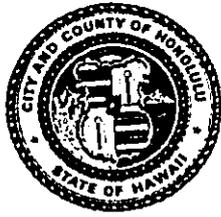


DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR



RECEIVED
SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER
IN REPLY REFER TO:

'92 MAR 11 A9:13 92-12-0123

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

March 9, 1992

Mr. Brian Choy, Director
Office of Environmental Quality Control
State of Hawaii
220 South King Street, 4th Floor
Honolulu, Hawaii 96813

Dear Mr. Choy:

Subject: Negative Declaration for the Lanikai Flood Control Project, Phase 2A, Kailua, Koolauoko, Oahu, Hawaii, Tax Map Key: 4-3-01 thru 05

This letter is a notice of Negative Declaration by the proposing agency, the City and County of Honolulu, Department of Public Works. The subject action has been assessed according to Title 11, Chapter 200, Environmental Impact Statement Rules, and Chapter 343, HRS.

A determination has been made that an environmental impact statement is not required based on an environmental assessment which was prepared for the project. Four copies of the environmental assessment are enclosed.

The pertinent information for this notice of determination is summarized below.

1. **PROPOSING AGENCY**

City and County of Honolulu, Department of Public Works.

2. **DESCRIPTION OF THE PROPOSED ACTION**

The project will consist of widening the Lanipo open channel drainage ditch between Mokulua Drive and the beach, constructing a new box culvert on Mokulua Drive, and constructing drain inlets and pipe collection systems on Mokulua Drive and Aalapapa Drive.

Mr. Brian Choy, Director
March 9, 1992
Page 2

The project is estimated to cost \$2,000,000 and will be funded entirely by the City and County of Honolulu. Construction is tentatively scheduled to begin at the end of 1992 and will take approximately one year to complete.

3. ***DETERMINATION***

After preparing an environmental assessment and consulting with other agencies, we have determined that the proposed project will not have a significant impact on the environment, and an Environmental Impact Statement is not required.

4. ***REASONS SUPPORTING DETERMINATION***

Reasons and conclusion supporting determination are based on the following criteria.

The proposed project will not:

- a. Involve an irrevocable commitment to loss or destruction of any natural or cultural resource;
- b. Curtail the range of beneficial uses of the environment;
- c. Conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, Hawaii Revised Statutes, and any revisions thereof and amendments thereto, court decisions or executive orders;
- d. Substantially affect the economic or social welfare of the community or State;
- e. Substantially affect public health;
- f. Involve substantial secondary impacts, such as population changes or effects on public facilities;
- g. Involve a substantial degradation of environmental quality;
- h. Substantially affect a rare, threatened, or endangered species or its habitat;
- i. Detrimentally affect air or water quality or ambient noise levels; or
- j. Detrimentally affect an environmentally sensitive area, such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

Mr. Brian Choy, Director
March 9, 1992
Page 3

5. **CONTACT PERSON**

Melvin Takakura
Department of Public Works
Division of Engineering
Honolulu Municipal Building, 15th Floor
650 South King Street
Honolulu, Hawaii 96813

Telephone No.: 523-4931

Very truly yours,



C. MICHAEL STREET
Acting Director and Chief Engineer

Attachment (4 copies)

cc: Kwock Associates, Inc. (w/o attach.)

WA

1992-03-23-0A-~~FEA~~- Lanikai Flood Control, Phase 2A
MAR 23 1992

FINAL

ENVIRONMENTAL ASSESSMENT

FOR

LANIKAI FLOOD CONTROL PROJECT, PHASE 2A

Kailua, Koolaupoko, Oahu
TMK: 4-3-01 thru 05

Proposing Agency

Department of Public Works
Division of Engineering
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Submitted Pursuant to Chapter 343, HRS

Responsible Official:

C. Michael Street

Date

2/27/92

J. Sam Callejo
Director and Chief Engineer

Prepared By

KWOCK ASSOCIATES, INC.
1100 WARD AVENUE, SUITE 920
HONOLULU, HAWAII 96814

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I. DESCRIPTION OF THE PROPOSED PROJECT

A. PURPOSE OF PROJECT

The Department of Public Works of the City and County of Honolulu is proposing to construct drainage improvements for the Lanikai community (Figure 1) situated on the windward side of Oahu. This project will be the second phase of improvements planned to relieve flooding in Lanikai due to heavy runoff. The project site shown on Figure 2 is located in the area that sustained extensive damages due flooding from two previous storms, one on November 26, 1984 and one on February 14, 1985.

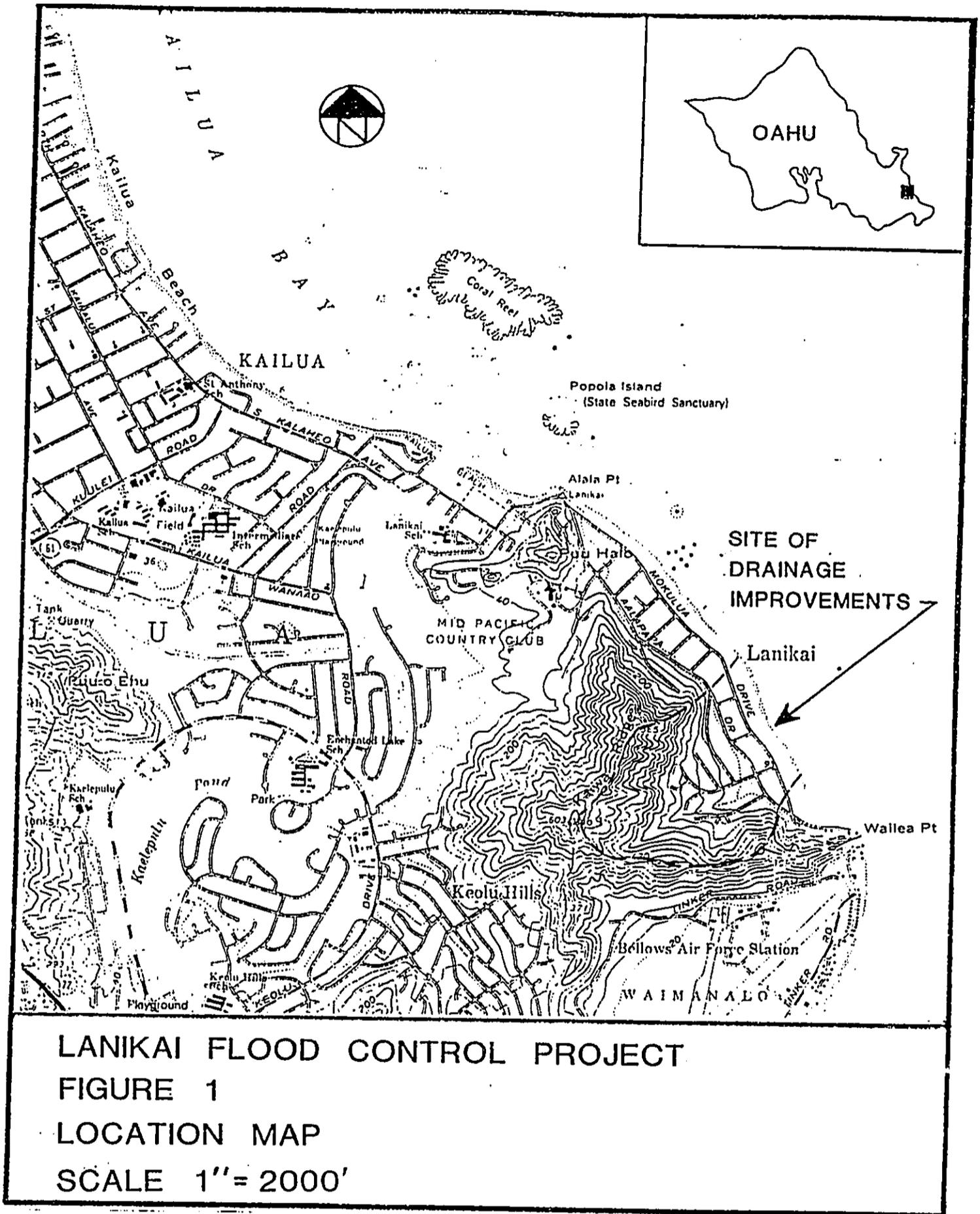
As a result of the damages suffered by many homeowners in the Lanikai community, the Department of Public Works, City and County of Honolulu in 1986 retained Kwock Associates, Inc. to conduct an investigation of the problem and to recommend improvements.

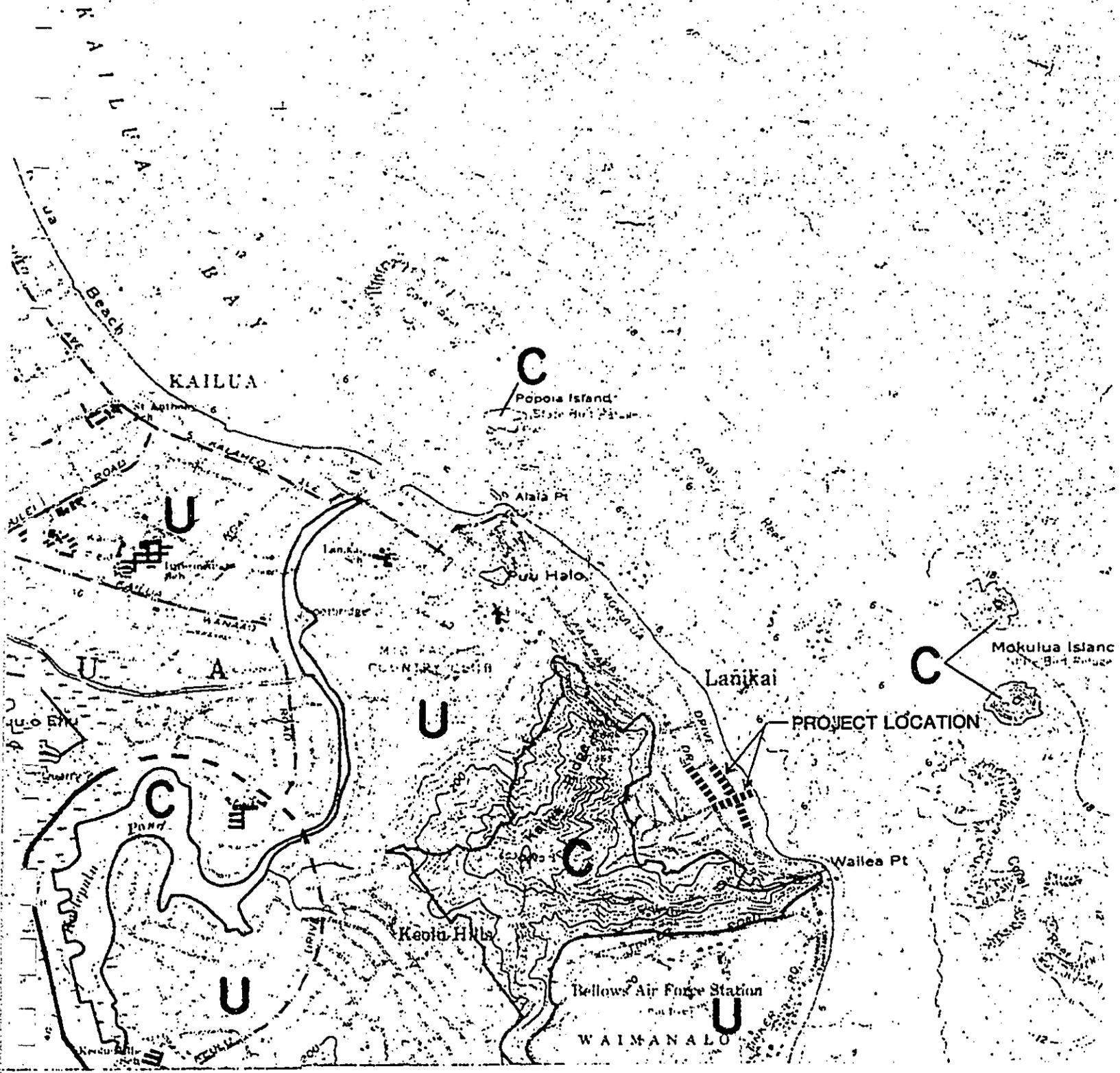
As a result of the study, Phase 1 improvements, overflow swales within the existing beach right of ways, were funded and constructed by the City and County of Honolulu and completed in February 1991.

An Environmental Impact Statement was prepared and promulgated previously. This Environmental Assessment is prepared because of change of work scope.

The study determined that the major reasons why flooding occurs were:

1. The existing drainage system is undersized and is inadequate to handle all of the runoff generated by rainfall of a ten year duration. During a storm of any magnitude, there would be an overflow from the system due to the insufficient capacity of the existing drainage system.
2. The existing drainage channel above Aalapapa Drive is unimproved and is vulnerable to erosion. During periods of heavy runoff, the bottom and banks of the dirt channel is subject to heavy erosion carrying mud and slit downstream. At Aalapapa Drive and Mokulua Drive, the mud and slit blocks the opening of the existing box culverts causing the water in the channel to overflow into the streets.
3. Mokulua Drive, the lowest point in the subdivision, is in a sump condition with no outlet to the ocean. Any excess runoff that flows to Mokulua Drive ponds in the roadway and if allowed to build up high enough would enter the houses on Mokulua Drive.





EXISTING LAND USE MAP
STATE LAND USE COMMISSION

Figure 2

4. Sand blockage at the mouth of the channel causes the water in the channel to back up into the channel. If the sand blockage is allowed to build up high enough, the water in the channel can overflow the channel and cause damages to the homes along Mokulua Drive.
5. In some areas, grading and development have changed the natural drainage flow patterns. Certain surface flows do not follow the natural water course or flow into the drainage structures designed to receive them. Homes in higher areas have no provisions to intercept runoff from the hillside that flow directly onto the properties.
6. Inadequate maintenance of the existing private drainage systems. These many private drainage systems are located within private property and is the responsibility of the property owner to maintain. The unlined drainage channel above Aalapapa Drive is one example where the adjoining property owner's property line is the centerline of the channel.

The purpose of this project is to improve the drainage system for Lanikai in order to reduce flooding caused by heavy rainfall and to minimize damages to the property owners. This Environmental Assessment will focus only on Phase 2A.

Future improvements to relieve flooding and damages in Lanikai will be subject to funding and may require a separate Environmental Assessment and/or Environmental Impact Statement if necessary.

B. EXISTING DRAINAGE SYSTEM

At the time the Lanikai area was developed, the standards for subdivision improvements permitted drainage runoff to flow overland from the hillside, across the roadways and lots and into the ocean. Inlets with headwalls and culverts were installed within the roadways to permit the runoff from defined drainage swales or ditches to cross the roadway without damaging the pavements. The roads in the area do not have curbs and gutters to contain the runoff within the roadway prism. Runoff flows overland through private property down to the lowest point in the development, Mokulua Drive.

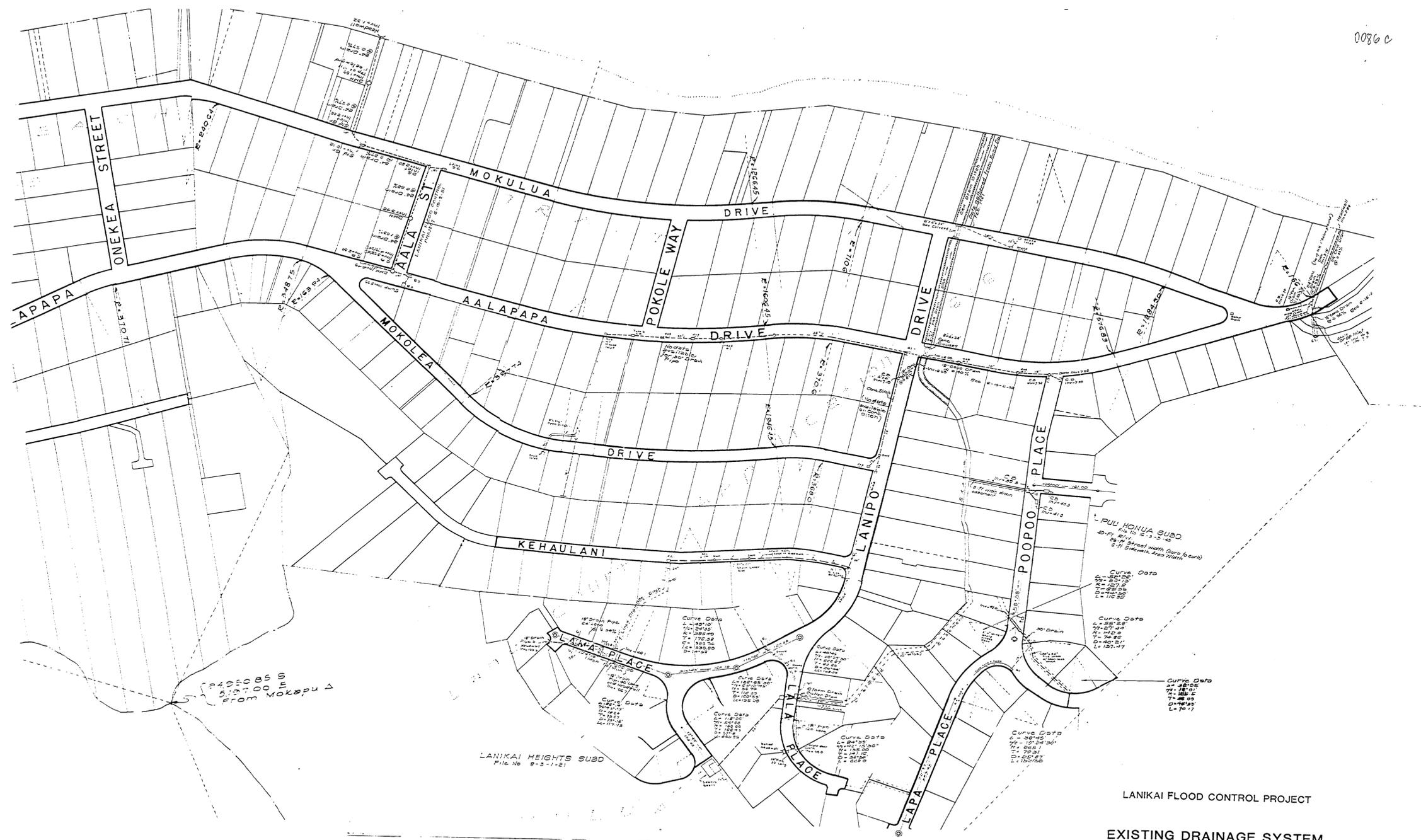
In 1953, the City and County of Honolulu constructed a pipe drainage system that collected runoff from the roadways and discharged the runoff onto the beach. The existing 24-inch drain located in the existing beach right-of-way near the intersection of Aala Drive and Mokulua Drive has limited capacity and the outlet is

**OVERSIZED
DRAWING/MAP**

**PLEASE SEE
35MM ROLL**

0086C

0086 C



LANIKAI FLOOD CONTROL PROJECT
 EXISTING DRAINAGE SYSTEM

FIGURE 3

constantly block by sand. This system extends up through Aala Drive to pick up flows from four catchbasins situated near the intersection of Aala Drive and Aalapapa Drive. In addition there is a small pipe system on Aalapapa Drive near Lanipo Drive to collect the flow from two catchbasins at the intersection of Poopoo Place and Aalapapa Drive and two grated inlets on Aalapapa Drive. This system discharges into the open channel adjacent to Lanipo Drive.

C. PROPOSED DRAINAGE SYSTEM

For Phase 2A, the following improvements are proposed:

1. Construct a new concrete lined drainage channel between the shoreline and Mokulua Drive. The channel will terminate at the shoreline and not extend into the ocean as previously proposed. A four foot high chain link fence will be constructed on both sides of the channel for safety.
2. Construct a new box culvert under Mokulua Drive to replace the existing box culvert.
3. Construct a new drainage collection system along a portion of Mokulua Drive consisting of drain inlets and underground piping.
4. Construct a new drainage collection system along a portion of Aalapapa Drive to replace an existing system.

D. FUNDING SCHEME

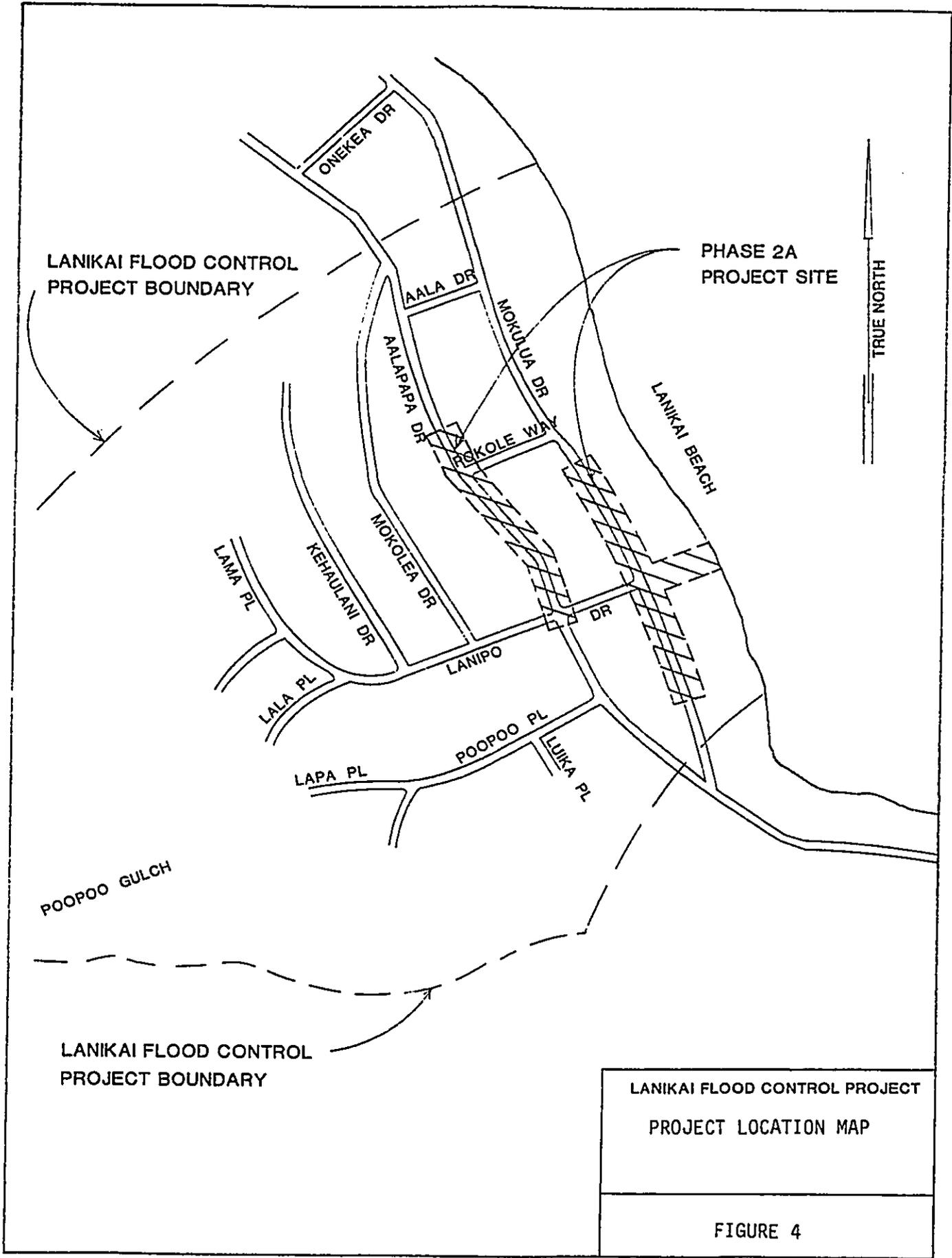
The proposed improvements for Phase 2A is estimated to cost \$2,000,000.00. Funding for this project has been included in the City's Capital Improvement budget and funds are available for use during Fiscal Year 1992. The project will be funded entirely by the City and no private funds will be used.

E. SCHEDULE

Construction of Phase 2A is tentatively scheduled to begin by December 1992. The construction period will be approximately one year in duration.

F. EASEMENT ACQUISITION

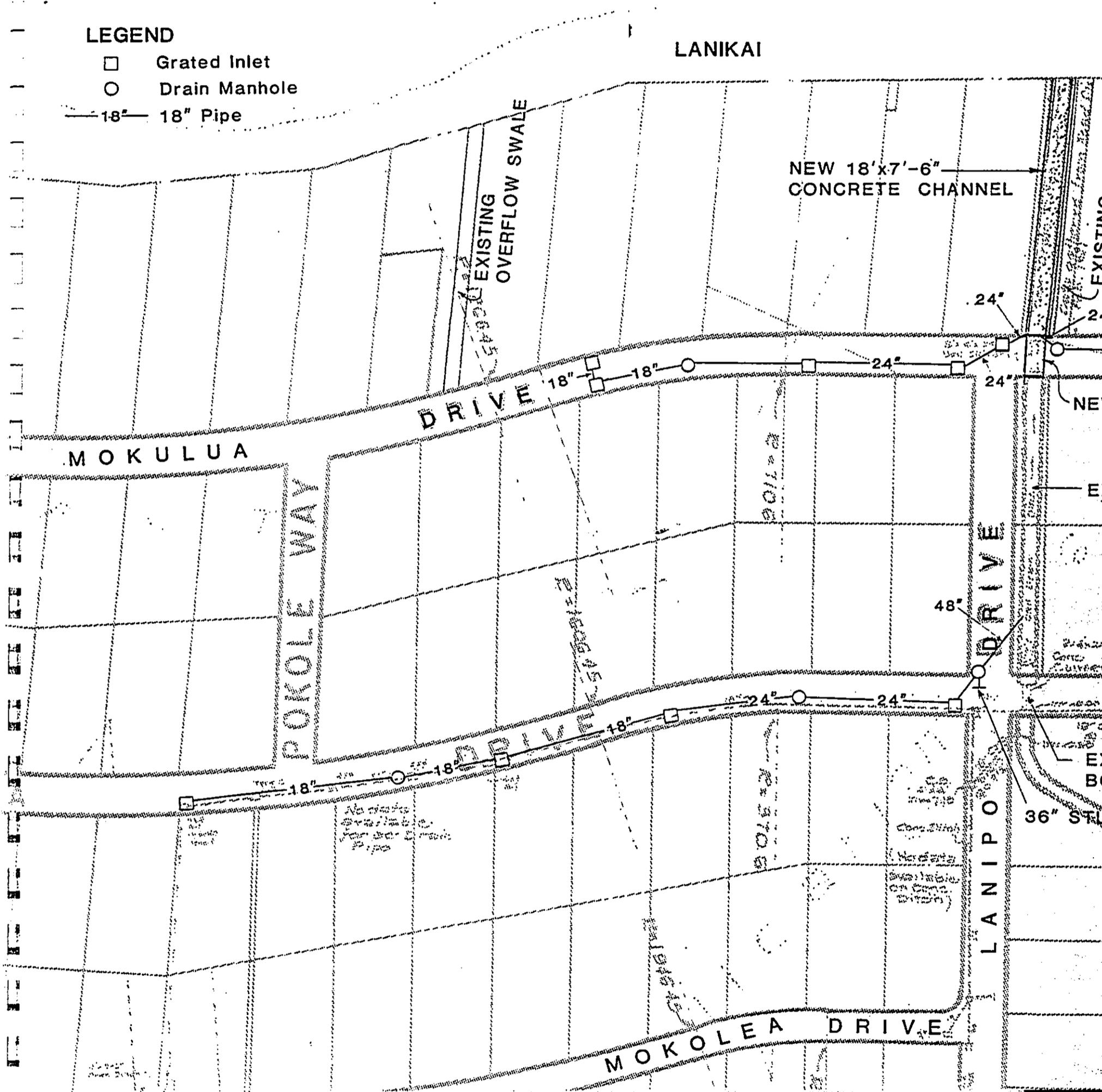
Although the new channel from Mokulua Drive to the ocean will be constructed in an existing drainage easement, the City and County of Honolulu is planning to obtain the fee interest to the easement so that they can properly maintain the channel. At the present time, there is an existing structure that is built over



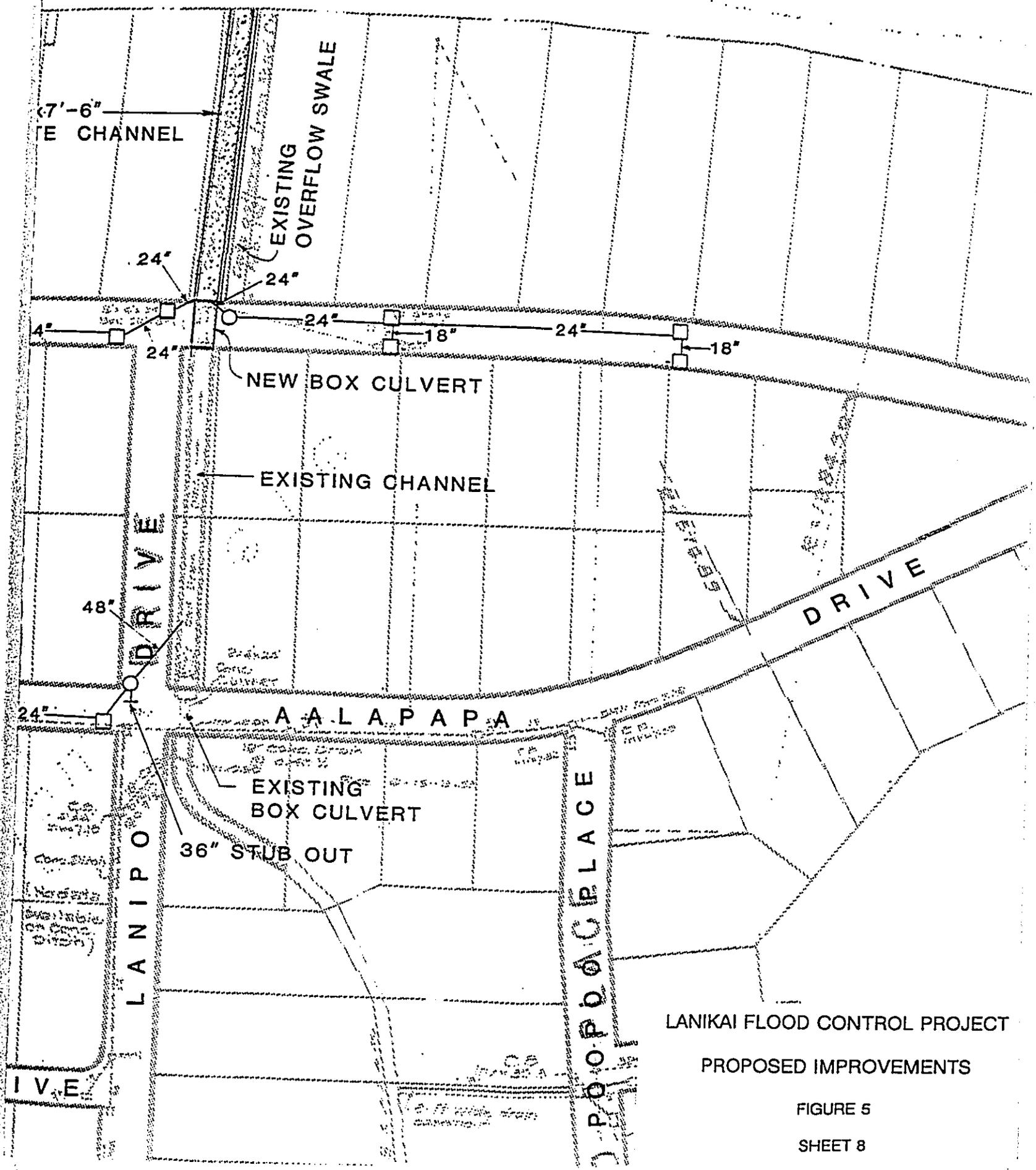
LEGEND

- Grated Inlet
- Drain Manhole
- 18"— 18" Pipe

LANIKAI

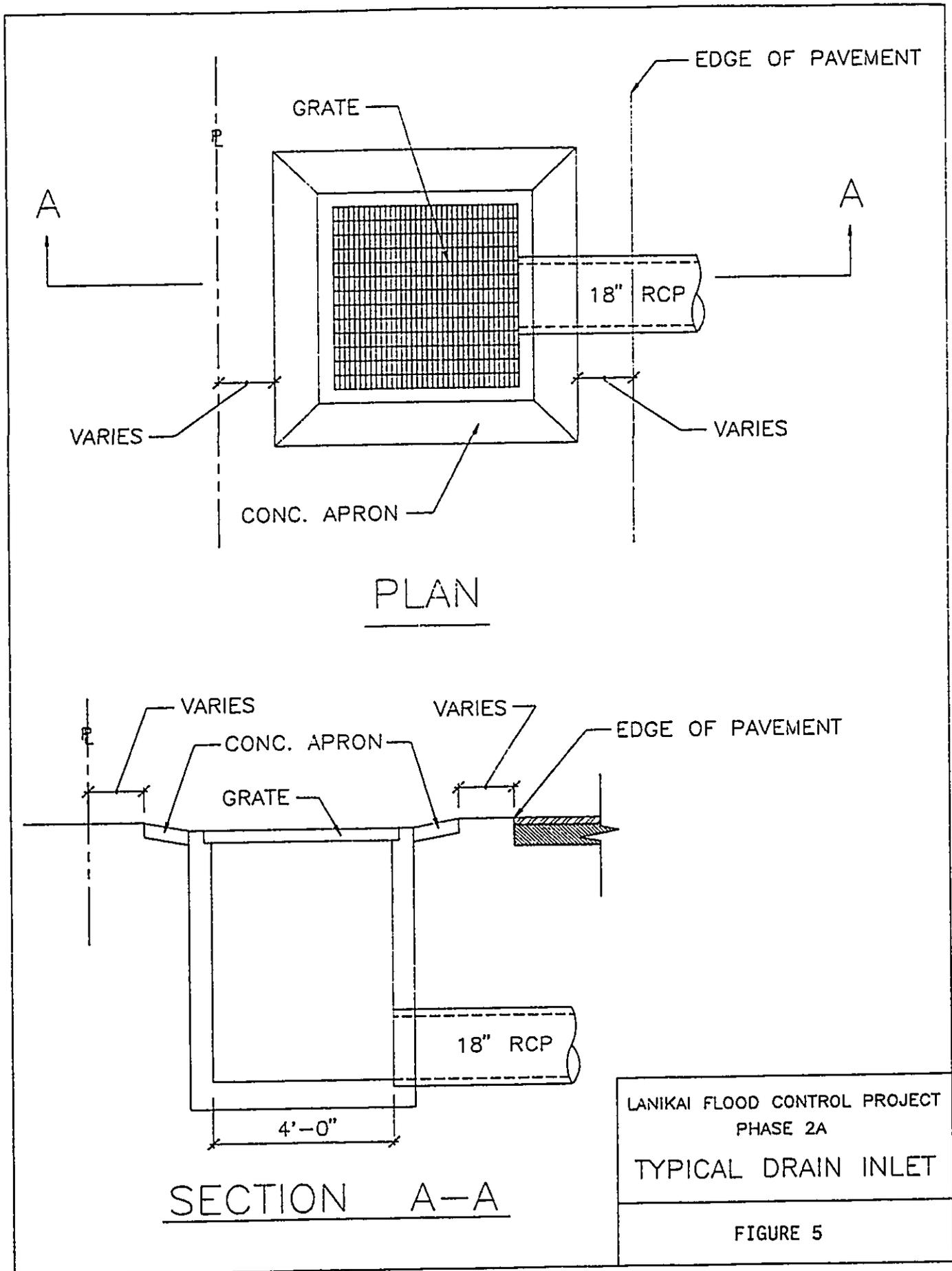


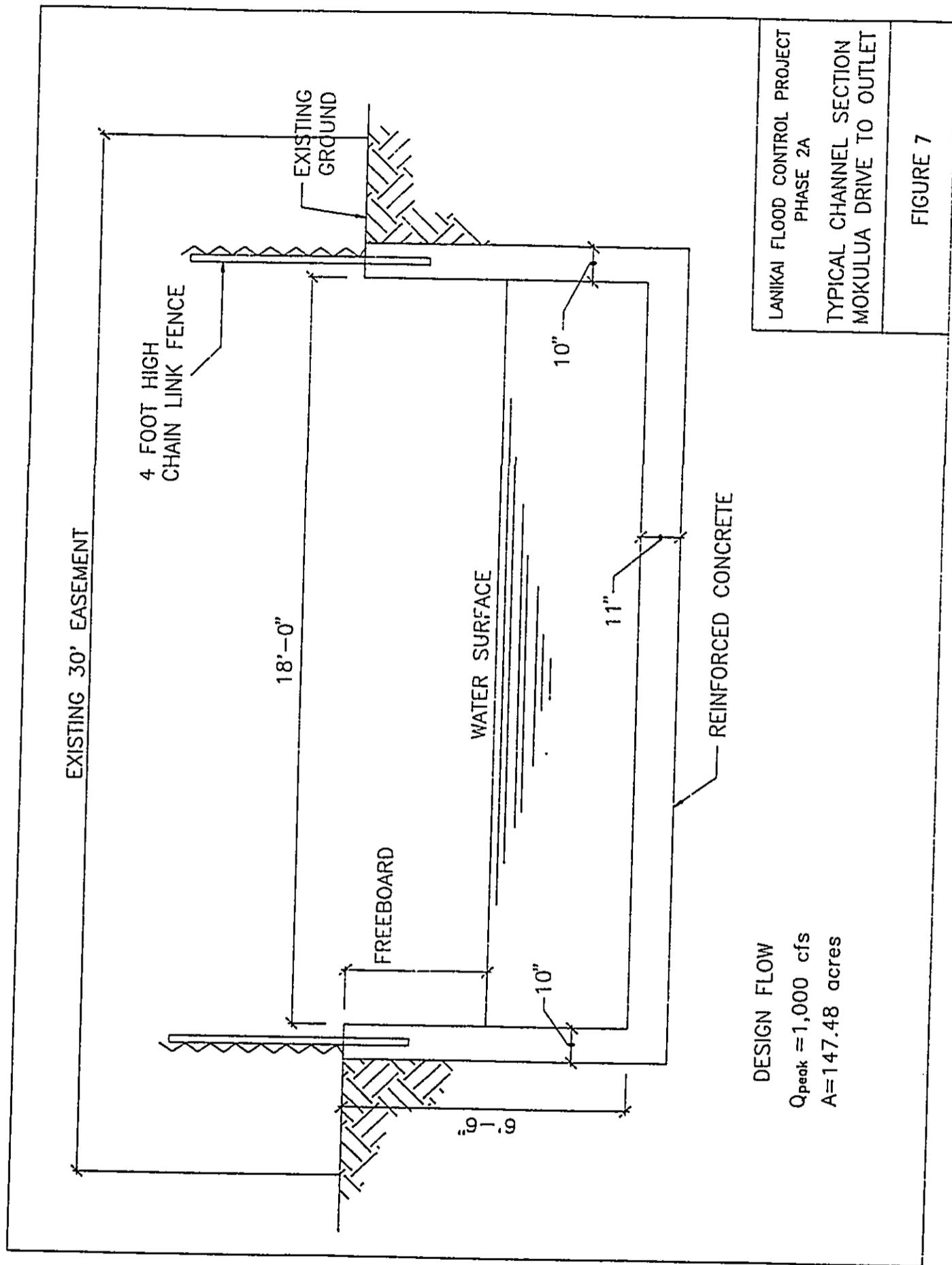
BEACH



LANIKAI FLOOD CONTROL PROJECT
PROPOSED IMPROVEMENTS

FIGURE 5
SHEET 8





the existing channel that will have to be demolished in order to construct the new channel. In acquiring the fee interest for the easement, compensation for the structure will be included.

G. APPROVALS REQUIRED

The following approvals will be required to construct the project:

1. Shoreline Management Area (SMA) Permit from the Department of Land Utilization, City and County of Honolulu.
2. Conservation Use Permit from the Department of Land and Natural Resources, State of Hawaii.
3. Permits for Structures and Fill Material in Navigable Waters, Corps of Engineers.

II. DESCRIPTION OF ENVIRONMENTAL SETTINGS

A. LOCATION

The project is located in Lanikai which is a residential community situated on the windward coast of Oahu between Kailua Beach and Waimanalo, approximately 14 miles from downtown Honolulu. Lanikai is part of the town of Kailua in the Judicial District of Koolauapoko. Housing consisting of single family dwelling units in a subdivision originally developed around 1929. Clark (The beaches of O'ahu, 1977) describes Lanikai as an excellent, close-knit community. The drainage improvements are proposed in the southern portion of Lanikai extending from the ocean to the Kaiwa Ridge line bordered by Onekea Drive on the west to a line just short of the Aalapapa and Mokulua Drive intersection on the east. The area is currently zoned R-10, Residential District.

B. BEACH SETTING AND USE

Lanikai Beach is a sandy beach which stretches for more than a mile along the coast between Wailea Point and Aala Point. Lanikai Beach is well protected by the shallow outer reef margin and offshore islands. The bottom slopes gently offshore and safe swimming is possible year round (Clark, 1977). The beach is used extensively by sunbathers, swimmers, wind surfers and small sailing crafts. Access to the beach is by several right-of-ways which are owned by the Lanikai

Association. Beachfront lots border its entire length with beach widths varying between 20 and 100 feet.

Beach widths are continuously changing due to the process of littoral drift. Littoral drift is the process where wave-induced long shore currents erode or accrete the beach. This is the reason that the beach width in the area of the open channel has decreased from about 100 feet in 1969 to less than 20 feet today.

The ocean bottom just offshore of Lanikai consists of sand, coral rubble and eroded coral blocks. Shifting sand keeps inshore waters fairly murky at the Wailea Point end of the beach. The reef flat is consolidated limestone of low relief or limestone rubble, in either case with a considerable admixture of sand (AEROS, 1979).

C. SOIL

The Lanikai area is classified by the United States Soil Conservation Service as being in the Kaena-Waialua Association. The association, or soil type, is described as fine grained soils that have a fine-texture to coarse-texture subsoil or underlying material, depending on the slope in which the association lies. The surface material in Lanikai varies from Jaucas Sand (0 to 15% slopes) between the beach and Aalapapa Drive, Mokuleia clay loam just mauka of Aalapapa Drive and Kokokahi clay (6 to 12% slopes) and Papaa clay (35 to 70% slopes) in the higher areas. All of these soil types are described in the U.S. Agriculture Soil Conservation Service Soil Survey Report.

D. CLIMATE

Lanikai is located on the windward side of Oahu which is subject to moisture laden northeast tradewinds 75% of the year. A reverse of wind pattern, the so called Kona Winds from the south to southwest occur about seven percent of the year. The average annual temperature is 75 degrees fahrenheit and humidities range from 70 to 80 percent throughout the year. Average annual rainfall is 25 inches along the coast. The air quality in the Lanikai area is generally excellent.

E. DRAINAGE

The project area is located in the valley in the southern portion of Lanikai between Puu O Lanikai and Kaiwa Ridge which has a total drainage area of 185

acres. Rain falling in the area travels overland or enters the existing drainage collection system and is discharged into the ocean at one of two locations. The main drainage channel in this valley is called "Lanipo Auwai" by residents. It runs parallel to Lanipo Drive and collects runoff from the majority of the area. A hydrologic study was performed that determined parts of the existing drainage system are inadequate to handle the runoff from a major storm.

F. ARCHAEOLOGY AND CULTURAL SIGNIFICANCE

All of the improvements to be constructed in Phase 2A will be located within existing street right-of-ways or existing easement. The improvements will be located completely within existing developed areas of Lanikai. The drains will not cross any virgin or undeveloped land and will not jeopardize any sites of historical or cultural significance. "Sites of Oahu" (Sterling and Summers, 1978) indicate no archeological sites within the proposed construction area.

The Bishop Museum performed a Historical Literature and Documents Search, Archeological Surface Survey for the Phase 2A project in May 1991 to assess the potential for archeological resources and to facilitate interpretation of any subsurface features and/or artifacts encountered during subsequent phases of the work. They reported that the Lanikai area remained barren of non-traditional Hawaiian habitation until 1921, when H.L. Castle built a hunting shack on his lands. The area was a prime place for fishing and hunting water fowl. The general area was used from the second half of the nineteenth century to about 1925 for livestock pastorage, rice cultivation and vegetable production. Information on the exact locations of these activities is unavailable. After the mid-1920s, the area was divided into residential lots that were sold fee simple. The area has remained since residential. A surface reconnaissance survey was conducted on May 19, 1991 at the project site. No surface archeological features were observed and no buried cultural layers or features were observed in the cut banks of the drainage ditch.

In their recommendations, Bishop Museum stated "Analysis of historical documents and other records, along with artifact finds from previous archeological investigations, show the project area around Po'opo'o Gulch, to have limited potential for archeological features particularly towards the beach (due to repeated washouts from storms). In addition, the results of the

current surface survey demonstrate an absence of archeological features within the project site."

There are no known sites listed in the Hawaii Registry of Historical Places, nor any eligible sites for inclusion on the Nations Registry of Historical Places in the project area. (DLNR, 1983)

G. FLORA AND FAUNA

Existing vegetation around the stream portion of the drain consists of Haole Koa, Kiawe, California Grass and Christmas Berry trees. Vegetation at other locations include ornamental plants which are part of the homeowner's landscaped yards. The subdivision development has probably displaced any native flora in the vicinity of the project. None of the flora are endangered. Animal life in the neighborhood consists of mongoose, rats and feral cats and dogs. Bird life is made up of common introduced birds such as Myna, Barred Dove and Spotted Dove. Residents have also reported seeing Sparrows, Linnets, Thrushes, Cardinals, Finches and Bulbuls.

There are no endangered marine plant or animal specimens in the waters off Lanikai except for the green sea turtle. Construction of this project will require excavation at the channel outlet to provide a passage to the ocean. The depth of material to be removed varies from one and a half foot to zero and should have no effect on the green sea turtle. Fish are extremely sparse from the shore seaward to where the reef heads are exposed. This is due to the wave surge force and periodic transport of sand into the reef creating a relatively flat reef causing a lack of habitat (Russo, 1980).

H. UTILITIES

Utilities in the Lanikai area are provided by the following agencies: Board of Water Supply (water), Hawaiian Telephone Company (telephone), Hawaii Electric Company (electric), and City and County of Honolulu (sewer and refuse collection). There is no natural gas service in the area. The water and sewer lines are underground while the telephone and electrical lines are on overhead poles.

III. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. CONSTRUCTION RELATED IMPACTS

CORRECTION

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

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III. ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

A. CONSTRUCTION RELATED IMPACTS

1. ECONOMIC

The construction cost of the project is estimated to cost \$2,000,000. Funding for this project will be provided by the City and County of Honolulu as part of their Capital Improvements program. No private funds will be used. Job opportunities will be generated as a result of this project.

2. AIR QUALITY

There will be an increase in dust and vehicular exhaust emissions in the immediate working area during construction. The dust generated should not occur at significant levels. Appropriate water sprinkling methods will be used to reduce dust if it becomes a problem. Exhaust emissions should not have any significant affect on the area because prevailing winds should disperse any exhaust gas concentrations.

3. WATER QUALITY

There should be no soil runoff during construction because the existing open channel is normally dry. Only during a heavy rainfall is there a possibility of soil runoff. However, a strict adherence to erosion control procedures and appropriate protection of existing construction will minimize any soil runoff from occurring. There will be some excavation required at the mouth of the channel to provide an opening to the ocean. The depth is not expected to exceed 1-1/2 foot in depth. This work is not expected to be performed until the new channel is ready for use.

4. EROSION

Erosion is expected to be minimal as construction will be limited to built up areas. Open trenches will be covered during non-working hours. Any landscape areas disturbed by construction will be immediately re-planted upon completion of construction.

5. TRAFFIC

Portions of Mokulua Drive will have to be closed during construction of the new box culvert. Residents however will be provided access to their homes at all times. Temporary detours may cause slight inconvenience to the residents of Lanikai

at various times during construction. Portion of Aalapapa Drive and Mokulua Drive may also be partially closed to construct the drain pipe crossings. A traffic plan and appropriate traffic control measures including but limited to hiring off duty policeman to direct traffic, will be implemented to allow access into and out of driveways. All open trenches will be covered with steel plates during non-working hours. Any road closure will be limited to non-peak hours. There will be a slight increase in traffic due to construction workers working on the project. The construction traffic will be limited to weekdays and will not affect weekend beach traffic.

6. NOISE

There will be an increase in noise from the construction activity. Construction hours shall be limited to that permitted by law and no weekend work will be permitted. All noise generated by the construction activity shall conform to the noise regulations established by the State Department of Health.

7. BIOLOGICAL

There are no rare or endangered flora or fauna in the area. Any vegetation disturbed by construction will be re-planted immediately upon completion of construction. The existing drain channel is normally dry and should have no effect on any aquatic life.

Removal of sand at the channel outlet will have no negative impact on the existing biological system. The Biological Reconnaissance Surveys of the Lanikai Fringing Reef by AECOS, Inc., January 1989 found that below the water line at the existing open channel outlet the bottom is basalt and limestone rubble mixed with sand out to about 18 meters. A few sea cucumbers and a sparse population of sea urchins were found in the area.

8. ARCHEOLOGICAL

There are no known historical or archeological significant areas near the project site. A historical literature and documents search by Bishop Museum personnel in May 1991 determined that the area around the project has limited potential for archeological features due to

repeated washouts from previous storms. In addition the results of the surface survey demonstrated an absence of archeological features within the project area. However archeological monitoring will be required during construction related excavation to mitigate any potentially adverse effects to archeological resources. If any archeological sites are discovered during construction, the State Historical Preservation Officer shall be notified and all work suspended until the area has been studied and the appropriate mitigating measures implemented.

9. BEACH USE

Beach use will only minimally be affected in the area where the open channel improvement will end. The new drainage channel will terminate near the shoreline and not extend into the beach area. However construction activity may temporarily extend into the beach area requiring that safety barricades be erected to protect the public. During the construction period, it is likely that the public will choose to avoid this area and use another portion of the beach.

B. LONG TERM IMPACTS

1. DRAINAGE

The proposed drainage improvements will help reduce flooding in the Lanikai area. Construction of a drainage collection system on Mokulua Drive and Aalapapa Drive will aid in disposing of runoff that reach the street. Construction of the new box culvert on Mokulua Drive and the new drainage channel between Mokulua Drive and the shoreline will provide enough capacity for the runoff from a storm with an intensity of greater than 100 years frequency. The improvements at the lowest point in the subdivision will prevent flooding along Mokulua Drive. The drain inlets on the streets will be similar to those existing in the Lanikai area and will require no concrete curbs and gutters. The proposed drainage channel will replace an existing smaller channel along the same alignment. All of the proposed improvements will have little or no impact on the character of Lanikai.

2. ECONOMIC

The drainage improvements will have an economic impact to the Lanikai community. Implementation of this project will reduce flooding and eliminate damages to the houses during the periods of heavy rainfall. This project will reduce the cost of cleaning, repairing and replacing damaged items. Interruption of lives and the inconvenience of cleaning up after flooding as well as elimination of anxiety during periods of heavy rainfall will be a direct benefit as a result of this project. With the elimination of the potential for flooding, the home values will also increase.

3. WATER QUALITY

The drainage channel is usually dry and contain runoff only during periods of rainfall. Discharge of storm waters with the drainage channel is not a new use but a continuing use of an existing system. No new drainage runoff areas will be added to the drainage system and all runoff generated will continue to be from the Lanikai drainage basin. The same amount of pollutants will be discharge by the system but the rate may increase because of the enlargement of the system. The proposed improvements will therefore have little impact on the existing water quality.

4. EROSION

The proposed improvements will be constructed within the existing improved streets or in an existing easement replacing an existing smaller channel. Construction of the drainage collection system on Mokulua Drive and Aalapapa Drive will use open trenches that will be backfilled. Construction of the drainage channel will have some excavation for the sidewalls but construction of the formwork to construct the sidewalls will follow the excavation. Potential for erosion therefore will be minimal.

5. NOISE

There will be no long term impact on noise. The proposed improvements will not generated any noise. Therefore no significant change in noise is expected from what is existing today.

6. AIR QUALITY

Ambient air quality should not be changed as a

result of this project. No significant impact on air quality is expected.

7. TRAFFIC

Construction of this project will have no impact on the traffic traveling into, around and out of Lanikai. The existing one way traffic pattern will be maintained. There will be no loss of parking on the streets. Any street pavement disturbed by trench excavation will be reconstructed to as good or better condition.

8. BIOLOGICAL

The project area does not contain any endangered species of plants and animals. Displaced flora and fauna will be able to return following construction. No long term adverse impacts from the proposed drainage improvements are anticipated.

The drainage system is usually dry and there is no reason to believe that there will be any significant effect on marine life. During periods of intense rainfall the discharge of storm waters from the drainage improvements would not be a new but a continuing impact. The same quantity of pollution would enter the ocean if no drainage improvements were constructed.

9. ARCHEOLOGICAL

The project area does not contain any known archeological sites. Initial development of the area in Lanikai into residential lots probably destroyed any sites and artifacts of significant value. In addition the repeated washout from storms along the shoreline and along the channels probably contributed to the lack of any significant archeological sites and artifacts. Archeological monitoring during construction will be required to mitigate any potential adverse effects to archeological resources.

10. UTILITIES

There will be no impacts on existing utilities for Lanikai. Any utilities that conflict with the proposed improvements will be relocated as part of this project. Utilities that will be impacted would be the underground water and sewer lines.

There is also an abandoned Signal Corp cable that is no longer in use on Mokulua Drive that will cross over the new box culvert. This cable is not in used according to Hawaiian Telephone who is responsible to maintain signal cables for the U.S. Army and need not be relocated.

11. BEACH MODIFICATIONS

At the channel outlet some excavation will be required that will extend into the beach areas in order to provide an outlet for the channel to the ocean. The material at the outlet is basalt and limestone rubble mixed with sand. Sand patches are not evident until 41 to 46 meter from the beach. Sand blockage of the mouth of the channel may require periodic maintenance by the City to open the channel to permit the passage of storm water. The proposed improvements will neither cause erosion of the beach or accretion of the beach.

12. RECREATIONAL EFFECT

There will be no effect on the recreational activities that are currently taking place in Lanikai. These includes swimming, sun bathing, wind sailing, boating and canoe paddling.

IV. ALTERNATIVE TO PROPOSED ACTION

A. NO PROJECT

If the project is not constructed, there will be no cost impact since appropriated funds will not be spent. However there will be a negative environmental impact from doing nothing because the flooding problems and damages from heavy rainfall will continue and affect the entire Lanikai community. If this project is not constructed, the remainder of the improvements recommended for Lanikai will probably also not be constructed.

V. AGENCIES AND PERSONS CONSULTED

1. Federal Government

U. S. Army Corps of Engineers, Pacific Division,
Honolulu District Engineer
U.S. Fish and Wildlife Service
U.S. Coast Guard, Fourteenth Coast Guard District

2. State Government

Department of Health
Department of Land and Natural Resources
Department of Business, Economic Development and
Tourism
Department of Transportation
State Office of Environmental Quality Control
University of Hawaii Environmental Center
University of Hawaii Water Resources Research Center
State Senator Mary George
State Representative Cynthia Thielen

3. County Government

Department of Land Utilization
Department of Transportation Services
Department of Parks and Recreation
Department of General Planning
Honolulu Police Department
Board of Water Supply
City Councilman Steve Holmes

4. Private

The Lanikai Association
The Lani-Kailua Outdoor Circle
Kailua Community Council
Kailua Neighborhood Board No. 31

Response letters to the Environmental Assessment are included in
"Comments and Responses" section, page 25.

VI. DETERMINATION

After completing an assessment of the potential environmental effects of the proposed project and consulting formally with other governmental agencies, it has been determined that an Environmental Impact Statement is not required. Therefore this document constitutes a notice of Negative Declaration.

VII. FINDINGS AND REASONS SUPPORTING THE DETERMINATION

Findings and reasons supporting the Negative Declaration determination are as follows, using the criteria, policies, guidelines and provisions of Title 11, Chapter 200, Environmental Impact Statement Rules and Chapter 343, HRS. The proposed project will not:

- A. Involve an irrevocable commitment to loss or destruction of any natural or culture resource;
- B. Curtail the range of beneficial uses of the environment;
- C. Conflict with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, Hawaii Revised Statutes, and any revisions thereof and amendments thereto, court decisions or executive orders;
- D. Substantially affect the economic or social welfare of the community or State;
- E. Substantially affect public health;
- F. Involve a substantial secondary impacts, such as population changes or effects on public facilities;
- G. Involve a substantial degradation of environmental quality;
- H. Substantially affect a rare, threatened or endangered species, or its habitat;
- I. Detrimentally affect air or water quality or ambient noise levels; or
- J. Detrimentally affect an environmentally sensitive area, such as a flood plain, tsunami zone, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters. [Eff. Dec. 06, 1985] (Auth: HRS Sec. 343-6) (Imp. HRS Secs. 343-2, 343-6)

VIII. REFERENCES

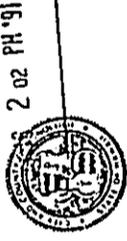
1. AEROS, Oahu Coral Reef Inventory, U.S. Army Corp of Engineers, Pacific Division, Fort Shafter, Hawaii, 1979
2. Clark, John R.K., The Beaches of O'ahu, University of Hawaii Press, Honolulu, 1977.
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4. Hawaii, Department of Land and Natural Resources, National Registry of Historical Places, 1983.
5. Hawaii, State Department of Health, Title 11, Administrative Rules, Chapter 43 - Community Noise Control for Oahu, Honolulu, November, 1981.
6. Orndorff, Carolyn and Clark, Stephen D., Historial Literature and Documents Search, Archeological Surface Survey for the Phase I Flood Control Project, Lanikai, Kailua, O'ahu, Bishop Museum, May 1991.
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IX. APPENDIX

X. COMMENTS AND RESPONSES

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU

455 SOUTH KALANIA AVENUE
HONOLULU, HAWAII 96813
DEPARTMENT OF PUBLIC WORKS



91-4462

cc: [Handwritten initials]
[Handwritten signature]
[Handwritten text]

Sam Callejo
October 16, 1991
Page 2

Thank you for the opportunity to comment on this EA. Should you have any questions, please contact Eugene Takahashi of our staff at 527-6022.

BBL
BENJAMIN B. LEE
Chief Planning Officer

BBL:ft

ET 9/91-3081

October 16, 1991

RECEIVED
DIV. OF ENGINEERING
OCT 21 8 55 AM '91

MEMORANDUM

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

SUBJECT: ENVIRONMENTAL ASSESSMENT FOR THE LANIKAI FLOOD CONTROL
PROJECT, PHASE 2A, KAILUA, OAHU, HAWAII
TAX MAP KEY: 4-3-01 THROUGH 05

This is in response to your letter of September 24, 1991 requesting comments on the Environmental Assessment (EA) for drainage improvements proposed for Phase 2A of the Lanikai Flood Control Project.

Given the minimal impacts that are anticipated, we have no objections to a Negative Declaration for the project.

We suggest, however, that the channel be designed to limit the amount of debris and siltation which would be discharged into the ocean. It is also recommended that a sloped rip-rap lining be provided rather than the proposed vertical concrete lining, and that areas be appropriately landscaped to soften the appearance of the proposed chain link fencing. Access ways to facilitate maintenance of drainage ways should also be considered in the design of the project. Proper means of security should be considered to prevent unauthorized entry into the channel area.



RECEIVED
OFFICE OF PUBLIC WORKS
OCT 23 PM '91

STATE OF HAWAII
DEPARTMENT OF HEALTH
P. O. BOX 339
HONOLULU, HAWAII 96813

91-4492
JOHN C. LEWIN, M.D.
DIRECTOR OF HEALTH

W. C. LEWIN, M.D.
DIRECTOR OF HEALTH

IN REPLY, PLEASE REFER TO:

91-362

RECEIVED
DIV. OF ENGINEERING
NOV 12 4 13 PM '91

October 29, 1991

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Subject: Environmental Assessment (EA) for the Lanikai Flood
Control Project, Phase 2A, Kailua, Oahu, Hawaii
Tax Map Key No.: 4-3-01 through 05

We have reviewed the subject document and have the following
comments to offer:

1. The subject project may require a Section 404 permit issued by the U.S. Army Corps of Engineers (COE). If the COE determines that a Section 404 permit is required, a Section 401 Water Quality Certification or a waiver from the Department of Health may be required. We suggest that the City and County consult with the COE for details.
2. The subject project will not involve land disturbance of more than five (5) acres, so a National Pollutant Discharge Elimination System (NPDES) permit for storm water runoff is not required.
3. Based on the scope of the project, we recommend that the construction activity be conducted during the dry season to the extent possible. Adequate erosion and storm water runoff control measurements shall be established and applied to prevent the runoff from the construction site.
4. The following basic water quality criteria as established in Hawaii Administrative Rules, Chapter 11-54, Section 11-54-04, shall not be violated at the project site during the construction period:
 - a. All waters shall be free of substances attributable to domestic, industrial or other controllable sources of pollutants, including:
 - a. Materials that will settle to form objectionable sludge or bottom deposits;

Mr. Sam Callejo
October 29, 1991
Page 2

- b. Floating debris, oil, grease, suncn or other floating materials;
- c. Substances in amounts sufficient to produce taste or odor in the water or detectable off flavor in the flesh of fish or in amounts sufficient to produce objectionable color, turbidity or other conditions in the receiving waters;
- d. High temperatures; biocides; pathogenic organisms; toxic, radioactive, corrosive or other deleterious substances at levels or in combination sufficient to be toxic or harmful to human, animal, plant or aquatic life or in amounts sufficient to interfere with any beneficial use of the water;
- e. Substances or conditions or combinations thereof in concentrations which produce undesirable aquatic life; and
- f. Soil particles resulting from erosion on land involved in earthwork, such as the construction of public works; highways; subdivisions; recreational, commercial or industrial developments; or the cultivation and management of agricultural lands.

If you have any questions on this matter, please contact Mr. Edward Chen of the Engineering Section, Clean Water Branch, at 586-4309.

Very truly yours,

John C. Lewin
John C. Lewin, M.D.
Director of Health

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
510 SOUTH KING STREET
HONOLULU, HAWAII 96813



FRANK P. KIM
DIRECTOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER
IN REPLY REFER TO
91-12-0541

November 22, 1991

MEMORANDUM

TO: MR. BENJAMIN B. LEE, CHIEF PLANNING OFFICER
DEPARTMENT OF GENERAL PLANNING

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

SUBJECT: YOUR MEMORANDUM OF OCTOBER 16, 1991 CONCERNING THE
ENVIRONMENTAL ASSESSMENT FOR THE LANIKAI FLOOD
CONTROL PROJECT, PHASE 2A, KAILUA, OAHU, HAWAII

We appreciate your comments to the subject Environmental Assessment.

During our study, we seriously considered using a trapezoidal channel section but found that in order to provide the necessary capacity, the channel width would have to be much wider than the rectangular channel proposed. The use of a trapezoidal channel with sloping sides would have a more pleasing aesthetic effect but would also require a wider right-of-way acquisition and demolition of an existing dwelling unit and displacing some long time residents of Lanikai. The proposed rectangular channel can be constructed within an existing drainage easement that the City is planning to acquire.

Access to the new channel from Mokuia Drive to the ocean will be provided by the existing beach right-of-way that adjoins and runs parallel to the channel. A four-foot high chain link fence will be provided to prevent unauthorized entry into the channel area.


SAM CALLEJO
Director and Chief Engineer

cc: Kwok Associates, Inc.

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
510 SOUTH KING STREET
HONOLULU, HAWAII 96813



FRANK P. KIM
DIRECTOR

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER
IN REPLY REFER TO
91-12-0560

December 9, 1991

John C. Lewin, M.D.
Director of Health
Department of Health
State of Hawaii
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Lewin:

Subject: Your Letter 91-362 dated October 29, 1991, Relating to the Environmental Assessment for the Lanikai Flood Control Project, Phase 2A, Kailua, Oahu, Hawaii. Tax Map Key: 4-3-01 through 05

Thank you for your review of the subject Environmental Assessment.

The final construction plans will be submitted to the Corps of Engineers for determination if a Section 404 permit is required. If required, we will apply for a Section 401 Water Quality Certification or a waiver from the Department of Health.

We will try to schedule the construction activities during the dry season. We will also provide adequate erosion and storm water runoff control measures to minimize the amount of sediment that will be produced from the construction activities.

In addition, the basic water quality criteria as established in the Hawaii Administrative Rules, Chapter 11-54, will be included in the construction contract specifications.

Very truly yours,

SAM CALLEJO
Director and Chief Engineer

cc: Kwok Associates, Inc.



STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
P. O. BOX 111
HONOLULU, HAWAII 96813

WALTER W. BAILEY, ENGINEERING
MADE BY LAW AND NATURAL RESOURCES

NOTAR

WALTER W. BAILEY, ENGINEERING
MADE BY LAW AND NATURAL RESOURCES
Dan T. Kochl
SPECIALIST ENGINEER
ADVISOR, ARCHITECT
CONSTRUCTION AND
ENGINEERING, DESIGN
CONTRACTS, PROJECTS
DESIGN AND CONSTRUCTION
MANAGEMENT
LAND MANAGEMENT
STAFF PLANS
WITH AND LAND MANAGEMENT

FILE NO.: 92-309
DOC. NO.: 2193E

REF: OCEA: SKK

The Honorable Sen Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Environmental Assessment for the Lanikai Flood Control
Project, Phase 2A, at Kailua, Oahu

Thank you for giving our Department the opportunity to comment on
this matter. We have reviewed the submitted Environmental
Assessment (EA) for the Lanikai Flood Control Project and have the
following comments.

Brief Description:

The County of Honolulu, Department of Public Works (DPW) has
submitted an Environmental Assessment to proceed with drainage
improvements (Phase 2A) at Lanikai, Oahu.

The improvements would include a new concrete lined open channel
between the shoreline and Mokuia Drive with the channel
terminating at the shoreline and not extending into the ocean as
previously proposed. The reconstruction of drainage collection
system and a new box culvert along Mokuia Drive to collect and
transport storm runoff is also planned during this Phase.

Mr. S. Callejo

-2-

File No.: 92-309

DIVISION OF AQUATIC RESOURCES COMMENTS:

The Environmental Assessment and previous information provided has
adequately described the activity proposed and mitigated most of
the potential impacts adverse to aquatic resource values. We note
that mitigation measures suggested earlier are being implemented.
In Phase 2A, the proposed channel outlet will not extend into the
ocean as recommended earlier to alleviate the sand blockage
problems. Instead, a periodic maintenance program (to relieve the
sand blockage) will be implemented by the City.

Finally, our attached comments on earlier Environmental Assessments
(dated July 13, 1989 and March 19, 1990) remain applicable.

HISTORIC PRESERVATION DIVISION COMMENTS:

Excavation of a sewer line and house foundations along Kalapapa
Drive have unearthed many human burials, a fact not noted in the
Historic Literature and Documents Search. Therefore, we believe
that excavation of drainage collection systems along Mokuia and
especially Kalapapa Drives is likely to unearth human burials in
areas that have not been previously excavated. In the event that
burials are found, and these prove to be Hawaiian, then a burial
treatment plan will have to be worked out with the O'ahu Island
Burial Council. It is impossible to tell from the plans how much
excavation will take place in previously unexcavated areas, but if
this is a substantial portion of the total, then it would be
advisable to work out a proposed burial treatment plan in advance.
Typically, such a plan would include a protocol for determining the
circumstances under which burials could be removed, how this would
take place, and some arrangement for reinterment.

We believe that the best way to ensure that all burials are found
is to follow the recommendation in the Environmental Assessment
that a qualified archaeologist monitor all excavation.

DIVISION OF LAND MANAGEMENT COMMENTS:

The City and County of Honolulu proposes to "daylight" the drainage
water at or near the shoreline and supposedly not onto the beach
area. If this is true, there will be erosion and loss of sand when
run-off occurs. How does the City and County propose to control
the erosion and loss of sand because the EA doesn't address this.
Also, it appears that City and County will require an easement from
the State.

Mr. S. Callejo

-3-

File No.: 92-309

Also, be reminded that a Conservation District Use Application (CDUA) would be required for any dredging or submerged land adjacent to the planned drainage improvements.

Thank you for your cooperation in this matter. Please feel free to call me or Sam Lexmo at our Office of Conservation and Environmental Affairs, at 587-0377, should you have any questions.

Very truly yours,


WILLIAM W. Paly

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU



RECEIVED
DEPARTMENT OF PUBLIC WORKS
HONOLULU HAWAII
92-12-0043

January 29, 1992

Mr. William W. Paly, Chairperson
Board of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

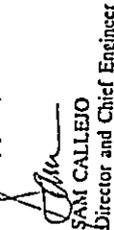
Dear Mr. Paly:

Subject: Environmental Assessment for the Lanikai Flood Control Project, Phase 2A, at
Kaliua, Oahu

Thank you for your comments on the Environmental Assessment. Our response to your comments are as follows:

1. We will attempt to schedule construction for the dry weather period to mitigate excess sediment loading of the nearshore waters.
2. The plans and specifications for the project will require the services of a qualified archaeologist to monitor all excavation.
3. Excavation for the drain pipes and the channel will follow the alignment of the existing improvements and may not unearth human burials. In the event human burials are uncovered, the procedure for reburial outlined in your letter will be followed.
4. The drain channel outlet will be located at the location of the present channel outlet. The area is rocky and, therefore, erosion will be slight.
5. The required permits from the Department of Land and Natural Resources will be obtained prior to the start of construction.

Very truly yours,


SAM CALLEJO
Director and Chief Engineer

cc: Kwock Associates, Inc.

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
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DIV. OF ENGINEERING
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91-4002



Sup
WALTER H. OZAWA
DIRECTOR



91-12-0537

October 7, 1991

November 22, 1991

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: WALTER H. OZAWA, DIRECTOR

SUBJECT: ENVIRONMENTAL ASSESSMENT FOR THE
LANIKAI FLOOD CONTROL PROJECT, PHASE 2A,
KAILUA, OAHU, HAWAII
TAX MAP KEY 4-3-01 THROUGH 05
PROJ. REF. NO. 91-12-0437

MEMORANDUM

TO: MR. WALTER OZAWA, DIRECTOR
DEPARTMENT OF PARKS AND RECREATION

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

SUBJECT: YOUR MEMORANDUM OF OCTOBER 7, 1991 CONCERNING THE
ENVIRONMENTAL ASSESSMENT FOR THE LANIKAI FLOOD
CONTROL PROJECT, PHASE 2A, KAILUA, OAHU, HAWAII

Thank you for the opportunity to review the subject Environmental Assessment (EA). We have the following comments and recommendations.

The area shown as "existing overflow swale" in Figure 4 of the EA is a public beach right-of-way (Tax Map Key 4-3-03: 89) under our jurisdiction.

The EA does not address the impact the project would have on the public using the right-of-way to and along the beach.

We request that the construction plans for the project be submitted for our review and comments.

Should you have any questions, please contact Doug Keller of our Advance Planning Branch at extension 4884.

Walter H. Ozawa
WALTER H. OZAWA, Director

WMO:ei
Attachment

Thank you for your review of the subject Environmental Assessment. The project will not have any long term impacts on the existing public beach right-of-way located on TMK 4-3-03: 89. Upon completion of the project, the beach right-of-way will be restored and the public will have use of the right-of-way as an access to the beach.

As requested, we will submit the construction plans for the project to your department for your review and approval.

Sam Callejo
SAM CALLEJO
Director and Chief Engineer

cc: -Kwock Associates, Inc.



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JOHN HENRY FELIX
Commissioner
Chas. F. Kei 'Wani and Sally
Hasegawa, Mayor

C7-0309

Samuel H. King
CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII 96813 / TELEPHONE 533-4000

*Dir. Dep. of P. Works
Eng.*

Dr. [Signature]

October 16, 1991

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
650 South King Street, 11th floor
Honolulu, HI 96813

VIA

Mr. Jeremy Harris, Managing Director
Managing Director's Office
City and County of Honolulu
530 South King Street, 3rd Floor
Honolulu, HI 96813

Dear Mr. Callejo:

At our Public Works and Safety Committee meeting held on Tuesday, October 15, 1991, the following questions were asked as it relates to the Environmental Assessment for the Lanikai Flood Control Project, Phase 2A:

1. Why has the Department of Public Works conducted an environmental assessment for a phase of a project? It is our understanding that under Chapter 343, HRS, a project cannot be segmented under our environmental impact statement laws.
2. Is the assessment meant to be a supplemental Environmental Impact Statement or is the terminology incorrect?
3. Is the Department of Public Works planning to go ahead with Phases 3 and 4?

Mr. Sam Callejo, Director
and Chief Engineer
October 16, 1991
Page 2

Your attention to this matter would be appreciated.

Sincerely,

[Signature]
Eugene Lee, DPW
Councilmember
Public Works and Safety Committee

cc Eugene Lee, DPW
Councilmember Steve Holmes

by

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DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU



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C&C OF HONOLULU
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91-12-0539

December 31, 1991

The Honorable John Henry Felix, Chair
Public Works and Safety Committee
City Council
City and County of Honolulu
Honolulu, Hawaii 96813

Dear Councilmember Felix:

Subject: Your Letter of October 16, 1991 Concerning the Environmental Assessment
for the Lanikai Flood Control Project, Phase 2A, Kailua, Oahu, Hawaii

Thank you for your review of the subject Environmental Assessment. In response to
your questions, we offer the following:

1. The Department of Public Works is proposing an environmental assessment for
the Lanikai Flood Control Project - Phase 2A because it believes the project will
not have any significant impacts on the environment. The project is not being
segmented from the EIS laws since the Phase 2A improvements represent the
final phase of the Lanikai Flood Control Project and since the Department of
Public Works will be withdrawing the earlier EIS filed with the Office of
Environmental Quality Control which proposed additional phases to the project.
2. No, the assessment is not meant to be a Supplement Environmental Impact
Statement. The Department of Public Works is planning to proceed with the
preparation of an Environmental Assessment and Negative Declaration for the
project as stated in Item No. 1 above.

The Honorable John Henry Felix
December 31, 1991
Page 2

3. The Department of Public Works has no plans to proceed with Phases 3 and 4 of
the Lanikai Flood Control Project since the community has indicated that they are
not willing to participate in an Improvement District project.

Very truly yours,

SAM CALAJO
Director and Chief Engineer

cc: Kwock Associates, Inc.

APPROVED:

Jeremy Harris
JEREMY HARRIS
Managing Director



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DEPARTMENT OF THE ARMY
U.S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96813-440

October 11, 1991

Planning Division

91-4123

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DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
830 SOUTH KING STREET
HONOLULU, HAWAII 96813



PROJECT NO.
DATE

SAM CALLEJO
DIRECTOR, DEPARTMENT OF ENGINEERING

91-12-0540

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Thank you for the opportunity to review and comment on the environmental assessment (EA) for the proposed Lanikai Flood Control Project, Phase 2A, Kailua, Koolau, Oahu (TKS 4-3-01 through 4-3-05). The following comment is provided pursuant to Corps of Engineers authorities to issue Department of the Army (DA) permits under the Clean Water Act; the Rivers and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act.

The new concrete channel may require a DA permit. Please submit detailed plan and profile, when completed, to the Operations Division.

Sincerely,

Ray H. Jyo
Ray H. Jyo
Acting Director of Engineering

November 22, 1991

Mr. Ray H. Jyo
Acting Director of Engineering
U.S. Army Engineer District, Honolulu
Department of the Army
Fort Shafter, Hawaii 96858-5440

Dear Mr. Jyo:

Subject: Your Letter of October 11, 1991 Concerning the Environmental Assessment for the Lanikai Flood Control Project, Phase 2A

We appreciate your review and comments to the Environmental Assessment. Thank you for pointing out that the new channel may require a DA permit under the Clean Water Act; the Rivers and Harbors Act of 1899; and the Marine Protection, Research and Sanctuaries Act. We will submit construction plans showing the details and profile of the channel to the Operations Division for review of permit requirements.

Very truly yours,

Sam Callejo
SAM CALLEJO
Director and Chief Engineer

cc: Kwok Associates, Inc.

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU
430 SOUTH KING STREET
HONOLULU, HAWAII 96813



SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER
IN REPLY REFER TO

91-12-0538

November 22, 1991

Ms. Esther Ueda
Executive Officer
Land Use Commission
State of Hawaii
Department of Business, Economic Development & Tourism
Room 104, Old Federal Building
335 Merchant Street
Honolulu, Hawaii 96813

Dear Ms. Ueda:

Subject: Your Letter of October 15, 1991 Concerning the Environmental Assessment for the Lanikai Flood Control Project, Phase 2A

Thank you for your review of the subject Environmental Assessment. As suggested, we will include maps in the final Environmental Assessment that will identify the project site in relation to the State Land Use Urban District and State Land Use Conservation District.

Very truly yours,

Sam Callejo
SAM CALLEJO
Director and Chief Engineer

cc: Kwock Associates, Inc.

ESTHER UEDA
DIRECTOR OFFICER

91-12-0538

W. J. ...



RECEIVED
DIV. OF PUBLIC WORKS
STATE OF HAWAII
DEPARTMENT OF BUSINESS, ECONOMIC DEVELOPMENT & TOURISM
LAND USE COMMISSION
Room 104 Old Federal Building
335 Merchant Street
Honolulu, Hawaii 96813
Telephone: 541-4111
OCT 17 3 12 PM '91
4 15 1991

October 15, 1991

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Environmental Assessment for the Lanikai Flood Control Project, Phase 2A, Kailua, Oahu, Hawaii, Tax Map Key Nos.: 4-3-01 through 5

The information for the subject Environmental Assessment transmitted to the Department of Business, Economic Development and Tourism by your letter dated September 24, 1991 was referred to our office for reply. Based on our review of the Environmental Assessment, we find that the project site, as approximately represented in Figure 3 on page 6, is located within the State Land Use Urban and Conservation Districts.

According to our records, the majority of the project site is located in the State Land Use Urban District. However, there is a portion of the project, that extends seaward from Lanipo Drive, which is in the State Land Use Conservation District.

We suggest that the Environmental Assessment include maps which detail the project site in relation to these State Land Use District Boundaries.

We have no further comments to offer at this time. Thank you for the opportunity to comment on this matter. If you have any questions, please call me or Steve Tagawa of my staff at 548-8101.

Sincerely,
Esther Ueda
ESTHER UEDA
Executive Officer

EU:to

cc: DEED

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU



SAM CALLEJO
DIRECTOR
91-12-0536

91-4175

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU



JOSEPH M. MAGALDI, JR.
DIRECTOR
TE-5011
PLS 1.1.332
91-12-0437

OCT 18 3 30 PM '91

November 22, 1991

MEMORANDUM

TO: MR. JOSEPH M. MAGALDI, JR., DIRECTOR
DEPARTMENT OF TRANSPORTATION SERVICES

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

SUBJECT: YOUR MEMORANDUM OF OCTOBER 17, 1991 CONCERNING THE ENVIRONMENTAL ASSESSMENT FOR THE LANIKAI FLOOD CONTROL PROJECT, PHASE 2A, KAILUA, OAHU, HAWAII

Thank you for your review of the subject Environmental Assessment. We will finalize the Environmental Assessment after addressing the comments received from the various agencies responding to the Environmental Assessment. As requested, the construction plans will be submitted to your department for review and approval.

Sam Callejo
SAM CALLEJO
Director and Chief Engineer

cc: Kwock Associates, Inc.

October 17, 1991

MEMORANDUM

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: JOSEPH M. MAGALDI, JR., DIRECTOR

SUBJECT: LANIKAI FLOOD CONTROL PROJECT, PHASE 2A
ENVIRONMENTAL ASSESSMENT
TRK: 4-3-01 THROUGH 05

This is in response to your memorandum dated September 24, 1991 requesting our comments on the subject environmental assessment.

Based on our review, we have no objections to the proposed flood control project at this time. However, construction plans for all work within the City's right-of-way should be submitted to our department for review. A traffic control plan showing temporary detours for pedestrians, bicyclists, and vehicles should be included in these plans.

Should you have any questions, please contact Lance Watanabe of my staff at local 4199.

Joseph M. Magaldi, Jr.
JOSEPH M. MAGALDI, JR.

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DIV. OF ENGINEERING
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91-4097

EDWARD Y. HIRATA
DIRECTOR
DEPARTMENT OF TRANSPORTATION
143 PULUOHONO STREET
HONOLULU, HAWAII 96813



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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
143 PULUOHONO STREET
HONOLULU, HAWAII 96813
October 11, 1991

Ely

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Environmental Assessment (91-12-0437), Lanikai
Flood Control Project, Phase 2A, Kailua, Oahu
TKK: 4-3-01 to 4-3-05

Thank you for your letter of September 24, 1991, requesting our
review of the subject environmental assessment.

The proposed project will not impact our State highway facilities.

Very truly yours,

Ely

Edward Y. Hirata
Director of Transportation

JOHN W. ...

91-4111

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STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
375 SOUTH KING STREET
FOURTH FLOOR
HONOLULU, HAWAII 96813

October 10, 1991

Mr. Sam Callejo
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Callejo:

Subject: Environmental Assessment for the Lanikai Flood Control
Project, Phase 2A, Kailua, Oahu, Hawaii. T.M.K. 4-3-01 through 05

Thank you for the opportunity to review the subject document. We
have no comments to offer.

Sincerely,

Brian J. J. Choy

Brian J. J. Choy
Director

Ely

POLICE DEPARTMENT
CITY AND COUNTY OF HONOLULU

1515 SOUTH KING STREET
HONOLULU, HAWAII 96813



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91-4001

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SG-LK

October 8, 1991

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: MICHAEL S. NAKAMURA, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: ENVIRONMENTAL ASSESSMENT FOR THE LANIKAI FLOOD CONTROL
PROJECT, PHASE 2A, KAILUA, OAHU, HAWAII,
TAX MAP KEY: 4-1-01 THROUGH 05

We have reviewed the attachments for the above-referenced project
and have no objections to the proposed project.

We do not anticipate this project to have an impact on police
services in the area.

Thank you for the opportunity to provide comments.

MICHAEL S. NAKAMURA
Chief of Police

By *Michael S. Nakamura*
CHESTER E. HUGHES
Assistant Chief of Police
Support Services Bureau

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU

630 SOUTH BERTZNER STREET
HONOLULU, HAWAII 96813



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October 25, 1991

91-4314

Euph

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: KAZU HAYASHIDA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

SUBJECT: YOUR MEMORANDUM OF SEPTEMBER 24, 1991 ON THE
ENVIRONMENTAL ASSESSMENT (EA) FOR THE LANIKAI FLOOD
CONTROL PROJECT, PHASE 2A, KAILUA, OAHU, T.M.K. 4-3-01 TO 05

Thank you for the opportunity to review and comment on the EA for the Lanikai
flood control project. We have no objections to the proposed project.

The construction plans should be submitted for our review and approval. The plans
should show all affected water facilities, including water meters with meter numbers.

If you have any questions, please contact Bert Kuiuoka at 527-5235.

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DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

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450 SOUTH KING STREET
DIV. OF LAND UTILIZATION
HONOLULU, HAWAII 96813-5012

OCT 25 8 31 AM '91



OFFICE OF PUBLIC WORKS
OCT 23 3 30 PM '91

91-456

copy

LORETTA K. CHEE
DIRECTOR

LORETTA K. CHEE
ACTING DIRECTOR
LU9/91-7901(JSM)

October 24, 1991

MEMORANDUM

TO: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

ATTN: DIVISION OF ENGINEERING
DIVISION OF WASTEWATER MANAGEMENT
DIVISION OF REFUSE COLLECTION AND DISPOSAL

FROM: LORETTA K. C. CHEE, ACTING DIRECTOR

SUBJECT: ENVIRONMENTAL ASSESSMENT (EA) FOR THE LANIKAI FLOOD
CONTROL PROJECT, PHASE 2A; KAILUA: TAX MAP KEY 4-3-01
THROUGH 05

Thank you for providing us with the opportunity to review your EA for the Lanikai Flood Control Project, Phase 2A. At this time we have the following questions and comments:

1. The EA states, on page 5, that the channel will terminate at the shoreline. How will the exact location of the shoreline be determined? Will a certified shoreline survey be prepared in conjunction with this project?
2. Will the open drainage swale have a maintenance right-of-way? If so, will this right-of-way be available to the public for access to the beach?
3. On page 16 of the EA, the document states that there may be some disruption of beach use during the construction phase of the drainage channel. What is the magnitude of disruption that you anticipate? How much of the beach area will be barricaded during construction? How long is it anticipated that this disruption will last?
4. What are the anticipated impacts of the drainage flow across the beach? Are there any anticipated impacts on the littoral flow of sand along the beach? Will this project impact the ability of beach users to laterally traverse the beach?
5. A Special Management Area (SMA) Permit and Shoreline Setback Variance will be required for this project.

SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
Page 2

If you have any questions, please contact John Morihara of our staff at 527-5349.

Loretta K. Chee
LORETTA K. C. CHEE
Acting Director of Land Utilization

LKCC:cct

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

835 SOUTH KING STREET
HONOLULU, HAWAII 96813



FORM NO. 7-78
REVISED 1-80

SAM CALLEJO
DIRECTOR AND CHIEF ENGINEER
TELEPHONE NO.
91-12-0561

Mr. Donald A. Clegg
December 9, 1991
Page 2

5. We will obtain the necessary Management Area (SMA) Permit and Shoreline Setback Variance for the project.

December 9, 1991

MEMORANDUM

TO: MR. DONALD A. CLEGG, DIRECTOR
DEPARTMENT OF LAND UTILIZATION

FROM: SAM CALLEJO, DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

SUBJECT: YOUR MEMORANDUM LU9011-7901(JSM) DATED OCTOBER 24, 1991,
RELATING TO THE ENVIRONMENTAL ASSESSMENT FOR THE
LANIKAI FLOOD CONTROL PROJECT, PHASE 2A, KAILUA,
TMS: 4-3-01 THROUGH 05

SAM CALLEJO
Director and Chief Engineer

cc: Kwock Associates, Inc.

Thank you for your comments on the Environmental Assessment. Our responses to your comments are shown below and in the same order as stated in your memorandum.

1. The Department of Public Works will prepare a certified shoreline survey to determine the exact location of the shoreline.
2. The new drainage channel will utilize the adjoining beach right-of-way as a maintenance access. The existing beach right-of-way will serve as both a beach access for the public and as a maintenance access for the channel.
3. The disruption of beach use will be minimal during construction. The beach area will be barricaded only during the time required to remove the material at the mouth of the channel. This area is approximately 16'x20', and the time required to perform this work is estimated to be about two days.
4. We do not anticipate any significant impacts from the drainage flow across the beach since the new channel will be constructed along the same alignment and will maintain approximately the same invert as the existing ditch. The project should not have an impact on littoral flow of sand along the beach since the channel will not extend beyond the existing seawalls. Further, the project will not have an impact on the ability of beach users to laterally traverse the beach since there is no usable beach on the Waimanalo side of the proposed channel.

Ms. 052591

HISTORICAL LITERATURE AND DOCUMENTS SEARCH
ARCHAEOLOGICAL SURFACE SURVEY
FOR THE PHASE I FLOOD CONTROL PROJECT
LANIKAI, KAILUA, O'AHU

HISTORICAL LITERATURE
AND DOCUMENTS SURVEY

by

Carolyn Orndoff

and

SURFACE SURVEY

by

Stephan D. Clark

for

Kwock Associates, Inc.
1100 Ward Ave., Suite 920
Honolulu, Hawai'i 96814

May 1991

Public Archaeology Division
Applied Research Group
Bishop Museum
Honolulu, Hawai'i 96814

INTRODUCTION

Reconstruction of Po'opo'o Gulch and related drainage improvements in Lanikai, O'ahu, is proposed for the Phase II Flood Control Project. The following report summarizes findings from a historical literature and documents search and surface survey conducted under contract to Kwock Associates, Inc. The objective of this data search was to obtain a chronological overview of the pre- and post-Contact occupation of the area in order to assess the potential for archeological resources and to facilitate interpretation of any subsurface features and/or artifacts encountered during subsequent phases of work.

PROJECT AREA DESCRIPTION

The project area is located in Lanikai, in the *ahupua'a* (a traditional Hawaiian land division) of Kailua and the *'ili* (a subdivision of an *ahupua'a*) of Mokulua, Ko'olau Poko District, O'ahu Island (Fig. 1).

The *'ili* is triangular in shape with Mt. Ka'iwa as the apex and the shoreline as the base (Fig. 2). Ka'iwa Ridge, with Mt. Mōkapu located approximately mid-way on the ridge, forms the northern side of the triangle. Another ridge to the south, the dividing line between Lanikai and Waiānalo, forms the southern side of the triangle. Po'opo'o Gulch runs from east to west, beginning south of Mt. Ka'iwa on the southern ridgeline, and ending at the shoreline.

The project area follows Po'opo'o Gulch, from the elevated *mauka* (towards the mountain) end near the ridgeline, to the shoreline with several curb and gutter additions along existing roadways (Fig. 3). The gulch has been modified with stone and cement retaining walls that run intermittently along the length of the drainage.

A public beach easement (a sand walkway) begins on the *makai* (towards the ocean) side of Mokulua Drive, just south of the gulch, and ends at the shoreline. A cement and cinderblock wall separates a current residential construction project from the easement on the southside. The wall on the north side of

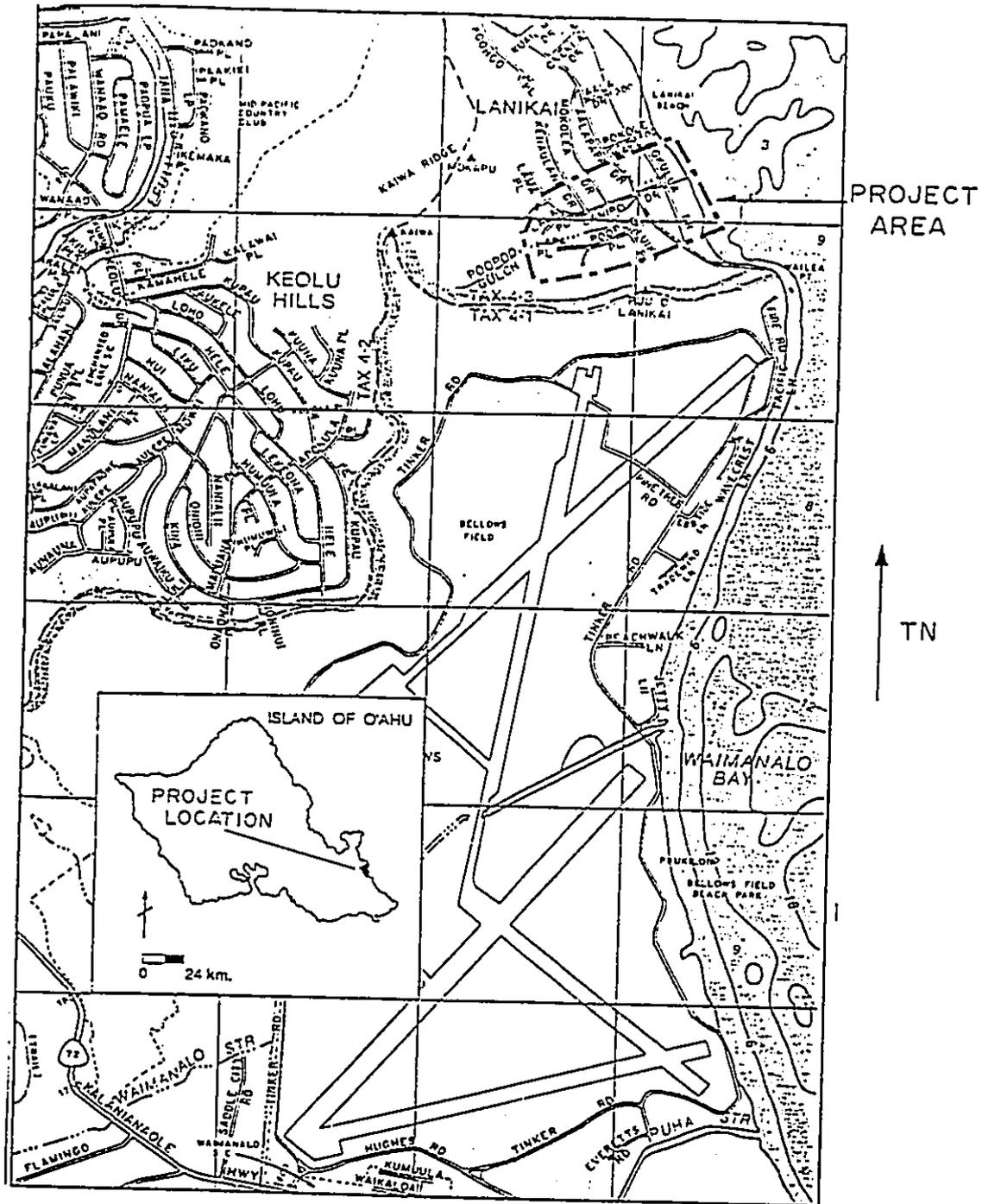


FIG. 1, THE PROJECT AREA. From Bryan's Sectional Maps of O'ahu.



FIG. 2, THE 'ILI OF MOKULUA.

the easement is overgrown with foliage. The drainage parallels this easement and spills onto the beach.

PREVIOUS ARCHAEOLOGICAL INVESTIGATIONS

Previous archaeological investigations consist of monitoring, surface reconnaissance surveys, and geoarchaeological and excavation projects.

In 1990, the Bishop Museum conducted monitoring during the construction phase of the Phase I Flood Control project in Lanikai. The artifacts collected are discussed in the Traditional Hawaiian Artifacts and Historic Artifacts section

J. Gilbert McAllister conducted a survey of archaeological sites in the *ahupua'a* of Kailua in 1933. The findings of this survey are discussed in the Traditional Hawaiian Land Use section. Both the 1933 *Archaeology of Oahu*, by McAllister, and the 1978 *Sites of Oahu*, by Sterling and Summers, contain information on traditional Hawaiian culture.

HISTORY

TRADITIONAL HAWAIIAN LAND USE

Overview

The *ahupua'a* of Kailua is an area rich in traditional Hawaiian culture. Prominent Hawaiian chiefs and other *ali'i* (persons of nobility) favored Kailua for occupation. Kailua was well-known for its two freshwater fishponds, ocean fishing, and water fowl. Kailua contained an extensive area of taro cultivation, from Kawai Nui Pond to Ka'elepulu Pond.

The traditional Hawaiian activity in the project area was most likely the exploitation of the local marine resources, but there is, at present, insufficient evidence of traditional Hawaiian occupation. However, data obtained from both informants and legends refer to habitation of the *'i'i* of Mokulua. *Kaōhao* is the original Hawaiian name for Lanikai (Sterling and Summers

1978:239). Keikipuipui heiau was located at the highest point on the ridge between Lanikai and Waimānalo, possibly at Pu'u o Lanikai (McAllister 1933:190). A legend alludes to the Ka'iwa ridge as the being the residence of Chiefess Ka'iwa (Sterling and Summers 1978:239).

Evidence for Traditional Hawaiian Land Use

Several sources exist which cite evidence for traditional Hawaiian habitation of the *ahupua'a* of Kailua: McAllister, Sterling and Summers, and Pope (pending). The reader is referred to McAllister and Sterling and Summers for further detail on the sites, legends, and place names.

McAllister lists 14 individual sites throughout the *ahupua'a* of Lanikai, including eight *heiau* (pre-Christian place of worship), two house sites, the Kawai Nui and Ka'elepulu fishponds, the Pōhaku Puo'o (stone with a hole in it), and the possible site of an *akua* (spirit) stone (McAllister 1933:182-190).

In addition to the sites mentioned by McAllister, Sterling and Summers note a cave, a stone wall, a sacrifice stone, two adze quarries, additional burials, and place names from various legends (Sterling and Summers 1978:227-243).

Traditional Hawaiian Artifacts

Below is a list of the traditional Hawaiian artifacts collected by Pope while monitoring the construction of the Phase I project at Lanikai, a short distance north of the Po'opo'o Gulch project area. These artifacts account for exactly one-third of the collection.

| <u>Artifact #</u> | <u>Artifact</u> |
|-------------------|--------------------------|
| BM 465-1 | possible worked hematite |
| BM 465-2 | basalt hammerstone |
| BM 465-3 | flaked, waterworn cobble |
| BM 465-4 | basalt net weight |
| BM 465-10 | pitted hammerstone |

HISTORICAL LAND USE

Overview

The Lanikai area remained barren of non-traditional Hawaiian habitation until 1921, when H. L. Castle built a hunting shack on his lands (Mustapha 1985:5). The area was a prime place for fishing and hunting water fowl [Land Court Application (L.Ct. App.) 616, 1962:4-5; Mustapha 1985:5; Kelly and Nakamura 1981:99].

The general area was used from the second half of the nineteenth century to about 1925 for livestock pastorage, rice cultivation, and vegetable production, but information specifying the locations of these activities is unavailable.

After the mid-1920s, the area was divided into residential lots that were sold fee simple. The area has remained since residential.

Land Owners: 1848 to 1924

Queen Hazaleleponi Kapukahaili Kalama. On February 11, 1848 during the Great Mahele, King Kamehameha III deeded over the *ahupua'a* of Kailua to his consort, Queen Hazaleleponi Kapukahaili Kalama (Kelly and Nakamura 1981:118; Mahele Book:147; L.Ct. App. 616, 1924:5). The Land Commissioners confirmed her ownership in the *ahupua'a*, with the exception of those *kuleana* (personal property owned by commoners) claimed by others, and applied the Land Commission Award (L.C.A.) number 4452 Apana 12 to the property in May of 1854. H. K. Kalama also inherited the *ahupua'a*, with the exception of the *kuleana*, from the king upon his death in December of 1854.

Queen Kalama entered into a sugar plantation venture with Judge C. C. Harris, but it failed (Mustapha 1985:2). An experiment in pineapple production also proved unsuccessful (Mustapha 1985:2).

In 1858, H. K. Kalama, now H. K. Kapakuhaili, mortgaged all of her holdings in

Kailua to Richard Armstrong (L.Ct.App. 616, 1924:11). C. C. Armstrong, Richard Armstrong's widow, released Kapakuhaili in 1869 from the mortgage, which had been paid in full in 1869 (L.Ct.App. 616, 1924:12).

In 1870 Kapakuhaili died intestate (L.Ct.App. 616, 1924:13).

Charles C. Harris. The lands of Kapakuhaili, which included L.C.A. 4452 Apana 12, went to her stepfather, Charles Kanaina (L.Ct.App. 616, 1924:13-14). Three months before the will went through, Kanaina sold his interest in the *ahupua'a* of Kailua to Charles C. Harris (L.Ct.App. 616, 1924:15-16).

The Board of Commissioners of Crown Lands attempted in 1875 to claim the lands held by Harris (L.Ct.App. 616, 1924:17-20). Over a year later, Harris proved his claim to the property, but had to pay the government \$750 to relinquish its alleged ownership (L.Ct.App. 616, 1924:21-23).

Charles C. Harris died testate in 1881 (L.Ct.App. 616, 1924:24).

Nannie R. B. Rice. The C. C. Harris property in Kailua went to his sole heir, daughter Nannie R. Brewer. Her name changed to Nannie R. B. Rice, and she moved from Hawai'i to Boston, Massachusetts upon marriage to her second husband (Kelly and Nakamura 1981:119).

Nannie R. B. Rice acquired a Certificate of Boundaries and a Royal Patent for her property in the *ahupua'a* of Kailua (Kelly and Nakamura 1981:119). In May of 1892 she was awarded Certificate No., 101 by the Commissioner of Boundaries (Kelly and Nakamura 1981:119). In July of the same year, Nannie Rice applied for a Royal Patent. Queen Liliuokalani retroactively granted Royal Patent Number 7983 to H. K. Kalama for 11,885 acres in the *ahupua'a* of Kailua (L.Ct.App. 616, 1924:6).

Although residing in Boston, Massachusetts, Nannie Rice engaged in several business transactions involving the land in Kailua. In 1894, Rice leased her lands in Kailua to the Kaneohe Ranch Company, Ltd. (L.Ct.App. 616, 1924:30). H. K. L. Castle purchased her land holdings in 1917 (L.Ct.App. 616, 1924:49).

Kaneohe Ranch Company, Ltd. In 1893, the *ahupua'a* of Kailua was leased to Joseph P. Mendonca (L.Ct.App. 616, 1924:28). The following year, Mendonca went into the cattle ranching business with C. Bolte, and the Kaneohe Ranch Company, Ltd. was established (Mustapha 1985:3). At that time, the Mendonca lease was deeded over to the Kaneohe Ranch (L.Ct.App. 616, 1924:30).

As the market for rice in Hawai'i and California expanded, Chinese rice farmers acted to fill the demand by signing leases with landowners to cultivate rice and build rice mills (Kelly and Nakamura 1981:55). In 1894, Yim Quon, who had been growing rice in Kailua since 1876, leased acreage for rice land at Kapa'a and acquired the right to cut firewood for his rice operations (Kelly and Nakamura 1981:55; L.Ct.App. 616, 1924:31). Three years later, Quon leased additional acreage for rice and pasturage, free of charge, for twenty animals (L.Ct.App. 616, 1924:32).

In 1904, Wong Leong leased acreage between his rice plantation and the government road at Hanakea and Pohakea from Kaneohe Ranch (L.Ct.App. 616, 1924:34). At this point, the Hawaiian rice market was in decline because of competition from mainland states such as California (Kelly and Nakamura 1981:63). Leong had been a major rice grower in Kailua (Kelly and Nakamura 1981:63). In 1911, he deeded over all of his lands (both fee-simple and lease-hold), water rights, and capital goods to Nannie Rice (Kelly and Nakamura 1981:64).

Also in 1904, Kaneohe Ranch leased twenty acres near Kawai Nui Pond to the Tin Tai Company (L.Ct.App. 616, 1924:35). Tin Tai previously had been doing business as vegetable vendors in Kailua (L.Ct.App. 616, 1924:35). By the 1930s, truck farm leases were providing excellent opportunities for a growing Japanese community in Kailua (Mustapha 1985:6).

H. K. L. Castle. According to Mustapha, in 1905 James B. Castle acquired the Mendonca-Bolte lease with an option to purchase, but there is no record of this in the Land Court Application (Mustapha 1985:3). However, Kaneohe Ranch and Nannie Rice did renegotiate their lease in 1907; the rent was raised and there was an option to purchase (L.Ct.App. 616, 1924:38-41).

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In 1917, Nannie Rice sold her land holdings (subject to leases, water rights, and agreements with utilities companies) in Kailua to H. K. L. Castle (L.Ct.App. 616, 1924:49).

The Waimanalo Sugar Company leased all of its wetlands in Kailua and the water rights in those lands from Kaneohe Ranch in 1922 (L.Ct.App. 616, 1924:63). Waimanalo Sugar Company was liquidated in 1947, and a new corporation, Waimanalo Agricultural Development Company, was formed as a holding company for the Territorial lands that had previously been leased to Waimanalo Sugar Company (Kelly and Nakamura 1981:79).

William G. Irwin. In 1903, Kaneohe Ranch leased a parcel of land in the 'ili of Mokulua, along Ka'iwa Ridge, to William G. Irwin, who then transferred the lease to the William G. Irwin Estate Company (L.Ct.App. 616, 1924:33, 45). The lease provided additional acreage for the Maunawili Ranch, which was owned by the Irwin Estate Company (L.Ct.App. 616, 1924:45-46). The Maunawili Ranch pastured horses at Lanikai on this parcel (Kelly and Nakamura 1981:67).

In 1914, the Irwin Estate Company sold the Maunawili Ranch, which had land in Kailua, Kāne'ohe, and Waimānalo, to Fannie M. Irwin (L.Ct.App. 616, 1924:49).

In May of 1924, Helene I. Crocker, who obtained her lease with Kaneohe Ranch through her mother, Fannie M. Irwin, assigned the lease to C. Brewer and Co., Ltd. (L.Ct.App. 616, 1924:69).

The next month, C. Brewer and Co. assigned its lease to Realty Auction Co., Ltd. for H. K. L. Castle.

Residential Development: Mid-1920s to the Present

The resident population of Kailua has been one of the fastest growing communities on O'ahu (Kelly and Nakamura 1981:100). Residential development of beach land at Lanikai began in 1924 when the Charles R. Frazier Company developed a prospectus to sell 33 beach lots (Mustapha 1985:5).

In 1925, the Lanikai Marker was erected and the first formal housing project opened in the Kalama area (Mustapha 1985:6).

As previously stated, the area has remained a residential area to the present and investigation of ownership would far exceed the time allotment and the scope of this report.

Historical Artifacts

Historical artifacts accounted for two-thirds of the collection from the 1991 monitoring by Clark Pope. These consisted of four whole glass bottles and various glass sherds.

Floods: 1900 to 1950

The beach land at Lanikai has been repeatedly washed out and rebuilt by storms and tidal waves. Records of flooding in Kailua between 1902 and 1949 show two major storms in 1902 and 1921 (Kelly and Nakamura 1981:85). Herbert M. Dowsett described, while giving court testimony for L.Ct. App. 616, how a 1947 tidal wave took out the existing beach and approximately 30 ft. of the beach front properties (L. Ct. App. 616, 1962:6).

METHODOLOGY

Initial literary search focused first on traditional Hawaiian occupation, and secondly, on historical occupation.

Investigation of pre-Contact occupation included reviewing reports from previous archaeological projects in Kailua and historical literature and looking at artifacts. The archaeological reports were obtained from both the Department of Land and Natural Resources and the Bishop Museum Library. Artifacts collected by Bishop Museum Archaeologist, Clark Pope, during 1990 monitoring were examined for pre-Contact specimens.

Several sources were used to research historical data: reports from previous

archaeological projects in Kailua; historical studies; miscellaneous maps; and Land Court Application 616, which included a map and a complete title search that began with the mid-1800 Land Commission Awards and ended in 1924.

FIELD RESULTS

On Sunday, May 19, 1991, a reconnaissance survey was conducted in a portion of Po'opo'o Gulch, the only undeveloped portion of the project area, situated south of Lanipō Drive. The survey began at the intersection of A'alapapa and Lanipō Drives, mauka of subdivision. The cut banks of the drainage were inspected for exposed, buried cultural deposits. The tops of the banks were examined for surface structural remains.

From the intersection of A'alapapa and Lanipō Drives, to just makai of Mokulea Drive, the drainage is modified. The modification consists of dressed basalt blocks cemented in place along the vertical sides of drainage and on the floor. This masonry work also changed the general form of the drainage. The sides are now relatively smooth and vertical with a smooth, gently sloping floor.

The modifications to the drainage terminate approximately 150 feet mauka of the A'alapapa/Lanipō intersection. From this point, the drainage is essentially in a "natural" state and has been modified with cemented basalt rock retaining walls in only two places.

Vegetation within the drainage and along the banks primarily includes introduced shrubs and trees. Banyan (*Ficus sp*), papaya (*Caricaceae*), koa haole (*Leucaena glauca*), and land dry grasses are commonly occurring.

No surface archaeological features were observed along the banks above the drainage, and no buried cultural layers or features were observed in the cut banks of the drainage. However, many recent items and debris (rusted metal car parts, appliances, electrical wire, children's toys, bottles, cans, and other refuse) associated with the residences that border the drainage were observed.

RECOMMENDATIONS

Analysis of historical documents and other records, along with artifact finds from previous archaeological investigations, shows the project area around Po'opo'o Gulch, to have limited potential for archaeological features within the project area, particularly towards the beach (due to repeated washouts from storms). In addition, the results of the current surface survey demonstrate an absence of archaeological features within the project area. Therefore, no further pre-construction procedures are necessary, and archaeological monitoring during construction-related excavations is recommended to mitigate any potentially adverse effects to archaeological resources.

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