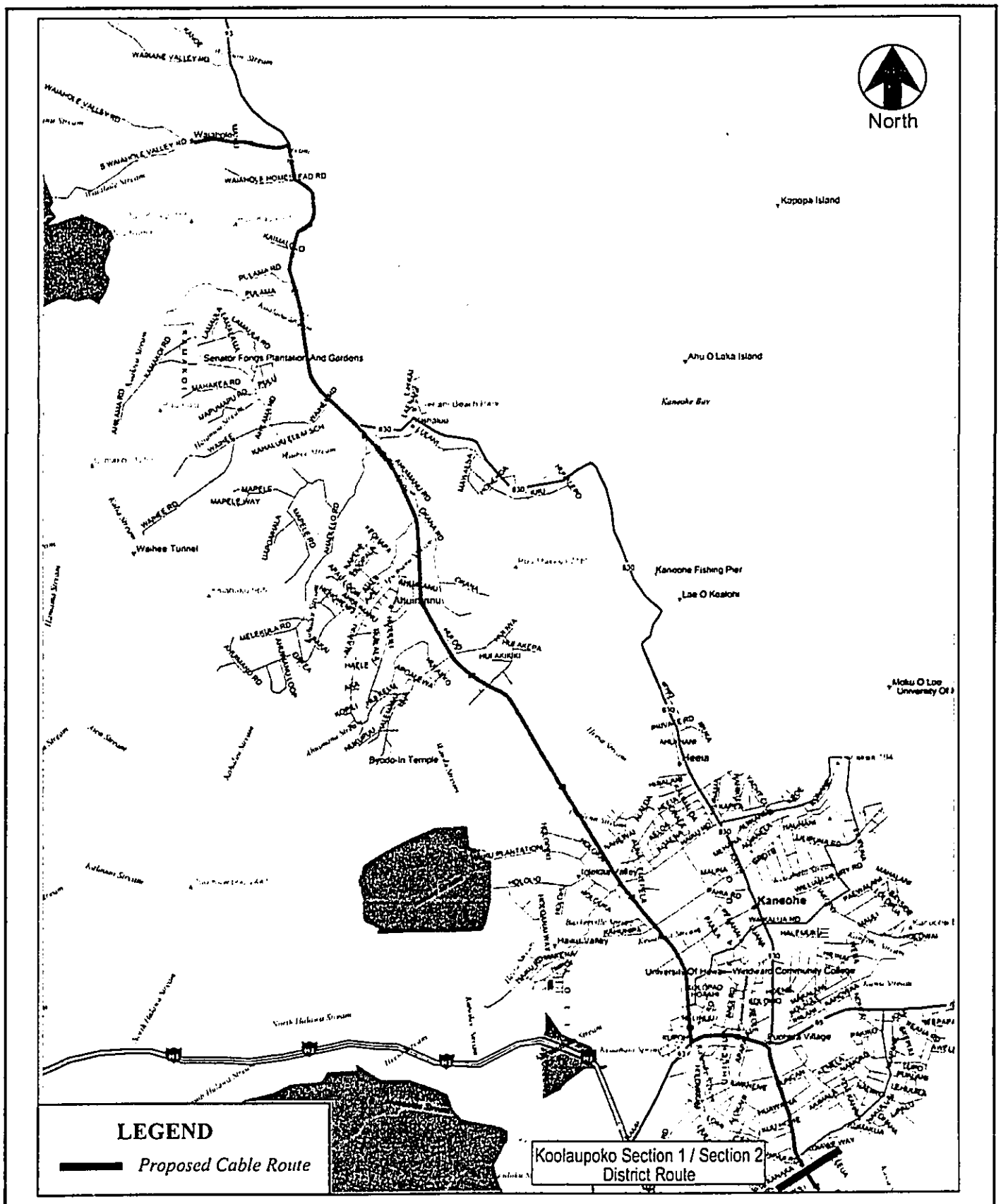


IBER OPTIC ROUTE

Source:
Delorme Street Atlas USA (2000)

Figure 2.9

SSFM INTERNATIONAL



KOOLAUPOKO DISTRICT (SECTION 2)
FIBER OPTIC ROUTE

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
Delorme Street Atlas USA (2000)

Figure 2.9A

SSFM INTERNATIONAL

Future Development Phases

In addition to the underground fiber optic lines proposed within existing roadway rights-of-ways on the island, landing sites along shoreline areas are planned in the future to accommodate submerged cables connecting to this land based roadway system. The land based fiber optic system is an independent system 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. However, these undersea cables are not required to the provision of providing essential telecommunication services to DHHL properties on Oahu.

Planning work will be conducted at a later time to determine the feasibility of pursuing specific submerged cable routes between islands along with specific landing sites for the Island of Oahu. The implementation of these landing sites is contingent upon the successful implementation of the underground fiber optic 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.

SIC would like to pursue landing sites in the regions of Waianae, Waimanalo, and Haleiwa. However, specific locations of such landing sites have not been determined since the economic feasibility of routes still needs to be planned for and evaluated by SIC. As a result, there are currently no available plans or project details available at this time to address these landing sites. Therefore, a separate environmental document would be prepared to better address these landing sites at the appropriate time when the feasibility of this phase is established and project details are developed. Consultation meetings with OEQC were also held in May and October of last year concerning this matter, and it was mutually agreed upon that such an approach would be appropriate.

2.3 PROJECT NEED AND OBJECTIVES

The DHHL has been developing homestead properties for agricultural, pastoral, and residential purposes for native Hawaiian beneficiaries (DHHL 1997). However, funding requirements associated with the development of these homestead properties are costly and somewhat constrains DHHL's ability to administer their program. This funding is necessary to construct supporting infrastructure, such as roadways, water lines, and sewer lines.

SIC has entered into a license agreement with DHHL which allows SIC to provide essential communications services to homestead properties on the Island of Oahu at no cost to DHHL. This allows more funds from DHHL to be put into the actual development of homestead properties. SIC is a native Hawaiian-owned corporation that has been committed to serving native Hawaiians since 1998. Consequently, the mission of SIC is to provide state-of-the-art, competitively priced, broad band telecommunications services to DHHL homestead properties to serve beneficiaries.

Consequently, SIC needs expedient, consistent, and equal access to public roadway rights-of-way to construct fiber optic lines between homestead properties resulting in the proposed project. This project will subsequently create several positive benefits for DHHL and its beneficiaries as identified below.

1. 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.
3. The action will provide DHHL beneficiaries with access to state-of-the-art telecommunication innovations such as educational programming, internet services, video tele-conferencing, and other fiber optic-based services in the future.
4. Employment training and educational opportunities for beneficiaries are also planned in the future.

2.4 DEVELOPMENT SCHEDULE AND CONSTRUCTION COST ESTIMATES

Upon completion of the environmental review process, design work for the various route segments will be completed. Other discretionary land use approvals or permits may also need to be obtained if applicable. Easement requests from the State DOT and City for installing the fiber optic duct lines will also be initiated during the design phase.

Construction of the various routes on the Island of Oahu will be implemented in phases. SIC has some priority routes which they are planning to install this year with remaining routes implemented over the next few years. The first priority is the segments located within the Waianae district and Kapolei area of the Ewa district. Construction of the entire roadway system for the island is planned to be completed by the end of the year 2003.

The preliminary construction cost estimates for the Oahu fiber optic cable system is estimated to be approximately $35 million. SIC has received funding for this project from the U.S. Department of Agriculture, Rural Utilities Service (RUS) through a low-interest loan program to cover the capital investment for this infrastructure project. The RUS is an agency 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.

2.5 LISTING OF REQUIRED PERMITS

A listing of required discretionary land use approvals and ministerial permits for this project is provided.

Federal Permits

1. Department of Army Permit - May be required for fiber optic routes crossing streams, and would be dependent upon the design of the system.

State of Hawaii Permits

1. Conservation District Use Permit – Installation of fiber optics within roadways located in the Conservation District should be "exempt" based upon initial consultation with DLNR staff since it may be considered an accessory use. However, coordination of construction plans and other design information with DLNR would be conducted for portions of those routes affected to obtain confirmation.
2. Stream Alteration Permit – May be required if fiber optic routes crossing streams affect the bed or banks.
3. Construction Noise Variance – Only if required.
4. 401 Water Quality Certification and Coastal Zone Management Consistency Determination – Required only if Department of Army permit is necessary.
5. Easements –State DOT approval required.
6. Permit for construction within DOT rights-of-way.

City Approvals And Permits

1. Special Management Area Use Permit – Underground utility lines constructed within existing roadways are generally "exempt." However, coordination with the City would be needed to confirm the applicability of this for various route segments implemented.
2. Easements –City Council approval required.
3. Trenching Permits

CHAPTER 3
ALTERNATIVES CONSIDERED

Some alternatives to the fiber optic routes proposed were developed and evaluated for consideration as part of this project. However, these alternatives were eliminated from further consideration because they would not meet the project need and objectives of providing DHHL homestead properties with essential communication service pursuant to the DHHL license agreement with SIC. A discussion of those alternatives that were evaluated and eliminated from further consideration is provided.

3.1 NO ACTION ALTERNATIVE

The No Action Alternative would involve SIC not pursuing construction of the rural fiber optic duct lines within rights-of-way of existing State and City facilities. 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 lines to serve their homestead properties. Furthermore, not implementing the proposed project would not satisfy the DHHL license agreement with SIC to provide the installation of these fiber optic lines at no cost to DHHL. Consequently, this alternative was eliminated from consideration because it would not meet the project needs and objectives, and would not benefit DHHL beneficiaries.

3.2 ROUTE ALTERNATIVES

Alternatives to the present routes proposed under this project were considered during the initial planning phases. Given limited major roadway facilities available in most districts of the island, there were no other feasible and practicable alternatives available to connect the various DHHL homestead properties. For example, Farrington Highway was utilized because it is the only major roadway facility serving the Waianae district, along with Kalanianaole Highway in East Honolulu and Waimanalo, and Kamehameha Highway in Kailua and the North Shore area.

Alternative routes were more readily available in the Primary Urban Center. Consequently, the planning portion of this project involved looking at the feasibility of using different roadways. One alternative involved a route using South Street, but was eliminated due to archaeological concerns associated with that street. Other roads considered included using portions of King Street and Waialae Avenue. However, the routes associated with these streets were not practical. Based upon this alternatives evaluation, the proposed route was determined to be the most practical in connecting DHHL homestead properties and minimizing impacts.

CHAPTER 4
PHYSICAL AND BIOLOGICAL ENVIRONMENT

This chapter discusses the existing physical and biological environment in the general area of the proposed fiber optic routes, and the probable impacts resulting from the implementation of the project. Mitigative measures, if necessary, are also discussed.

4.1 CLIMATE, TOPOGRAPHY, AND SOILS

Climate

Climate on the island of Oahu, as well as within the State of Hawaii, can be characterized as having low day-to-day and month-to-month variability. Differences in the climate of various areas can be attributable to the island's geologic formation and topography. These geologic formations create miniature ecosystems ranging from tropical rain forests to dryer plains along with corresponding differences in temperature, humidity, wind, and rainfall over short distances (Dept. of Geography 1998).

The project involves installing underground fiber optic cables within the rights-of-way of both State highway facilities and City roadways extending throughout the majority of the island. As a result, the general climate for the project area would reflect those conditions associated with each particular area of the island where the fiber optic cable is routed.

Temperature

Annual and daily variation in temperature depend to a large degree on elevation above sea level, distance inland, and exposure to the trade winds. On Oahu, the Koolau and Waianae mountain ranges are oriented almost perpendicular to the tradewinds which account for much of the variation in local climatology. Windward areas of the island are exposed to trade wind air from the sea, and thus have the least variation in temperature between day and night. The climate is generally warmer and dryer throughout the southern and leeward areas of the island.

Oahu's temperatures have small seasonal variation such that the temperature range averages only 7 degrees between the warmest months (August and September) and the coolest months (January and February). Daily maximum temperatures usually run from the high 70's in winter to the mid-80's in summer, while daily minimum temperatures run from the mid-60's to the low 70's, respectively (Dept. of Geography 1983). The average annual temperature for the Island of Oahu is 73 degrees with variations in different regions of the island where the routes are located ranging from 70 to 77 degrees (NOAA 1998).

Rainfall

Rainfall on Oahu is highly variable depending upon elevation and location with respect to the tradewinds. Most of the rainfall occurs during winter storms usually taking place during the months from October through April. The average annual rainfall for the entire island is about 41 inches per year. However, large variations in annual rainfall occurs with each particular area of the island.

The Waianae to Ewa region of the island has a more semi-arid climate with average annual rainfall ranging from about 20 to 25 inches per year. Within the Primary Urban Center area, average annual rainfall varies from about 25 inches along shoreline areas up to about 40 inches at Punchbowl Crater. The East Honolulu region has a similar semi-arid climate with average annual rainfall of about 20 to 30 inches along the coastline. Within the Windward district of the island, average annual rainfall varies from about 30 to 50 inches along areas from Waimanalo to Kailua and up to about 70 to 80 inches at Waiahole (NOAA 1998 and Dept. of Geography 1983).

Surface Wind

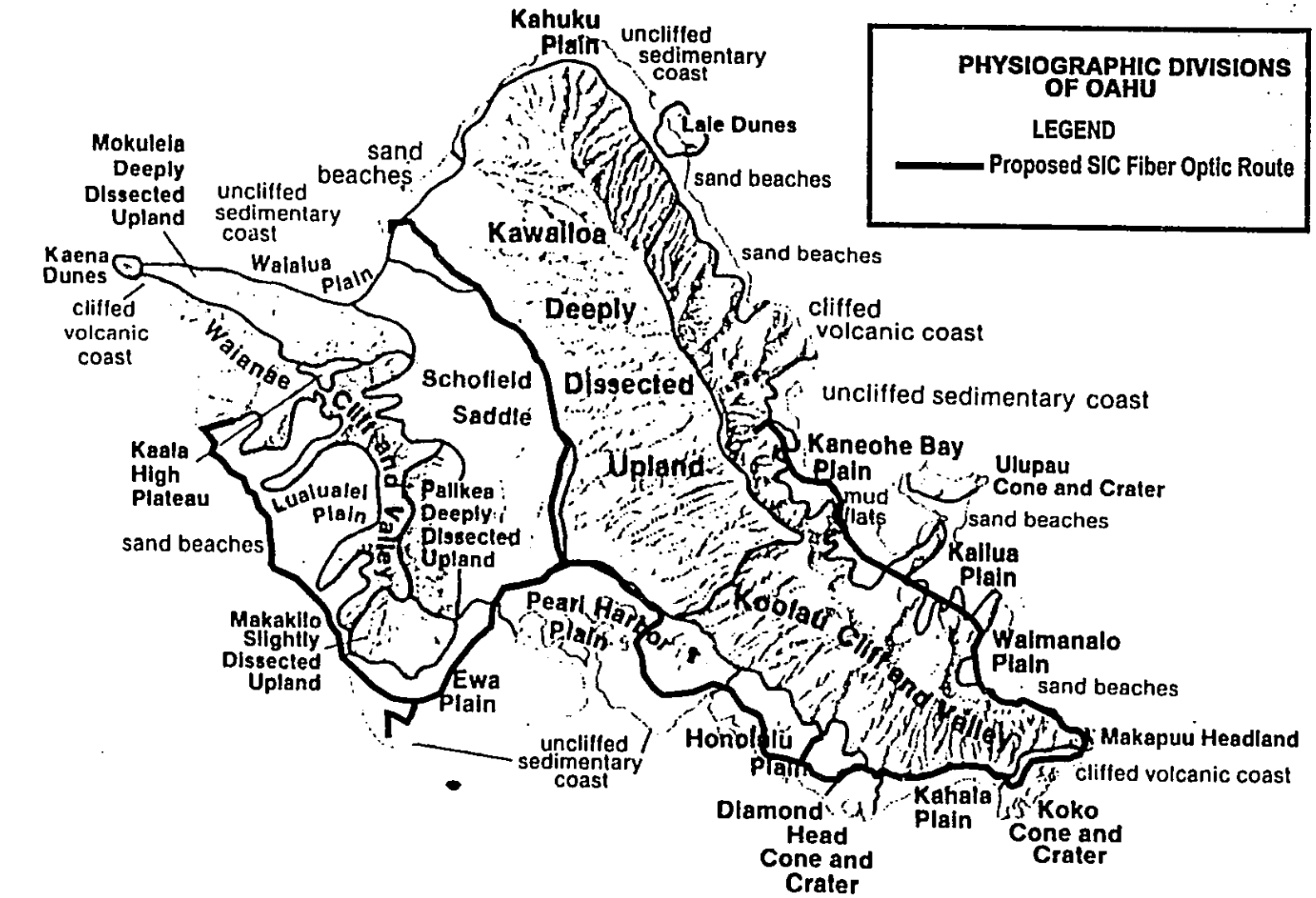
Surface winds occurring on Oahu are predominantly "trade winds" from the east-northeast direction. Occasionally, there are periods when "Kona" storms may generate strong winds from the south or when the trade winds are weak and land breeze to sea breeze circulations develop. The trade wind speeds typically vary between about 10 and 25 miles per hour providing relatively good ventilation much of the time (Department of Geography 1983).

4.1.1 Regional Geology And Topography

Regional Geology

The Island Of Oahu is entirely volcanic in terms of geologic origin. Throughout time, however, the volcanic landscape of Oahu has been subject to the natural forces of erosion, and sedimentation, resulting in such physiographic features as beaches, reefs, coastal plains, saddles, dunes, uplands, cliffs and valleys. The proposed project occurs mainly along the coastal plains, and crosses a saddle in the middle of the island (Central Oahu). The coastal plains and the saddle are mainly composed of sediments, which accounts for the agricultural and residential settlements that now characterize these areas.

As shown on Figure 4.1, the fiber optic route on Oahu extends from the Lualualei Plain in Waianae southeast to the Ewa Plain, Pearl Harbor Plain, Honolulu Plain and Kahala Plain. From there, it continues due east past Koko Head, the Makapuu Headland, and cliffed volcanic coast. At this point, the project heads in a northwesterly direction across the Waimanalo Plain, Kailua Plain, and terminates in the town of Waiahole on the Kaneohe Bay Plain. Another segment of the project begins in Waipahu, and continues in a northerly direction over the Schofield Saddle, and terminates in the north shore town of Haleiwa on the Waialua Plain.



PHYSIOGRAPHIC MAP

Figure 4.1

Oahu Rural Fiber Optic Duct Lines Project
Sunwich Isles Communication, Inc.

Source:
Atlas Of Hawaii (1983)

SSFM INTERNATIONAL

Existing Topography

The topography of areas to be affected by the installation of underground fiber optic cables would reflect that of the existing roadway and rights-of-way. Since the fiber optics would be installed along a narrow corridor within State or City roadway rights-of-way, the affected areas would consist of unpaved shoulders, paved shoulders, or paved travel lanes. As a result, the present topography of such areas would primarily range from flat within paved travel lanes and shoulders to gently sloping unpaved areas within the State or City rights-of-way.

The fiber optic route along existing roadways would cross several streams or gulches where bridges are present. The topography at such crossings would be different from normal roadway areas since stream beds and banks along with major gulches may be quite steep.

4.1.2 Soils

There are seven major soil associations on the Island of Oahu, and these soil associations are graphically shown on Figure 4.2. This figure also indicates that the route of the proposed fiber optic cable would be situated within five of the major soil associations. These soil associations encountered by the project along with the primary soil classifications which comprise them are described.

Laulualei-Fill Land-Ewa Soil Association

This Laulualei-Fill Land-Ewa soil association generally includes most of the leeward and southern coastline of the island as shown on Figure 4.2. Hence, this soil association encompasses the large areas of Waianae, Ewa, the Primary Urban Center, and East Honolulu up to the western end of Hawaii Kai. Soils in the Lualualei Plain, Ewa Plain, Pearl Harbor Plain, Honolulu Plain and Kahala Plain are of this Laulualei-Fill Land-Ewa soil association. Consequently, a great majority of the fiber optic route would be situated within this soil association since it will routed through these large districts.

The Laulualei-Fill Land-Ewa soil association is characterized as deep, nearly level to moderately sloping, well-drained soils that have a fine textured or moderately fine textured subsoil or underlying material, and areas of fill land on coastal plains. The Lualualei Series soil classification make up about 20 percent of this soil association, Fill Land about 20 percent, and Ewa Series about 15 percent. The Honouliuli, Jaucas, Kawaihapai, Makalapa, Mamala, and Pulehu Series make up the remainder of this soil association (SCS 1973).

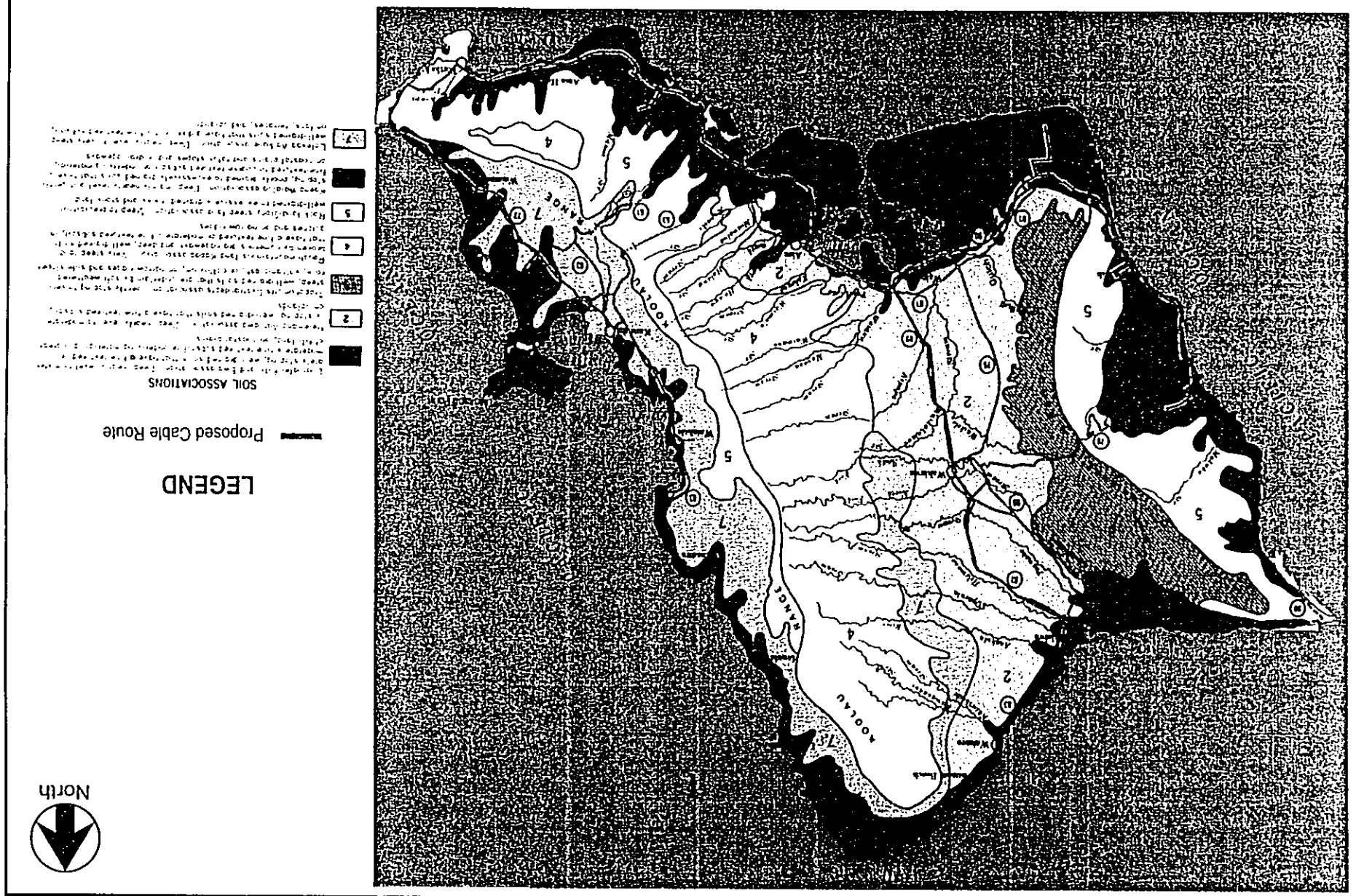
The Lualualei Series of soils have a surface layer of very dark grayish-brown, very sticky, and very plastic clay that cracks widely upon drying. They are underlaid by coral, gravel, sand, or clay at a depth below 40 inches. Fill Land consists of varying types of fill material. The Ewa Series have a surface layer and subsoil of dark reddish-brown, friable silty clay loam. The substratum is gravelly alluvium or coral limestone (SCS 1973).

SOIL SURVEY MAP FOR ISLAND OF OAHU

Source:
U.S. Dept. of Agriculture
Soil Conservation Service,1973

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communications, Inc.

Figure 4.2



Rock Land-Stoney Steep Land Soil Association

Soils present in the Koko Head-Makapuu Headland are of the Rock Land-Stony Steep Land soil association. The fiber optic route would only encounter this soil association in the Hawaii Kai area as the route follows Kalanianaole Highway from Hawaii Kai around Makapuu Lookout. These soils are characterized as steep to precipitous, well-drained to excessively drained, rocky and stony land. The primary soil series in this association is Rock Land, with random areas of Extremely Stony Clay. Permeability is rapid where rock is highly fractured. Rock Land is 25 to 90 percent rock outcrop. It is very steep and occurs in gulches and on mountainsides, and the soil material is very shallow (SCS 1973).

Kaena-Waialua Soil Association

The Kaena-Waialua soil association is present primarily along the entire stretch of coastline area in the Windward District of the island. This soil association area includes the Waimanalo Plain. Consequently, the fiber optic route encounters this Kaena-Waialua soil association as it passes through the Waimanalo area, Kahaluu to Waiahole shoreline corridor, and sporadically in the areas of Kailua and Kaneohe as shown on Figure 4.2.

This soil association is also present along the north shore coastline such as in the town of Haleiwa. Hence, the Waialua Plain is similarly comprised of soils in the Kaena-Waialua soil association. The fiber optic route would thus encounter this soil association as it enters the North Shore area and travels to Haleiwa Boat Harbor.

This soil association is characterized by deep, nearly level and gently sloping, poorly drained to excessively drained soils that have a fine to coarse textured subsoil or underlying material on coastal plains, talus slopes, and drainageways. The primary soil series in this association is sand in the lower elevations, with silty clay loams in the bench areas, and upper elevations (SCS 1973).

The Kaena and Waialua Series make up about 50 percent of this entire soil association. Hanalei, Kawaihalai, Jaucas, Haleiwa, Kaloko, Keaau, Mokuleia, Pear Harbor, and Pulehu Series, along with areas of coral outcrop and marsh make up the remaining 50 percent. The Kaena Series are poorly drained, dark-colored silty clays, or clays underlain by alluvium. The Waialua Series are moderately well-drained, dark reddish-brown silty clays or clays underlain by alluvium (SCS 1973).

Lolekaa-Waikane Soil Association

The fiber optic cable route through the Windward District also encounters the Lolekaa-Waikane soil association as shown on Figure 4.2. This soil association is present on the Kaneohe Bay Plain and includes various inland sections of the fiber optic route in the Kailua to Kaneohe communities. The Lolekaa-Waikane soil association consists of deep, nearly level to very steep,

well-drained soils that have a dominantly fine-textured subsoil. These soils formed on alluvium and material weathered from basic igneous rock. This association makes up about 15 percent of the entire island (SCS 1973).

Both the Lolekaa along with Waikane Series of soils each comprise about 20 percent of the entire soil association. The Paumalu, Kemoo, Leilehua, Alaeloa, Kaneohe, Paaloa, Pohakupu, and Manana Series make up the rest. Lolekaa Series have a surface layer of dark brown silty clay, and a dominant silty clay subsoil. Their stratum is gravelly alluvium. Waikane Series have a surface layer of dark brown silty clay, and a subsoil of dark reddish-brown silty clay. Their substratum is gravelly alluvium (SCS 1973).

Helemano-Wahiawa Soil Association

The Schofield Saddle consists of soils associated with the Helemano-Wahiawa soil association. These soils make up about 18 percent of the entire island. As a result, this soil association includes most of the Central Oahu corridor from Waipahu to Wahiawa which is where a segment of the proposed fiber optic cable route would be located. This soil association consists of well-drained, moderately fine textured and fine textured soils on uplands on the island of Oahu.

The Helemano Series of soils make up about 40 percent of this soil association, and the Wahiawa Series about 30 percent. Helemano Series are dark reddish-brown silty clays. They occur on the sides of very steep gulches and have slopes of 30 to 90 percent. Wahiawa Series of soils have a surface layer of very dusky red silty clay, a subsoil of dark reddish-brown silty clay, and a substratum of soft weathered rock (SCS 1973).

4.1.3 Effects From Construction Activity

Construction of the underground fiber optic cable is not expected to have a significant impact on the existing topography or physical character of the immediate area. The installation of fiber optic cable would be within existing rights-of-way of both State highway facilities and City roadways. Such construction work would thus involve affecting unpaved shoulders, paved shoulders, or paved travel lanes. As a result, there would essentially be no change to the existing topography of these roadway rights-of-way since all duct lines would be placed underground in conformance with both State and City design standards and requirements. Upon completion of fiber optic cable installation, roadways and shoulders would also be restored in conformance with applicable design standards.

The fiber optic cable route proposed would run through many areas having different soil types as discussed previously. However, much of the actual soil types encountered would likely consist of structural fill overlying a compacted sub-base associated with the construction of existing roadway facilities. This structural fill could likely consist of crushed coral or basalt,

while the sub-base could likely consist of compacted existing, or "in-place" soils. Given this prior disturbance of existing soil composition for roadway construction, the installation of fiber optic cables should have minimal effect on existing soils. To minimize potential short-term impacts during construction activities, an erosion control plan will be prepared during the design of particular route segments, as necessary. Appropriate coordination and review of design plans would also be performed with pertinent agencies.

At locations of existing streams or gulches, the design and installation of fiber optic cables would be determined on a case by case basis due to the unique conditions of that particular area along with the structure of bridges. The design of such crossings may involve bridge attachments for the fiber optic cable which would have no effect on the existing topography or soils. Some type of trenchless construction method may also be used, such as directional drilling, which should have minimal impact on topography since the fiber optic cable will be installed under the stream or gully. Appropriate coordination with the applicable agency would be conducted during the design phase to address these construction details and minimize impacts on the topography and soils.

Other Short-Term Construction Impacts

Other typical short-term impacts that are usually associated with construction related activities may include fugitive dust emissions, construction noise, and traffic disturbances from construction activity along roadways. Fugitive dust emissions are not expected to cause much disturbances or annoyances to surrounding properties along affected roadways. The installation of fiber optic cable would involve a very narrow trench or trenchless methods which would not result in significant disturbances to existing pavement and shoulder areas.

Construction activities are not expected to cause excessively loud construction noises which may significantly affect surrounding properties along roadways. Activities are planned to be conducted during normal working hours of weekdays, and all work would comply with pertinent regulations. In the event some work is conducted at night or may exceed permitted noise levels, a noise permit would be obtained from the State Department of Health. A traffic control plan would also be prepared to address traffic flow during construction activities. This plan would be submitted for agency review as part of the normal review of construction plans.

Although these potential short-term effects should be minimal, other possible mitigative measures would be considered for implementation during the project's design. Such measures would be determined during the design of particular routes and preparation of construction plans. Measures typically considered may include: limiting construction activities to off-peak traffic hours and implementing an approved Traffic Control Plan. The measures actually developed would be designed to make construction activities comply with pertinent Administrative Rules of the State Department of Health such as Title 11: Chapter 42 (Vehicular Noise Control), Chapter

46 (Community Noise Control), and Chapter 60-1 (Air Pollution Control).

4.1.4 Agricultural Lands

The fiber optic cable route proposed would primarily traverse through highly urbanized areas of the island such as the Primary Urban Center, East Honolulu, and most of Koolaupoko. However, there are segments which are routed through rural and agricultural areas primarily in Central Oahu and the North Shore. Along roadways through such areas, much of the surrounding land consist of agricultural uses several of which are actively being cultivated.

The proposed project is expected to have minimal if any impacts on agricultural lands or existing agricultural operations occurring in the project area. The fiber optic cable routes would be constructed within existing State and City roadway rights-of-way. Therefore, the project would not displace any agricultural lands or significantly disrupt or prevent current agricultural activities from continuing.

4.2 NATURAL HAZARDS

This section addresses those natural hazards applicable to the project. Of the potential natural hazards, earthquakes, hurricane, and tsunami and flooding hazards are addressed. There are no other known potential urban-related hazards applicable to the project such as airport clear zones, nuisances, hazardous wastes, or other site safety issues associated with roadways affected by the fiber optic cable routes. Because the fiber optic cables would be located underground, the project should not impact nor be affected by such urban-related hazards.

4.2.1 Earthquake Hazards

Although difficult to predict, an earthquake of sufficient magnitude causing structural or other property damage may occur in the future. However, except for the island of Hawaii, the Hawaiian Islands are not situated in a highly seismic area subject to numerous earthquakes (Macdonald et al. 1983). Most of the earthquakes that have occurred were volcanic earthquakes causing little or no damage.

Earthquakes in the Hawaiian Islands are primarily associated with volcanic eruptions resulting from the inflation or shrinkage of magma reservoirs beneath which shift segments of the volcano (Macdonald et al. 1983). Oahu is periodically subject to episodes of seismic activity of varying intensity. Available historical data indicates that the number of major earthquakes occurring on Oahu have generally been less and of lower magnitude compared with other islands such as Hawaii (DBEDT 1998, Furumoto, et al. 1973). However, earthquakes cannot be predicted with any degree of certainty or avoided, and an earthquake of sufficient magnitude (greater than 5 on the Richter Scale) may cause some damage to existing infrastructure facilities such as the underground fiber optic cables.

Although the possibility of earthquakes occurring on Oahu have been lower than other

islands, potential damage to these fiber optic duct lines may occur from an earthquake of sufficient magnitude. However, damages to these facilities will be minimized since the design of the fiber optic duct lines would meet or possibly exceed the minimum design requirements specified under State DOT design standards and City building code standards. Thus, the risk of potential damage to this project will not be more than other existing land uses or infrastructure facilities on the island of Oahu.

4.2.2 Hurricane Hazards

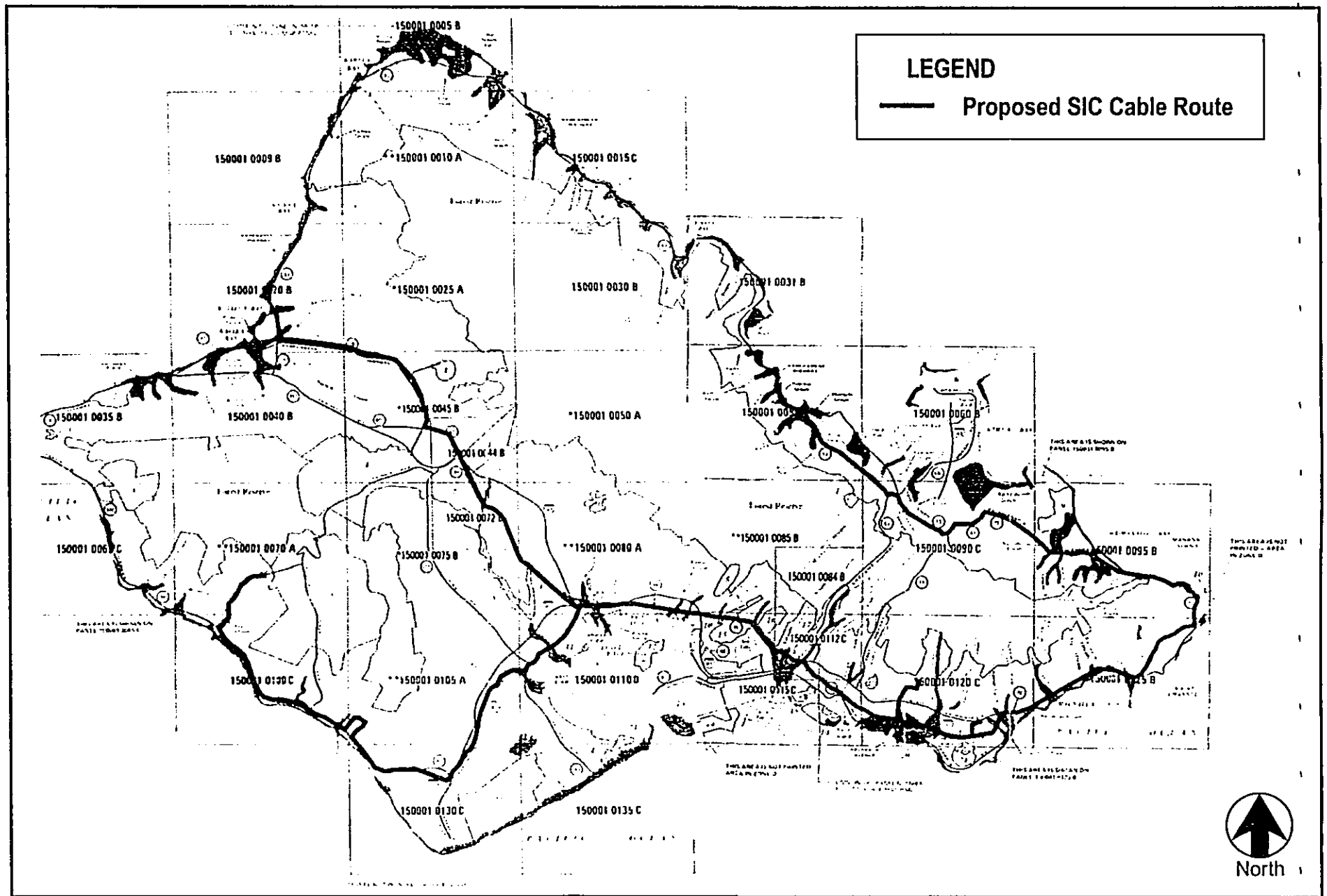
The three major elements of a hurricane making it hazardous are: 1) strong winds and gusts, 2) large waves and storm surge, and 3) heavy rainfall. A hazard mitigation report prepared by the Federal Emergency Management Agency after Hurricane Iniki in 1992 determined that nine hurricanes approached within 300 nautical miles (about one day's travel time) of the Hawaiian Island's coastlines between 1970 and 1992. Most hurricanes affecting the islands have focused on Kauai. Based upon a tracking of hurricanes since 1950, there appears to be no geographical or meteorological reasons why hurricanes miss the other islands but tend to steer toward Kauai (FEMA 1993).

A hurricane of significant strength and high winds passing close to the island could cause damages to existing buildings and structures on Oahu. However, the potential for damages from a hurricane to the proposed fiber optic cable lines should be minimal since all facilities would be located underground within existing roadway rights-of-way. The location of such facilities underground would thus make them less susceptible to damage from high winds.

Several of the fiber optic cable routes would also follow existing coastal roads which are susceptible to storm surge. However, potential damages from large waves and storm surge are not expected to significantly impact the project since the duct lines would be located underground. Similarly, heavy rainfall should not significantly impact the fiber optic cable system since it would be located underground. To further minimize potential damages, the improvements would be designed and constructed in conformance to applicable State DOT and City building regulations and design standards.

4.2.3 Flood Hazards

The various Flood Insurance Rate Maps (FIRM) for Oahu were reviewed in relation to the proposed fiber optic cable route. Based upon this review of FIRM maps, the fiber optic cable lines would be routed through several coastal areas which are subject to some flooding since they follow existing coastal highways and roadways. Figure 4.3 shows the proposed route in relation to the FIRM map (Community Panel 150001 0000) for the entire island.



FLOOD INSURANCE RATE MAP FOR ISLAND OF OAHU

Figure 4.3

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communications, Inc.

Source: Flood Insurance Rate Map

SSFM INTERNATIONAL

Waianae District

In the Waianae district, the FIRM, Community Panel 150001 0100 C, shows the entire coastline area from Waianae to Nanakuli being designated as Special Flood Hazard Areas inundated by the 100-year flood. Figure 4.4 shows the flood hazard designations along this coastline in greater detail in relation to the proposed fiber optic cable route.

The designation for these shoreline areas is generally Zone VE indicating coastal flood with velocity hazard (wave action) as shown on Figure 4.4. Inland of these flood with velocity hazards areas are flood areas designated Zone AE (base flood elevations determined). In Waianae, Zone AE flood hazards encroach onto portions of Farrington Highway near Waianae Mall and Mailiili Channel. Near Maile Point, portions of the highway are also subject to Zone AE flood hazards, and Zone VE hazards appear to encroach up to the highway at certain points. Fronting Lualualei Homestead, both Zone VE and AE hazards encroach onto the highway particularly around Ulehawa Channel. Lastly, Zone AE hazards encroach onto the highway in Nanakuli around the Nanakuli Stream area.

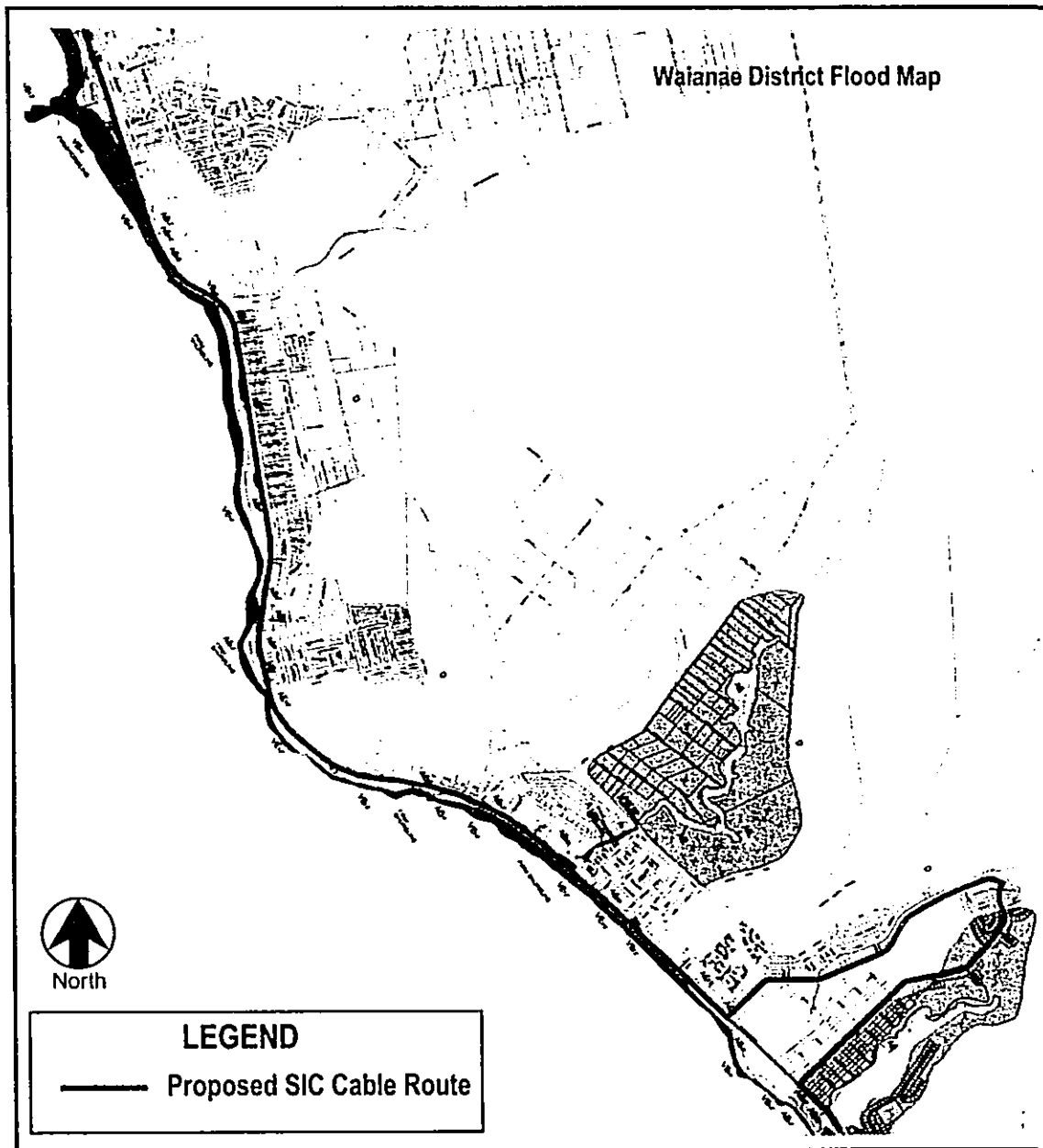
Central Oahu And North Shore District

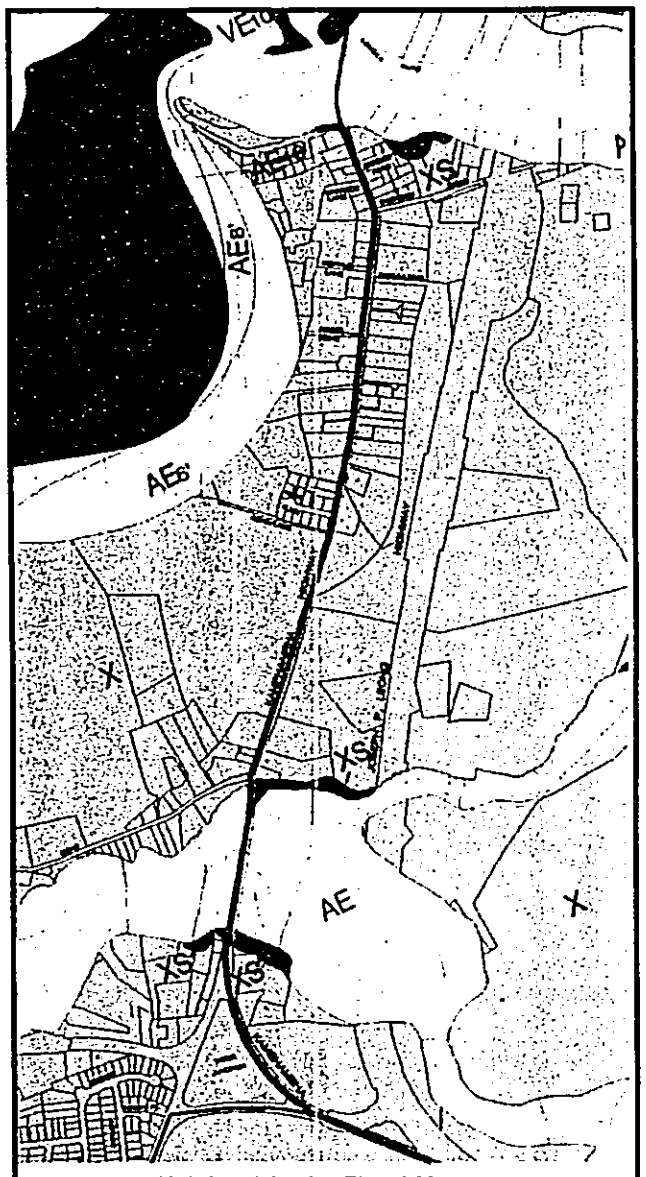
The fiber optic cable route through the Central Oahu district follows Kamehameha Highway, and thus does not cross any major flood hazards areas based upon the FIRM and as shown previously on Figure 4.3. There is one small area associated with Waikakalaua Stream where a Zone AE flood hazard encroaches up to the highway. Although not shown on the map since the limit of detailed study ends at the highway, the stream does cross the highway and thus the flood hazard would likely extend through this highway.

The FIRM for the Haleiwa area, Community Panel 150001 0020 B, indicates two main areas where flood hazards encroach onto Kamehameha Highway which would be used for the fiber optic cable route. As shown on Figure 4.4, one area is north of Weed Junction where the highway crosses an area where Opaeula and Helemano Streams meet. This area is subject to Zone AE and Zone X flood hazards. The second area is near Haleiwa Boat Harbor where Anahulu River empties into Waialua Bay. The highway near this river mouth is subject to both Zone AE and VE flood hazards.

Primary Urban Center

The fiber optic cable route through the Primary Urban Center passes through a few areas subject to flood hazards as indicated by the FIRM, Community Panel 150001 0110 D, 0112 C, and 0120 C. Figures 4.5 and 4.6 show the major flood areas within this PUC DP area which are present within the fiber optic cable route.





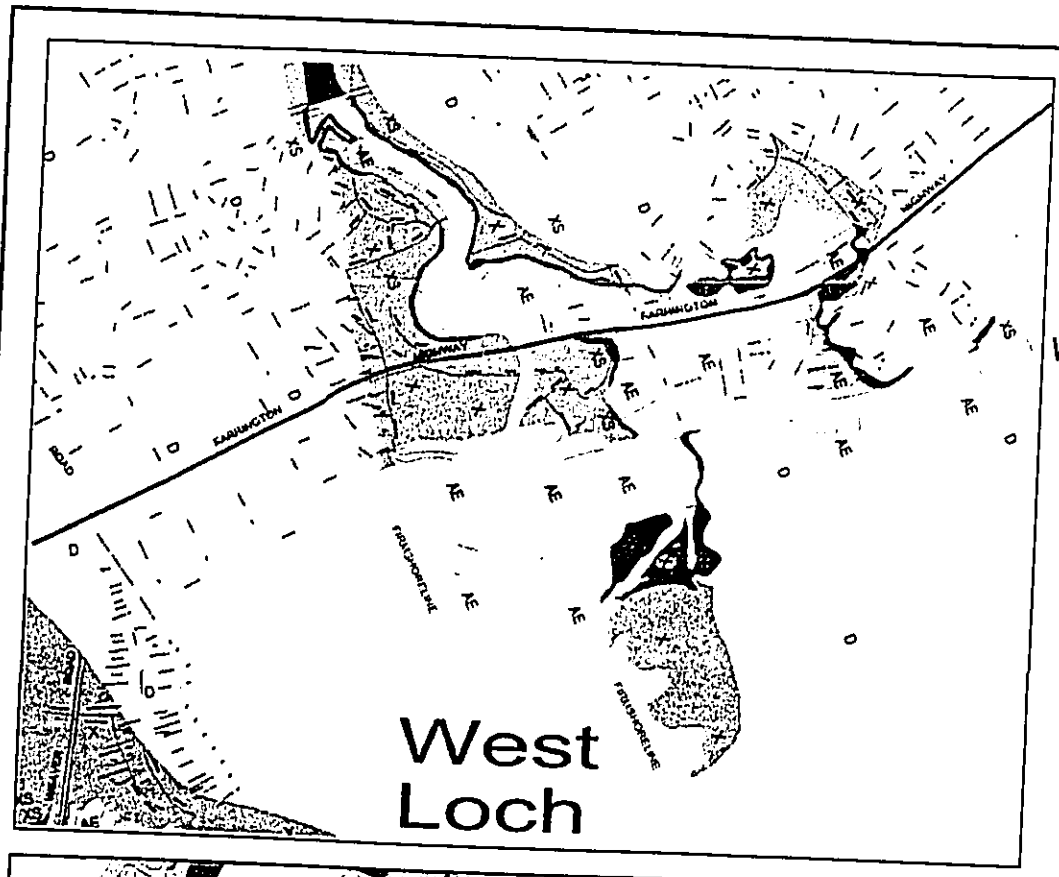
FLOOD MAP FOR WAIANAE AND HALEIWA

Figure 4.4

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
City Department of Planning & Permitting

SSFM INTERNATIONAL



North

Waipahu Area Flood Map

Nimitz Area Flood Map

LEGEND

Proposed SIC Cable Route

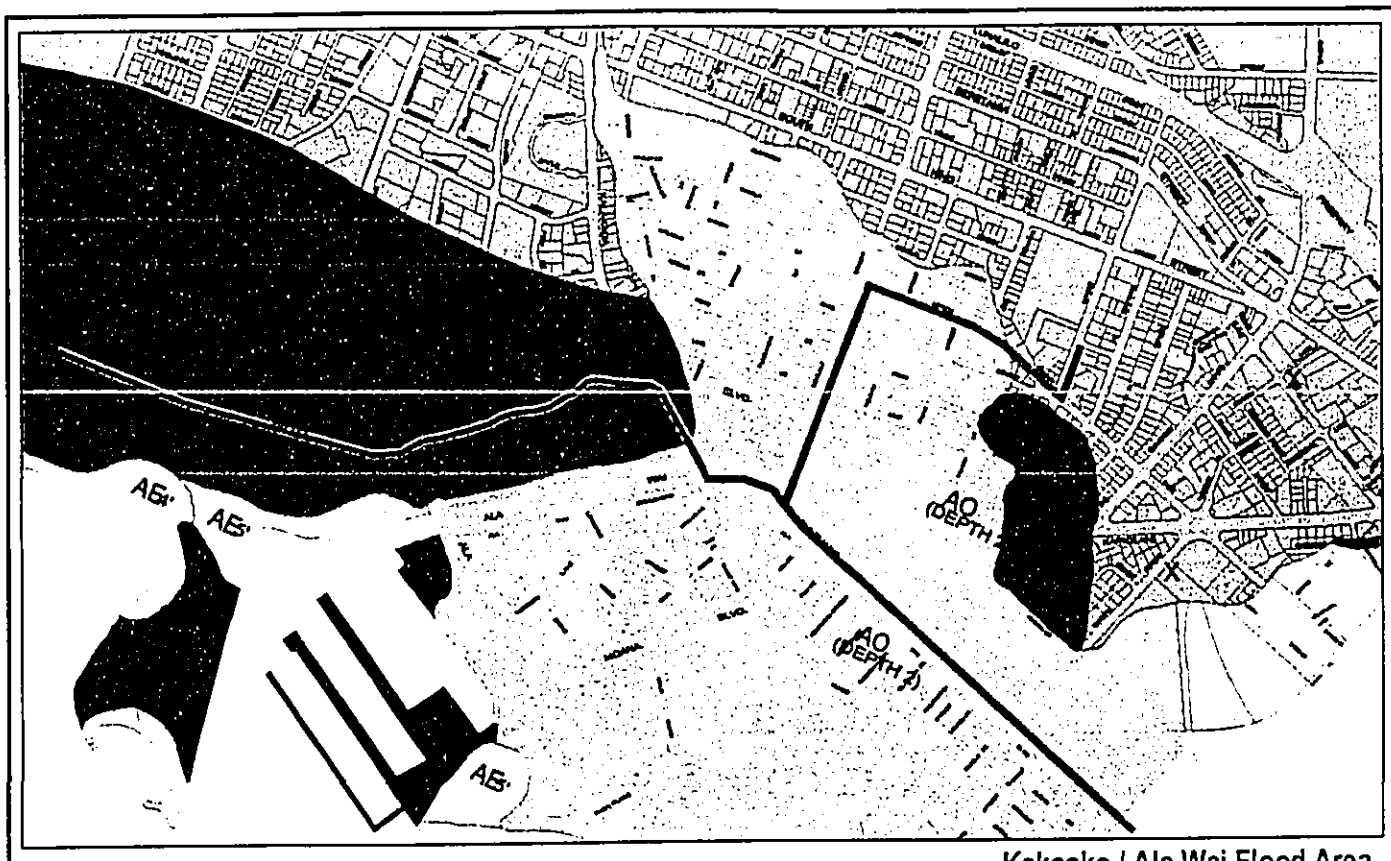
FLOOD MAP FOR PRIMARY URBAN CENTER

Figure 4.5

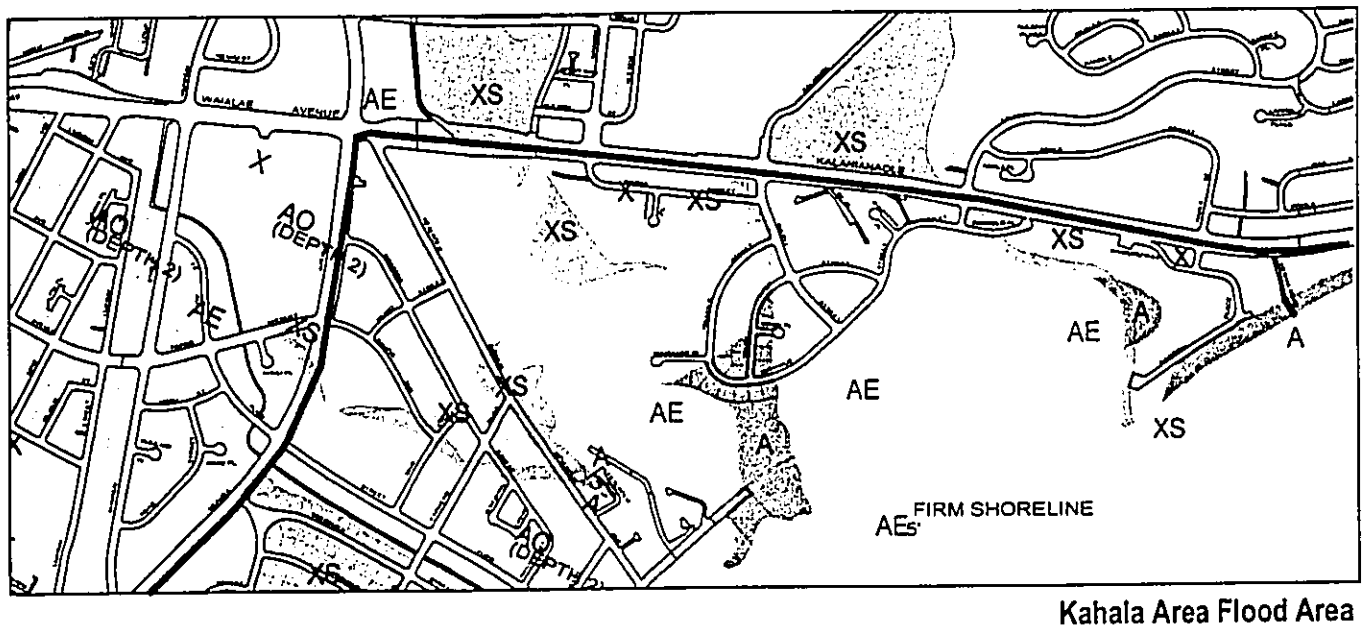
Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
City Dept. of Planning & Permitting GIS

SSFM INTERNATIONAL



Kakaako / Ala Wai Flood Area



Kahala Area Flood Area

LEGEND

Proposed SIC Cable Route

North

FLOOD MAP FOR PRIMARY URBAN CENTER (Continued)

Figure 4.6

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
City Department of Planning & Permitting

The route follows Farrington Highway starting from Waipahu as it proceeds eastbound into downtown Honolulu. This highway passes through a large Zone AE flood hazard area in Waipahu town where Waikele Stream, Kapakahi Stream, and the Wailani drainage canal converge in emptying into West Loch (Figure 4.5). Through Aiea, the route would follow Kamehameha Highway which encounters two smaller Zone AE flood areas associated Kalauao and Aiea Streams which empty into East Loch.

The next major flood hazard area encountered along the fiber optic cable route is along Nimitz Highway and Kamehameha Highway from Puuloa Road to Puuhale Road as shown on Figure 4.5. This area involves both Zone AO (flood depths of 1 to 3 feet) and Zone AE flood since it serves as a general drainage basin area for Moanalua Stream (Lower) and Kalihi Stream which empty into Keehi Lagoon.

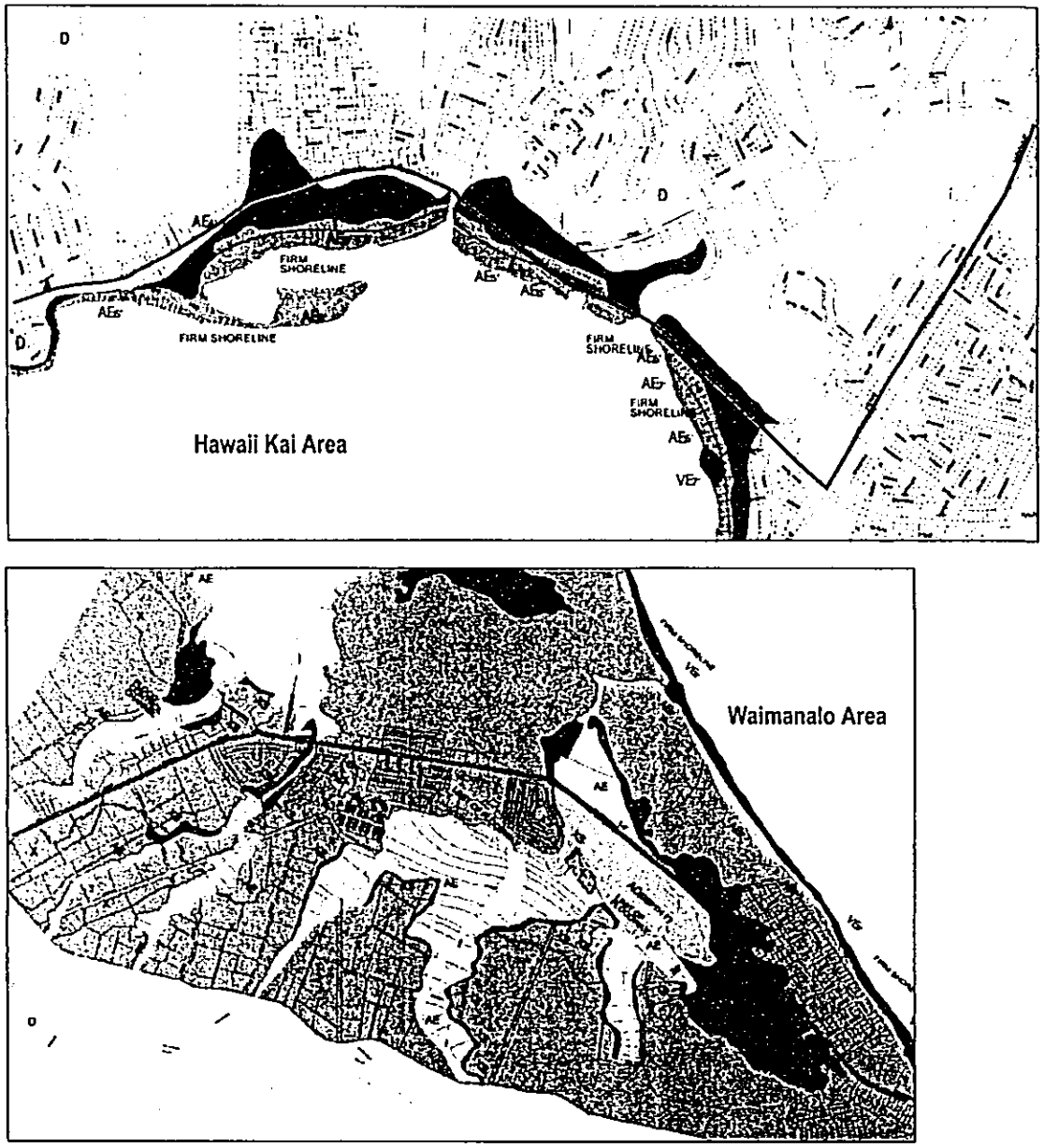
The next flood area encountered is from the lower Kakaako to Waikiki area as shown on Figure 4.6. The fiber optic cable route would be following existing City roads through this area from the Ala Moana Center to Ala Wai Canal which has Zone A, AO, and AE flood hazards. This drainage area is fed by both Makiki Stream and the Manoa-Palolo Drainage Canal which empty into the Ala Wai Canal.

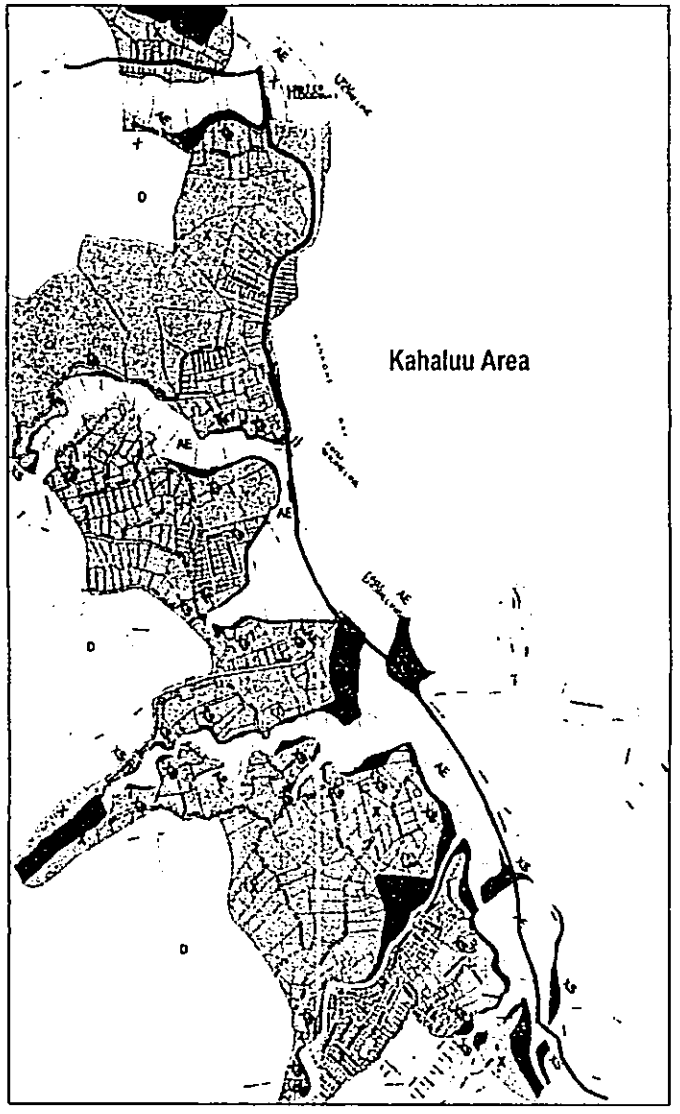
The last flood area encountered in this Primary Urban Center is on the eastern end in the Kahala area as shown on Figure 4.6. The fiber optic cable route would follow Kilauea Avenue and then onto Kalanianaole Highway which runs through a few drainage areas. A section of Kilauea Avenue is encroached by Zone AO flood due to the Waialae drain area. A section of Kalanianaole Highway is encroached by Zone AE at two locations by Waialae Nui Stream and Kapakahi Stream.

East Honolulu District

The fiber optic cable route through the East Honolulu district follows along Kalanianaole Highway for much of the way until Lunalilo Home Road in Hawaii Kai. The FIRM for this district include Community Panel 150001 0125 B and a portion of 0120 C. The first flood area encountered along this highway is in the Kahala to Waialae Iki area and was previously shown on Figure 4.6. The highway is encroached by both Zone X (above highway) and Zone AE (below highway) flood hazards associated with Waialae Iki Stream.

From Waialae Iki, the highway is encroached by several flood areas as it passes by the various shoreline and valley subdivisions up to Hawaii Kai. As shown on Figure 4.7, these include both Zone A and AE flood areas past Kuapa Pond where it empties into Maunalua Bay. The areas affected are due to the drainage areas for Wailupe Stream, Niu Stream, Kuliouou Stream, and Kuapa Pond.





LEGEND

Proposed SIC Cable Route

North

EAST HONOLULU AND KOOLAUPOKO AREA FLOOD MAP

Figure 4.7

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
City Department of Planning & Permitting

Koolaupoko District

In the Koolaupoko district, the fiber optic cable follows major highways which include Kalanianaole, Kamehameha, and Kahekili Highways as shown on figure 4.7. The FIRMs showing flood areas for this district include Community Panel 150001 0095 B and a 0055 B. In Waimanalo, the highway passes through a short segment near Sea Life Park which is subject to Zone AE and VE flood hazards. The highway route further along this coastline comes close to Zone VE flood hazards makai of the roadway.

As the highway moves further inland near Waimanalo Elementary and Intermediate School, a large flood area is encountered designated as Zone X and AO where several streams converge into Puha Stream at the shoreline. The highway then crosses two flood areas as it passes Bellows Air Force Base which are designated Zone X and AE. These flood areas are associated with Waimanalo Stream and Stream A.

The next major flood area encountered is in the Kahaluu area where Kahekili and Kamehameha Highway run through areas with Zone X and AE flood designations. This area extends from Ahuimanu to Pulama Road as shown on Figure 4.7. There are several streams converging in this area which include Ahuimanu, Kahaluu, Waihee, and Kaalaea Streams. Finally, the last area encountered is at the terminus of this fiber optic cable route in Waiahole where Kamehameha Highway and Waiahole Road run through Zone AE flood designation associated with Waiahole Stream.

Impacts Associated With Flood Hazard Areas

The underground fiber optic cable lines planned are not expected to be impacted by the various flood hazards present along certain portions of the routes. Nor is the installation of these fiber optic cable lines expected to have a significant impact on existing developed land uses and structures located within applicable flood areas. It is common for utilities to be installed in such areas since they are generally situated within the rights-of-way of existing roadway facilities.

The fiber optic duct lines would be constructed underground in conformance with State and City design requirements, therefore, they are not expected to be affected by flooding which occurs in these areas. Thus, waves that may potentially encroach onto roadways situated near the shoreline or due to tsunami inundation are similarly not expected to have a significant negative impact on these fiber optic cables.

The majority of flood hazard areas encroaching onto existing highways or City 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 cables should not impact the design or condition of such drainage facilities. Thus, the

project would not alter existing drainage conditions which may impact existing buildings or structures along roadways during periods of flooding. Furthermore, review of construction plans would be coordinated with pertinent State and City agencies during the design of various segments.

4.3 BOTANICAL RESOURCES

The proposed project occurs within four vegetation zones, including Strand, Coastal, Dryland Forest and Shrub, and Mixed Mesic Forest (Department of Geography 1983). Figure 4.8 shows the location of these vegetation zones in relation to the fiber optic cable routes.

The Strand Vegetation zone includes areas affected by salt spray and seawater. Strand vegetation is generally dominated by low shrubs, perennial herbs, and grasses. Two areas of the project that are within the strand vegetation zone are at Maipalaoa Beach in Nanakuli and Sandy Beach in Hawaii Kai. Typical species found within the rights-of-way in these areas include coconut and palm trees, heliotrope, ironwood, false kamani, haole koa, kiawe, hau, beach naupaka, ilima, beach vitex, beach morning glory, and various introduced grasses and weedy species (Sohmer, S.H. and R. Gustafon 1987). There are no known threatened, rare, endangered, or candidate species present within the rights-of-way of State highways or City roads affected by the project.

The Coastal Vegetation zone does not include species influenced by salt spray or seawater. There are arid and mesic areas of this zone. The arid parts of this zone are found mostly on the leeward side of the island. Most of the proposed project occurs within the coastal vegetation zone. Principal species include many of those found in the strand vegetation zone, plus wiliwili, hala, noni, kou, guava, kukui, milo, ohai, ma'o, naio, as well as various introduced ornamentals, and weedy species (Sohmer et.al. 1987). There are no known rare, threatened, endangered or candidate species within the affected rights-of-way of State highways or City roads that occur in this vegetation zone.

The Dryland Forest and Shrub Vegetation zone occurs primarily on the leeward side of the island, and ranges from near sea level to approximately 2,500 feet in elevation. Most of the area that would have once been covered by this vegetation is now largely used for agriculture or has been urbanized with various land use developments. Many of the species in the Coastal Vegetation zone are also found in this zone as well as many introduced agricultural and ornamental plants, weeds, and grasses. There are no known rare, threatened, endangered, or candidate species within the rights-of-way of State highways or City roads that occur in this Dryland Forest and Shrub Vegetation zone.

The Mixed Mesic Forest zone generally occurs in the higher elevations beginning from about 2,000 feet above sea level. There are however some low elevation mesic forest remnants on the Windward district of the island including portions of the project area from Kaneohe to Waiahole and part of Wahiawa. Koa ohia, and kukui are the most common native trees, although there are many other introduced species such as eucalyptus, sugi pine, silk oak, jacaranda, and African tulip. The understory also contains numerous introduced species including hibiscus, melastoma, lantana, schinus, tibouchina, psidium, verbena, rubus, and pennisetum. There are known no rare, threatened, endangered, or candidate species within the rights-of-way of affected roadways that occur in this Mixed Mesic Forest zone.

Other vegetation present along existing roadways or highways include street trees planned as part of landscaping improvements provided along roadways or within medians. Such street trees typically consist of various types of introduced ornamentals trees commonly found throughout the island.

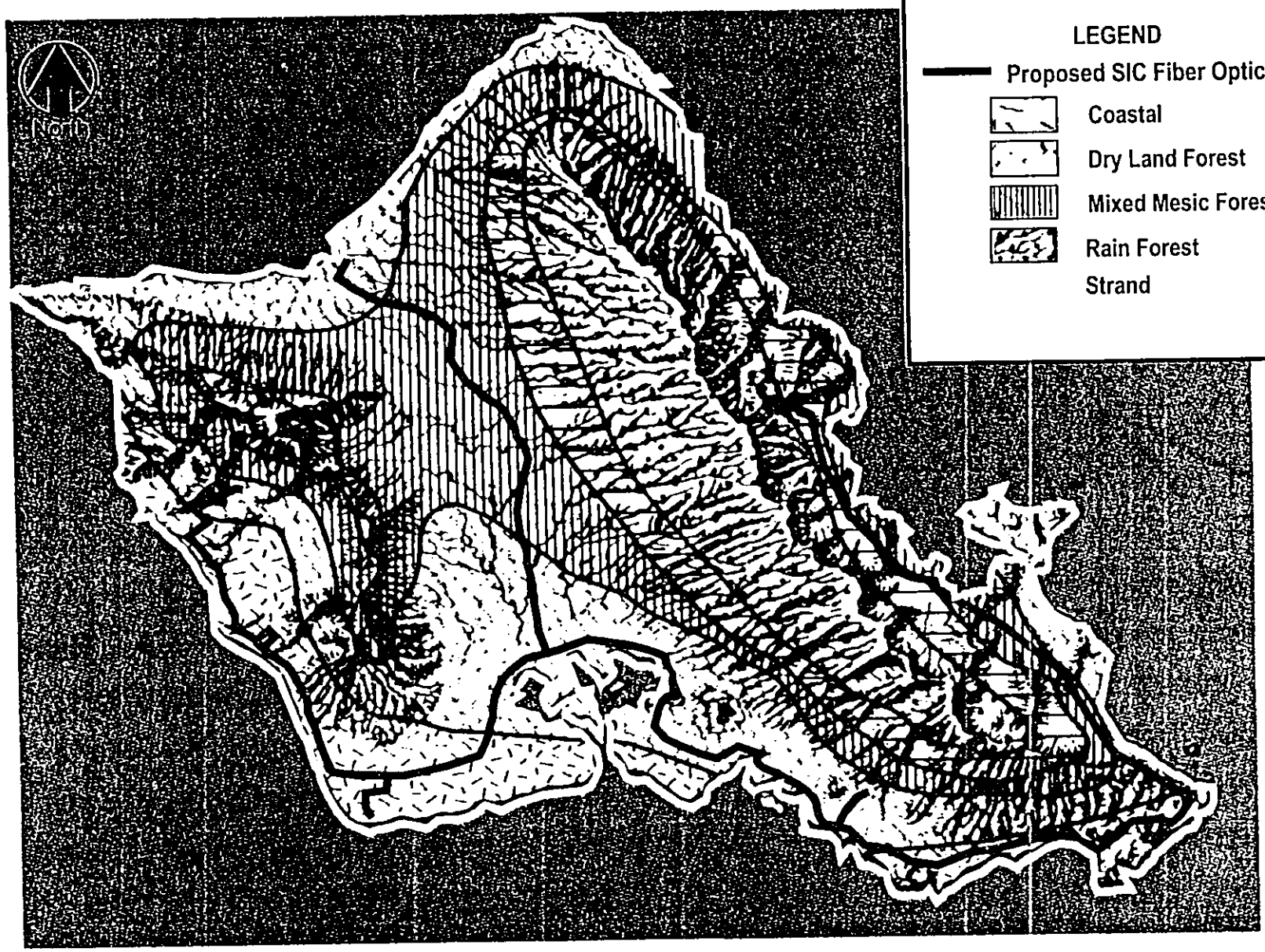
Probable Impacts On Botanical Resources

The actual alignment of the fiber optic cable within the rights-of-way of both State highways and City roads will be determined during the design of each segment. However, the priority would be to locate underground fiber optic cables within unpaved shoulder areas first to minimize disruption to existing paved areas. If not available, paved shoulders and finally paved travel lanes would be utilized.

The vegetation within most of these roadway rights-of-way areas is very sparse or absent, and no known threatened or endangered plant species are known to be present within these areas. Roadways within more highly urbanized areas such as the Primary Urban Center, East Honolulu, and most of Ewa and Koolaupoko are absent of vegetation within rights-of-way since adjoining areas generally consist of developed properties or paved sidewalks.

Within less developed or rural areas, vegetation along these major roadway facilities are also generally absent due to ongoing road maintenance practices such as mechanical eradication. Finally, the construction of these roadways has disturbed existing areas and vegetation along these corridors. Therefore, it is anticipated that the proposed project will have minimal if any negative impact on important existing vegetation in these areas.

There are areas where construction activities may come within close proximity of street trees provided as part of roadway landscaping. Street tree roots affected by construction activities would try to be pruned to promote healing and avoid potential infection normally associated with roots damaged from excavation machinery. The contractor will be responsible to follow either State or City construction standards associated with trench excavation, backfill, and pavement restoration within public roadway rights-of-way. To further minimize potential damages to street trees, SIC will have the contractor include a certified aborist on the project



VEGETATION ZONE MAP

Figure 4.8

Source: Atlas Hawaii (1983)

Oahu Rural Fiber Optic Duct Lines Project
Sandwich Isles Communication, Inc.

team for route sections that have street trees likely to be affected by construction activities or machinery such as along Kalanianaole Highway from Kahala to Hawaii Kai. If construction activities would affect Exceptional Trees, the contractor would obtain the services of a certified arborist and comply with all requirements of the "Protective Regulations for Exceptional Trees" (Chapter 41, Article 13, ROH).

4.4 FAUNA AND AVIFAUNA

The majority of the proposed fiber optic cable routes would occur within highly urban or suburban traffic corridors which are generally not known to provide suitable habitat for important wildlife. Within these urbanized areas, such as the Primary Urban Center, no mammals of concern would be present within existing roadway rights-of-way or adjoining properties since they would typically consist of developed land uses such as residential, commercial, or industrial.

In more rural or agricultural areas such as Waimanalo, Kahaluu, Waianae, Haleiwa, and the Central Oahu corridor from Waikele to Haleiwa, there are no known rare, endangered, or threatened mammals known to occur along these roadways or within the immediate adjoining area. The most common species of terrestrial mammals that could be expected to occur within these roadway areas would likely be introduced species such as feral cats or dogs, rats, and mongoose.

Avifauna would include introduced species such as pigeons, doves, cardinals, mynas, finches, and sparrows. Open country birds in rural areas such as the Schofield saddle may include pueo, barn owls, jungle fowl, and pheasants. In the sparsely populated coastal areas such as Makapuu, certain shore birds may be expected to visit the project area. These species may include terns, plovers, and various migratory shorebirds.

Probable Impacts On Fauna And Avifauna

Because the proposed project will be contained within existing State highway and City roadway rights-of-way, no long-term negative impacts on fauna or avifauna species are anticipated. Temporary, short-term construction activities during installation of fiber optic cable may result in small amounts of fugitive dust and increased noise levels. However, these impacts will be largely confined to the existing rights-of-way, and the aforementioned species are highly mobile and can leave the project area during construction. Vehicular traffic occurring along these affected roadways would also deter the presence of fauna and avifauna in the area especially along more highly used transportation corridors.

4.5 AIR QUALITY

Ambient air quality standards (AAQS) have been established by both Federal and State governments that limit ambient concentrations of particulate, matter less than 10 microns (PM_{10}), sulfur dioxide, nitrogen dioxide, carbon monoxide (CO), ozone, and lead. In addition, a State standard has been established for hydrogen sulfide. State AAQS are more stringent than the comparable national limits (NAAQS) except for the standards for sulfur dioxide, particulate matter and lead, which are set at the same levels.

A summary of both State and National AAQS is presented below. Hawaii's standards are not divided into primary and secondary standards as are National standards. Primary standards are intended to protect public health with an adequate margin of safety while secondary standards are intended to protect public welfare through the prevention of damage to soils, water, vegetation, man-made materials, animals, wildlife, visibility, climate, and economic values.

Summary Of National And State Ambient Air Quality Standards

Pollutant	Sampling Period	NAAQS Primary	NAAQS Secondary	State Standards
Particulate Matter Less Than 10 Microns (PM_{10})	Annual	50	50	50
	24-Hour	150	150	150
Sulfur Dioxide	Annual	80	n/a	80
	24-Hour	365	n/a	365
Nitrogen Dioxide	Annual	100	n/a	70
Carbon Monoxide	8-Hour	10	n/a	5
	1-Hour	40	n/a	10
Ozone	1-Hour	235	n/a	100
Hydrogen Sulfide	1-Hour	n/a	n/a	35
Lead	Quarter	1.5	n/a	1.5

Note: All concentrations in micrograms per cubic meter ($\mu g/m^3$) except for carbon monoxide which is in milligrams per cubic meter (mg/m^3)

The present level of air quality along the proposed fiber optic routes would be influenced to a great extent by the level of vehicular traffic occurring along affected roadways. Thus, vehicular traffic along roadways would contribute to carbon monoxide emissions. In areas where the fiber optic cable route follows roads through large agricultural areas, such as from Wahiawa to Haleiwa or to a less extent through Central Oahu, air quality in the area would also be influenced by agricultural activities occurring. Such agricultural activities would typically generate fugitive dust emissions.

The existing air quality of general areas situated along roadway facilities affected by the fiber optic route is anticipated to be generally acceptable. No exceedances of PM_{10} AAQS due to agricultural activities are known to be presently occurring. Carbon Monoxide emission levels

along affected roadways are generally acceptable along most roadways with the exception of more heavily used and congested intersections that may occasionally exceed Carbon Monoxide 1-hour AAQS during weekday peak hours.

Impacts From Construction Activities

Air quality concerns most applicable to the fiber optic project are associated with short-term construction related emissions such as fugitive dust. No long-term effects on air quality would be associated with this project because fiber optic duct lines would be installed underground and would not generate emissions of pollutants regulated under the National and State AAQS.

Short-term impacts on air quality from construction activities would predominantly be associated with fugitive dust emissions and exhaust emissions from on-site construction equipment. Some fugitive dust emissions would inevitably arise from work associated with the opening and filling of trenches and to a lesser degree trenchless methods implemented such as directional drilling. The amount of fugitive dust emissions generated is expected to be relatively small since the size of trenches created would be relatively narrow and shallow. Consequently, construction activities for the installation of fiber optic cables are expected to have minimal impacts on the present air quality of the surrounding area. Furthermore, such impacts would be temporary, and no exceedances of National or State air quality standards are anticipated.

State air pollution controls prohibit visible emissions of fugitive dust from construction activities at the property line. Therefore, a dust control plan could be prepared, if required, to have the contractor minimize fugitive dust emissions in complying with these regulations. Adequate fugitive dust control can usually be accomplished by establishing a frequent watering program, and looking into other additional measures to address trenching activities.

4.6 NOISE

Under the State Department of Health's Community Noise Control regulations (Title 11, Chapter 46, HAR), a classification of zoning districts is established to regulate noise. Under this classification system, the maximum permissible sound levels for zoning districts for daytime (7:00 a.m. to 10:00 p.m.) and nighttime hours (10:00 p.m. to 7:00 a.m.) is prescribed for various types of activities such as construction activities. This zoning district classification consists of three classes which are Class A (residential, conservation, open space, etc.), Class B (multi-family, commercial, resort, hotel, etc.) and Class C (agricultural, industrial, country, or similar).

The fiber optic cable route proposed would cover several miles of roadway which passes by various types of land uses falling under all three of these district Classes. The maximum permissible sound levels for construction activities thus ranges from a low of 55 dBA during daytime hours along Class A areas, 60 dBA along Class B, and 70 dBA along Class C zoning

district areas. These noise levels may not be exceeded at or beyond the property line for more than 10 percent of any continuous 20-minute period unless a permit is obtained. .

Impacts From Short-Term Construction Activities

Potential noise impacts associated with this project would only be associated with short-term construction activities. Long-term noise impacts would not occur since this project only involves the installation of underground fiber optic lines within the rights-of-way of existing State and City roadways. As a result, the operation of these fiber optic lines would not generate audible noise which may inconvenience surrounding properties or activities being conducted since they would be situated underground.

However, any noise impact from these construction activities would be relatively short-term and minor given the type of utility being constructed which necessitates creating a relatively narrow trench. The actual noise levels generated would be dependent upon the construction methods and equipment employed during each stage of the construction process for various segments. Furthermore, pertinent construction equipment would be equipped with mufflers as required under DOH regulations.

In cases where construction noise exceeds, or is expected to exceed, the maximum permissible noise level allowable to property line limits, a permit would be obtained from the DOH to allow these activities. This noise permit would also be obtained if any construction work is conducted at night as requested for consideration by certain agencies to minimize disruptions on vehicular traffic. This permit includes restrictions to help mitigate potential noise impacts resulting from short-term construction activities. Such restrictions would be followed by the contractor.

4.7 VISUAL RESOURCES

There are several scenic landforms, scenic viewing points, and important coastal views present along roadways throughout Oahu. Such visual landforms of scenic value include the Honolulu and Waikiki skylines, mountain ranges, and other unique landforms such as Diamond Head (Mount Leahi). Coastal views along roadways primarily occur along various sections of State highways routed along the island's coastline along with City roadways mainly throughout the Honolulu area. The City's Development Plans and Sustainable Communities Plans for the various areas identify such scenic landforms, viewing points, and coastal views from roadways.

Potential impacts on important scenic and coastal views associated with this project would only be associated with short-term construction activities. Long-term impacts on visual resources would not occur since this project involves the installation of underground fiber optic lines within the rights-of-way of existing State and City roadways. As a result, these fiber optic lines would not be visible since they would be situated underground.

Construction activities may involve the presence of equipment and workers along roadways that may temporarily interfere with some coastal views from roadways. However, this would be a relatively minor disruption which inevitably happens as part of any construction project occurring along roadways. The project would not alter or damage any important scenic coastal landform or other visual resources in the surrounding area since work would generally be limited to existing State and City roadway rights-of-way.

Construction activities may also have an impact on existing street trees serving as visual landscaping along existing roadways and highways. To minimize impacts on such street trees, the contractor will be responsible to follow either State or City construction standards associated with trench excavation, backfill, and pavement restoration within public roadway rights-of-way. Street tree roots affected by construction activities would try to be pruned to promote healing and avoid potential infection normally associated with roots damaged from excavation machinery. To further minimize potential damages to street trees, SIC will have the contractor include a certified aborist on the project team for route sections that have street trees likely to be affected by construction activities or machinery such as along Kalanianaole Highway from Kahala to Hawaii Kai. Therefore, the proposed project is expected to have minimal if any impacts on visual resources, which includes street trees, or scenic views.

4.8 ARCHAEOLOGICAL AND CULTURAL RESOURCES

An archaeological assessment was conducted for this project by Cultural Surveys Hawaii, Inc. (CSH). A copy of this report is included in Appendix B of this document. The objective of this assessment was to identify areas within the fiber optic route corridors that have potential for subsurface historic properties. This includes human burials and cultural deposits which may be encountered during installation of the proposed fiber optic line.

4.8.1 Archaeological Research

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 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. Maps and other documents associated with these awards may give clues to settlement areas within and nearby the study route in the mid-1850s.
3. Review of Geographic Information System (GIS) data and archaeological reports at the State Historic Preservation Division.
4. Field inspection of the entire study route to evaluate the relationship of the study route to possible subsurface properties. Areas of anomalous sand deposits were

examined to consider their potential for significant subsurface cultural deposits. Also noted were areas of fill and/or road cut in which the alignment has been brought significantly above grade.

5. Consultation with the State Historic Preservation Division (SHPD). Resources and expertise of the SHPD were utilized.
6. CSH 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.

Research Of Soils

There were two general areas on Oahu along the study route containing sands or sandy soils. The first area is in Nanakuli where soils maps indicate the proposed route intersects a pocket of Beach Sand just northwest of Nanakuli Stream drainage. Although this is the only area where sands actually underlie the proposed route, Beach Sands lie adjacent to and *makai* of the proposed route from Waianae to Kahe Point.

The second area is on the east side of the island starting in Waimanalo, continuing with isolated pockets on either side of Makapuu Point and ending with deposits at the base of several valleys draining into Maunalua Bay. In Waimanalo, the fiber optic cable route runs above and adjacent to a large deposit of Jaucus Sands (JaC) just northwest of the main gate into Bellows Air Force Base. The proposed route intersects with this Jaucus sand deposit at approximately Aloiloi Street, and the deposit underlies the proposed route until approximately where the houses end in Waimanalo. In addition to the Jaucus Sands, there is a small section of Mokuleia loam underlying the proposed route directly mauka of Waimanalo Bay State Recreation Area. A small pocket of Beach Sand also underlies the route makai of Sea Life Park. Similarly, a pocket of Jaucus Sand underlies the proposed route on the south side of Makapuu Point.

In Hawaii Kai, larger deposits of Jaucus Sands (JaC) are found at the edges of Kuapa Pond, in the areas of Portlock and at the base of Kuliouou Valley. At Portlock, a portion of the Jaucus Sand deposit runs adjacent to and makai of the route starting from the Koko Marina Shopping Center and ending near the pier. A small fragment of the deposit also extends across Kalanianaole Highway near the Koko Marina Shopping Center.

In Kuliouou, a large deposit of Jaucus Sand encompasses the route from just mauka of Kuliouou Beach Park to mauka of Paiko Lagoon. From here, the Jaucus Sands run adjacent to and makai of the route until Halemaumau Road on the east side of Niu Valley. Moving west through Niu Valley and Aina Haina, Jaucus Sand deposits continue, however, they are well makai of the proposed route.

Mauka of the Jaucus Sands in both valleys is Mokuleia clay loam (Mt). In Niu Valley, the proposed route intersects Mokuleia clay loam beginning just west of Niu Stream Drainage extending to Puuikena Drive at Hawaiiloa Ridge. The proposed route intersects the Mokuleia clay loam at several locales in Aina Haina.

Land Commission Awards And Archaeological Sites

Inspection of tax maps and historic maps indicated the presence of Land Commission Awards (LCAs) for kuleana parcels along the study route on Oahu. The highest distribution of kuleana lands in the vicinity of the route occurred on the fringes of Pearl Harbor in the south and near Kahaluu in the north. A figure showing these LCAs is provided in the archaeological assessment report included in Appendix B.

Two clusters of LCAs were present along the fiber optic cable route near Haleiwa. One was near the coast and the other one located further mauka near Opaeula Stream. In Waianae, all the known LCAs were located mauka along Waianae Valley Road. A cluster of three was situated near Mauna Kuwale with three more separate LCAs located near Waianae Homesteads.

Several kuleana surround Pearl Harbor along the study route which parallels Farrington Highway. Concentrations of LCAs begin just west of Waipahu and continue east. Pearl City has multiple LCAs at Waimalu, Kalauao and an isolated LCA near Makalapa Park on the east side of Pearl Harbor. In East Honolulu, there are two kuleana at the intersection of Kalanianaole Highway and Kalaniiki Street.

On the windward side, three large concentrations of LCAs are present between Ahuimanu and Kahaluu along the proposed route. A cluster of LCAs occurs in the vicinity of the study route near the entrance of the Maunawili Drainage into Kawainui Marsh. Near the present day Pohakupu Subdivision, there are two LCAs. An LCA is also located near the eastern intersection of the Old Kalanianaole Road and the present day Kalanianaole Highway just mauka of the Olomana Golf Course.

The GIS files at the State Historic Preservation Division were reviewed to determine locations of archaeological sites in the general vicinity of the proposed route. Those sites identified are shown in the archaeological assessment report provided in Appendix B.

Historic Districts And Railway

Based upon the archaeological assessment study, there are two historic districts on the National Register of Historic Places identified for which the fiber optic cable route would be located within. These are the Chinatown Historical District (Site 50-80-14-9986) and Hawaii Capitol Historic District (Site 50-80-14-1321). Also on Oahu in the Ewa district is the Oahu Railway and Land Company rights-of-way (Site 50-80-12-9714) that has been similarly placed on the National Register of Historic Places.

The Hawaii Capitol Historic District generally encompasses the area between Vineyard Boulevard to the north (mauka) and Ala Moana Boulevard to the south (makai), and Alakea Street to the west and South Street to the east. This district was placed on the National Register because of its significance in association with events that have made a significant contribution to the broad patterns of the State's history, and because of its association with the lives of persons significant in the past. The early centralization of government resulted in an extraordinary concentration of public and private architecture reflecting the social political evolution of the people of Hawaii.

The Chinatown Historical District generally encompasses the area between Beretania Street to the north (mauka) and Nimitz Highway to the south (makai), and River Street to the west and Nuuanu Avenue to the east. It is the only district in Honolulu which reflects vividly in its building, institutions, and people, the full impact of the city's role as a center of attraction for many diverse races and cultures. This district derives its historical and cultural significance in part from the central role it played in the life of the Chinese community in Honolulu. Despite a relatively small proportion of Chinese actually residing in Chinatown, this area still provides the principal center for the business and social life of the entire Chinese community.

The Oahu Railway and Land Company right-of-way consists of the historic railway generally running in an east to west direction in the Ewa district of the island of Oahu. This railway is significant for its associations with the operation of the Oahu Railway and Land Company railroad and the development of the sugar and pineapple industries. This narrow gauge right-of-way is a well preserved remnant of the earlier 175 miles of tracks laid by this company that had a tremendous effect on the economic development of the Oahu along with the State of Hawaii.

Historic Bridges

Information on historic bridges that may be affected by the fiber optic cable project was obtained using available information obtained from the State Department of Transportation after consulting with the SHPD. A listing of bridges which may be affected is provided below.

Karsten Thot Bridge
Waialua Twin Bridges
Kalakaua Avenue Bridge
North King St.-Nuuanu River Bridge
Heeia Viaduct Bridge

4.8.2 Evaluation Of Fiber Optic Cable Routes

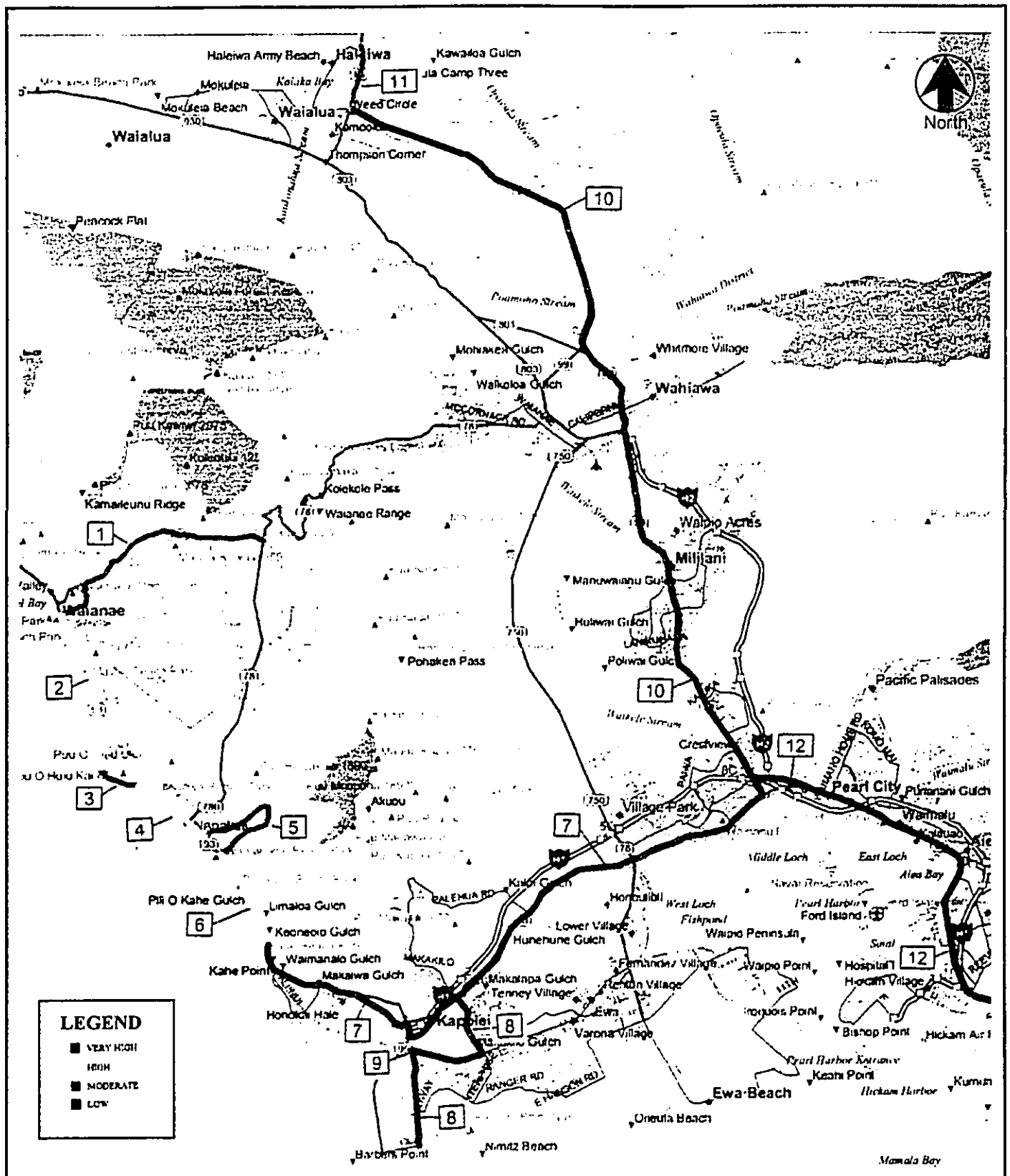
Based on the research conducted, all segments of the study route were evaluated based on four categories representing varied potential for yielding subsurface archaeological resources. The four categories are:

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.
HIGH	Area contains sand and/or Land Commission Awards. Also present are historic properties based on researched archaeological data.
VERY HIGH	Area contains known burials or cultural layers.

The proposed fiber optic route has been subdivided into 29 sections based on the four categories of archaeological potential identified above. Figures 4.9 to 4.11 present the archaeological assessment of the study route identifying each of the segments by categories. Each section is identified below, and are organized by category type. Sections with a High category rating are discussed briefly. A full discussion of all sections is provided in Appendix B.

Low Potential

Section 7	Farrington Highway (93) from the western side of Waimanalo Gulch southeast through Honokai Hale, Kapolei, Honouliuli, and Waipahu to the junction with Kamehameha Highway (99) mauka of Leeward Community College.
Section 8	Fort Barrette Road from intersection with Farrington Highway (93) southeast to Renton Road, along Renton Road westbound to end, then south onto Saratoga Street entering the former Barbers Point Naval Air Station.
Section 10	Kamehameha Highway (99) northwest from the interchange mauka of Leeward Community College through Waipio, Mililani, and Wahiawa to Weed Circle.
Section 12	Kamehameha Highway (99) from the interchange mauka of Leeward Community College southeast through Pearl City, Waimalu, and Aiea to Aloha Stadium, then south and southeast past the Makalapa Naval Housing and continuing east on North Nimitz Highway past the Honolulu International Airport and Keehi Lagoon to Dillingham Boulevard, continuing on Dillingham Blvd to the intersection with North King Street.
Section 15	Lusitania Street (from the H-1 overpass) to Puowaina Drive around Punchbowl Crater, then on Tantalus Drive.
Section 17	Kona Street from the intersection with Piikoi Street southeast along the mauka side of Ala Moana Shopping Center to the intersection with Atkinson Drive, then northeast on Atkinson Drive to the intersection with Kapiolani Boulevard, then east on Kapiolani Boulevard to the intersection with Kalakaua Avenue, then southeast on Kalakaua Avenue over the Ala Wai Canal to the intersection with Ala Wai Boulevard.



ARCHEOLOGICAL EVALUATION OF FIBER OPTIC ROUTES

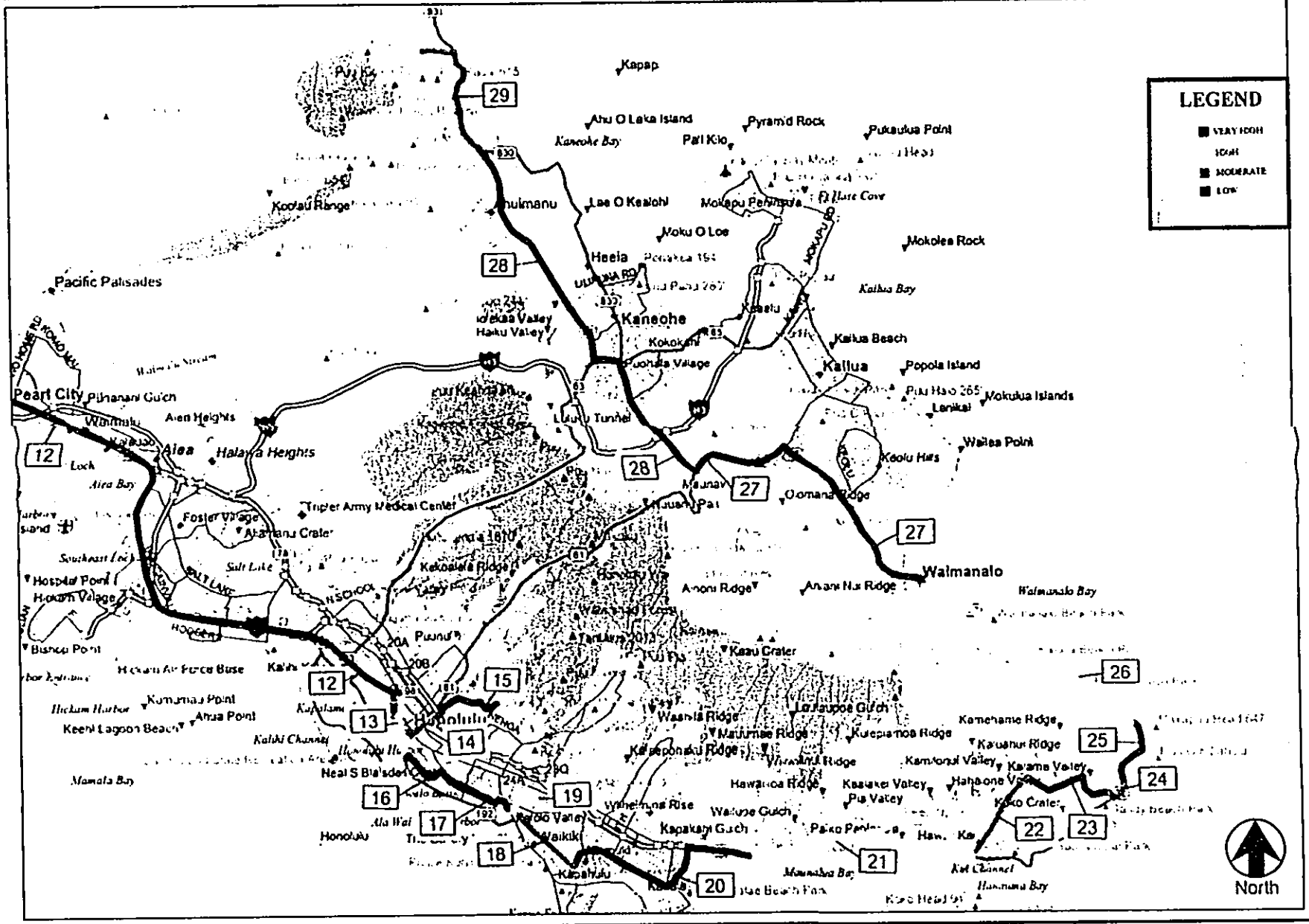
Waianae To Haleiwa

Figure 4.9

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
Cultural Surveys Hawaii, Inc.

SSFM INTERNATIONAL



ARCHEOLOGICAL EVALUATION OF FIBER OPTIC ROUTES

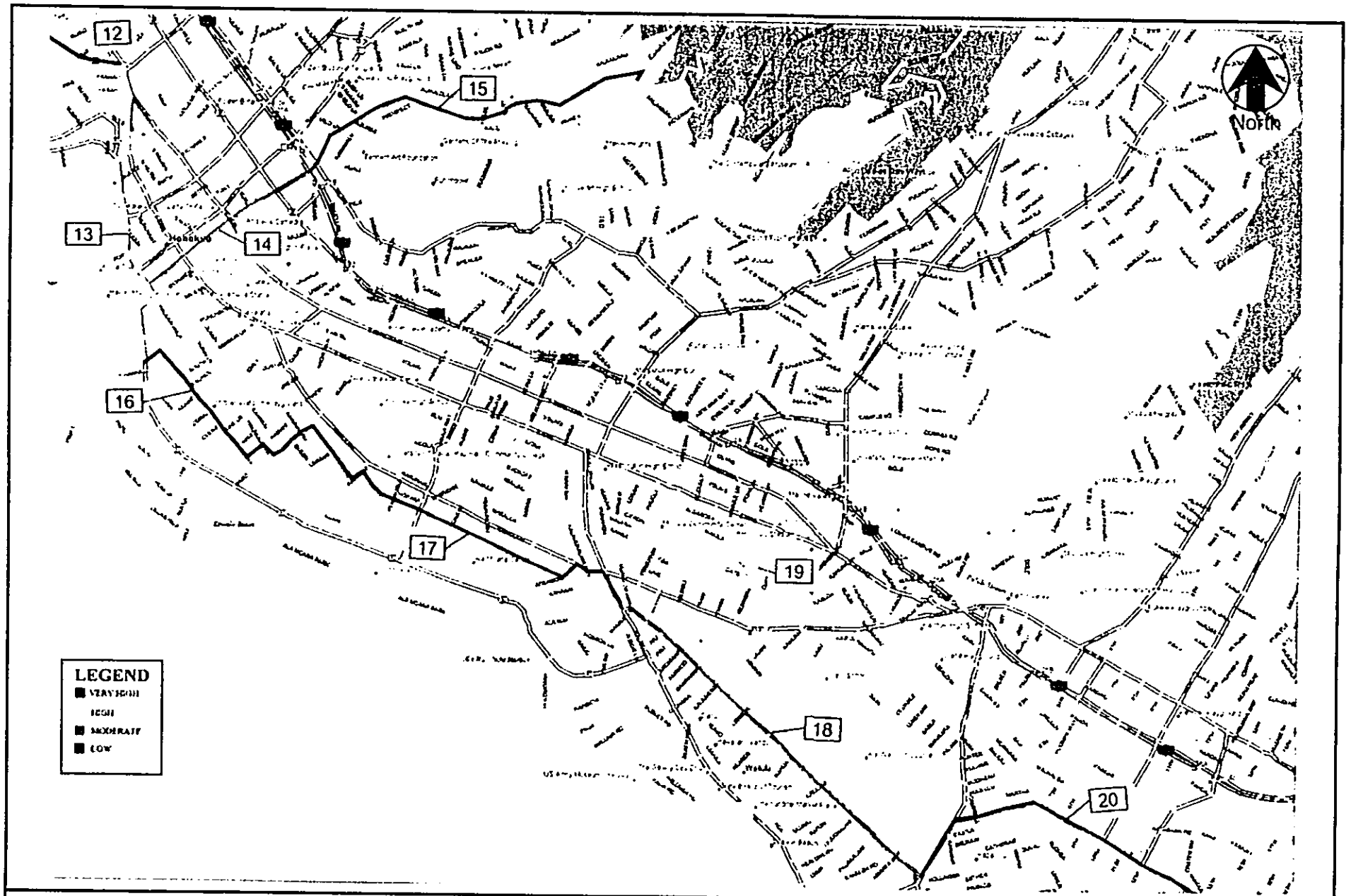
Primary Urban Center To Waiahole

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
Cultural Surveys Hawaii

Figure 4.10

SSFM INTERNATIONAL



ARCHEOLOGICAL EVALUATION OF FIBER OPTIC ROUTES
Primary Urban Center / Ala Wai

Oahu Rural Fiber Optics Duct Lines Project
Sandwich Isles Communication, Inc.

Source:
Cultural Surveys Hawaii, Inc.

Figure 4.11

SSFM INTERNATIONAL

Section 20 Kapahulu Avenue from the intersection with Ala Wai Boulevard northeast to the intersection with Herbert Street, then east on Herbert Street to the intersection with Kilauea Avenue, then southeast and northeast on Kilauea Avenue through Kaimuki and Waialae-Kahala to the intersection with Kalanianaole Highway(72), then east on Kalanianaole Highway to the intersection with Analii Street.

Section 23 Hawaii Kai Drive from the intersection with Lunalilo Home Road southeast and northeast around the mauka side of Koko Crater to the intersection with Kealahou Road, then south and east on Kealahou Road to the intersection with Kalanianaole Highway (72).

Section 25 Kalanianaole Highway (72) from the Wawamalu Bridge to the entrance to Sea Life Park.

Section 27 Kalanianaole Highway (72) from Waimanalo Elementary and Intermediate School northeast through Waimanalo and Olomana to Castle Memorial Hospital, continuing southwest on Kailua Road/Kalanianaole Highway (61) to the intersection with Kamehameha Highway (83) at Castle Junction.

Section 28 Kamehameha Highway (83) from the intersection with Kailua Road/ Kalanianaole Highway (61) northwest into Kaneohe to the intersection with Likelike Highway, then west on Likelike Highway to the junction with Kahekili Highway (83), then north on Kahekili Highway through Ahuimanu to Kahaluu Regional Park.

Moderate Potential

Section 1 Commencement of route on Waianae Valley Road at Haleahi Road heading southwest, the short Kaneaki Street segment, and onto Plantation Road to the intersection with Farrington Highway (93).

Section 3 Farrington Highway (93) from the intersection with Kaukama Road southeast around Pu`u o Hulu Kai to the intersection with Akowai Road.

Section 5 Northeast on Haleakala Avenue from the intersection with Mano Avenue to the intersection with Nanakuli Avenue, then southwest on Nanakuli Avenue to the intersection with Mano Avenue.

Section 11 Kamehameha Highway north through Haleiwa Town to the terminus of the study route at the intersection with Haleiwa Road.

Section 14 Alakea Street from the intersection with South Nimitz Highway northeast to the intersection with South Beretania Street, then Queen Emma Street to the H-1 Freeway ovepass.

Section 18 Ala Wai Boulevard from the intersection with Kalakaua Avenue east then southeast along the makai side of the Ala Wai Canal to the intersection with Kapahulu Avenue.

Section 22 Lunalilo Home Road from the intersection with Kalanianaole Highway (72) northeast to the intersection with Hawaii Kai Drive.

Section 24 Kalanianaole Highway (72) from the intersection with Kealahou Road northeast to the Wawamalu Bridge.

Section 29 Kamehameha Highway (83) from Kahaluu Regional Park north to the intersection with Waiahole Valley Road, then west on Waiahole Valley Road to the study route terminus near the junction of the North and South Branches of Waiahole Valley Road.

High Potential

Section 2 Farrington Highway (93) from the intersection with Old Government Road south to the intersection with Kaukama Road.

According to the soil survey, Farrington Highway in this section runs immediately adjacent to and *makai* of beach sand deposits. Because of the possibility that sand deposits may impinge beneath portions of this section, and because of the possible presence of significant historic sites, including human burials in such deposits, the potential to encounter historic properties is assessed as high.

Section 4 Southeast on Farrington Highway (93) from the intersection with Akowai Road to the intersection with Haleakala Avenue, then northeast on Haleakala Avenue to the intersection with Mano Avenue.

Farrington Highway runs parallel to beach and Beach Sands in this section. These sand deposits, which in areas of the adjacent Ulehawa Beach Park have been documented to contain intact cultural layers, and may extend beneath the highway. Additionally, towards its southern end, Section 4 runs over Coral Outcrop, ancient coral reef material or cemented calcareous sand underlying a very thin cap of friable, red soil. In the former Camp Andrews parcel adjacent to the makai end of Haleakala Avenue a human burial was also documented. Based on these factors, the potential to encounter historic properties is assessed as high.

Section 6 Nanakuli Avenue from the intersection Mano Avenue southwest to Farrington Highway, then south and southeast on Farrington Highway around Kahe Point to the western side of Waimanalo Gulch.

At the northern end of Section 6, the route runs over coral outcrop in which, as noted in Section 4 above, a human burial has been documented in a parcel adjacent to the study route. Toward the southern portion of Section 6, a human burial (Site 50-80-12-4061) was documented in Kahe Beach Park. At the bend around Kahe Point Section 4 runs through an area in which several surface archaeological sites, both historic and prehistoric, have been documented including walls, a fishing shrine, rockshelters, platforms, and midden scatters.

Section 13 South on North King Street from the intersection with Dillingham Boulevard to the intersection with River Street, southeast on River Street to the intersection

with South Nimitz Highway, then south on Nimitz Highway past Aloha Tower and onto Ala Moana Boulevard to the intersection with Punchbowl Street.

Adjacent to the northwestern portion of Section 13 on North King Street, human remains were encountered during archaeological investigations in a parcel, former site of a fishpond, between Iwilei Road, Kaaahi Place, and North King Street.

The portion of Section 12 that includes River Street and South Nimitz Highway is at the periphery of the Chinatown Special District which was placed on the National Register of Historic Places in January 1973 (Site 50-80-14-9927). Under Chapter 6E of the Hawai`i Revised Statutes, special procedures may be mandated for this portion of the study route. Consultation with the SHPD is recommended. During archaeological investigations in 1992 of the Marin Tower parcel on the mauka side of Nimitz Highway, within the Chinatown Special District, significant historic sites, including human burials, were documented.

Further southeast on Nimitz Highway and Ala Moana Boulevard, recent archaeological monitoring by Cultural Surveys Hawaii of excavations for utilities projects has documented the presence of historic properties including former tram lines beneath fill layers.

Section 19 McCully Street from the intersection with Ala Wai Boulevard, north over the McCully Street Bridge to the intersection with Citron Street, then southeast on Citron Street to the intersection with Isenberg Street, then north along Isenberg Street to about the site of the former Stadium Bowl-O-Drome.

Section 18 of the study route runs through an extensive, continuous network of former taro lo`i beneath the present-day McCully and Moiliili neighborhoods. It is likely that material related to traditional agriculture and habitation remain intact beneath portions of this section. Additionally, a human burial was encountered and the intersection of Citron Street and Pumehana Street during excavations for a utilities project in January 1998.

Section 21 Kalanianaole Highway (72) from the intersection with Analii Street east through Wailupe, Niu, Kuliouou and Hawaii Kai to the intersection with Lunalilo Home Road.

Kalanianaole Highway in Section 20 crosses over or through sandy soils of the Coral Reef formation in which it is likely that significant historic sites, including human burials, may be encountered during excavation procedures associated with the fiber optic cable project. Multiple human burials have been previously documented along portions of this section in archaeological investigations related to road widening projects of the 1980s and 1990s.

Section 26 Kalanianaole Highway from the entrance to Sea Life Park northwest into Waimanalo to Waimanalo Elementary and Intermediate School.

As noted above in the soil survey summary, in Waimanalo, the study route runs mauka of and adjacent to a large deposit of Jaucus Sands (JaC). Additionally, there is a section of

Mokuleia loam underlying a portion of the route in Waimanalo. Although not sand, the Mokuleia soil series has a unique relationship to coral sand and is linked to burials on Kauai. A human burial was recently encountered during excavation into sandy soil deposits in a parcel immediately mauka of Kalanianaole Highway, near Waimanalo Beach Park. Additionally, burials and cultural layers have been encountered in archaeological investigations within the Bellows Air Force Station.

Section A *(Alternative Segment Being Considered) North Beretania Street southeast from Aala Triangle Park to the intersection with Punchbowl Street, then proceeding southwest on Punchbowl Street to the intersection with South King Street.*

A portion of this alternative route section between River Street and Bethel Street is at the periphery of the Chinatown Special District which was placed on the National Register of Historic Places. A portion of this alternative route which includes South Beretania Street (southeast of Alakea Street) and Punchbowl Street is within the Hawaii Capitol Historic District which was placed on the National Register of Historic Places. Under Chapter 6E, HRS, special procedures may be mandated for this portion of the alternative route being considered if implemented. Consultation with the SHPD is recommended.

Archaeological studies in the vicinity of Nuuanu Stream (though not immediately adjacent to Beretania Street) have indicated the presence of deposits associated with the village of Kou. Archaeological studies for the Kekaulike redevelopment area along River Street have also indicated a long history of habitation in the area, both pre-contact and post-contact. It is likely that deposits associated with that habitation extend into the Beretania Street area.

Land Commission Award parcels were located along both sides of Beretania Street and Punchbowl Street. It is likely that historic trash pits associated with these residential parcels remain intact within or adjacent to road corridors in this area.

Very High Potential

Section 9 Portion of route between Renton Road and Saratoga Road crossing over the Oahu Railway and Land Company rights-of-way.

This segment crosses a known historic site which is the Oahu Railway and Land Company rights-of-way which has been placed on the National Register of Historic Places (Site 50-80-12-9714). Because installation of the fiber optic line may have an impact on this site, preliminary review and consultation with the SHPD and other agencies would be necessary.

Section 16 Punchbowl Street (from Ala Moana Boulevard) north to Pohukaina Street, then southeast on Pohukaina Street to Kamani Street, then north on Kamani Street to Halekauwila Street, then southeast on Halekauwila Street to Ward Avenue, then north on Ward Avenue to Waimanu Street, then southeast on Waimanu Street to Kamakee Street, then north on Kamakee Street to Kona Street, southeast on Kona Street to intersection with Piikoi Street.

This section enters into the Kakaako district where several human burials have been encountered during excavations for various construction projects. During construction of the Hawaii Community Development Authority's Kakaako Improvement District 1, four burial site areas were encountered consisting of two cemeteries and two isolated burials. The cemeteries recorded on Queen Street and on South Street/Quinn Lane contained 116 and 31 sets of remains, respectively. These two areas comprised the 1853 Honuakaha Cemetery established during the smallpox epidemic. A variety of other archaeological and historical features were noted, excavated and recorded during the monitoring process, including historic trash layers, cultural features, and fill layers associated with the urbanization of the Kakaako area. Burials were also recently encountered during excavation activities along Kamakee Street. The Kakaako district was the site, in historic times, of ethnic camps and a leprosy hospital. Intact subsurface deposits related to these entities may be present beneath the modern fill layers.

Section B *(Alternative Segment Being Considered) Punchbowl Street between South King Street and Pohukaina Street.*

There is a potential for encountering historic trash pits associated with the development of Honolulu Town beginning in the 19th century associated with this portion of an alternate route being considered. Burials have also been recorded in archaeology studies for the redevelopment of the Kakaako area. On Punchbowl Street, burials in cinder deposits related to the Kawaiahao Cemetery have been encountered at the intersection with Queen Street. Makai of Queen Street, burials in marine sand deposits have been reported within parcels adjacent to Punchbowl Street.

Punchbowl Street is within the Hawaii Capitol Historic District which was placed on the National Register of Historic Places. Under Chapter 6E, HRS, special procedures may be mandated for this portion of the alternative route being considered if implemented. Consultation with the SHPD is recommended.

4.8.3 Recommendations

The fiber optic fiber optic cable route for Oahu has been divided into 29 sections of which each section was assigned one of four levels of the potential for the presence of subsurface historic properties being encountered. This also included two sections (Section A and B) associated with an alternative route in Honolulu being considered for implementation.

It should be emphasized that a Low potential assessment does not imply that there is no possibility of encountering subsurface deposits within a fiber optic route section. This assessment refers to a lessened possibility relative to other areas where documented evidence would suggest a heightened potential. It should also be emphasized that the fiber optic routes are limited to the portion of roadway or shoulder through areas that have already been altered to varied degrees by construction of the affected roadway itself. Consequently, the following recommendations are suggested for each level:

Based on the low potential for subsurface deposits, no further archaeological work is recommended in the sections of the route given a Low category rating. On-call monitoring with periodic site inspections using a cultural monitor is recommended.

Areas determined to be of Moderate potential for encountering archaeological resources was recommended for a monitoring program with on-call monitoring. On-call monitoring with periodic site inspections using a cultural monitor is recommended.

Areas deemed of High potential for encountering archaeological resources based on presence of sand, Land Commission Awards, or historic properties were recommended for a monitoring program with continual on-site monitoring.

Two fiber optic route segments (Sections 9 and 16) along with a portion of the alternative route being considered (Section B) were identified as having a Very High potential for encountering archaeological resources. Such areas merit more detailed consultation with SHPD before any determination is made on the specific archaeological mitigation measures to be implemented. Such sections should plan to anticipate delays or changes to excavation techniques based upon the likelihood of encountering burials or cultural layers. Consequently, consultation with the archaeological and burial staffs of the SHPD and Oahu Island Burial Council was recommended during the project's design phase when more design details and construction methods have been developed. Such consultation efforts would be intended to develop appropriate mitigative measures to address potential impacts on historic resources.

Effects On Historic Districts And Railway

The proposed fiber optic cable route should have no adverse effect on both the Hawaii Capitol Historic District and Chinatown Historical District. The project only involves the construction of underground fiber optic duct lines within the existing rights-of-way of established roadways. It would be no different from other water main or utility projects constructed within these districts. Installation of this project would not negatively alter, directly or indirectly, any of the characteristics associated with these historic districts such as historic buildings or other architectural features.

The project would similarly not negatively diminish the integrity of the Chinatown Historical District's location, the feeling for this district because cables would be located underground, or the effect on the district's association with the Chinese community, their business and social life. Being installed within present roadways, the project wouldn't effect or diminish the integrity of existing buildings or architectural features contributing to the district's cultural diversity and significance. The architectural design of culturally significant buildings within this district would not be affected, nor would the setting of this district area along with the workmanship or materials used to construct these buildings.

The project would not negatively diminish the integrity of the Oahu Railway and Land Company right-of-way because the fiber optic duct line would be installed under this railway where it crosses it. As a result, it would not affect the location of this railway right-of-way, or the railway's association with its historical use in the development of the sugar and pineapple industries. Crossing this railway wouldn't effect or diminish the integrity of the railway structure or features, its design, nor the workmanship or materials used to construct it.

Affects On Historic Bridges

The proposed fiber optic cable route will be located within existing highways and roadways, and would thus inevitably cross some historic bridges. The crossing of such streams or gullies associated with historic bridges would be determined on a case-by-case basis during the route's design. Such crossings could involve utilizing bridge attachments in accordance with State DOT or City design standards. Another method may involve utilizing trenchless construction methods to cross under such streams or gullies and thus not affect historic bridges.

If bridge attachments are installed in accordance with State DOT or City design standards, the fiber optic lines would be located under such bridges and will be out of public view where applicable. The lines installed would be on the order of about 8-inches in diameter and located about 12-inches under the bridge deck which is smaller and considerably lighter in comparison to water mains. Review of design plans will be conducted with either the State or City applicable agency. Therefore, installation of this fiber optic cable project would not negatively alter, directly or indirectly, any of the characteristics associated with historic bridges which qualified them for historic designation.

Section 106 Consultation

Since publication of the Draft EA, consultation efforts have been conducted with the SHPD and RUS to address compliance with Section 106 consultation under the National Historic Preservation Act. Such coordination included meetings, telephone conversations, correspondence, and the submittal of the archaeological assessment report prepared for the Island of Oahu to SHPD for their review. The category ratings assessment developed for the proposed fiber optic cable route was reviewed by SHPD, and they had expressed general concurrence with the findings and recommendations.

Based upon this consultation with SHPD, a Memorandum of Agreement (MOA) would be prepared to avoid potential adverse impacts to cultural layers or burials that may be encountered during construction activities. This MOA is proposed to have two stipulations addressing mitigative measures of which SIC is committed to implementing.

The first stipulation would include an archaeological monitoring plan developed for

construction of cable trenches associated with the project. Continuous on-site monitoring would occur for areas having a High and Very High rating potential for encountering burials of cultural layers. On-call monitoring with periodic site inspections would occur for other areas having a Low and Moderate rating probability of encountering burials during construction activities.

The second stipulation of the MOA would include a contingency plan specifying treatment steps to be implemented in the event burials are encountered. This contingency plan would be developed in consultation with the Oahu Island Burial Council. A presentation before the Oahu Island Burial Council was conduct on May 9th, and the Council was agreeable to working with SIC and SHPD in developing an acceptable contingency plan for implementation.

4.8.4 Cultural Assessment

The archaeological assessment conducted an extensive literature research of areas affected by the fiber optic cable route along with field inspections. This research provided considerable background information and discussion of the area of which information was available to make a reasonable assessment of the likelihood of traditional native Hawaiian cultural practices being significantly affected by the project.

Consequently, this project is not expected to significantly affect traditional native Hawaiian cultural practices occurring in the rights-of-way of existing roadways or other traditional cultural practices occurring in the adjacent area. There are no known traditional cultural practices occurring within the existing rights-of-way of public highways or roadways affected by the project since such areas are used for travel by vehicles most of which are heavily utilized. Adjacent properties along the majority of highways and roadways affected are also highly urbanized consisting of various types of developed commercial, residential, or industrial uses.

The project would also not restrict access to surrounding areas which may be used for traditional native Hawaiian cultural practices since the fiber optic cables would be installed underground within the rights-of-way of existing State highways and City roadways. Construction activities would result in temporary lane closures. However, this would not prevent access to shoreline areas or surrounding mauka areas that may be used for traditional gathering or other cultural practices.

The archaeological assessment did identify the potential likelihood of various fiber optic cable segments encountering cultural deposits or possible burials during construction work. This would be the only potential cultural resources which may be affected within roadways, however, whether any are actually encountered would only be determined during construction. If burials are encountered, necessary consultation and coordination would be conducted with the SHPD and Oahu Island Burial Council in compliance with Chapter 6E, HRS. Such activities may include the search and identification of lineal descendents to help determine the desired treatment of burials by the Oahu Island Burial Council. Therefore, consultation with the Oahu Island Burial Council and any lineal descendents recognized under Chapter 6E, HRS procedures

is the most appropriate and practical recourse for addressing traditional native Hawaiian cultural practices and resources.

As previously discussed, a MOA would be developed under the Section 106 consultation process to establish necessary mitigative measures of which SIC is committed to implementing. This MOA is proposed to have two stipulations addressing mitigation which includes establishing an archaeological monitoring plan and developing a contingency plan specifying treatment steps to be implemented in the event burials are encountered. This contingency plan will be developed in consultation with the Oahu Island Burial Council of which a presentation was already conducted by SIC, and consultation efforts are continuing.

4.9 AQUATIC AND MARINE RESOURCES

4.9.1 Aquatic Resources

The proposed fiber optic route would cross several perennial and intermittent streams as well as gulches, drainage canals, and ditches located throughout Oahu since the fiber optic routes would be constructed within major highways and roadways. Most of these streams have been channelized at roadway crossings and in urbanized areas for flood control purposes and to limit or prevent erosion. This channelization typically involves the lining, partial lining, or alteration of a stream course (HCPSU 1990). Major streams that would be encountered along existing highways and roadways affected by this project are summarized in Table 4.1, and a more detailed discussion of the streams is provided below.

Waianae District And Ewa Districts

Within the Waianae district, existing roadways affected by the fiber optic route would cross several streams of which Farrington Highway is generally the primary coastal highway facility crossing these streams. Most of these streams have been channelized at roadway crossings and in urbanized areas for flood control purposes. These streams include Kaupuni, Mailiilii, Nanakuli, Maili, and Ulehawa Streams. Kaupuni, Mailiili, and Nanakuli Streams have been identified as perennial streams of which Mailiilii Stream was identified as a continuous stream while the other two were interrupted. None of these streams were identified to consist of outstanding aquatic resources based upon the *Hawaii Stream Assessment* (HCPSU 1990).

In the Ewa district, the fiber optic route would traverse through several gulches some of which include the Kaloi, Makaiwa, and Makakiko gulches. The only identified perennial stream in the area is the Honouliuli Stream near West Loch. This stream was identified as an interrupted stream and did not have any outstanding aquatic resources (HCPSU 1990). Farrington Highway would generally be the main highway crossing these gulches and stream.

Table 4.1 Summary of Streams Along Proposed Fiber Optic Cable Route

DISTRICT	STREAM NAME	TYPE	AQUATIC RESOURCES*
Waianae District	1. Kapuni	Perennial (Interrupted)	Not Present
	2. Maililili	Perennial (Continuous)	Not Present
	3. Nanakuli	Perennial (Interrupted)	Not Present
	4. Ulehawa	Perennial (Interrupted)	Not Present
Ewa District	1. Honouliuli	Perennial (Interrupted)	Not Present
	2. Kaloi	Intermittent	Not Present
	3. Makaiwa	Intermittent	Not Present
	4. Makakilo	Intermittent	Not Present
Central Oahu District	1. Kapakahi	Tributary	Not Present
	2. Kaukonahua	Tributary	Not Present
	3. Waikele	Perennial (Continuous)	Not Present
	4. Kipapa	Tributary	Not Present
	5. Waikekalaua	Tributary	Not Present
North Shore District	1. Wahiawa Ditch	Intermittent	Not Present
	2. Poamoho Gulch	Intermittent	Not Present
	3. Helemano Ditch	Intermittent	Not Present
	4. Anahulu	Perennial (Continuous)	Substantial
	5. Paukauila	Perennial (Continuous)	Outstanding
Primary Urban Center District	1. Waiawa	Perennial (Interrupted)	Not Present
	2. Waimalu	Perennial (Continuous)	Not Present
	3. Aiea	Perennial (Interrupted)	Not Present
	4. Kalauao	Perennial (Continuous)	Not Present
	5. Halawa	Perennial (Continuous)	Not Present
	6. Moanalua	Perennial (Continuous)	Not Present
	7. Kalihi	Perennial (Continuous)	Moderate
	8. Kapalama	Perennial (Continuous)	Not Present
	9. Nuuanu	Perennial (Continuous)	Limited
	10. Makiki	Tributary	Not Present
	11. Ala Wai	Perennial (Continuous)	Moderate
East Honolulu District	1. Wailupe	Perennial (Interrupted)	Not Present
	2. Niu	Perennial (Interrupted)	Not Present
	3. Kuliouou	Perennial (Interrupted)	Not Present
Koolaupoko District	1. Puha	Intermittent	Not Present
	2. Waimanalo	Perennial (Continuous)	Moderate
	3. Muliwaolena	Intermittent	Not Present
	4. Mamalahoa	Intermittent	Not Present
	5. Maunawili	Perrennial (Continuous)	Limited
	6. Kahanaiki	Tributary	Not Present
	7. Kamooalii	Tributary	Not Present
	8. Keapuka	Intermittent	Not Present
	9. Kapunahala	Intermittent	Not Present
	10. Keaahala	Perennial (Continuous)	Moderate
	11. Heeia	Perennial (Continuous)	Moderate
	12. Ahuimanu	Perennial	Not Present
	13. Waiola	Intermittent	Not Present
	14. Kahaluu	Perennial (Continuous)	Moderate
	15. Waihee	Intermittent	Not Present
	16. Haiamoa	Intermittent	Not Present
	17. Kaalaea	Perennial (Continuous)	Moderate
	18. Waiahole	Perennial (Continuous)	Moderate

* As categorized in the HCPSU "Hawaii Stream Assessment – A Preliminary Appraisal of Hawaii's Stream Resources" (1990)

Central Oahu And North Shore Districts

In the Central Oahu district, the fiber optic route would follow Farrington Highway which cross Kaukonahua, Waikele and Kapakahi Streams in the Waipahu town area. The area surrounding these streams near the highway is characterized by extensive commercial and residential developments. Waikele Stream was identified as a perennial stream with continuous flow, but without outstanding aquatic resources. Through the Central Oahu corridor, Kamehameha Highway crosses the Kipapa and Waikakalaua Streams which serve as tributaries to Waikele Stream. The Wahiawa Reservoir which feeds into Lake Wilson is also crossed by the highway in Wahiawa (HCPSU 1990).

In the North Shore district, the fiber optic route following Kamehameha Highway would cross the Poamoho Gulch, Helemano reservoir ditch, Paukauila Stream, and the Anahulu River mouth near Haleiwa Boat Harbor. Paukauila Stream is a perennial stream with continuous flow and was the only stream along the proposed cable route identified as having outstanding aquatic resources including habitat supporting populations of native fishes (HCPSU 1990).

Primary Urban Center And East Honolulu Districts

Through the Primary Urban Center, the fiber optic route would cross several streams gulches and drainageways. These major streams have been channelized at particular roadway crossings where the fiber optic route would follow. The various streams crossed include Waiawa, Waimalu, Aiea, Kalauao, Halawa, Moanalua, Kalihi, Kapalama, Nuuanu, and Makiki Streams. The route also crosses the Ala Wai Canal as it travels along Kalakaua Avenue and McCully Street. These major streams are identified as perennial streams with either continuous or interrupted flows. However, none of them were identified as having important aquatic resources (HCPSU 1990).

Within East Honolulu, the proposed fiber optic duct line would cross Wailupe, Niu, Kuliouou Streams, as well as some unnamed intermittent streams and drainage canals. These major streams are crossed by Kalanianaole Highway. These three major streams are identified as perennial with interrupted flows, and do not have important aquatic resources. The fiber optic route would also cross Kuapa Pond near its mouth at Moanalua Bay (HCPSU 1990).

Koolaupoko District

In the Koolaupoko district, the fiber optic route would follow major highway facilities which cross several streams present on this Windward side of the island. These streams include Puha, Waimanalo, Muliwaolena, Mamalahoa, Maunawili, Kahanaiki, Kamooalii, Keapuka, Kapunahala, Keaahala, Heeia, Ahuimanu, Waiola, Kahaluu, Waihee, Haiamoa, Kaalaea, and Waiahole Streams. Several of these larger streams were identified as being perennial with continuous flows. However, none of them were identified as being streams with outstanding

aquatic resources. (HCPSU 1990).

Impacts And Mitigation

The fiber optic duct line project is not expected to have any long-term adverse impacts to existing streams or aquatic resources that may be present. The fiber optic line would be buried within the rights-of-ways of existing State and City roadways or attached to existing bridge structures. Thus, once constructed, the operation of these fiber optic lines would not change the character of these streams nor impact aquatic resources which may be present.

Short-term construction activities may have the potential to cause some minor impacts on streams depending upon the construction method utilized to cross them. Such impacts may involve erosion and sedimentation from runoff which could affect the water quality of streams. However, such impacts would be temporary and are not expected to cause a significant deterioration in the current water quality of streams.

Crossings for streams, canals, and gulches would be determined on a case by case basis during the design phase associated with the various segments being implemented. The design method selected would consist of either bridge attachments or trenchless methods to minimize disturbance to stream bed and banks and aquatic resources present within them. Attaching the fiber optic cable to existing bridges would be done in accordance with State and City design standards. Trenchless methods may include direction drilling beneath streams or gulches to minimize impacts on sensitive resources present. Therefore, such construction methods implemented should not have significant impacts on streams or important aquatic resources.

It should be noted that a Department of the Army Permit may not be required since the proposed construction methods may not affect jurisdictional waters. Nevertheless, appropriate consultation and coordination with the U.S. Army Corps of Engineers will be conducted during the design of the project to address the applicability of Department of the Army permits.

To further minimize impacts, Best Management Practices would be considered for incorporating into design plans at such crossings. Such practices would be implemented by the contractor to minimize erosion and other impacts. Appropriate coordination would also be conducted with pertinent agencies during the normal construction plan review process to address applicable regulations and other requirements to address concerns during the project's design.

4.9.2 Marine Resources

The proposed fiber optic route would travel near coastal marine resources in three areas on Oahu. These areas would be Lualualei Beach and Maili Point in the Waianae District, Paiko Lagoon, and Maunalua Bay (Hawaii Kai), and Wawamalu Beach in the East Honolulu District , and Kahaluu and Waiahole in the Koolaupoko District.

Marine resources in these districts may typically include fishes, crustaceans, molluscs, and amphibians, which in turn support populations of marine flora, fauna, and avifauna discussed earlier in this Chapter.

Impacts And Mitigation

The fiber optic project is not expected to have any long-term adverse impacts to existing marine resources that may be present in the area. The fiber optic line would be buried within the rights-of-ways of existing State and City roadways or attached to existing bridge structures. Thus, once constructed, the operation of these fiber optic lines would not impact such resources which may be present.

Short-term construction activities may have the potential to cause some minor impacts on coastal areas depending upon the construction method utilized to cross them. Such impacts may involve erosion and sedimentation from runoff which could affect the water quality of shoreline areas. However, such impacts would be temporary and are not expected to cause a significant deterioration in the current water quality.

To further minimize impacts, Best Management Practices would be considered for incorporating into design plans at such bridge crossings or along roadway sections situated near coastal waters. Such practices would be implemented by the contractor to minimize erosion and other impacts. Appropriate coordination would also be conducted with pertinent agencies during the normal construction plan review process to address applicable regulations and other requirements to address concerns during the project's design. It should be noted, that Department of the Army permits may not be required since construction activities may not affect jurisdictional waters. Nevertheless, appropriate consultation and coordination with this agency will be conducted during the design of the project to address the applicability of Department of the Army permits.

CHAPTER 5
INFRASTRUCTURE AND PUBLIC FACILITIES

This chapter addresses the project's probable effect on existing infrastructure within and adjacent to roadways affected by the proposed fiber optic cable route. This chapter also addresses public facilities affected by this project.

5.1 WATER FACILITIES

Water supply serving the Island of Oahu is provided by the City and County of Honolulu Board of Water Supply (BWS). Approximately 800,000 people are served by the system, which is comprised of 1,800 miles of pipeline making it one of the 10 largest in the United States. With the rights-of-way of both State highways and City roadways, the BWS has water mains and laterals located within paved travel lanes and along shoulder areas. Such water mains vary in size for particular areas on the island, but typically range from 8-inches up to 30-inches in size.

Probable Impacts On Water Facilities

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

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

5.2 WASTEWATER FACILITIES

Sanitary sewer systems are present within both State and City roadway rights-of-way. These sewer systems consist of various sizes of sewer mains and pump station which are primarily owned and maintained by the City Department of Environmental Services. Within the Hawaii Kai district of East Honolulu, the existing sewer system serving this area is privately-owned and operated by the Hawaii American Water Company.

Probable Impacts On Wastewater Facilities

Potential impacts on the City's and other privately-owned wastewater facilities associated with the project would be limited to only short-term construction related activities. Since the project consists of fiber optic cables, this project would not have any long-term impacts on these wastewater facilities once constructed.

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

5.3 DRAINAGE FACILITIES

Stormwater conveyance systems including culverts, inlets, catchbasins, and storm sewer lines are present within State and City roadway rights-of-ways. The majority of these facilities are maintained by the City.

Probable Impacts On Drainage Facilities

Potential impacts on drainage facilities associated with the project would be limited to only short-term construction related activities. Since the project consists of underground fiber optic fiber optic cables, this project would not have any long-term impacts on these facilities once constructed.

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

5.4 SOLID WASTE

Residential and commercial solid waste is hauled to landfills, transfer stations, or the H-POWER plant located at Campbell Industrial Park. Waimanalo Gulch Landfill is located on the west side of Oahu, and accepts residential, commercial, and non-hazardous industrial solid waste, demolition debris, and ash residue from the H-POWER waste to energy facility. Waimanalo Gulch and H-POWER accept all of the island-wide solid waste.

Probable Impacts On Solid Waste Facilities

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 fiber optic cable material will also be generated in small amounts throughout the project. Other solid waste such as vegetation along unpaved roadway shoulders will be properly disposed of.

The contractor will be responsible for properly disposing of all solid waste generated from the installation of the fiber optic cables. Therefore, construction of the fiber optic cable system will generate relatively small amounts of solid waste typical of normal construction related activities, and will thus not have a significant impact on existing solid waste disposal facilities.

5.5 TRANSPORTATION FACILITIES

The fiber optic cable routes proposed for Oahu would affect several State and City roadway facilities. Chapter 2 identified these roadways which would be affected by Development Plan area and under Table 2.1. Figures included in that chapter also showed the routes along these roadways.

The great majority of roadways affected would consist of State highways which include Farrington Highway, Kamehameha Highway, Nimitz Highway, and Kalanianaole Highway as previously shown in Chapter 1. These highway facilities are composed mainly of two- and four-laned highway facilities through more rural and agricultural districts such as Waianae, Ewa, Central Oahu, North Shore, Waimanalo, and Kahaluu. Within more urbanized areas such a the Primary Urban Center and East Honolulu, these highway facilities typically range from four- to six-lanes.

City roadways affected by the project are generally located within the more urbanized areas of the Primary Urban Center and East Honolulu. The majority of City roads affected would occur between the corridor from Kalihi through Kakaako to Kahala. The other major area where City roads would be used is in the Hawaii Kai community. These City roads affected typically range from 2- to 4-lanes.

Probable Impacts On Transportation Facilities

The proposed fiber optic cable project will not have any long-term impacts on both State and City transportation facilities since the duct lines would be located underground. As a result, the project would not generate additional traffic volumes along roadways or increased congestion at particular intersections or areas during the peak commuter periods.

Potential short-term impacts on transportation facilities would inevitably be associated with temporary construction activities. Installation of the fiber optic duct lines would create a short-term impact on traffic flow in areas affected due to lane closures during construction activities. Additionally, City bus stops may be temporarily impacted as a result of construction activities. However, these impacts would be minor in nature and could potentially result in the temporary relocation of bus stops. A traffic monitoring plan would be prepared during the project's design to minimize disruptions to travel lanes and vehicular traffic along roadways. This plan would be coordinated with either the applicable State or City agency during the project's design for review and approval for implementation by the contractor. Consequently, the project is not expected to have a significant impact on transportation facilities.

5.6 ELECTRICAL AND COMMUNICATION FACILITIES

Electrical services are provided to urbanized areas on Oahu by Hawaiian Electric Company, Inc. (HECO) via their island-wide distribution network. Their electrical distribution system generally consists of both overhead and 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 Oceanic Cable. Services are primarily distributed via both underground and overhead lines following highways and roadways.

Probable Impacts On Electrical And Communication Facilities

The proposed project is not expected to have a significant impact on existing electrical facilities or HECO's ability to provide electricity. The fiber optic cables installed should create minimal additional demands on HECO'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 would be conducted during the design and construction of this project to minimize disruptions to their services and existing underground lines.

5.7 RECREATIONAL FACILITIES

The proposed fiber optic cable project traverses nearby several large and smaller recreational facilities throughout Oahu. Such recreational facilities include beach parks, popular fishing and surfing spots, golf courses, and district and neighborhood parks.

Waianae and Ewa Districts

Farrington Highway is a major highway facility travelling along the coastline that would be used for the fiber optic cable route through the Waianae district. As a result, the fiber optic cable route along this highway would pass by several beach parks which include Pokai Bay Beach Park, Lualualei Beach Park, Maili Beach Park, Ulehawa Beach Park, and Nanakuli Beach Park.

Within the Ewa district, the fiber optic cable route would generally continue following Farrington Highway after being routed through the City of Kapolei. Beach parks located in the vicinity of the fiber optic cable route in this district include "Tracks" Beach Park and Kahe Point Beach Park. Past the Kahe Power Plant, the fiber optic cable route would be located through inland areas. Existing recreational facilities along this inland route include the Kamokila Community Park, Ko Olina Golf Club, Kapolei Regional Park, Kapolei Golf Course, and West Loch Golf Course.

Central Oahu and North Shore Districts

In the Central Oahu district, the fiber optic cable route would follow Kamehameha Highway which is routed through much open agricultural land areas. Recreational facilities situated along this fiber optic cable route on in the immediate vicinity includes Waipahu Cultural Park, Central Oahu Regional Park, and Melemanu Neighborhood Park.

Through the North Shore district, the fiber optic cable route would follow along Kamehameha Highway through agricultural fields for most of the entire way. Thus, the only recreational facilities in the immediate vicinity would be Haleiwa Beach Park near the Haleiwa Boat Harbor.

Primary Urban Center

Within the Primary Urban Center, there are many types of recreational facilities located in the immediate vicinity of the fiber optic cable route. The majority of these facilities involve district or neighborhood parks. Those facilities identified from Pearl City to Kalihi include Pacheco Neighborhood Park, Neil S. Blaidsdell Park, and Keehi Lagoon Beach Park. In the downtown to Kakaako corridor, recreational facilities include Aala Park, Irwin Park at Aloha Tower Marketplace, Queen Emma Square, and Kamamalu Neighborhood Park.

Within the Kakaako to Kahala section of this district, recreational facilities in the immediate vicinity include Mother Waldron Neighborhood Park, Ala Wai Community Park, the Ala Wai Canal which is frequently used for canoeing activities, Ala Wai Golf Course,

Kapaolono Community Park, Kaimuki District Park, Kahala Community Park, and the Waialae Golf Course.

East Honolulu and Koolaupoko Districts

The fiber optic cable route through the East Honolulu district follows Kalanianaole Highway along the coastline until it connects with Lunalilo Home Road in Hawaii Kai. There are several beach parks located along this coastline which include Waialae Iki Neighborhood Park, Wailupe Beach Park, Kawaikui Beach Park, and Maunalua Bay Beach Park. In the Hawaii Kai community, recreational facilities along roadways affected include Kamiloiki Community Park, Hawaii Kai Golf Course, Sandy Beach Park, and Wawamalu Beach Park, and Makapuu Point Lookout.

The Koolaupoko district is comprised of several large districts which include both beach and community parks. In Waimanalo, the route passes along Makapuu Beach Park, Kaupo Beach Park, Kaiona Beach Park, Waimanalo Bay Beach Park, and Olomana Golf Course just before entering Kailua.

In the Kailua to Kaneohe districts, facilities encountered included Pohakupu Mini Park at Castle Memorial Hospital, Pali Golf Course, Kaneohe District Park, and Ahuimanu Community Park. From Kahaluu to Waiahole, the only recreational facilities present are Kahaluu Regional Park and Waiahole Beach Park.

Probable Impacts On Recreational Facilities

The fiber optic cable project should not have any long-term impacts on recreational facilities since the duct lines would be located underground within the rights-of-way of both State and City roadways. As a result, the project would not restrict access to recreational facilities or the activities conducted there. Construction activities would inevitably have some minor short-term impacts on recreational facilities. Such impacts would 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 would be prepared during the project's design to minimize disruptions to travel lanes and vehicular traffic along roadways. This plan would be coordinated with either the applicable State or City agency during the project's design for review and approval for implementation by the contractor. In addition, the contractor would 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 significant impact on recreational facilities.

5.8 EDUCATIONAL FACILITIES

The proposed fiber optic cable route would utilize major highways and City roadways of which several educational facilities are either located along such roadways or at intersections.

Consequently, there are several educational facilities situated in the immediate vicinity of the fiber optic cable route. These facilities include private and public pre-schools, elementary schools, high schools, and colleges.

Waianae and Ewa Districts

Educational facilities adjacent to the proposed fiber optic cable alignment in the Waianae District include Waianae Elementary School, Waianae Community Center, and Nanaikapono Elementary School.

There are no educational facilities adjacent to the proposed fiber optic cable alignment in the Ewa District.

Central Oahu and North Shore Districts

In the Central Oahu District, educational facilities adjacent to the fiber optic cable route include Waipahu Intermediate School, St. Joseph School, Waipahu High School, Mililani Uka Elementary School, and Mililani High School.

There are no educational facilities adjacent to the proposed fiber optic cable alignment in the North Shore District.

Primary Urban Center and East Honolulu District

Educational facilities adjacent to the proposed fiber optic cable alignment in the Primary Urban Center include: Kalihi Kai Elementary School, Honolulu Community College, Thomas Jefferson School, Kapiolani Community College, Kaimuki Intermediate School, and Kahala Elementary School.

Educational facilities within the East Honolulu District in the project vicinity include: Star of the Sea, Kalani High School, Aina Haina School, Holy Nativity School, Holy Trinity School, Koko Head Elementary School, Kaiser High School, and Kamiloiki School.

Koolaupoko District

Educational facilities adjacent to the proposed fiber optic cable alignment in the Koolaupoko District include: Waimanalo Elementaty and Intermediate School, Kawaialoa Training School for Girls, Maunawili Elementary School, Hawaii Pacific University, Kaneohe Elementary School, Ahuimanu Elementary School, and Waiahole Elementary School.

Probable Impacts On Educational Facilities

The fiber optic cable project should not have any long-term impacts on educational facilities since the duct lines would be located underground within the rights-of-way of both State and City roadways. The project would therefore not restrict access to educational facilities the activities conducted there, or place additional demands staff requirements. Construction

activities would inevitably have some minor short-term impacts on educational facilities. Such impacts would 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 would be prepared during the project's design to minimize disruptions to travel lanes and vehicular traffic along roadways. This plan would be coordinated with either the applicable State or City agency during the project's design for review and approval for implementation by the contractor. In addition, the contractor would be required to comply with other State DOH regulations covering construction noise and fugitive dust emissions. The applicant will also require the contractor to provide at least two weeks advance notice to schools located in the immediate vicinity of construction activities. Consequently, the project is not expected to have a significant impact on educational facilities.

5.9 MEDICAL FACILITIES

There are four major medical facilities situated along major roadways or highways of which the fiber optic cable would be routed along. These facilities consist of St. Francis Hospital–West in Ewa, Hale Mohalu Hospital in Pearl City, Leahi Hospital in Kaimuki, and Castle Medical Center in Kailua.

The fiber optic cable project should not have any long-term impacts on these medical facilities since the duct lines would be located underground within the rights-of-way of both State and City roadways. Therefore, the project would not restrict access to medical facilities or the activities conducted there. Construction activities would inevitably have some minor short-term impacts on these facilities. Such temporary impacts would 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 would be prepared during the project's design to minimize disruptions to travel lanes and vehicular traffic along roadways. These medical facilities are also air conditioned which further reduces outside noise sources and minimizes dust or other air pollutants from entering the facility. This plan would be coordinated with either the applicable State or City agency during the project's design for review and approval for implementation by the contractor. In addition, the contractor would 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 significant impact on these facilities.

5.10 POLICE AND FIRE PROTECTION

The Honolulu Police Department (HPD) has law enforcement jurisdiction throughout the entire island of Oahu. There are 8 patrol districts and 13 stations located throughout the island.

The Honolulu Fire Department (HFD) has fire protection jurisdiction throughout the entire island of Oahu. The island is divided into five battalions which include 42 engine companies, 13 ladder companies, two rescue companies, one hazardous materials company, one snorkel company, one fireboat company, five tankers, one helicopter, and one helicopter tender. HFD currently has a force of over 1,000 fire fighters, making it the 12th largest in the United States. Emergency Medical Technicians (EMT's) and ambulances are also based out of HFD fire stations.

Probable Impacts On Police And Fire Protection

The proposed fiber optic cables should not have any long-term adverse impacts on the police or fire department's ability to provide protective services on Oahu. Once the fiber optic cable lines are installed, there would be no personal or business activities occurring with these underground cables 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 would be short-term, utilizing off-duty police officers. The contractor would 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 would 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 would be provided throughout the construction work installing the fiber optic cable lines. The Fire Communication Center would 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 Fire Department's operations or ability to provide protective services.

CHAPTER 6
ECONOMIC AND SOCIAL FACTORS

6.1 ECONOMIC AND FISCAL FACTORS

Construction of the fiber optic cable project should have a minor positive economic impact associated with the creation of short-term design-engineering and construction related jobs. Additionally, the maintenance and servicing of the fiber optic telecommunications lines will support several new permanent jobs including field and office positions.

Project-Related Jobs And Income

The projected preliminary construction budget for the fiber optic cable project is estimated to be approximately $35 million. As a result, the construction of this project would create several construction jobs over the anticipated 3-year construction period. Construction of the project would also generate additional personal income for construction workers. Personal income is defined as the wages paid to the direct construction workers or operational employees associated with a development.

Direct construction jobs created would typically consist of on-site laborers, tradesmen, equipment operators, supervisors, etc. Engineering jobs associated with the design and construction management work would typically consist of surveyors, design engineers, and administrative staff. It is anticipated that these project-related jobs would likely be filled by residents from the Island of Oahu employed within the engineering and construction fields.

It was estimated that a total of about 280 full-time direct construction jobs would be created over the entire construction period which translates into about 93 new construction jobs per year. Direct jobs created would also stimulate indirect and induced employment within other industries on the island such as retail, restaurants, material distributors, and other related businesses. This would also generate on the order of about 360 total additional indirect and induced jobs over the 3-year construction period resulting from the income spent by direct construction jobs.

Fiscal Factors

Fiscal impacts associated with this project would primarily involve additional tax revenue generated to the State resulting from the spending of money for the project's construction. Since City revenues are primarily limited to property tax revenues, there should be minimal changes to City revenues. However, easement fees for granting the installation of fiber optic cables within both State and City rights-of-way would generate some additional income for both the State and City.

Tax revenue sources for State government are composed primarily of general excise taxes (GET) on development costs and construction materials, along with corporate income tax. In addition, GET taxes on indirect and induced income spent stimulated by the spending of direct income would also contribute new revenues to the State.

Based upon the $35 million construction budget estimate, this project would generate about $725,000 in additional State income tax revenue given the estimated new direct construction related jobs created. It was estimated that about $2.14 million in GET revenue would be generated by the various State GET taxes which includes corporate tax and GET tax on construction materials, costs, along with direct, indirect, and induced income spent. Thus, additional State revenues generated by the project would amount to about $2.84 million.

This project is not expected to generate any new in-migrant residents to the Island of Oahu to fill short-term construction related jobs. As a result, there should not be any impact on State and County operational expenditures for public services serving the island.

6.2 SOCIAL IMPACT FACTORS

The resident population for the Island of Oahu was estimated to be about 870,900 in 1995. This reflects a slight increase in population of less than 1 percent annually from about 838,000 persons in 1990 (DBEDT 1997).

The 1990 Census data showed that the Honolulu division was the island's largest population center with about 377,000 people. Honolulu includes the communities form Red Hill to Makapuu Point, and mauka to the ridgeline of the Koolau Mountains. Other major areas included Ewa with about 230,200 and Koolaupoko with 117,700 persons. The smaller census divisions of Waianae had about 37,400 persons and Wahiawa with about 43,900 persons (DCC 1991).

Housing in Honolulu consists of single-family dwellings, duplexes, townhouses, condominiums, and apartments. Single-family dwellings are found primarily in neighborhoods such as Kalihi-Palama, Kahala, Mililani, Hawaii-Kai. Waimanalo, and Waianae. The more inner-city urban neighborhoods such as Makiki, Waikiki, and Nuuanu are characterized by low-rise and high-rise condominiums and apartments. Wahiawa, and Kaneohe have the majority of military housing units which consists of various types.

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. The fiber optic cable project is also not expected to significantly disrupt or change the unique characteristics associated with each community. The fiber optic cable lines would be located underground within existing State highways and City roads. As a

result, these lines would not be visible or disrupt activities occurring in affected communities.

6.3 SECONDARY AND CUMULATIVE IMPACTS

Interaction With Other Planned Projects

There are various State DOT highways and City roadway or utility projects planned on the Island of Oahu over the next several years as part of their yearly implementation of programmed highway improvements and City Capital Improvements Program (CIP). Such infrastructure projects typically include new water mains, sewer lines, roadway resurfacing, and drainage improvements. In addition, there other private utility projects being implemented such as those by Hawaiian Electric Company, Inc. or other communication companies. As a result, some of these projects have implications for the proposed SIC fiber optic duct line project in terms of construction scheduling.

To address such interaction with other roadway and utility projects, SIC is conducting appropriate coordination with both the State DOT and City. Representatives from SIC are members of the Mayor's Utilities Coordination Committee which includes the BWS and other major utility companies. The objective of this committee is to better coordinate the scheduling of construction projects among utility companies to minimize construction-related disruptions to communities. In addition, SIC is a member of a similar committee established by the State DOT to also address coordination of projects on their highways. SIC has been attending regular meetings with these committees, and is working with the involved parties to coordinate their construction of the fiber optic duct line project.

In addition, SIC has been open to consider coordinating their construction activities with other private utility companies implementing projects in the same corridor where feasible. One example is in the Waianae district where SIC has been discussing the possibility of coordinating construction activities or sharing trench with another private utility company proposing a similar project along this coastline. Therefore, SIC is taking appropriate measures to coordinate their fiber optic project with other utility companies, State, or City projects to minimize disruptions. Their participation on the utility coordination committees will also help address construction of their other route segments planned over the next few years.

Secondary Impacts

Secondary impacts, or indirect effects, are effects which are caused by an action and are later in time or farther removed in distance , but are still reasonably foreseeable. Such effects may include growth inducing impacts and other effects related to changes in land use patterns, population density or growth rate, and related effects on air, water, and other natural systems. The proposed fiber optic duct line project is expected to have minimal secondary impacts on resident population, land use patterns, public facilities and infrastructure, and the natural environment.

SIC is licensed to provide emergency, basic, and advanced telecommunication services to DHHL properties at a cost regulated by the Public Utility Commission's tariff. As a result, the impacts associated with this project are primarily associated with only construction related activities. As previously discussed, this project would generate short-term construction-related and engineering jobs associated with the design and construction of the project. This project would also generate some full-time employment for the operation of the system.

However, creation of short-term construction jobs and some operational jobs are not expected to generate substantial in-migration to the Island of Oahu to fill these jobs generating a significant indirect increase in resident population, housing, and demand for public facilities. SIC is committed to fill positions using existing residents along with qualified local contractors to construct the project.

This project is not expected to result in other indirect effects such as the development of several large high-tech centers on Oahu. Development and feasibility of such high-tech centers are dependent upon several other more important factors such as business climate, education, labor force, etc. The availability of fiber optic duct lines represents only one very small component that may not even be suitable in the future given the rapid changes in technology occurring.

The project objective is to provide emergency, basic, and advanced telecommunication services to DHHL parcels, and this fiber optic duct line would allow SIC to provide such service. A question of non-DHHL beneficiaries using this service is not an issue since it would not generate significant secondary effects. SIC has no immediate plans for the use of this network and availability to non-DHHL beneficiaries.

Cumulative Impacts

Cumulative impacts are impacts on the environment which results from the incremental impact of a project when added to past, present, and reasonably foreseeable future actions. The impacts associated with the fiber optic duct line project are primarily associated with construction related impacts. As already discussed, other State, City, and utility projects being implemented and programmed in the immediate future may involve similar construction related impacts on roadways where the proposed fiber optic duct line is planned.

Since these effects are essentially construction related, the cumulative impact of them are not expected to be significant because they would be short-term and not create adverse impacts on the environment. Appropriate Best Management Practices would be incorporated to minimize impacts, construction plans would be reviewed by agencies as part of the normal design review, and the contractor would need to meet all pertinent State and City requirements concerning construction activities.

This land based fiber optic system for Oahu is an independent system to provide emergency, basic, and advanced telecommunication services to DHHL properties. If for some reason one island system could not be constructed, it would not prevent the other islands from being constructed and operated independently. Therefore, potential cumulative impacts from development of the other island systems would not be significant or adverse as such impacts would similarly be short-term and construction related.

Construction related issues and mitigation are thus better addressed at each county level since they are more applicable to the communities there as well as being regulated by County agencies. Similarly, archaeological concerns such as burials during construction are addressed at the county or island level because established island burial councils have jurisdiction in addressing such issues. Based upon meetings held with the State OEQC in May and October of last year, this project was discussed and agreed that separate environmental assessment documents for each county were thus more appropriate and should be prepared as such. Environmental documents have been prepared and published for public comments for each county.

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. However, these undersea cables are not required or integrally related to the provision of providing basic essential telecommunication services to DHHL. There are no specific landing sites established at this time as SIC still needs to conduct planning and feasibility studies to evaluate them. SIC would like to pursue landing sites in the regions of Waianae, Waimanalo, and Haleiwa. However, there are no specific locations or sites established at this time which can be reasonable or adequately addressed. Meetings held with the State OEQC last year discussed this and it was agreed that an appropriate environmental document will be prepared later to address these landings sites once project details are established.

SIC is proposing to construct a network operations center in Mililani on 10 acres that will also serve as the company headquarters. This facility would function as the system's control center, and a separate environmental document has been prepared for this project to address its impacts. This center is separate from the fiber optic duct lines proposed to be constructed within highways and roadways. However, the cumulative impacts resulting from the fiber optic cable and operations center should not be significant or adverse.

Impacts associated with the fiber optic cable project would be associated with construction related activities whereas the operations center would have both construction and some operational effects at the proposed site.

CHAPTER 7
CONFORMANCE WITH PLANS AND POLICIES

This chapter discusses the project's conformance with the State Land Use District regulations, the City's General Plan and Development Plan goals and policies, the Special Management Area objectives and policies, and Zoning District standards.

7.1 STATE LAND USE DISTRICT

Portions of the State and City roadway rights-of-ways to be utilized by the proposed fiber optic routes fall within three of the State Land Use Commission's district classifications. These land use districts include the Urban, Agricultural, and Conservation Districts. Chapter 1 previously identified those sections of the fiber optic routes which are situated within the Agricultural District and Conservation District.

The vast majority of roadway facilities affected by the project would occur within the Urban District. Land uses and activities occurring within the Urban District fall under the jurisdiction of the City. Discussion of the project in relation to the Agricultural District regulations and Conservation District regulations are provided.

Agricultural District

The purpose of the State Agricultural District is to maintain a strong agricultural economic base and prevent unnecessary conflicts among compatible uses (State of Hawaii 1998). Under Chapter 205, HRS, the accommodation of utilities is identified as one of various permissible uses within this district.

"Section 4.5 – Permissible uses within the agricultural district

(a)(7) Public, private, and quasi-public utility lines and roadways, transformer stations, communications equipment building, solid waste transfer stations, major water storage tanks, and appurtenant small buildings such as booster pumping stations, but not including offices or yard for equipment, material, vehicle storage, repair or maintenance, treatment plants, or corporations yards, or other like structures."

The rural fiber optic cable improvements being proposed by SIC would satisfy this condition because SIC is a rural telephone company regulated under the State Public Utilities Commission. Consequently, this project is a permitted use within the Agricultural District and its implementation will be consistent with the regulations and requirements described under this District.

Conservation District

The Conservation District is generally intended to protect and preserve lands with natural resource and other values necessary to the future welfare of the State (State of Hawaii 1998). According to Title13, Chapter 5, Subchapter 3, HAR, which governs uses within the State Conservation District, public purpose uses are permitted subject to a permit from the Board of Land and Natural Resources. Consequently, the proposed project would satisfy this use classification as a public purpose use because it is a communication system being constructed. According to Title 13, Chapter 5, Subchapter, P-6, HAR:

> *"P-6 Public Purpose Uses*
>
> *Land uses undertaken by the State of Hawaii or the counties to fulfill a mandated governmental function, activity, or service for public benefit and in accordance with public policy and the purpose of the conservation district. Such land uses may include transportation systems, water systems, communication systems, and recreational facilities."*

Discussions with Department of Natural Resources (DLNR) staff indicate that the proposed underground fiber optic cables may not necessarily require a Departmental or Board permit because it would be located within existing State rights-of-way. As a result, such utilities could be considered as an "accessory use" to the existing roadways. However, appropriate coordination would need to be conducted with DLNR during the design or various route segments to address the applicability of permit requirements and other coordination matters. Such coordination would include submittal of construction plans for route segments affecting Conservation District lands along with a letter request for their review and determination.

7.2 CITY & COUNTY OF HONOLULU GENERAL PLAN

This project would generally conform to and be consistent with applicable objectives and policies described under the City and County of Honolulu General Plan (DGP 1992). These objectives and policies include:

Economic

1. *Goals:*
   a. *Provide residents with opportunities to improve their quality of life.*
   b. *To prevent the occurrence of large scale unemployment.*
2. *Policies:*
   c. *The City & County of Honolulu shall strive for full employment.*

   The fiber optic telecommunication line project would be consistent with these goals and policies as the project will create employment opportunities in engineering, construction and technical support positions. The project would thus contribute to the City's policy for full employment.

C. *Natural Environment*

1. *Goals:*
   a. *To protect and preserve the natural environment.*
   b. *To preserve and enhance the natural monuments and scenic views of Oahu for the benefit of both residents and visitors.*
2. *Policies:*
   a. *Protect Oahu's natural environment, especially the shoreline, valleys, and ridges, from incompatible development.*
   b. *Protect Oahu's scenic views, especially those seen from highly developed and heavily traveled area.*

The project would be consistent with these goals and policies to improve the island's natural environment. This project will be taking appropriate action and preventive measures through implementation of the fiber optic cable. Since the fiber optic cable will be installed underground or attached to existing bridges / overpasses along state highways and city roadways it will preserve all natural monuments and scenic views for all residents and visitors. The proposed project will be installed within existing road right of ways which is also consistent with the goal to protect Oahu's natural environment. Implementation of this project would be designed to meet all applicable Federal, State and City regulations to protect the environment.

D. *Transportation and Utilities*

1. *Goals:*
   a. *To maintain a high level of service for all utilities.*
   b. *To maintain transportation and utility systems which will help Oahu continue to be a desirable place to live and visit.*
2. *Policies:*
   a. *Provide improvements to utilities in existing neighborhoods to reduce substandard conditions.*
   b. *Plan for the timely and orderly expansion of utility systems.*
   c. *Require the installation of underground utility lines wherever feasible.*

The project would be consistent with these goals and policies for transportation and utilities. The fiber optic cable will be installed underground within existing State and City roadway rights-of-way. This project would support development of DHHL homestead properties by providing a modern communication system. The timing and construction of this project is planned to be completed in a timely manner, and construction plans are being coordinated with the State and City as part of their efforts to better coordinate construction projects occurring on the island.

7.3 SPECIAL MANAGEMENT AREA

This chapter discusses the project's conformance with the City and County of Honolulu's Special Management Area objectives and policies as prescribed under the Hawaii Revised Statutes, Chapter 205A Special Management Area.

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 by;*

   The telecommunication line project would not damage coastal resources having significant recreational value in the immediate area. The project would run fiber optic cables along segments of the existing roadways and state highways. Therefore, it should have minimal effort on these resources.

2. *Historic Resources:*

   a. *Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*

   The project should not have significant adverse impacts on any historic or natural resources in the coastal zone management that are significant to the Hawaiian and American history as discussed in this document. The fiber optic cable will be located within existing City and State roadway rights-of-way and would be located underground about 3 feet deep. In addition, appropriate

mitigation and monitoring plans would be developed in consultation with the SHPD for implementation by the contractor.

3. *Scenic and Open Space Resources:*

   a. *Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources*

The project is not expected to adversely impact the shoreline, public views, or the surrounding environment as discussed in this policy. This fiber optic telecommunication line project will be constructed underground along existing City and State roadways and highways, therefore, it will not disrupt any scenic and open space resources.

4. *Coastal Ecosystems:*

   a. *Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems*

The project is expected to have minimal or no impact on existing coastal ecosystems of significant biological importance. There are no known rare, threatened or endangered species or habitats within the proposed fiber optic cable alignment. Construction activities would be conducted utilizing Best Management Practices to minimize construction-related impacts. As a result, this project should not negatively impact coastal water ecosystems and streams, and is consistent with the policy of promoting water quality planning and management practices.

5. *Economic uses;*

   a. *Provide public or private facilities and improvements important to the State's economy in suitable locations*

   b. *The development is important to the State's economy.*

The proposed fiber optic cable route will be located within existing State and County right of ways where other utilities and infrastructure are usually located. Thus, the fiber optic route utilizes existing suitable transportation corridors to provide high-speed telecommunications capabilities to DHHL properties throughout the island of Oahu. The project is important to the State's economy because it will create several construction and long-term jobs, and will provide needed infrastructure to DHHL homestead areas. This system would also allow for internet education, health care, telecommuting, and state of the art technological capabilities to DHHL beneficiaries.

6. *Coastal hazards;*

   a. *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.*

   The project would be consistent with this policy. The fiber optic telecommunication line project will run along the city and state roadways and highways, and it will buried three feet underground. Therefore, it will not impact any coastal hazards that will reduce any life property from tsunami, storm waves, stream flooding, erosion, subsidence and pollution.

7. *Managing development:*

   a. *Improve the development review process, communication, and public participation in the management of coastal resources and hazards.*

   Early consultation with review agencies and publication of this environmental assessment as part of the State's environmental review procedures will be consistent with this policy. The process allows for public review of the project and participation to express comments and concerns which are addressed through mitigative measures that help minimize impacts to coastal resources.

8. *Public participation:*

   a. *Stimulate public awareness, education, and participation in coastal management.*

   Early consultation with agencies and the publication of this document helps stimulate public awareness and participation in coastal management. The environmental assessment process allows for public review of the project and participation expressing comments and concerns which are addressed through mitigative measures that help minimize impacts to coastal resources.

9. *Beach protection:*

   a. *Protect beaches for public uses and recreation.*

   The proposed project will occur within the existing right of ways of State and County roadways, and consequently, will have minimal impact on beaches or related recreational resources.

10. *Marine resources;*

    a. *Implement the State's ocean resources management plan.*

    The project does not involve the use of ocean resources, or is it expected to significantly impact marine resources. Best management practices would be implemented to minimize short-term effects typically associated with construction activities.

7.4 DEVELOPMENT PLANS

This chapter discusses the project's conformance with applicable objectives and policies associated with the City's Development Plans.

7.4.1 Waianae Sustainable Communities Plan

1. Preservation of Open Space

a. Preserve and protect open space and scenic beauty.

The proposed fiber optic cables system will be located about three feet below grade within the existing (ROWs) of State highways and County roads. In this manner, the project will be consistent with the Development Plan policy on the preservation and protection of open space and scenic beauty.

2. Preservation of Coastal Lands

a. No new coastal development makai of Farrington Highway.

The proposed fiber optic cable system is planned to be buried on the mauka side of Farrington Highway and other coastal roadways if allowable by State and City agencies. The project would thus not involve new developments of properties makai of Farrington Highway.

3. Preservation of Streams and Stream Floodplains

a. Restrict uses within stream conservation corridors to those uses that will not have an adverse impact on stream ecosystems.

The proposed fiber optic cable system will utilize existing bridges culverts, and other existing stream crossing structures in order to avoid adverse impact on stream ecosystems. In the event that no bridge, culvert or other stream crossing structure is available, the fiber optic cable would be installed beneath the stream corridors through use of trenchless technology to minimize disruptions to stream ecosystems.

4. Policies Pertaining to Historic and Cultural Sites

a. Preserve and protect major concentrations of cultural sites.

b. Preserve other scattered important cultural sites.

An archaeological assessment of the entire fiber optic cable alignment has been conducted to identify the location of known and potential cultural sites within the project area. Research and coordination between project archaeologists, SHPD, and contractor will assure that any cultural sites found to be present within the project corridor are adequately protected, and necessary mitigative measures such as a monitoring plan are implemented.

5. ***Residential Land Use***

   a. *No increase in lands designated for residential use.*

   b. *Coordination with DHHL important.*

   The proposed project will be contained within existing road right of ways, and will not increase lands designated for residential use. The Applicant has a license agreement with DHHL to provide the fiber optic cable system for DHHL properties. As a result, appropriate coordination with DHHL is on-going and continuing.

6. ***Electrical power and Communications***

   a. *Reducing the visual impact of power lines and utility poles, especially along Farrington Highway.*

   The proposed fiber optic cable will be buried within the right of ways of existing State and County roadways thereby eliminating the need for above ground utility poles which may cause visual impacts.

7.4.2 Ewa Development Plan

1. ***Open Space Preservation and Development***

   a. *Protect scenic views and provide recreation*

   The proposed fiber optic cable will be buried beneath the right of ways of existing State and County roadways, and will not impact scenic views throughout the area.

2. ***Historic and Cultural Resources***

   a. *Significant historic features from the plantation era and earlier periods should be preserved.*

   b. *Whenever possible, significant vistas should be retained.*

   An archaeological assessment of the entire proposed fiber optic cable alignment was undertaken to identify known or potential areas of cultural deposits and other historic or prehistoric sites. The project archaeologists will continue to coordinate research and findings with SHPD and the contractor, and appropriate mitigative measures such as a monitoring plan would be implemented to minimize impacts on archaeological sites. Significant vistas will be retained as the fiber optic cable will be buried.

7.4.3 Primary Urban Center Development Plan (Public Review Draft)

1. ***Mauka Conservation and Access***

   a. *Prevent the visual intrusion of structures, including utility and telecommunications installations, when seen from below and from hiking trails and camping grounds.*

   The potential impacts on scenic and mauka views with this project would only be associated with short-term construction activities. In addition, the fiber optic cable lines will buried underground along the City and State ROW's, therefore, is should be consistent with this policy.

2. ***Historic and Cultural Resources***

   a. *Preservation and Protection*

   b. *Accessibility*

   An archaeological assessment of the entire proposed fiber optic cable alignment was undertaken to identify known or potential areas of cultural deposits and other historic or prehistoric sites. The project archaeologists will continue to coordinate research and findings with SHPD and the contractor, and appropriate mitigative measures such as a monitoring plan would be implemented to minimize impacts on archaeological sites. Significant vistas will be retained as the fiber optic cable will be buried.

3. ***Electrical Power***

   a. *Future transmission lines in PUC are to be placed underground.*

   b. *Undergrounding of utilities shall be considered as part of redevelopment efforts.*

   The proposed fiber optic telecommunications cable routes would run underground along existing City and State rights-of-way in this Primary Urban Center thereby fully supporting these policies.

4. ***Telecommunications facilities***

   a. *Minimize the proliferation and visual impact of new facilities.*

   The proposed fiber optic telecommunication lines will not require antennas since all duct lines would be installed underground. The fiber optic cables will be buried within existing State and County right of ways, thereby eliminating visual impacts.

7.4.4 North Shore Sustainable Communities Plan

1. Open Space and Natural Environment

a. Retain the North Shore's rural character

b. Protect significant natural features

c. Protect scenic views

The proposed fiber optic cables system will be located three feet below grade within the existing (ROWs) of State highways and County roads. With this in mind, the project will have no impact with these policies on the preservation and protection of open space and scenic beauty, and still retain the rural area of the North Shore.

2. Natural Gulches, Streams, and Drainageways

a. Preserve the aesthetic and biological values of the natural gulches, streams, and drainages as part of the North Shore's open space system.

The proposed project will utilize existing bridges culverts, and other existing stream crossing structures in order to avoid adverse impacts on stream ecosystems.

3. Historic And Cultural Resources

a. Preserve significant historic features from earlier periods.

b. Retain, wherever possible, significant vistas associated with archaeological features.

The proposed fiber optic cable will be buried within existing State and County rights of way in order to minimize potential impacts on historic features and significant vistas. An archaeological assessment of the entire proposed fiber optic cable alignment was undertaken to identify known or potential areas of cultural deposits and other historic or prehistoric sites. The project archaeologists will continue to coordinate research and findings with SHPD and the contractor, and appropriate mitigative measures such as a monitoring plan would be implemented to minimize impacts on archaeological sites.

7.4.5 Koolaupoko Sustainable Communities Plan

1. Open Space Preservation

a. Protect scenic views

The proposed fiber optic cable system will be buried beneath the existing State highway and City roadway right of ways, and will not have an impact on scenic views in the project area.

2. Historic And Cultural Resources

a. Preserve significant historic features from earlier periods

b. Retain, wherever possible, significant vistas associated with archaeological features.

The proposed fiber optic cable will be buried within existing State and County rights of way in order to minimize potential impacts on historic features and significant vistas. An archaeological assessment of the entire proposed fiber optic cable alignment was undertaken to identify known or potential areas of cultural deposits and other historic or prehistoric sites. The project archaeologists will continue to coordinate research and findings with SHPD and the contractor, and appropriate mitigative measures such as a monitoring plan would be implemented to minimize impacts on archaeological sites.

3. Electrical And Communications Systems

a. Design system elements and incrementally replace facilities such as sub-stations, transmission lines and towers to avoid or mitigate any potential adverse impacts on scenic and natural resource values and to enhance system reliability.

The proposed fiber optic telecommunications cables would be buried underground within existing roadway rights-of-way which supports this policy.

7.4.6 Central Oahu Sustainable Communities Plan (Public Review Draft)

a. Public Views. In order to promote pleasing attractive living environments and panoramic mauka and makai views from public places, views of major landmarks from public places shall be protected whenever possible.

The proposed fiber optic cable will be buried within the existing ROW's of State and City roadways, and therefore will not adversely impact public views.

7.4.7 East Honolulu Sustainable Communities Plan

1. Open Space Preservation and Development

a. Natural Gulches and Drainageways.

1) Preserve the aesthetic and biological values of significant streams, wetlands, natural gulches and other drainageways by providing appropriate setbacks as part of the open spaces system.

The proposed fiber optic cable will be buried within the existing ROW's of State and City roadways, or attached to existing bridge structures. Therefore, it will not significantly impact natural gulches and drainageways.

b. *Shoreline Areas*

1) *Maintain existing makai view channels along H-1 Freeway or Kalanianole Highway between Waialae and Koko Head.*
2) *Protect and preserve the long-term recreational and scenic value of the shoreline between Koko Head and Makapuu.*

The proposed project will run along the City and State ROW's, and be buried underground, therefore, it will not impact any makai view channels along Kalanianaole Highway. And, the project route will not run along roadways entering Koko Head to Makapuu, but cut across and run along Hawaii Kai Dive, therefore, no impact will occur.

c. *Historic And Cultural Resources*

1) *Preserve significant historic features from earlier periods.*
2) *Retain, whenever possible, significant vistas associated with archaeological features.*

The proposed fiber optic cable will be buried within existing State and County rights of way in order to minimize potential impacts on historic features and significant vistas. An archaeological assessment of the entire proposed fiber optic cable alignment was undertaken to identify known or potential areas of cultural deposits and other historic or prehistoric sites. The project archaeologists will continue to coordinate research and findings with SHPD and the contractor, and appropriate mitigative measures such as a monitoring plan would be implemented to minimize impacts on archaeological sites.

7.5 ZONING REQUIREMENTS

Under the *Land Use Ordinance* definitions prescribed in Article 10, Section 21-10-1, the proposed underground fiber optic cable project would satisfy the definition used to describe "Utility installations, Type A and B." The underground fiber optic cables and associated telephone equipment would be classified as Type A utility installations which are those with minor impact on adjacent land uses.

Under Table 21-3, Master Use Table, utility installations, Type A are permitted uses in every zoning district classification. In most of these zoning districts, this use is permitted subject to the standards discussed in Article 5. Article 5, Section 21-5.650, Utility Installations, discusses specific standards for Type A utility installations involving transmitting antennas. Since the project would not involve transmitting antennas, these standards would not directly apply to this project. Therefore, the proposed project would be a permitted use in each of the zoning districts it encroaches into because it would be located within the rights-of-way of both State highways and City roadways.

The fiber optic route would encroach into several areas which involve Special District regulations as prescribed under Article 9. One form of Special Districts are flood hazard districts, and the design of the various underground fiber optic routes would conform to applicable development standards.

Other types of applicable Special Districts relate to those associated with particular areas within communities. Those Special Districts for which portions of the fiber optic route would traverse through include Haleiwa Special District, (Table 21-9-7), Waikiki Special District, Diamond Head Special District, Hawaii Capital Special District, Punchbowl Special District, and the Chinatown Special District. Under the listed permitted uses and structures specified for each of these Special Districts, the underground fiber optic project would be Exempt from a Special District Permit. Within the Waikiki Special District, the project is a permitted use subject to applicable standards described under this district. The project would be consistent with these standards.

CHAPTER 8
AGENCY AND PUBLIC CONSULTATION

Consultation with various State and City government agencies and community organizations was conducted to obtain their comments and concerns associated with the project as part of the environmental assessment process. Consultation efforts included sending early consultation letters providing preliminary project information to these parties, and the distribution of the Draft EA for agency and public review.

8.1 EARLY CONSULTATION EFFORTS

The intent of early consultation efforts was to provide potentially interested parties of with preliminary project details and to solicit their concerns and comments during the early stages of the environmental assessment process. Early consultation letters were sent to these parties in November 2000. The consultation letters included preliminary site plans identifying affected roadways, and provided summary information on construction of the fiber optic duct system, required appurtenant structures such as man holes and pullboxes, proposed methods of installation, and anticipated positive impacts to Hawaiian Home Lands beneficiaries.

A listing of agencies and organizations for which consultation letters were sent is provided below. Those providing written response are identified with a "»" symbol. Copies of written comments received along with written responses are included in Appendix A.

Comments from the U.S. Fish and Wildlife Service were received over the phone. Comments received are described below along with a response:

1. Agency was pleased that the fiber optic cables would be buried within existing rights-of-way thereby avoiding many potential physical and visual impacts to the environment.
   Response: We note your support for locating the fiber optic cables underground.
2. Existing bridges and other structures are intended to be used to cross streams and other bodies of water were feasible. Where bridges or structures are not utilized, they would like the Draft EA to address water quality and stream impacts, specifically how the project would avoid or minimize impacts in these areas.
   Response: The Draft EA will include discussion of probable impacts on streams and water quality, and include discussion on measures being taken to minimize impacts.

Federal Agencies

- »[1] Fish and Wildlife Service, Department of the Interior
- U.S. Army Engineer Division, Department of the Army

1 Verbal comments provided over telephone

- » Federal Highway Administration

State of Hawaii Agencies

- » Department of Education
- » Department of Health
- • Department of Land and Natural Resources
- » Department of Land and Natural Resources, Historic Preservation Division
- » Department of Transportation
- » Land Use Commission, Dept. of Business, Economic Development & Tourism
- • Office of Hawaiian Affairs

City and County of Honolulu Agencies

- » Board of Water Supply
- • Department of Design and Construction
- • Department of Facility Maintenance
- • Department of Parks and Recreation
- » Department of Planning and Permitting
- » Department of Transportation Services
- » Honolulu Fire Department
- » Honolulu Police Department

Community Organizations and Utilities

- » Hawaiian Electric Company
- • Verizon Hawaii
- • Sierra Club Hawaii Chapter
- » Outdoor Circle
- » Downtown Neighborhood No. 13
- • Hawaii Kai Neighborhood Board No. 1
- • Kuliouou Kalani-Iki Neighborhood No. 2
- • Waialae-Kahala Neighborhood No. 3
- • Kaimuki Neighborhood No. 4
- • Diamond Head /Kapahulu / St. Louis Heights Neighborhood No. 5
- • McCully-Moiliili Neighborhood No. 8
- • Waikiki Neighborhood No. 9
- • Ala Moana / Kakaako Neighborhood No. 11
- • Kalihi-Palama Neighborhood No. 15
- • Aliamanu / Salt Lake / Foster Village Neighborhood No. 18
- • Airport Area Neighborhood No. 19
- • Aiea Neighborhood No. 20
- • Pearl City Neighborhood No. 21

- Waipahu Neighborhood No. 22
- Ewa Neighborhood No. 23
- Waianae Coast Neighborhood No. 24
- Mililani / Waipio / Melemanu Neighborhood No. 25
- Wahiawa Neighborhood No. 26
- North Shore Neighborhood No. 27
- Kahalu'u Neighborhood No. 29

8.2 DRAFT ENVIRONMENTAL ASSESSMENT COMMENTS

The Draft EA for the proposed project was published in the March 23, 2001 issue of the State Office of Environmental Quality Control's *The Environmental Notice* initiating a 30-day public comment period which ended on April 23, 2001. Copies of this Draft EA were distributed to the following parties for review and comments. Those parties which submitted comments are indicated by a "» " next to them. Comment letters received from these parties along with corresponding response letters are included in Appendix A.

Federal Agencies

- Fish and Wildlife Service, Department of the Interior
- » U.S. Army Engineer Division, Department of the Army
- USDA Natural Conservation Resources Service

State of Hawaii Agencies

- Department of Accounting and General Services
- » Department of Education
- Department of Hawaiian Home Lands
- » Department of Health
- Department of Land and Natural Resources
- Department of Land and Natural Resources, State Historic Preservation Division
- Department of Land and Natural Resources, Oahu Island Burial Council
- Department of Transportation, Highways Division, Oahu District Office
- » Hawaii Community Development Authority
- » Land Use Commission, Dept. of Business, Economic Development & Tourism
- » Office of Environmental Quality Control
- Office of Hawaiian Affairs
- Office of Planning

City and County of Honolulu Agencies

- » Board of Water Supply
- Department of Design and Construction
- Department of Environmental Services

- Department of Facility Maintenance
- Department of Parks and Recreation
- Department of Planning and Permitting
- Department of Transportation Services
- Honolulu City Council, Chairman
- Honolulu Fire Department
- Honolulu Police Department
- Office of the Mayor

Community Organizations

- State Commission of Hawaiian Homestead Association
- *Hawaii Kai Neighborhood Board No. 1*
- Kuliouou Kalani-Iki Neighborhood No. 2
- Waialae-Kahala Neighborhood No. 3
- Kaimuki Neighborhood No. 4
- Diamond Head /Kapahulu / St. Louis Heights Neighborhood No. 5
- McCully-Moiliili Neighborhood No. 8
- Makiki/Lower Punchbowl/Tantalus No. 10
- Ala Moana / Kakaako Neighborhood No. 11
- Downtown Neighborhood No. 13
- Pearl City Neighborhood No. 21
- Waipahu Neighborhood No. 22
- Ewa Neighborhood No. 23
- Waianae Coast Neighborhood No. 24
- Mililani / Waipio / Melemanu Neighborhood No. 25
- Wahiawa Neighborhood No. 26
- North Shore Neighborhood No. 27
- Kahalu'u Neighborhood No. 29
- Kaneohe Neighborhood No. 30
- Kailua Neighborhood No. 31
- Waimanalo Neighborhood No. 32
- Makakilo / Kapolei / Honokai Hale Neighborhood No. 34
- Hawaii State Library
- Ewa Beach Public Library
- Kaimuki Public Library
- Pearl City Public Library
- Waianae Public Library
- Kaneohe Public Library
- Hawaii Kai Public Library
- Hui Malama I Na Kupuna 'O Hawaii Nei

- The Outdoor Circle
- Ko Olina Fairways Corporation

CHAPTER 9
FINDINGS AND ANTICIPATED DETERMINATION

To determine whether a proposed action may have a significant effect on the environment, the Approving Agency needs to consider every phase of the action, the expected primary and secondary consequences, cumulative effect, and the short- and long-term effects. The Approving Agency's review and evaluation of the proposed action's effect on the environment would result in a determination whether: 1) the action would have a significant effect on the environment, and an Environmental Impact Statement Preparation Notice should be issued, or 2) the action would not have a significant effect warranting a Finding Of No Significant Impact (FONSI).

This chapter discusses the results of the assessment conducted for the proposed installation of the rural fiber optic duct lines in relation to the 13 Significance Criteria prescribed under the State Department of Health's Administrative Rules Title 11, Chapter 200. The purpose of this assessment was to consider the "significance" of potential environmental effects which includes the sum of effects on the quality of the environment along with the overall and cumulative effects. The resulting findings are discussed below for each criteria.

9.1 PRELIMINARY FINDINGS

1. Involves an irrevocable commitment to loss or destruction of any natural or cultural resource.

The proposed project would not result in the irrevocable commitment to loss or destruction of any natural or cultural resource. As discussed in Chapter 4, the project would not negatively impact any natural or cultural resources of significance or concern. The improvements would only involve the installation of underground fiber optic duct lines within the rights-of-way of existing State highway facilities and City roadways. These duct lines would only involve a trench typically about 1 foot wide by about 3 to 4 feet deep.

In the construction of the fiber optic routes, trenchless construction methods to minimize disturbances to existing roadways and the surrounding environment would be considered. Such trenchless methods would also be considered at streams or gully crossings to minimize disturbing stream bed and banks if bridge attachments is not feasible or practicable. Consequently, the project should not result in the destruction or loss of any significant, endangered, or threatened botanical, faunal, geological, or other natural resources. Design of the fiber optic cable routes would be in conformance with both State and City design standards and requirements. Furthermore, appropriate coordination with applicable agencies would also be conducted during the design phase to allow for review of construction plans and design details.

In terms of archaeological and cultural resources, the assessment study conducted by Cultural Surveys Hawaii, Inc. identified potential areas along the route which may have a higher potential to encounter archaeological resources during construction. The design of fiber optic cable segments through these areas of higher potential would be closely coordinated with the SHPD to address appropriate mitigation given planned installation methods developed. Such efforts will include developing and executing a MOA under the Section 106 consultation process which will establish a monitoring plan and contingency plan developed in consultation with SHPD and Oahu Island Burial Council In addition, since the fiber optic cable would be installed within the rights-of-way of existing roadways, there should be no significant impact on traditional cultural or religious practices. Consequently, appropriate coordination with the SHPD and other pertinent agencies during the project's design would ensure natural or cultural resources are not adversely impacted.

2. *Curtails the range of beneficial uses of the environment.*

The proposed project will be contained within the rights-of-ways of existing State and City roadways, and will therefore not prevent any beneficial uses of the environment. Such rights-of-way are presently used for either paved travel lanes, paved shoulder areas, or unpaved shoulder areas. Because the fiber optic cables would be installed underground, these shoulder and paved areas would continue to be used for their present use. Furthermore, it is common to install utilities or other infrastructure lines within such rights-of-way.

3. *Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders.*

The roadway improvements proposed under this project would not conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS. This Final EA addressed the probable environmental impacts associated with the project of which most would be primarily associated with short-term construction activities. Thus, locating the fiber optic cables within the existing rights-of-ways of State and City roadways helps to prevent conflicts with environmental policies, goals, or guidelines. The improvements are not expected to have a significant impact on natural resources or the surrounding environment. Consequently, the project would be consistent in conserving natural resources in the area, and enhancing the quality of life for DHHL beneficiaries by providing essential communication services.

4. *Substantially affects the economic, or social welfare, cultural practices of the community or State.*[2]

As discussed in this document, the project would not have any significant negative impacts on economic factors. This project would provide an economic benefit by creating short-term construction related jobs and correspondingly increased tax revenue which would have a positive affect on the overall economy of the City and State. This project would also create a small number of long-term technical support and maintenance positions on the island of Oahu which provides a small but positive long-term economic impact.

As discussed in this document, the project is also not expected to substantially affect the social welfare of the City. The project would have no impact on the existing character of neighborhoods or communities for which the fiber optic cables would be routed along existing roadways. There would be no additional housing units, increased resident population, or commercial uses associated with this project. This project is essentially a utility improvement project which would have fiber optic cables installed underground, thus, it would have minimal if any long-term impacts on the existing activities or land uses within surrounding areas.

There are no known traditional native Hawaiian cultural practices or other religious practices occurring within the rights-of-way of existing State highway facilities and City roadways. Because fiber optic cables would be located underground, this project would also not restrict access to cultural resources or areas in the vicinity that may be used for traditional cultural practices or other traditional gathering activities along the shoreline. These roadway shoulder areas and paved travel lanes are already used by other utility companies and agencies for their infrastructure facilities such as water mains, sewer lines, and electrical lines. Furthermore, appropriate coordination with the SHPD and Oahu Island Burial Council under Chapter 6E, HRS would be conducted during the project's design and through construction to address any issues which may arise.

5. *Substantially affects public health.*

The proposed project will be designed and installed in accordance with State and City design standards and other regulatory requirements which take into consideration public safety and health. Consequently, the fiber optic cable lines are not expected to constitute a public health or safety hazard. The only public health related concerns would involve short-term air, noise, and traffic impacts during construction activities. Potential impacts due to such construction activities will be minimized or brought to negligible levels by use of appropriate mitigation measures described in this document along with compliance with

[2] This significance criteria was modified to reflect the recent change to Chapter 343, HRS approved by the Governor as Act 50 on April 26, 2000. This Act added "cultural practices" as part of the factors considered in determining the significance of an effect.

agency regulations.

6. *Involves substantial secondary impacts, such as population changes or effects on public facilities.*

The project is limited to the installation of fiber optic cables within existing rights-of-ways of State or City roadways. This project would thus not include new housing units, commercial uses, or other activities which may affect the resident or visitor population. As a result, it will not have any secondary impacts on the social environment or other infrastructure and public facilities.

The project would benefit DHHL because it would reduce some utility infrastructure costs for their particular developments which can be used for other program priorities. However, the installation of these fiber optic cables would not significantly alter the types of developments planned for under their program, nor the feasibility of developing particular properties which are dictated more by the physical environment and other infrastructure requirements. Therefore, the project would not involve substantial secondary impacts such as major population changes or increased demands on existing public facilities.

7. *Involves a substantial degradation of environmental quality.*

The fiber optic cable project would not involve a substantial degradation to the quality of the surrounding environment. Chapters 4 through 7 of this document discussed the probable impact of several environmental factors associated with these improvements. The results of this assessment and studies performed determined that the project would not substantially impact or degrade the environmental quality of the immediate environment.

8. *Is individually limited, but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.*

This project involves the construction of fiber optic cables within about 113.1 miles of roadway throughout the island. Construction of these fiber optic cable routes would be conducted in phases within various areas of the island. This document has subsequently addressed the cumulative affect of this project by including the entire route planned for the island instead of addressing only portions of the route being implemented. In addition, discussion of other cumulative and secondary impacts have been addressed.

The result of the assessment conducted and discussed in this document has determined that this project is not expected to have a considerable impact on the environment. Improvements would be confined to the rights-of-way of existing roadways that are already used for other utilities and infrastructure facilities.

9. *Substantially affects a rare, threatened, or endangered species, or its habitat.*

As discussed in Chapter 4, there were no known endangered, threatened, or rare botanical resources present within the rights-of-way of roadways affected or in the immediate vicinity along roadways. These improvements would also not substantially affect endangered or threatened faunal, avifaunal, and marine resources which may occur in the general surrounding area since construction activities would generally be limited to existing roadways and shoulder areas.

These roadway rights-of-ways are already used by other utility companies or government agencies to locate infrastructure facilities such as water mains, sewer lines, and electrical lines. Necessary control measures and best management practices would also be implemented to minimize runoff and other potential short-term impacts associated with construction activity. Thus, the project is not expected to substantially affect rare, threatened, or endangered species or potential habitat for such species.

10. Detrimentally affects air or water quality or ambient noise levels.

This project should not have a detrimentally significant impact on air, water quality, or ambient noise levels in the immediate vicinity of roadways where fiber optic cable routes would be located. Impacts associated with these factors would be limited to short-term construction activities, and are expected to be minor due to the relatively narrow trench area required for fiber optic cables. No grading and or other major forms of excavation work would be required. To further minimize impacts, construction activities would be subject to applicable State regulations as discussed under Chapter 4, and construction plans prepared would be reviewed by applicable government agencies to address potential concerns.

11. Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

Portions of the fiber optic cable routes would be located within flood areas and tsunami inundation areas since the routes utilize coastal highways. However, the fiber optic cables would be buried underground within existing State or City rights-of-ways or attached to existing bridges in conformance with design standards and requirements. As a result, these improvements are not expected to be susceptible to much damage from various natural hazards nor would it affect existing environmental conditions making areas more prone to damage from such hazards. These roadway areas are already used for other utilities and infrastructure facilities.

12. Substantially affects scenic vistas and viewplanes identified in county or state plans or studies.

The proposed fiber optic duct lines would not affect scenic viewplanes because these lines would be installed underground within existing State or City roadway rights-of-way.

13. Requires substantial energy consumption.

The project would not require substantial energy consumption or the need for additional electrical facilities because it only involves the installation and operation of fiber optic duct lines.

9.2 ANTICIPATED DETERMINATION

A Finding of No Significant Impact (FONSI) determination should be warranted for the Oahu Rural Fiber Optic Duct Lines project based upon the information provided in this Final EA document. The results of the assessments conducted along with technical study performed have determined that the installation and operation of the rural fiber optic duct lines should not have a significant impact on the surrounding environment. The preliminary findings supporting this anticipated determination are based upon the previous discussion of the project's affect on the environment in relation to the 13 Significance Criteria.

CHAPTER 10
BIBLIOGRAPHY

City and County of Honolulu (City). 2000. *The Revised Ordinances of Honolulu 1990.* Chapter 21 - Land Use Ordinance. Honolulu, Hawaii.

Department of Business, Economic Development, and Tourism (DBEDT). 2000. *The State of Hawaii Data Book 1999.* Research and Economic Analysis Division. State of Hawaii. Honolulu, Hawaii.

Department of Business, Economic Development, and Tourism (DBEDT). 1997. *Population and Economic Projections for the State of Hawaii to 2020.* DBEDT 2020 Series; Report of Results and Methodology. Research and Economic Analysis Division. State of Hawaii. Honolulu, Hawaii.

Department of Commerce (DOC). 1991. *1990 Census of Population and Housing.* Summary Population and Housing Characteristics; Hawaii. 1990 CPH-1-13. Economic and Statistics Administration. U.S. Government Printing Office. Washington, DC.

Department of Hawaiian Home Lands (DHHL). 1997. *Department of Hawaiian Home Lands; An Overview.* Revised February 2000. State of Hawaii. Honolulu, Hawaii.

Department of General Planning (DGP). 1992. *General Plan; Objectives and Policies.* City and County of Honolulu. Honolulu.

Department of Geography. 1998. *Atlas of Hawaii.* Third Edition. University of Hawaii at Hilo. University of Hawaii Press. Honolulu, Hawaii.

Department of Geography. 1983. *Atlas of Hawaii.* Second Edition. University of Hawaii. University of Hawaii Press. Honolulu, Hawaii.

Department of Public Works (DPW). 1984. *Standard Details for Public Works Construction.* County of Kauai, City and County of Honolulu, County of Maui, County of Hawaii of the State of Hawaii. Honolulu.

Federal Emergency Management Agency (FEMA). 1993. *Hazard Mitigation Report, Hurricane Iniki.* In Response to the September 12, 1992 Federal Disaster Declaration. FEMA-961-DR-HI. San Francisco, California.

Furumoto, Augustine S., Norby N. Nielsen, and William R. Phillips. 1973. A Study of Past Earthquakes, Isoseismic Zones of Intensity, and Recommended Zones for Structural Design for Hawaii. Hawaii Institute of Geophysics. University of Hawaii. Honolulu, Hawaii.

Hawaii Cooperative Park Service Unit (HCPSU). 1990. *Hawaii Stream Assessment; A Preliminary Appraisal of Hawaii's Stream Resources.* Report R84. Prepared for Commission on Water Resource Management, State of Hawaii. Honolulu.

Information Resource Management Branch (IRMB). 2000. Current official enrollment count and enrollment projections, 2000-01. Department of Education, State of Hawaii.

Macdonald, Gordon A., Abbott, Agatin T., and Peterson, Frank L. 1983. *Volcanoes in the Sea, The Geology of Hawaii.* Second Edition. University of Hawaii Press. Honolulu, Hawaii.

National Oceanic and Atmospheric Administration (NOAA). 1998. *Climatological Data Annual Summary; Hawaii and Pacific.* Volume 94, Number 13. Department of Commerce, United States of America. National Climatic Data Center. Asheville, North Carolina.

Sohmer, S.H. and R. Gustafon. 1987. *Plants and Flowers of Hawaii.* University of Hawaii Press. Honolulu, Hawaii.

Spencer Mason Architects. 1996. *State of Hawaii Historic Bridge Inventory and Evaluation.* Prepared for Department of Transportation Highways Division, State of Hawaii. Honolulu.

State of Hawaii, Department of Health, Noise, Radiation and IAQ Branch (DOH). 1996. *Community Noise Control.* Chapter 11-46, Hawaii Administrative Rules.

State of Hawaii Department of Health. 1998. *Air Pollution Control.* Chapter 11-60.1, Hawaii Administrative Rules.

State of Hawaii Department of Health. 1981. *Vehicular Noise Control for Oahu.* Chapter 11-60.1, Hawaii Administrative Rules.

State of Hawaii Department of Health. 1997. *Water Pollution Control.* Chapter 11-55, Hawaii Administrative Rules.

State of Hawaii, Department of Transportation (DOT). 1981. *Accommodation and Installation of Utilities on State Highways and Federal Aid County Highways.* Title 19, Department of Transportation, Subtitle 4, Highways Division, Chapter 105, Hawaii Administrative Rules.

APPENDICES

APPENDIX A

Early Consultation and Draft EA Comment Letters & Responses

Early Consultation
Comment Letters & Responses

U.S. DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
Hawaii Division
Box 50206
300 Ala Moana Boulevard, Room 3-306
Honolulu, HI 96850
November 20, 2000

Mr. Stephen Seiler
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, HI 96817

Dear Mr. Seiler:

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

This is to acknowledge receipt of your letter dated November 14, 2000, to solicit comments or regulatory requirements from resource agencies. We appreciate the opportunity to comment.

Based on the preliminary information included in your letter of November 14, 2000, we have the following comments for your consideration:

1. The design and construction shall be performed in accordance with the Hawaii Department of Transportation's (HDOT's) "Accommodation and Installation of Utilities on State Highways and Federal-aid County Highways."

2. Utilities that cross or occupy the right-of-way of freeways shall meet the requirements of the American Association of State Highway and Transportation Officials' "Policy on the Accommodation of Utilities of Freeway Rights-of-Way."

3. Sandwich Isles Communication's projects should be coordinated with the HDOT projects to limit disruption to the traveling public.

4. If there are any cost or schedule impacts to federal-aid projects because of Sandwich Isles Communication, Inc., the impacts shall be the responsibility of Sandwich Isles Communication, Inc.

Again, thank you for the opportunity to comment. We look forward to your future consultation with the Federal Highway Administration. Please contact me at (808) 541-2700, extension 305, if there are any questions.

Sincerely,

Pat V. Phung

Pat V. Phung, P.E.
Transportation Engineer

cc: Mr. Thomas Toyama, HDOT, HWY-R
Mr. Robert Itagaki, HDOT, HWY-T

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075 010

February 1, 2001

Mr. Pat V. Phung, P.E., Transportation Engineer
Federal Highways Administration, Hawaii Division
U.S. Department of Transportation
Box 50206
300 Ala Moana Boulevard, Room 3-306
Honolulu, Hawaii 96850

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

Dear Mr. Phung:

Thank you for your letter dated November 20, 2000 regarding the subject project. The project would be designed in conformance to the State Department of Transportation's (DOT) regulations, policies, and requirements identified.

Appropriate coordination with the State DOT would occur during the design phase and construction of the various segments to minimize disruptions to the general public traveling on affected highways. The applicant would like to coordinate its work with State DOT projects being implemented, and they have already been attending meetings with the State DOT on this matter. This coordination would help avoid any cost or schedule impacts to federal-aid projects resulting from the proposed project.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

BENJAMIN J. CAYETANO
GOVERNOR

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

PAUL G. LeMAHIEU, Ph.D.
SUPERINTENDENT

OFFICE OF THE SUPERINTENDENT

December 5, 2000

Mr. Stephen Seiler, Planner
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Seiler:

Subject: Sandwich Isles Communication, Inc.
Early Consultation for Draft EA

The Department of Education has no comment on the subject document.

Thank you for the opportunity to respond.

Very truly yours,

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

PLeM:hy

cc: P. Yoshioka, DAS

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

February 1, 2001

SSFM 2000_075 010

Paul G. LeMahieu, Ph.D., Superintendent of Education
Department Of Education
State of Hawaii
P.O. Box 2360
Honolulu, Hawaii 96804

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

Dear Dr. LeMahieu:

Thank you for your letter dated December 5, 2000 regarding the subject project. We note that your department has no comments on the proposed project.

Thank you for taking the time to review this project. If you have any questions, please give me a call at (808) 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

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:

00-233/epo

January 4, 2001

SSFM INTERNATIONAL, INC
RECEIVED
FILE

Mr. Stephen Seiler
Planner
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Seiler:

Subject: Early Consultation for Draft Environmental Assessment
Sandwich Isle Communication, Inc.
Underground Fiber Optic Cables
Island of Oahu, Hawaii State Department of Health

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

Water Pollution

1. The applicant should contact the Army Corps of Engineers to identify whether a federal permit (including a Department of Army permit) is required for this project. If a federal permit is required, then a Section 401 Water Quality Certification is required from the State Department of Health, Clean Water Branch.

2. A National Pollutant Discharge Elimination System (NPDES) general permit is required for the following discharges to waters of the State:

   a. Storm water discharges relating to construction activities, such as clearing, grading, and excavation, for projects equal to or greater than five years;

   b. Construction dewatering activities;

   c. Hydro testing water.

Any person requesting to be covered by a NPDES general permit for any of the above activities should file a Notice of Intent with the Department's Clean Water Branch at least 30 days prior to commencement of any discharge to waters of the State.

Any questions regarding these comments should be directed to Mr. Denis Lau, Branch Chief, Clean Water Branch at 586-4309.

Noise Concerns

Activities associated with the construction phase of the project must comply with the Department of Health's Administrative Rules, Chapter 11-46, "Community Noise Control."

a. The contractor must obtain a noise permit if the noise levels from the construction activities are expected to exceed the allowable levels of the rules as stated in Section 11-46-6(a).

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

c. The contractor must 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(d)(4).

Should there be any questions on this matter, please call Mr. Russell Takata, Environmental Health Program Manager of the Noise, Radiation and Indoor Air Quality Branch at 586-4701.

Sincerely,

GARY GILL
Deputy Director
Environmental Health Administration

c: CWB
NRB

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075 010

February 1, 2001

Mr. Gary Gill, Deputy Director
Environmental Health Administration
Department Of Health
State of Hawaii
P.O. Box 3378
Honolulu, HI 96801

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

Dear Mr. Gill:

Thank you for your letter dated January 4, 2001 regarding the subject project. We have the following responses to comments provided from your branches.

Appropriate coordination would be conducted with the Army Corps of Engineers to identify whether a federal permit (including a Department of Army permit) is required for this project. A Section 401 Water Quality Certification from the State Department of Health, Clean Water Branch would subsequently be obtained if necessary.

A National Pollutant Discharge Elimination System (NPDES) general permit would be obtained if required, and a Notice of Intent would be filed at least 30 days prior to commencement of any discharge to waters of the State.

Construction activities conducted for this project would comply with your department's Administrative Rules, Chapter 11-46, Community Noise Control.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

GILBERT COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DEPUTIES
JANET E. KAWELO
LINNEL NISHIOKA

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND
STATE PARKS
WATER RESOURCE MANAGEMENT

December 8, 2000

Mr. Stephen Seiler, Planner
SSFM International
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

LOG NO: 26601
DOC NO: 0011SC24

Dear Mr. Seiler:

SUBJECT: National Historic Preservation Act, Section 106 Compliance – Proposed Installation of Underground Fiber Optic Telecommunications Cables
Ko`olaupoko, `Ewa, Honolulu, Wahiawa, and Wai`anae Districts, O`ahu

Thank you for the opportunity to comment on the proposed installation of underground fiber optic telecommunication cables within State and County Right of Ways (ROWs) to provide service to Department of Hawaiian Homelands (DHHL) homestead lands. The project consists of building an underground duct system that will be used for the installation of fiber optic cable and/or copper cable. Construction work will include open trenches about one foot wide and two-three feet deep. Once the conduit system is placed in the trench the excavation will be filled in with either engineered material or concrete. In addition to the open trenching, three-foot by five-foot manholes will be installed along the cable routes at intervals of every 2,000 to 3,000 feet. It is estimated that about 141 miles of cable will be installed, all within designated ROWs within four main project areas. Currently, it appears that all proposed work and installations will take place below the existing ground surface. Thus, no impacts are expected for historic properties such as buildings or structures. Our review is based on historic maps, aerial photographs, reports, and records maintained at the State Historic Preservation Division; no field inspection was made of any portion of the project area. We received your letter of inquiry on November 21, 2000, and provide the following comments on the entire activity and each of the four major segments that you describe.

General Comments

It appears that the proposed cable installation is an undertaking, as defined in 36 CFR Part 800, both because federal licenses (through the Federal Communications Commission) are needed, and because the action is federally funded through the US Department of Agriculture. Therefore, the responsible federal agencies will need to ensure that the

project is in compliance with Section 106 of the National Historic Preservation Act (NHPA). Compliance actions include appropriate identification of the area(s) of potential effect and historic sites, and consultation with consulting parties and the public on these matters. Consulting parties include but are not limited to the State Historic Preservation Office and Native Hawaiian organizations likely to have concerns with or knowledge of historic properties in the area. Interested parties. With regard to the identification of historic sites, we have provided some general information below but it will be incumbent upon the federal agencies involved, or their designated representatives, to provide more specific information to all consulting parties. Also, you should be aware that if any portion of the proposed project areas is owned by the DHHL, Native Hawaiian burials on that land are subject to the provisions of the Native American Graves Protection and Repatriation Act, in addition to any requirements imposed by Section 106, NHPA.

Description of Cable Route Segments

I. Waianae to Kapolei Segment

This segment begins on Waianae Valley Road just past the intersections with Kaneaki Street and Piliuka Place. It runs down Waianae Valley Road to Farrington Highway, along Farrington Highway to Kapolei. A small spur extends from Farrington Highway down Fort Barrette Road to Kalaeloa DHHL lands (formerly Barbers Point Naval Air Station). At Kalaeloa, the cable lines run along Enterprise and Lexington Streets.

II. Kapolei to Waimanalo Segment

The cable route runs along Farrington Highway from Kapolei through Waipahu and Pearl City where it goes onto Kamehameha Highway and then onto Nimitz Highway. From Nimitz Highway, the cable route goes onto Dillingham Boulevard and into downtown Honolulu. In Honolulu, the cable route goes from Dillingham Boulevard to N. King Street, down River Street to Nimitz Highway again. On Nimitz Highway, the cable route turns *mauka* at South Street, running up that street to Kawaihao Street where the route turns east and runs along that roadway to Kamakee Street. The cable route then runs *mauka* up Kamakee Street, turns east on Kona Street and runs along it to Atkinson Drive where the route turns *mauka* again onto Kapiolani Boulevard. At the intersection of Kapiolani Boulevard and Kalakaua Avenue, the cable route turns *makai* along Kalakaua Avenue into Waikiki, where it then turns east onto the Ala Wai Boulevard. At the intersection of Ala Wai Boulevard and McCully Street, the cable route splits into two segments: a *mauka* segment runs up McCully to Citron Street where it runs east to the intersection of Citron and Isenberg Streets. The main route runs along Ala Wai Boulevard to Kapahulu Avenue where it turns *mauka* to Herbert Street. From Herbert Street, the cable route runs east and then *mauka* along Kilauea Avenue all the way to Kalanianiole Highway. The cable route goes along Kalanianiole Highway all the way to Lunalilo Home

Road where it turns mauka and runs up to Hawaii Kai Drive, then Kealahou Street and then to Kalanianiole Highway. The cable route goes along within the right-of-way for Kalanianiole Highway for the remainder of the corridor to Waimanalo Town.

III. Waimanalo to Waiahole

The proposed cable route follows Kalanianiole Highway to its intersection with Pali Highway, where it runs along Pali Highway to Kamehameha Highway. The cable route proceeds north along Kamehameha Highway through Kaneohe town to its termination at Waiahole.

IV. Pearl City to Haleiwa

An addition segment of the cable route begins at the intersection of Farrington Highway and Kamehameha Highway in Pearl City and runs north along the highway through Mililani town and Wahiawa to its terminus in Haleiwa.

Discussion of Potential for Historic Sites

Segment I: Waianae to Kapolei

At its beginning until Ma`ili`ili Stream, the highway corridor, and cable route, in this portion of the segment, go through terrigenous sediments which, due to modification from highway development, are unlikely to contain significant historic sites. Beginning on the south side of Ma`ili`ili Stream and extending down the coast to about Kahe Point Beach Park, the highway corridor either runs through or immediately next to beach sand deposits. Such deposits are known to contain significant historic sites such as cultural layers and human burials, even in areas where there has been some prior disturbance. Thus, cable installation could have an "adverse effect" on significant historic sites in this area. The remainder of this segment, including the spur into Kalaeloa DHHL, goes through terrigenous soils, which are unlikely to contain significant historic sites.

Segment II: Kapolei to Waimanalo

Until the cable route reaches the intersection of Nimitz Highway and South Street, the road corridor in these areas passes through largely fill soils or terrigenous and alluvial sediments that are unlikely to contain significant historic sites. Beginning at the *makai* end of South Street, it is highly likely that trenching and excavation activities will encounter and have an "adverse effect" on significant historic sites such as human burials and cultural layers. Previous work in the South Street corridor, extending up to Queen Street, has uncovered numerous burials. Similar finds have been made elsewhere in Kaka`ako, including along Kamakee Street and typically occur at depths between 2.5 to 6.0 feet below existing surface.

From the intersection of Kamakee and Kona Streets until just past the intersection of Analii Street and Kalanianiole Highway, the cable route corridor is underlain by fill soils or deposits of terrigenous or alluvial origins; these soils are unlikely to contain significant historic sites. Between Analii Street and the intersection of Kalanianiole Highway and Lunalilo Home Road, the cable route will pass through or next to sand deposits that are likely to contain significant historic sites. According to data compiled during Phases II and III of the widening of Kalanianiole Highway, a number of historic sites including subsurface cultural deposits and human burials were encountered during construction work in the highway corridor in this area. These kinds of sites typically occurred in sandy deposits of the Mokuleia, Jaucas or Coral Reef soils series, as described in standard references. The majority of cultural deposits, including burials, occurred at depths between three and six feet below the existing surface. Thus, installation of the cable facilities within the Kalanianiole Highway ROW between Analii Street and Lunalilo Home Road could have an "adverse effect" on significant historic sites.

Beginning at the intersection of Lunalilo Home Road and Kalanianiole Highway, the cable route will pass through largely terrigenous or alluvial soils until the intersection of Kealahou Street and Kalanianiole Highway. At this point, for a short distance, the highway corridor (and cable route) appear to pass through Jaucas sands before the road turns *mauka* in the direction of Makapu`u. As noted previously, Jaucas Sands frequently contain significant historic sites such as cultural deposits and human burials. Thus, cable installation in this portion of the segment could have an "adverse effect" on significant historic sites.

From the eastern end of the sandy deposits, as shown on USDA soil maps, until Kaupo Beach Park, the highway corridor passes through terrigenous or alluvial soils that are unlikely to contain significant historic sites. From Kaupo Beach Park to the intersection of Inoaole Place and Kalanianiole Highway, the cable route (and roadway) pass through or next Jaucas Sands deposits, which are likely to contain significant historic sites such as buried cultural deposits and human burials. Thus, cable installation activities between Kaupo Beach Park and the intersection of Inoaole Place and Kalanianiole Highway could have an "adverse effect" on significant historic sites.

<u>Segment III, Waimanalo to Waiahole</u>
The entire cable route passes through terrigenous or alluvial sediments that are unlikely to contain significant historic sites.

Segment IV, Pearl City to Haleiwa
Assuming that the terminus is at or before the intersection of Haleiwa Road and Kamehameha Highway, the entire cable route passes through terrigenous or alluvial sediments that are unlikely to contain significant historic sites.

SUMMARY
As noted above, considerable portions or the entirety of each segment pass through soils that are not likely to contain significant historic sites. We believe that in these areas, "no historic properties will be affected" by the proposed undertaking. Specific portions of Segments I and II, though, are known or likely to contain significant historic sites such as buried cultural layers and human burials. Thus, excavations and trenching for cable installation may have an "adverse effect" on these buried historic sites. For these areas, on-site archaeological monitoring, by qualified personnel, will probably be needed. As noted above, the responsible federal agencies or their designated representatives will need to provide more information to consulting parties, including SHPO, on the undertaking and its effects, if any, on significant historic sites. Once the site identification and consultation required by Section 106, NHPA is completed, we should have a more accurate understanding of precisely where mitigation of "adverse effects" is needed and can advise your office accordingly.

Should you have any questions, please feel free to contact Sara Collins at 692-8026.

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

SC:jk

c: Mr. A. Van Horn Diamond, Chair, O`ahu Island Burial Council
Mr. Kala`au Wahilani, Burial Sites Program

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

February 1, 2001

SSFM 2000_075 010

Mr. Don Hibbard, Administrator
State Historic Preservation Division
Department of Land and Natural Resources
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

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

Dear Mr. Hibbard:

Thank you for your letter dated December 8, 2000 regarding the subject project. We would like to correct that the approximate miles of fiber optic cable installed within Oahu roadways would be about 112.6 miles and not the 141 miles initially indicated.

We would like to thank you for the information provided us associated with the various route segments, and note your determination that no impacts are expected to historic properties such as buildings or structures associated with the project.

Appropriate consultation efforts would be conducted to comply with Section 106 consultation as prescribed under the National Historic Preservation Act. Only a short segment of about 1,000 feet of roadway is owned by the State Department of Hawaiian Home Lands (DHHL). In the event native Hawaiian burials are encountered along this short stretch of road, then compliance with the Native American Graves Protection and Repatriation Act would be conducted.

We have the following clarifications to the information provided us. The Draft EA will provide appropriate descriptions and maps showing the proposed routes, along with addressing historic and archaeological impacts.

1. Waianae to Kapolei Segment. In the Kalaeloa area, the route would now extend from Renton Road onto Saratoga Street.
2. Kapolei to Waimanalo Segment. In the Kakaako area, the current route would not travel along South Street or Kawaihao Street. It would generally follow Pohukaina Street, Waimanu Street, and Kona Street as it heads toward Waikiki. There is also a segment which runs along Alakea Street from Nimitz to the National Memorial Cemetery of the Pacific (Punchbowl) to serve a DHHL property in Kalawahine. The change to eliminate South Street was to minimize impacts on historic sites known along this street.

Archaeological assessments of the proposed fiber optic cable route are being conducted by our archaeological consultant, and a copy of your letter has been forwarded to them for their use. Appropriate consultation will be conducted with your Division to address necessary mitigative measures.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

BENJAMIN J. CAYETANO
GOVERNOR

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:
HWY-T 2.0922
I.D. No. 0-00-76

DEC 4 2000

SSFM INTERNATIONAL, INC.
RECEIVED
DEC
FILE

Mr. Stephen Seiler
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Seiler:

Subject: Sandwich Isle Communication, Inc.
Underground Fiber Optic Telecommunication Cables - Island of Oahu
Early Consultation for Draft Environmental Assessment

In reply to your letter dated November 14, 2000, we have the following comments:

1. Please contact our Right-of-Way Branch to determine assessment amount and easement requirements.

2. Enclosed for your use are the following:

   a. Rules and Regulations Relating to the Accommodation and Installation of Utilities on State Highways and Federal Aid County Highways

   b. Procedure for Securing Approval of Permit Construction Plans

   c. Notes for Construction Within State Right-of-Way

   d. National Pollutant Discharge Elimination System Requirements for Permit Projects Within State Highway Right-of-Way

   e. Trench Restoration Detail

   f. General Notes for Traffic Control Plan

   g. Statewide Guidelines for Work Zone Traffic Control Devices

h. Americans with Disabilities Act Compliance Guidelines for Permit Construction

3. If at all possible, we prefer the work be done at night by directional drilling, especially at major intersections.

4. Along major highways, we request a spare conduit for fiber optic cables for our Traffic Management System.

Should there be any questions, please call Robert Itagaki at 692-7691.

Very truly yours,

KAZU HAYASHIDA
Director of Transportation

Enclosure

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075 010

February 1, 2001

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

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

Dear Mr. Minaai:

Thank you for your letter dated December 4, 2000 regarding the subject project. We have been coordinating our work with your Rights-of-Way Branch on this project to determine assessment amounts and easement requirements, and will continue to do so throughout this project.

Thank you for the regulations, guidelines, and other information provided with your letter concerning work within State highways rights-of-way. The design of these fiber optic duct lines would be conducted in conformance with these requirements.

Consideration will be given to performing construction work at night and using directional drilling methods especially at major intersections. However, the economic feasibility and practicability of implementing such work at night would need to be evaluated during the design phase of this project. Consideration would also need to be given to noise concerns and potential impacts on nearby residences since a Department of Health noise permit may be necessary.

Sandwich Isles Communication, Inc. (SIC) was assigned a State Department of Hawaiian Home Lands (DHHL) license agreement to provide the installation of essential communications services to homestead properties on the Island of Oahu. Therefore, the purpose for the project is to specifically provide DHHL homestead properties with broad band telecommunications services. However, SIC would be willing to discuss with your department the possible use of a spare fiber optic conduit for your Traffic Management System.

SIC would like to understand your request in the context of DOT easement compensation requirements, request to and similar requirements imposed on other telecommunication providers, and other cost efficient alternatives to effect the Traffic Management System's future requirements. Representatives from SIC will contact your staff to arrange a mutually convenient time to meet on this matter.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

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

SSFM INTERNATIONAL, INC.
RECEIVED
NOV 20 2000
√ JS
Ron
Calvin
Ed
JS
FILE

November 16, 2000

Mr. Stephen Seiler
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Seiler:

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

We have reviewed the description of the subject project provided by your letter dated November 14, 2000, and find that the alignment of the proposed cables, as represented on Exhibits O-1 through O-14, will traverse through areas designated within the State Land Use Urban, Agricultural, 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 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

FILE COPY

EU:aa

c: OEQC

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

February 1, 2001

SSFM 2000_075 010

Ms. Esther Ueda, Executive Officer
Land Use Commission
Department of Business, Economic Development & Tourism
State of Hawaii
P.O. Box 2359
Honolulu, Hawaii 96804-2359

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

Dear Ms. Ueda:

Thank you for your letter dated November 16, 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 City and County of Honolulu roadways, the proposed route would traverse through areas designated within the Urban, Agricultural, and Conservation districts.

Based upon discussion with your staff, the Draft Environmental Assessment will discuss the proposed route in relation to the State Land Use District. Figures showing the alignment of the fiber optic cables in relation to applicable Conservation District areas traversed would be provided.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96843

December 1, 2000

Mr. Steven Seiler
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Seiler:

Subject: Your Transmittal of November 14, 2000 Requesting Pre-Consultation Comments on the Sandwich Isles Communication, Inc., Underground Fiber Optic Telecommunication Cables Project Draft Environmental Assessment, Oahu

Thank you for the opportunity to comment on the proposed fiber optic telecommunication project.

We have the following comments to offer:

1. The location of existing Board of Water Supply (BWS) waterlines should be addressed in the Draft Environmental Assessment (EA) and indicated on the construction plans to insure the protection and integrity of our water system.

2. The Draft EA and construction plans should be submitted for our review.

We reserve further comments until we review the Draft EA.

If there are any questions, please contact Scot Muraoka at 527-5221.

Very truly yours,

FOR CLIFFORD S. JAMILE
Manager and Chief Engineer

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

February 1, 2001

SSFM 2000_075 010

Mr. Clifford S. Jamile, Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

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

Dear Mr. Jamile:

Thank you for your letter dated December 1, 2000 regarding the subject project.

The Draft Environmental Assessment prepared will address the potential impacts on your waterlines associated with this project. Appropriate coordination with your department would be conducted during the design of the fiber optic routes to identify the location of existing waterlines within roadways.

Further coordination would also be conducted with your department as part of the normal review of construction plans to minimize impacts on your water system. Sandwich Isles Communication, Inc. looks forward to coordinating their activities with the Board of Water Supply projects if the opportunity presents itself.

We will include your department in our distribution of the Draft Environmental Assessment.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743 • INTERNET: www.co.honolulu.hi.us

FILE COPY

JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI, AIA
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

2000/CLOG-6039 (RY)

January 2, 2001

SSFM INTERNATIONAL, INC
RECEIVED
JAN 3 2001
FILE

Mr. Stephen Seiler
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Seiler:

Subject: Sandwich Isles Communications, Inc. Underground Fiber Optic Telecommunications Cables - Island of Oahu
Early Consultation for Draft Environmental Assessment

In response to your request for early consultation, we have provided the following:

Overall

Past correspondence on the project indicates that the proposed cabling will be part of a statewide network with network components on each island (Oahu, Hawaii, Maui, Molokai, Lanai, and Kauai). Description of facilities in those correspondence indicates that there will be undersea cabling to respective islands, construction of office buildings, telephone and switching facilities, and other telecommunication equipment and support facilities on each island, including Oahu. In our August 22, 2000 letter to Mr. Kauhi Keliiaa of Sandwich Isles Communications, Inc., we recommended that the environmental disclosure document address the entire scope of the project. If that is not possible, the reasons for not including the entire scope in the initial environmental assessment should be included. If future phases of the project are anticipated, please describe phasing and what is involved and whether they would be subject to further environmental disclosures pursuant to Chapter 343, Hawaii Revised Statutes.

General Plan and Development Plans

Include a discussion of the projects consistency with the General Plan and relevant Development Plans and Sustainable Communities Plans. The discussion should also include consistency with proposed major revisions to the Primary Urban Center and the Central Oahu Development Plans. The discussion should include statements indicating project consistency by citing specific sections of said documents.

Special Management Area Permit

The environmental assessment should include a discussion on permitting within the Special Management Area. What and where are, if any, portions of the project that are located within the Special Management Area (SMA). Unless those portions qualify for an exemption, they will be subject to an SMA Permit . Detailed information will be required at the time of SMA Permit application or when an exemption is requested.

Portions of the project that fall within the shoreline setback will require a shoreline setback variance.

Land Use Ordinance Permits

Include a discussion of applicable zoning requirements and related permits for utility installations. For information on what permit types are applicable, we have enclosed a copy of our March 17, 2000 letter to Mr. Bruce N. Lovejoy of Mid-State Consultants.

Traffic Concerns

1. Anticipated scheduling of planned work within or affecting the City's road right-of-way should be provided for each phase of construction and be coordinated with other planned road work in the vicinity of the proposed cabling.

2. The extent and duration of work should be described. Work requiring street closures or extends into the peak traffic period should be identified and an assessment of impacts included. Possible mitigation measures should also be identified.

3. At the appropriate time, construction plans and traffic control plans for work affecting City's road right-of-way should be submitted for review and comment.

Civil Engineering

Permits for excavation within the City right-of-way will be required. In addition, unless a franchise agreement between the City (Department of Budget & Fiscal Services) and Sandwich Isles Communications, Inc., is executed, easements over private utilities in the City right-of-way are required.

If groundwater is encountered, a City dewatering permit will be required when the effluent is discharged into the City storm drainage system.

If you have any questions, you may contact Raymond Young of our staff at (808) 527-5839.

Sincerely yours,

RANDALL K. FUJIKI, AIA
Director of Planning and Permitting

RKF:mo
Attachments

Doc 69996

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

February 1, 2001

SSFM 2000_075 010

Mr. Randall K. Fujiki, AIA, Director
Department of Planning & Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

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

Dear Mr. Fujiki:

Thank you for your letter dated January 2, 2000 regarding the subject project. Sandwich Isles Communication, Inc. (SIC) was assigned a State Department of Hawaiian Home Lands (DHHL) license agreement to provide the installation of essential communications services to DHHL homestead properties on the Island of Oahu as well as other counties. Separate environmental documents are being prepared for each respective county to address the land-based, or terrestrial, fiber optic routes being installed within roadways.

Regarding future plans associated with landing sites, the Draft Environmental Assessment (Draft EA) being prepared will identify this. However, the environmental assessment for these landing sites is not appropriate at this time since there are no specific plans or project details available at this time. The feasibility of pursuing specific landing sites for the Island of Oahu has not been determined. Furthermore, the successful implementation of the underground fiber optic duct system within roadways is needed as a first step. As a result, a separate environmental document will be prepared for these landing sites at the appropriate time when project details are developed. Consultation with OEQC concerning this matter was also discussed and mutually agreed upon.

The Draft EA will include appropriate discussion of the project's consistency with the General Plan and relevant Development Plans and Sustainable Communities Plans. The Draft EA will also identify those portions of the fiber optic route which traverse the City's Special Management Area (SMA), and include a discussion of the project's conformance and consistency with these regulations. Further details on specific routes will be provided at the time a SMA exemption request is submitted.

The fiber optic route is not expected to occur within the shoreline setback area, however, an appropriate variance application will be submitted if necessary. Discussion will also include applicable zoning requirements and related permits for utility installations.

SIC would like to coordinate its construction schedule with the City to the extent possible, to address coordination with other utility and roadway projects being conducted. Pursuant to this, SIC representatives have already been attending utility coordination meetings held by the City Department of Facilities and Maintenance on this matter. The extent and duration of construction work for the various route segments would be determined during the design phase of this project. Thus, coordination of such details would be coordinated with the City at the appropriate time.

Construction related impacts would be addressed in the Draft EA. As part of the design phase, a traffic control plan would be prepared to minimize disruptions to vehicular traffic during construction activities. This plan would be coordinated with pertinent City agencies for review and approval as part of the normal construction plan review.

Necessary permits for excavation work within the City rights-of way will be obtained at the appropriate time. Appropriate easements from the City would also be obtained at the appropriate time. If groundwater is encountered, a City dewatering permit will be obtained if effluent is discharged into the City storm drainage system.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

PARTMENT OF TRANSPORTATION SERVIC!
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA • 711 KAPIOLANI BOULEVARD, SUITE 1200 • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

JOSEPH M. MAGALDI, JR.
DEPUTY DIRECTOR

November 16, 2000

Mr. Stephen Seiler
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Seiler:

Subject: Sandwich Isles Communication, Inc.
Underground Fiber Optic Telecommunication Cables – Island of Oahu
Early Consultation for Draft Environmental Assessment

A review of the project proposal found some points of concern. First, a detailed explanation should be given as to actual need for another fiber optic or cable infrastructure within the City's jurisdiction when other trunk lines and services from other communication companies may be available.

Secondly, if the fiber cables, conduits, manholes, and pullboxes are installed within the City's right-of-way by a private agency licensed by the State, then several pairs of dark fibers shall be dedicated to the City at no cost. The Department of Transportation Services would require at least four single-mode fibers.

Thirdly, if the project is constructed, an extensive traffic control plan, work schedules, and construction information campaign will be required to preclude and mitigate major traffic impacts before the City will issue any roadway permits.

If we can be of further assistance or if there are any questions, please call Don Hamada at 527-5004.

Sincerely,

CHERYL D. SOON
Director

CDS:ik

FILE COPY

SSFM INTERNATIONAL, INC.
RECEIVED
FILE

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075 010

February 1, 2001

Ms. Cheryl D. Soon, Director
Department of Transportation Services
City and County of Honolulu
Pacific Park Plaza, Suite 1200
711 Kapiolani Boulevard
Honolulu, Hawaii 96813

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

Dear Ms. Soon:

Thank you for your letter dated November 16, 2000 regarding the subject project. Sandwich Isles Communication, Inc. (SIC) was assigned a State Department of Hawaiian Home Lands (DHHL) license agreement to provide the installation of essential communications services to homestead properties statewide, including those on the Island of Oahu, at no cost to DHHL. Therefore, SIC is proposing this project which would install fiber optic duct lines within some City roadways, however, the vast majority would be within State highway facilities. Greater discussion of this would be provided in the Draft Environmental Assessment being prepared.

The purpose for the project is to specifically provide DHHL homestead properties with basic and advanced broad band telecommunications services. The required dedication of fiber at no cost to the City is a concern to SIC. However, SIC is open to discuss this matter at your earliest convenience, and representatives from SIC will contact you to arrange a mutually convenient time to meet on this matter.

As part of the design phase, a traffic control plan would be prepared to minimize disruptions to vehicular traffic during construction activities. This plan would be coordinated with pertinent City agencies for review and approval as part of the normal construction plan review. SIC would like to coordinate their construction schedule with the City to address coordination of other projects being conducted, and their representatives have already been attending meetings held by the City on this matter.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
3375 KOAPAKA STREET, SUITE H425 • HONOLULU, HAWAII 96819-1869
TELEPHONE: (808) 831-7761 • FAX: (808) 831-7750 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

ATTILIO K. LEONARDI
FIRE CHIEF

JOHN CLARK
DEPUTY FIRE CHIEF

November 22, 2000

Mr. Stephen Seiler, Planner
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Seiler:

Subject: Sandwich Isles Communication, Inc., Underground
Fiber Optic Telecommunication Cables – Island of Oahu
Early Consultation for Draft Environmental Assessment

We received your letter dated November 14, 2000, regarding the above-referenced project.

The Honolulu Fire Department requests that the following be complied with:

1. Maintain fire apparatus access throughout the construction site for the duration of the project.

2. Notify the Fire Communication Center at 523-4411 regarding any interruption in the existing fire hydrant system during the project.

Should you have any questions, please call Battalion Chief Kenneth Silva of our Fire Prevention Bureau at 831-7778.

Sincerely,

ATTILIO K. LEONARDI
Fire Chief

AKL/KS:jo

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

February 1, 2001

SSFM 2000_075 010

Mr. Attilio K. Leonardi, Fire Chief
Fire Department
City and County of Honolulu
3375 Koapaka Street, Suite H425
Honolulu, HI 96819-1869

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

Dear Mr. Leonardi:

Thank you for your letter dated November 22, 2000 regarding the subject project.

We note your comments that: 1) fire apparatus access be maintained throughout the construction site for the duration of the project; and 2) the Fire Communication Center be notified regarding any interruption in the existing fire hydrant system during the project's construction. The contractor would be required to comply with these requirements throughout construction of the project.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111
http://www.honolulupd.org
www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

LEE D. DONOHUE
CHIEF

MICHAEL CARVALHO
ROBERT AU
DEPUTY CHIEFS

SSFM INTERNATIONAL, INC.
RECEIVED
JS
FILE

OUR REFERENCE CS-LS

November 22, 2000

Mr. Stephen Seiler, Planner
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Seiler:

Thank you for the opportunity to review and comment to the Draft Environmental Assessment for the Underground Fiber Optic Telecommunication Cables for the island of Oahu.

It should be noted that all of the police districts will be affected by the proposed installation of the underground duct system. Dust, noise, and traffic problems during this phase will be inevitable and will likely cause an increase in calls for police service.

Traffic congestion will also be unavoidable. Therefore, we strongly recommend that the contractor work closely with the affected district commands to discuss possible solutions wherever and whenever there are to be any changes or disruptions in the regular traffic flow.

If there are any questions, please call Carol Sodetani of the Support Services Bureau at 529-3658.

Sincerely,

LEE D. DONOHUE
Chief of Police

By
EUGENE UEMURA, Assistant Chief
Support Services Bureau

cc: Districts 1-8

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075 010

February 1, 2001

Mr. Eugene Uemura, Assistant Chief
Support Services Bureau
Police Department
City and County of Honolulu
801 South Beretania Street
Honolulu, Hawaii 96813

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

Dear Mr. Uemura:

Thank you for your letter dated November 22, 2000 regarding the subject project. Short-term construction activities will inevitably result in some temporary construction noise, fugitive dust, and traffic disturbances.

The design of each segment of fiber optic route would include provisions to ensure the contractor complies with applicable regulations concerning noise and dust. Such measures are intended to minimize disturbances to surrounding properties and subsequent calls to your department.

A traffic control plan would be prepared as part of the construction plans developed for the various route segments to minimize disruptions to vehicular traffic. This traffic control plan would be submitted to the City for review and approval as part of the normal construction plan review. The contractor would also appropriately coordinate their construction work with the affected district commands.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

DOWNTOWN NEIGHBORHOOD BOARD NO. 18

c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

FILE COPY

December 19, 2000

Mr. Stephen Seiler
Planner
SSFM International, Inc.
501 Sumner St., Suite 502
Honolulu, HI 96817
via fax: 521-7348

Re: Draft EA Early Consultation Letter, Sandwich Isles Communication, Underground Fiber Optic Telecommunication Cables

Dear Mr. Seiler:

Thank you for the opportunity to comment on the above. The board has no comments at this time. We look forward to receiving the Draft Environmental Assessment.

Sincerely,

Lynne Matusow

Lynne Matusow, Chair

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075 010

February 1, 2001

Ms. Lynne Matusow, Chair
Downtown Neighborhood Board No. 18
c/o Neighborhood Commission
City Hall, Room 400
Honolulu, Hawaii 96813

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

Dear Ms. Matusow:

Thank you for your letter Dated December 19, 2000 regarding the subject project.

We note that the Board has no comments at this time, and would like a copy of the Draft Environmental Assessment. We will include you in our distribution of the Draft EA for this project.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-0001

SSFM INTERNATIONAL, INC.
RECEIVED
JAN - 4 2001
/35
FILE

January 3, 2000

Mr. Stephen Seiler
Planner
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, HI 96817

Dear Mr. Seiler:

This is in reference to your letter dated November 14th, 2000, regarding Sandwich Isles Communication, Inc.'s underground fiber optic telecommunication installation.

We reviewed your maps with the proposed route and have determined that we have various underground cables in the area. As the project proceeds and more detailed design is completed, please submit them for our review and comment.

If you have any questions, please call me at (808) 543-7281.

Sincerely,

Enrique M. Che, P.E.
Director, Planning and Design Division
Hawaiian Electric Company

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075 010

February 1, 2001

Mr. Enrique M. Che, P.E., Director
Planning and Design Division
Hawaiian Electric Company, Inc.
P.O. Box 2750
Honolulu, HI 96840-0001

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

Dear Mr. Che:

Thank you for your letter dated January 3, 2001 regarding the subject project. Appropriate coordination would be conducted with Hawaiian Electric Company, Inc. during the design and construction plan review of the project to ensure your underground cables are not negatively impacted by the project. Sandwich Isles Communication, Inc. will also coordinate any electrical power requirements for their network equipment with your department.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

THE OUTDOOR CIRCLE
1314 South King St., Suite 306 • Honolulu, HI 96814
Phone: 808-593-0300 Fax: 808-593-0525

December 8, 2000

Mr. Stephen Seiler
Planner
SSFM International, Inc.
501 Sumner Street, Ste. 502
Honolulu, HI 96817

RE: Sandwich Isles Communication Inc. Underground Fiber Optic Telecommunication Cables--Island of Oahu
Early Consultation for Draft Environmental Assessment

Dear Mr. Seiler:

Thank you for including The Outdoor Circle in your request for early consultations for the Draft Environmental Assessment on the above referenced project.

The Outdoor Circle is particulary interested in the trees which line our streets and highways. We would like assurance that whenever cabling comes 15-feet or closer to the base of a tree that a certified arborist will be on site to hand cut the tree roots and evaluate the best way to proceed. Our trees are an important part of Oahu's infrastructure and we believe that they should be protected at all costs.

Thank you for the opportunity to comment.

Sincerely,

Mary Steiner
CEO

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

February 1, 2001

SSFM 2000_075 010

Ms. Mary Steiner, CEO
The Outdoor Circle
1314 South King Street, Suite 306
Honolulu, Hawaii 96814

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

Dear Ms. Steiner:

Thank you for your letter dated December 8, 2000 regarding the subject project. We note your comments regarding the cutting of tree roots along the proposed fiber optic cable alignment and concern with protecting trees lining the roadways.

The contractor will be responsible for following either State or City construction standards and practices associated with trench excavation, backfill, and pavement restoration within public roadway rights-of-ways. Street tree roots could be pruned to promote healing and avoid potential infection that is normally associated with roots that are jagged or split from excavation machinery. This practice is not required under existing regulations, but would be considered during the project's design to help prevent unnecessary root mortality and protect trees.

Thank you for taking the time to review this project. If you have any questions, please give me a call at 531-1308.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Project Planner
Email: rsato@ssfm.com

Draft EA
Comment Letters & Responses

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

REPLY TO ATTENTION OF

March 22, 2001

Regulatory Branch

Mr. Ronald A. Sato, AICP
SSM International, Inc
501 Summer Street, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Sato:

This letter responds to your request for comments on the draft Environmental Assessment for Sandwich Isles Communication, Inc. Oahu Rural Fiber Optics Duct Lines Project, dated March 2001. Based on the information provided it appears that the cables will cross numerous streams; therefor, one or more Department of the Army (DA) permits will be required for this project. When planning is further along, we will be able to provide more details concerning the permit requirements. When the Final Environmental Assessment is prepared, it should include information about the streams which will be crossed.

If you have any questions concerning this determination, please contact William Lennan of my staff at 438-6986 or FAX 438-4060, and reference File No. 200100170.

Sincerely,

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

Copy furnished
Office of Environmental Quality Control, Department of Health, 235 South Beretania St., Room702, Honolulu, HI 96813
Mr. Michael Amuro, Highways Division, Right-of-Way Branch, Department of Transportation, 601 Kamokila Boulevard, Suite 691, Kapolei, HI 96707

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

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

Dear Mr. Young:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated March 22, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

The proposed route for the fiber optic duct line will follow existing highways and roadways that will cross several perennial and intermittent streams. The Draft Environmental Assessment did identify existing perennial streams being crossed, however, further clarification will be provided to identify such streams in the Final Environmental Assessment.

The crossing of streams would be either via bridge attachments or using directional drilling under such streams to minimize impacts to beds and banks. Consequently, 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.

If you have any questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

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 Minaal, Director
Department of Transportation, State of Hawai'i
869 Punchbowl Street
Honolulu, Hawai'i 96813-5097

Dear Messrs. Fukunaga, Soon and Minaal:

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 possibility 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 S2 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.

The historical period studied in a cultural impact assessment should commence with the initial presence in the area of the particular group whose cultural practices and features are being assessed. The types of cultural practices and beliefs subject to assessment may include subsistence, commercial, residential, agricultural, access-related, recreational, and religious and spiritual customs.

The types of cultural resources subject to assessment may include traditional cultural properties or other types of historic sites, both man made and natural, including submerged cultural resources, which support such cultural practices and beliefs.

The Environmental Council recommends that preparers of assessments analyzing cultural impacts adopt the following protocol:

(1) identify and consult with individuals and organizations with expertise concerning the types of cultural resources, practices and beliefs found within the broad geographical area, e.g., district or ahupua'a;

(2) identify and consult with individuals and organizations with knowledge of the area potentially affected by the proposed action;

(3) receive information from or conduct ethnographic interviews and oral histories with persons having knowledge of the potentially affected area;

(4) conduct ethnographic, historical, anthropological, sociological, and other culturally related documentary research;

(5) identify and describe the cultural resources, practices and beliefs located within the potentially affected area; and

(6) assess the impact of the proposed action, alternatives to the proposed action, and mitigation measures, on the cultural resources, practices and beliefs identified.

Interviews and oral histories with knowledgeable individuals may be recorded, if consent is given, and field visits by preparers accompanied by informants are encouraged. Persons interviewed should be afforded an opportunity to review the record of the interview, and consent to publish the record should be obtained whenever possible. For example, the precise location of human burials are likely to be withheld from a cultural impact assessment, but it is important that the document identify the impact a project would have on the burials. At times an informant may provide information only on the condition that it remain in confidence. The wishes of the informant should be respected.

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.

6. A discussion concerning the cultural resources, practices and beliefs identified, and, for resources and practices, their location within the broad geographical area in which the proposed action is located, as well as their direct or indirect significance or connection to the project site.

7. A discussion concerning the nature of the cultural practices and beliefs, and the significance of the cultural resources within the project area, affected directly or indirectly by the proposed project.

8. An explanation of confidential information that has been withheld from public disclosure in the assessment.

9. A discussion concerning any conflicting information in regard to identified cultural resources, practices and beliefs.

10. An analysis of the potential effect of any proposed physical alteration on cultural resources, practices or beliefs; the potential of the proposed action to isolate cultural resources, practices or beliefs from their setting; and the potential of the proposed action to introduce elements which may alter the setting in which cultural practices take place.

11. A bibliography of references, and attached records of interviews which were allowed to be disclosed.

The inclusion of this information will help make environmental assessments and environmental impact statements complete and meet the requirements of Chapter 343, HRS. If you have any questions, please call us at 586-4185.

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
State of Hawaii
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Projects
Comment Letter for Draft Environmental Assessments

Thank you for your letter dated April 23, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Line project. For ease of reference, our responses are numbered to correspond to the comments in your letter.

1. Cumulative Impacts. In light of your comments concerning the discussion of exemption provisions, the Final Environmental Assessment (Final EA) will be revised to remove this discussion.

   The Final EA will expand the discussion on the cumulative impacts associated with this project. This discussion will address the interaction of other projects being implemented of which their impacts may have the potential to interact with those of the proposed project in producing cumulative impacts.

   Based upon meetings held with your office in May and October of last year, this project was discussed and it was agreed that separate environmental assessment documents for each county were appropriate and should be prepared. Impacts associated with the fiber optic duct line project would mainly be related to construction activities such as traffic congestion, dust, underground archaeological sites, noise, etc. Thus, construction related impacts were more appropriately addressed at the individual county level. The cumulative impact discussion will thus be framed to address other major utility projects being implemented that have the potential to cause similar impacts or generate conflicts during construction.

   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.

   With regard to the comment on cable landing sites, there are no specific landing sites established at this time as SIC still needs to conduct planning and feasibility studies to evaluate them. SIC would like to pursue landing sites in Waianae, Waimanalo, and Haleiwa. However, there are no specific

locations or sites established at this time which can be adequately and reasonably addressed. Thus, addressing possible co-location of landing sites, new sites, or alternatives is premature at this time. As discussed and agreed to at the meetings held with your office last year, an appropriate environmental document will be prepared to address these landings sites once project details are established.

2. Use of Federal Funds and Compliance with Federal Requirements. 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. The Final EA will address this project's interaction with the other utility projects that would be implemented along the corridor routes. SIC is an active participant at utility coordination meetings conducted by the State DOT and City. SIC is also meeting other telecommunication companies to coordinate similar construction activities.

4. Secondary (or indirect) Impacts. The Final EA will better clarify potential secondary impacts that may result from this fiber optic cable project. SIC's main focus is to provide emergency, basic, and advanced telecommunication services to DHHL properties. The project could improve the existing communication service being provided by other utility companies. However, we do not expect adverse impacts on the environment from this potential improvement in telecommunication service.

   The network operation center proposed by SIC in Mililani is not an example of the secondary effect resulting from the fiber optic cable, but rather the headquarters for the company that wishes to establish such service. An appropriate environmental document is being prepared to address this development. The springing up of large high-tech centers on Oahu as a result of this fiber optic cable project is highly unlikely. Development and feasibility of such high-tech centers are dependent upon several complex and more important factors such as business climate, education, labor force, etc. Thus, the availability of fiber optic duct lines represents only one very small component that goes into such business decisions in light of the rapid changes in technology occurring.

5. Cultural Impact Requirements. The Draft EA did address the project's likely impact on traditional cultural practices. The fiber optic cables would be installed within existing developed roadways and rights-of-way where no known traditional cultural practices are occurring 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 also 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 Oahu Island Burial Council. In the event burials are encountered, consultation with SHPD and the Oahu Island Burial Council would be conducted in compliance with Chapter 6E, HRS. This may include the search for lineal descendents and consultation with the Oahu Island Burial Council to address proper treatment.

If you have any other questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

Attachment

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.
Paushi 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.

BENJAMIN J. CAYETANO
GOVERNOR

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

FILE COPY

April 24, 2001

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

Dear Mr. Sato:

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

We have reviewed the subject DEA as transmitted by your letter dated March 20, 2001.

We have no further comments to add to our letter dated November 16, 2000, providing comments during the 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

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Mr. Anthony Ching, Executive Officer
State Land Use Commission
Department of Business, Economic Development and Tourism
State of Hawaii
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Ching:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 24, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

We acknowledge that your agency has no further comments to offer on the proposed project..

If you have any other questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

HAWAII COMMUNITY DEVELOPMENT AUTHORITY

KAKAAKO
Where Hawaiʻi Grows The Sun

Benjamin J. Cayetano
Governor

Lori Ann C. Lum
Chair

Jan S. Yokota
Executive Director

Ref. No.: GF ST 3.33

April 19, 2001

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

Dear Mr. Sato:

Re: Draft Environmental Assessment
Sandwich Isles Communication, Inc.
Oahu Rural Fiber Optic Duct Lines Project

Thank you for the opportunity to comment on the subject draft Environmental Assessment. We have no comments to offer on the proposed project.

Should you have any questions, please call Susan Tamura at 587-8180.

Sincerely,

Jan S. Yokota
Executive Director

JSY/SJT:gst

SSFM INTERNATIONAL, INC.
RECEIVED
APR 2 5 2001
JKS
FILE

677 Ala Moana Boulevard
Suite 1001
Honolulu, Hawaii
96813

Telephone
(808) 587-2870

Facsimile
(808) 587-8150
e-Mail
contact@hcdaweb.org
Web site
www.hcdaweb.org

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Mr. Jan S. Yokota, Executive Director
Hawaii Community Development Authority
677 Ala Moana Blvd., Suite 1001
Honolulu, Hawaii 96813

Dear Mr. Yokota:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 19, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

We acknowledge that your agency had no comments to offer on the proposed project..

If you have any other questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

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

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

In reply, please refer to:
File:

01-005/cpo

SSFM INTERNATIONAL, INC.
RECEIVED
MAY 02 2001
JRAS
FILE

April 25, 2001

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

Dear Mr. Sato:

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

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Mr. Gary Gill, Deputy Director
Environmental Health Administration
State of Hawaii Department of Health
P.O. Box 3378
Honolulu, Hawaii 96801

Dear Mr. Gill:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 25, 2001 on the Draft Environmental Assessment (Draft EA) for the Oahu Rural Fiber Optic Duct Lines Project.

As discussed in the Draft EA, appropriate Best Management Practices will be implemented by the contractor to minimize short-term construction related impacts associated with fugitive dust and noise. All construction activities for this project will be conducted in compliance with Department of Health's Administrative Rules, Chapter 11-60, "Air Pollution Control" and Chapter 11-46, "Community Noise Control".

The measures identified to control dust from the road areas will be considered for implementation as appropriate. The contractor will also be required to comply with the identified noise regulations concerning construction equipment and activities.

If you have any questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

BENJAMIN J. CAYETANO
GOVERNOR

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

PAUL G. LeMAHIEU, Ph.D.
SUPERINTENDENT

OFFICE OF THE SUPERINTENDENT

April 4, 2001

Mr. Ronald A. Sato, AICP
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawai'i 96817

Dear Mr. Sato:

Subject: Sandwich Isles Communication
Oahu and Kauai 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 the trenching. The advance notification will allow the affected school to prepare for possible noise and traffic disruptions.

Thank you for the opportunity to comment.

Very truly yours,

Patricia Hamamoto

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

PLeM:hy

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

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Dr. Paul LeMahieu, Superintendent of Education
Office of the Superintendent
Department of Education
State of Hawaii
Queen Liliuokalani Building
1390 Miller Street
Honolulu, Hawaii 96813

Dear Dr. LeMahieu:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 4, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

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

If you have any questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111
http://www.honolulupd.org
www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

LEE D. DONOHUE
CHIEF

MICHAEL CARVALHO
ROBERT AU
DEPUTY CHIEFS

OUR REFERENCE CS-LS

April 5, 2001

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

Dear Mr. Sato:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the Sandwich Isles Communications, Inc., Oahu Rural Fiber Optic Duct Lines Project.

We have noted that the contractor will be preparing traffic control plans and will be coordinating with the affected police district commands as a means of minimizing disruptions to vehicular traffic during the installation phase of this project.

However, as we stated in our previous comment of November 22, 2000, all police districts will be affected by this proposal. The inevitable dust, noise, and traffic problems related to the installation phase of this project will likely cause an increase in calls for police service and will be unavoidable.

If there are any questions, please call Carol Sodetani of the Support Services Bureau at 529-3658.

Sincerely,

LEE D. DONOHUE
Chief of Police

By
EUGENE UEMURA, Assistant Chief
Support Services Bureau

SSFM INTERNATIONAL, INC
RECEIVED
APR 09 2001
JR3
FILE

cc: Mr. Michael Amuro, DOT
OEQC
Districts 1-8

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075.010

May 22, 2001

Mr. Lee D. Donohue, Chief of Police
Police Department
City and County of Honolulu
501 South Beretania Street
Honolulu, Hawaii 96813

Dear Mr. Donohue:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 5, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

Your comments on inevitable dust, noise, and traffic congestion from construction of the project likely causing an increase in calls to your department is noted.

The applicant will require the contractor to appropriately notify your district commands to minimize disruptions in vehicular traffic during construction activities. In addition, a qualified full-time construction inspector will be present at all times to monitor and provide quality control of construction work performed to further minimize potential calls to your department.

If you have any questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
3375 KOAPAKA STREET, SUITE H425 • HONOLULU, HAWAII 96819-1869
TELEPHONE: (808) 831-7761 • FAX: (808) 831-7750 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

ATTILIO K. LEONARDI
FIRE CHIEF

JOHN CLARK
DEPUTY FIRE CHIEF

SSFM INTERNATIONAL, INC
RECEIVED
APR 2001
VRS
FILE

April 16, 2001

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

Dear Mr. Sato:

Subject: Draft Environmental Assessment for the
Sandwich Isles Communication, Inc.
Oahu Rural Fiber Optic Duct Lines Project

We received your letter dated March 20, 2001, regarding the Draft Environmental Assessment for the above-referenced project.

The Honolulu Fire Department requests that the following be complied with:

1. Maintain fire apparatus access throughout the construction site for the duration of the project.

2. Notify the Fire Communication Center at 523-4411 regarding any interruption in the existing fire hydrant system during the project.

Should you have any questions, please call Battalion Chief Kenneth Silva of our Fire Prevention Bureau at 831-7778.

Sincerely,

Attilio K. Leonardi

ATTILIO K. LEONARDI
Fire Chief

AKL/KS:jo

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

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Mr. Attilio K. Leonardi, Fire Chief
Fire Department
City and County of Honolulu
3375 Koapaka Street, Suite H425
Honolulu, Hawaii 96819

Dear Mr. Leonardi:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 16, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

The applicant will require that the contractor maintain fire access throughout the construction site for the duration of the project. The contractor will also be required to notify the Fire Communication Center at 523-4411 should there be any interruption in the existing fire hydrant system during the project.

If you have any other questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA • 711 KAPIOLANI BOULEVARD, SUITE 1200 • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

TP3/01-01245R

April 24, 2001

SSFM INTERNATIONAL, INC.
RECEIVED
APR 26 2001
JRAS
FILE

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

Dear Mr. Sato:

Subject: Sandwich Isles Communication, Inc.
Oahu Rural Fiber Optic Duct Lines Project

In response to the March 20, 2001 letter from SSFM International, Inc., the draft environmental assessment (EA) for the subject project was reviewed. The following comments are the result of this review:

1. As related in our November 16, 2000 letter, the utility agreement for those portions of the project within the City's right-of-way will require that two pairs of single-mode fiber optic cable be dedicated to the City at no cost.

2. Section 5.5 of the draft EA should discuss the impact on existing bus stops. During the construction phase, existing bus stops may be affected and therefore may need to be temporarily relocated.

3. When specific plans involving City-jurisdiction streets are developed, the construction plans and traffic control plans should be submitted for review and comment. Work should be phased whereby the project's impact on the City roadway system is kept to a minimum. City streets should be kept open to traffic flow at all times. Street closures and detours should be avoided, if at all possible.

4. In the Primary Urban Center, the subject project proposes the location of the fiber optic duct lines along some of the same roadways to be used by the Primary Corridor Transportation Project Bus Rapid Transit system. Appropriate coordination will be essential to minimize the impacts of both projects.

Should you have any questions regarding these comments, please contact Faith Miyamoto of the Transportation Planning Division at 527-6976.

Sincerely,

CHERYL D. SOON
Director

cc: Mr. Michael Amuro, State Department of Transportation, Highways Division, Right-of-Way Branch

Office of Environmental Quality Control

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Ms. Cheryl D. Soon, Director
City and County of Honolulu
Department of Transportation Services
711 Kapiolani Boulevard, Suite 1200
Honolulu, Hawaii 96813

Dear Ms. Soon:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 24, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project. For ease of reference, our responses are numbered to correspond to the comments in your letter.

1. The purpose of the project is to specifically provide DHHL homestead properties with basic and advanced broad band telecommunications services. In the matter of DTS requiring two pairs of fiber optic cable being dedicated to the City, the applicant would like to understand the basis for this requirement. The applicant is available to discuss this matter further at your earliest convenience.
2. The Final EA will address potential short-term impacts on existing bus stops due to construction activities. Appropriate coordination will be conducted with your department during the preparation and review of construction plans to address the temporary relocation of bus stops affected.
3. All project construction and traffic control plans will be submitted to your department for review and comment. Construction work will try to phase activities to minimize disruptions to City roadways. Street closures and detours will be avoided if possible.
4. Thank you for informing us that portions of the planned fiber optic route is located along some of the same roadway corridors to be used for the City's Primary Corridor Transportation Project Bus Rapid Transit System. Appropriate coordination with your department will be conducted to minimize the impacts of both projects.

If you have any other questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI, AIA
DIRECTOR

LORETTA K.C CHEE
DEPUTY DIRECTOR

2001CLOG-1224(RY)

May 2, 2001

SSFM INTERNATIONAL, INC.
RECEIVED
MAY 08 2001
JAPS
FILE

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

Dear Mr. Sato:

Subject: Sandwich Isles Communications, Inc. Underground Fiber Optic Telecommunications Cables - Island of Oahu
Draft Environmental Assessment (DEA)

We have reviewed the subject Draft Environmental Assessment and have no additional comments to our previous letter of January 2, other than the following:

Portions of the project that are underground or appurtenant fixtures less than 4 feet in height, within the Special Management Area, may be exempt from Special Area Management requirements provided that the development is not part of a larger project, the cumulative impact of which may have a significant environmental effect on the Special Management area.

We are aware that the system's headquarters, known as the Network Operations Center (NOC), is being proposed in Mililani and is under review in a separate environmental document. The DPP is the accepting authority. Inasmuch as the NOC is an integral part of the fiber optic system, the issue of **segmentation** could be avoided by incorporating information and impact disclosure statements about the NOC in the subject DEA. In addition, any facilities/structures contemplated at coastal cable landing sites and their anticipated impacts, should also be disclosed in this document.

If you have any questions, you may contact Raymond Young of our staff at (808) 527-5839.

Sincerely yours,

RANDALL K. FUJIKI, AIA
Director of Planning and Permitting

RKF:lh
Doc 93340

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Mr. Randall Fujiki, Director
City and County of Honolulu
Department of Planning and Permitting
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Fujiki:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated May 2, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

Sandwich Isles Communications, Inc. intends to meet all the necessary requirements for work within the Special Management Area. The Final Environmental Assessment (Final EA) will expand discussion of the cumulative impact of the project. Appropriate coordination will be conducted with your department to confirm the exemption status for portions of the proposed fiber optic route.

The Final EA will incorporate discussion of the Network Operations Center (NOC) as requested, and an environmental document has already been prepared to address this operations center.

With regard to cable landing sites, there are no specific landing sites established at this time as SIC still needs to conduct planning and feasibility studies to evaluate them. Thus, addressing probable impacts associated with such landing sites and facilities is not reasonable or appropriate at this time. An appropriate environmental document will be prepared to address these landings sites once project details are established.

If you have any other questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, HONOLULU HI 96813

Jeremy Harris
Mayor

Timothy E. Steinberger, P.E.
Acting Director

FILE COPY

PRO 00-24

April 23, 2001

via fax: 521-7348
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Attention: Mr. Ronald A. Sato, AICP

Subject: Draft Environmental Assessment (EA) for the Sandwich Isles Communication, Inc. Oahu Rural Fiber Optic Duct Lines Project

Thank you for allowing us to review the subject document. Our comments are as follows:

1). All sewer infrastructure must be located and protected during the project. We are especially concerned with the proposed horizontal directional drilling activity, which may run at the same depths as existing sewer mains.

2). Be aware that there may be shallow buried sewer laterals in Kaneohe, Kailua, Waimanalo, throughout the primary urban center, Mililani and Waianae, which may interfere with the alignment of the proposed duct lines.

3). Consider the need for testing and inspecting sewer lines and laterals after the construction of the duct lines is completed. Damage to sewers could result in sewage spills, exfiltration of sewage, clogging of sewer lines, and infiltration of groundwater and storm water into the sanitary sewers, which could lead to ground settlement, as well as surcharging and overflowing of sewers. If any damage is done to sewer lines, the contractor must be responsible for repairs.

4). We are aware of two sewer projects that may be constructed at about the same time as the proposed duct lines, the Kamehameha Highway Reconstructed Sewer, Mililani, and the Kapiolani Blvd. Trunk Sewer Rehabilitation. Please consult with the Department of Design and Construction regarding the specifics of the location and timing of these projects.

If you have any questions, please call Mr. Jack Pobuk, Program Coordinator, at 527-6696.

Sincerely,

TIMOTHY E. STEINBERGER, P.E.
Acting Director

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Mr. Timothy E. Steinberger, P.E.
Acting Director
City and County of Honolulu
Department of Environmental Services
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Steinberger:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 23, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

We acknowledge your concerns to locate and protect existing sewer infrastructure during construction activities which may include directional drilling. Thank you for also notifying us about shallow buried sewer laterals in various areas of the island.

To prevent damages to existing sewer lines and laterals, appropriate coordination efforts will be conducted with the City and Hawaii American Water Company. This would include the review of construction plans for fiber optic cables. In addition, a qualified full-time construction inspector will be present at all times to monitor and provide quality control of construction work performed. Consideration will also be given to inspecting sewer lines and laterals in the area after construction of the duct lines is completed. Furthermore, the contractor will be responsible for repairs to any damaged sewer lines and laterals.

Thank you for providing information regarding the two proposed sewer projects along Kamehameha Highway and Kapiolani Boulevard. The applicant will consult with the Department of Design and Construction to obtain more specifics of the location and timing of these projects.

If you have any other questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU
630 SOUTH BERETANIA STREET
HONOLULU, HI 96843

April 10, 2001

SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817

Attention: Ronald A. Sato

Gentlemen:

Subject: Your Transmittal of March 20, 2001 of the Draft Environmental Assessment for the Sandwich Isles Communication's Oahu Rural Fiber Optic Duct Lines Project, Oahu, Hawaii

Thank you for the opportunity to review and comment on the subject document for the proposed fiber optic cable project.

We have no objections to the proposed project. We understand the construction plans will be coordinated and submitted for our review to minimize any impacts to our water system facilities.

If you have any questions, please contact Kathryn Fujikami at 527-5221.

Very truly yours,

CLIFFORD S. JAMILE
Manager and Chief Engineer

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

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

May 22, 2001

SSFM 2000_075.010

Clifford S. Jamile, Manager and Chief Engineer
Board of Water Supply
City and County of Honolulu
630 South Beretania Street
Honolulu, Hawaii 96843

Dear Mr. Jamile:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project, Oahu, Hawaii
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 10, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

We acknowledge that your department has no objections to the proposed project. Project construction plans will be submitted to your department for your review to minimize impacts to existing water systems.

If you have any other questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

DOWNTOWN NEIGHBORHOOD BOARD NO. 13

c/o NEIGHBORHOOD COMMISSION • CITY HALL, ROOM 400 • HONOLULU, HAWAII 96813

April 10, 2001

Mr. Ronald Sato, AICP
SSFM International, Inc.
501 Sumner Street, Suite 502
Honolulu, HI 96817

Re: Draft EA for Sandwich Isles Communications, Inc. Oahu Rural Fiber Optic Duct Lines Project

Dear Mr. Sato:

Thank you for making a presentation on the above referenced project at the April 2001 Downtown Neighborhood Board meeting.

Board members are concerned with the continual disruptions to traffic which are caused by construction project after construction project. The Board voted to ask you to reconsider the routing in the Downtown area by using more direct routing from Dillingham/Liliha to Papakolea and Papakolea to the former Stadium Bowl-O-Drome and eliminate the major routes of Nimitz, King, and Beretania. These three arteries are heavily congested.

Other comments made at the meeting concerned noise which would bother residents in the densely populated community, especially if night work were done. We have major high rises with thousands of occupants, many in apartments without air conditioning, along Beretania from River Street to Bishop Street, and also the Governor's residence at Richards Street, along King Street from Maunakea to Bethel, and along Nimitz from River Street to Richards Street. Noise rises and tends to be louder as you go to higher floors of a building.

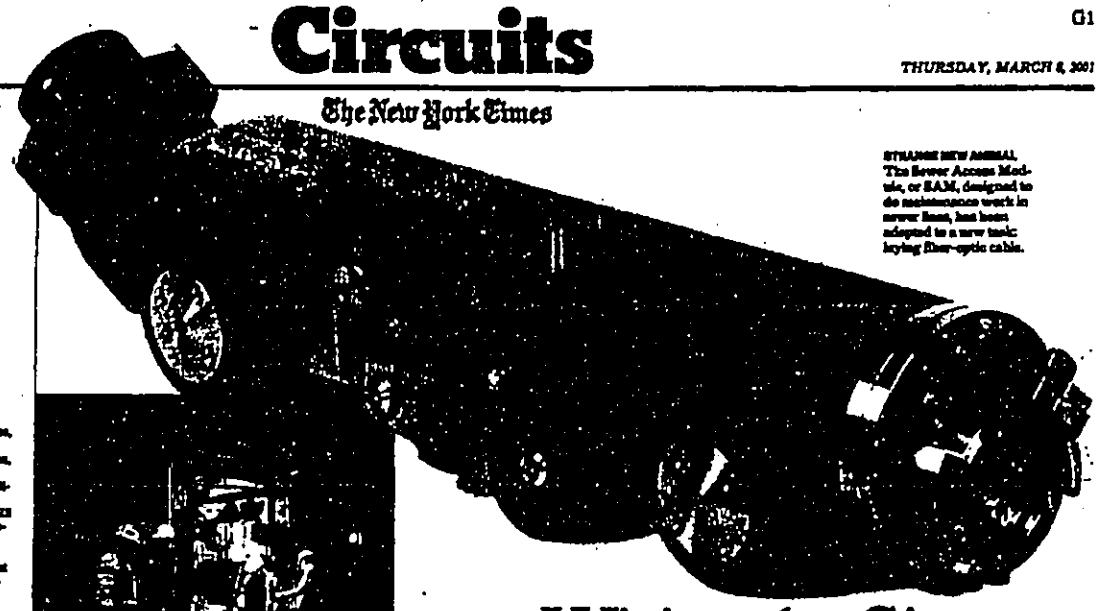
I have taken the liberty of enclosing a copy of an article titled "Wiring the City: Humans Won't Do," from the March 8, 2001 *New York Times*. In Albuquerque, New Mexico, they are using a robot to install fiber-optic cables using the sewers instead of tearing up city streets. I did not know if you were aware of this technology.

Sincerely,

Lynne Matusow

Lynne Matusow, Chair
cc: Sandwich Isles Communications, Inc.
Department of Transportation, Highways Division, Right-of-Way Branch
Office of Environmental Quality and Control

The New York Times



STRANGE NEW ANIMAL The Sewer Access Module, or SAM, designed to do maintenance work in sewer lines, has been adapted to a new task: laying fiber-optic cable.

TUNNEL VISION A CityNet crew sends a robot into a sewer in Albuquerque to install fiber-optic cables without having to tear up city streets. A tiny camera sends images to an operator inside a truck.

Photographs by Cary Wood for The New York Times

Wiring the City: Humans Won't Do

Using One Network (the Sewers) to Create Another Means Trading In Those Jackhammers for a Robot

By JOHN SCHWARTZ

ALBUQUERQUE

MANHOLE 498 is a "good hole," the crew says, almost free of sand and surprisingly free of roaches. I am standing at the bottom of the 15-foot-deep shaft, straddling a narrow channel of greasy, gray water that murmurs between my high-water boots. Sitting conspicuously in the channel is a long, thin robot on wheels: the Sewer Access Module, or SAM. The robot is far more comfortable in this dank environment than I am. For one thing, it's waterproof. Also, SAM doesn't have a nose.

The robot was created to fulfill a dream: laying fiber-optic cable within city sewer systems. Owned by CityNet Telecommunications Inc., a new company in Silver Spring, Md., the device, which looks a little like the unlikely offspring of a dachshund and an Electrolux vacuum cleaner, is on its first American mission. If all works as planned, efforts like this promise sweet relief to Americans nationwide who have sacrificed their shock absorbers, wheels and lower backs to streets turned into wastelands by companies cutting and repaving streets to lay the "last mile" of fiber-optic cable.

The slender strands of miraculous glass that make up fiber-optic cable are the path of choice for high-speed voice and data communications. Cities hoping to attract and hold on to high-tech business know they need to upgrade from the old copper wires sending through their phone networks, and companies are rushing to fill in the remaining distance between the major switching stations and the businesses that will actually hook up to them. CityNet asserts that its methods are 90 percent faster than street-cutting methods and that its costs are comparable to those of damaging road work.

The company's chief executive, Robert G. Berger, said the idea of using municipal water systems to deliver bursts of laser light came to him in the shower. His background had prepared him for the epiphany: Mr. Berger, a telecommunications lawyer, was serving his second term on the Washington Suburban Sanitary Commission. "I was looking up at the water, washing the shampoo out of my hair, and said: 'Oh, my gosh! I'm a water and sewer commissioner — it's the one infrastructure that goes everywhere.' "

Mr. Berger's ideas had to change somewhat over time: his first idea was to use the water supply system, and the sewers, but the high water pressure, small pipes and safety concerns led him instead to the other end of the water system.

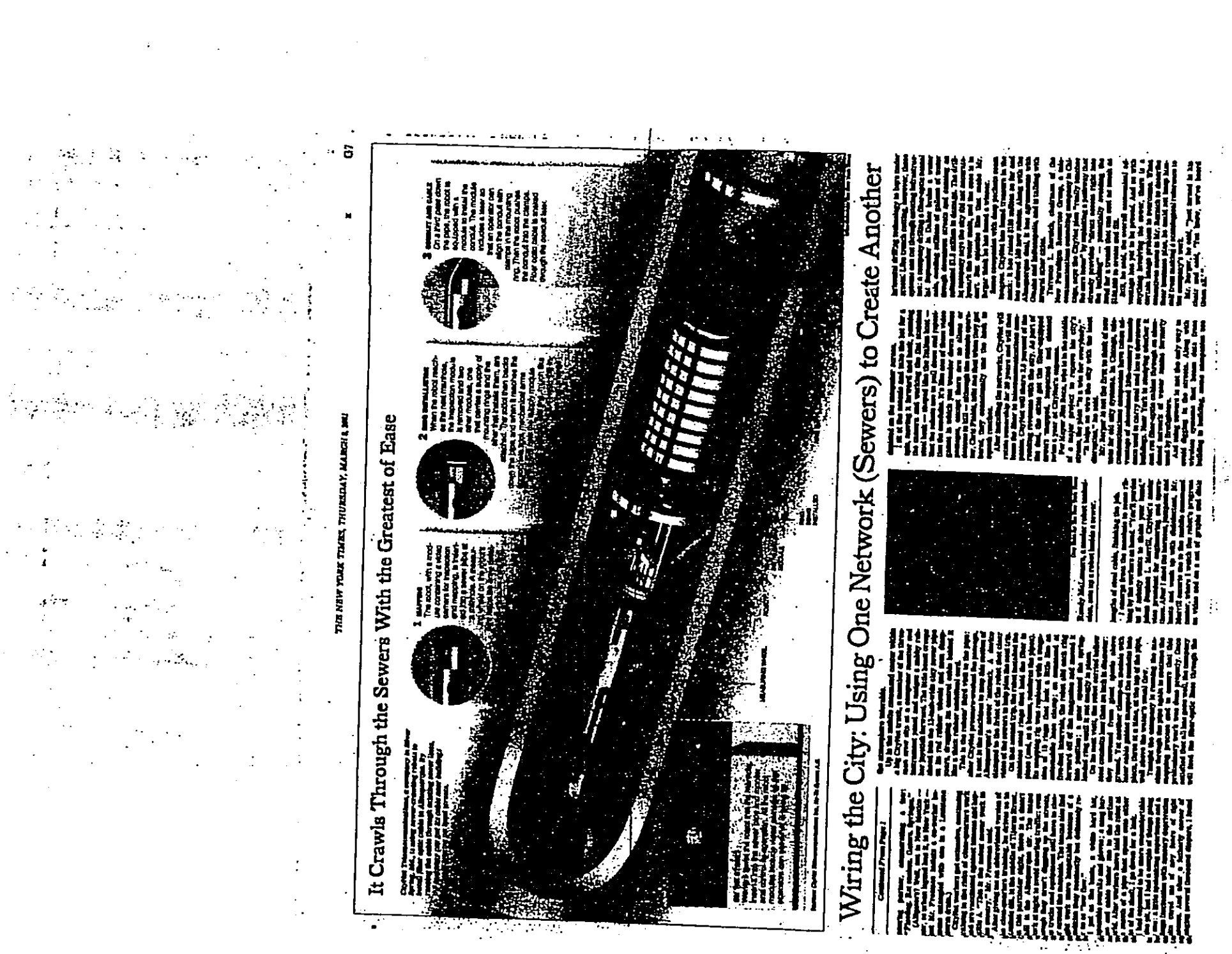
And, inevitably, to robots. Although sewer pipes come in many sizes, few can accommodate a person. Robots, however, come in all shapes and sizes; and when the science fiction visionaries promised that some day robots would handle the dirty tasks that humans would abhor, well, this was exactly the sort of thing they were talking about.

At a trade show, Mr. Berger discovered Ka-Te Systems A.G., a Swiss company that made sewer-roving robots for maintenance work; it had developed a robot that was laying fiber-optic cable in Hamburg, Germany. CityNet bought the North American rights to KAM's and ordered three. The robots, command truck and other equipment cost about $800,000 for each team, the company says.

Robots do not take humans out of the mesh entirely, however. Somebody has to get the robot into the manhole, to build in the "slack loops" that allow the connections from the fiber-optic network into buildings, and to take on other tasks, sometimes unpleasant. It's a dirty job, but somebody's got to do it.

Under any circumstances, sewers can be dangerous places. The workers who call themselves "sewer rats" can be asphyxiated or choke on toxic fumes; people routinely pour poisons into the sewer system for illegal but convenient disposal. And that doesn't count other hazards, says Scotty Freeman, a leaky Texan who is safety manager for Carter-Burgess, the company's engi-

Continued on Page 7



THE NEW YORK TIMES, THURSDAY, MARCH 8, 2001 G7

It Crawls Through the Sewers With the Greatest of Ease

Wiring the City: Using One Network (Sewers) to Create Another

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075.010

May 22, 2001

Ms. Lynne Matusow, Chair
Downtown Neighborhood Board No. 13
c/o Neighborhood Commission
City Hall, Room 400
Honolulu, Hawaii 96813

Dear Ms. Matusow:

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Thank you for your letter dated April 10, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

We are sensitive to your Board's concerns over disruptions to traffic flow due to construction projects occurring in your neighborhood. Sandwich Isles Communications, Inc. (SIC) is a member of the Mayor's utility coordination committee established to try to better coordinate construction projects occurring. SIC has also been attending meetings held by the State Department of Transportation to similarly address the coordination of utility projects occurring on highway facilities.

Unfortunately, any route chosen would temporarily affect businesses or residences in the area because this urban corridor is more densely populated. SIC has considered your suggestion for an alternative route for the fiber optic cable to Papakolea and the former Stadium Bowl-o-Drome site. However, the present route was determined to be more practical and economically feasible. This is also because of the need to connect to Verizon's central facilities at Bishop and Beretania Streets as well as AT&T facilities at One Waterfront which enables SIC customers access to the broader telecommunications network. The Draft EA did already consider an alternative route utilizing Beretania Street.

Construction activities would occur during permitted hours of the day, and the contractor will comply with all noise regulations for such construction activities. SIC is willing to work with the downtown community to address construction noise and the hours of construction to minimize noise concerns by area residents.

Thank you for the newspaper article providing information on technology used to install fiber optic cables. If you have any questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner

THE OUTDOOR CIRCLE
1314 South King St., Suite 306 • Honolulu, HI 96814
Phone: 808-593-0300 Fax: 808-593-0525

April 18, 2001

Mr. Ronald A. Sato, AICP
SSFM International, Inc.
501 Sumner Street, Ste. 502
Honolulu, HI 96817

RE: Draft Environmental Assessment for Sandwich Isles Communication, Inc. Oahu Rural Fiber Optic Duct Lines Project, Oahu, Hawai'i

Dear Mr. Sato:

In The Outdoor Circle's response to your request for early consultations on the Draft Environmental Assessment (DEA) on the above referenced project, we requested that the impact of the project on the street trees be discussed. Chapter 4 of the DEA deals with the physical and biological environment and sections 4.3 and 4.7 discuss the specific impacts to botanical and visual resources. However, street trees are never mentioned anywhere in the entire document.

Oahu's urban forest is an integral part of our infrastructure and must be safeguarded from potential degradation which could result from this project. The Outdoor Circle believes that precautionary measures must be written into the Final EA in order to protect the trees.

In your response to our letter (dated 2/1/01), you stated that the contractor will be responsible for following either State or City construction standards and practices "associated with trench excavation, backfill and pavement restoration within the public roadway rights-of-ways." Further, you mention that "street tree roots could be pruned to promote healing and avoid potential infection that is normally associated with roots that are jagged or split from excavation material." We believe this is a good start and must be incorporated into the DEA, but that it does not go far enough in protecting our very important green infrastructure. As requested in our communication, we have asked that the contractor be required to include a certified arborist on the project team who can assess each tree root conflict and offer immediate mitigation. Until trenching begins, it will be impossible to identify where the conflicts will occur (a conflict defined by us is wherever cable comes within 15-feet or closer to the base of the tree) and having a contracted arborist on the team will allow for quick reaction time and fewer construction delays.

In addition, there are bound to be conflicts with machinery and tree canopies. An arborist involved with the project team will be able to prevent negative visual impacts by trimming the trees appropriately when required.

Currently, the City and County of Honolulu, Department of Parks and Recreation, Department of Urban Forestry, requires that a qualified certified arborist perform all labor involving addressing trees in their jurisdiction. We believe the same should be done for the street trees lining all of our highways which will be affected by this project. In addition, an Exceptional tree trimming permit must be submitted to work on or near any tree protected by law.

We look forward to seeing these suggested revisions included in the Final Environmental Assessment demonstrating Sandwich Isles Communication's commitment to maintaining Honolulu's urban forest. Thank you for the opportunity to comment.

Sincerely,

Mary Steiner
CEO

cc: Mr. Michael Amuro, Department of Transportation
Office of Environmental Quality Control

SSFM INTERNATIONAL, INC.
501 Sumner Street, Suite 502
Honolulu, Hawaii 96817
Phone: (808) 531-1308
Fax: (808) 521-7348

Project Managers, Planners, & Engineers
American Consulting Engineers Council, Member

SSFM 2000_075.010

May 22, 2001

Ms. Mary Steiner, CEO
The Outdoor Circle
1314 South King Street, Suite 306
Honolulu, Hawaii 96814

Subject: Sandwich Isles Communications, Inc.; Oahu Rural Fiber Optic Duct Lines Project
Draft Environmental Assessment Comment Letter

Dear Ms. Steiner:

Thank you for your letter dated April 18, 2001 on the Draft Environmental Assessment for the Oahu Rural Fiber Optic Duct Lines Project.

Your concern for the protection of street trees is noted, and the Final Environmental Assessment will include discussion of the project's potential impact on street trees during construction activities. It will also incorporate the discussion mentioned of compliance with State and City construction standards and practices associated with trench excavation along with the pruning of street tree roots.

The applicant has indicated that they will consider the need and suggestion to have the contractor include a certified arborist on the project team for route sections that have street trees which may be affected from construction activities or machinery such as along Kalanianaole Highway from Kahala to Hawaii Kai. The contractor will also be required to comply with all City regulations and requirements associated with street trees falling under their jurisdiction. This will also include obtaining an Exceptional Tree trimming permit if necessary.

The applicant shares your concerns for the protection of Oahu's "urban forest" and intends to take necessary steps to ensure that the health and preservation of street trees along the project route are not compromised during construction activities.

If you have any questions, please give me a call at 531-1308. Thank you.

SSFM INTERNATIONAL, INC.

Ronald A. Sato, AICP
Senior Project Planner
Email: rsato@ssfm.com

APPENDIX B

Archaeological Assessment Of The Proposed Sandwich Isles Communication Fiber Optic Cable Project

Prepared By:
Cultural Surveys Hawaii, Inc. (January 2001)

ARCHAEOLOGICAL ASSESSMENT OF THE PROPOSED SANDWICH ISLES COMMUNICATION FIBEROPTIC CABLE PROJECT WITHIN APPROXIMATELY 112.6 MILES (181.6 KILOMETERS) OF ROAD CORRIDOR ON THE ISLAND OF O`AHU

by

Hallett H. Hammatt, Ph.D.

Prepared for

SSFM INTERNATIONAL, INC.

CULTURAL SURVEYS HAWAII, INC.
January 2001

TABLE OF CONTENTS

LIST OF FIGURES

I. INTRODUCTION

A. Project Background

Cultural Surveys Hawai`i has completed an archaeological assessment of approximately 112.6 miles (181.6 kilometers) of road corridor on the island of O`ahu. The road corridors are proposed for the installation of a telecommunications cable system connecting Department of Hawaiian Home Lands (DHHL) properties on O`ahu Island (Figure 1). The lines are to be installed entirely within state Department of Transportation and City and County of Honolulu rights-of-way consisting of existing pavements or road shoulders at an approximate 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 the Wai`anae District, the study route commences Haleahi Road (near Lualualei Naval Reservation Gate) and Wai`anae Valley Road, running southwest onto Farrington Highway (93). On Farrington Highway the route continues south through Lualualei and Nānākuli *ahupua`a*. In Nānākuli, the route turns northeast on Haleakalā Avenue then southwest on Nānākuli Avenue and returns to Farrington Highway where it proceeds southeast on Farrington Highway. Around Kahe Point, the route continues southeast and northeast on Farrington Highway, H-1 Freeway, Kalaeloa Boulevard, Kapolei Parkway, and Kamokila Boulevard through Honokai Hale and Kapolei. The route then returns to Farrington Highway (at Kamokila Boulevard) and proceeds through Honouliuli to Ft. Weaver Road (interchange). A branch of the route runs to Kalaeloa (former Barbers Point Naval Air Station) on Fort Barrette Road, Renton Road, and Saratoga Road.

Past the intersection with Ft. Weaver Road, the main route continues to run northeast on Farrington Highway through Waipahu to the interchange *mauka* of Leeward Community College. One arm of the route runs along Kamehameha Highway (99) northwest through Waipi`o, Mililani, and Wahiawa, then descends to Weed Circle and continues through Hale`iwa Town to route terminus at the intersection with Hale`iwa Road. The other arm of the route follows Kamehameha Highway (99) southeast from the interchange *mauka* of Leeward Community College through Pearl City, Waimalu, and Aiea to Aloha Stadium, then south and southeast past the Makalapa Naval Housing, and continuing east on Nimitz Highway (near Valkenburgh St.) to Kamehameha Highway (near Middle Street) and Dillingham Boulevard to the intersection with North King Street.

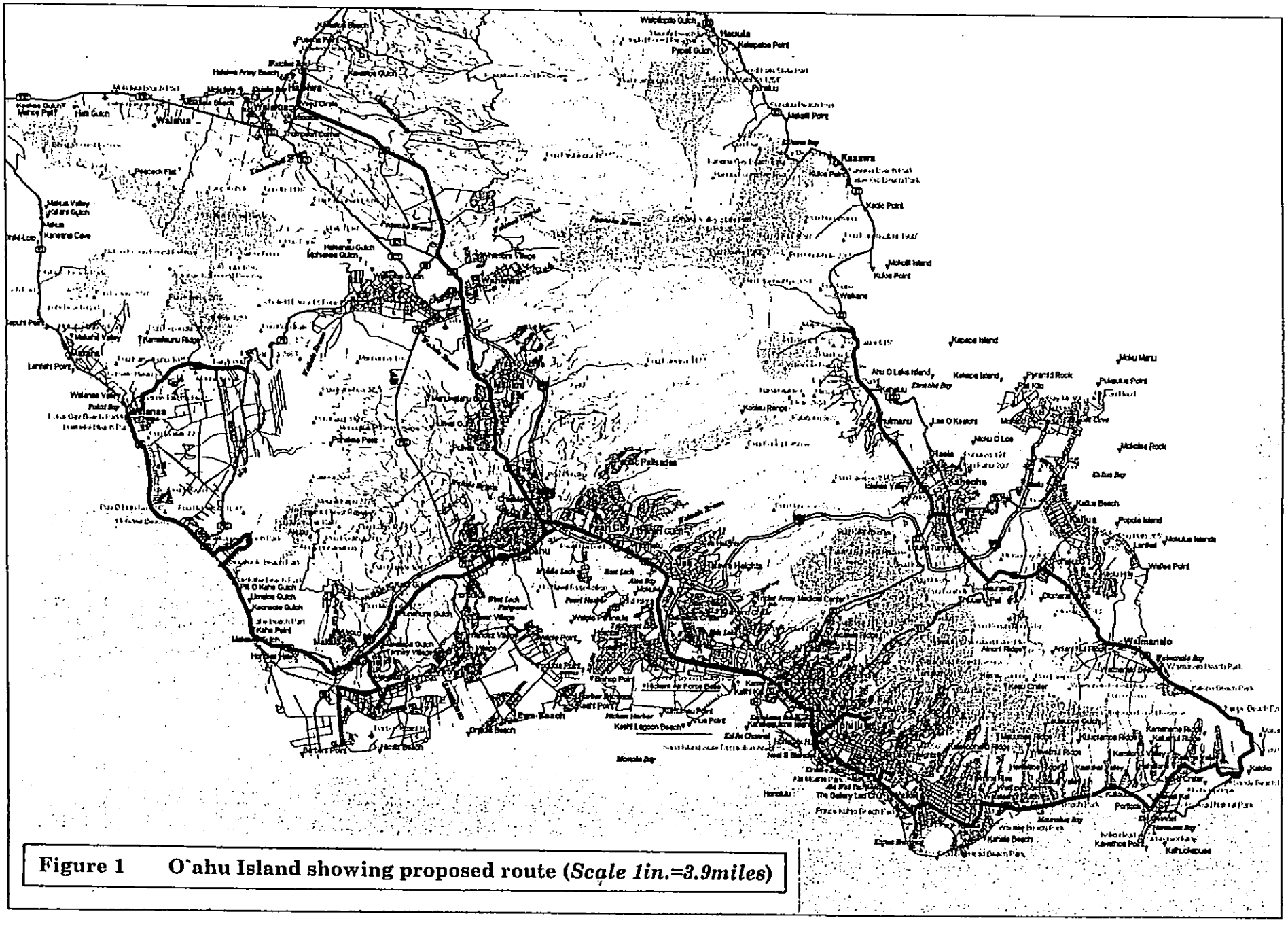


Figure 1 O`ahu Island showing proposed route (*Scale 1in.=3.9miles*)