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'94 SEP 22 A6:9

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES

P. O. BOX 621
HONOLULU, HAWAII 96809

SEP 20 1994

Ref.: LM-CNS

Dr. Bruce S. Anderson
Interim Director
Office of Environmental
  Quality Control
220 South King Street
Central Pacific Plaza, 4th Floor
Honolulu, Hawaii 96813

Refer to:OA:94-124

Dear Dr. Anderson:

Subject: Negative Declaration for Reconstructing Waimano Drainage Channel Through the Former Hale Mohalu Site, Pearl City, Ewa, Oahu, TMK: 9-7-19: 35

The Department of Land and Natural Resources has reviewed the comments received during the 30 day comment period which began on July 8, 1994. We have determined that that the project will not have significant environmental effects and hereby issue a negative declaration. Please publish this notice in the next OEQC Bulletin.

We enclose a completed OEQC Publication Form and four (4) copies of the final Environmental Assessment. Should you have any further questions, please contact Mr. Carl Smith of our staff at 587-0414.

Very truly yours,

KEITH W. AHUE

Enclosures

cc: Michael Nekoba
Libert Landgraf
Gerald Park

125

1994-10-08-OA-FEA-Waimano Drainage Channel Reconstruction

FINAL ENVIRONMENTAL ASSESSMENT

WAIMANO DRAINAGE CHANNEL RECONSTRUCTION

Pearl City, Oahu, Hawaii

Prepared in Fulfillment of the Requirements
of Chapter 343, Hawaii Revised Statutes and
Chapter 200, Title 11, Administrative Rules
Department of Health, State of Hawaii

Prepared For

Coalition for Specialized Housing

Prepared By

Calvin Kim & Associates, Inc.
1050 Queen Street, Suite 300
Honolulu, Hawaii 96813

and

Gerald Park Urban Planner
1245 Young Street, Suite 201
Honolulu, Hawaii 96814

August, 1994

PREFACE

This Environmental Assessment describes and evaluates potential environmental impacts resulting from proposed reconstruction of a section of the existing Waimano Drainage Channel. As part of the Environmental Assessment, the lower reach of the channel was investigated and information on downstream areas can be found in Appendix A of this Assessment.

Environmental impacts resulting from a housing project proposed on State lands adjoining the channel were disclosed in a separate Environmental Assessment. The Assessment, titled *"Environmental Assessment, Hale Mohalu Housing Project, Waimano, Oahu, Hawaii"* dated May, 1989, was published as a Negative Declaration in the OEQC Bulletin of August 8, 1989 (Vol. 6, No. 15).

There is a discrepancy in the correct name of the affected stream channel. The stream is called Waiau Stream on U.S. Geological Survey Maps and it is referenced as such by AECOS, Inc. in their environmental reconnaissance report prepared for this Assessment. City and County of Honolulu construction plans for completed drainage improvement projects upstream and downstream of the project site identify the channel as Waimano Stream Channel and Waimano Stream Flood Control, respectively. Preliminary plans for this project label the channel as an existing drainage channel. In this Assessment, the terms Waiau Stream and Waimano Drainage Channel refer to the same drainageway.

SUMMARY INFORMATION

PROJECT:	Waimano Drainage Channel Reconstruction
APPLICANT:	Coalition for Specialized Housing
DETERMINING AGENCY:	Division of Land Management Department of Land and Natural Resources State of Hawaii P.O. Box 621 Honolulu, Hawaii 96801
TAX MAP KEY:	*9-7-19: 35*
LAND AREA: Area of Use:	6.507 acres Approximately 33,000 square feet
LAND OWNER:	State of Hawaii
STATE LAND USE DESIGNATION:	Urban
GENERAL PLAN:	Primary Urban Center
DEVELOPMENT PLAN LAND USE MAP:	Residential and [Preservation]**Park**
DEVELOPMENT PLAN PUBLIC FACILITIES:	No Symbol
ZONING:	Residential R-5 (Makai of Channel) Preservation P-2 (Mauka of Channel)
EXISTING USE:	Zoned Areas Undeveloped Storm Drainage Channel
CONTACT PERSON:	Carl Smith, Land Agent Division of Land Management Department of Land and Natural Resources State of Hawaii P.O. Box 621 Honolulu, Hawaii 96801 Telephone: (808) 587-0414

Note: Revisions to the Draft Environmental Assessment are shown in bold type. Deleted text is enclosed by brackets [ ].

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SECTION 1

DESCRIPTION OF THE PROPOSED PROJECT

The Coalition for Specialized Housing, a local non-profit housing corporation, proposes to reconstruct a section of the existing Waimano Drainage Channel that passes through a portion of State lands located at Waimano, Ewa District, City and County of Honolulu, State of Hawaii. The property is identified as Tax Map Key 9-7-19: 35 encompassing an area of 6.507 acres. A Location Map is shown in Figure 1.

A. Purpose of the Project

Applicant proposes to develop vacant lands on the makai side of the channel for multi-family housing. The housing project will offer a housing alternative to institutionalized living arrangements for elderly households and the developmentally disabled, including those afflicted with Hansen's disease. The landowner, the State of Hawaii, has leased lands mauka of the channel to the Pearl City Youth **Complex** Association (PCYCA) for recreational uses and applicant has secured a lease for lands makai of the channel. Before construction of the housing project can proceed, the drainage channel needs to be improved to meet current drainage design flows.

B. Technical Characteristics

The project is proposed for the lower reach of Waimano Drainage Channel located generally between Kamehameha Highway and the H-1 Freeway. This section is primarily a reinforced concrete trapezoidal section approximately 700 feet in length.

The entire existing channel (approximately 700'L X 35'W) will be removed and replaced with a new structure. It has been determined that (1) the existing channel cannot contain the calculated peak discharge of 6,200 cfs and (2) repairing sections of the channel that have cracked or deteriorated and erecting vertical sidewalls atop the existing channel to contain the peak discharge is not an effective containment solution. All improvements generally will be confined to the channel right-of-way except for about 25 feet on both sides of the channel which will be cleared to allow the movement of men, material, and equipment.

The channel will be demolished in increments using conventional construction equipment. Excavated material and debris will be used for fill and backfill on the adjoining vacant State lands. Approximately 2,600 cubic yards of material will be excavated and the bottom rough graded. A permeable geotextile fabric will be placed atop the exposed subgrade. Six to twelve inches of No. 3B fine crushed rock will be placed atop the fabric and lightly compacted. An estimated 1,200 cubic yards of rock will be used for backfill and cushion fill. The reinforced concrete channel will then be constructed on the rock base.

The new channel will be constructed of cast in-place reinforced concrete. A trapezoidal rather than rectangular section is proposed. The new channel varies between 45 to 48 feet wide across the top with a bottom width of 22 to 29 feet. Sidewalls will maintain a 1:1 slope for the entire length except at the outer wall of bends in which a vertical reinforced concrete wall will be constructed. The channel will be 10 to 12 feet deep including freeboard which ranges from

3.7 to 4.0 feet. Concrete quantities are estimated at 1,230 cubic yards. A concrete lining is required to negate potential gouging and scouring of the channel bottom and sides due to the high velocity of flow.

Construction of the new drainage channel and the demolition of the existing channel will be done in increments beginning from the downstream end as described below.

Approximately 100 to 150 feet of the existing channel bottom and side walls will be demolished and reconstructed at a time.

One-half the width of the new channel will be constructed for the exposed length. The other half of the channel bottom will be maintained for runoff. A temporary cofferdam consisting either of steel plates or concrete barriers 3 to 5 feet high will be positioned around work sites to keep water out of the work site.

Upon completion of one-half of the channel, the opposite half of the channel will be constructed. The cofferdam will be adjusted to protect the new work site.

Upon completion of the 100 to 150 foot length of channel, the work will move to the next 100 to 150 foot section and the construction sequence repeated.

This construction method will minimize erosion and provide for continuous waterway flow at all times. The channel will never be completely obstructed at any time.

New drainage outlets into the channel will be cut to match the new channel sidewalls. Two dilapidated pedestrian bridges and a vehicular bridge over the channel will be removed. One of the pedestrian bridges will be will be replaced by a new precast concrete footbridge as part of the project; the vehicular bridge will not be replaced.

New 6-foot high chain link fencing will be installed on both sides of the channel for public safety purposes. A 15-foot wide service road is proposed along the eastern bank to facilitate access to the channel by maintenance equipment personnel.

C. Economic Characteristics

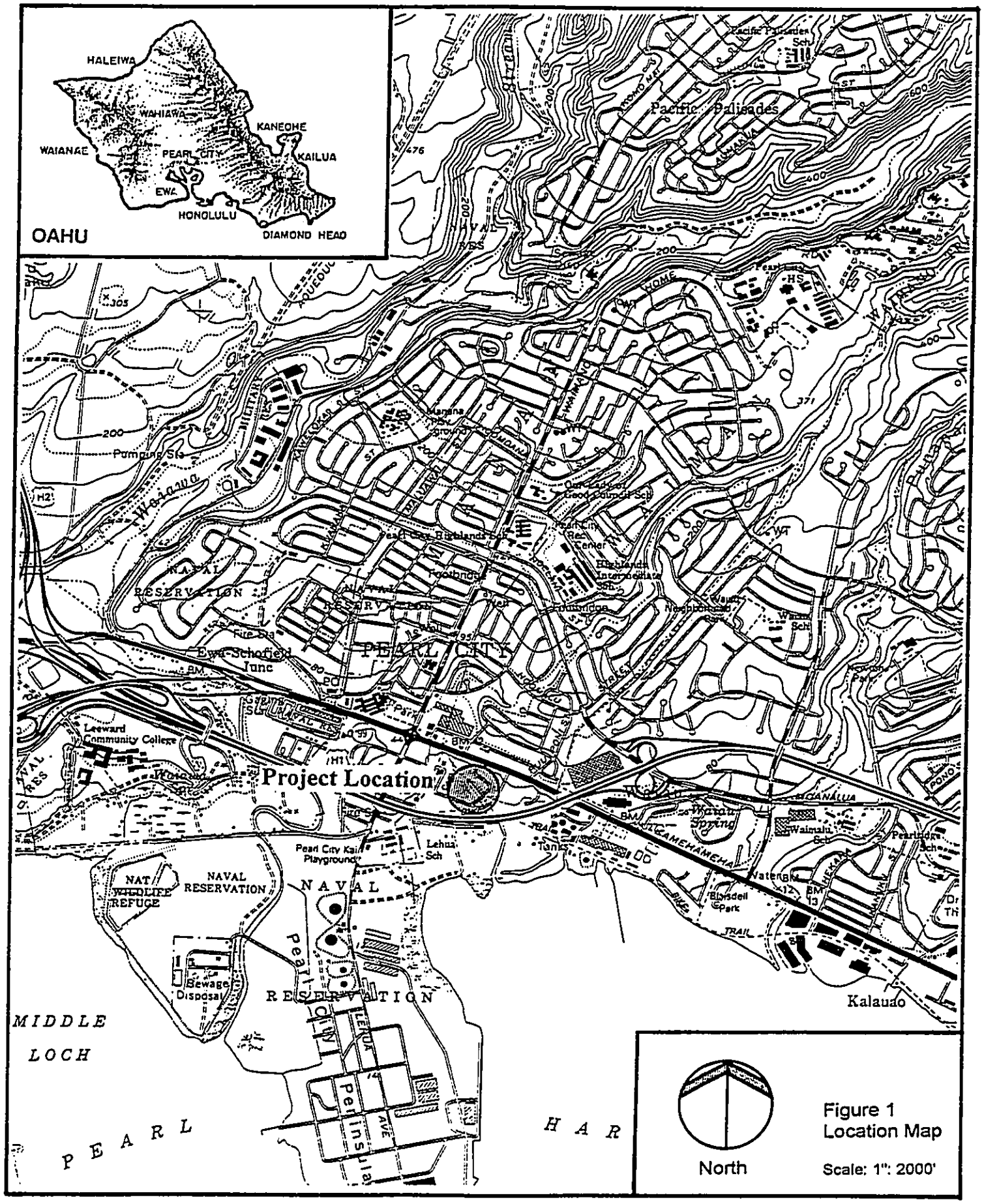
The cost of the project is estimated at $ 1.0 million and will be funded by applicant. Work will commence after all necessary approvals are received. The project will be built in one phase lasting approximately 8 months.

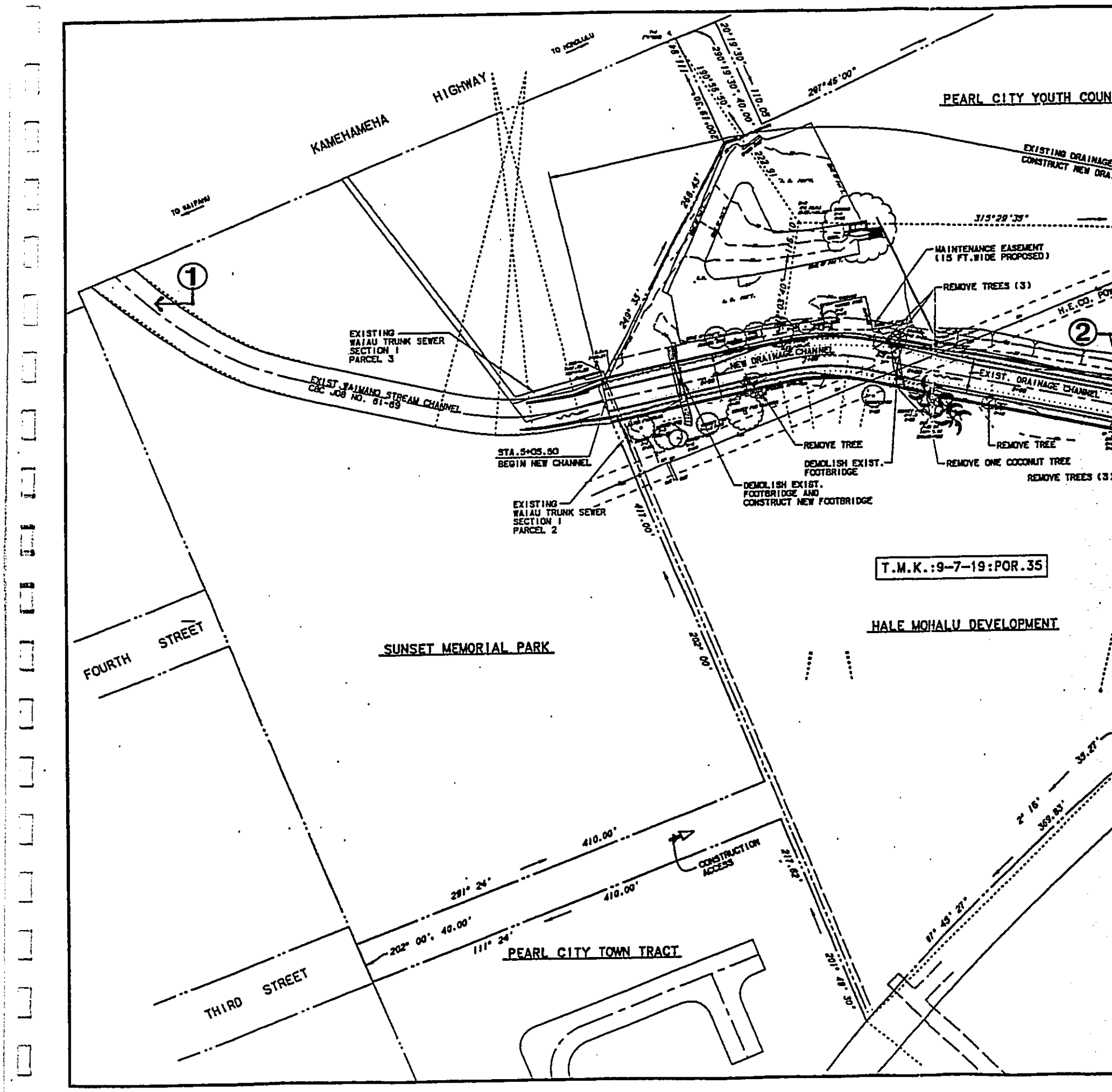
The channel will be designed and built to standards of the Department of Public Works and will be dedicated to the City and County of Honolulu following completion.

D. Social Characteristics

No resident or business enterprise will be displaced by the project.

Drainage improvements will prevent potential flooding of the adjoining State lands which are planned for multi-family housing and recreational uses.


HALEIWA
WAHIAWA
KANEOHE
WAIANAE
PEARL CITY
KAILUA
EWA
HONOLULU
DIAMOND HEAD
OAHU
Pacific Palisades
Project Location
PEARL CITY
NAVAL RESERVATION
NAT WILDLIFE REFUGE
Leeward Community College
Pearl City Kai Playground
Lehua Sch
Waiau Spring
Waimalu Sch
Pearlridge Sch
Blaisdell Park
Kalauao
Sewage Disposal
MIDDLE LOCH
PEARL HAR
North
Figure 1
Location Map
Scale: 1": 2000'


KAMEHAMEHA HIGHWAY
TO HONOLULU
TO WAIPAHU
PEARL CITY YOUTH COUN
EXISTING DRAINAGE
CONSTRUCT NEW DRA
MAINTENANCE EASEMENT
(15 FT.WIDE PROPOSED)
REMOVE TREES (3)
EXISTING
WAIAU TRUNK SEWER
SECTION I
PARCEL 3
EXIST. WAIMANO STREAM CHANNEL
C&C JOB NO. 81-69
NEW DRAINAGE CHANNEL
EXIST. DRAINAGE CHANNEL
STA.5+05.50
BEGIN NEW CHANNEL
REMOVE TREE
DEMOLISH EXIST.
FOOTBRIDGE
REMOVE ONE COCONUT TREE
REMOVE TREES (3)
EXISTING
WAIAU TRUNK SEWER
SECTION I
PARCEL 2
DEMOLISH EXIST.
FOOTBRIDGE AND
CONSTRUCT NEW FOOTBRIDGE
T.M.K.:9-7-19:POR.35
HALE MOHALU DEVELOPMENT
FOURTH STREET
SUNSET MEMORIAL PARK
CONSTRUCTION
ACCESS
THIRD STREET
PEARL CITY TOWN TRACT

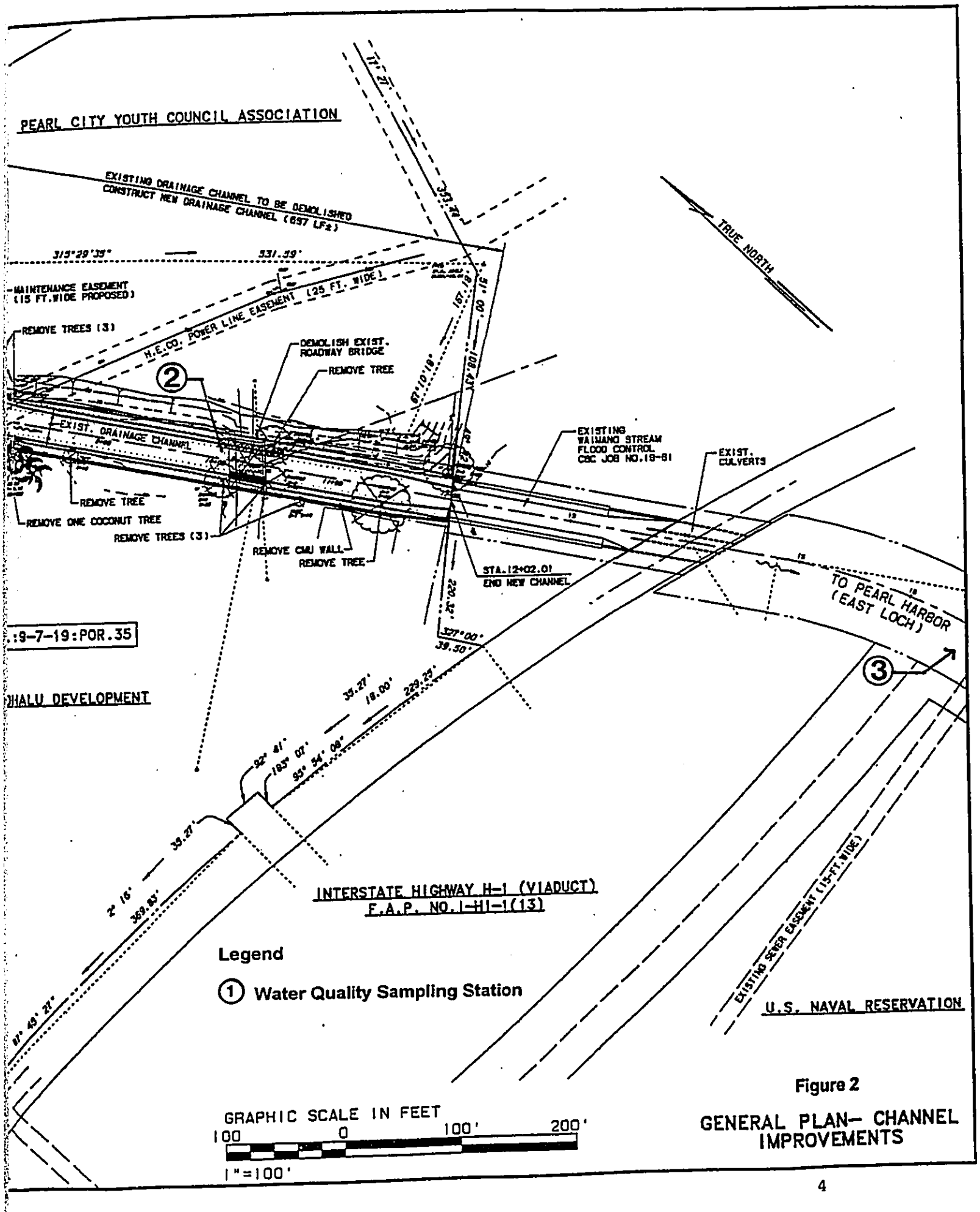
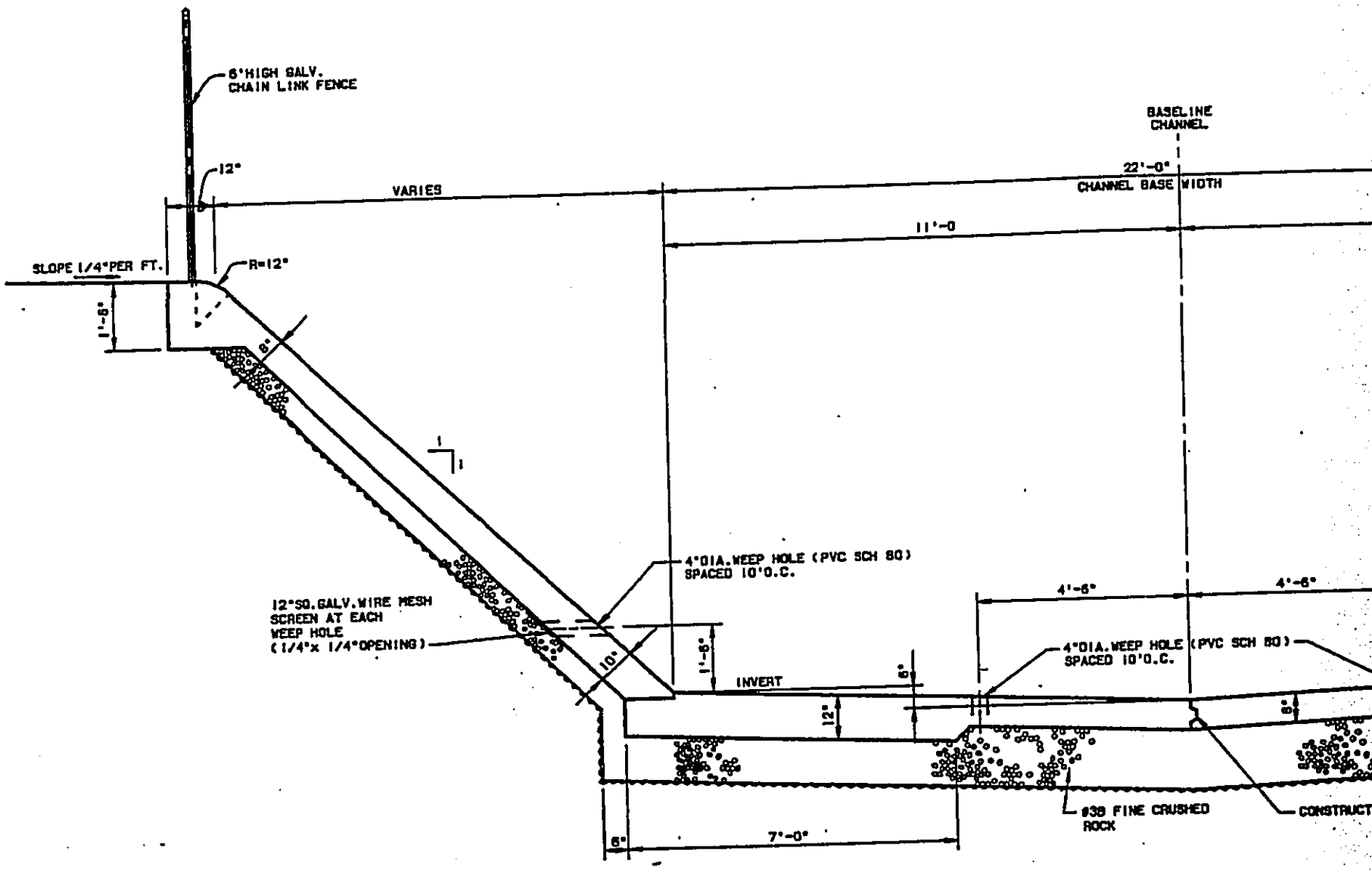


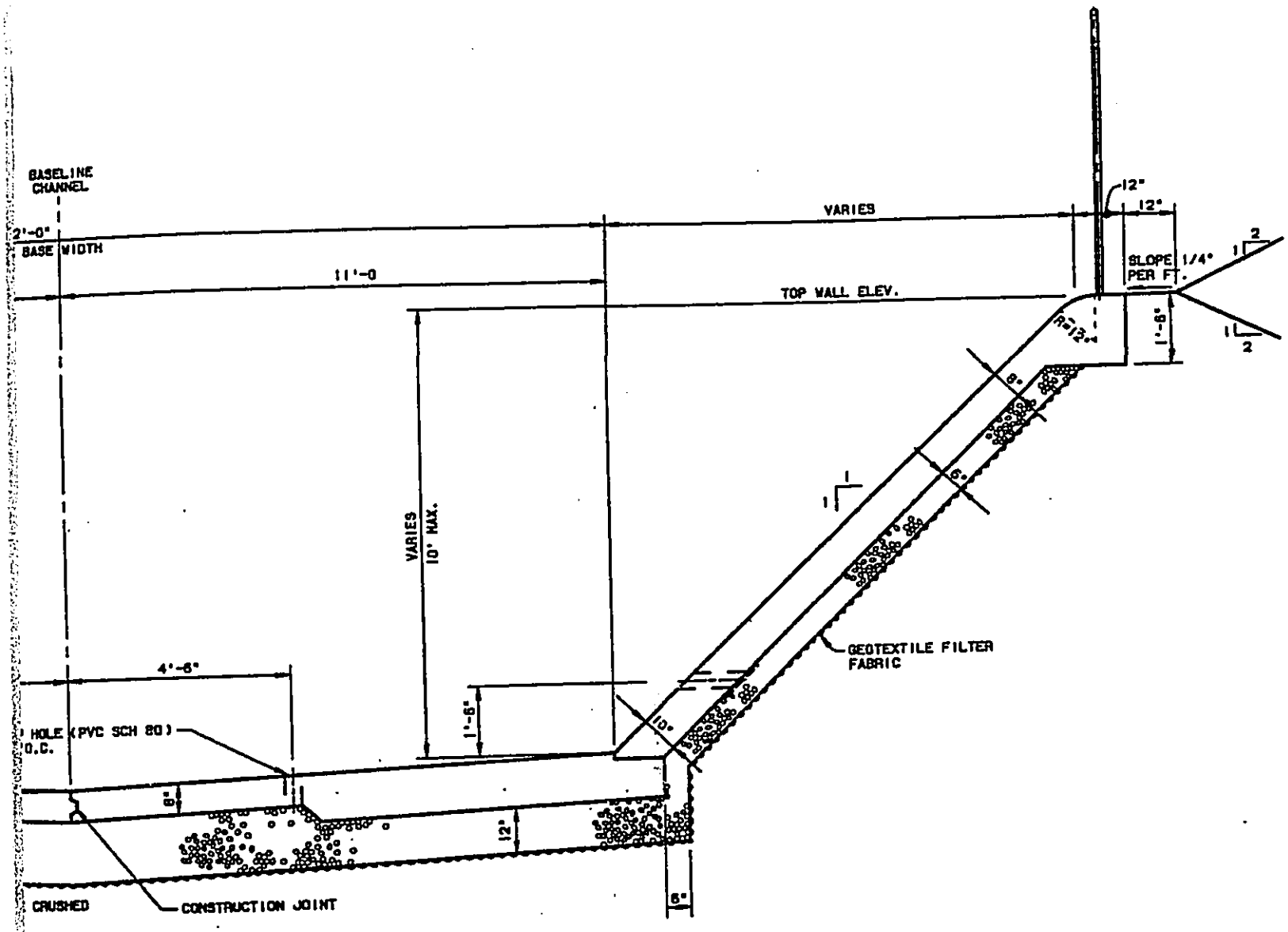
Figure 2

GENERAL PLAN– CHANNEL IMPROVEMENTS



TYPICAL CHANNEL SECTION (STA.5+05

NOT TO SCALE

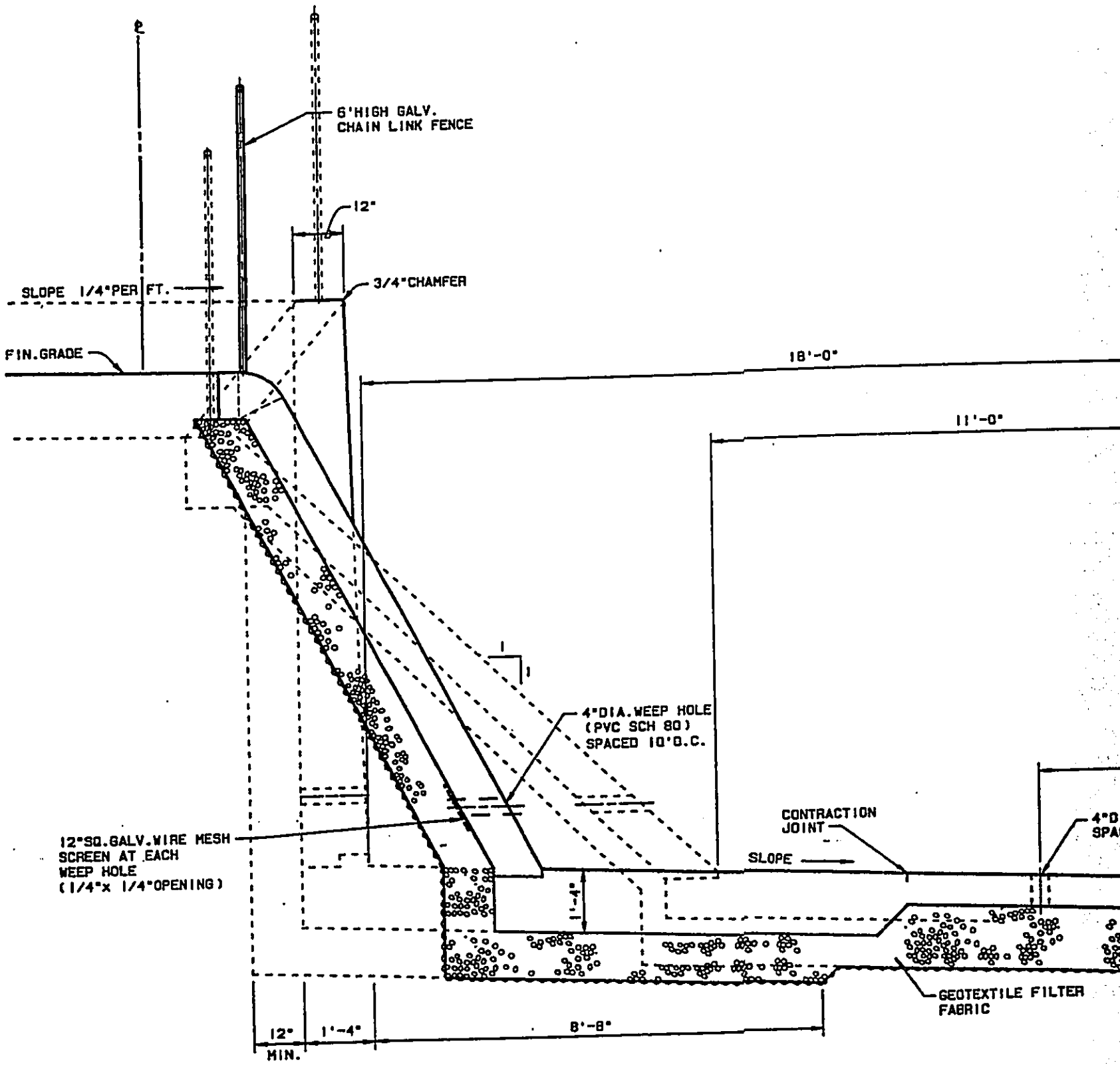


(STA.5+05.50± TO STA.6+10)

NOT TO SCALE

Figure 3

TYPICAL CHANNEL SECTION



(STA.6+10 TO
STA.7+62.52

TYPICAL CHANNEL TRANSITION HALF-SECTION

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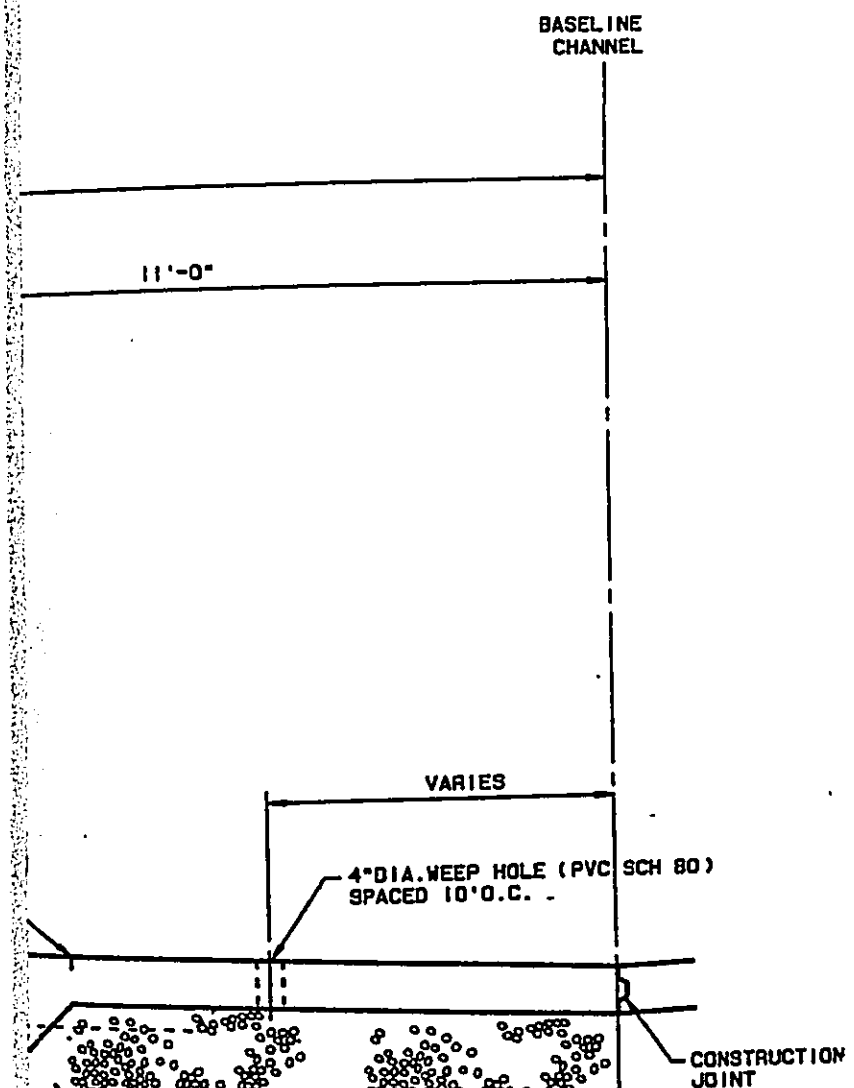
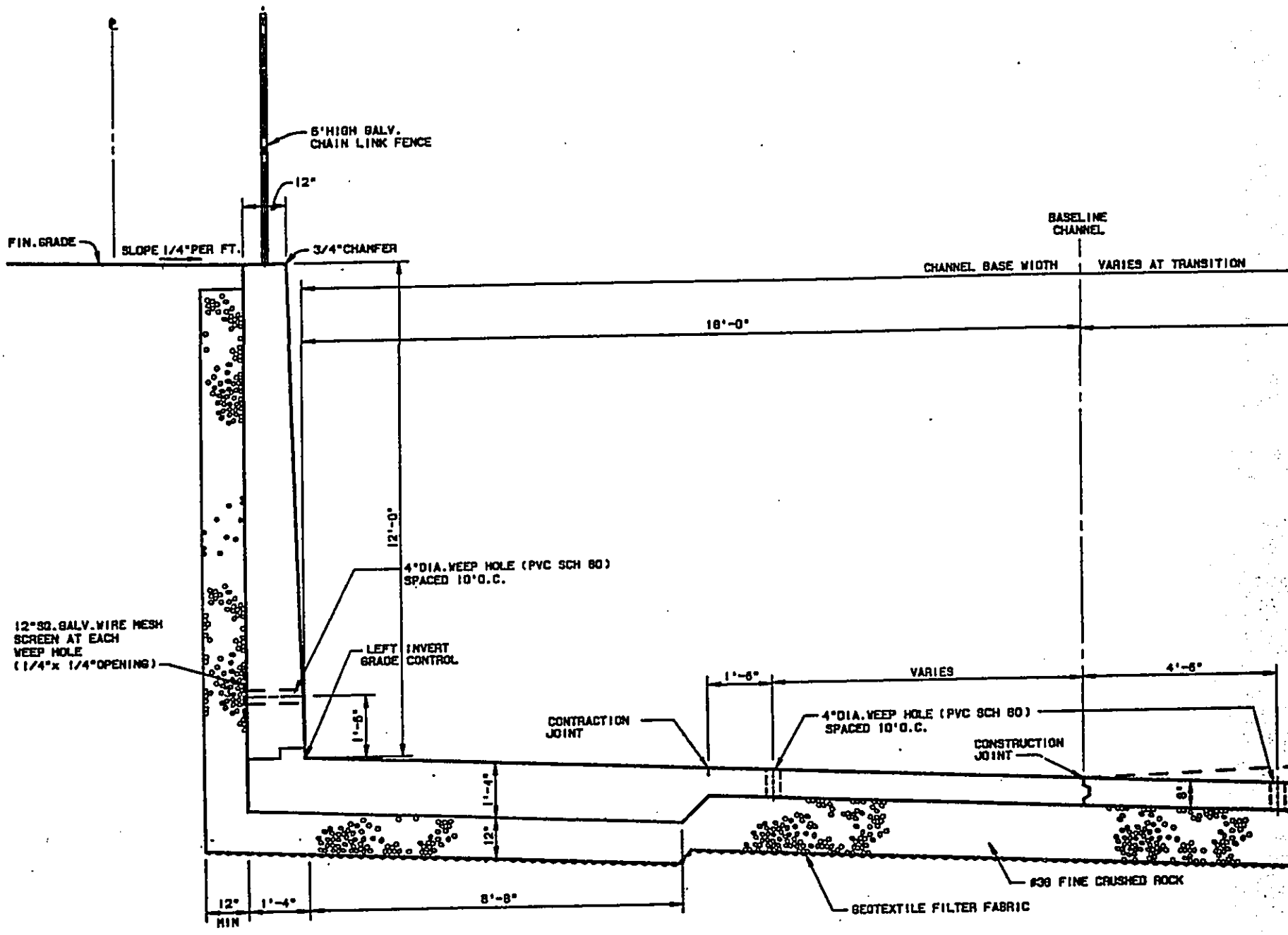


STA.6+10 TO STA.6+60 &
TA.7+62.52 TO STA.8+62.52)

Figure 4

TYPICAL CHANNEL SECTION



TYPICAL CHANNEL SECTION - SUPERELEVATED (STA.6+

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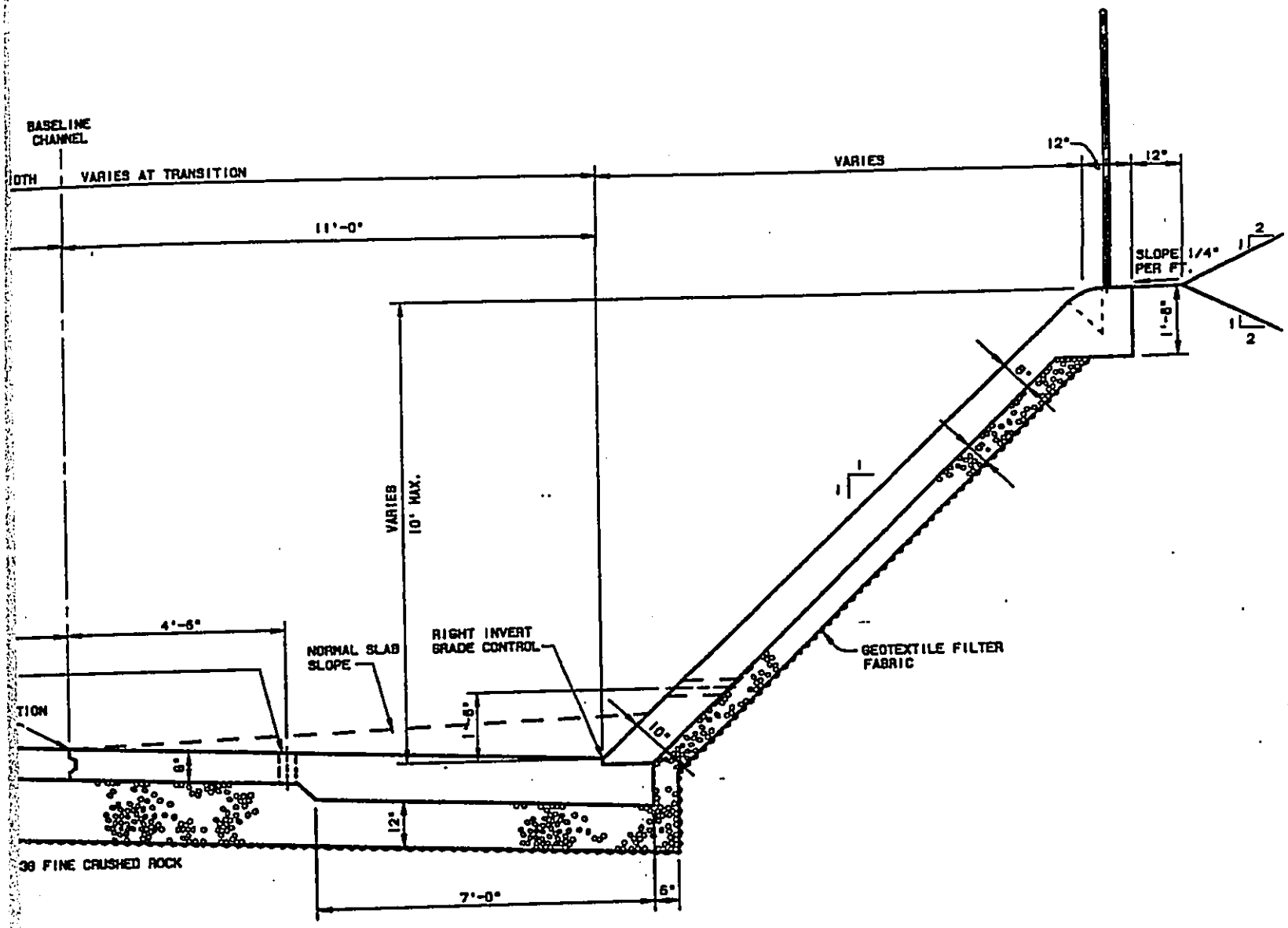
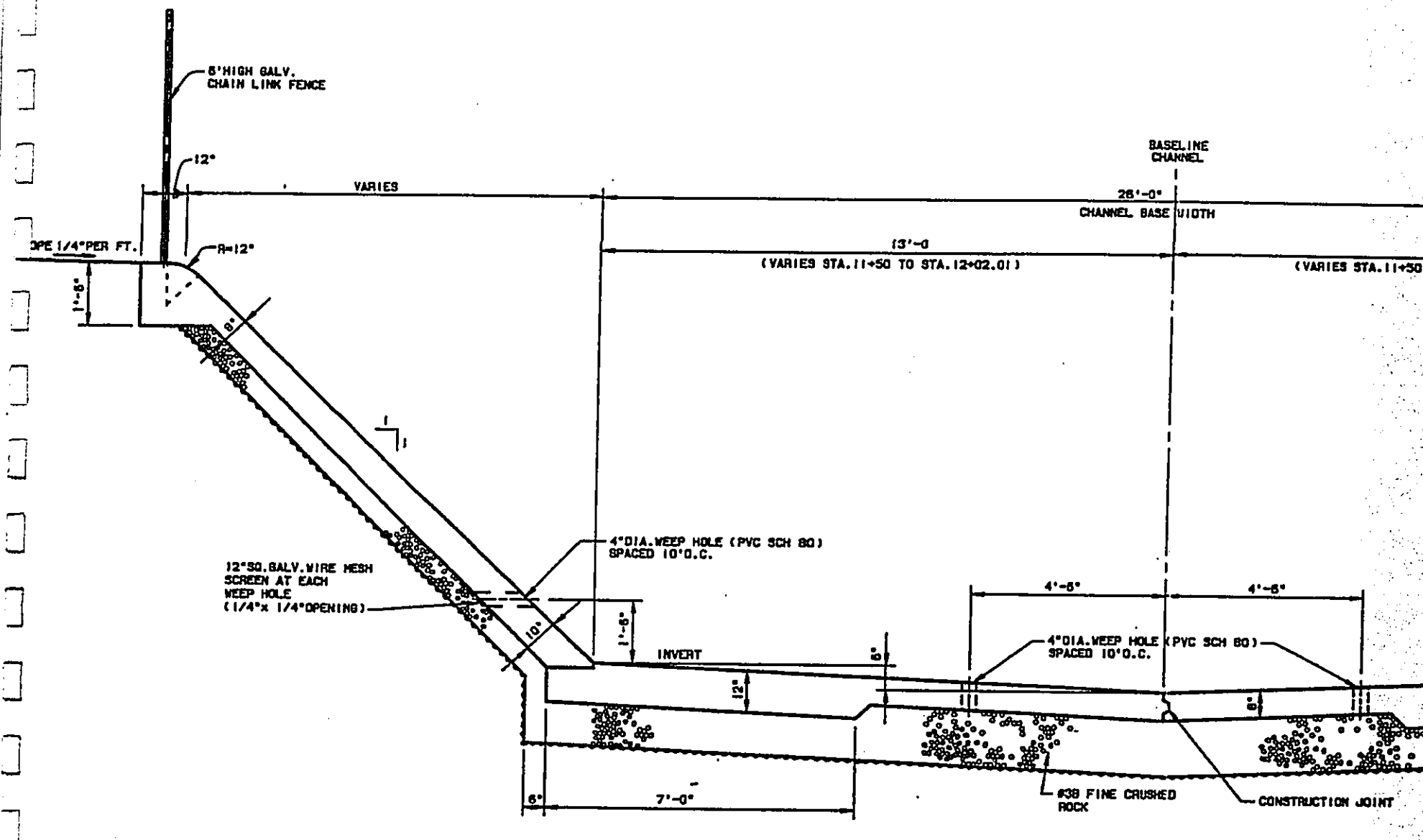


VATED (STA.6+60 TO STA.7+62.52)

LE

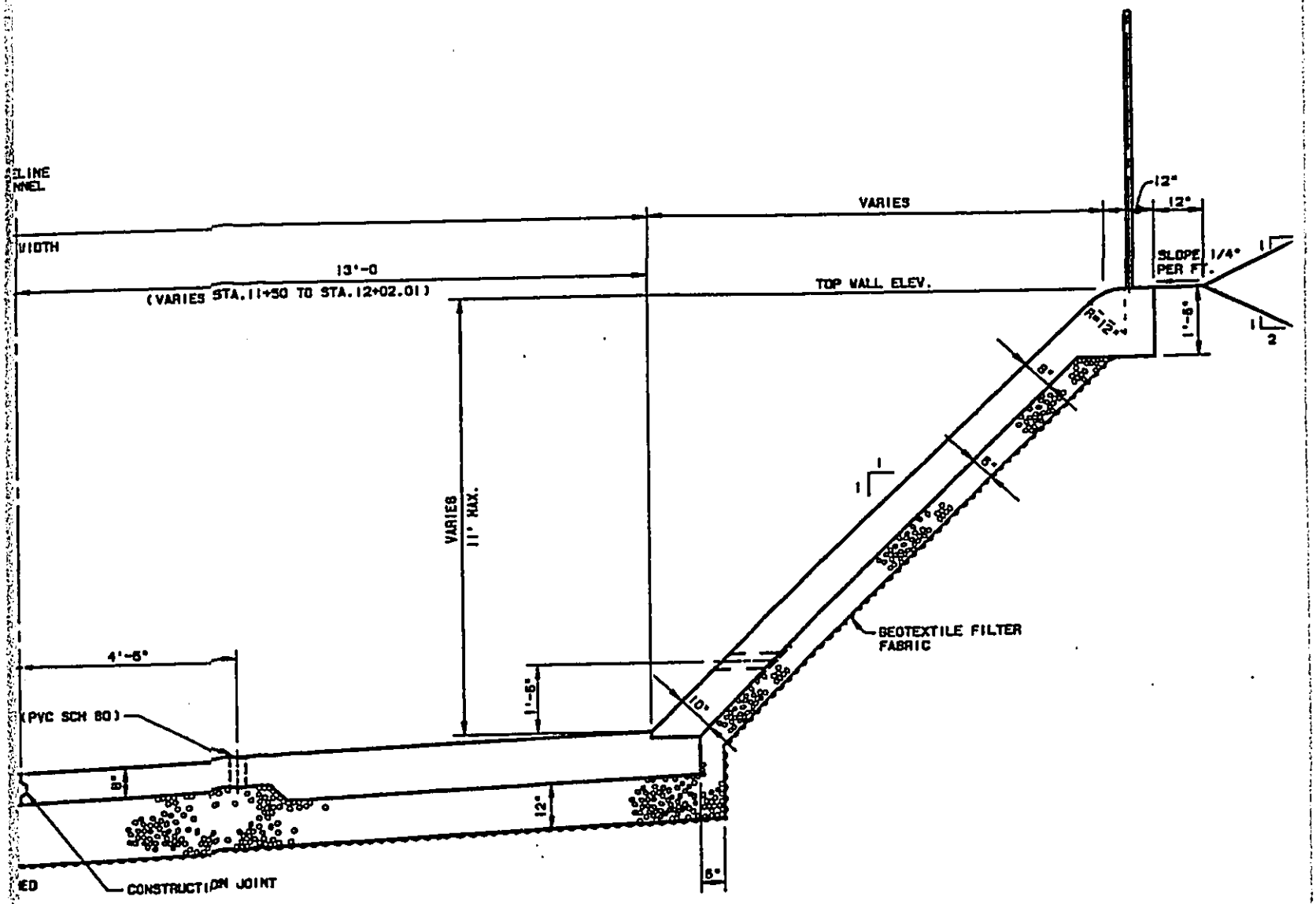
Figure 5

TYPICAL CHANNEL SECTION



TYPICAL CHANNEL SECTION (STA.8+62.52 TO

NOT TO SCALE



STA.8+62.52 TO STA.12+02.01)

DT TO SCALE

Figure 6

TYPICAL CHANNEL SECTION

SECTION 2

DESCRIPTION OF THE AFFECTED ENVIRONMENT

A. Existing Use

The section of channel to be improved is part of a larger man-made drainage system and stream that drains a tributary area of 1,700 acres (See Figure 7). Above the upper end of Hoohulu Street in upper Pearl City, Waiau Gulch is undeveloped and the stream channel remains in a natural state. Below this point, the stream is confined to modified channels of various sizes and designs, but all having concrete or CRM side walls and a flat, concrete floor (AECOS, 1994).

The channel passes beneath Kamehameha Highway and through Sunset Memorial Park where it is confined to a concrete rectangular section about 25 feet wide and 12 feet deep. This section of channel is owned by the City and County of Honolulu and was constructed as the Waimano Stream Channel (C/C Job No. 61-69). Beginning at the west end of and through the property, the rectangular section transitions into a concrete trapezoidal section which is owned by the State of Hawaii. Beyond the southern end of the property, the channel reverts to City and County of Honolulu ownership. This section of channel was constructed as the Waimano Stream Flood Control Project (C/C Job No. 19-61) and features a trapezoidal channel with a smooth bottom and cement rubble masonry sidewalls. This lower section extends to a triple box culvert which passes under the Pearl City bikeway and outlets into a natural streambed beneath the H-1 Freeway. Sections of the channel are shown in Photographs 1-4.

B. Engineering Characteristics

The 700 foot long existing channel was constructed in the early to mid-1960's. Aligned in a west to south direction, the trapezoidal section lies within a right-of-way that tapers from 45 (upstream end) to 60 feet (downstream end). The concrete channel has a top width of 32 feet, a bottom width of 20 feet, and a depth of 8 feet. The channel invert slopes from 17 feet at its inlet to 6.5 feet at its outlet (1.5%).

The design flow is estimated at 6,200 cfs based upon City and County of Honolulu storm drainage standards.

C. Flood Hazard

Flood Insurance Rate Maps place the channel and adjoining lands in Zone D which is defined as "areas in which flood hazards are undetermined" (Federal Emergency Management Agency, 1987).

D. Stream Flora*

From the western end of the channel to the vehicle crossing, portions of the channel are extensively damaged. Some of the sidewalls and concrete bottom have been displaced by

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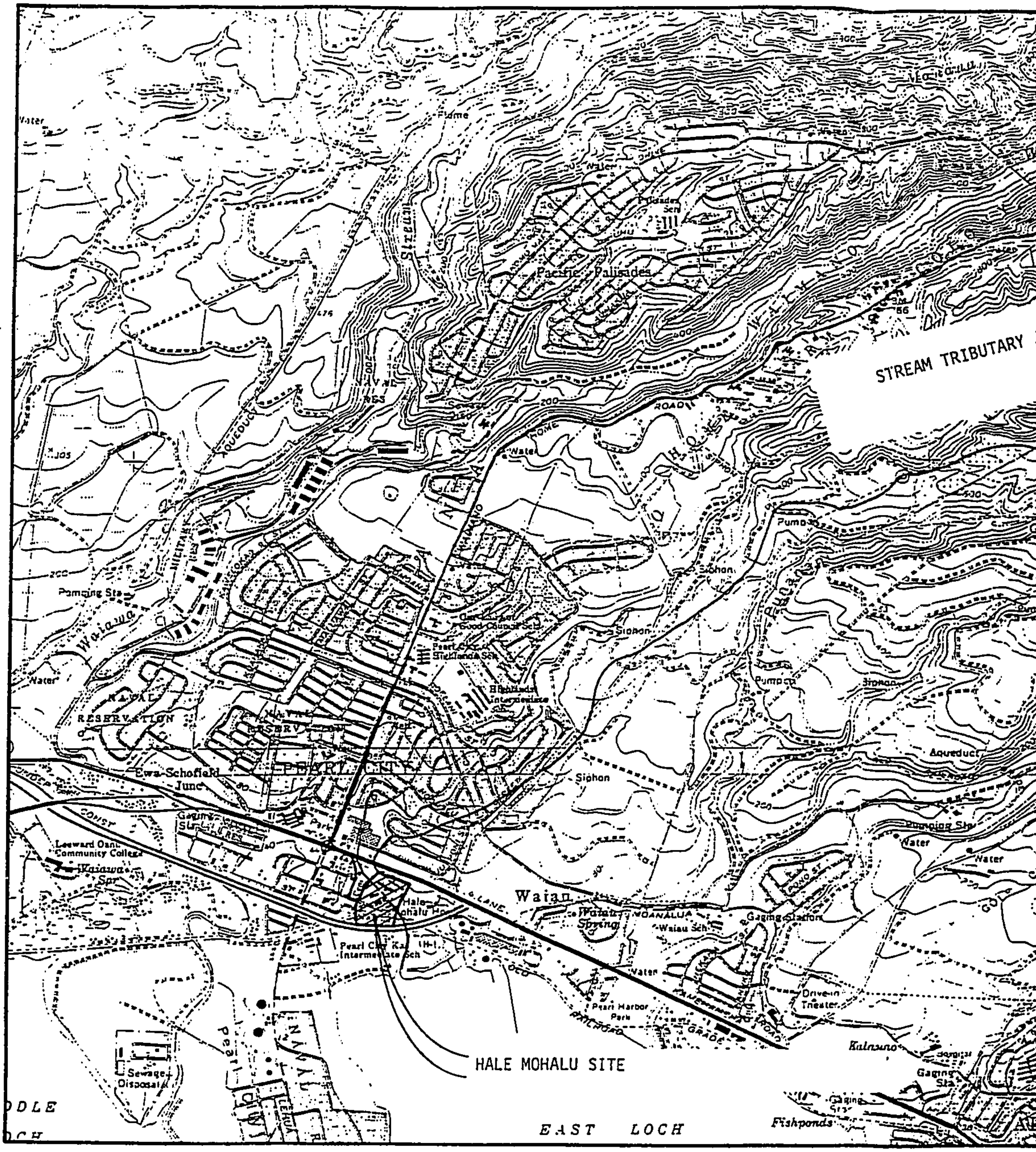
* AECOS, Inc. 1994. *An Environmental Reconnaissance Survey of Lower Waiau Stream.*



STREAM TRIBUTARY
HALE MOHALU SITE
Pacific Palisades
Pumping Sta
NAVAL RESERVATION
Ewa-Schofield Junc
Leeward Oahu Community College
Waiawa Spr
Waiau
Waiau Spring
Waiau Sch
Gaging Station
Drive-in Theater
Pearl Harbor Park
Pearl City Kai (H-I) Intermediate Sch
Hale Mohalu Hs
Sewage Disposal
Aqueduct
Siphon
Kalauao
Fishponds
EAST LOCH

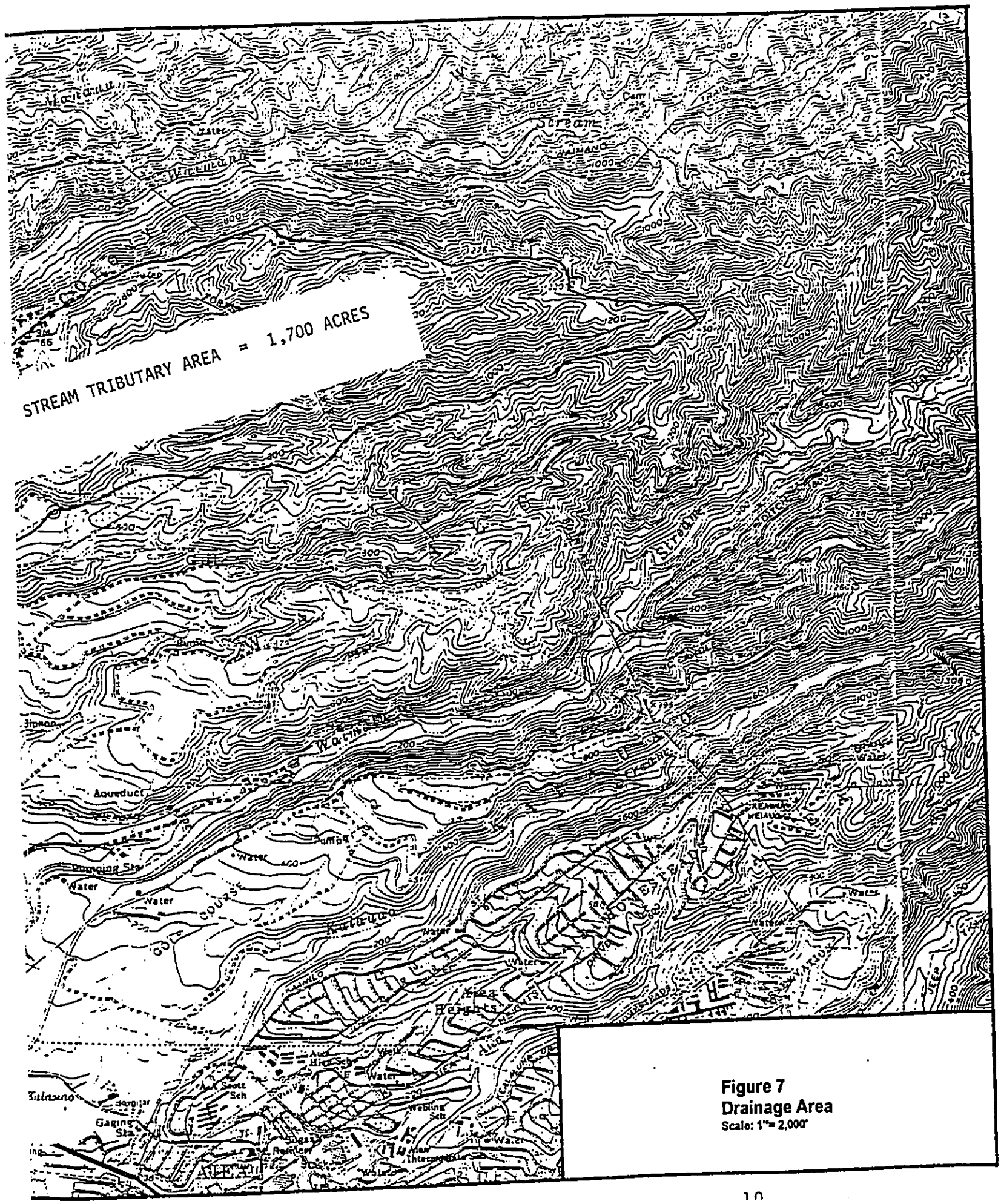


Figure 7
Drainage Area
Scale: 1"= 2,000'

Figure 1. West View of Channel. Pearl Harbor Business Plaza on Right.

Figure 2. View of Channel From Vehicle Crossing. Portion of Shallow Pond in Foreground.

Figure 3. South View of Channel from Pedestrian Bridge.

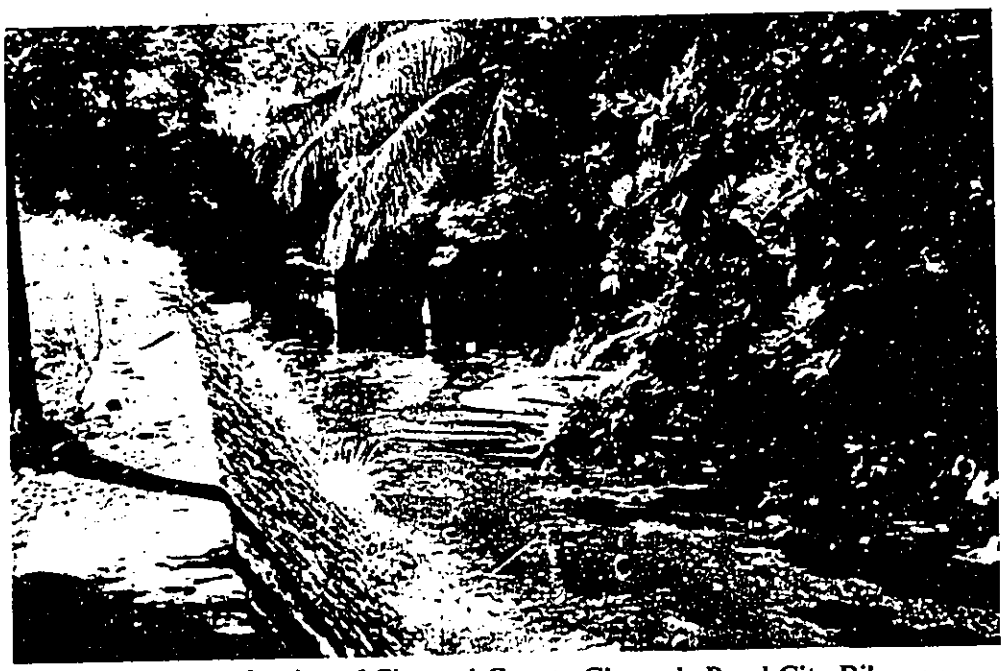


Figure 4. Lower Section of City and County Channel. Pearl City Bikeway Crosses Over Box Culverts. Note CRM Sidewall.

storm flow resulting in a "natural" bottom. California grass (*Brachiara mutica*) overgrows the sidewalls. Scattered colonies of papyrus (*Cyperus papyrus*) and wandering Jew (*Tradescantia fluminensis*) have rooted in broken sections.

Several large banyan (*Ficus Sp.*) Hong Kong orchid (*Bauhinia blakeana*), Java plum *(Syzygium cumini)* trees line both banks and their canopies overhang the channel at some locations. Koa haole *(Leucaena leucocephala)*, honohono grass *(Commelina diffusa)*, and guinea grass *(Panicum maximum)* are abundant.

E. Stream Biota*

Between Kamehameha Highway and the stream mouth, approximately 60% of the stream bed is smooth concrete. Most of this highly modified channel is shaded by roadway overcrossings or large trees above the banks. Nonetheless, the complete absence of pools, other types of refuges (boulders, for example) and the shallow, intermittent nature of the water flow makes this type of habitat extremely poor from the perspective of the aquatic biota. Water flow was observed at the time of the January 1994 survey to be present in the box culvert beneath Kamehameha Highway and the Pearl City Shopping Center. This flow formed a shallow sheet of water across the bottom of the channel supporting mostly a growth of filamentous algae. Near the old road bridge at the project site, pond snails (sinistral Lymnaeidae, probably *Pseudisidora producta*) were abundant on these algae. This species is endemic to the Hawaiian Islands.

A single, long pool within the trapezoidal channel has resulted from removal and/or collapse of a section of concrete channel bottom. At the time of the stream survey, this pool was being fed by sheet flow from the culvert under Kamehameha Highway. The water in the pool was greenish, and filmentous algae grew copiously on all wetted surfaces. A pond snail (Lymnaeidae) was particularly abundant. The only other aquatic animal observed was the guppy, *Poecilia reticulata.* However, the site was heavily shaded by large trees and the water clarity less than ideal. Other fishes might well have been present. However, the guppy appeared to be mostly juveniles. Several of the adults that were seen were diseased. It is suspected that this pool experiences stagnant conditions worse than those that prevailed at the time of the survey.

F. Water Quality*

Three water quality stations were planned: (1) at or near the culvert outlet just below Kamehameha Highway, (2) in the pool representing the damaged section of the concrete-lined channel, and (3) at the approximate junction between the stream and the estuary. However, on January 3, the shallow depth of the sheet of water flowing out of the box culvert precluded collecting adequate sample at Station 1, so only Stations 2 and 3 were sampled. The results of water quality testing and analyses are presented in Tables 1 and 2. **The sampling station locations are shown in Figure 2.**

The results presented in Table 1 show that Station 3 is influenced by a small amount of saline water and that dissolved oxygen (DO) is somewhat low at Station 2. The water at Station 2 is

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*Ibid, 1994.

more turbid than that at Station 3, reflecting the large amount of phytoplankton present at Station 2 as measured by the chlorophyll content.

Table 2 summarizes water quality in Waiau Stream with respect to nutrients. The results show that Station 2 is subject to relatively high inputs of nitrate + nitrite and phosphates. The high ammonia may be entering with water inflow, or generated by stagnant conditions within the pool (i.e. decay of organic matter). These dissolved nutrients are either diluted or removed by biological activity as the water flows on the Station 3. Some ammonia will be lost as a gas to the atmosphere. Dilution may come from other side streams entering the main stream, or from mixing with some portion of water from East Loch. Given the low salinity (and conductivity) at Station 3, the proportion of East Loch waters represented in this part of the estuary is small.

Because the water quality measurements made in January are from a single event , the representativeness of the values cannot be assessed. For many of the parameters measured, very different values would result if the samples were collected, for example, during a freshet (flood event caused by heavy rains). High flow conditions, however, would not be considered "typical" for this stream.

The results of single measurement events cannot be assessed for compliance with the State of Hawaii water quality standards which require the calculation of a geometric mean (an average of several measurements) and some sense of the temporal variability of the parameters being compared. However, the results reported here provide indication that Waiau Stream would not be in compliance with respect to nitrate + nitrite.

Table 1. Basic water quality characteristics of Waiau Stream.

	Temperature (°C)	DO (mg/L)	pH (pH units)	Conductivity (µmhos/cm)	Turbidity (ntu)	Total Suspended Solids (mg/L)
Station 1	---	---	---	---	---	---
Station 2	21.1	3.69	7.41	506	6.54	9.0
Station 3	21.2	8.21	7.60	988	2.33	3.0

Table 2. Nutrient water quality characteristics of Waiau Stream.

	Ammonia (µg N/L)	Nitrate + nitrite (µg N/L)	Total nitrogen (µg N/L)	Total phosphorus (µg P/L)	Chlorophyll α (µg/L)
Station 1	---	---	---	---	---
Station 2	86	405	1880	397	74.6
Station 3	13	370	518	102	3.14

SECTION 3

SUMMARY OF POTENTIAL ENVIRONMENTAL IMPACTS AND MEASURES TO MITIGATE ADVERSE EFFECTS

A. Assessment Process

The scope of the project was discussed with the consulting engineers. State and County agencies were consulted for information relative to their jurisdiction and expertise. Time was spent in the field noting conditions within the channel and on adjoining lands. Water samples were collected for testing and biological surveys were conducted within the affected channel section and to its outlet into East Loch, Pearl Harbor. From the discussions and field investigations, existing conditions and features that could be affected by or affect the project were identified. *These influencing conditions are:*

- *o* The project area has been extensively modified to include construction of the existing channel and a former State hospital and appurtenant facilities;
- *o* Waiau Stream is an intermittent stream;
- *o* The stream is channelized above Kamehameha Highway to the 230 foot elevation, a distance of about 1.5 miles, through the project area, and for approximately 200 LF makai of the project site;
- *o* There are neither rare, threatened, or endangered flora and fauna within the channel nor on adjoining undeveloped lands;
- *o* There are no archaeological features in the area; and
- *o* The project is [not] located **in an area where the flood hazard is undetermined** [within a flood hazard area].

B. Short-term Impacts

Dust will be raised during demolition, grubbing, and grading activities. Fujitive dust cannot be avoided but measures will be taken to control dust generation. State of Hawaii Department of Public Health Administrative Rules stipulate acceptable dust control measures and additional measures may be attached as conditions to approved grading plans by the Department of Public Works, City and County of Honolulu.

Construction noises will be generated for the duration of the project. Heavy construction equipment will be used and noise in the range of 78-90 dBA can be expected. No pile driving activity is proposed. Construction noise should not pose a major acoustical problem because most of the adjoining lands are vacant. Business activities in the Pearl City Business Plaza near the mauka end of the channel may be affected by noise when that section of the channel is under construction. Similarly, construction noise will be quite audible in the several homes near the makai end of channel because of their proximity to the channel. Noise, like fugitive

dust, cannot be avoided. All activities will comply with noise provisions of Title 11, Administrative Rules, State Department of Health (Chapters 42 and 43).

The channel and its banks will be grubbed of vegetation. Flora in the project area are not rare, threatened, or endangered. Several specimen trees may be relocated elsewhere on the premises for use in landscaping the housing area.

Should any cultural features be unearthed during construction, work in the affected area will cease and historic authorities notified for proper disposition of the finds.

During construction, stream flow will be diverted within the channel but not obstructed. The single, long pool within the trapezoidal channel which provides habitat primarily for the ubiquitous guppy will be removed. The condition of the pool was judged to be less than ideal and removal will not create a significant environmental impact..

Environmental impacts on stream flora and the aquatic biota can be severe, but not necessarily any greater than that which occurs during a major flood event. Increases in suspended solids during construction can have a negative impact on downstream areas, but the estuarian reach below the project boundary is an accretion zone where stream bed load accumulates and suspended solids settle out under normal flow conditions.

C. Long-term Impacts

Applicant is not proposing a major drainage project through pristine lands. The project area was previously used as a treatment center for Hansen's disease until its closing in 1978 and the community of Pearl City is a major suburban neighborhood of Honolulu. There are no significant environmental features or resources on the property or in the channel that will be adversely affected by the proposed project.

The Hale Mohalu site is the largest single piece of unimproved property in Pearl City. By negating the potential for flooding, approximately six acres of adjoining vacant and underused lands can be improved to help satisfy community recreation and housing needs.

There is no significant difference between the existing and proposed channel if measured by their function, alignment, construction material, and appearance. The new channel will be built atop the site of the existing channel, use the same construction materials, and look like the existing channel. Although both channels are designed to convey stormwater, the major functional difference is that the reconstructed channel will accommodate the design peak discharge which the existing channel cannot.

The section of Waiau Stream in need of repair is relatively short, only about 2% or less of the length of the stream between Kamehameha Highway and East Loch. It is estimated that some 60% of this part of Waiau Stream is presently modified, having a smooth concrete bed. Above the project site, between Kamehameha Highway and the 230-foot elevation, all of Waiau Stream is confined within culverts and concrete-lined channels. Water is present only during wet weather. Likewise, the channel below Kamehameha Highway is intermittent to the vicinity of the H-1 viaduct, where inputs from watercress farms probably help stabilize aquatic habitats by providing more or less continuous water flow for the short remainder of the stream above the head of the estuary. A small depression within the channel may hold water continuously or

over a long period of time because of the nature of the bed in an area where the concrete channel bottom has been damaged and partly removed. This aquatic habitat is of low quality.

It is always preferable, from an environmental perspective, to avoid stream modifications, particularly modifications that transform a natural stream bed into a smooth, concrete surface. However, the repair of the concrete-lined channel at the project site, would not result in loss of valuable aquatic habitat because of the intermittent flow in this area. Even were the stream bottom throughout the project site to be restored to a somewhat natural state, the absence of reliable water flow would limit the value of aquatic habitat created. The extensive streambed modifications extending upstream some 1.5 miles, and presumed absence of perennial habitat above the urban area, further reduce the value of the reach within the project site.

SECTION 4

ALTERNATIVES TO THE PROPOSED ACTION

No Action or Delaying the Action

A no action or delaying the action are not prudent alternatives. The property has been vacant and undeveloped for several years and, in lieu of drainage improvements, a no action alternative would maintain the status quo. This alternative precludes the occurrence of all environmental impacts, short and long-term, beneficial and adverse, described in this assessment.

SECTION 5

AGENCIES AND ORGANIZATIONS CONSULTED IN THE PREPARATION OF THE ENVIRONMENTAL ASSESSMENT

An asterik * identifies agencies and organizations that offered comments to the Draft Environmental Assessment. Comment letters are found in Appendix B.

Federal

*U.S. Army Corps of Engineers
U.S. Department of the Interior
Fish and Wildlife Service

State

Department of Health
Environmental Management Division
Department of Land and Natural Resources
Aquatic Resources
*Commission on Water Resource Management
*Historic Preservation Division
Office of Environmental Quality Control
***Environmental Center, University of Hawaii at Manoa**

City and County of Honolulu

*Department of Land Utilization
*Department of Public Works
Department of Wastewater Management
*Planning Department

Others

Hawaiian Electric Company
Hawaiian Telephone Company
Pearl City Youth [Council] Complex Association
Sunset Memorial Park
Pearl City Business Plaza
*Pearl City Neighborhood Board No. 21
Aiea-Pearl City Business[mens] Association

SECTION 6

DETERMINATION OF SIGNIFICANCE

Chapter 200 (Environmental Impact Statement Rules) of Title 11, Administrative Rules of the State Department of Health, establishes criteria for determining whether an action may have significant effects on the environment (11-200-12). The relationship of the proposed project to these criteria is discussed below.

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

   There are no significant natural or cultural resources on the premises.

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

   The project does not curtail the beneficial uses of the environment. The new drainage channel will serve the same function as the existing channel but by being able to convey the design peak discharge, it will allow development of adjoining vacant and underused lands for housing and recreational purposes.

3) Conflicts 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;

   The project does not conflict with long-term environmental policies, goals, and guidelines of the State of Hawaii.

4) Substantially affects the economic or social welfare of the community or State;

   The project does not substantially affect the economic or social welfare of the State. Indirectly, it will provide for the safety of residents of a housing project proposed on lands adjoining the channel.

5) Substantially affects public health;

   Public health will not be adversely affected by the proposed project.

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

   Substantial secondary impacts are not anticipated.

7) Involves a substantial degradation of environmental quality;

   The proposed project will not degrade environmental quality of the site and surrounding neighborhood.

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

The project is a precursor for a larger action. The channel is required to negate potential flooding of adjoining lands that will be developed for multi-family housing and recreational purposes. Potential environmental impacts resulting from the development of housing were reported in an Environmental Assessment prepared in 1989.

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

The endemic snail, *Pseudisidora producta*, was observed in the project channel but it is not considered rare, threatened or endangered.

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

During construction, ambient air quality will be affected by fugitive dust and combustion emissions but potentially adverse effects can be mitigated by control measures stipulated in this Assessment. Construction noise will be pronounced during site preparation work but should diminish once the building is erected. All construction activities will comply with air quality and noise pollution regulations of the State Department of Health. In the long run, the channel will not degrade air and noise quality.

Applicant will construct the channel using an approved best management practice plan to mitigate adverse effects on water qualtiy. Best management practices will include conditions made a part of water use approvals or permits received from State and County authorities. No obstruction of flow in the channel is proposed during construction but water will be diverted to one half the channel to allow construction on the other half. When completed, no long-term adverse effects on receiving water quality are anticipated.

11) Affects an environmentally sensitive area such as a flood plain, tsunami zone, erosion prone area, geologically hazardous land, estuary, fresh water, or coastal waters.

The project is not proposed in an environmentally sensitive area. However, between the H-1 Freeway and East Loch of Pearl Harbor, Waiau Stream supports diverse biological habitats and segments of the stream are popular for recreational fishing. Existing stream flow in the channel will be maintained during construction so as to not adversely affect aquatic habitats in the lower reach of the stream. In the long run, no significant change in stream flow through the new channel is anticipated, concomitantly the stream habitat should remain relatively unaffected and should revert to near existing conditions after construction is completed.

Based on the above criteria, it is concluded that the Waimano Drainage Channel Reconstruction project will not result in significant adverse environmental impacts and an Environmental Impact Statement should not be required.

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APPENDIX A

An Environmental Reconnaissance Survey of Lower Waiau Stream, Pearl City, O'ahu

AECOS No. 770

An Environmental Reconnaissance Survey of Lower Waiau Stream, Pearl City, O'ahu

Prepared For:

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Prepared By:

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January 1994

WAIAU STREAM

INTRODUCTION

Waiau Stream is located in the Pearl City area of O'ahu (Figure 1). This intermittent stream arises around the 1200-foot elevation in the Ko'olau Range above Pearl City from several branches within the ahupua'a of Waiau. Higher elevations up to the Ko'olau crest are drained by either Waimalu Stream (to the east) or Waimano Stream (to the north and west), or tributaries of these streams (including Punanani Gulch). Above the upper (mauka) end of Hoohulu Street in Pearl City, Waiau Gulch is undeveloped and the stream channel remains in a natural state. Below this point, the stream is confined to modified channels of various sizes and designs, but all having concrete or CRM side walls and a flat, concrete floor. The stream is directed through a lengthy underground box culvert beneath the Pearl City Shopping Center on Kamehameha Highway. Stream bed modifications end just below the H-1 viaduct, with a box culvert which forms a bridge for the Pearl City bikeway. The stream ends and its estuary begins some 20 to 25 meters further downstream. The tributary area of Waiau Stream is estimated at 1,700 acres.

The project site, the former Hale Mohalu State Hospital, is located generally between Kamehameha Highway and the H-1 viaduct east of Lehua Avenue. The existing 700-foot long stream channel through the Hale Mohalu site is on State land and was constructed in the early to mid-1960's. The trapezoidal channel has a top width of 32 feet, a floor width of 20 feet, and a depth of 8 feet. Upstream of a vehicular crossing on the site, this channel is all concrete and transitions at the mauka property boundary with a City and County of Honolulu, rectangular, concrete channel which is 25 feet wide and 12 feet deep and was built around 1970. Downstream of the bridge the channel sidewalls are concrete and rock masonary (CRM).

The assessment survey described here was conducted to supplement a Stream Channel Alteration Permit (SCAP) for replacing the existing lined channel. The field survey of aquatic habitats was conducted on January 3, 1994. A preliminary reconnaissance of the channelized portions of the stream above the project area was undertaken on October 5, 1993.

PREVIOUS STUDIES

Waiau Stream is not listed in Timbol & Maciolek (1978), nor is it mentioned in the Hawaii Stream Assessment (1990), in both cases presumably because it was considered to be strictly an intermittent stream: flow occurring only in response to rainfall events or wet weather. Exclusion from the State's inventory of stream resources would seem to be a

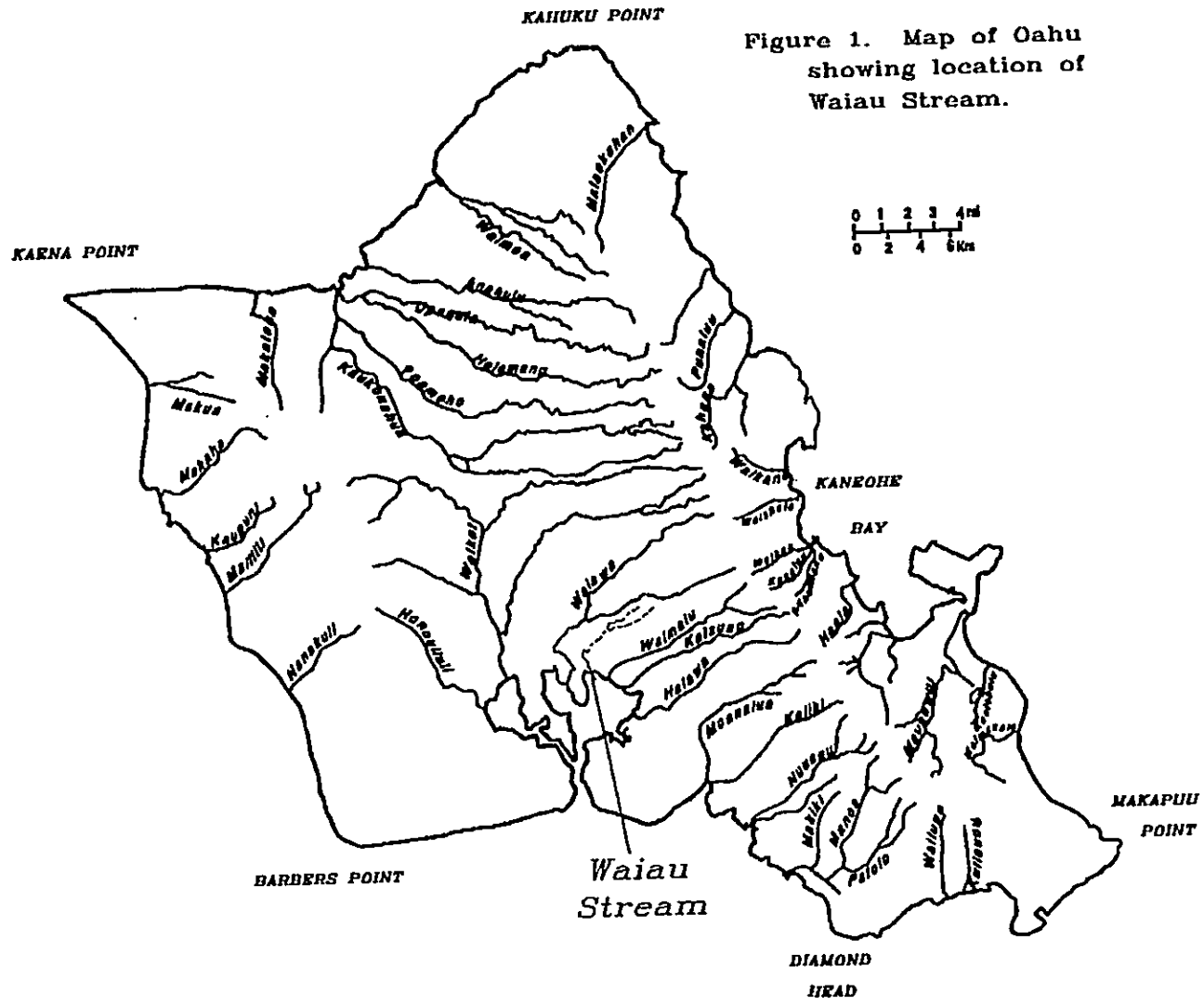

Figure 1. Map of Oahu showing location of Waiau Stream.

short-coming of the inventory process, which should have included all streams in the State, before focusing (as it does) on those thought to be perennial or at least interrupted (having a perennial reach). No other studies for Waiau Stream were reviewed, but surveys of nearby Waiawa (*AECOS*, 1991) and Wailani (*AECOS*, 1988) Streams provided comparative data with respect to biology and water quality.

STREAM DESCRIPTION

Examination of portions of Waiau Stream within and just above the developed areas of Pearl City confirm that this stream course is intermittent above Kamehameha Highway, and highly modified (channeled) to the 230-foot elevation. Although not explored as part of this survey, it is unlikely that perennial stream habitat exists above the channeled portions, given the relatively low elevation of the "headwaters" of the several tributaries of upper Waiau Stream. Adjacent or nearby Waimano (State Stream No. 3-4-06.01), Waimalu (No. 3-4-05), and Kalauao (No. 3-4-04) Streams are interrupted: intermittent at lower elevations, but flowing continuously at higher elevations. However, these streams arise near the Ko'olau crest (where the climate is much wetter) at elevations exceeding 2000 feet and are shown on the Waipahu and Kaneohe USGS 7.5 minute, topographic quad sheets as continuous flowing down to around the 800-foot elevation (the 450-foot elevation for Waimano Stream).

Below Kamehameha Highway, Waiau Stream is confined within a box drain with high vertical sidewalls and a smooth concrete bottom. This structure is replaced by a trapezoidal channel with steep sidewalls at the project site. California grass (*Brachiaria mutica*) has overgrown the sidewalls (Figure 2). A portion of this modified channel has suffered extensive damage, resulting in a segment with sloped sidewalls and "natural" bottom where the concrete floor of the trapezoidal channel has been removed by storm flow. However, below this point, the trapezoidal channel has a smooth, concrete bottom and CRM sidewalls starting at the road bridge within the old Hale Mohalu State Hospital site and extending to a double box culvert supporting the first of two access roads beneath the H-1 viaduct.

The culvert opens onto a rock bottom area beneath the H-1 overpass. This is an area of considerable shading by the wide freeway viaduct. Stream banks are mostly bare soil, but Guinea grass (*Panicum maximum*) and honohono (*Commelina diffusa*) are abundant along the stream outside of the area of deepest shading (and rainfall occlusion). A second culvert structure is present a short distance downstream of the H-1 viaduct. The latter supports an access road for small farm lots between Waiau Stream and the HECO Waiau Electrical Generating Station and the Pearl City bike trail. Vegetation along the stream and its banks in this area consists of Guinea grass, napier grass (*Pennisetum purpureum*), Job's tears (*Coix lachryma-jobi*), elephant's ear (*Alocasia macrorrhiza*), umbrella sedge

(*Cyperus alternifolius*), honohono, primrose willow (*Ludwigia octovalvus*), and moon flower vine (*Ipomoea alba*). Koa haole (*Leucaena leucocephala*), castor bean (*Ricinus communis*), and java plum (*Syzygium cumini*) grow on the banks.

Figure 2. Waiau Stream from the road bridge on the Hale Mohalu site.
A shallow pond occupies all of the damaged floor of the trapezoidal culvert.

Below the double concrete box culvert which supports the bike trail, the stream empties into a rock strewn pool (Figure 3). The water then tumbles over a low escarpment on smooth basalt and enters a series of pools which terminate some 25 meters from the bridge in the upper end of the Waiau Stream estuary. Water depth in the estuary is initially less than 0.5 m, but increases downstream to over 1 m. The upper reach is confined between steep banks of soil and rock, mostly grass-covered on the west side with California grass (*Brachiaria mutica*), Guinea grass, koa haole, yellow-flowered bindweed (*Ipomoea ?obscura*), and love-in-a-mist vine (*Passiflora foetida*); and the east bank supporting a growth of hau (*Hibiscus tiliaceus*). More open areas outside of the hau support California grass, castor bean, koa haole, fleabane (*Pluchea indica* and *P. symphytifolia*), and a small Fabaceae tree (*Samanea saman* or *Albizia lebbeck*). The high banks in this area appear to represent an old levy. Within the riparian habitat, the dragonfly (*Anax* cf. *strenuus*) was seen, as well as a damselfly (unidentified: grey and dark grey coloration on thorax). A flock of 4 to 6 orange-cheeked waxbills (*Estrilda melpoda*) was observed here. Scattered, large basalt boulders are present along the upper

part of this channel, projecting above the surface of the pool. These boulders serve as perches for the black-crowned night heron (*Nycticorax nycticorax hoactli*).

Figure 3. Fresh water pool immediately downstream of the Pearl City bikeway culvert (note center divider in upper left and culvert reflection across lower third of photograph).

The lowermost segment of the stream is lined with mangrove (*Rhizophora mangle*), and opens into the northwest corner of Pearl Harbor's East Loch. The stream is a long, narrow inlet at this point, some 10 meters across. Extending offshore is a shallow bank called Waiau Bank which is a mostly submerged stream mouth delta or alluvial fan. A patch of bulrush (*Schoenoplectus californicus*) covers the shoreward end of a silty-sand bar along the east side of the stream channel in front of the mangrove swamp (Figure 4).

WATER QUALITY

Three water quality stations were planned: (1) at or near the culvert outlet just below Kamehameha Highway, (2) in the pool representing the damaged section of the concrete-lined channel, and (3) at the approximate junction between the stream and the estuary. However, on January 3, the shallow depth of the sheet of water flowing out of the box culvert precluded collecting adequate sample at station 1, so only stations 2 and 3 were sampled. The results of water quality testing and analyses are presented in Tables 1 and 2 below.

Figure 4. The mouth of Waiau Stream from the tidal sand bar. Both sides of the stream are lined with mangrove, but a patch of bulrush occupies a part of the sand bar (shown on the right, center of the photograph).

Table 1. Basic water quality characteristics of Waiau Stream.

	Temperature (°C)	DO (mg/L)	pH (pH units)	Conductivity (µmhos/cm)	Turbidity (ntu)	Total Suspended Solids (mg/L)
Station 1	---	---	---	---	---	---
Station 2	21.1	3.69	7.41	506	6.54	9.0
Station 3	21.2	8.21	7.60	988	2.33	3.0

The results presented in Table 1 show that Station 3 is influenced by a small amount of saline water and that dissolved oxygen (DO) is somewhat low at Station 2. The water at Station 2 is more turbid than that at Station 3, reflecting the large amount of phytoplankton present at Station 2 as measured by the chlorophyll content.

Table 2 summarizes water quality in Waiau stream with respect to nutrients. The results show that Station 2 is subject to relatively high inputs of nitrate + nitrite and phosphates. The high ammonia may be entering with water inflow, or generated by stagnant conditions within the pool (i.e., decay of organic matter). These dissolved nutrients are either diluted or removed by biological activity as the water flows on to

Station 3. Some ammonia will be lost as a gas to the atmosphere. Dilution may come from other side streams entering the main stream, or from mixing with some portion of water from East Loch. Given the low salinity (and conductivity) at Station 3, the proportion of East Loch waters represented in this part of the estuary is small.

Table 2. Nutrient water quality characteristics of Waiau Stream.

	Ammonia (µg N/L)	Nitrate + nitrite (µg N/L)	Total nitrogen (µg N/L)	Total phosphorus (µg P/L)	Chlorophyll α (µg/L)
Station 1	---	---	---	---	---
Station 2	86	405	1880	397	74.6
Station 3	13	370	518	102	3.14

It was noted during the field survey that the surface of the water under the H-1 viaduct had a sheen typical of petrochemical introductions. A strong petrochemical smell was present under the viaduct, but the source of the fumes could not be ascertained. Measurement of dissolved oxygen (DO = 7.83 mg/L) and temperature (20.5 °C) were made in the large, shallow pool immediately downstream of the bikeway culvert.

Because the water quality measurements made in January are from a single event, the representativeness of the values cannot be assessed. For many of the parameters measured, very different values would result if the samples were collected, for example, during a freshet (flood event caused by heavy rains). High flow conditions, however, would not be considered "typical" for this stream. We can compare the results from Waiau Stream with results from other nearby streams: Table 3 provides selected water quality data from Wailani Stream and Waiawa Stream after *AECOS* (1988, 1991). Wailani Stream drains the Crestview area through Waipahu and into Middle Loch, and the sampled locations would be similar to Station 3 on Waiau Stream in being representative of the upper end of an estuary. Above Station 2 on Wailani occurs a concrete-lined channel with intermittent flow. The stations on Waiawa stream (which drains a large area, including Waimano Stream, into Middle Loch) were all above the estuarine part, but represented lowland reaches more or less isolated from each other by the minimal stream flow occurring at the time. Note the relatively high temperatures.

These samples show the very wide range of nutrient values, paricularly nitrate + nitrite and total phosphate, that can be obtained from relatively low-flowing, urban streams. The State of Hawaii, water quality criteria for streams (DOH, 1992, §11-54-05.2) includes a geometric mean value "not-to-exceed" of 70 µg-N/L (wet season) and 30 µg-N/L (dry season) as nitrate + nitrite, and no more than 2% of all measurements are "not-to-exceed"

a value of 300 µg-N/L (wet season) and 170 µg-N/L (dry season). The criteria applicable to estuaries for nitrate + nitrite are more stringent, and ammonia criteria are included as well. For the Pearl Harbor estuary (somewhat less stringent than for other estuaries in the State), the geometric mean value "not-to-exceed" is 10 µg-N/L as ammonia, and no more than 2% of all measurements "not-to-exceed" 30 µg-N/L as ammonia. Only Station 3 on Waiau Stream would qualify as an estuary sample.

TABLE 3. Water quality in three Oahu streams (lowland reaches) that drain into Pearl Harbor.

	Wailani Stream		Waiawa Stream			Waiau Stream	
	Sta. 1	*Sta. 2*	*Sta. 1*	*Sta. 2*	*Sta. 3*	*Sta. 2*	*Sta. 3*
Sample date	1/8/88	1/8/88	11/6/91	11/6/91	11/6/91	1/3/94	1/3/94
Salinity (ppt)	7	1	0	0	0	0	1
Conductivity (µmhos/cm)	10529	881	--	--	--	506	988
pH	7.29	7.37	7.20	7.57	7.52	7.41	7.60
Temperature (°C)	24.2	23.8	25.0	26.5	25.0	21.1	21.2
DO (mg/L)	8.15	8.35	6.55	3.55	3.2	3.69	8.21
Turbidity (ntu)	2.58	1.87	1.03	2.58	0.33	6.54	2.33
Total suspended solids (mg/L)	2.8	1.6	0.8	3.6	0.3	9.0	3.0
Ammonia (µg/L)	49	110	--	--	--	86	13
Nitrate + nitrite (µg/L)	2030	2020	19	25	129	405	370
Total N (µg/L)	2170	2040	78	220	272	1880	518
Orthophosphate (µg/L)	--	--	4	14	17	--	--
Total P (µg/L)	119	129	24	28	39	397	102

The results of single measurement events cannot be assessed for compliance with the State of Hawaii water quality standards which require the calculation of a geometric mean (an average of several measurements) and some sense of the temporal variability of the parameters being compared. However, the results reported here provide indication that Waiau Stream would not be in compliance with respect to nitrate + nitrite.

AQUATIC BIOTA

Aquatic habitats on lower Waiau Stream occur in four basic aquatic environment types: (1) concrete-lined channel, (2) stream pool, (3) stream riffle, and (4) estuarine. Each of these environment types and the observed biota are discussed below.

Between Kamehameha Highway and the stream mouth, approximately 60% of the stream bed is smooth concrete. Most of this highly modified channel is shaded by roadway overcrossings or large trees above the banks. Nonetheless, the complete absence of pools, other types of refuges (boulders, for example), and the shallow, intermittent nature of the water flow makes this type of habitat extremely poor from the perspective of the aquatic biota. Water flow was observed at the time of the January 1994 survey to be present in the box culvert beneath Kamehameha Highway and the Pearl City Shopping Center. This flow formed a shallow sheet of water across the bottom of the channel, supporting mostly a growth of filamentous algae. Near the old road bridge at the project site, pond snails (sinistral Lymnaeidae, probably *Pseudisidora producta*) were abundant on these algae. This species is endemic to the Hawaiian Islands (Morrison, 1968).

Stream pools were observed in the damaged section of the trapezoidal channel (~2 %) and directly beneath the H-1 viaduct and downstream in an area extending some 20 meters from the bike trail culvert (4 %).

A single, long pool within the trapezoidal channel has resulted from removal and/or collapse of a section of concrete channel bottom. At the time of the survey, this pool was being fed by sheet flow from the culvert under Kamehameha Highway. The water in the pool was greenish, and filamentous algae grew copiously on all wetted surfaces. A pond snail (Lymnaeidae) was particularly abundant. The only other aquatic animal observed was the guppy, *Poecilia reticulata*. However, the site was heavily shaded by large trees and the water clarity less than ideal. Other fishes might well have been present. However, the guppies appeared to be mostly juveniles. Several of the adults that were seen were diseased. It was suspected that this pool experiences stagnant conditions worse than those that prevailed at the time of the survey.

The pools directly beneath the H-1 viaduct were not surveyed because of the large amount of man-made debris and general unsanitary appearance of the stream at this location. However, it was noted that water flow increased in this area, perhaps due to inputs from a watercress farm located immediately north of the H-1 viaduct. At the elevation represented here by Kamehameha Highway, a number of fresh water springs occur all along the north side of Pearl Harbor. Most of these springs are diverted into shallow ponds in which watercress (*Nasturtium microphyllum*) is grown for commercial sale.

The series of pools found below the bike trail culvert became the focus of biological observations made on January 3. Here, the water was confined to an area between one and several meters across within the wider soil banks of the stream channel. The stream bed was a mixture of small boulders and silty-sand and gravel. The pools were observed to support abundant populations of mollies (*Poecilia latipinna*), young tilapia (*Sarotherodon* cf. *mossambica*), and 'o'opu nakea (*Awaous guamensis*). Present were young mullet (*Mugil cephalus*), swordtails (*Xiphophorus helleri*), and 'o'opu akupa (*Eleotris sandwicensis*). Tadpoles of the toad (*Bufo marinus*) were very abundant, and several bullfrog juveniles (*Rana catesbeiana*) were seen. A single 'o'opu naniha (*Awaous genivittatus*) was thought to be seen, but the sighting could not be confirmed. However, this species is regularly observed in nearby Waiawa Stream (*AECOS*, 1990).

Riffle habitats were present between pools from beneath the H-1 viaduct to the head of the estuary, comprising an estimated 2 % of the stream between Kamehameha Highway and East Loch. In some areas, the riffle zone tumbles down across smooth basalt through a series of small pools. These pools were particularly popular with the 'o'opu nakea.

The estuarine reach comprises an estimated 32% of the stream between East Loch and Kamehameha Highway. Below the water, these boulders support oysters (*Crassostrea* sp.). Salinity was around 1 ppt and an outward surface flow was observed at low tide. Inputs from watercress farms in the area contribute additional flow to the stream within the estuarine reach. Flow observed from the west side through a concrete culvert was substantial. The only fish observed were large tilapia, mullet, and 'o'opu nakea, but the depth (mostly over 0.5 m) and somewhat turbid water limited observations. A glass shrimp was common throughout the estuary, becoming very abundant toward the mouth and along the mangrove shore of East Loch. Native 'opae oeha'a (*Macrobrachium grandimanus*) were observed among large boulders at the upper end of the estuary, along with smaller glass shrimp (*Palaemon debilis*). Also seen were numerous swimmming crabs (*Thalamita* spp.) and the shore crab or 'alamihi (*Metopograpsus thukuhar*).

Downstream, the banks are lined with mangrove and the stream passes through the mangrove swamp which borders the northwest shore of East Loch. At the mouth of the stream occurs a large patch of bulrush (*Schoenoplectus californicus*), wedged between the mangroves and a spit or mudflat which extends out into East Loch along the east side at the stream channel. On the west side of the channel, a similar spit is entirely covered by mangrove growth. In this area at the stream mouth were observed large numbers of glass shrimp (*Palaemon debilis*) and minnows. Snapping shrimp (*Alpheus* sp.) occupy burrows on the intertidal flat. At low tide, the mud flat was visited by golden plovers (*Pluvialis dominica*).

The area around the mouth of Waiau Stream appears to be a popular one with shore fishermen. A well-worn path leads from the bike trail, through tall California grass and the mangrove swamp, to the shore of East Loch. Small, jerry-built platforms allow fishermen to stand dry above the water when the tide comes across the mudflat.

CONCLUSIONS

The section of Waiau Stream in need of repair is relatively short, only about 2 % or less of the length of the stream between Kamehameha Highway and East Loch. It is estimated that some 60% of this part of Waiau stream is presently modified, having a smooth concrete bed. Above the project site, between Kamehameha Highway and the 230-foot elevation, all of Waiau Stream is confined within culverts and concrete-lined channels. Water is present only during wet weather. Likewise, the channel below Kamehameha Highway is intermittent to the vicinity of the H-1 viaduct, where inputs from watercress farms probably help stabilize aquatic habitats by providing more or less continuous water flow for the short (tens of meters) remainder of the stream above the head of the estuary. A pool within the project site may hold water continuously or over a long period of time because of the nature of the bed in an area where the concrete channel bottom has been damaged and partly removed. This aquatic habitat is of very low quality.

Despite the limited stream habitat and extensive stream modification which characterizes lower Waiau Stream, the fauna found here does include several native stream species: an endemic snail (*Pseudisidora producta*), an endemic prawn (*Macrobrachium grandimanis*), and at least two indigenous fishes (*Awaous guamensis* and *Eleotris sandwicensis*). Native forms are included among the inhabitants of the estuary, although these are essentially marine species which are indigenous to the Hawaiian Islands (i.e., found throughout the Indo-West Pacific).

It is always preferable, from an environmental perspective, to avoid stream modifications, particularly modifications that transform a natural stream bed into a smooth, concrete surface. However, the repair of the concrete-lined channel at the project site, would not result in loss of valuable aquatic habitat because of the intermittent flow in this area. Even were the stream bottom throughout the project site to be restored to a somewhat natural state, the absence of reliable water flow would limit the value of any aquatic habitat created. The extensive streambed modifications extending upstream some 1.5 mile, and presumed absence of perennial habitat above the urban area, further reduce the value of the reach within the project site. The proposed repair (or replacement) of the trapezoidal channel within the project site will not have long term, adverse impacts on the aquatic fauna of Waiau Stream.

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APPENDIX B

Comment Letters and Responses

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

REPLY TO ATTENTION OF

July 18, 1994

RECEIVED 7/19/94

Planning Division

Mr. Gerald Park, Urban Planner
1245 Young Street, Suite 201
Honolulu, Hawaii 96814

Dear Mr. Park:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment for the Waimano Drainage Channel Reconstruction Project, Pearl City, Oahu (TMK 9-7-17: 35). The following comments are provided pursuant to Corps of Engineers authorities to disseminate flood hazard information under the Flood Control Act of 1960 and 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.

a. Please refer to the enclosed letter from our Operations Division dated April 13, 1994 regarding Section 401 Water Quality requirements. File Number NW94-032 has been assigned to this project and should be referred to for future inquiries.

b. The flood hazard information provided on page 9 is correct.

Sincerely,

Ray H. Jyo, P.E.
Director of Engineering

Enclosure

Operations Division

13 APR 1994

Mr. Conrad T. Shiroma
Vice President
Calvin Kim & Associates, Inc.
1050 Queen Street, Suite 300
Honolulu, Hawaii 96814

Dear Mr. Shiroma:

This is in response to your March 23, 1994 letter requesting verification of the applicability of nationwide authorization for stream improvements at Hale Mohalu, Pearl City, Oahu, Hawaii, TMK: 9-7-017: 035. The project was proposed by the Hawaii Council of Churches and involved the repair of about 700 feet of existing lined channel. The authority under which the November 3, 1988 nationwide permit was issued has expired. Consequently, a new authorization must be issued for the project.

Based on the understanding that the project is substantially the same as described and authorized in 1988, nationwide approval in accordance with Federal Regulations at 33 CFR 330, Appendix A, Paragraph B.3. is appropriate. Before the authorization can be issued, you must obtain a Section 401 Water Quality certification or waiver from the State Department of Health.

File No. NW 94-032 has been assigned to this project. Please refer to this number in future correspondence or inquiries. Upon receipt of a copy of the Water Quality certification or waiver, authorization can be issued without further processing.

Sincerely,

Michael T. Lee
Chief, Operations Division

Copy Furnished:

Environmental Management Division, 919 Ala Moana Blvd., 3rd Floor, Honolulu, Hawaii 96814

ENCLOSURE

JOHN WAIHEE
GOVERNOR OF HAWAII

RECEIVED
7/14/94

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

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

July 14, 1994

KEITH AHUE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCE

DEPUTIES

JOHN P. KEPPELER II
DONA L. HANAIKE

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

LOG NO: 12203
DOC NO: 9407EJ10

MEMORANDUM

TO: Carl Smith
Land Management

FROM: Don Hibbard, Administrator
Historic Preservation Division

SUBJECT: Waimano Drainage Channel Reconstruction
Waimano, 'Ewa, O'ahu
TMK: 9-7-19:035

We previously commented to the City and County of Honolulu Department of Housing and Community Development on the proposed construction of housing for the elderly and persons with Hansen's disease. Our comments to them were based on the possibility of encountering subsurface cultural deposits. Since this project also proposes excavation within the same parcel, we recommend that the same conditions apply to this project. A copy of our comments is attached (Log NO. 12111/ Doc No. 9406EJ18).

EJ:jk

cc: Bill Turbeek Coalition for Specialized Housing
Gerald Park Urban Planner
Office for Environmental Quality Control

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

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

KEITH AHUE, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCE

DEPUTIES

JOHN P. KEPPELER II
DONA L. HANAIKE

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

July 7, 1994

LOG NO: 12111
DOC NO: 9406EJ18

Lorna Uesato
City and County of Honolulu
Department of Housing and Community Development
650 South King Street, 5th Floor
Honolulu, Hawaii 96813

Dear Ms. Uesato:

SUBJECT: Hale Mohalu: Construction of Housing for the Elderly and Persons with Hansen's Disease.
Waimano, 'Ewa, O'ahu
TMK: 9-7-19:035

Thank you for the opportunity to review the proposed Hale Mohalu Elderly Housing project. An archaeological reconnaissance and testing by State Parks archaeologists was conducted in 1985 at this parcel. The parcel was bulldozed in 1983 to remove surface structures leaving only paved roadways and concrete foundations on the surface. Because of land record information from the 1850s test excavations were conducted to determine if any subsurface cultural deposits relating to earlier agricultural use could be located. Because results of the testing were limited and not definitive, it was recommended that future development of this parcel should be accompanied by archaeological monitoring of backhoe trenches. Because of the possibility of subsurface cultural deposits, we recommend that the City follow the attached conditions to ensure "no adverse effect" to any significant historic sites:

The State Historic Preservation Division (SHPD) 1) view the final plans for ground disturbing activities, and 2) utility corridors be inspected by SHPD archaeologists in order to identify and treat any significant subsurface remains that would be disturbed by construction activities.

If you have any questions please call Elaine Jourdane at 587-0015.

Very truly yours,

Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk

JUL 1 1994

JOHN WAIHEE
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

RECEIVED 7/18/94

JUL 15 1994

Mr. Gerald Park
Urban Planner
1245 Young Street
Suite 201
Honolulu, Hawaii 96814

Dear Mr. Park:

Thank you for your letter dated June 27, 1994, requesting our comments to the draft environmental assessment for the proposed Waimano Drainage Channel Reconstruction at Pearl City.

The proposed project includes the construction of a 700-foot lined stream channel to accommodate the proposed Hale Mohalu Housing Project.

Please be advised that the applicant must obtain a stream channel alteration permit pursuant to Title 13, Section 169-50, Hawaii Administrative Rules.

Should you have any questions please call David Higa at 587-0249.

Sincerely,

RAE M. LOUI
Deputy Director

DH:ky

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813 • (808) 523-4432

FRANK F. FASI
MAYOR

DONALD A. CLEGG
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

RECEIVED 7/20/94

94-04147(DT)

July 19, 1994

Mr. Gerald Park
1245 Young Street, Suite 201
Honolulu, Hawaii 96814

Dear Mr. Park:

Comments To Draft Environmental Assessment (DEA)
For Waimano Drainage Channel Reconstruction
Pearl City, Oahu
Tax Map Key: 9-7-19: 35

We have reviewed the above-referenced DEA and have no comments to offer at this time. The project is not within the Special Management Area.

Very truly yours,

DONALD A. CLEGG
Director of Land Utilization

DAC:ak

waimano.djt

PEARL CITY NEIGHBORHOOD BOARD NO. 21

P.O. BOX 1025 • PEARL CITY, HAWAII 96782

July 29, 1994

RECEIVED 8/1/94

Mr. Carl Smith, Land Agent
Department of Land and Natural Resources
Division of Land Management
P.O. Box 621
Honolulu, Hawaii 96801

RE: WAIMANO DRAINAGE CHANNEL RECONSTRUCTION DRAFT ENVIRONMENTAL ASSESSMENT (EA) WAIMANO, EWA, OAHU, HAWAII, TAX MAP KEY: 9-7-19:35, APPLICANT: COALITION FOR SPECIALIZED HOUSING.

At its July 28, 1994 Regular Meeting, The Pearl City Neighborhood Board No. 21, voted unanimously (14-0-0) to submit the following comments and concerns regarding the above mentioned document for response and disclosure in the Final EA:

1. The correct reference to the "Pearl City Youth Complex Association" should be made on pages 1.4 and 20.

2. The correct references to the "Pearl City Neighborhood Board No. 21" and "Aiea - Pearl City Business Association" should be made on page 20.

3. Stream Biota

   a. Page 13: A more detailed listing of fauna habitating the existing channel sections, mauka and makai of the project site, should be disclosed, based on the species identified on pages 9 and 10 of the AECOS, Inc. 1994 report.

   b. Pages 17 and 18: Mitigation measures for long term impacts associated with the potential loss of the habitat of existing stream biota should be disclosed.

      A REVIEWER SHOULD NOT BE CONSTANTLY REFERRING BACK AND FORTH TO THE SUB-CONSULTANT'S REPORTS TO OBTAIN OR VERIFY INFORMATION OF GREAT CONCERN.

4. Water Quality

   a. Page 13: The three water quality sampling stations should be indicated on one of the exhibits for informational purposes.

   b. Pages 15 and 17: All water quality tables (1,2 and 3) from the AECOS, Inc. 1994 report should be indicated, with

comparative State standards information and discussion being focused to compare its relationship with those of the existing status and any mitigative measures for projected conditions of the channel.

5. On page 17, Section C, 2nd paragraph, we believe that... "the Hale Mohalu site is potentially one of the largest single pieces of unimproved property in Pearl City,

For your information, the other larger properties slated for future use are the Navy's Pearl City Junction 13.75 acre parcel and the Manana Warehouse 109-acre lands.

The Pearl City Neighborhood Board No. 21 continues to support the completion of the Hale Mohalu Project to provide its residents with affordable housing. The completion of the reconstructed channel improvements will greatly enhance the value and appearance of the properties on each side of this drainage facility.

Very truly yours,

Naomi Fujimoto

Naomi Fujimoto, Vice Chair

cc: Reverend William Terbeek, CSH
Gerald Park, Urban Planner
Clifton Yaguchi, PCYCA
Pearl City Neighborhood Board No. 21 Members
Neighborhood Commission Office

September 6, 1994

Naomi Fujimoto, Vice-Chair
Pearl City Neighborhood Board No. 21
P.O. Box 1025
Pearl City, Hawaii 96782

Dear Ms. Fujimoto:

Subject: Waimano Drainage Channel Reconstruction
Waimano, Ewa, Oahu, Hawaii

Thank you for reviewing the Draft Environmental Assessment prepared for the subject project. Our responses to your comments are numbered to correspond with your comments.

1. The text on pages 1 and 20 has been revised to Pearl City Youth Complex Association.

2. The names of consulted organizations have been revised as you suggest.

3.a. The listing of fauna was limited to that inhabiting the 700-foot long section of channel within the project area. No stream fauna was observed mauka of the project site because the channel is usually dry. What little flow there is in the channel is derived from drain lines and a box culvert beneath Kamehameha Highway.

Sections of the channel makai of the project site are outside of the project area. The AECOS report adequately discloses stream fauna inhabiting the unimproved section of stream makai of the project site.

3.b. The shallow pool formed in a section of broken channel is the only aquatic habitat within the section of channel to be improved. Because of the limited number of species that inhabit the pool and the poor quality of the habitat, the loss of this habitat should not result in significant adverse effects and no mitigative measures have been recommended.

4.a. Only one sampling station (Station 2) is located within the project channel; Stations 1 and 3 are located upstream and downstream respectively of the project area.

4.b. The report by AECOS (1994) presents, in the discussion on pages 7 and 8, some comparisons of the water quality measured in Waiau Stream with State of Hawaii water quality standards. Complete tables of applicable criteria from DOH (1992) are provided below for fresh water

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young street
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honolulu, hi 96814
tel (808)
596 0018
urban planning / environmental studies

streams (Table 1 for Station 2 in the report) and Pearl Harbor estuary (Table 2 for Station 3 in the report). For some of the analytes (for example, pH and dissolved oxygen), the State standards are stated as actual values that are not to be exceeded. Others, (temperature, salinity, and pH in part) refer to "ambient conditions", meaning that some prior record of natural values must exist before deviation from the standards can be determined. Many others (notably turbidity, suspended solids, and nutrients such as nitrates) are expressed in terms of percent occurrence. That is, "limits" (termed criteria) are not to be exceeded a certain percentage of the time. To apply these criteria, many samples must be collected over time from a location. Enough samples must be collected to be able to at least infer whether half will be above the "geometric mean criterion", 10% will exceed the "10% of the time" criterion, or 2% will exceed the "2% of the time" criterion. Results from a single sampling cannot be compared to these standards, other than noting that the single value is close to, well below, or well above a criterion value and speculating on the likelihood that the single value is really a typical value. Chemicals that are known to be toxic to aquatic biota (the toxic pollutants) are included in another part of the State of Hawaii regulations as not-to-exceed values (acute toxicity standards), 24-hour average values not-to-exceed (chronic toxicity standards) and 30-day average values not-to-exceed (fish consumption standards).

While this system may appear to be difficult to apply, perhaps even troublesome that a single measurement cannot be related to the standards in any meaningful way, the standards have been written to take into account the natural variability shown by these parameters in aquatic environments. Where it becomes necessary to determine that some aspect of the water quality is being degraded and one or more water quality standards "violated", a proper number of samples must be collected and analyzed to establish the facts. Otherwise, sampling is conducted to provide a sense of how one location compares with another (See Table 3 in AECOS report) or to provide an indication of water quality problems to direct future monitoring efforts.

Although the conclusions of the AECOS report assessed the impacts of the proposed channel repairs on aquatic habitat and aquatic biota in Waiau Stream, the impact of the project on long-term water quality would likewise not be significant.

5. Thank you for pointing out other large properties in Pearl City. We still believe, however, that the Hale Mohalu site is the largest single piece of unimproved property in Pearl City. The other sites you mentioned are or have been improved for warehousing.

We hope that our responses satisfactorily addressed your concerns. Please call me at 596-0018 if you have further questions.

Sincerely,

GERALD PARK URBAN PLANNER

Gerald Park

xc: C. Smith, DLM-DLNR

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

RECEIVED
7/23/94

KENNETH E. SPRAGUE
DIRECTOR AND CHIEF ENGINEER

ENV 94-182

July 21, 1994

Mr. Gerald Park
Gerald Park Urban Planner
1245 Young Street, Ste. 201
Honolulu, Hawaii 96814

Dear Mr. Park:

Subject: Draft Environmental Assessment (DEA)
Waimano Drainage Channel Reconstruction
TMK: 9-7-19: 35

We have reviewed the subject DEA and have no comments to offer at this time.

Should you have any questions, please contact Mr. Alex Ho, Environmental Engineer, at 523-4150.

Very truly yours,

for KENNETH E. SPRAGUE
Director and Chief Engineer

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

RECEIVED
8/9/94

ROBIN FOSTER
CHIEF PLANNING OFFICER

ROLANDO LIBBY, JR
DEPUTY CHIEF PLANNING OFFICER

LW 6/94-3877

August 5, 1994

Mr. Gerald Park
Gerald Park Urban Planner
1245 Young Street, Suite 201
Honolulu, Hawaii 96814

Dear Mr. Park:

Draft Environmental Assessment (DEA) for
Waimano Drainage Channel Reconstruction
Pearl City, Oahu, TMK: 9-7-19: 35

Thank you for the opportunity to comment on the subject Environmental Assessment.

We note that the subject site is designated Residential and Park on the Primary Urban Center Development Plan Land Use Map, not Residential and Preservation as indicated in the DEA. We have no other comments to offer at this time.

Should you have any questions, please contact Lin Wong of our staff at 523-4485.

Sincerely,

ROBIN FOSTER
Chief Planning Officer

RF:ft

University of Hawai'i at Mānoa

Environmental Center
A Unit of Water Resources Research Center
Crawford 317 • 2550 Campus Road • Honolulu, Hawai'i 96822
Telephone: (808) 956-7361 • Facsimile: (808) 956-3980

RECEIVED 8/12/94

August 8, 1994
EA:0075

Mr. Carl Smith
Department of Land and Natural Resources
Division of Land Management
P. O. Box 621
Honolulu, Hawaii 96801

Dear Mr. Smith:

Draft Environmental Assessment (EA)
Waimano Drainage Channel Reconstruction
Ewa, Oahu

The applicant proposes to replace a section of the existing Waimano Drainage Channel in order to develop a housing project on an adjacent lot.

The Environmental Center has reviewed this document with the assistance of James Parrish, Hawaii Cooperative Fishery Research Unit; and Huilin Dong of the Environmental Center.

General Comments

In general, we find that the draft EA does not meet the requirements of Hawaii Administrative Rules Section 200-11-7, (HAR) and subsequently does not fulfill the intent of Chapter 343, HRS. While the project encompasses a channel reconstruction and a housing development, the scope of the draft EA is limited to the description and discussion of only the channel reconstruction. In addition, the draft EA does not include an adequate description of the action's technical and environmental characteristics.

Scope of the Environmental Assessment

The applicant proposes to reconstruct a section of the existing Waimano Drainage Channel in order to develop a housing project on an adjacent lot. While the entire project concerns a stream channel improvement and a housing project, the draft EA only encompasses the stream channel improvement. The scope of the housing development and its potential impacts are not discussed in the document. Consequently, the magnitude of the entire project and its potential environmental impacts are not addressed in the draft EA.

The Department of Health's Administrative Rules in Section 200-11-7 clearly state that "a group of actions proposed by an agency or an applicant shall be treated as a single action when:

(1) The component actions are phases or increments of a larger total undertaking.

(3) An individual project represents a commitment to a larger project.

Clearly, the applicant must describe and discuss all phases of the project and address the potential impacts to the environment from each of the proposed phases.

In addition, the Preface of the draft EA refers to "City and County of Honolulu construction plans for completed drainage improvement projects upstream and downstream of the project site". The potential impact of the referenced channel reconstruction on the upstream and downstream areas should be addressed in the document. Of particular importance is the compatibility of the proposed design flow with the existing downstream design flow. However, no where in the document is this information given.

Technical Comments

The purpose of the project cannot be justified by the conflicting information provided in the document. Page 1 stipulates that "it has been determined that the existing channel cannot contain the calculated peak discharge of 6,200 cfs. However, on page 9, the EA indicates that flood hazards in the area are undetermined; and on page 16, the EA stats that "the project is not located within a flood hazard area." In addition, vital information with regard to the new design flow is not given. Judging from the new structure design, the new design flow does not seem to be significantly larger than the existing design flow. Consequently, the conclusion that "A no action or delaying the action are not prudent alternatives" (page 19) would appear premature. Furthermore, if the subject area is not in high flood zone, the alternative of leaving the stream bed in its natural state for the benefit of aquatic animals should also be considered.

Thank you for the opportunity to review and comment on the draft EA.

Sincerely,

John Harrison, Ph.D
Environmental Coordinator

cc: OEQC
Coalition for Specialized Housing
Gerald Park Urban Planner
Roger Fujioka
James Parrish
Huilin Dong

September 6, 1994

John T. Harrison, Ph.D
Environmental Coordinator
University of Hawaii at Manoa
Environmental Center
Crawford 317
2550 Campus Road
Honolulu, Hawaii 96822

Dear Dr. Harrison:

Subject: Draft Environmental Assessment
Waimano Drainage Channel Reconstruction
Ewa, Oahu

Thank you for reviewing and offering comments on the Environmental Assessement prepared for the subject project. Our responses are given to coincide with your comments. We would like to point out that although your letter was dated August 8, 1994, the last day of the public comment period, we did not receive it until August 12, 1994.

Scope of the Environmental Assessment.

The housing development is not discussed in the subject Environmental Assessment. A Negative Declaration for the housing development (General Lease to Coalition for Specialized Housing for Low or Moderate Income Elderly or Disabled Housing Project, Hale Mohalu, Pearl City, Waimano, Ewa, Oahu) was issued in 1989 by the Division of Land Management, Department of Land and Natural Resources, and published in the August 8, 1989 Office of Environmental Quality Control Bulletin. This was noted in the Preface to the Environmental Assessment.

Because the housing development was assessed previously and a Negative Declaration issued, we believe there is no need to assess the particular action again.

Technical Comments

Applicant is not constructing a new drainage channel. Rather, the proposed action is to reconstruct a 700-foot long section of existing concrete lined channel. The section has been damaged and cannot convey the calculated peak discharge of 6,200 cfs. The calculated peak discharge is for the entire 1,700 acre drainage basin above the proposed project. Alternatives to reconstructing the channel were evaluated by the consulting

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596 0018
urban planning

engineer and determined to not be feasible containment solutions. Lands adjacent to the section of channel to be improved are in an area where the flood hazard is undetermined.

The statement on page 16 "The project is not located in a flood hazard area" will be revised to read: The project is located in an area of undetermined flood hazard.

The alternative of a natural stream bed was considered. However, for reasons of public health and safety, engineering considerations, and low aquatic habitat value (as explained on page 18 of the Assessment), this alternative was dropped from consideration.

Please call me at 596-0018 if you have any questions.

Sincerely,

GERALD PARK URBAN PLANNER

Gerald Park

xc: C. Smith, DLM-DLNR