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

SEP -9 1999

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OFC. OF
QUALITY CONTROL

TO: Genevieve Salmonson, Director
Office of Environmental Quality Control

FROM: Timothy E. Johns, Chairperson

SUBJECT: **Final Environmental Assessment for Job No. 31-OP-P, Paukauila Stream Mouth Dredging, Oahu**

The Department of Land and Natural Resources has reviewed the public comments received during the comment period for the draft environmental assessment. The Department has determined that the subject project will have no significant effect on the environment and has issued a Finding of No Significant Impact (FONSI). Please publish notice of availability for this project in the next OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form, four copies of the final EA, and the project summary on disk. Please call Mr. Hiram Young of the Engineering Branch at 587-0260, if you have any questions.

c: Oceanit

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1999-09-23-OA-FEA

FINAL ENVIRONMENTAL ASSESSMENT PAUKAUILA STREAM MOUTH DREDGING, OAHU

Prepared for:

DEPARTMENT OF LAND AND NATURAL RESOURCES

Prepared by:

OCEANIT LABORATORIES, INC.

AUGUST 1999

EXECUTIVE SUMMARY

The State of Hawaii Department of Land and Natural Resources (DLNR), Land Division, plans to perform maintenance dredging in the lower reaches of Paukauila Stream (see Site Map – Figure 1) to reduce the probability of upstream flood hazard. The proposed project consists of dredging and removing approximately 3,870 cubic yards of accumulated sand, silt, and debris from the stream bed. The dredge area is 1,100 feet long and the proposed channel is 2.5 feet deep, 50 feet wide at the bottom with side slopes of 1 vertical to 5 horizontal. The maintenance dredging will be accomplished using heavy equipment. Construction-related impacts will include short-term impacts to stream water quality. These potential problems will be minimized utilizing appropriate mitigation measures including a best management practices plan and a water quality monitoring plan. There are no significant long-term or cumulative negative impacts from the proposed project. The proposed dredging will temporarily increase the hydraulic capacity of the stream, which will result in significant positive impacts for residents who are impacted by the Paukauila stream flooding.

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I. GENERAL INFORMATION

Proposing Agency:	State of Hawaii Department of Land and Natural Resources Engineering Branch, Land Division P.O. Box 621 Honolulu, Hawaii 96809 Contact: Mr. Hiram Young Telephone: (808) 587-0260
Consultant:	Oceanit Laboratories, Inc. 1100 Alakea Street 31st Floor Honolulu, Hawaii 96813 Contact: Mr. Ian Wasnich Telephone: (808) 531-3017
Landowner:	State of Hawaii Department of Land and Natural Resources
Accepting Agency:	State of Hawaii Department of Land and Natural Resources
Project Location:	Waialua, Oahu, Hawaii
Tax Map Key:	A portion of 6-6-14
Project Area:	Dredging Area - A channel approximately 1,100 x 80 and 2.5 feet deep.
State Land Use District:	Agriculture
Conservation Subzone:	N/A
County General Plan:	N/A
Zoning:	Nearby riparian lands are AG-1 and P-2.
Special Designations:	Riparian lands are within the Special Management Area.
Existing Use:	Paukauila stream is one of the main watercourses for one of the largest watersheds on the island of Oahu. It drains an area of 21.4 square miles.

Proposed Action:	Maintenance dredging of the lower reach of the stream to reduce flooding upstream.
Trigger(s):	Use of State Funds.
Anticipated Determination:	Finding of No Significant Impact (FONSI)
Funding Source:	State Funds
Cost of Project:	$175,000
Time Frame:	3 months
Unresolved Issues:	Permit Conditions
Consulted Agencies:	U.S. Army Corps of Engineers - Operations Branch State of Hawaii Department of Land and Natural Resources - Land Division • Engineering Branch • Planning and Technical Services Branch - State Historic Preservation Division State of Hawaii – Office of Hawaiian Affairs State of Hawaii – Office of Environmental Quality Control
Consulted Groups/ Individuals:	State Senator Robert Bunda (22nd District) Mr. Benton Ching, P.E. Native Hawaiian Advisory Council Life of the Land Hawaii Fish Company Waialua Taro Hui

II. GENERAL DESCRIPTION OF PROPOSED ACTION

A. BACKGROUND

Paukauila Stream is located in Waialua on the North Shore of Oahu. Kiikii and Paukauila Streams merge together at the makai end of the project area before emptying into Kaiaka Bay (See Figure II-1). The area of Paukauila Stream between the Haleiwa Road Bridge and the Cane Haul Road Bridge is silted with sand and mud that restricts discharge of flood waters from the drainage area. In order to mitigate flooding problems upstream, the State of Hawaii, Department of Land and Natural Resources (DLNR) plans to perform maintenance dredging at the lower reaches of Paukauila Stream between the Cane Haul Road Bridge and the Haleiwa Road Bridge (See Figure II-2. Site Photographs).

Kiikii and Paukauila Streams are the main watercourses for one of the largest watersheds on the island of Oahu. Paukauila Stream drains 21.4 square miles and runs through pineapple and sugar cane cultivated land. The stream probably receives a portion of its runoff from these areas. During periods of heavy rains, the area in the vicinity of the stream is prone to flooding.

Man-made alterations to the waterway over the past 50 years have de-stabilized the Paukauila estuary and caused shoaling to occur on the south side of Paukauila Stream. Alterations to the waterway include the following:

- Two previous dredging operations performed in 1962 and 1976,
- Removal of a railroad trestle,
- Reconstruction of a bridge,
- Placement of riprap shore protection and construction of a groin at the mouth of the stream.

Since the last dredging operation, sediment has again built up and reduced the hydraulic capacity (the maximum flow a stream can discharge before overflowing its banks) of Paukauila Stream, resulting in an increased probability for upstream flooding. In order to reduce potential flooding upstream, DLNR plans to dredge a channel in the lower reach of the stream between the Haleiwa Road Bridge and the Cane Haul Road Bridge.

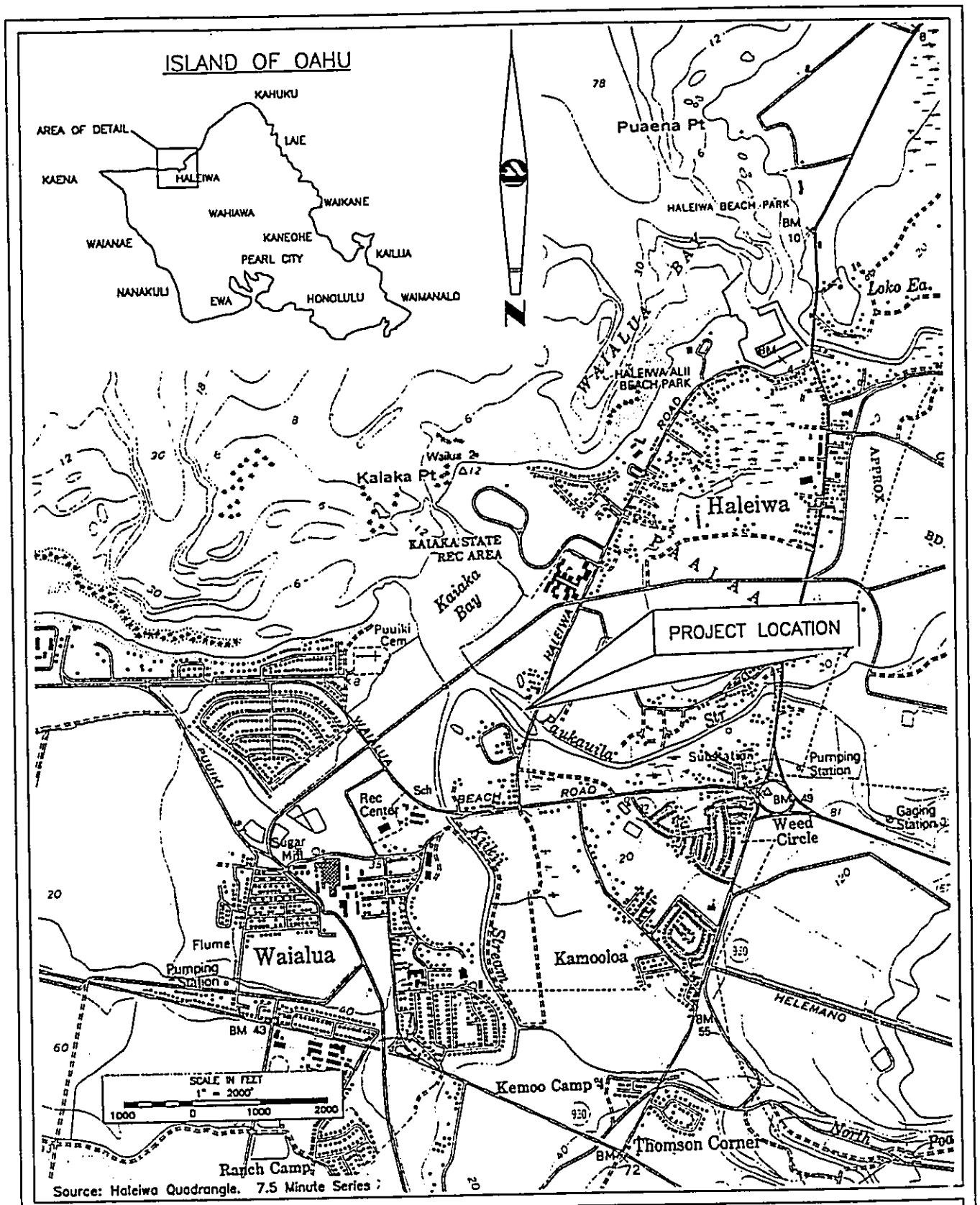

FIGURE II–1. SITE MAP

PAUKAUILA STREAM MOUTH DREDGING

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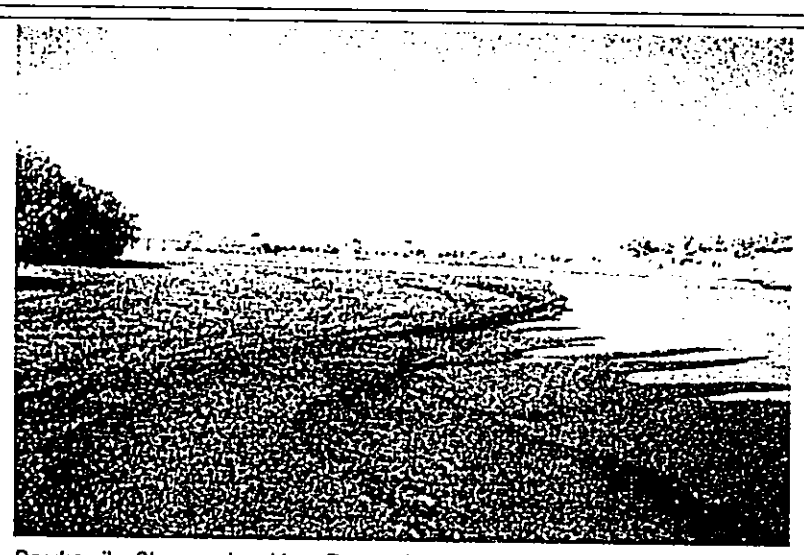
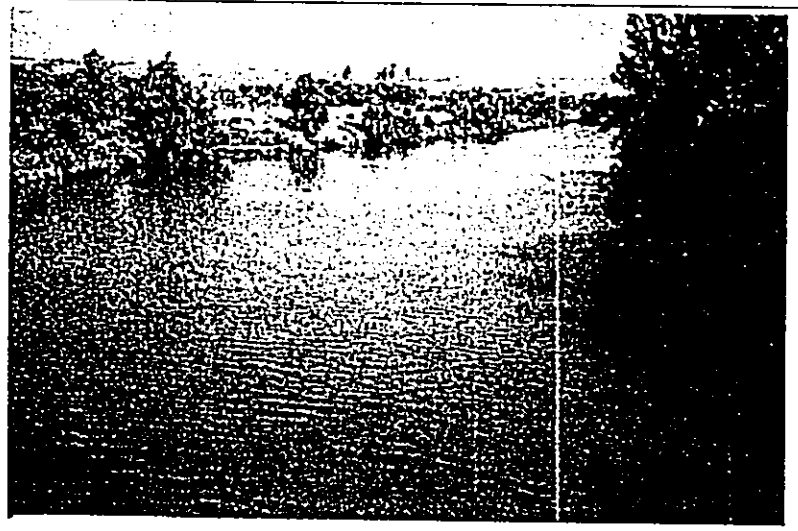
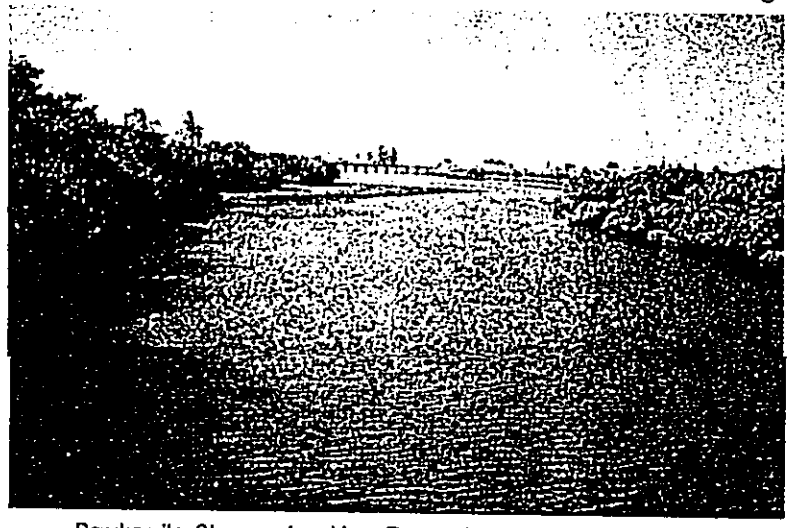


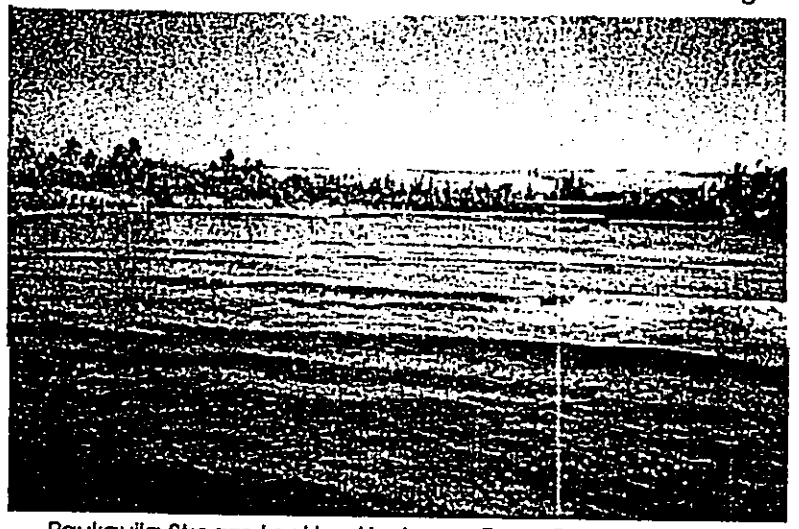
Paukauila Stream Looking Downstream Towards Cane Haul Bridge.



Paukauila Stream Looking Upstream From Haleiwa Road Bridge.



Paukauila Stream Looking Downstream From Haleiwa Road Bridge. Cane Haul Bridge in Background.



Paukauila Stream Looking Upstream From Cane Haul Bridge Towards Haleiwa Road Bridge. Note Waves Penetrating Upstream

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FIGURE II-2. SITE PHOTOGRAPHS

PAUKAUILA STREAM MOUTH DREDGING

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B. TECHNICAL CHARACTERISTICS

Paukauila and Kiikii streams serve a drainage area of 79.8 square miles. The streams originate in the Koolau mountains and discharge into the sea at Kaiaka Bay. The two streams join a few hundred feet upstream of the Bay. Kiikii stream serves a larger drainage area but is narrower than Paukauila stream and is stable up to the point of confluence.

The mouth of the combined streams is about 700 feet wide. The west bank below the Cane Haul Road Bridge is a natural rock outcrop, and the east bank is modified by the construction of a groin, where a sandy beach has built-up on the eastern side of the groin.

During heavy discharge conditions, large amounts of sediments are brought to the estuary from erosion upstream. In addition, the sand that has accumulated on the east side of the groin is transported around the end of the groin to the stream mouth by wave action and is ultimately moved into the estuary by tidal currents and by waves that penetrate from Kaiaka Bay into the estuary. The comparatively wide stream mouth allows a significant portion of ocean waves to intrude into the estuary during periods of high tide and high surf. These waves, along with periods of high stream flow, have caused erosion along the banks of Paukauila Stream downstream of the Haleiwa Road Bridge.

Sediments brought to the estuary from the beach and upstream erosion are redistributed within the estuary by waves that penetrate through the stream mouth. The accumulation of sediments at the confluence of the two streams restricts Paukauila stream discharge and causes upstream flooding. The area of the stream between the Cane Haul Road Bridge and the Haleiwa Bridge has been dredged several times to increase the flow capacity to reduce flooding. Within a few years after each dredging, the Paukauila Stream mouth becomes silted and upstream flooding recurs.

1. Proposed Extent of Dredging

At present there is a large accumulation of sand in Paukauila Stream between the Haleiwa Road Bridge and the Cane Haul Road Bridge that is restricting stream discharge. DLNR plans to dredge a channel through the silted area to partially restore the hydraulic capacity of the stream. The dredged channel will extend from approximately 75 feet downstream of the Haleiwa Road Bridge to within approximately 100 feet upstream of the Cane Haul Road Bridge. The finish depth of the dredged channel will be a minimum of 2.5 feet mean sea level (MSL) and approximately 3,870 cubic yards of material will be dredged from the project area. The approximate dredging area is shown in Figure II-3. Expected post-dredging contours are shown in Figure II-4.

Since the dredging area is not near the stream bank or vegetation overhang, extensive removal of stream vegetation is not anticipated.

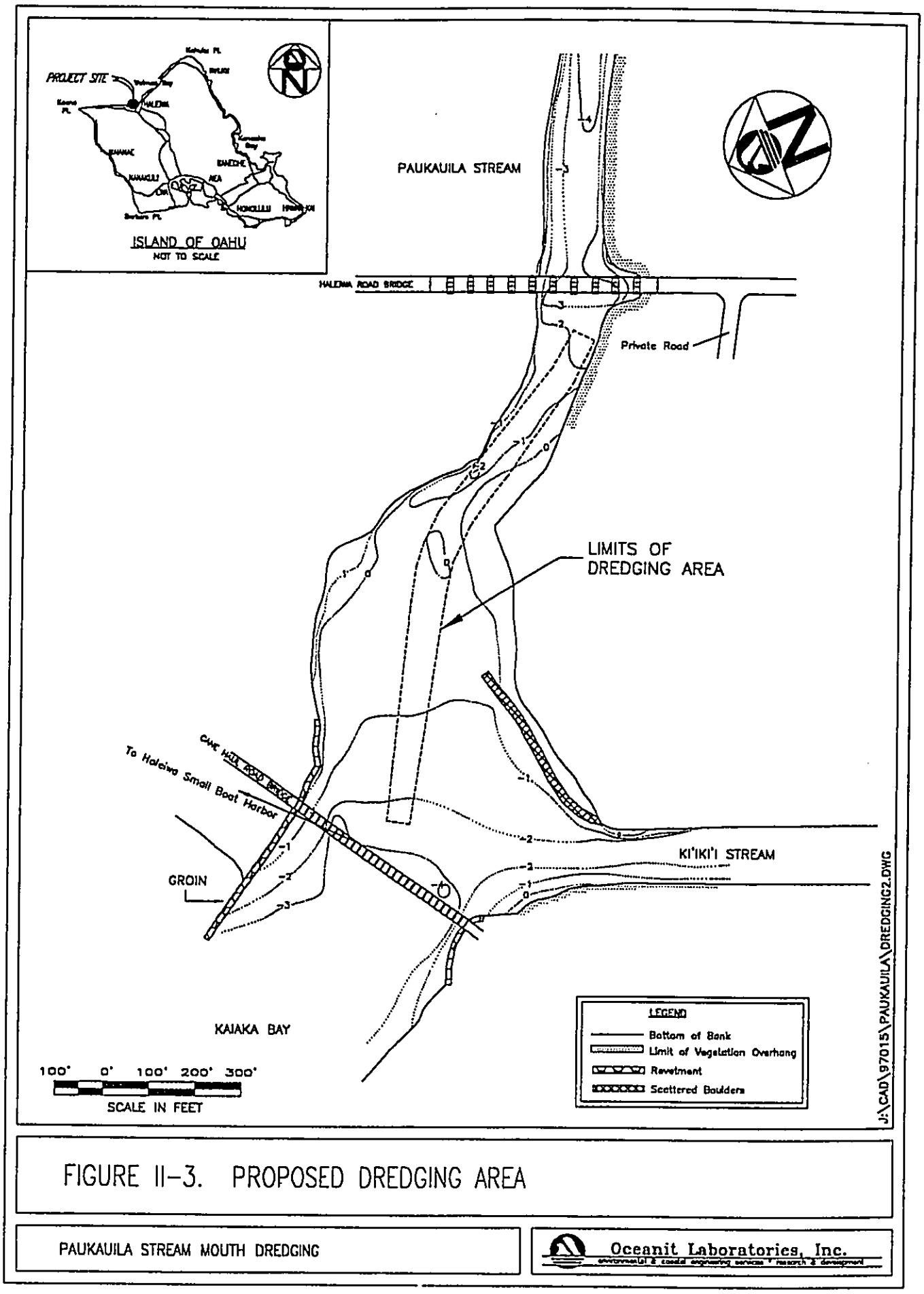

FIGURE II-3. PROPOSED DREDGING AREA

PAUKAUILA STREAM MOUTH DREDGING

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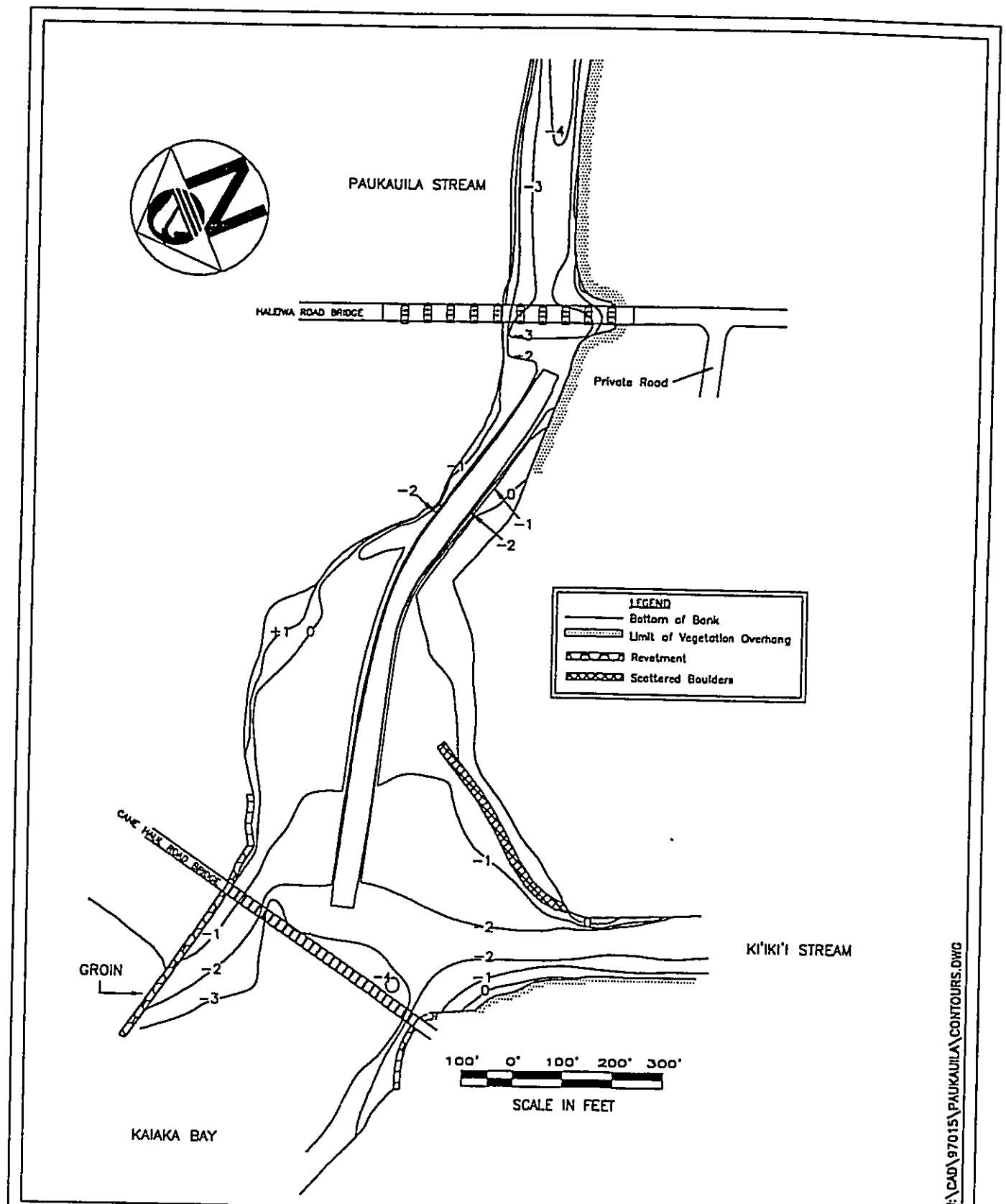

FIGURE II–4. POST DREDGING CONTOURS

PAUKAUILA STREAM MOUTH DREDGING

Oceanit Laboratories, Inc.

2. Proposed Method of Dredging

Due to concerns about weather and waves, maintenance dredging is proposed to take place using a hydraulic dredge. Water quality is expected to be impacted by the dredging; therefore, water quality will be monitored and a Best Management Practices Plan (BMP) will be prepared as required by the State of Hawaii Department of Health (DOH). The BMP will specify the use of appropriate silt containment methods to reduce the impacts of downstream sediment discharge (see Figure II-3).

Dredged material will be reasonably dewatered at an approved site utilizing methods approved by the DOH and the U.S. Army Corps of Engineers. During the dewatering process, temporary storage of dredged materials may be necessary; the proposed location is at an old sugar cane field on privately-owned land west of the dredging area (see Figure II-3). No discharge of dewatering effluent back into Paukauila Stream is anticipated. Dredging activities are anticipated to last 2-3 months.

All material will be transported and disposed of in accordance with Federal, State and City and County regulations. The recommended disposal site is Mokuleia Quarry located near the Dillingham Airfield. There are two aquifers near the Mokuleia Quarry. The mauka aquifer is in a sensitive aquifer system.

C. PROBABLE PERMIT REQUIREMENTS

Permits and approvals that may be required for the proposed action include:

- Department of the Army – Nationwide Permit 96-001.
- State of Hawaii Department of Health – Monitoring Plan and Best Management Practices Plan.
- State of Hawaii Department of Land and Natural Resources - Stream Alteration Permit.
- City and County of Honolulu Department of Planning and Permitting – Stockpiling Permit

III. AFFECTED ENVIRONMENT

The Paukauila-Kiikii Stream basin extends from the ocean, east to the Koolau Mountain Range, and south to the Waianae Mountain Range. Poamoho and Kaukonahua Streams combine to form Kiikii Stream, and Opaeula and Helemano Streams merge to form Paukauila Stream. Paukauila and Kiikii Streams merge in Waialua before discharging into Kaiaka Bay (Corps, September 1976). The shoreline of Kaiaka Bay and the lower reach of Paukauila Stream are subject to flooding, including tsunami inundation.

The portion of Paukauila Stream planned for maintenance dredging is approximately 1,100 feet long. In the vicinity of the project site, the stream is narrow (about 100 feet wide) near the Haleiwa Road Bridge and widens as it merges with Kiikii Stream near the Cane Haul Road Bridge. The eastern bank of the stream appears to have shoaled over approximately 240 feet. This shoaling has caused the stream flow to narrow, resulting in a relatively steep escarpment along the eastern bank.

A. *SOCIAL AND ECONOMIC CHARACTERISTICS*

The two main population centers in the vicinity of the project site are Haleiwa town, located approximately one-mile northwest of the project site and Waialua town, located approximately a quarter-mile southwest of the project site.

Haleiwa town began as a business area for the Waialua Plantation. Today, Haleiwa has a population of about 2,442 (census designated places) and is the commercial center of the North Shore (1990 U.S. Census). Local employment is primarily in commerce with many small businesses including restaurants, clothing stores, surf shops, banks, and real estate companies. Many well-maintained beach parks in the Haleiwa area attract tourists as well as visitors from other Oahu districts. These parks help to generate business for the shopping areas of Haleiwa town.

Waialua town is a former plantation town whose economy was primarily dependent on sugar cultivation up until the Waialua Sugar Company, Inc. closed its sugar mill in 1996. Today, Waialua's population is approximately 3,943 (census designated places) and local employment for residents of Waialua is primarily in diversified agriculture such as cattle feed, pasture land, coffee farms, and papaya farms in the vicinity of Waialua town.

The residential areas to the east and west of the stream are called Kaiaka and Puuiki, respectively. A few single-family homes line the peninsula between the Paukauila and Kiikii Streams as well as along Haleiwa Road to the east. Haleiwa Elementary School and the Kaiaka State Recreation Area are also located on the east side of the stream.

The project is not anticipated to significantly change the social or economic characteristics of the area. After dredging, upstream flooding will be alleviated, thus reducing the probability of damage to land and property in the vicinity of the stream.

B. LANDWARD ENVIRONMENT

1. Climate

The climate in the northern part of Oahu is characteristically mild with persistent northeast trade winds. The mean monthly temperature at Waialua averages about 73.2° F and humidity in the area generally ranges between 60 to 80 percent. The mean annual rainfall at Waialua is approximately 30 inches with about 75 percent of the rainfall occurring between October and April. Wind speed at Mokuleia is predominantly from the easterly direction, averaging between 4 to 12 miles per hour.

2. Geology and Hydrology

The Island of Oahu developed thousands of years ago when lava flows from the Waianae volcanic shield on the west and the Koolau volcanic shield on the east converged forming the central plain that is known today as the Schofield Plateau. This merging of the Waianae and Koolau mountain ranges formed the submerged river valley of Waialua Bay. Alluvial and colluvial deposits found in Waialua is attributed to material eroded from the Waianae and Koolau mountain ranges.

An extensive freshwater body is located in dike-free Koolau lava flows from Waialua to Waialee. Recharge from rainfall in the Koolau Range maintains this lens. The water body is divided into two segments near the coastline, the Waialua-Haleiwa and the Kawailoa, by thick alluvial fill and weathered bedrock (basalt) in the Anahulu River Valley (Wilson, Okamoto & Associates, 1988).

The artesian aquifers in the Waialua-Haleiwa area are confined to lava flows overlain by terrestrial and marine sediments 500 feet thick. Ground water movement in the Waialua-Haleiwa area occurs in a seaward direction. Some ground water moves northwest to the Kawailoa area.

3. Flood Hazard

The proposed dredging site is located in a flood zone (see Figure III-1). The lands in the vicinity of the project site are particularly susceptible to flooding for the following reasons:

- The lands are in low-lying areas with localized drainage problems.
- The lands are near the shoreline and are subject to tsunamis and high winter waves; and
- The low-lying areas are subject to stream overflow resulting from regional storms (City and County of Honolulu Department of Public Works, 1977).

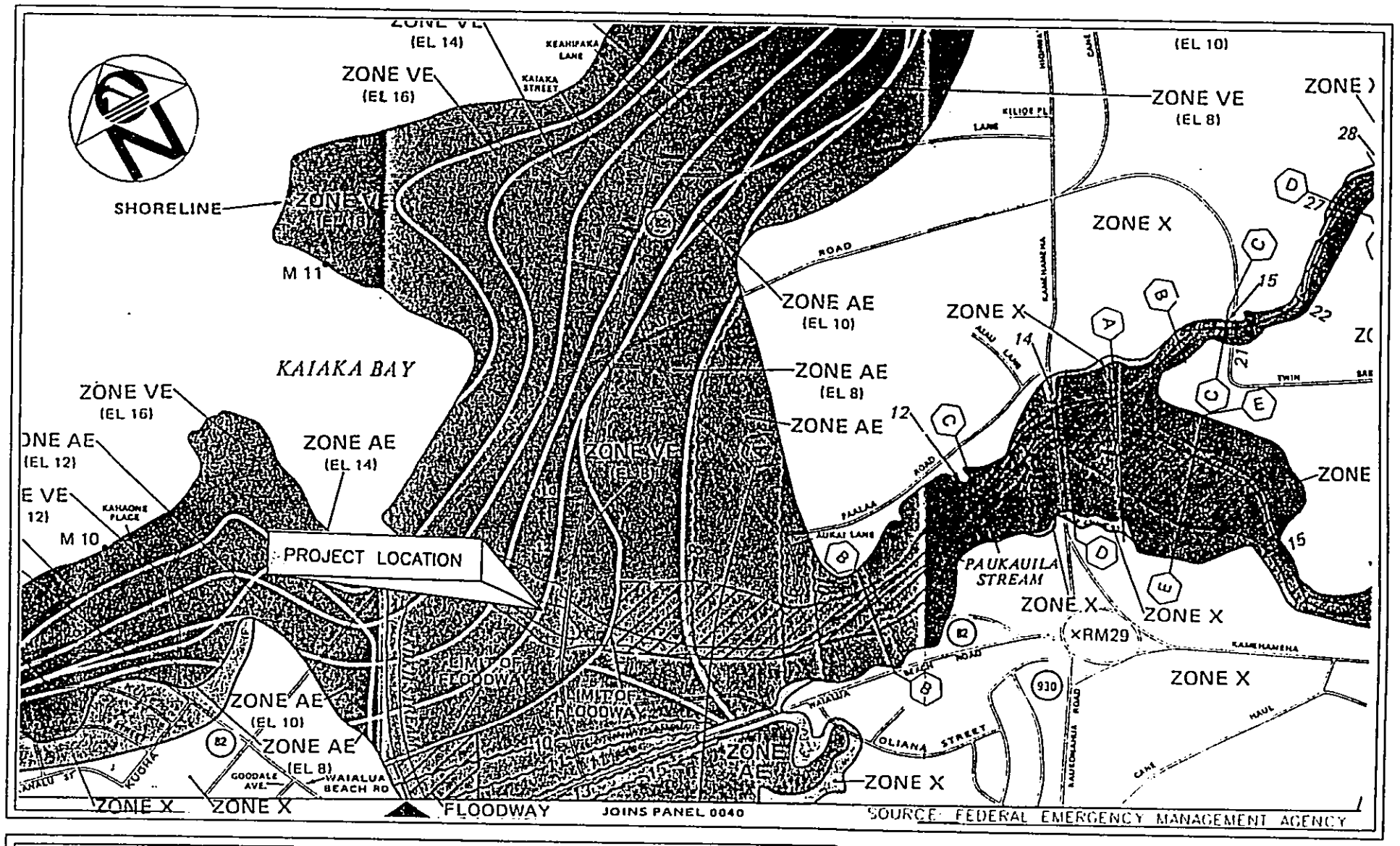

FIGURE III–1. FLOOD MAP

PAUKAUILA STREAM MOUTH DREDGING

Oceanit Laboratories, Inc.

Flood insurance maps indicate a base flood elevation of 8 - 10 feet for a 100-year storm (Zone VE and AE). The entire project site and adjoining landmasses are in the tsunami inundation zone. The tsunami that had the most severe effects in the Waialua-Haleiwa coastal area in recorded history occurred on March 9, 1957. This tsunami caused a runup to about the 13-foot elevation in the Waialua Bay area. The coastal area between Kaiaka and Waialua Bays was flooded approximately 3,000 feet inland (Dept. of Army Flood Plan Information, 1970). In February 1976, a flood damaged 57 homes and 5 stores, making Haleiwa road impassable.

Present shoaled conditions in the Paukauila Stream increases the potential for upstream flooding even under a moderate storm. Dredging the discharge channel across the shoal will temporarily alleviate this problem.

4. Soils

Soil associations on the Island of Oahu are delineated on soil maps prepared by the U.S. Department of Agriculture, Natural Resources Conservation Service (see Figure III-2). The soils in and around the Waialua-Haleiwa area have poorly to excessively drained soils with level and gentle slopes. Soils include Haleiwa silty clay (HeA) and Waialua silty clay (WkA), with minor occurrences of Ewa silty clay loam (EmA), Kawaihapai clay loam (KIA), and Mamala Series (MnC). All five soils are similar in that they have slow runoff, slight erosion hazard, moderate permeability, and neutral to low corrosivity. Mean annual soil temperature is between 73°F to 74°F (Park Engineering, Inc., 1977).

Sediment samples were taken at 11 locations as noted in Figure III-3. These samples were analyzed for grain size to determine the physical properties of the material to be dredged from the stream. The results of the grain size analysis are summarized in Table III-1. More detailed grain size analysis of the individual samples can be found in the Appendices.

In addition to the grain size analysis, a composite soil sample representative of the dredging area was analyzed for agricultural herbicides, pesticides, and metals to determine whether the proposed dredged material has been contaminated by agricultural activities upstream of the project area. Table III-2 summarizes the results of the soil samples. See Appendix E for a detailed breakdown of the parameters tested and the detection levels used for soil sample analysis.

No agricultural herbicides or pesticides were detected in the composite sample. Metals detected in the soil were Silver (Ag), Barium (Ba), Chromium (Cr), Mercury (Hg), Manganese (Mn), Lead (Pb) and Zinc (Zn). There are no industrial activities in the drainage area of these streams that would contribute these metals. The levels measured were within naturally occurring levels for volcanic soils.

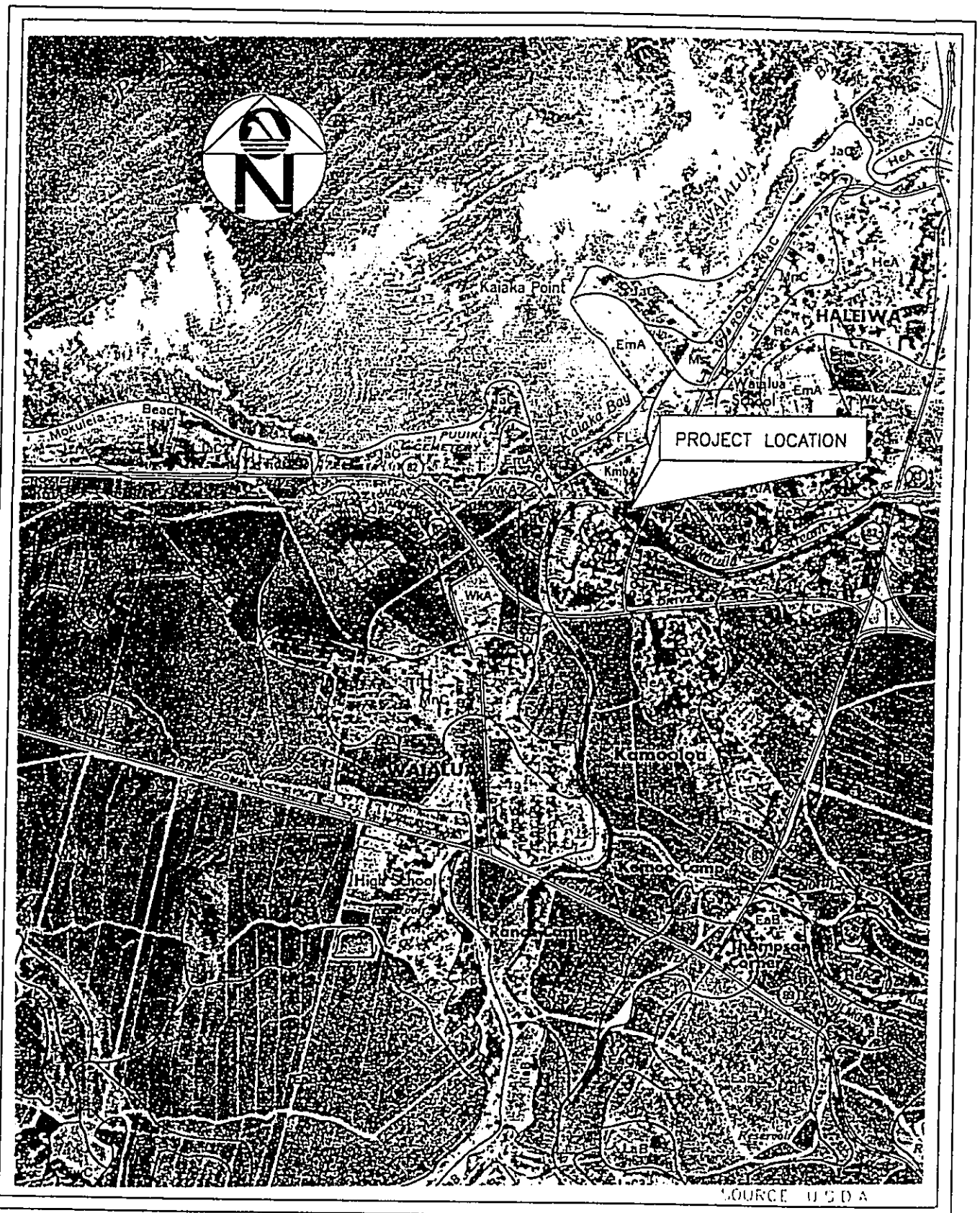

FIGURE III-2. SOIL MAP

PAUKAUILA STREAM MOUTH DREDGING

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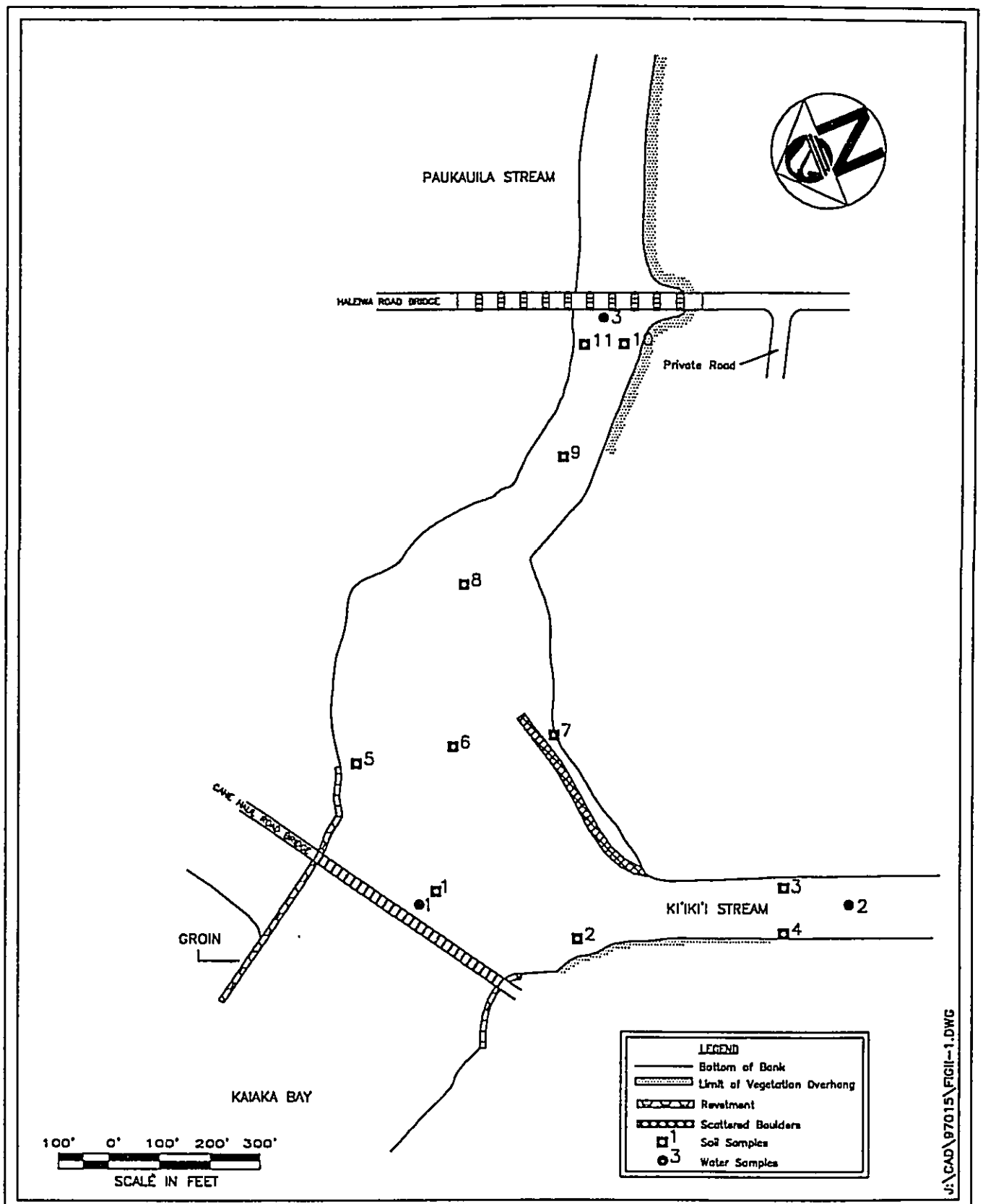

FIGURE III–3. SOIL AND WATER QUALITY SAMPLE LOCATIONS

PAUKAUILA STREAM MOUTH DREDGING

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Table III-1.
Summary of Grain Size Analysis

Grain Size (mm)	Description	Percent
< 0.063	Silt / clay	14%
0.063 – 0.125	Very fine sand	19%
0.125 – 0.250	Fine sand	20%
0.250 – 0.500	Medium sand	11%
0.500 – 1	Coarse sand	16%
1 – 2	Very coarse sand	11%
2 – 4	Fine gravel	6%
> 4	Gravel	3%

Table III-2.
Soil Pollutant Analysis

Description	Result	Units
BNA Extractable	None Detected	mg/kg
Herbicides	None Detected	mg/kg
Pesticides/PCBs	None Detected	mg/kg
Silver	74	mg/kg
Arsenic	None Detected	mg/kg
Barium	8.9	mg/kg
Cadmium	None Detected	mg/kg
Chromium	130	mg/kg
Copper	None Detected	mg/kg
Mercury	0.04	mg/kg
Manganese	1300	mg/kg
Lead	2.8	mg/kg
Selenium	None Detected	mg/kg
Zinc	62	mg/kg

5. Flora and Fauna

Common avifauna that inhabit the vicinity of the project site include mynah (*Acridotheres tristis*), cardinal (*Cardinalis cardinalis*), English sparrow (*Passer domesticus*), barred dove (*Geopelia striata*), the house finch (*Carpodacus mexicanus frontalia*), spotted munia (*Lonchura punctulata*), Japanese white-eye (*Zosterops japonica*), and lace-necked dove (*Streptopelia chinensis*) (Environmental Impact Study Corp, 1980).

On May 6, 1998 a qualitative biological survey was conducted. Despite the broad expanse of shallow mudflats, only five waterfowl were seen: Two Hawaiian Stilts

(*Himantopus mexicanus*), two common mallard ducks, and one Black-crowned Night Heron (*Nycticorax nycticorax*). The Hawaiian Stilt is listed on the endangered species list. The Black-crowned Night Heron population has increased in recent years and is the only native waterbird that is not listed as endangered.

Rats (*Rattus rattus, R. norvegicus* and *R. exulans hawaiiensis*), mice *(Mus musculus domesticus*), cat (*Felis catus*), and mongooses (*Herpestes auropunctatus*) can be found in the area. The domestic dog (*Canis familiaris*) is prevalent near residential areas (Environmental Impact Study Corp, 1980).

The predominant vegetation along Paukauila stream consists of weeds and shrubs. Koa haole (*Leucaena leucocephala*), Hilo grass (*Sporobolus virginicus*), hau (*Hibiscus tiliaceus*), and mangrove (*Rhizophora mangle*) can also be found within the vicinity of the project area.

6. Noise

The Waialua-Haleiwa communities are semi-urban areas with noise levels consistent with similar coastal locations in the surrounding area. Noise levels are higher around the project site due to motor vehicle traffic on Haleiwa Road Bridge and Cane Haul Bridge. There will be an increase in noise levels at the project site during dredging.

7. Traffic

The project is located at Paukauila Stream between the Haleiwa Road Bridge and the Cane Haul Road Bridge. Most residents of the area use Haleiwa Road to access Waialua and Haleiwa. The Cane Haul Road is a pathway used by the agricultural community.

Haleiwa Road experiences increased traffic levels in the morning and afternoon hours, primarily due to drop off/pick up of children at the schools located nearby. Traffic on weekends is also slightly increased due to the increased volume of beach goers. The Cane Haul Road has a sign at each end prohibiting unauthorized foot, bicycle and motorized vehicle. Although local traffic is technically not permitted on this road, use by the public was observed on several occasions. There is secured access to the road during non-working hours and on weekends.

8. Archaeology/Cultural Resources

Based on information from the Final Environmental Impact Statement for Waialua-Kahuku Regional Water System Improvements, prepared by Wilson, Okamoto & Associates in 1988, there are no sites of archeological or cultural significance located within the project area. The stream bottom and stream banks

in the vicinity of the project site have been exposed to years of stream flow erosion and siltation and are therefore unlikely to contain any significant archaeological or cultural resources.

However, there is one historic site located approximately 2,000 feet from the project site. The Waialua School (Haleiwa Elementary School) was added to the Hawaii State Historic Register on May 3, 1980 (Wilson, Okamoto & Associates, 1988). On May 11, 1980 it was added to the National Historic Register. The Department of Land and Natural Resources, State Historic Preservation Office has been informed of the project. If any artifacts are discovered at the project site during dredging, the State Historic Preservation Officer will be immediately notified.

9. Surrounding Land Uses

Waialua and Haleiwa are semi-urban communities characterized by a resident population of 6,385 (1990 U.S. Census). The majority of the land in the Waialua-Haleiwa area is classified as Agriculture or Conservation (State Land Use). Kaiaka Bay is characterized as Conservation and is in the *resource* subzone (see Appendix B). The City and County of Honolulu Department of Planning and Permitting administers the Zoning Ordinance. The City and County of Honolulu zoning districts for the surrounding lands on the banks of the stream are AG-1 and Country (see Figure III-4). Single family residential units predominate in the vicinity of the proposed dredging. Both sides of the lower banks of Paukauila Stream are within a residential subdivision. The project site is also within the City and County of Honolulu Special Management Area as delineated by the Department of Planning and Permitting.

Kiikii and Paukauila Streams merge together at the makai end of the project site and empty into Kaiaka Bay. Kaiaka Bay is located approximately one mile west of the Haleiwa Boat Harbor. The bay is approximately 1,300 feet long by 1,500 feet wide and is a part of the Kaiaka State Park and Recreational Area, which is used by the community and visitors as a place to swim, surf and picnic. There are commercial establishments in the area to serve the community and support the recreational and visitor activities that exist along Kamehameha Highway.

In addition to Waialua and Haleiwa, upland areas in the same watershed, including Wahiawa and Schofield Barracks, have been used for plantation agriculture and military training operations, respectively.

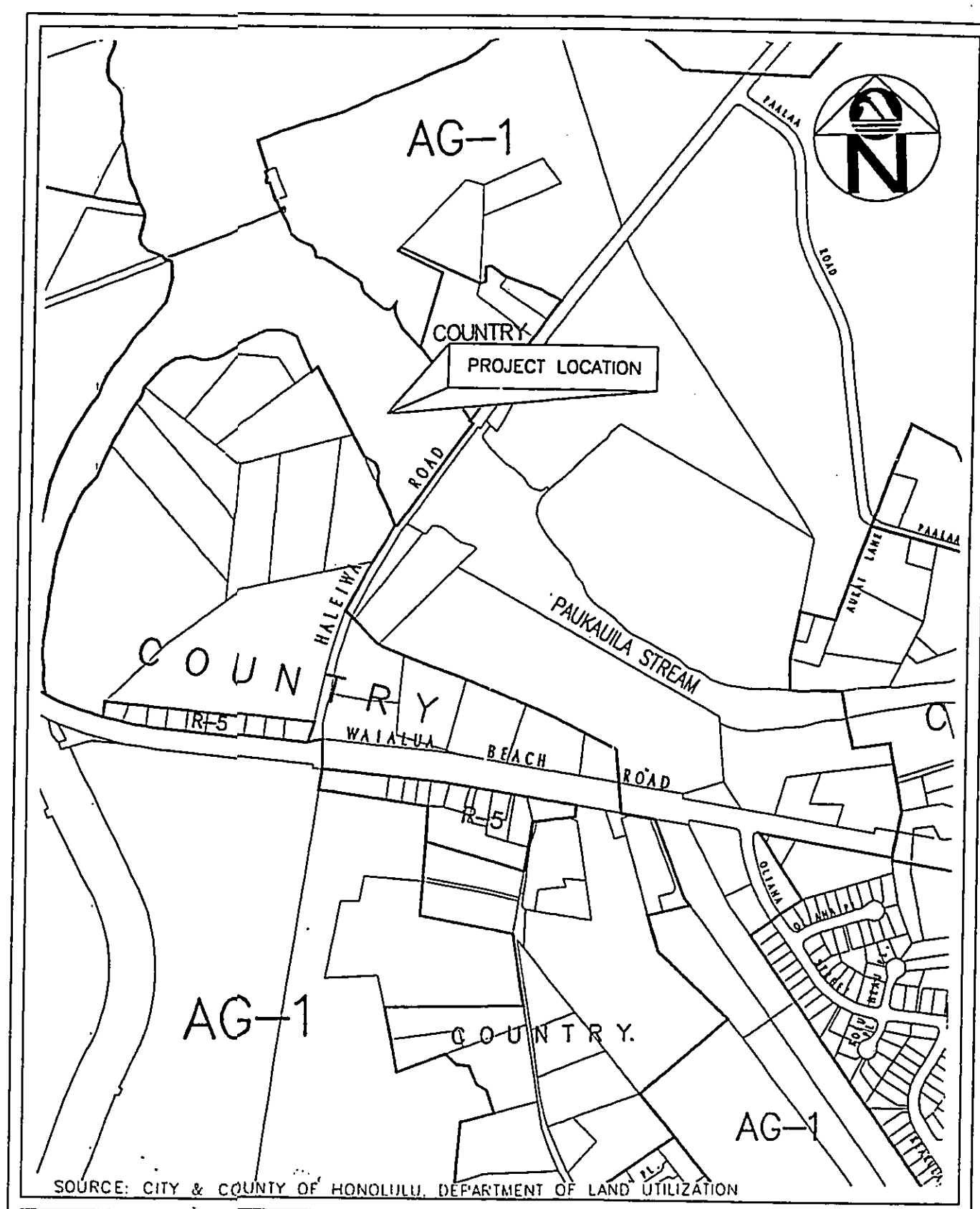

FIGURE III–4. CITY & COUNTY OF HONOLULU ZONING DISTRICTS

PAUKAUILA STREAM MOUTH DREDGING

Oceanit Laboratories, Inc.

10. Surface Runoff

Kiikii and Paukauila Streams are the main watercourses of the largest watershed on the island of Oahu (ref. USCE, 1970), and are susceptible to high current velocities and large amounts of discharge during storms or flash floods. The watershed extends from the Koolau mountain range above Wahiawa to the outlets of the streams at Kaiaka Bay (Ching, 1994).

Approximately 9 square miles of prior sugar cane fields and 13 square miles of pineapple fields are located within the watershed above Kaiaka Bay. Since the closing of the Waialua Sugar Mill, the sugar cane lands have been planted with other crops, including coffee, or left fallow. Sediment-laden runoff from these lands may have contributed to the silt loading of Paukauila and Kiikii Streams.

The most significant project related impact on surface runoff would be the movement of construction equipment along riparian lands. The contractor will follow best management practices to minimize land disturbance. In addition, construction during periods of heavy rain will be avoided.

C. STREAM AND MARINE ENVIRONMENT

The project site is located in an estuary environment, subject to the influences and impacts of both river and ocean. Therefore, this section characterizes the significant affected environment of both Paukauila Stream and Kaiaka Bay. Kaiaka Bay is roughly 1,300 feet long by 1,500 feet wide. The bottom has a gentle slope and is 10 feet below mean lower low water (MLLW) at its deepest point. Near the entrance of Kaiaka Bay is a coral reef known as Moi Island.

1. Waves

Kaiaka Bay is relatively well sheltered from trade wind waves, southern swells, and Kona storm waves. Kauai and Niihau block off a portion of the winter swells and nearshore wave action in winter is due primarily to the northern swell and locally generated wind waves. The possibility of waves from hurricanes could also affect the project site.

Wave climate within Kaiaka Bay is governed by offshore water depth. Wave refraction and diffraction around Moi Island limits the intensity of waves entering the estuary. Larger waves generally break on the shallow area outside the estuary entrance and dissipate a portion of their total energy. Smaller waves that can pass over the shallow depth and those that reform within the bay intrude into the stream estuary, particularly during periods of high winter surf.

2. Bathymetry

Evaluation of aerial photographs over the past 48 years indicate that sedimentation of the stream mouth is related to an instability created by alteration of the stream mouth and the estuarine flow regime in the 1950's. Figure III-5 below shows the history of sedimentation at the project site.

In the 1940's Paukauila and Kikii streams discharged through a relatively narrow mouth located at the west headland of Kaiaka Bay. A sand spit extended from the east bank into Kaiaka Bay that restricted water exchange between the stream and ocean and more importantly prevented most of the wave penetration that is present at present. Absence of excessive wave action resulted in more stable stream bed and stream banks. During low stream flow, the mouth narrows by the growth of the sand spit. When storms occur, the associated heavy runoff is partially restricted by the narrow mouth resulting in water back up and flooding in the upstream areas. The higher water level forces the water through the existing mouth and widens it by eroding the sand spit to relieve the flooding. This process has been altered by the modifications to the stream mouth during the 1950 s.

The present configuration of the estuary and the stream mouth increases wave penetration and tidal flow into the estuary. It appears that sediment from Kaiaka Bay moved into the stream by wave and tide induced currents and sediments from erosion of the estuary banks result in shoaling of the stream. At present, the grade of Paukauila Stream bed in the vicinity of the proposed dredging varies from about +0.2 to –2.4 feet MSL (see Figure II-3).

The water depth of Kaiaka Bay ranges from about 3-4 feet MSL just seaward of the Cane Haul Road Bridge to about 10-12 feet MSL near Moi Island. The proposed dredging will not have a significant impact on the bathymetry in Kaiaka Bay. Figure II-4 shows the anticipated post-dredging contours.

3. Tides

Tides at the site are primarily diurnal in nature. Tide information for Haleiwa Harbor should be obtained from tables. The tide at Haleiwa Harbor can also be estimated by multiplying the predicted tide at Honolulu Harbor by 0.8.

4. Currents, Circulation, and Sediment Transport

Currents at the dredging site are governed by tides and stream flow. At low flow and high tides, currents can move upstream beyond the Haleiwa Road Bridge. During periods of higher flow the predominant flow will be seaward with little modification from tides.

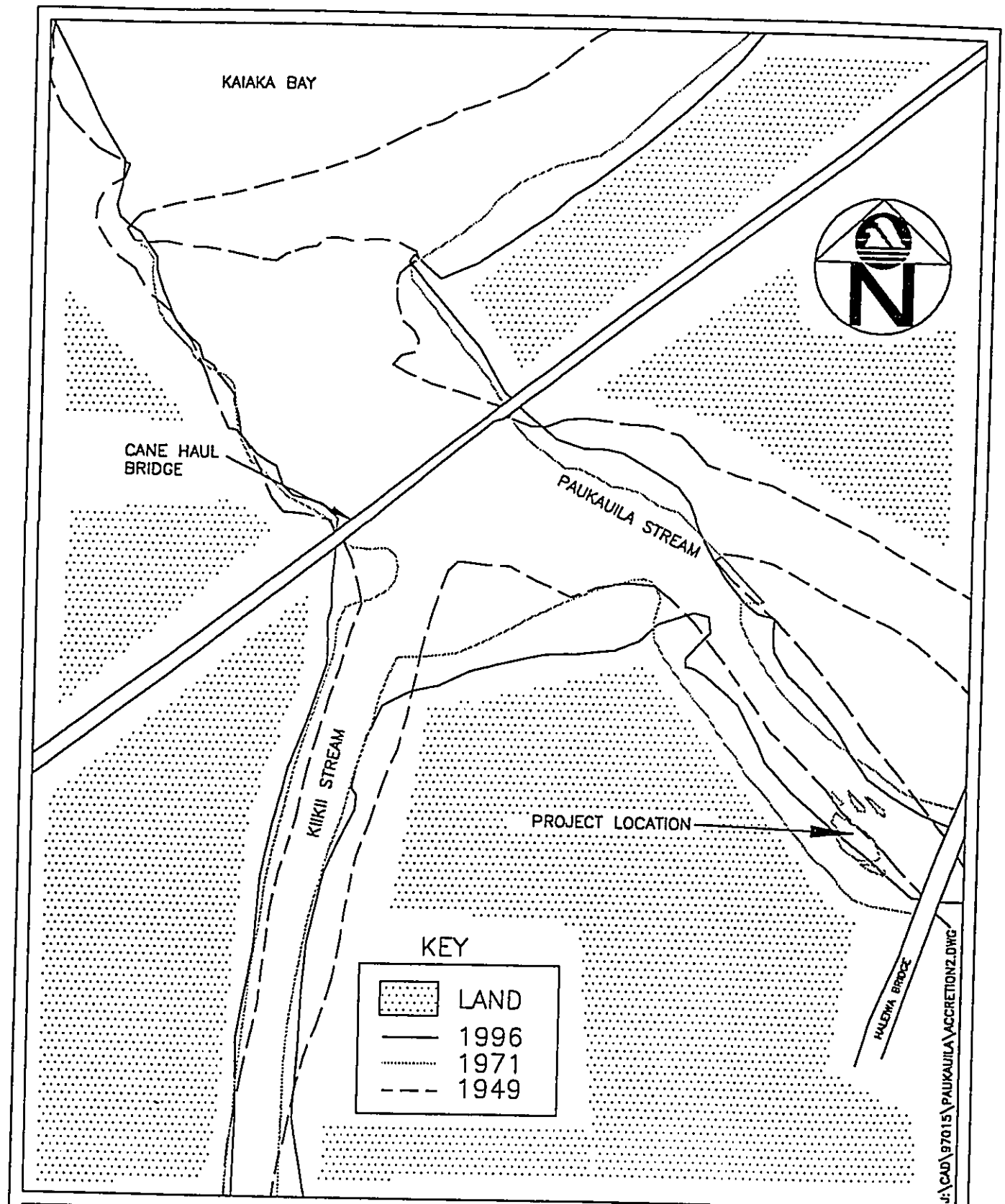

FIGURE III–5. HISTORY OF BANK CHANGES

PAUKAUILA STREAM MOUTH DREDGING

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Circulation in Kaiaka Bay and the estuary of Paukauila and Keiki Streams is influenced by ocean circulation, local winds, tides, waves and stream flow. The configuration of the beach north of the groin indicates that there is a dominant clockwise circulation in the Bay that moves sediments towards the beach, along the beach toward the groin and then into the estuary.

Existing information indicates that Kaiaka Bay has not been dredged in the recent past (B. Ching, 1994). Also, the nearshore bottom contours of Kaiaka Bay from 1924 have not changed significantly suggesting that fine sediments from the land are being flushed out to sea. The coarser portion of the sediments are deposited on the shallow area and are pushed back onto the beach north of the boulder groin. These sediments move with littoral currents around the groin and finally end up in the estuary. Lighter suspended sediments associated with stream flow move westward along the shoreline heading seaward along the submarine canyon at Puuikii (B. Ching, 1994). A lighter trace heads eastward towards Haleiwa.

Sediment movement in the nearshore portion of Kaiaka Bay and the stream estuary has undergone a drastic change due to stream mouth modifications that probably were carried out in the early 1950's. Paukauila and Kiikii Streams confluence forming the common estuary a few hundred feet upstream of the Cane Haul Road Bridge located at the head of Kaiaka Bay.

Historically, a sand bar extended westward from the right (northeast) bank of the estuary leaving a narrow channel to discharge stream water. The sand bar effectively prevented waves from entering the estuary that ensured stable bank conditions.

However, the restriction of stream flow created by the sand bar may have caused upstream flooding during heavy rainfall. The historical estuary condition is shown in Figure III – 5 as a dashed line. The estuary and the shoreline of Kaiaka Bay has been modified after 1949, probably to improve drainage and reduce flooding during heavy storms.

The modifications to the estuary and the shoreline consisted of dredging out the sand bar that partially blocked the stream mouth and construction of a groin on the right (northeast) bank of the estuary to prevent the re-formation of the sand bar. A wide beach has accreted in Kaiaka Bay on the right (northeast) side of the groin, consisting primarily of sediments brought by the stream from upland erosion.

The modifications resulted in excessive wave intrusion into the estuary through the wide mouth. This created a new environment in the estuary dominated by the waves that entered from the sea. Sediment transport patterns within the estuary as far as the Haleiwa Bridge and sediment interchange between the Bay and the estuary changed dramatically with this situation. Waves started to erode the

seaward end of the land between Paukauila and Kiikii streams resulting in significant bank erosion and overall destabilization of the estuary equilibrium. Following the major alteration, the estuary was dredged in 1962 and 1972 to alleviate flooding of upstream low-lying areas.

The estuary below the confluence of the two streams and the portion of Paukauila Stream immediately upstream of the confluence underwent major changes during the past 50 years probably due to these stream modifications. The right (north) bank of the stream has silted up and the stream has shifted by eroding into the left (south) bank. A significant area of land was also eroded at the confluence. No significant changes occurred in Kiikii Stream during this time. The changes that occurred in the estuary during the last 50 years are shown in Figure III–5.

In this project, an eighty (80) feet wide channel will be dredged to accommodate flood waters during heavy rain. The effectiveness of this channel will be temporary because of continued wave penetration into the area and the resulting siltation that will occur. As long as the wave penetration into this area is present, the estuary and the portion of Paukauila Stream downstream of Haleiwa Bridge will continue to change until a new equilibrium condition is reached. In order to achieve a more stable environment, the estuary, stream bank stabilization, and flood protection should be approached from a much larger scale. Unfortunately, due to budget constraints such an investigation was not in the scope of the project.

Dredging activities in the estuary will only be carried out during good weather. During stormy conditions dredging may be hazardous due to strong currents.

5. Water Quality

The water quality parameters applicable for Paukauila Stream include standards for inland water and estuaries. Kaiaka Bay is listed as Class A waters according to the State of Hawaii Department of Health (DOH) Water Quality Standards. The City and County of Honolulu 208 Plan identifies the waters within Kaiaka Bay as a Water Quality Limited Segment. Water Quality Limited Segments are those coastal areas that are identified by DOH that generally do not meet water quality standards and will likely not meet applicable standards even after effluent limitations on point source discharges are in place (Hydro Resources, Inc., 1996).

Under normal conditions, Paukauila Stream is characterized as a well-mixed estuary of salt and fresh water. In these cases, density currents are small. However, under rainy conditions the flow of the stream increases and becomes stratified as fresh water travels over a salt-water layer.

Water samples were taken at mid span of the Cane Haul Bridge below the confluence of the two streams (Sample #1), near the bridge over the Kiikii Stream (Sample #2), and at the Haleiwa Road Bridge in Paukauila Stream (Sample #3) (see Figure III-3). Sampling was timed to coincide with the low tide of the day.

Each sample was analyzed for turbidity, total suspended solids, nitrate plus nitrite nitrogen, total nitrogen, total phosphorus, and salinity. Turbidity and nutrients were analyzed in a State Certified laboratory. Paukauila and Kiikii Stream discharge into Kaiaka Bay and DOH water quality standards "wet criteria apply for this location. The geometric mean, 10 percent exceedance level and 2 percent exceedance level are included in the table for comparison. Results are shown in Table III-3.

Table III-3.
Water Quality Results, May 1998

Sample No. Site	Turbidity (NTU)	Total Suspended Solids (mg/L)	Nitrate + Nitrite (µg N/L)	Total Nitrogen (µg N/L)	Total Phosphorus (µg P/L)	Salinity (ppt)
1	23.9	37.8	674	783	81	20
2	6.22	6.9	840	908	54	14
3	5.32	4.7	940	1070	103	15
DOH Std. Not to Exceed:						
Geo. Mean	1.50	No	8.00	200.00	25.00	No
10% of time	3.00	State	20.00	350.00	50.00	State
2% of time	5.00	Std.	35.00	500.00	75.00	Std.

Results of the water quality analysis indicate that all water quality parameters of the stream waters exceed DOH standards. Samples #2 and #3 were collected from the estuary and Sample #1 was collected from Kaiaka Bay.

Turbidity in the Kiikii Stream sample and the Paukauila sample, although higher than the DOH limits, are significantly lower than the turbidity in the Kaiaka Bay sample. This phenomenon is due to sediments that are put into suspension by wave action at the entrance of the streams. Visual observation indicates that water clarity increases as one moves offshore from Kaiaka Bay. Fine sediments brought to the stream mouth from upland erosion are probably the source for the high turbidity.

The extremely high concentrations of nitrate + nitrite indicate the influence of fertilizers, which are probably used for upstream agriculture. Nitrate + nitrite concentrations in the Kaiaka Bay sample is lower than the concentrations in the stream samples. This shows that dilution of stream discharge has already occurred to some degree at the stream mouth. Results for total nitrogen and total

phosphorus are similar. Nutrient concentrations in the Paukauila Stream sample are higher than in the Kiikii Stream sample. This may be related to the flow restriction caused by the sedimentation.

The difference between total nitrogen and nitrate + nitrite is caused by the presence of ammonia and organic nitrogen. High ammonia and organic nitrogen concentrations often indicate decaying vegetable or plant matter. The Paukauila Stream sample has higher ammonia and organic nitrogen levels probably due to the longer stagnation period compared with the other sample sites. The concentration of ammonia and organic nitrogen is comparatively low at the bay entrance due to dilution with and oxidation from ocean water.

Salinity measurements show that even at low tide some of the ocean water remains in the estuary. Low stream discharge at the time of sampling may be the reason for incomplete flushing. Complete flushing of the estuary would be expected to occur under high stream flow conditions.

6. Marine Biology

A marine environmental site overview was conducted on May 6, 1998. The purpose of this overview was to characterize the site environment, identify any rare or endangered species, and make an initial assessment of the probable environmental impact from the project to the surrounding environment. This overview was not a quantitative biological assessment and was intended to supplement existing information about the region. No quantitative transects were conducted and no sampling of mud-flat infauna, intertidal, or land flora were carried out. The limits of the survey are shown in Figure III-6.

Macro algae in the stream consisted of a fine short mat of an unidentified green filamentous algae similar *to Enteromorpha* sp. (see Figure III-7). This mat was present over the majority of the substrate from the Haleiwa Bridge halfway down to the tip of the peninsula. The algae was littered with many fine tubular casts indicating an abundant population of subsurface dwelling organisms, probably small polychaete worms. On the revetment rocks at the end of the peninsula at the confluence of the streams there was some small growth of the green sea-lettuce *Ulva* sp., but these rocks appear to be a little high above mean tide level to support significant enteromorpha or ulva growth. Seaweed growth was much more prolific on the revetment rocks of the groin on the northeast side of the channel, seaward of the Cane Haul Road. Seaweed noted include (in rough order of dominance) *Ulva reticulata*, *Hypnea musciformis*, *Acanthophora spicifera*, *Ahnfeltia* sp., and *Grateloupia* sp.

The burrows of sand crabs were the most obvious sign of invertebrate fauna; however, they were not common, as only about a dozen burrows were noted during the survey. Most of the sand/mud-flat surface was devoid of any evidence of burrowing infauna, except (as indicated above) in the vicinity of the algae mat.

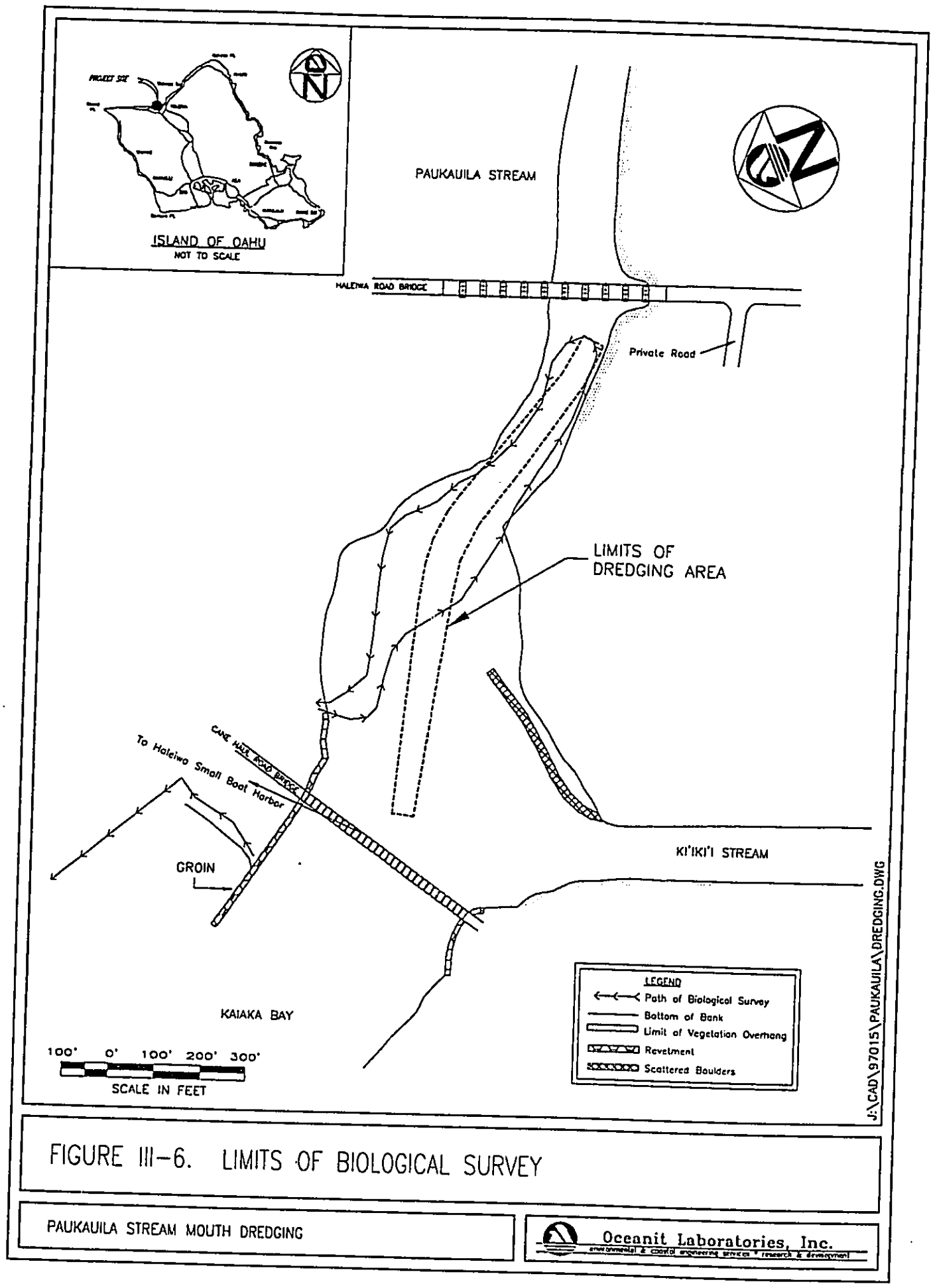

FIGURE III-6. LIMITS OF BIOLOGICAL SURVEY

PAUKAUILA STREAM MOUTH DREDGING

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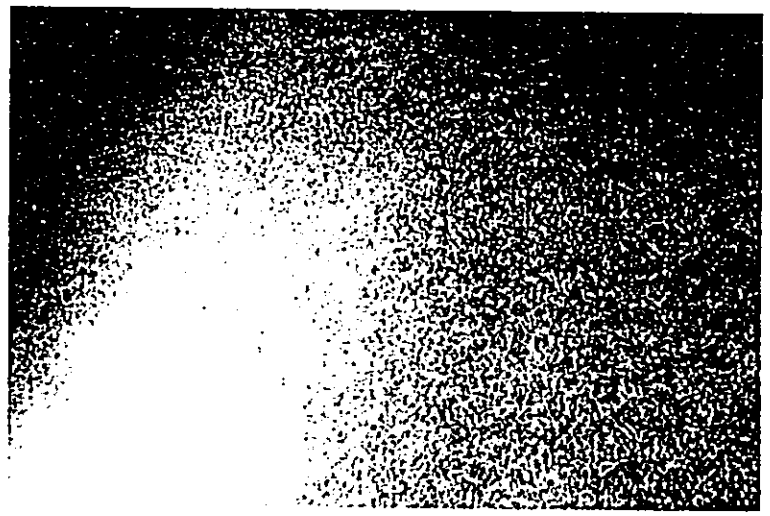
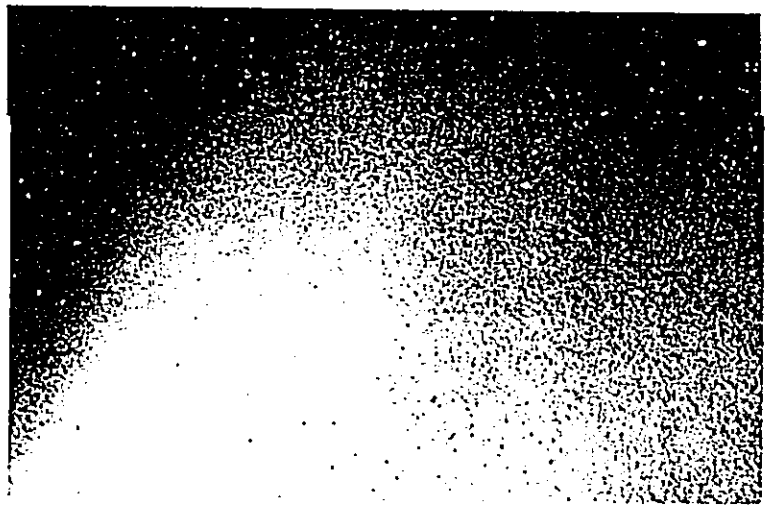
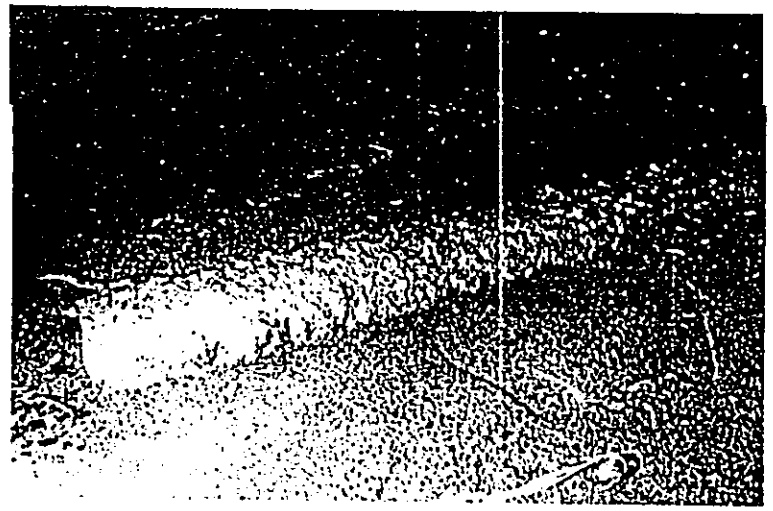


Mud Surface With Algae Wet and Warm Tube Casts.

Growth of Green Sea-lettuce on Revetment Rocks.



Mud Surface Showing Burrow Holes and Tube Casts.



Half Burried Pipe With Colony of Dead Barnacles.

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FIGURE III-7. BENTHIC PHOTOGRAPHS

PAUKAUILA STREAM MOUTH DREDGING

Oceanit Laboratories, Inc.

In this area very small (1mm) holes are abundant on the sand surface (see photo Figure III-7). Fine silt and sand would provide ideal support for burrowing worms, and it is likely that a diverse population of polychate worms exists in the mud-flat. The slightly larger vent holes and cones typically associated with mollusks or infaunal crustaceans were absent. Although no traps or other evidence was noted, it is probable that this area supports larger invertebrates. Previous surveys noted invertebrates including the Samoan crab (*Scylla serrata*), blue claw crab (*Thalamita crenata*), and the shore crab (*Metopograpsus messor*) (Environmental Impact Study Corp, 1980).

Evidence of dead barnacle colonies on several rocks and a half-buried pipe were noted in the stream (See Figure III-7). None of the barnacles were alive. Since barnacles require greater salt-water influence than what currently exists in the stream, either the stream had greater salt-water influence in the past or these rocks (and pipe) were transported to the stream.

Fish are probably more abundant at the site during high tide when they may move across the sand flat to and from the ocean. A small school of nehu (*Stolephorus purpureus*) baitfish was seen near the Haleiwa Bridge. About a dozen dead akule (*Trachurops* sp.), some with gill netting attached, were found around the inlet at the high tide mark. It is likely that this area supports abundant fish typical of brackish water habitats including tilapia, mullet (*Mugil* sp.), awa (*Chanos chanos*), and barracuda (*Syphraena* sp.).

In the waters off of Kaiaka Beach, the water visibility was poor (<2ft) due to small waves that kept bottom sediments suspended in the water column. The amount of suspended solids in the water off of the beach was visibly greater than in the stream.

Out to a depth of 4 feet, the bottom was fine sand and small to medium sized rubble colonized with algae. Algae covering the rubble in the shallower areas were primarily *Acanthophora spicifera*, and *Hypnea musciformis*, with a greater variety of species noted on rubble from deeper (3-4') water. All of the algae and rubble was coated with a fine layer of silt.

No underwater observations were made in Kaiaka Bay due to poor visibility.

IV. MAJOR IMPACTS, ALTERNATIVES AND MITIGATION

A. IMPACTS

Anticipated cumulative, direct, and indirect impacts of the proposed project have been assessed. Dredging-related activities may cause both short-term and long-term impacts to the environment. These impacts are discussed below.

1. Shoreline

The cumulative impact to the shoreline from maintenance dredging will be positive. Most of the discharge water flow will concentrate in the dredged channel and erosion of the banks of Paukauila Stream will be minimized. The dredging will result in better drainage of the stream and will improve the flow in existing drainage ditches and culverts that are connected to the stream. As a result, the discharge rates into Paukauila Stream will increase. This increased discharge rate will temporarily mitigate flooding in the lower section of Paukauila Stream. Removal of sediments from the dredge channel may increase upstream wave penetration slightly. However, the effect of these waves will be mostly restricted to the dredge channel area. The eroding south bank of Paukauila Stream is located far enough away from the proposed dredge channel area to be impacted by this project. The dredge material was found to be unsuitable for beach nourishment.

2. Water Quality

The most significant direct impact on the environment from the proposed action will be impacts to water quality during the construction period. Turbidity near the dredging site will increase during dredging operations. After completion of operations, water quality should return to pre-existing conditions. The use of appropriate silt containment methods, avoidance of construction during periods of heavy rainfall, and other construction BMP's should result in minimal impacts to water quality.

No significant indirect or cumulative impacts on water quality are expected as a result of the project.

3. Traffic and Parking

Existing traffic levels at the project site is light during weekdays. Traffic in the area will increase temporarily during dredging operations. Trucks will be used to move dredged material to the disposal site. Unless required by special need, the trucks will operate during normal working hours. A few unpaved parking spaces near the Cane Haul Road Bridge may used near the mouth of Paukauila Stream.

4. Recreation/Boating

Boat traffic, if any, at Paukauila Stream will be temporarily restricted during dredging operations. Fishing opportunities in Paukauila stream may also be restricted. Offshore fishing opportunities are not expected to be affected. Shoreline access will not be adversely affected, except in limited areas during dredging operations.

Impacts on offshore recreational areas, such at sailing areas, rough water-swimming areas, and surfing sites are anticipated to be negligible. Temporary effects on recreation will be primarily due to dredging operations. Boaters, canoeists, and fishermen will be required to stay clear of dredging equipment. The quality of fishing in the area fronting Kaiaka Bay may be affected due to the increase in noise and turbidity. Turbidity levels should return to present conditions after completion of the dredging operations.

5. Noise

Construction vehicles and equipment will generate noise. It will be the dredging Contractor's responsibility to minimize noise during dredging operations. Dredging operations will be restricted to avoid early morning and evening noise.

6. Archaeology

The material to be dredged and removed is accreted material deposited at the project site during the past few years. No historical or archaeological artifacts are expected to be found in the dredging area. However, should any unforeseen archaeological or historical artifacts be encountered during the dredging of Paukauila stream, all work will be stopped and the State of Hawaii Department of Land and Natural Resources (DLNR) Historic Preservation Office will be notified immediately.

7. Marine Environment Impacts

The site environment may be characterized as an open stream-mouth, shallow estuary brackish-water environment. The habitat is exposed to the inflow of salt water from the ocean and the outflow of freshwater, nutrients, and sediments from the land. The rate of stream flow, tidal exchange and low wave action probably prevents the formation of a permanent berm across the stream mouth, but is not sufficient to keep a wide, deep channel open. Therefore, at the mouth of the stream the very shallow sand and mud flat creates a shallow habitat subject to both fresh and saltwater influences. Invertebrate animals in this habitat must show tolerance for salinity fluctuations and be adapted to occasional heavy silt loads.

Offshore habitats of Kaiaka Bay were not examined but probably show very limited coral growth due to fresh water and silt impacts from the streams and increased growth of algae and invertebrate populations. The offshore areas of Kaiaka Bay probably provide forage grounds for green and hawksbill sea turtles. However, the shallow nature of the bay would not provide habitat for nesting. It is apparent that the bay acts as a transitional estuarine habitat between the river and the ocean and has become adapted to continual and fluctuating loads of fresh water, nutrients, and silt. Any reasonable silt load that would result from dredging operations would probably be a small fraction of that experienced by these habitats following a heavy rainfall with significant runoff from surrounding agricultural fields.

8. Bird Habitat

The shallow water estuary habitat near the project site is an ideal forage habitat for waterfowl. However, there does not appear to be any endangered or threatened wildlife that would be adversely impacted from the dredging operation. The vicinity of the proposed dredging is already disturbed by human activity from fishermen, occupants of the surrounding residential housing area, and vehicle traffic over the Haleiwa and Cane Haul Road bridges.

The Hawaiian Stilts (*Himantopus mexicanus)* and Mallard ducks that use this area to forage left the area as soon as the observer entered the riverbed. No nesting at the project site or adjacent areas was observed. The project area is not suitable for nesting and any adjacent areas that might otherwise be appropriate for nesting would be unusable due to local populations of domestic dogs and cats. Maintenance dredging of this scale and duration should not pose a significant environmental threat to the surrounding habitats.

B. ALTERNATIVES

1. No Action

If no maintenance dredging is performed, the present flooding problem will continue to occur. Sediments will continue to collect at the mouth of Paukauila Stream, which will restrict flow and result in upstream flooding during localized rainstorms. This is not an acceptable alternative from the public welfare standpoint. Also, flooding may adversely impact the value of agricultural land in the area. Land taken out of cultivation due to flooding will result in a loss of earnings to the Waialua-Haleiwa community, especially the agricultural industry. The no action alternative was rejected because it would not restore the stream's flow capacity to its natural rate.

2. Regional Flood Control Plan

The proposed maintenance dredging is not a long-term solution to control flooding in the area. Eventually, the sediment will build up in the stream necessitating additional maintenance dredging. A long-term solution would require a more detailed flood study that would include the development of an adequate flood protection scheme and a stream bank protection design. This could be a viable alternative if funds were available for a larger scale study of the area.

C. MITIGATION

The only significant impact to the environment requiring mitigation is impacts to water quality resulting from maintenance dredging operations. This problem will be addressed through the use of appropriate silt containment methods and other site specific mitigation measures as noted in the monitoring plan and BMP as required by the State DOH.

V. DETERMINATION, FINDINGS AND REASONS FOR SUPPORTING DETERMINATION

Based on the information contained in this document, the anticipated determination for the proposed action is a Finding of No Significant Impact (FONSI). When a FONSI is issued, a project may proceed without further study. In making a FONSI determination certain "significance criteria" has been established. An action shall be determined to have a significant effect to the environment if it meets any of the following criteria:

(1) **Involves an irrevocable commitment to loss or destruction of any natural or cultural resource;**

There are no natural or cultural resources that will be significantly impacted by the proposed project. Short-term negative impacts to water quality may result during the dredging period. These impacts will be mitigated with measures noted in Section IV. There are no significant historic or cultural resources in the project area (see Section IV-A (6)).

(2) **Curtails the range of beneficial uses of the environment;**

The proposed project will benefit the surrounding environment by alleviating upland flooding that is caused by sedimentation in the project area.

(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 proposed dredging is consistent with the State's Environmental Policy to enhance the quality of life in Hawaii by reducing the probability of damage to person and property resulting from flooding. In addition, best management practices and a water quality monitoring plan will ensure that there will not be any significant negative impacts on natural resources.

(4) **Substantially affects the economic or social welfare of the community or state;**

Existing shoaled conditions in Paukauila Stream results in increased potential for upland flooding. The economic resources required for maintenance dredging is minor compared to the positive impacts on social welfare to the community resulting from the reduced probability of flooding.

(5) **Substantially affects public health;**

Impacts on water quality, air, and noise are anticipated to be confined to the construction period. These negative impacts are anticipated to be insignificant when compared with the positive impacts of reduced flooding probability.

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

The proposed project will alleviate the probability of upland flooding in the lower portion of Paukauila Stream. There are no substantial secondary or indirect impacts that will result from the project.

(7) **Involves a substantial degradation of environmental quality;**

As previously mentioned, the impact of the proposed project on the environment will not be significant and will be limited to the construction period. Mitigation measures including the use of silt curtains will ensure that there are no substantial impacts to the environment.

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

The proposed dredging will not have a cumulative effect on the environment or involve a commitment for larger actions. However, over time, periodic maintenance dredging will be required to reduce the probability of upland flooding. If the proposed project is not implemented, sediment will continue to build up in Paukauila Stream, requiring a commitment of even greater resources to control upland flooding.

(9) **Substantially affects a rare, threatened, or endangered species, or its habitat;**

As noted in Section IV (A), the impacts on rare, threatened, or endangered species or habitats is not substantial.

(10) **Detrimentally affects air or water quality or ambient noise levels;**

As noted in Section IV (A), the proposed project will not have a detrimental affect on air, water quality, or ambient noise.

(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;**

The proposed action is designed to alleviate damage from flooding and will reduce probability of damage to lands in the surrounding flood plain.

(12) **Substantially affects scenic vistas and viewplanes identified in county or state plans or studies; or**

The proposed project will not affect scenic vistas or viewplanes.

(13) **Requires substantial energy consumption.**

The proposed action will not require substantial energy consumption relative to other similar dredging projects.

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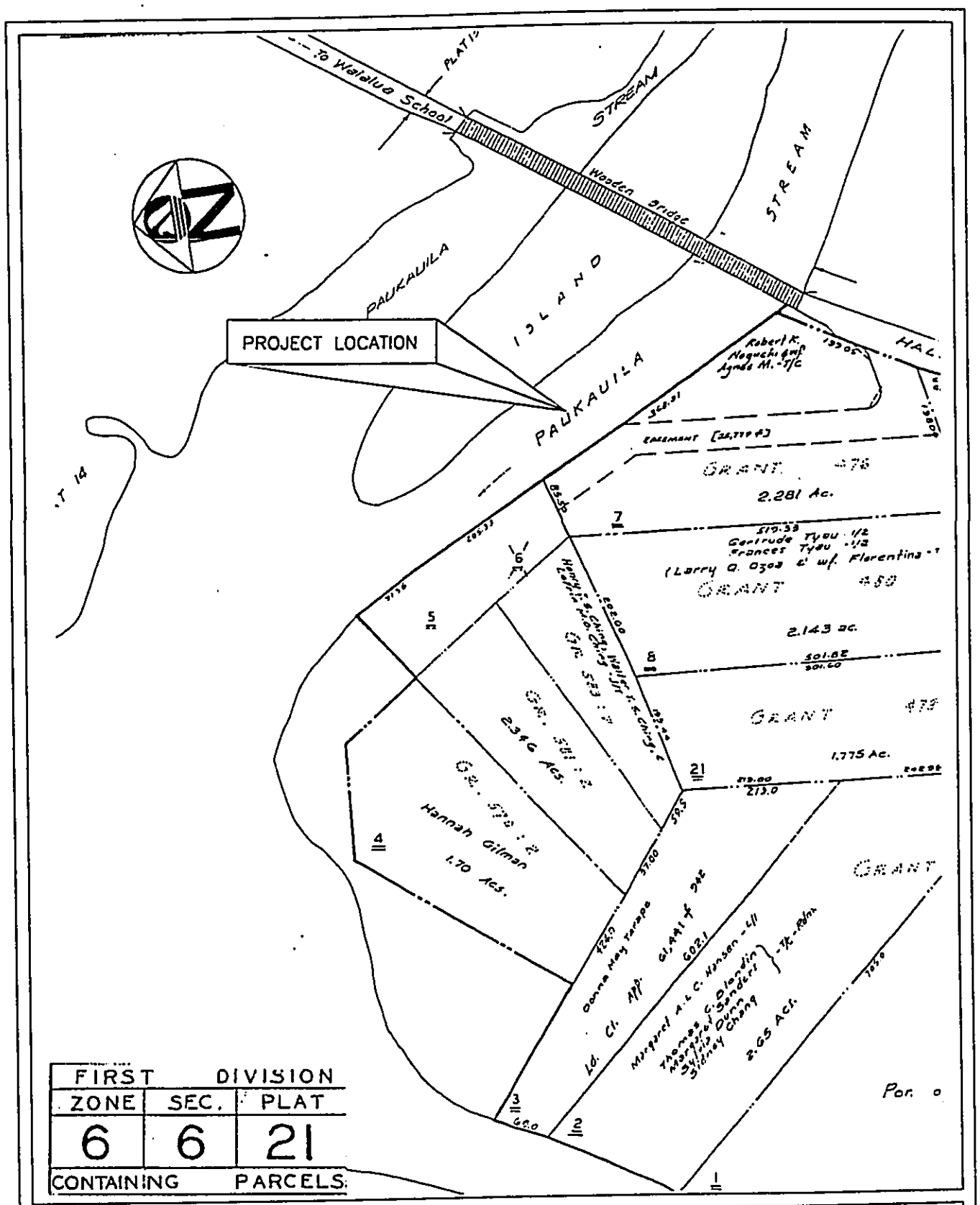
APPENDICES

APPENDIX A
TAX MAP KEY

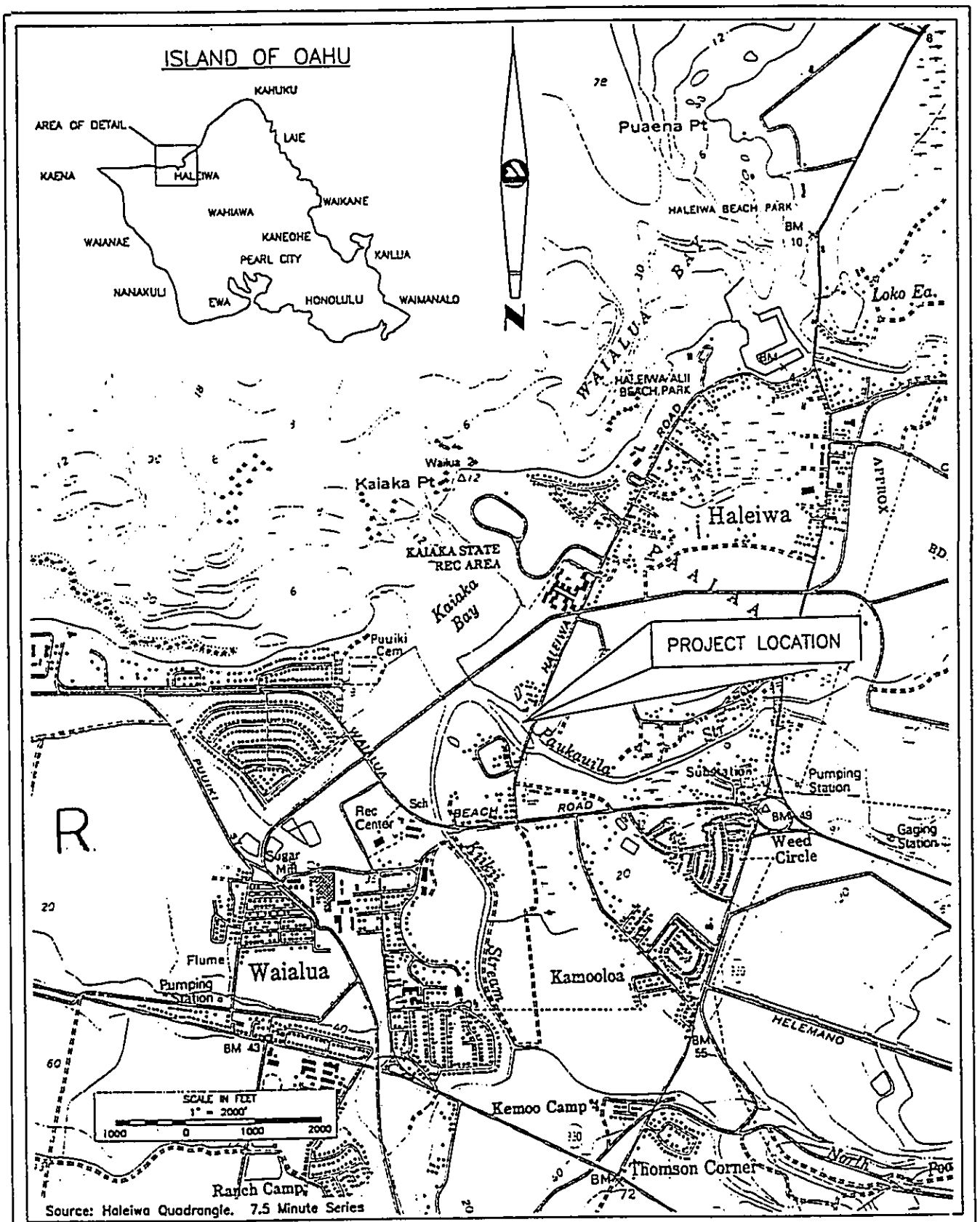


TAX MAP KEY

PAUKAUILA STREAM MOUTH DREDGING

Oceanit Laboratories, Inc.
environmental & coastal engineering services • research & development

APPENDIX B
CONSERVATION DISTRICT USE MAP

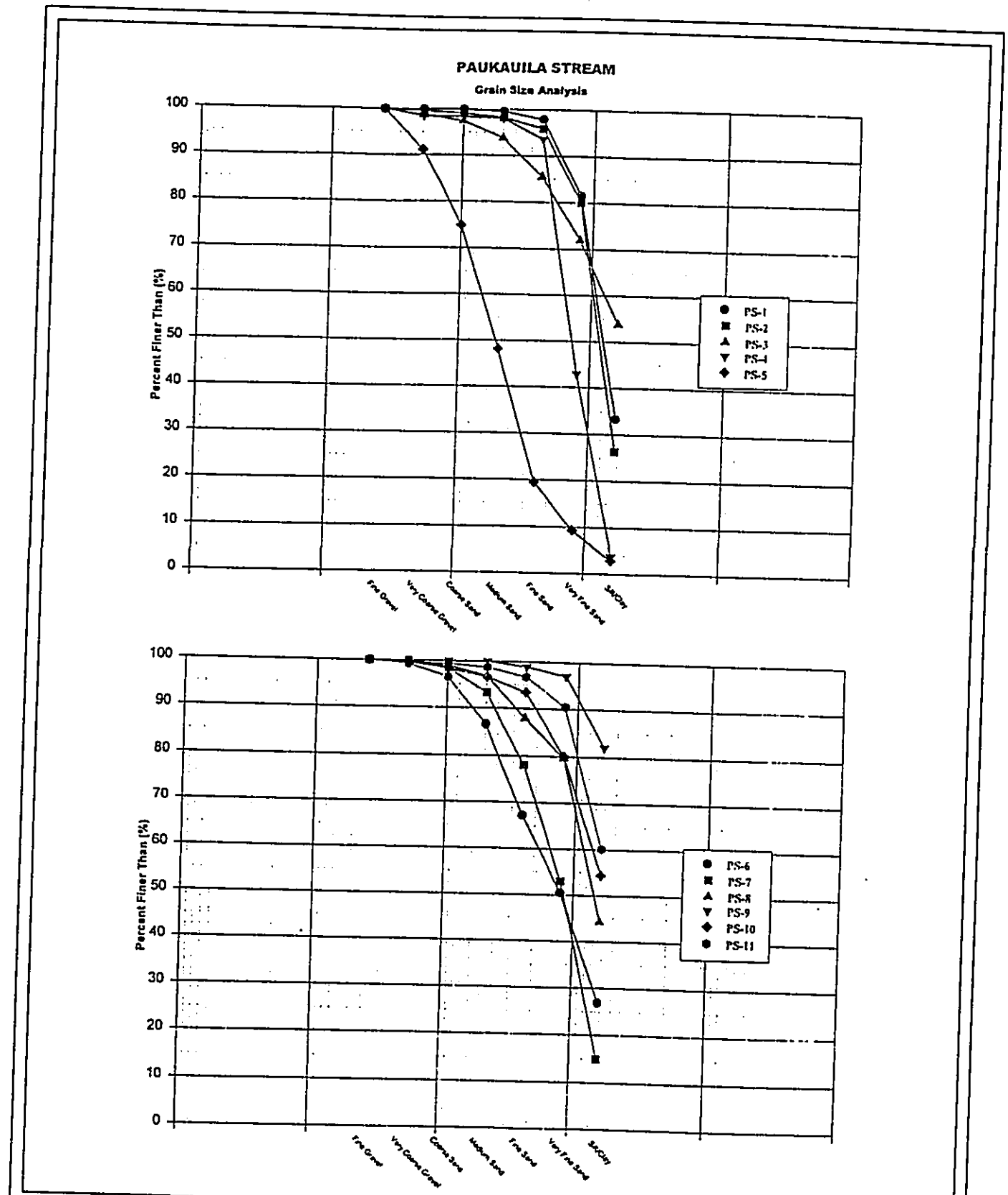


CONSERVATION DISTRICT USE MAP

PAUKAUILA STREAM MOUTH DREDGING

Oceanit Laboratories, Inc.

APPENDIX C
GRAIN SIZE ANALYSIS



GRAIN SIZE ANALYSIS

PAUKAUILA STREAM MOUTH DREDGING

Oceanit Laboratories, Inc.

APPENDIX D
EARLY CONSULTATION LETTERS

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
GILBERT COLOMA-AGARAN

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND ENVIRONMENTAL AFFAIRS
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION DIVISION
LAND MANAGEMENT
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

July 7, 1998

David Takeyama
Oceanit Laboratories, Inc.
1100 Alakea Plaza, 31st Floor
1100 Alakea Street
Honolulu, Hawaii 96813

LOG NO: 21759
DOC NO: 9806EJ34

Dear Mr. Takeyama:

SUBJECT: Chapter 6E-8 Historic Preservation Review-- Preliminary Environmental Assessment Consultation Proposed Dredging of a Portion of Paukauila Stream
Paukauila, Waialua, O'ahu
TMK: 6-6-14

Thank you for the opportunity to provide comment during your preparation of an environmental assessment for this project. The project proposes the maintenance dredging of approximately 3, 870 cubic yards of accumulated sediments deposited at the mouth of Paukauila stream. A review of our records shows that there are no known historic sites within the stream at the project location. Since the proposed work involves clearing of recently accumulated sediments and, according to your letter, maintenance dredging has occurred in the past, we believe that this action will have "no effect" on this historic site.

We also concur that since dredging actions will not be conducted in the vicinity of Haleiwa Elementary School (a site on the National and Hawaii State Register of Historic Places), that the project will have "no effect" on this historic sites.

If you have any questions please call Elaine Jourdane at 587-0014.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

1998

EJ:je

Oceanit Laboratories, Inc.
environmental & coastal engineering services • research & development

June 25, 1998

Ms. Mufit Jourdan, Archaeologist
Department of Land and Natural Resources.
State Historic Preservation Office
33 South King Street. 6th Floor
Honolulu, HI 96813

Subject: Consultation Regarding Maintenance Dredging
Of Paukauila Stream

Dear Ms. Jourdan:

Oceanit Laboratories has been contracted to prepare an environmental assessment for proposed dredging of a portion of Paukauila Stream, located on the north shore of Oahu; TMK 6-6:14. Based on the available information we have acquired, and on the nature and extent of the project, we believe the proposed action will not adversely affect any historical or cultural resources located within the area. We are seeking your agency's concurrence of a "no affect" finding concerning this project. To assist in your evaluation, enclosed is a brief description of the dredging plan and a site location map.

Project Site

Paukauila Stream is located in Waialua, on the North Shore of Oahu (Figure 1). Specifically, the project site is situated between Cane Haul Road Bridge and Haleiwa Bridge. During heavy rain conditions erosion occurs, resulting in large amounts of sediments deposited at the mouth of Paukauila Stream. Additionally, wave action and tidal currents from Kaiaka Bay transport sand to the mouth of Paukauila Stream—exacerbating siltation. These conditions have contributed to upland flooding, necessitating occasional maintenance dredging.

Project Description

In order to reduce upland flooding, maintenance dredging of a channel area approximately 1,100 feet long by 75 feet wide by 3 feet deep is proposed. The volume of dredged material is approximately 3,870 cubic yards. Dredging will be accomplished using a suction hydraulic dredge, backhoe, or other devices depending on the type of materials to be removed and the contractor's judgement. Prior to transport, the material will be reasonably dewatered using methods approved by the Department of Health. Temporary storage of dredged materials is anticipated, however a suitable location has yet to be determined. Proposed disposal of dredged

1100 Alakea Plaza • 1100 Alakea Street, 31st Floor • Honolulu, Hawaii 96813
TEL: (808) 531-3017 • FAX: (808) 531-3177 • E-MAIL: oceanit@oceanit.com • URL: http://www.oceanit.com

material entails transport to Mokuleia Quarry, located near the Dillingham Airfield. The project site has been dredged for general maintenance in 1962, and more recently in 1976.

Known Historical Facts

According to a document--addressing a project development in the same area--prepared by Wilson, Okamoto & Associates (1988), there are no significant archeological or cultural sites within the project area. Nonetheless, adjacent to the project site, at an approximate distance of 2,000 feet, is the Haleiwa Elementary School, which was included on the Hawaii State Historic Register on May 3, 1980 and on the National Historic Register on May 11, 1980.

In closing, we believe that based on the available information, dredging activities will not adversely affect any cultural resources. Should you have any questions, please contact either Hedy Hager or David Takeyama at 531-3017. Thank you for your time and effort concerning this matter.

Sincerely,

David Takeyama, Environmental Planner.
Oceanit Laboratories

Enclosure

APPENDIX E
RESULTS OF PESTICIDE AND CONTAMINANTS SAMPLES

Laboratory Report

Sample Type Soil Sampled 17-apr-1998 Received 22-apr-1998 Reported 26-may-1998

Parameter		Units	Result	Conc.	%Rec	Dilution	Det.Limit	Prepared	By	Analyzed	By
Silver, Total, ICAP	(ML/SW 6010)	mg/kg	74				1	27-apr-1998	gsr	30-apr-1998	wim
Arsenic, Total, GP	(ML/EPA206.2)	mg/kg	ND			10	5	27-apr-1998	gsr	11-may-1998	jps
Barium, Total, ICAP	(ML/SW 6010)	mg/kg	8.9				5	27-apr-1998	gsr	30-apr-1998	wim
Cadmium, Total, ICAP/MS	(EPA/ML 200.8)	mg/kg	ND			10	1	08-may-1998	gsr	11-may-1998	jps
Chromium, Total, ICAP	(ML/SW 6010)	mg/kg	130				1	27-apr-1998	gsr	30-apr-1998	wim
Copper, Total, ICAP	(ML/SW 6010)	mg/kg	ND				1	27-apr-1998	gsr	30-apr-1998	wim
Mercury	(ML/SW7471)	mg/kg	0.04				0.02	28-apr-1998	gne	28-apr-1998	gne
Manganese, Total, ICAP	(ML/SW 6010)	mg/kg	1300				1.5	27-apr-1998	gsr	30-apr-1998	wim
Lead, Total, GP	(ML/EPA 239.2)	mg/kg	2.8				1	27-apr-1998	gsr	11-may-1998	jps
Selenium, Total, GP	(ML/EPA 270.2)	mg/kg	ND			10	5	27-apr-1998	gsr	11-may-1998	jps
Zinc, Total, ICAP	(ML/SW 6010)	mg/kg	62				2	27-apr-1998	gsr	30-apr-1998	wim

Report #: 42401

Laboratory Report

Sample Type Soil Sampled 17-apr-1998 Received 22-apr-1998 Reported 26-may-1998

BNA Extractable (ML/SW 8270)

Parameter	Units	Result	Conc.	%Rec	Dilution	Det.Limit	Prepared	By	Analyzed	By
1,2,4-Trichlorobenzene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
1,2-Dichlorobenzene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
1,2-Diphenylhydrazine	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
1,3-Dichlorobenzene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
1,4-Dichlorobenzene (p-DCB)	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2,4,5-Trichlorophenol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2,4,6-Trichlorophenol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2,4-Dichlorophenol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2,4-Dimethylphenol	mg/kg	ND				1	30-apr-1998	sub	01-may-1998	sub
2,4-Dinitrophenol	mg/kg	ND				2	30-apr-1998	sub	01-may-1998	sub
2,4-Dinitrotoluene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2,6-Dinitrotoluene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2-Chloronaphthalene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2-Chlorophenol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2-Methylnaphthalene	mg/kg	ND				0.33	30-apr-1998	sub	01-may-1998	sub
2-Methylphenol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2-Nitroaniline	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
2-Nitrophenol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
3,3'-Dichlorobenzidine	mg/kg	ND				1	30-apr-1998	sub	01-may-1998	sub
3-Nitroaniline	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
4,6-Dinitro-o-cresol	mg/kg	ND				1	30-apr-1998	sub	01-may-1998	sub
4-Bromophenylphenylether	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
4-Chloroaniline	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
4-Chlorophenylphenylether	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
4-Methylphenol	mg/kg	ND				2	30-apr-1998	sub	01-may-1998	sub
4-Nitroaniline	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
4-Nitrophenol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Acenaphthene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Acenaphthylene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub

Report #: 42401

Laboratory Report

Sample Type Soil Sampled 17-apr-1998 Received 22-apr-1998 Reported 26-may-1998

BNA Extractable (ML/SW 8270)

Parameter	Units	Result	Conc.	%Rec	Dilution	Det.Limit	Prepared	By	Analyzed	By
Aniline	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Anthracene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Benzo(a)anthracene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Benzo(a)pyrene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Benzo(b)fluoranthene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Benzo(g,h,i)perylene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Benzo(k)fluoranthene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
bis(2-Chloroethyl)ether	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
bis(2-Chloroethoxy)methane	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
bis(2-Chloroisopropyl)ether	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
bis(2-Ethylhexyl)phthalate	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Butylbenzylphthalate	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Benzidine	mg/kg	ND				5	30-apr-1998	sub	01-may-1998	sub
Benzoic Acid	mg/kg	ND				2.5	30-apr-1998	sub	01-may-1998	sub
Benzyl Alcohol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Chrysene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Dibenzo(a,h)anthracene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Dibenzofuran	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Diethylphthalate	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Dimethylphthalate	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Di-n-butylphthalate	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Di-n-octylphthalate	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Fluoranthene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Fluorene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Hexachlorobenzene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Hexachlorobutadiene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Hexachlorocyclopentadiene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Hexachloroethane	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Indeno(1,2,3-c,d)pyrene	mg/kg	ND				1	30-apr-1998	sub	01-may-1998	sub

Report #: 42401

Laboratory Report

Sample Type Soil Sampled 17-apr-1998 Received 22-apr-1998 Reported 26-may-1998

BNA Extractable (ML/SW 8270)

Parameter	Units	Result	Conc.	%Rec	Dilution	Det.Limit	Prepared	By	Analyzed	By
Isophorone	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Naphthalene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Nitrobenzene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
N-Nitrosodimethylamine	mg/kg	ND				2	30-apr-1998	sub	01-may-1998	sub
N-Nitrosodi-N-propylamine	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
N-Nitrosodiphenylamine	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
p-Chloro-m-cresol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Pentachlorophenol	mg/kg	ND				1	30-apr-1998	sub	01-may-1998	sub
Phenanthrene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Phenol	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub
Pyrene	mg/kg	ND				0.5	30-apr-1998	sub	01-may-1998	sub

Report #: 42401

Laboratory Report

Sample Type Soil Sampled 17-apr-1998 Received 22-apr-1998 Reported 26-may-1998

Herbicides, Chlorophenoxy (ML/SW 8150)

Parameter	Units	Result	Conc.	%Rec	Dilution	Det.Limit	Prepared	By	Analyzed	By
2,4,5-T	mg/kg	ND				0.01	08-may-1998	sub	18-may-1998	sub
2,4,5-TP (Silvex)	mg/kg	ND				0.01	08-may-1998	sub	18-may-1998	sub
2,4-D	mg/kg	ND				0.07	08-may-1998	sub	18-may-1998	sub
2,4-DB	mg/kg	ND				0.07	08-may-1998	sub	18-may-1998	sub
2,4-DP (Dichorprop)	mg/kg	ND				0.07	08-may-1998	sub	18-may-1998	sub
Dalapon (Dowpon)	mg/kg	ND				0.017	08-may-1998	sub	18-may-1998	sub
Dicamba	mg/kg	ND				0.01	08-may-1998	sub	18-may-1998	sub
Dinoseb	mg/kg	ND				0.03	08-may-1998	sub	18-may-1998	sub
MCPA	mg/kg	ND				16.7	08-may-1998	sub	18-may-1998	sub
MCPP	mg/kg	ND				16.7	08-may-1998	sub	18-may-1998	sub
Data Entry	--	05/26/98				0	08-may-1998	sub	18-may-1998	sub

Report #: 42401

Laboratory Report

Sample Type Soil Sampled 17-apr-1998 Received 22-apr-1998 Reported 26-may-1998

Pesticides/PCBs (ML/EPA 608)

Parameter	Units	Result	Conc.	%Rec	Dilution	Det.Limit	Prepared	By	Analyzed	By
PCB 1016 Aroclor	mg/kg	ND				0.05	29-apr-1998	sub	30-apr-1998	sub
PCB 1221 Aroclor	mg/kg	ND				0.1	29-apr-1998	sub	30-apr-1998	sub
PCB 1232 Aroclor	mg/kg	ND				0.05	29-apr-1998	sub	30-apr-1998	sub
PCB 1242 Aroclor	mg/kg	ND				0.05	29-apr-1998	sub	30-apr-1998	sub
PCB 1248 Aroclor	mg/kg	ND				0.05	29-apr-1998	sub	30-apr-1998	sub
PCB 1254 Aroclor	mg/kg	ND				0.05	29-apr-1998	sub	30-apr-1998	sub
PCB 1260 Aroclor	mg/kg	ND				0.05	29-apr-1998	sub	30-apr-1998	sub
Alpha-BHC	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Aldrin	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Beta-BHC	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Chlordane	mg/kg	ND				0.025	29-apr-1998	sub	30-apr-1998	sub
Delta-BHC	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
p,p' DDD	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
p,p' DDE	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
p,p' DDT	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Dieldrin	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Endrin Aldehyde	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Endrin	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Endosulfan I (alpha)	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Endosulfan II (beta)	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Endosulfan sulfate	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
BHC (Lindane)	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Heptachlor	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Heptachlor Epoxide	mg/kg	ND				0.0025	29-apr-1998	sub	30-apr-1998	sub
Methoxychlor	mg/kg	ND				0.0075	29-apr-1998	sub	30-apr-1998	sub
Toxaphene	mg/kg	ND				0.075	29-apr-1998	sub	30-apr-1998	sub
Data Entry	--	05/26/98				0	29-apr-1998	sub	30-apr-1998	sub

Report #: 42401

APPENDIX F
SUBSTANTIVE COMMENTS TO DEA AND RESPONSES

Benton Ching
91-1175 Kupipi Place
Ewa Beach, Hawaii 96706

December 7, 1998

Mr. Andrew Monden
Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Monden:

This is in regard to the proposed dredging of Paukawila Stream at Waialua, Oahu. Since the 1920's, my family has owned a property (TMK 6-6-021:005) adjacent to the mouth of Paukawila Stream where the dredging will be taking place. My father was raised on this property and I spent many weekends and summers on the property where we boated, crabbed and fished in Kiikii Stream, Paukawila Stream and Kaiaka Bay. Over the past fifty years, the area has experienced significant changes in the shoreline caused by previous dredging and construction projects. The shoreline erosion in this area was the subject of a paper I wrote for my Masters of Science in Ocean Engineering degree from the University of Hawaii at Manoa.

Mr. Hiram Young of your staff has forwarded me a copy of the draft Environmental (EA) and construction plans for this project. I have spoken to Mr. Young and also to the consultants on the project on several occasions and described my concerns on wave generated erosion which has been battering the shoreline since the last dredging project by the City and County of Honolulu in 1976. Enclosed are copies of photographs which show the erosion in 1987 and the photographs from 1998. I am also enclosing copies of aerial photographs and excerpts from my paper which explain how the removal of sediments from the area has contributed to the shoreline erosion. If you examine the photographs, you will see that the opposite side of the stream has accreted substantially while the side most exposed to the ocean has seriously eroded. In general, the DLNR staff and consultants have been sensitive to my concerns and have shifted the proposed dredged channel to the opposite side of the stream.

I recognize that funds are limited and that shoreline protection and additional studies are a problem due to financial constraints. However, I am concerned that there is no acknowledgement of the erosion problem in the EA. Further, there is no discussion on how the removal of sediment from the littoral cell will impact the shoreline. Removing sediment from the system has destabilized the shoreline in the past and continues to occur. It is my opinion as a professional engineer that the removal of sediments from the littoral cell will hasten the upstream migration of the protective shoal which has historically protected the property in question but has since moved upstream leaving the shoreline exposed.

The plans and specifications are written in such a manner that there is no way of assuring that the sand will remain in the system. I ask that you reconsider this and take the action to have the sand placed in the eroded sections of the shoreline above the ordinary high water mark. My understanding is that the dredged material will become the property of the contractor and that it will be removed from the area. If the spirit of Chapter 205A-44(e), Hawaii Revised Statues, is followed, clean sand cleared from the mouth of streams are to be used for nourishing adjacent beaches where possible. This regulation was written to protect the removal of sand from the littoral sediment budget of erosion prone areas and certainly applies to this case. I think that this could be a win-win situation if the contractor would take the sand and move it to adjacent shoreline areas above the ordinary high water mark. In addition to rebuilding the shoreline and providing a buffer for nearby structures, this action would lessen the hauling and dewatering costs for the contractor. We are not asking for all the sand, even a portion of it would help.

Thank you for your consideration of these comments. If you have any questions, please contact me at 438-1157 or at home at 685-1434.

Sincerely,

Benton Ching

Benton Ching, P.E.

Attachments
Copies furnished:
Office of Environmental Quality Control
U.S. Army Corps of Engineers, Regulatory Branch

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
ENGINEERING BRANCH
P.O. BOX 373
HONOLULU, HAWAII 96809

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTY
JANET E. KAWELO

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
LAND DIVISION
ENGINEERING BRANCH
PLANNING BRANCH
TECHNICAL & SUPPORT BRANCH
STATE PARKS

Mr. Benton Ching, P.E.
91-1175 Kipipi Place
Ewa Beach, Hawaii 96706

Dear Mr. Ching:

Response to Comments on Draft Environmental Assessment, Paukauila Stream Mouth Dredging, Oahu

Thank you for your letter dated December 7, 1998, regarding comments on the draft environmental assessment (DEA) for Paukauila Stream Mouth Dredging, Oahu. We are finalizing the draft environmental assessment since you did not respond to our March 10, 1999 written request for a meeting to resolve the impact of the proposed dredging on the existing erosion of the stream bank. The following are responses to your comments:

1. The present instability of the estuary and resulting stream bank erosion and accretion will be included in the final EA.

2. The siltation of Paukauila Stream estuary occurs from sediments brought from adjacent shoreline and upstream areas. Waves that intrude into the estuary are the main force that control siltation patterns. Removal of sediments from the proposed dredge channel might increase upstream wave penetration slightly. However, the effect of these waves will be mostly restricted to the dredge channel area. The channel is located far enough away from the eroding left (south) bank of Paukauila Stream, so that project-related impacts on this bank are anticipated to be minimal.

The shoal formed at the Paukauila Stream estuary consists of approximately 19,250 cubic yards of sand and mud. Approximately, 3,870 cubic yards of this material will be dredged to provide drainage capacity during high flow conditions. The proposed sand removal is about 18% of the existing shoal above the dredge level of -2.5 feet MSL. Nevertheless, this will result in some impact to the present system. We expect this impact to be small in view of the greater benefit of the proposed channel dredging to the flooding of upstream areas.

3. Plans and specs were prepared as a part of the bidding document to hire a contractor. Environmental issues from the proposed action were not addressed in them.

4. Based on sediment samples from the stream and surrounding beaches, it is our opinion that the dredge material is not suitable for beach nourishment. The dredge material is brown in color, and is not aesthetically compatible with sand from nearby beaches. Furthermore, the comparatively soft nature and the high silt content of the material could also create nearshore turbidity problems if the material is placed on the shoreline.

Thank you for your comments. If you have any additional questions, please do not hesitate to call Mr. Hiram Young of the Design Section at 587-0260.

Sincerely,

ANDREW M. MONDEN
Chief Engineer

HMY:ka
✓ Oceanit

BENJAMIN J. CAYETANO
GOVERNOR

GARY GILL
DIRECTOR

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

December 8, 1998

Mr. Hiram Young
State of Hawai'i Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawai'i 96809

Dear Mr. Young:

Having reviewed the draft environmental assessment (DEA) for the "Paukauila Stream Mouth Dredging," we submit the following comments for your response.

1. ENVIRONMENTAL SETTING AND IMPACTS

   A. FLORA AND FAUNA: Please consult with the U.S. Fish and Wildlife Service on the extent and distribution of the various flora and fauna in the area and whether such organisms may be directly, indirectly, or cumulatively impacted by the project.

   B. CEDED LANDS: Please consult with the Office of Hawaiian Affairs on whether the project parcel will involve the use of ceded lands as defined in Section 5 of the Admission Act.

2. PREVENTIVE MEASURES

Please consult with the National Resources Conservation Service and discuss what preventive measures can be taken to minimize silt loading in the project region.

3. DREDGED SAND

Please evaluate whether the dredged sand would be suitable for any beach nourishment project. Please contact Mr. Samuel Lemmo of the Land Division of the Department of Land and Natural Resources to further discuss this matter. Document this consultation in the final EA.

A copy of all comment letters, and your responses must be included in the final environmental assessment and notice of determination for this project. If there are any questions, please call Leslie Segundo, Environmental Health Specialist at 586-4185.

Sincerely,

GARY GILL
Director

c Mr. Ian Wasnich, Oceanit Laboratories, Inc.

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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STATE PARKS

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
ENGINEERING BRANCH
P.O. BOX 373
HONOLULU, HAWAII 96809

AUG 10 1999

TO: Genevieve Salmonsen, Director
Office of Environmental Quality Control

FROM: Andrew M. Monden, Chief Engineer
Engineering Branch

SUBJECT: **Response to Comments on Draft Environmental Assessment, Paukauila Stream Mouth Dredging, Oahu**

Thank you for your letter dated December 8, 1998, regarding comments on the draft environmental assessment (DEA) for Paukauila Stream Mouth Dredging, Oahu. The following are responses to your comments:

1. ENVIRONMENTAL SETTING AND IMPACTS

A. Prior to submission of the Final Environmental Assessment, the U.S. Fish and Wildlife Service will be consulted regarding the extent and distribution of the various flora and fauna in the area and whether such organisms may be directly, indirectly, or cumulatively impacted by the project.

B. The Office of Hawaiian Affairs will be consulted on whether the project parcel will involve the use of ceded lands as defined in Section 5 of the Admission Act.

2. PREVENTIVE MEASURES

The scope of the proposed project provides only a temporary solution to the problem of silt loading of the lower reaches of Paukauila Stream and the resulting upland flooding. Siltation of the stream occurs from stream bank erosion and drainage area erosion. A regional drainage and flood control study should be conducted to prevent excessive stream siltation and upland flooding.

3. DREDGED SAND

Mr. Sam Lemmo, a Planner with the Land Division, will be contacted to discuss the feasibility of using the dredged sand for beach nourishment.

Thank you for your comments. If you have any additional questions, please do not hesitate to call Mr. Hiram Young of the Design Section at 587-0260.

Sincerely,

Andrew M. Monden

ANDREW M. MONDEN
Chief Engineer

HMY:ka
cc: Oceanit

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December 5, 1998

Mr. Sterling S. Yong, P.E.
State NFIP Coordinator
Head, Flood Control & Dam Safety Section
Department of Land and Natural Resources
Engineering Branch, Land Division
P.O. Box 373
Honolulu, HI 96809
FAX: (808) 587-0283
E-mail: dlnrsyong@aloha.net

Subject: Comments regarding Draft Environmental Assessment Paukauila Stream Mouth Dredging, Oahu

Dear Mr. Yong:

Thank you for meeting with me on December 4, 1998 and for the opportunity to comment regarding the Draft Environmental Assessment. The Department of Land and Natural Resources (DLNR), Engineering Branch, Land Division proposes the maintenance dredging of approximately 3870 cubic yards of accumulated sand, silt, and debris deposited in the lower reaches of Paukauila Stream, with the recommended disposal site for the dewatered material being the Mokuleia Quarry located near Dillingham Airfield.

Hawaii Fish Company (HFC) presently holds a revocable permit from DLNR (RP-6814) for eighteen acres of the quarry site adjacent to Dillingham Airfield for its current aquaculture activities. In addition, for the past several years, HFC has been planning a business/development plan for the staged establishment of an innovative integrated aquaculture-agriculture-livestock operation utilizing the entire quarry site, from Dillingham Airfield to Camp Erdman, subject to the approval of Land Management and the Board of Land and Natural Resources.

This proposed project has the support of the Mokuleia Community Association and has been included in the County of Honolulu's recent Empowerment Zone application to the U.S. Department of Housing and Urban Development. In addition, the State's and County's North Shore Enterprise Zone boundaries have been ammended to include the quarry site in support of HFC's ongoing and proposed activities at the site.

HFC supports DLNR's efforts to provide badly needed flood control measures for Paukauila Stream, but respectfully requests that DLNR consider additional steps to ensure that the proposed disposal of dredged sediments at the Mokuleia Quarry site be handled in a manner that will not contaminate the quarry site or damage or hinder HFC's ongoing or planned farming activities at the site. Properly planned and coordinated, the proposed sediment disposal activities could actually be beneficial to HFC's ongoing and proposed quarry site development efforts, if the dredged sediments are indeed free of contaminants.

To this end, HFC suggests the following actions be added as additional terms of reference for the planning, monitoring, dewatering, and disposal activities of the subject project:

1) That HFC be included in all appropriate discussions and planning activities regarding monitoring, dewatering, and disposal activities of the project;
2) That a goal of such discussions and planning be to find ways that will safeguard and, where reasonably possible within budget, support HFC's ongoing and planned activities at the quarry site rather than pose or be a hinderance to HFC's present or future activities;
3) That the physical characteristics of the sediments to be dredged be assessed by a qualified soils expert(s) as to their suitability for HFC's planned activities at the quarry site, including for pond construction, farm roadway construction, stabilization of eroded slopes, and the growth of pasture grasses, wetland crops, and fruit trees (this information will help HFC and DLNR select appropriate dumping area(s) at the quarry site for the dredged sediments and debris);
4) That the dredged sediments and debris be routinely and appropriately monitored/tested during the dredging/dewatering processes to ensure that the levels of pesticides, herbicides, heavy metals, accumulated sea salts, and other potentially detrimental pollutants and chemicals in the sediments be safely below levels that would reasonably be considered harmful or detrimental to freshwater aquatic animals and plants, agricultural crops, livestock, and humans;
5) That the selected disposal site(s) at the quarry site be properly prepared in advance to receive the dewatered dredged materials, and that these materials be placed or spread out at the selected site(s) in a manner that supports HFC's ongoing or planned activities; and
6) That the existing level of security at the quarry site be maintained or improved throughout the disposal process by the routine locking of all cables and gates present at the site, and that this essential security not be compromised by the creation of additional entry points into the quarry site.

Again, thank you for the opportunity to comment. I look forward to working with you on the sediment disposal issues in the months ahead.

Sincerely yours,

Ronald P. Weidenbach

Ronald P. Weidenbach
Owner/Manager
Hawaii Fish Company
P.O. Box 1039
Waialua, HI 96791-1039
Tel./FAX: (808) 637-0494
E-mail: hawaiifish@msn.com

cc: State Senator Robert Bunda (22nd District)
John Corbin, Manager, Hawaii Aquaculture Development Program
Mike Dailey, President, Molokai Community Association

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS, CHAIRPERSON
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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
ENGINEERING BRANCH
P.O. BOX 373
HONOLULU, HAWAII 96809
AUG 10 1999

Mr. Ronald P. Weidenbach
Owner/Manager
Hawaii Fish Company
P.O. Box 1039
Waialua, Hawaii 96791-1039

Dear Mr. Weidenbach:

RESPONSE TO COMMENTS ON DRAFT ENVIRONMENTAL ASESMENT, PAUKAUILA STREAM MOUTH DREDGING, OAHU

Thank you for your letter dated December 5, 1998, regarding comments on the draft environmental assessment (DEA) for Paukauila Stream Mouth Dredging, Oahu. The following are responses to your comments:

1. The Mokuleia quarry was suggested as a possible dredge spoil disposal site for this project. However, the dredge materials become the property of the contractor and the disposal or use is the contractor's decision. If the dredge spoils are disposed of at the quarry, within the area of use by the Hawaii Fish Company (HFC) or has direct impacts on the HFC operations, they will be included in decision making discussions. Monitoring, dewatering, and disposal of dredged material is the responsibility of the contractor.

2. The goals of such discussions will be to minimize the impact of dredged materials on the existing and planned uses. DLNR will not provide support or hinder HFC's planned activities.

3. If HFC desires to use the dredged spoils, it is their responsibility to contact the contractor to obtain the dredged spoils and perform testing to ensure the disposal materials are suitable for the intended uses. DLNR can not perform these tests on behalf of HFC.

4. During the dredging, water quality monitoring of Paukauila Stream will be conducted as required in the Best Management Practices (BMP) Plan and Water Quality Monitoring (WQM) Plan by the State of Hawaii, Department of Health (DOH) Clean Water Branch. Dredged sediments and dewatering water will be monitored, if required by the DOH.

5. It is the responsibilty of the dredging contractor to prepare the disposal site appropriately to receive the dredge spoils.

6. If the disposal site coincides with land used by HFC, arrangements should be made with the contractor to maintain security levels required.

Thank you for your comments. If you have any questions, please do not hesitate to contact Mr. Hiram Young of the Design Section at 587-0260.

Sincerely,

ANDREW M. MONDEN
Chief Engineer

HMY:kn
cc: Oceanit

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LIFE OF THE LAND

Ua Mau Ke Ea O Ka 'Aina I Ka Pono
Hawai'i's own Community Action Group
Protecting our Fragile Environment through
Research, Education, Advocacy and Litigation

November 12, 1998

Department of Land and Natural Resources
Engineering Branch, Land Division
ATTN: Hiram Young
P. O. Box 621
Honolulu, HI 96809

Oceanit Laboratories, Inc.
ATTN: Ian Wasnick
1100 Alakea Street, 31st floor
Honolulu, HI 96813

re: Draft Environmental Assessment: Paukauila Stream Mouth Dredging, Oahu

We commend the Department of Land and Natural Resources for its program to deal with the flooding problem on the North Shore. Flooding is a serious problem that must be dealt with.

Life of the Land read with interest the statements that "Haleiwa Road is the principal road that runs through Haleiwa Town. Many tourists use it to visit small shops and restaurants in Haleiwa Town" (III-8); that there are "insurance companies" in Haleiwa (III-1); and "coffee farms and papaya farms" in Waialua" (III-1); that "most residents ... use the Cane Haul Road Bridge" (III-8); that "traffic on the Cane Haul Road [permits] local traffic" and "is also a pathway to residential housing in the area" (III-8); and that "both sides of the lower banks of Paukauila Stream are within a residential subdivision." (III-8).

The principal road through Haleiwa is Kamehameha Highway. There are no insurance companies in Haleiwa (GTE Yellow Pages). The North Shore Coffee Farms are on Kamehameha Highway (Wahiawa Zip Code) mauka of Haleiwa. The Cane Haul Road Bridge is usually gated and never "open" to local traffic. It is not a path to residential neighborhoods. Paukauila Stream meanders through rural agricultural areas.

For "Consulted Groups/Individuals" the authors contacted the Waialua community, however the project is in Hale'iwa. In addition, there is no mention of the Waialua-Kalaka Bay Task Force, which was co-chaired by Dave Penn and Kim Clark and which dealt with water quality in Kaiaka Bay. Members included Dave Martin (Native Hawaiian Legal Corporation), Roberts Leinau and Dr Dan Janik.

1111 Bishop Street * Suite 503 * Honolulu, Hawai'i 96813 * phone (808) 533-3454 * fax (808) 533-0993

The Paukauila and Kiikii Watersheds cover almost 80 square miles of land, a good deal of which was in sugar and pineapple cultivation for over 100 years. Numerous pesticides have been applied throughout the area over decades. It seems so implausible that "results of the water quality analysis indicate that all water quality parameters of the stream waters exceeded DOH standards", while at the same time, analysis of the sediment showed that "no agricultural herbicides or pesticides were detected in the composite sample."

Perhaps the key wording is "composite sample", or perhaps the key phrase is "detection level"; or perhaps the authors are unfamiliar with the site.

The idea of "dewatering" the "safe" material somewhere and then disposing the remaining material in the Mokuleia Quarry raises numerous red flags.

> "In order to mitigate flooding problems upstream, the State of Hawaii, Department of Land and Natural Resources (DLNR) plans to perform maintenance dredging at the lower reaches of Paukauila Stream between the Cane Haul Road Bridge and the Haleiwa Road Bridge." (II-1)

Should the lower section of Kiikii Stream also be dredged?

> "Paukauila and Kiikii streams serve a drainage area of 79.8 square miles. The streams originate in the Koolau mountains and discharge into the sea at Kaiaka Bay. The two streams join a few hundred feet upstream of the Bay." (II-4)

> "The comparatively wide stream mouth allows a significant portion of ocean waves to intrude into the estuary during periods of high tide and high surf. These waves, along with periods of high stream flow, have caused erosion along the banks of Paukauila Stream downstream of the Haleiwa Road Bridge." (II-4)

> "The dredged channel will extend from approximately 75 feet downstream of the Haleiwa Road Bridge to within 100 feet upstream of the Cane Haul Road Bridge." (II-4)

> "Dredged material will be reasonable dewatered at an approved site ... During the dewatering process, temporary storage of dredged materials may be necessary; a suitable location is in the process of being determined. ... The recommended disposal site is Mokuleia Quarry near the Dillingham Airfield." (II-7)

How are approved sites chosen? Will the soil be dewatered all at once or a little at a time? How long will the soil need to be dewatered for?

> "The two main population centers in the vicinity of the project are Haleiwa, located approximately one-mile northwest of the project site and Waialua, located approximately a quarter-mile southwest of the project site." (III-1)

"Today, Haleiwa has a population of about 2,442 and is the commercial center of the North Shore. Local employment is primarily in commerce with many small businesses including restaurants, clothing stores, surf shop, banks, real estate and insurance companies. Many well-maintained beach parks in Haleiwa attract tourists as well as visitors from other Oahu districts." (III-1)

By "Haleiwa, located approximately one-mile northwest of the project site" you mean Hale'iwa Town. By "Haleiwa has a population of about 2,442" you mean the greater Haleiwa Town area. By , "many well-maintained beach parks in Haleiwa" you mean the whole zip code. You mean three different areas and you call each of them "Haleiwa".

"Consulted Groups ... Waialua community" (I-1,2) "coffee farms and papaya farms" in Waialua" (III-1)

By "Waialua community" do you mean the Kaiaka (Haleiwa) community. By "in Waialua" you may mean the moku of Waialua, but not the Town of Waialua or even greater Waialua, since the coffee is grown in the Wahiawa zip code. By "Waialua, located approximately a quarter-mile southwest" you are not referring to the Waialua zip code (which includes both banks of the Kiikii Stream) nor Waialua Town (which is further away). All of this gets very confusing when you are unfamiliar with the area and start messing up the geographic terms.

Waialua is a former plantation town. ... Today, Waialua's population is approximately 3,943 and local employment is primarily in diversified agriculture such as cattle feed, pasture land, coffee farms, and papaya farms." (III-1)

Waialua (Census Tract 99.01) has a population of 5,792. Waialua Town has a population of 3,943 (State of Hawaii Data Book pages 23 & 34). The population of one or both is primarily in agriculture and the service industry.

"The residential area to the east and west of the stream are called Kaiaka and Puuiki" (III-1)

"The tsunami that had the most severe effects in the Waialua-Haleiwa coastal area in recorded history occurred on March 9, 1957. This tsunami caused a runup to about the 13-foot elevation in the Waialua Bay area. The coastal area between Kaiaka and Waialua Bays were flooded approximately 3,000 feet inland. In February 1976, a flood damaged 57 homes and 5 stores, making Haleiwa road impassable." (III-4)

"a composite soil sample representative of the dredging area was analyzed for agricultural herbicides, pesticides, and metals ... No agricultural herbicides or pesticides were detected in the composite sample. Metals detected in the soil were Silver (Ag), Barium (Ba), Chromium (Cr), Mercury (Hg), Manganese (Mn), Lead (Pb) and Zinc (Zn). ... The levels measured were within naturally occurring levels for volcanic soils." (III-4).

What exactly does "a composite sample representative of the dredging area" mean?

"Rats, mice, and mongooses can be found in the area. The domestic dog and cat are prevalent near residential areas (Environmental Impact Study Corp, 1980)." (III-8).

That was 1980, today is 1998. Cats are no longer confined to residential areas.

"Noise levels are higher around the project site due to motor vehicle traffic on Haleiwa Road Bridge and Cane Haul Bridge." (III-8)

Motor vehicle traffic on the bridge may average one car an hour. Or it may be less. A dredging operation will make a lot more noise than the "vehicular traffic" on the cane hauling road. A number of people use the cane road for quiet activities like jogging, biking, bird watching, and walking. Some kids play on the cane road. What impact will the noise have on all of them?

"The project site is in the area is along the Paukauila Stream between the Haleiwa Road Bridge and the Cane Haul Road Bridge. Most residents of the area use the two roads to access Waialua and Haleiwa. Haleiwa Road is the principal road that runs through Haleiwa Town. Many tourists use it to visit small shops and restaurants in Haleiwa Town. The Cane Haul Road is also a pathway for the agricultural community to transport heavy machinery and trucks to and from agricultural lands in the area. It is also a pathway to residential housing in the area. ... The traffic on the Cane Haul Road is restricted to agricultural equipment and local traffic. There is secured access to the road during non-working hours and on weekends" (III-8)

The Cane Road has a sign at each end explaining that local traffic is forbidden on the road. Please include a photo of this sign in your Final Environmental Assessment.

"Both sides of the lower banks of Paukauila Stream are within a residential subdivision." (III-8).

What do you mean? The map on page III-10 states that "Country Zoning" and "R-5" zoning exists in the area. What is the date for that map.

"Waialua and Haleiwa are semi-urban communities characterized by a resident population of 6,385. The majority of the land in the Waialua-Haleiwa area is classified as Agriculture or Conservation (State Land Use). Kaiaka Bay is characterized as Conservation and is in the *resource* subzone" (III-9)

"Water samples were taken ... Each sample was analyzed for turbidity, total suspended solids, nitrate plus nitrite nitrogen, total nitrogen, total phosphorus, and salinity. ... Results of the water quality analysis indicate that all water quality parameters of the stream waters exceeded DOH standards." (III-14,15)

What pesticides and herbicides were used by agricultural interests within the watershed. Were all of those tested for? Was a generic pesticide/herbicide test used? If so, what pesticides/herbicides could it detect? What pesticides/herbicides could it not detect? The Schofield Barracks National Priorities List Technical Review Committee was informed that TCE has been found in some wells mauka of Hale'iwa. Was TCE checked for? Was it found? What detection levels did you use for each compound you tested for?

"A few unpaved parking spaces near the Cane Haul Road Bridge may be used near the mouth of Paukauila Stream." (IV-1)

Haleiwa Road? Waialua Beach Road? The Cane Haul Road? Please include a map.

> "The only significant impact to the environment requiring mitigation is impacts to water quality resulting from maintenance dredging operations. This problem will be addressed through the use of appropriate silt containment methods and other site specific mitigation measures as noted in the monitoring plan and BMP as required by the State DOH." (IV-4)

What non-significant impacts will occur?

> "Based on the information contained in this document, the anticipated determination for the proposed action is a Finding of No Significant Impact (FONSI)." (V-1)

The information in this Draft document has numerous obvious errors.

> "In order to reduce upland flooding, maintenance dredging of a channel area is approximately 1,100 feet long by 75 feet wide by 3 feet deep is proposed. The volume of dredged material is approximately 3,870 cubic yards. Dredging will be accomplished using a suction hydraulic dredge, backhoe, or other devices depending on the type of materials to be removed and the contractor's judgment." (Letter from David Takeyama, Environmental Planner, Oceanit Laboratories to DLNR, dated June 25, 1998. Appendix D, Early Consultation Letters.)

Why 1100 x 75 x 3? Why not 1200 x 80 x 4 or 900 x 60 x 10?

> References: US Army Corps of Engineering (1970) • US Army Corps of Engineering (1976) • EIS (1977) • Revised EIS (1980) • Haleiwa (1980) • Final EIS (1988) • DLNR (1992) • Ching (1994)

It is nice to see that those older works are still used. The Office of Environmental Quality Control (OEQC) suggests that if an EIS is over five years old, that it may need to be revised. Please give a synopsis of the latest work by Ching. What is that publication about? How is it relevant?

Map (Appendix A, Tax Map Key). When did the island -- that you have placed in the middle of the stream -- disappear?

Sincerely,

Henry Curtis

Henry Curtis
Executive Director

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
ENGINEERING BRANCH
P.O. BOX 373
HONOLULU, HAWAII 96809
JN 30 1999

Mr. Henry Curtis, Executive Director
Life of the Land
1111 Bishop Street, Suite 503
Honolulu, Hawaii 96813

Dear Mr. Curtis:

RESPONSE TO COMMENTS ON DRAFT ENVIRONMENTAL ASSESSMENT, PAUKAUILA STREAM MOUTH DREDGING, OAHU

Thank you for your letter dated November 12, 1998, regarding comments on the draft environmental assessment (DEA) for Paukauila Stream Mouth Dredging, Oahu. The following are responses to your comments:

Comment:

Life of the Land read with interest the statements that "Haleiwa Road is the principal road that runs through Haleiwa Town. Many tourists use it to visit small shops and restaurants in Haleiwa Town" (III-8); that there are "insurance companies" in Haleiwa (III-1); and "coffee farms and papaya farms" in Waialua" (III-1: that "most residents use the Cane Haul Road Bridge" (III-8); that "traffic on the Cane haul Road Bridge [permits] local traffic" and "is also a pathway to residential housing in the area" (III-8); and that "both sides of the lower banks of Paukauila Stream are within a residential subdivision." (III-8).

The principal road through Haleiwa is Kamehameha Highway. There are no insurance companies in Haleiwa (GTE Yellow Pages). The North Shore Coffee Farms are on Kamehameha Highway (Wahiawa Zip Code), mauka of Haleiwa. The Cane Haul Road Bridge is usually grated and never "open" to local traffic. It is not a path to residential neighborhoods. Paukauila Stream meanders through rural agricultural areas.

Response:

The DEA should read that the principal road through Haleiwa is Kamehameha Highway. The Final Environmental Impact Statement for Waialua-Kahuku Regional Water System Improvements included "insurance" companies as part of the local employment in Haleiwa (pg. IV-26), Wilson Okamoto, 1988). Your comments are correct in noting that there are currently no listing for insurance companies in the GTE Yellow Pages. The Final Environmental Assessment (FEA) will delete references to "insurance companies" in Haleiwa.

The Dole Food Company of Hawaii notes that "coffee trees are planted at elevations of 600 feet in an area known as Waialua" (http://planet.hawaii.com/dole/coffee.htm). The USGS Haleiwa Quadrangle map confirms the statement that coffee trees are grown in the Waialua District.

The DEA correctly notes that the Cane Haul Road is used by "...the agricultural community to transport heavy machinery and trucks to and from agricultural lands in the area"(III-8). The DEA does not say that local traffic is "permitted" along the Cane Haul Road. The FEA will note that local traffic is not permitted along the Cane Haul Road. However, during several site visits to Paukauila Stream, we observed local traffic using the Cane Haul Road.

Paukauila Stream meanders through rural agricultural areas, as noted in the comment letter. However, the lands surrounding the stream in the vicinity of the project site are zoned AG-1, or Country, according to the City and County of Hawaii, Department of Planning and Permitting (1998) and single family homes are found along the lower banks of Paukauila Stream, as noted in the DEA. This is significant because these homes are subject to flooding, which this project is designed to alleviate.

Comment:

For "Consulted Groups/Individuals" the authors contacted the Waialua community, however the project is in Hale'iwa. In addition, there is no mention of the Waialua-Kaiaka Bay Task Force, which was co-chaired by Dave Penn and Kim Clark and which dealt with water quality in Kaiaka Bay. Members included Dave Martin (Native Hawaiian Legal Corporation), Roberts Leinau and Dr. Dan Janik.

Response:

The project site is in the district of Waialua, as defined by the USGS Haleiwa Quadrangle map. The Waialua-Kaiaka Bay Task Force will be consulted prior to submittal of the FEA.

Comment:

The Paukauila and Kiikii Watersheds cover almost 80 square miles of land, a good deal of which was sugar and pineapple cultivation for over 100 years. Numerous pesticides have been applied throughout the area over decades. It seems so implausible that "results of the water quality analysis indicate that all water quality parameters of the stream waters exceed DOH standards", while at the same time, analysis of the sediment showed that "no agricultural herbicides or pesticides were detected in the composite sample."

Perhaps the key wording is "composite sample", or perhaps the key phrase is "detection level"; or perhaps the authors are unfamiliar with the site.

Response:

The purpose of the DEA is to examine the impacts of dredging. The reason for testing the sediment for pesticides and herbicides was to determine whether the dredge material contained contaminants that could be released into the water during dredging activities. Since herbicides and pesticides were not detected in the sediment, it is unlikely that dredging will release these chemicals into the water (whether or not the stream water already contains pesticides or herbicides is not an impact of dredging and is therefore irrelevant). The FEA will contain an appendix showing the parameters measured and their detection limits and a description of the sediment sampling and compositing methods used.

Water samples were tested for turbidity, total suspended solids, nitrate and nitrite, total nitrogen, total phosphorus, and salinity. Of these, the parameters most likely to be impacted by dredging are turbidity and total suspended solids. These parameters were measured to establish the existing (baseline) levels of these parameters at the project site. Based on DOH requirements a Best Management Practices (BMP) Plan and a Water Quality Monitoring (WQM) Plan are being developed for the project. Water samples taken during dredging will be compared to the baseline samples to ensure that dredging does not degrade water quality. DOH has the authority to stop dredging, if baseline water quality is exceeded during dredging activities.

Comment:

"In order to mitigate flooding problems upstream, the State of Hawaii, Department of Land and Natural Resources (DLNR) plans to perform maintenance dredging at the lower reaches of Paukauila Stream between the Cane Haul Road Bridge and the Haleiwa Road Bridge." (II-1)
Should the lower section of Kiikii Stream also be dredged?

Response:

Our opinion is that the lower section of Kiikii Stream does not need to be dredged at this time. The lower portion of Kiikii Stream is deeper and less affected by wave action (see Figure II-3 in DEA for existing depths). In contrast, the lower reaches of Paukauila Stream is blocked with sediment, due to wave action.

Comment:

"Dredged material will be reasonably dewatered at an approved site...During the dewatering process, temporary storage of dredged material may be necessary; a suitable location is in the process of being determined. ... The recommended disposal site is Mokuleia Quarry near the Dillingham Airfield." (II-7)

How are approved sites chosen? Will the soil be dewatered all at once or a little bit at a time? How long will the soil need to be dewatered for?

Response:

Since the publication of the DEA,the selected contractor has received permission fro Dole Foods to use old cane fields northwest of the dredge area for dewatering. The State of Hawaii, Department of Health, and other regulatory agencies must also approve the dewatering site. The contractor will determine how much material is dewatered at one time. Based on estimates from the contractor, construction of the dewatering basin should take five days, hydraulic dredging about twenty days, and drying and off-haul about sixty days.

Comment:

"The two main population centers in the vicinity of the project are Haleiwa, located approximately one-mile northwest of the project site and Waialua, located approximately a quarter-mile southwest of the project site." (III-1)

"Today, Haleiwa has a population of about 2,442 and is the commercial center of the North Shore. Local employment is primarily in commerce with many small businesses, including restaurants, clothing stores, surf shops, banks, real estate, and insurance companies. Many well-maintained beach parks in Haleiwa attract tourists, as well as visitors from other Oahu districts." (III-1)

By "Haleiwa, located approximately one-mile northwest of the project site", you mean Haleiwa Town. By "Haleiwa has a population of about 2,442", you mean the greater Haleiwa Town area. By, "many well-maintained beach parks in Haleiwa" you mean the whole zip code. You mean three different areas and you call them "Haleiwa".

Response:

The DEA correctly notes the resident population of census designated places for Haleiwa (2,442) and Waialua (3,943) (Table 1.11 - The State of Hawaii Databook, 1996). The proposed project is not anticipated to impact resident population or local commerce.

Comment:

By "Waialua community" do you mean the Kaiaka (Haleiwa) community? By "in Waialua" you may mean the moku of Waialua, but not the Town of Waialua or even grater Wailauna, since the coffee is grown in the Wahiawa zip code. By "Waialua, located approximately a quarter-mile southwest" you are not referring to the Waialua zip code (which includes both banks of the Kiikii Stream) nor Waialua Town (which is further away). All of this gets very confusing when you are unfamiliar with the area and start messing up the geographic terms.

Waialua is a former plantation town. ... Today, Waialua's population is approximately 3,943 and local employment is primarily in diversified agriculture such as cattle feed, pasture land, coffee farms, and papaya farms." (III-1)

Waialua (Census Tract 99.01) has a population of 5,792. Waialua Town has a population of 3,943 (State of Hawaii Data Book pages 23 & 34). The population of one or both is primarily in agriculture and the service industry.

Response:

The DEA noted the "Waialua community" as a consulted group. Most of the landowners in the immediate vicinity of the project sire were consulted regarding the project prior to submittal of the DEA. DLNR will also attempt to contact members of the Waialua-Kaiaka Bay Task Force before submittal of the DEA.

Comment:

"A composite soil sample representative of the dredging area was analyzed for agricultural composite sample. Metals detected in the soil were Silber (Ag), Barium (Ba), Chromium (Cr), Mercury (Hg), Manganese (Mn), Lead (Pb), and Zinc (Zn). ... The levels measured were within naturally occuring levels for volcanic soils." (III-4)

What exactly does "a composite sample representative of the dredging area" mean?

Response:

In order to obtain a composite sample representative of the dredging area, sediment was collected at multiple locations along the centerline of the proposed dredge channel. This sediment was composited (combined) into a single sample, which was sent to a laboratory for testing.

Comment:

"Rats, mice, and mongooses can be found in the area. The domestic dog and cat are prevalent near residential areas (Environmental Impact Study Corp, 1980)." (III-8)

That was 1980, today is 1998. Cats are no longer confined to residential areas.

Response:

The FEA will note that cats may be found in the project area.

Comment:

"Noise levels are higher around the project site due to motor vehicle traffic on Haleiwa Road Bridge and Cane Haul Road Bridge." (III-8)

Motor vehicle traffic on the bridge may average one car an hour. Or it may be less. A dredging operation will make a lot more noise than the "vehicular traffic" on the hauling road. A number of people use the cane road for quiet activities like jogging, biking, bird watching, and walking. Some kids play on the cane road. What impact will noise have on all of them?

Response:

As noted in the DEA, noise levels around the project site will temporarily increase during dredging. Noise impacts, however, will be limited to the construction period. Dredging operations will be restricted to avoid early morning and evening noise.

Comment:

"The project site is in the area is along the Paukauila Stream between the Haleiwa Road Bridge and the Cane Haul Road Bridge. Most residents of the area use the two roads to access Waialua and Haleiwa. Haleiwa Road is the principal road that runs through Haleiwa Town. Many tourist use it to visit small shops and restaurants in Haleiwa Town. The Cane Haul Road is also a pathway for the agricultural community to transport heavy machinery and trucks to and from agricultural lands in the area. It is also a pathway to residential housing in the area. ...The traffic on the Cane Haul Road is restricted to agricultural equipment and local traffic. There is secured access to the road during non-working hours and on weekends" (III-8)

The Cane Road has a sign at each end explaining that local traffic is forbidden on the road. Please include a photo of this sign in your Final Environmental Assessment.

Response:

In place of a photograph, we will include a reference to the sign and its text in the FEA. Although local traffic was repeatedly observed on the Cane Haul Road, the FEA will specify that any such use of the Cane Haul Road is unauthorized.

Comment:

"Both sides of the lower banks of the Paukauila Stream are within a residential subdivision." (III-8)

What do you mean? The map on page III-10 states that "County Zoning" and "R-5" zoning exists in the area. What is the date for that map?

Response:

Single-family homes are found along the lower reaches of Paukauila Stream in the vicinity of the project site. These homes are susceptible to flooding when Paukauila Stream overflows. The map on page III-10 is from the City and County of Honolulu, Department of Planning and Permitting. The map is part of the Land Use Ordinance (LUO) of the City and County of Honolulu. The purpose of the LUO is to regulate land use in a manner that will encourage orderly development in accordance with adopted land use policies. The map was obtained from the City and County of Honolulu, Department of Planning and Permitting in 1998.

Comment:

"Water samples were taken...Each sample was analyzed for turbidity, total suspended solids, nitrate plus nitrite nitrogen, total nitrogen, total phosphorus, and salinity. ...Results of the water quality analysis indicate that all water quality parameters of the stream waters exceeded DOH standards." (II-14, 15)

What pesticides and herbicides were used by agricultural interests within the watershed? Wre all of those tested for? Was a generic pesticide/herbicide test used? If so, what pesticide/herbicides could it detect? What pesticides/herbicides could it not detect? The Schofield Barracks National Priorities List Technical Review Committee was informed that TCE had been found in some wells mauka of Hale'iwa. Was TCE checked for? Was it found? What detection levels did you use for each compound you tested for?

Response:

The proposed dredged material was tested for pesticides and herbicides to determine whether the dredged spoil is a potential source of contamination. Chemicals tested for were those specified by the EPA as priority pollutants, included BNA Extractable (EPA Method 8270), Herbicides (EPA Method 8150) and Pesticides/PCBs (EPA Method 8081). The FEA will contain an appendix listing the measured parameters tested and the detection levels used. TCE was not tested for.

Comment:

"A few unpaved parking spaces near the Cane Haul Road Bridge may be used near the mouth of Paukauila Stream." (IV-1)

Haleiwa Road? Waialua Beach Road? The Cane Haul Road? Please include a map.

Response:

As noted above and on page IV-1 of the DEA, a few parking spaces near the Cane Haul Road Bridge may be used. The contractor will determine the precise parking requirements, subject to approval from Dole Foods. However, based on the scope of this project, no significant impacts are anticipated from project-related parking.

Comment:

"The only significant impact to the environment requiring mitigation is impacts to water quality resulting from maintenance dredging operations. This problem will be addressed through the use of appropriate silt containment methods and other site specific mitigation measures as noted in the monitoring plan and BMP as required by the State DOH." (IV-4)

What non-significant impacts will occur?

Response:

The purpose of the environmental assessment is to determine whether a proposed action has potential significant environmental impacts. Significant impacts include cumulative, direct, and indirect impacts. Please refer to the "Guidebook for The Hawaii State Environmental Review Process" (Office of the Environmental Quality Control, 1992) for a more detailed overview of the environmental review process in Hawaii. Page 10 of the manual notes that "An Environmental Assessment (EA) is a preliminary document prepared to determine if a particular action has potential significant environmental impacts. Based on this document, the proposing or approving agency determines whether or not an EIS will be required (EIS Guidebook, 1992).

Please refer to Section IV of the DEA for an overview of the potential impacts. This section describes some, but not all, of the non-significant impacts from the proposed action. The

description of all non-significant impacts is not relevant to the intent of the environmental review process.

Comment:

"Based on the information contained in this document, the anticipated determination for the project is a Finding of No Significant Impact (FONSI)." (V-1)

The information is this Draft document has numerous errors.

Response:

Thank you for commenting on this DEA. Relevant comments received during the comment period will be integrated into the FEA. These changes do not alter the anticipated determination for the project of a Finding of No Significant Impact (FONSI).

Comment:

"In order to reduce upland flooding, maintenance dredging of a channel area is approximately 1,100 feet long by 75 feet wide by 3 feet deep is proposed. The volume of dredged material is approximately 3,870 cubic yards. Dredging will be accomplished using a suction hydraulic dredge, backhoe, or other devices depending on the type of materials to be removed and the contractor's judgement." (Letter from David Takeyama, Environmental Planner, Oceanit Laboratories to DLNR, dated June 25, 1998. Appendix D, Early Consultation Letters.

Why 1100' x 75' x 3'? Why not 1200' x 80' x 4' or 900' x 60' x 10'?

Response:

Funds available for the project limited the amount of dredging to approximately 3,870 cubic yards. The dredge channel size and configuration was designed to minimize bank erosion and to maximize stability and flow within the budget constraints.

Comment:

*Reference: US Army Corps of Engineers (1970) * US Army Corps of Engineering (1976) * EIS (1977) * Revised EIS (1980) * Haleiwa (1980) * Final EIS (1988) * DLNR (1992) * Ching (1994)*

It is nice to see that those older works are still used. The Office of Environmental Quality Control (OEQC) suggests that if an EIS is over five years old, that it may need to be revised. Please give a synopsis of the latest work by Ching. What is that publication about? How is it relevant?

Response:

The work by Ching (1994) is a Mater's Thesis for shore protection at a property located along the lower reaches of Paukauila Stream. For more detailed information, the document may be viewed at the University of Hawaii, Hamilton Library.

Comment:

Map (Appendix A, Tax Map Key). When did the island - that you have placed in the middle of the stream disappear?

Response:

The island was dredged by the City and County of Honolulu in 1962 in an effort to increase the hydraulic capacity of the stream.

Thank you for your comments. If you have any questions, please do not hesitate to call Mr. Hiram Young of the Design Section at 587-0260.

Sincerely,

Andrew M. Monden

ANDREW M. MONDEN
Chief Engineer

HMY:ssk
c: Oceanit