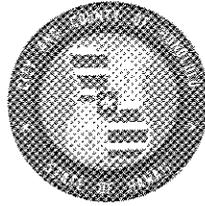


DEPARTMENT OF GENERAL PLANNING  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813

FRANK F. FASI  
MAYOR



ROBERT R. WAY  
CHIEF PLANNING OFFICER

DGP10/76-2448 (JB)

October 21, 1976

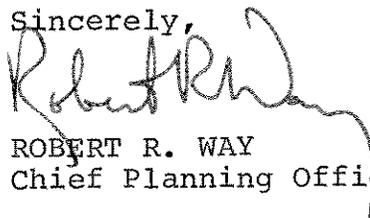
Dr. Albert Tom, Chairman  
Environmental Quality Commission  
State of Hawaii  
550 Halekauwila Street  
Honolulu, Hawaii 96813

Dear Dr. Tom:

Revised Environmental Impact Statement for  
the Proposed Kamehameha Highway-Hunaahi  
Street Relief Drain Project

On the basis of having satisfactorily complied with the requirements set forth in the Environmental Impact Statement Rules and Regulations promulgated by the Environmental Quality Commission, the Department of General Planning, in accordance with Chapter 343, HRS, and as the Mayor's authorized representative, hereby accepts the EIS for the proposed Kamehameha Highway-Hunaahi Street Relief Drain project.

Sincerely,

  
ROBERT R. WAY  
Chief Planning Officer

RRW:fmt

cc: Department of Public Works

Office Of Environmental Quality Control  
Office Of The Governor  
850 Hialehua Street  
Tani Office Building, Third Floor  
Honolulu, Hawaii 96813

DEPARTMENT OF PUBLIC WORKS  
CITY AND COUNTY OF HONOLULU

REVISED

ENVIRONMENTAL IMPACT STATEMENT

FOR

KAMEHAMEHA HIGHWAY-HUNAAHI STREET RELIEF DRAIN

KANEOHE, OAHU, HAWAII

TMK: 4-7-30, 34, 35 AND 44

THIS ENVIRONMENTAL DOCUMENT IS SUBMITTED PURSUANT TO CHAPTER 343, HRS

ACCEPTING AUTHORITY - DEPARTMENT OF GENERAL PLANNING  
CITY AND COUNTY OF HONOLULU

RESPONSIBLE OFFICIAL -

*Kazu Hayashida* 9/31/76

KAZU HAYASHIDA Date

DIRECTOR AND CHIEF ENGINEER  
DEPARTMENT OF PUBLIC WORKS

Prepared by  
Division of Engineering  
Department of Public Works

0A

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Office of Environmental Quality Control  
Office of the Governor  
550 Halekauwila Street  
Tani Office Building, Third Floor  
Honolulu, Hawaii 96813

## I. SUMMARY

The proposed project is to increase the capacity of the present drainage systems and to relieve the flood problems in the vicinity of Kamehameha Highway and Hunaahi Street.

The project will consist of the installation of a drainage system along Hunaahi Street, a drainage system along Kamehameha Highway between Miomio Loop and the improvements to the existing drainage channel from Hunaahi Street to the ocean front.

The environmental impacts of this project can be classified into two categories: (a) those of temporary effects due to the construction activities and; (b) those of permanent effects due to the increase of point-discharge of storm water into Kaneohe Bay.

Alternatives which were considered during the planning stage of the project were: (a) the regrading of some private lots; (b) the use of detention ponds; and (c) deep well disposal. However, these alternatives were found either too costly or impractical for this area.

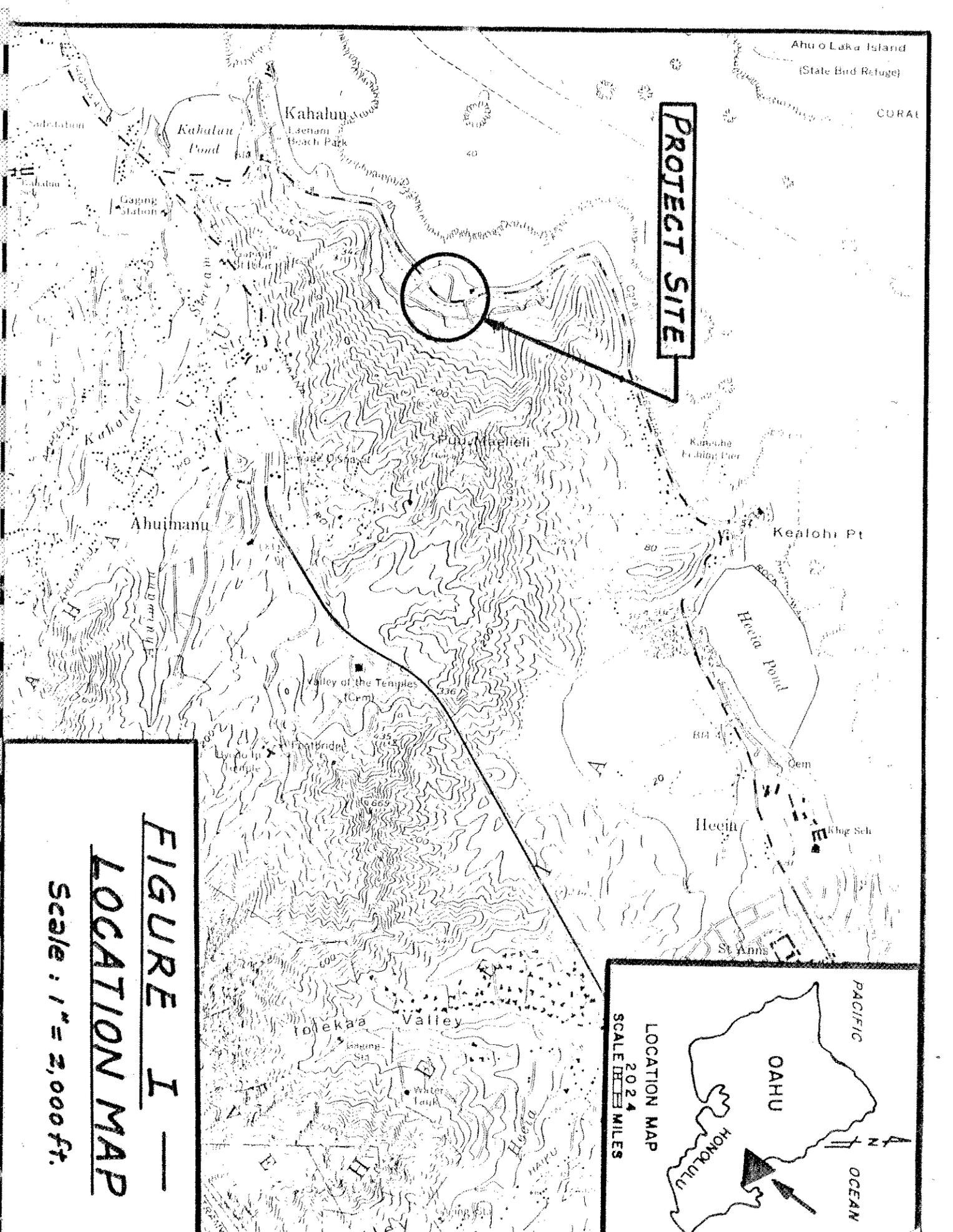
The estimated cost of this project is \$400,000.00. The project is scheduled in the City's 6-year Capital Improvement Program and will be financed entirely with City funds. Construction is tentatively planned in FY-1978 and will require approximately 180 calendar days for completion.

## II. PROJECT DESCRIPTION

The project area is located on the windward side of Oahu in the Koolaupoko District, approximately 25 miles from downtown Honolulu. The general location of the project area is shown on Figure I - Location Map.

The objectives of the proposed project are to relieve the drainage inadequacy and flood problems in the project area.

The project will consist of: (a) The construction of an intake box and approximately 350 feet of drain pipe extending from the mauka end of Hunaahi Street and connecting to the existing drainage system near the Iuiu/Hunaahi Street intersection; (b) The construction of a 250-foot long, 12-foot wide rock lined channel and a new box culvert under Kamehameha Highway; and (c) The construction of approximately 800 feet pipe system along the makai shoulder of Kamehameha Highway from the east end to the west end of Miomio Loop.



Ahu o Laka Island  
(State Bird Refuge)

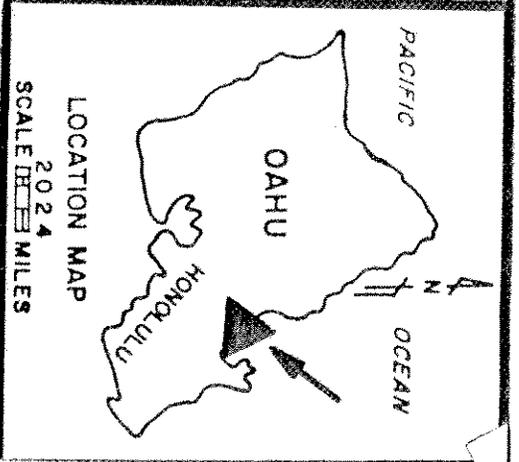
CORAL

**PROJECT SITE**

**FIGURE I —**

**LOCATION MAP**

Scale : 1" = 2,000 ft.



LOCATION MAP  
2024  
SCALE BAR  
MILES

The lined channel will receive the storm flow from Hunaahi Street and discharge into Kaneohe Bay through the modified existing outlet No. 2 (See Figure II). The capacity of the drainage system on Hunaahi Street will be increased from about 180 cubic feet per second (cfs) to about 270 cfs. The channel capacity will be designed to handle a total flow of 370 cfs. The system along the makai side of Kamehameha Highway will handle a storm flow of 60 cfs. The design storm recurrences in accordance with the City's Storm Drainage Standards are equivalent to 10-year and 50-year for the drain pipe system and for the channel improvement, respectively.

The existing and proposed drainage systems in the project area are shown on Figure II. The outlet details are shown on Figure III.

The estimated cost of the project is \$400,000.00 and will be funded entirely by the City. Construction has been tentatively scheduled for FY 1977-78. The site for the improvements is within the right-of-way of the City except for a strip of land totaling 2,700 square feet along the drainage channel which must be acquired from a private party.

### III. DESCRIPTION OF ENVIRONMENTAL SETTING

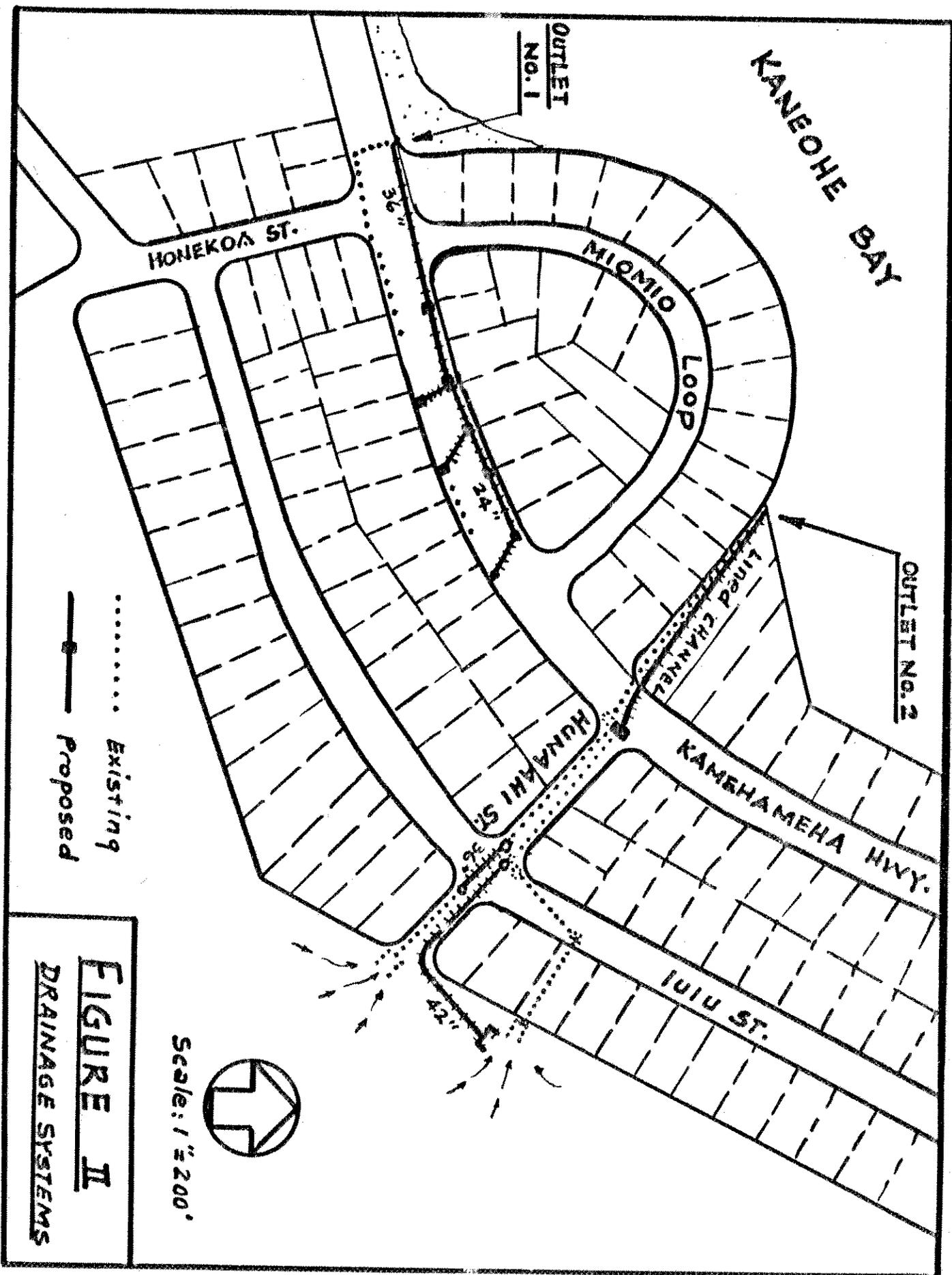
The project area is separated into two sub-areas, mauka and makai, by Kamehameha Highway. The mauka sub-area is located on a hillside terrace with an average ground slope of 15%. The makai sub-area is located on the ocean front with flat minimal ground slope. The floor elevations of the houses in the makai area are generally below grades of Kamehameha Highway and are susceptible to flooding by storm water runoff from the higher mauka areas.

The families within the project area are classified in the middle to above middle income bracket in the 1970 census report. The average household income was \$12,646 as compared to the island wide median of \$12,035. The owner occupied rate of the housing units was about 60% compared with the island wide rate of 45% (Ref. 1).

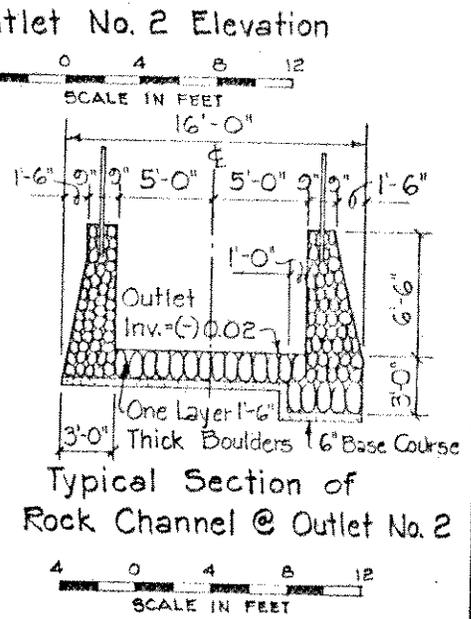
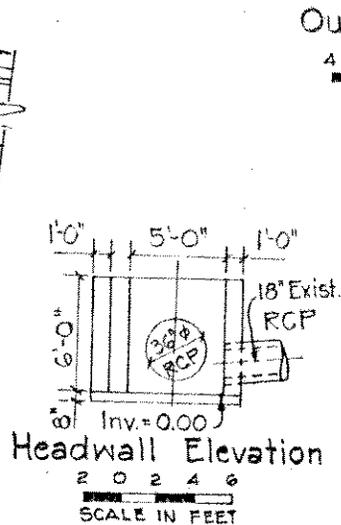
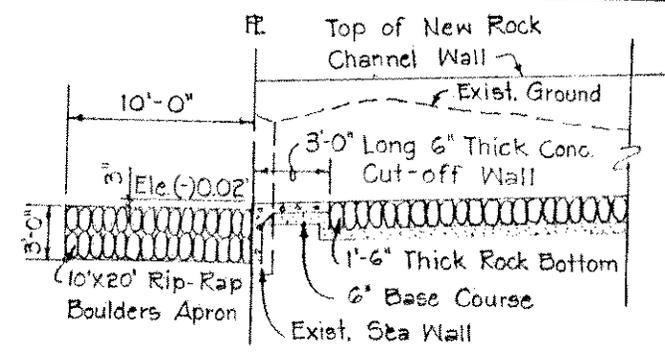
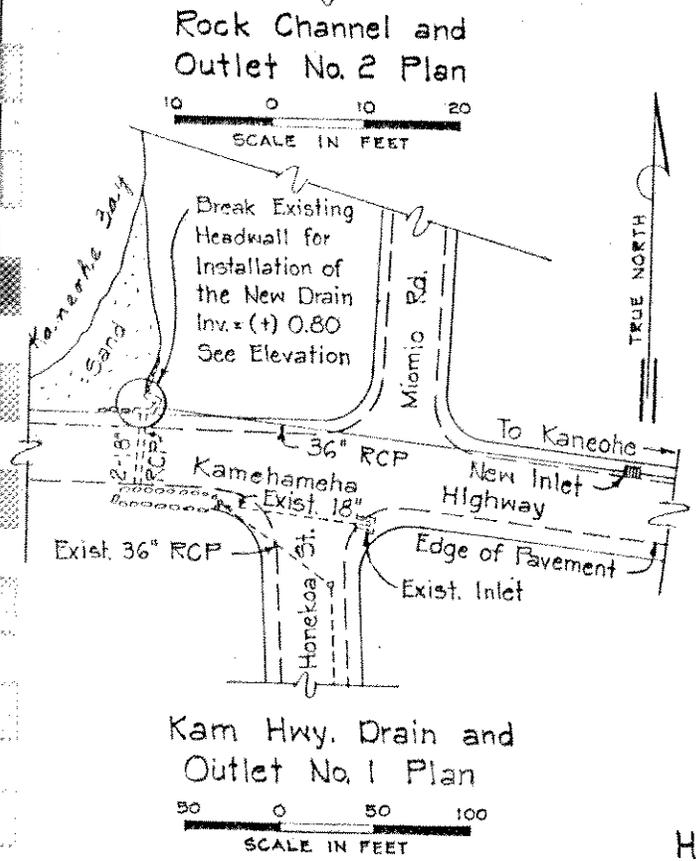
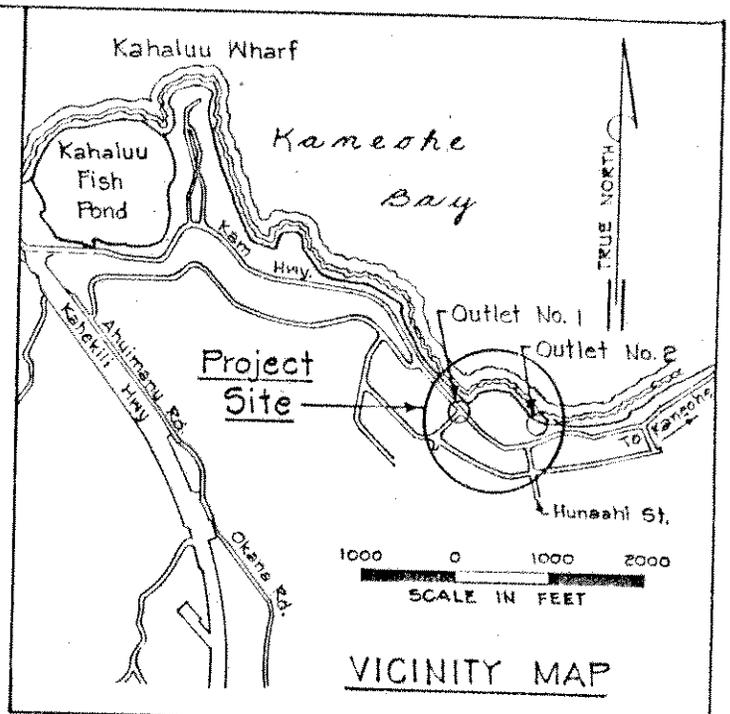
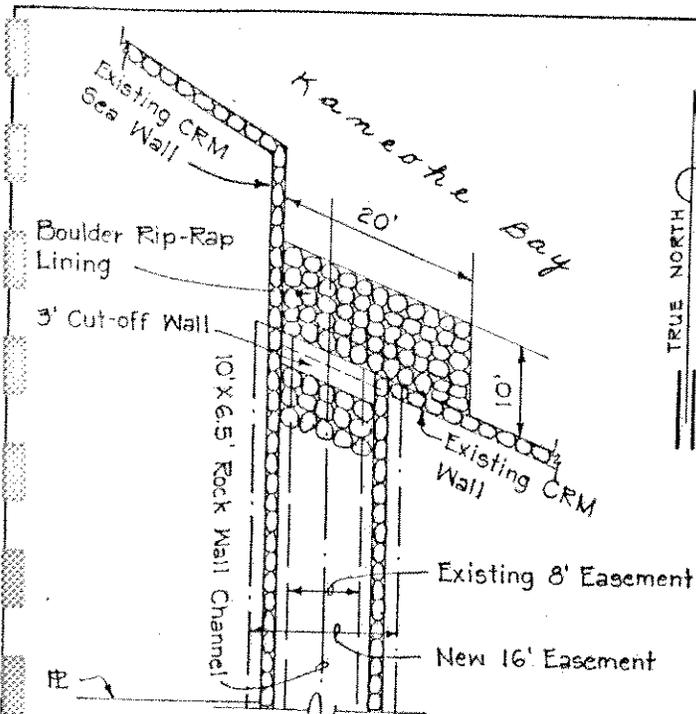
The temperature in the project area ranges from 65°F in January to 85°F in the summer. The average annual rainfall ranges from 75 inches to 100 inches.

The U. S. Department of Agriculture's soil survey has reported that the soil material in this area is mostly Aloeloa silty clay. The surface layer, about 10 inches thick is dark reddish-brown silty clay, and the subsoil, about 48 inches thick, is dark red and red silty clay that has sub-angular blocky structure. The permeability of the soil structure is moderately rapid and is medium acid in the surface layer to strong acid in the subsoil (Ref. 2).

The existing drainage system which services this area starts from the mauka end of Hunaahi Street where two unlined interceptor



# FIGURE - III OUTLET DETAILS



PURPOSE: Relief Drain Outlets  
 DATUM: Mean Sea Level = 0.00  
 NAME & ADDRESS OF ADJACENT PROPERTY OWNERS:  
 (1) City & County of Honolulu  
 (2) State of Hawaii  
 (3) Alina, Kobayashi & McDougall

Proposed Kamehameha Highway  
 Hunaahi Street Relief Drain  
 in Kaneohe, Oahu  
 County of Honolulu, State of Hawaii  
 Application by City & County of Honolulu

Sheet 1 of 1  
 DATE: September, 1976

ditches drain the surface runoff from the hillside area. A pipe drainage system is used to collect and convey the runoff to a box culvert crossing Kamehameha Highway which connects to an unlined open ditch which drains into Kaneohe Bay (Outlet No. 2). There is a shallow roadside ditch running along the mauka shoulder of Kamehameha Highway from the east end of Miomio Loop and discharges the flow into the Bay (Outlet No. 1). Both existing systems are also shown on Figure II. The maximum capacities of drainage systems through outlets No. 1 and No. 2 are approximately 20 cfs and 200 cfs, respectively. The anticipated storm runoff flow rate for these two systems in accordance with the City's Storm Drainage Standards are 60 cfs and 270 cfs, respectively. Since the capacities of the existing systems are limited, the storm water overflowing along the streets and across private properties has caused flooding problems. The storms of April 1963, February 1969, and July 1971 have caused considerable damages to properties and households.

The City's Department of Public Works has received many flooding complaints over the past years which have requested improvements to the drainage systems. A list of the major complaints and the nature of the problems that were reported to the City is shown on Table I.

The project area is classified as residential on the City's General Plan and Detailed Land Use Map which were adopted on July 1964. The proposed project will be located primarily within the road right-of-way except for the widening portion of the existing ditch outlet which will require an additional strip of private land along the present easement. The present 8-foot wide ditch easement will be extended to 16 feet wide, and a total of 2,700 square feet of private land will be converted into public use. The project area is almost fully developed and the availability of raw land for new development is virtually non-existent, thus, population growth due to the completion of the proposed project is not anticipated.

#### IV. PROBABLE ENVIRONMENTAL IMPACTS AND MITIGATION MEASURES

The environmental impacts of this proposed project consist of those temporary and permanent impacts during the construction and after its completion.

##### 1. Temporary Impacts

The temporary impacts are those of short-term effects generated by the construction activities and equipment. They are listed as follows: (a) Dust, air and noise emission resulting from the operation of construction equipment and activities; (b) Increase in turbidity and discoloration of the bay water at the outlets due to the construction; (c) Some inconvenience to motorists, pedestrians and abutting owners during the construction

TABLE I

MAJOR COMPLAINTS OF FLOOD PROBLEM

<u>Date</u>	<u>Address</u>	<u>Nature of Complaint</u>
4/03/63	47-208 Iuiu St.	Storm water from hillside properties diverted and damaged the property.
4/26/63	47-252 Iuiu St.	Drainage ditch overflowed by storm water causing erosion of property and weakening the foundation of the house.
7/30/64	47-197 Iuiu St.	Storm runoff from street diverted into and damaged property.
2/09/65	47-109 Hunaahi St.	Storm water from street entered and deposited debris and silt on property.
5/04/65	47-233 Miomio Lp.	Drainage ditch wall partially collapsed due to recent storm.
11/21/66	47-185 Iuiu St.	Street runoff diverted into the property and caused households damage.
1/12/68	47-220 Iuiu St.	Storm water constantly diverted into the property from street and caused front yard erosion.
2/03/69	47-207 Kam. Hwy.	Water from road and stream overflowed and flooded house.
2/07/69	47-134 Kam. Hwy.	Drainage ditch overflowed and entered into the property.
11/30/70	47-251 Kam. Hwy.	Storm water eroded property.
7/20/71	47-227 Kam. Hwy.	Storm water overflowed from mauka ditch and entered the property causing property damages.
4/76	47-212 Miomio Lp.	Rainwater runs across the highway and floods the ground floor of the property.
4/76	47-233 Kam. Hwy.	Rainwater always ponds in front the driveway and often runs into the property.

period. However, these temporary adverse impacts are controllable. The following measures will be used to reduce or eliminate the adverse impacts: (a) sprinkling of water to control dust emission; (b) requiring the Contractor to restrict noisy construction activities to only daylight hours from 7:30 a.m. to 3:30 p.m.; (c) requiring construction equipment and vehicles to meet the noise control requirements of Chapter 44A, established and adopted by the State Department of Public Health and also Chapter 44B, Community Noise Control For Oahu; (d) requiring that special attention and care is taken to provide for drainage of storm waters during the construction of the rock channel; the contractor will be required not to pollute water resources with any construction wastes, and objectionable construction discharges will be processed, filtered, ponded, or otherwise treated prior to their discharge into the drainage system; (e) requiring all disturbed area should be restored to its original or better condition; (f) requiring the Contractor to provide temporary access to all properties and necessary signs and flagmen in order to control the local traffic and to minimize the inconvenience to all residents in the area. With the above mitigating measures, the temporary adverse impacts can be controlled and kept to a minimum.

## 2. Permanent Impacts

The permanent adverse impacts which will result from the project include the following:

- (a) The point-discharge of storm water will be increased and more concentrated pollutant loads will enter Kaneohe Bay. Under existing conditions, part of the runoff from streets and private lots will drain into the bay via overland flow due to the inadequacy of drainage capacity. The completion of the project will provide for the collection of storm water into the system and reduce the overflow and overland runoff. This will reduce the quantity of surface pollutant (such as trash, pesticides, herbicides, fertilizer and animal wastes) swept into the bay by the overland flow.
- (b) The project calls for the widening of the existing partially lined ditch from Kamehameha Highway to the ocean. The existing 8-foot wide ditch right-of-way will be widened on both sides to a total of 16 feet. This will result in a change of land use from private to public. The adjacent lands to be acquired are presently being used as open area. Under the present practice of land acquisition by the City, negotiation shall be held between the property owner and the City before the construction starts. An agreeable compensation will be awarded to the owner thus the loss of land by the property owners may not be too severe;
- (c) The widening of the ditch will result in a loss of grass areas. However, the grass is just common type of lawn grass, thus, the effect of this flora loss is insignificant;

- (d) The rock lining of the ditch will reduce the existing natural bottom of breeding area for the small reef fish (manini, hinalea, omaka, uhu and goby) which may occasionally use the muddy bottom and holes or cracks in the ditch wall. However, the impact is very small because the existing ditch is only 320 feet long and 5 feet wide (exclusive of the side walls) and is submerged only at times of high tides so that any effects due to the reduction of natural ground area will be insignificant.

### 3. Water Quality

The Kaneohe Bay water at the outlet area is currently classified as AA waters by the State Health Department. Chapter 37-A of the Public Health Regulations prohibits any point discharge, other than from natural sources, into the bay. The storm water runoff, either collected in a drainage system or as overland runoff, is part of the natural water resource which include stream flow and ground water seepage discharging into the bay. Water quality analysis related to storm water in this area has not been conducted by any agency, however, comparison of stream water quality on bacterial counts, physical and chemical constituents at dry and wet weather conditions has been conducted at various locations in Oahu areas. Results of the studies have indicated that the stream waters during wet weather period were generally higher in turbidity, color, nutrients and solid contents; lower in total bacterial counts, chloride and pH; and virtually no change in dissolved oxygen (Ref. 4 & 5).

The changes in water quality occurred during wet weather condition were directly attributed to surface runoff including the waters from the streets, rooftops, and private yards. The major changes of water quality are related to solid contents whether from soil erosion of stream bed or from adjacent banks and yards. Thus, the storm drainage system will not significantly contribute to the overall degradation of water quality except to concentrate the pollutant loads into a point-source.

A marine biological reconnaissance report (Ref. 3) for the area adjacent to the existing outlets near Miomio Loop has provided the following information: (a) The flora and fauna in this area appear to be more concentrated in 100 to 200 feet from the outlets. This suggests that the periodic influxes of fresh water from storm runoff has created estuarine-like conditions attractive to many organisms; (b) The relative rich growth of live corals within 200 feet from the outlets indicates that the storm drainage has had a little effect on these organisms from the past years. The report concludes that there is sufficient buffer zone for mixing and dispersion of

fresh water and the increased flow rate should have very little detrimental effect on the biological environment adjacent to the existing outlets in Kaneohe Bay.

Kaneohe Bay is now receiving an average of 35 million gallons per day (MGD) of storm water from the nine (9) perennial streams over a total drainage basin area of 40 square miles (25,600 acres). The mass emission rates of nitrogen and phosphorus from all the stream flow are 110 pounds and 15 pounds per day, respectively. The sediment loads from the streams into the bay are about 192,000 pounds per day or 35,000 tons per year (Ref. 6 ). The proposed project will collect storm water from a subbasin with a total area of only 80 acres. The adverse effect from the project, in comparison with the total basin area, is very small and is considered negligible.

4. Sediment

Soil erosion in this area is not generally a serious problem because most of the area in the project drainage basin are well-covered with grass or paved roadways. Occasional soil erosion from the hillside due to intensive rainfalls is not substantial and will not cause, in all probability, significant water pollution to the bay waters.

The proposed project will not contribute a large quantity of suspended solid loads which normally result from mass erosion of the soil in a running unimproved stream. However, a small amount of silt and debris may be washed down from the street into the drainage system and will eventually be transmitted into the receiving waters in Kaneohe Bay. Because the quantity of these materials is small and the particles are generally very fine in size and also the occurrence will be occasional, there would not be any significant adverse impact to the bay waters. There may be some loose excavated material washed down along the street and from the ditch during heavy rainstorms during the construction period. The Contractor will be required to excavate the area by sections in order to minimize the exposed areas and the stockpiling of excavated material along the project area. A City inspector will be on the project site to ensure that the excavated material will be handled properly by the contractor.

5. Archaeological and Historical Significance

There are no known archaeological or historical sites in the project area according to the State Register of Historic Places.

6. Social-Economical Consideration

The project will not displace any residents and will not adversely affect the off-shore waters in Kaneohe Bay. The

project will provide additional drainage capacity and protect the residents from possible flooding and damage to their properties.

The construction of this project will require a substantial labor force and will add a total estimated \$400,000 worth of improvements to the community.

7. Public Facilities

The project will not induce or facilitate population growth, since most of the buildable area in the drainage district is already urbanized. Hence, the project will not have any long-term adverse impact on public facilities. Areas that are disturbed will be restored to original condition. Utility lines that are affected during construction will be adjusted and protected against damage.

V. UNAVOIDABLE ADVERSE ENVIRONMENTAL EFFECTS

- A. Airborne emissions at the project site including dust and exhaust emissions generated from the operation of trucks, tractors and other construction equipment.
- B. Noise emissions caused by construction equipment.
- C. Some inconvenience to motorists, pedestrians and abutting owners will be experienced during the construction.

VI. ALTERNATIVES TO THE PROPOSED PROJECT

- A. Forego the project construction and maintain the existing environmental setting in the project area. However, this course of action will not reduce the flood hazard and improve the well-being of the residents in the area.
- B. Regrade the properties and elevate or flood proof the houses that are situated in low-lying and flood-prone areas. Since a total of 25 properties will be involved and the owners will be required to voluntarily take the initiative and provide private financing, this alternative is not practical and manageable.
- C. Use detention ponds and dry wells to control and drain waters. This is not feasible since there are no suitable sites or large acreage of land to effect this alternative.
- D. Provide street and drainage improvements under an improvement district project and require the property owners to participate in the project. However, in considering the specific topographic

and traffic condition in this area, the street must be widened with the installation of curbs, gutters and sidewalks. This will cost more than \$1.0 million and would be too costly (assessment for owner participation is estimated to be more than \$3,000.00 per lot).

- E. The proposed project itself which is funded in the City's CIP budget.

VII. THE RELATIONSHIP BETWEEN LOCAL SHORT-TERM USES OF MAN'S ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

The project proposes the improvement of the existing unlined ditch and the culvert crossing Kamehameha Highway. Under the proposal, the present 8-foot wide ditch easement will be extended to 16 feet wide and the natural bottom will be lined with rubble rocks. The widening of the ditch will require an acquisition of 2,700 square feet of privately owned land along the ditch which will be converted to public use. The completion of the project will eliminate the flood hazard and potential property damages in the project area. Thus, the attendant upgrading of the social and economic well-being of the residents are permanent and continually benefited.

III. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES

The construction materials, energy and labor utilized in the project would be irretrievable.

IX. LIST OF NECESSARY APPROVALS

1. Federal Government

Under Section 10 of the River and Harbor Act of 1899 and under Section 404 of the Federal Water Pollution Control Act Amendment of 1972, a U. S. Department of Army Permit for the construction of the outlets and the discharge of storm water into Kaneohe Bay is needed.

2. State Government

In accordance with Regulation No. 4 of the Department of Land and Natural Resources, State of Hawaii, pursuant to Section 19-70 HRS, a Conservation District Use Permit for construction of the outlets is needed.

3. City and County Government

Under Chapter 205-A, HRS, as amended, and Ordinance No. 4529, relating to the shoreline protection, a Special Management Permit for the construction of the proposed drainage system within the special management zone designated by the Department of Land Utilization, City and County of Honolulu, is needed.

X. AGENCIES CONSULTED IN THE PREPARATION OF EIS

1. Federal Government

U. S. Army Corps of Engineers  
\*USDI, Fish and Wildlife Services  
\*EPA  
U. S. Coast Guard, 14th C. G. District  
USDA, Soil Conservation Service

2. Hawaii State Government

Department of Health  
Department of Land & Natural Resources  
Department of Transportation  
\*Environmental Center, University of Hawaii  
Department of Planning & Economic Development  
Hawaii Institute of Marine Biology

3. City and County of Honolulu

Department of General Planning  
Department of Land Utilization  
\*Department of Transportation Services  
Board of Water Supply

4. Private Group

Property Owner Liaison  
\*Kahaluu Coalition  
Life of the Land  
\*Windward Regional Council  
Huston Eubank  
M. J. Leineweber  
  
\*Did not Respond

XI. LIST OF COMMENT RECEIVED DURING THE PRELIMINARY ASSESSMENT PERIOD  
AND RESPONSE TO THE COMMENT

1. Federal Government

U. S. Army Corps of Engineers



RECEIVED  
OFFICE ENGINEERING  
OCT 20 8 54 AM '75

DEPARTMENT OF THE ARMY  
ARMY ENGINEER DISTRICT HONOLULU  
BLDG. 230, FT. SHAFTER WORKS  
APO SAN FRANCISCO 96558

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PODED-P

16 October 1975

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

Dear Mr. Hayashida:

The following comments are in response to your request for review of the preliminary assessment for the proposed Kamehameha Highway-Hunaahi Street Relief Drain Project.

a. The proposed project will require a Department of the Army permit under Section 10 of the River and Harbor Act of 1899. Provisions of Section 404 of the Federal Water Pollution Control Act Amendments of 1972 may be applicable depending upon the use of fill at the outlet site.

b. Your attention is directed to the recent request by the Environmental Protection Agency (see PODCO-0 letter dated 7 October 1975 to you) for a monitoring program to check if the discharge from the Kahaluu Flood Control project meets State water quality standards. The question arises whether the discharge from any storm drain meets water quality standards in Kaneohe Bay. It is to answer this and related questions that the Corps (in the Kaneohe Bay Urban Water Resources Study) has been doing monitoring of some streams in the area and intends to continue with more intensive monitoring during the forthcoming wet season starting in November. However, the Corps does not have the resources to monitor some of the individual storm drains as should be done in assessing the magnitude of the problem. Should you wish, we would welcome working out a joint monitoring program which could include the Environmental Protection Agency and the State Department of Health. Any such monitoring program necessarily includes assessing some of the cumulative impacts upon receiving waters.

c. Specific questions pertaining to the subject assessment are:



PODED-P  
Mr. Kazu Hayashida

16 October 1975

- (1) What is the design storm used to obtain the Q's shown on figure 1?
- (2) On page 6, what are the constituents of the "pollutant loads" referred to and what are the estimates of their quantities under differing rainfall and land use conditions?
- (3) What are the various land uses and their areas in acres within the drainage areas shown on figure 1?
- (4) Are there any grading operations or permits for the subject area?
- (5) Are there any major land use changes foreseeable in the drainage areas that would affect the quality of the runoff?
- (6) Would it be possible to do some "before and after" monitoring of discharges from the drains of the area?

Thank you for the opportunity to comment.

Sincerely yours,

  
KISUK CHEUNG  
Chief, Engineering Division

Copy furnished:  
US Environmental Protection Agency, Region IX  
State Department of Health, ATTN: Ms Parnell

501-12-0754

November 28, 1975

Mr. Kisuk Cheung, Chief  
Division of Engineering  
U.S. Corps of Engineers  
Building 230, Fort Shafter  
APO San Francisco 96558

Dear Mr. Cheung:

SUBJECT: YOUR LETTER OF OCTOBER 7, 1975 RELATING  
TO THE PRELIMINARY ASSESSMENT OF THE  
KAMEHAMEHA HIGHWAY - HUNAAHI STREET  
RELIEF DRAIN

Thank you for your comments and suggestions.

We will obtain a Department of the Army permit before we start construction on this project.

We are willing to participate in a joint monitoring program for individual storm drains. However, we will be limited to the extent of our capabilities and feel that the program objectives, scope and elements relating to cost must be identified and worked out before a firm commitment can be made.

The following is our response to your specific questions on this assessment.

1. A 50-year frequency design storm was used in accordance with the City's Storm Drainage Standards.
2. The constituents of the pollutant loads would normally include: debris and silty soil materials (settleable and suspended solids), nutrients (phosphorous and nitrogen compounds) and petroleum products (oil and grease). The quantities of such pollutant loads are not known and will vary from location to location with each storm based on the intensity and duration of the storm. At the present time, no rational method has been formulated to estimate the constituents and quantity.

Mr. Kisuk Cheung  
Page 2  
November 28, 1975

3. The land use of the area is currently zoned for residential and preservation.

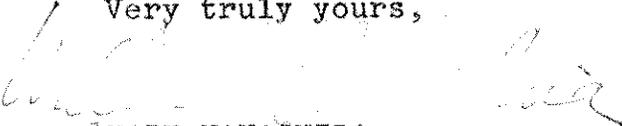
4. There are no current grading operations in this area.

5. No change of land use in this area is foreseeable.

6. We do not believe that a project of this size could justify the costs involved in before and after monitoring of discharges.

We will submit a draft EIS for your review and comments at a later date.

Very truly yours,

  
KAZU HAYASHIDA  
Director and Chief Engineer

PC/RYN:kk

XII. LIST OF COMMENTS RECEIVED DURING THE EIS PREPARATION NOTICE  
PERIOD AND RESPONSE TO THE SUBSTANTIVE COMMENTS

1. Federal Government

U. S. Army Corps of Engineers  
\*U. S. Coast Guard  
\*U. S. Soil Conservation Service

2. Hawaii State Government

Department of Health  
\*Department of Land and Natural Resources  
\*Department of Transportation  
Department of Planning and Economic Development  
Hawaii Institute of Marine Biology

3. City and County of Honolulu

Department of General Planning  
Department of Land Utilization  
\*Board of Water Supply

4. Private Group

Private Owner Liaison  
Life of the Land  
Huston Eubank

\*No Substantive Comments

7602049



REC: DEPARTMENT OF THE ARMY  
U.S. ARMY ENGINEER DISTRICT, HONOLULU  
BLDG. 230, FT. SHAFTER  
SAN FRANCISCO, 96558

MAR 29 41

1 26 PM '75  
TO ENVU  
Engg

29 March 1976

PODED-PV

Mr. Kazu Hayashida  
Director and Chief Engineer  
Department of Public Works  
City and County of Honolulu  
650 S. King Street  
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

The Environmental Impact Statement Preparation Notice for the Kamehameha Highway-Hunaahi Street Relief Drain was received 9 March 1976. We have reviewed the Preparation Notice, and supplementing our letter dated 16 October 1975 to you, we offer the following comments for your consideration:

- a. The drainage areas and design discharges should be included in the EIS.
- b. The EIS should describe the present land uses in the drainage basin by percentage of total area and the existence of present grading operations, grading permits, or known plans for developing the wooded hills landward of the project area.
- c. In Section VII, page 9, it is stated that the EIS will "identify and disclose possible adverse impacts to the receiving water quality and marine lives (sic) of Kaneohe Bay." As a first step, it would seem appropriate to determine and monitor the chemical, biological and physical constituents of the runoff--before, during and after construction in order to document possible damage to marine life. As reiterated in our letters of 7 October 1975 and 16 October 1975, the Corps of Engineers would welcome working out a joint monitoring program for this or other similar projects in the Kaneohe Bay region.
- d. In Section V, page 8, please elaborate on how the project "...will reduce the quantity of surface pollutants swept to the baywater by the overland flow" and how "the total quantity of pollutants discharging into Kaneohe Bay will be reduced."



PODED-PV  
Mr. Kazu Hayashida

29 March 1976

e. One area of immediate physical impact that should be addressed in the EIS is the potential deposition of silt in the dredged channel along the western shoreline off Miomio Road and opposite Outlet No. 1.

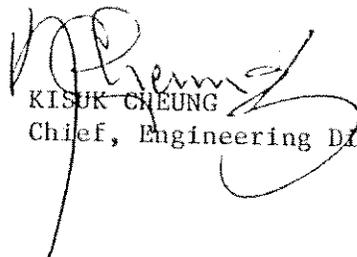
f. Attention should also be paid to evaluating the present recreational value of the existing five-foot wide ditch leading to Outlet No. 2, and the corresponding future impact of the proposed twelve-foot wide concrete channel. Localized recreational activities may include collecting bait-fish, fishing and skate boarding.

g. Particular emphasis should be placed on evaluating the aesthetic value of the ditch leading to Outlet No. 2 and the one along Kamehameha Highway. What measures will be implemented to maintain or enhance the aesthetics of new structures? Alternately, it may be desirable to reduce as much as possible the aesthetic intrusion of a concrete channel on the nearby residents.

h. We wish to correct an apparent misimpression in Section VII, page 9, regarding the Department of the Army permit program. Environmental Impact Statements are not necessarily required to obtain permits, but an Environmental Assessment should be prepared to accompany the permit application. This applies to permits both under Section 10 of the River and Harbor Act of 1899 and under Section 404 of the Federal Water Pollution Control Act Amendments of 1972.

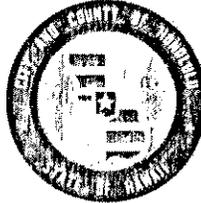
Thank you for the opportunity to comment.

Sincerely yours,

  
KISUK CHEUNG  
Chief, Engineering Division

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
HONOLULU HAWAII 96813



FRANK F. FASI  
MAYOR

KAZU HAYASHIDA  
DIRECTOR AND CHIEF ENGINEER

601-12-0267

May 13, 1976

Mr. Kisuk Cheung, Chief  
Engineering Division  
U.S. Army Corps of Engineers  
Building 230, Fort Shafter  
APO San Francisco 96558

Dear Mr. Cheung:

SUBJECT: YOUR LETTER OF MARCH 29, 1976,  
RELATING TO THE EIS PREPARATION  
NOTICE FOR THE KAMEHAMEHA HIGHWAY-  
HUNAAHI STREET RELIEF DRAIN

Thank you for your comments and suggestions. The following is our response.

a. The drainage areas and discharges for System No. 1 and No. 2 are approximately 20 acres and 65 cubic feet per second (cfs) and 80 acres and 370 cfs, respectively, and will be indicated in the EIS.

b. The total drainage basin area for the project is approximately 100 acres, of which 50% is currently zoned as residential and the remaining 50% zoned as conservation. There are no present grading operations or proposed grading permits or plans for development of the hillside area.

c. We concur that the best way to identify and disclose possible impacts is to monitor the chemical and biological constituents of the runoff before and after construction of any storm drain improvement. However, we feel that a project of this size and location will not justify the requirements and costs involved in the monitoring program. We are willing to participate in a joint monitoring program for storm drains, but we will be limited to the extent of our capabilities.

Mr. Kisuk Cheung, Chief  
Page 2  
May 13, 1976

d. The statement on pollutants was based on a comparison of total pollutant loads discharging into the water with or without the project. The amount of storm runoff which cannot be accommodated in the drainage system will flow overland across private lands to reach the bay. In this case, more pollutants such as leaves, residual of pesticides, herbicides and fertilizer and animal waste can be expected to be carried by the flood waters into the bay. The proposed project will provide additional drainage capacity to prevent the overflow from the system to reduce the pollutant loads discharging into the bay. This will be indicated in the EIS.

e. The potential deposition of silt in the dredged channel along the shoreline off Miomio Road will be small and insignificant based on the condition of the existing outlet. Outlet No. 1 on the west side of Miomio Road did not show any large amount of silt deposit from storm water runoff. The presence of litter and debris at the outlet area is due to the shoreline configuration which serves as a natural catchment basin for wind driven floatables. The silty material and debris from inland areas will be screened and filtered by the existing ditch along the mauka shoulder of Kamehameha Highway. This ditch will continue to function and only the bypass flows from this ditch will be drained by the new system. Changes in the water quantity attributable to silty material reaching the bay will therefore probably be insignificant.

f. The elevation of the channel invert varies from approximately 1.0 foot above mean sea level at the upstream end to mean sea level at the outlet. The channel will have a depth of 2 to 3 feet of water during high tide or during heavy rainstorms. Therefore, recreational activities in the proposed channel, such as collection of bait-fish or fishing are limited. Skateboard riding is not anticipated because of the rock bottom channel.

g. We have decided to change the originally proposed all concrete channel to a rock wall and rock bottom channel in order to simulate existing conditions of the area and to minimize the adverse impacts to the macro-fauna which may

Mr. Kisuk Cheung, Chief  
Page 3  
May 13, 1976

use the existing ditch as a breeding area. We believe this change and proper maintenance of the system along Kamehameha Highway will add to the enhancement of the area.

h. We will correct the statement with respect to permit requirements as you suggested.

Very truly yours,

*Wallace Mujahid*  
KAZU HAYASHIDA  
Director and Chief Engineer



DEPARTMENT OF TRANSPORTATION  
UNITED STATES COAST GUARD

76 02197

Address reply to:  
COMMANDER (mep)  
Fourteenth Coast Guard District  
677 Ala Moana  
Honolulu, Hawaii 96813

ENV III  
Engrg

5922

5 APR 1976

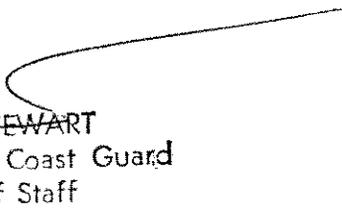
Mr. Kazu Hayashida  
Director and Chief Engineer  
Department of Public Works  
City and County of Honolulu  
650 S. King Street  
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Staff review of the "Environmental Impact Statement Preparation Notice for the Kamehameha Highway - Hunaahi Street Relief Drain, Kahaluu, Oahu, Hawaii" has been completed, and the Coast Guard has no objections to the project being implemented as stated therein. We have no particular comments to offer on the proposed project in relation to Coast Guard responsibilities or jurisdiction. There are no Coast Guard permits required in connection with the proposed project.

The opportunity to review and comment on the EIS Preparation Notice is appreciated.

Sincerely,

  
W. H. STEWART  
Captain, U. S. Coast Guard  
Chief of Staff  
Fourteenth Coast Guard District

Copy to:  
COMDT (G-WLE)  
OEQC Hawaii  
CEQ Washington

7602420

UNITED STATES DEPARTMENT OF AGRICULTURE

SOIL CONSERVATION SERVICE

RECEIVED  
WORKS

440 Alexander Young Building, Honolulu, HI 96813

APR 19 8 44 AM '76  
April 15, 1976

TO \_\_\_\_\_  
*ENVTY*  
*Engng*

Mr. Kazu Hayashida  
Director and Chief Engineer  
Department of Public Works  
City and County of Honolulu  
650 South King Street  
Honolulu, HI 96813

Dear Mr. Hayashida:

Subject: EIS - PROPOSED KAMEHAMEHA HIGHWAY-HUNAAHI STREET  
RELIEF DRAIN, KAHALUU, OAHU, HAWAII

We have reviewed subject preparation notice and have no comments.

Sincerely,

*Francis C. H. Lum*  
Francis C. H. Lum  
State Conservationist



GEORGE R. ARIYOSHI  
GOVERNOR OF HAWAII

RECEIVED  
MAR 29 2 54 PM '76



STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. Box 3378  
HONOLULU, HAWAII 96801

March 23, 1976

RECEIVED  
DEPT. OF PUBLIC WORKS

MAR 10 19 11 17 76  
*Enwllf*  
*Engrg*

GEORGE A. L. YUEN  
DIRECTOR OF HEALTH

Audrey W. Mertz, M.D., M.P.H.  
Deputy Director of Health

Henry N. Thompson, M.A.  
Deputy Director of Health

James S. Kumagai, Ph.D., P.E.  
Deputy Director of Health

In reply, please refer to  
File EPHS - SS

MEMORANDUM

To: Mr. Kazu Hayashida, Director and Chief Engineer  
Department of Public Works, City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Environmental Impact Statement Preparation Notice for the Kamehameha  
Highway - Hunaahi Street Relief Drain

Thank you for allowing us to review and comment on the proposed EIS. The following are staff comments on the subject project EIS notice:

- 1) Table 1 - Have there been other major complaints since 1971? If not, why?
- 2) Part V.
  - a. Construction activities must comply with Public Health Regulations, Chapter 44B and 44A, Community and Vehicular Noise Control for Oahu.
  - b. Where is the water table in this area? What will be done with water discharged during the construction and laying of the pipelines?
  - c. The statement saying "total quantity of pollutants discharging into Kaneohe Bay will be reduced" is only speculative at this time.
  - d. A more thorough inspection of the reef life is necessary before stating that adverse effects are insignificant.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

*James S. Kumagai*  
JAMES S. KUMAGAI, Ph.D.

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK F. FASI  
MAYOR

KAZU HAYASHIDA  
DIRECTOR AND CHIEF ENGINEER

601-12-0266

May 13, 1976

Dr. James S. Kumagai  
Deputy Director for Environmental Health  
State Department of Health  
State of Hawaii  
P.O. Box 3378  
Honolulu, Hawaii 96813

Dear Dr. Kumagai:

SUBJECT: YOUR LETTER OF MARCH 23, 1976,  
RELATING TO THE EIS PREPARATION  
NOTICE FOR THE KAMEHAMEHA HIGHWAY-  
HUNAAHI STREET RELIEF DRAIN

Thank you for your comments. The following is our response.

1. Table I

After 1971, major complaints concerning the flood problem and damages in this area were similar to the complaints listed in Table I. The degree of damages was less and related directly to the intensity of the storms.

2. Part V

- a. The contractor will be required to comply with all Federal, State, City and County pollution control measures, including Chapter 44-A and 44-B, Community and Vehicular Noise Control for Oahu. This will be stipulated in the construction contract specifications.
- b. No water table data were collected for this project. Base flows enter the nearby Ahuimanu and Kahaluu drainage systems between elevation 10 feet and sea level. Since the soil in the

Dr. James S. Kumagai  
Page 2  
May 13, 1976

immediate area is alluvium, we can assume that the water table is mean sea level. For the control of construction dewatering, the contractor will be required to filter, pond, or otherwise treat the effluent prior to discharge into the bay.

- c. Although the statement on pollutants cannot be quantified, it can be justified on the basis of a comparison of total pollutant loads discharging into the water with or without the project. The amount of storm runoff which cannot be accommodated in the system will flow overland across private lands to reach the bay. In this case, more pollutants such as leaves, residual of pesticides, herbicides and fertilizer and animal waste can be expected to be carried by the flood waters into the bay. The project will provide additional drainage capacity to prevent the overflow from the system to reduce the pollutant loads discharging into the bay.
- d. Dr. Bowers, marine biologist, was engaged to study the potential effects of the proposed project on the marine environment. He has submitted a reconnaissance report on the areas immediately seaward of the project area. The report indicates that live corals are found at least 200 feet offshore from the two outlets; and fauna and flora appear to be more concentrated at least 100 feet seaward from the outlets. Dr. Bowers has concluded that the increased flow rates from the proposed improvements will have little, if any, detrimental effects on the biological environment adjacent to the outlets.

Very truly yours,

*Wallace Hayashida*  
FOR KAZU HAYASHIDA  
Director and Chief Engineer

76 02217

GEORGE R. ARIYOSHI  
GOVERNOR OF HAWAII

RECEIVED  
APR 8 11 16 AM '76



CHRISTOPHER COBB, CHAIRMAN  
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU  
DEPUTY TO THE CHAIRMAN

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

*ENVU*  
*Engg*

DIVISIONS:  
CONVEYANCES  
FISH AND GAME  
FORESTRY  
LAND MANAGEMENT  
STATE PARKS  
WATER AND LAND DEVELOPMENT

April 1, 1976

Honorable Kazu Hayashida  
Department of Public Works  
City and County of Honolulu  
650 So. King Street  
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Your 601-12-0135

We have reviewed the EIS notice for the Kam Highway - Hunaahi drain,  
and have no comments to offer.

Sincerely,

*Edgar A. Hamasu*  
CHRISTOPHER COBB  
Chairman of the Board

cc: DOWALD  
FISH & GAME  
LAND MANAGEMENT

760207

GEORGE R. ARIYOSHI  
GOVERNOR

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APR 1 9 22 AM '76



STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
869 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813

*ENVU  
Engng*

E. ALVEY WRIGHT  
DIRECTOR

DEPUTY DIRECTORS

WALLACE AOKI  
RYOKICHI HIGASHIONNA  
DOUGLAS S. SAKAMOTO  
CHARLES O. SWANSON

IN REPLY REFER TO:

STP 8:3567

March 24, 1976

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

Dear Mr. Hayashida:

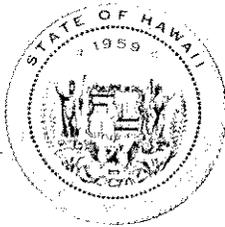
Subject: EIS Preparation Notice for Kamehameha  
Highway - Hunaahi Street Relief Drain

Thank you for the opportunity to review the subject pro-  
posal. However, we have no comments to offer.

Sincerely,

*Douglas S. Sakamoto*  
for E. ALVEY WRIGHT  
Director

76 02605



RECEIVED  
DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT  
DEPT OF PUBLIC WORKS

Kamamalu Building, 250 South King St., Honolulu, Hawaii • Mailing Address: P.O. Box 2317, Honolulu, Hawaii 96804

GEORGE R. ARIYOSHI

Governor

HIDETO KONO

Director

FRANK SKRIVANEK

Deputy Director

APR 27 8 17 AM '76

TO ENV  
Engng

DR-  
Kono

April 19, 1976

Ref. No. 0839

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

Dear Mr. Hayashida:

Subject: Environmental Impact Statement for the Proposed  
Kamehameha Highway-Hunaahi Street Relief Drain,  
Kahaluu, Oahu, Hawaii

We have reviewed the preparation notice of the environmental impact statement for the Kamehameha Highway-Hunaahi Street Relief Drain project.

We suggest for this subject EIS that you include photographs of the immediate area of the two outlets to assist in the impact evaluation of the discharge of storm water into the bay. You might also present any data on the water quality of the storm water to determine its impact on the immediate area of the discharge.

We appreciate the opportunity of reviewing this preliminary EIS and look forward to receiving the final statement.

Sincerely,

for HIDETO KONO

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK F. FASI  
MAYOR

KAZU HAYASHIDA  
DIRECTOR AND CHIEF ENGINEER

601-12-0262

May 13, 1976

Mr. Hideto Kono, Director  
Department of Planning and  
Economic Development  
250 South King Street  
Honolulu, Hawaii 96813

Dear Mr. Kono:

YOUR LETTER OF APRIL 19, 1976, RELATING  
TO THE EIS PREPARATION NOTICE FOR THE  
KAMEHAMEHA HIGHWAY-HUNAAHI STREET RELIEF DRAIN

Thank you for your comments.

We will include some photographs taken in the immediate area of the two outlets in the EIS. Water quality data of storm runoff in the immediate area are not available. Considering the rural characteristics of the drainage area, storm waters are not considered to be polluted from any source.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Kazu Hayashida".

For KAZU HAYASHIDA  
Director and Chief Engineer

7601886



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Mar 25 9 35 AM '76  
UNIVERSITY OF HAWAII AT MANOA  
Mar 25 2 00 PM '76

Hawaii Institute of Marine Biology  
P.O.Box 1348 • Coconut Island • Kaneohe, Hawaii 96744  
Cable Address: UNIHAW

ENV  
Engg

March 22, 1976

RE: Your letter March 3, 1976  
#601-12-0135

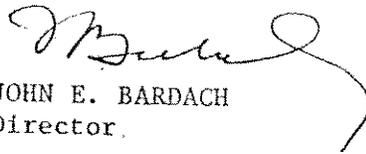
Mr. Kazu Hayashida  
Director and Chief Engineer  
Department of Public Works  
City and County of Honolulu  
650 South King Street  
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

SUBJECT: ENVIRONMENTAL IMPACT  
STATEMENT FOR THE PROPOSED  
KAMEHAMEHA HIGHWAY-HUNAAHI  
STREET RELIEF DRAIN,  
KAHALUU, OAHU, HAWAII

Please accept the attached statement  
by Dr. Ernst Reese as the official statement  
of this laboratory.

Yours truly,

  
JOHN E. BARDACH  
Director

JEB:ec  
Attachment

4/6



University of Hawaii at Manoa

RECEIVED  
PUBLIC WORKS  
2 14 PM '76

Hawaii Institute of Marine Biology  
P.O.Box 1346 • Coconut Island • Kaneohe, Hawaii 96744  
Cable Address: UNIHAW

March 20, 1976

TO : Dr. John E. Bardach, Director, Hawaii Institute of Marine Biology  
FROM : Ernst S. Reese, Professor of Zoology  
SUBJECT : EIS for Kamehameha Highway - Hunaahi Street relief drain,  
Kahaluu, Oahu. Hawaii

I would judge that the benefits to be gained from this project in terms of the residents of the area outweigh minor detrimental influences to the environment.

As a matter of principle, I object to any stream being put into a cement bed, but this has happened all over the State. I would judge the elimination of the natural bottom of the ditch as the most significant permanent adverse impact. Sloping concrete sides which join a natural rocky bottom would seem to be a better solution. According to their figures this is a small but not insignificant area - 1,500 square feet of bottom - which may be used as a breeding area by certain reef fishes.

The point discharge into the bay at the existing outlet No. 1 may be reduced by the proposed outlet diverting some run-off to another location. This could be beneficial.

*Ernst Reese*

DEPARTMENT OF PUBLIC WORKS  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK P. FASI  
MAYOR

KAZU HAYASHIDA  
DIRECTOR AND CHIEF ENGINEER

601-12-0261

May 13, 1976

Mr. John E. Bardach, Director  
Hawaii Institute of Marine Biology  
P. O. Box 1346  
Coconut Island  
Kaneohe, Hawaii 96744

Dear Mr. Bardach:

YOUR LETTER OF MARCH 22, 1976, RELATING TO THE  
EIS PREPARATION NOTICE FOR THE KAMEHAMEHA HIGHWAY-  
HUNAAHI STREET RELIEF DRAIN

Thank you for your comments. The following is our response.

We have decided to change the originally proposed all concrete channel to a rock wall channel and rock bottom channel to simulate existing conditions as Dr. Reese had suggested.

The diversion of flows away from outlet No. 1 cannot be justified because of the existing terrain and other ground conditions. Diverting some runoff to another location is not practical nor economically feasible on this small project.

Very truly yours,

  
KAZU HAYASHIDA  
Director and Chief Engineer

7601786

DEPARTMENT OF GENERAL PLANNING  
CITY AND COUNTY OF HONOLULU

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HONOLULU, HAWAII 96813  
DEPARTMENT OF PUBLIC WORKS

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MAR 18 AM '76  
*Engng*



FRANK F. FASI  
MAYOR

ROBERT R. WAY  
CHIEF PLANNING OFFICER

DGP3/76-501 (JB)

March 19, 1976

MEMORANDUM

TO : MR. KAZU HAYASHIDA, DIRECTOR AND CHIEF ENGINEER  
DEPARTMENT OF PUBLIC WORKS

FROM : ROBERT R. WAY, CHIEF PLANNING OFFICER

SUBJECT: KAMEHAMEHA HIGHWAY-HUNAHI STREET  
RELIEF DRAIN  
EIS PREPARATION NOTICE

We appreciate your sending us a copy of the above-captioned. The basic information and outline as presented in the Preparation Notice seem adequate. However, the statement regarding the insignificant effects on the fauna in this area should be better substantiated. Efforts to examine and study further the potential harmful effects upon the waters and marine life of Kaneohe Bay that might result from this proposal are commendable.

*Robert R. Way*  
ROBERT R. WAY  
Chief Planning Officer

RRW:fmt

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK F. FASI  
MAYOR

KAZU HAYASHIDA  
DIRECTOR AND CHIEF ENGINEER

601-12-0264

May 13, 1976

TO : MR. ROBERT R. WAY, CHIEF PLANNING OFFICER  
DEPARTMENT OF GENERAL PLANNING

FROM : KAZU HAYASHIDA, DIRECTOR AND CHIEF ENGINEER  
DEPARTMENT OF PUBLIC WORKS

SUBJECT: YOUR LETTER OF MARCH 19, 1976, RELATING TO THE EIS  
PREPARATION NOTICE FOR THE KAMEHAMEHA HIGHWAY-HUNAAHI  
STREET RELIEF DRAIN

---

Thank you for your comments.

Dr. Bowers, a marine biologist, was engaged to study the potential effects of the proposed project on the marine environment. He has submitted a reconnaissance report on the areas immediately seaward of the project area. The report indicated that live corals are found at least 200 feet offshore from the two outlets and fauna and flora appear to be more concentrated at least 100 feet seaward from the outlets. Dr. Bowers has concluded that the increased flow rates from the proposed improvements will have little, if any, detrimental effects on the biological environment adjacent to the outlets.

  
KAZU HAYASHIDA  
Director and Chief Engineer

DEPARTMENT OF LAND UTILIZATION  
**CITY AND COUNTY OF HONOLULU**  
DEPT. OF ENGINEERING 650 SOUTH KING STREET  
HONOLULU, HAWAII 96813

7601885

MAR 25 9 35 AM '76

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DEPT. OF PUBLIC WORKS

MAR 24 2 14 PM '76

*Ea Vill*  
*Engly*

FRANK F. FASI  
MAYOR



GEORGE S. MORIGUCHI  
DIRECTOR

LU3/76-662 (GN)  
601-12-0135

March 24, 1976

MEMORANDUM

TO : MR. KAZU HAYASHIDA, DIRECTOR AND CHIEF ENGINEER  
DEPARTMENT OF PUBLIC WORKS

FROM : MR. WILLIAM E. WANKET, ACTING DIRECTOR  
DEPARTMENT OF LAND UTILIZATION

SUBJECT: EIS REVIEW FOR THE PROPOSED KAMEHAMEHA HIGHWAY--  
HUNAHI STREET RELIEF DRAIN, KAHALUU, OAHU, HAWAII

This is in response to your March 3, 1976, memorandum (601-12-0135) and accompanying submittal of an Environmental Impact Statement Preparation Notice for the above project.

We would like to mention that the project lies within the Special Management Area established by Ordinance No. 4529. The environmental concerns relating to Ordinance No. 4529 should be addressed in the final statement. Also, compliance of this ordinance should be met prior to construction.

Thank you for the opportunity to comment on the above. We would appreciate the opportunity to review the EIS when completed.

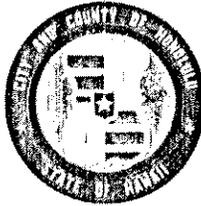
A handwritten signature in black ink, appearing to be "Wanket".

WILLIAM E. WANKET  
Acting Director

WEW:ls

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK F. PASI  
MAYOR

KAZU HAYASHIDA  
DIRECTOR AND CHIEF ENGINEER

601-12-0263

May 13, 1976

TO : MR. GEORGE S. MORIGUCHI, DIRECTOR  
DEPARTMENT OF LAND UTILIZATION

FROM : KAZU HAYASHIDA, DIRECTOR AND CHIEF ENGINEER  
DEPARTMENT OF PUBLIC WORKS

SUBJECT: YOUR MEMORANDUM OF MARCH 24, 1976, RELATING TO THE EIS  
PREPARATION NOTICE FOR THE KAMEHAMEHA HIGHWAY-HUNAHI  
STREET RELIEF DRAIN

Thank you for your comment. We understand that the project lies within the Special Management Area established by Ordinance No. 4529. After the acceptance of the EIS, a request for a Special Management permit will be submitted to your office according to Section 7 of the Ordinance.

The environmental concerns relating to the preservation and protection of the natural resources of the coastal zone and its environments will be addressed in the EIS.

*Kazu Hayashida*  
for KAZU HAYASHIDA  
Director and Chief Engineer

74 61932

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU

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POST OFFICE BOX 3410

HONOLULU, HAWAII 96843

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FRANK F. FASI, Mayor

STANLEY S. TAKAHASHI, Chairman

YOSHIE H. FUJINAKA, Vice Chairman

KAZU HAYASHIDA

EDWARD F. C. LAU

TERESITA R. JUBINSKY

E. ALVEY WRIGHT

EDWARD Y. HIRATA

Manager and Chief Engineer

March 24, 1976

Mr. Kazu Hayashida  
Director and Chief Engineer  
Department of Public Works  
650 South King Street  
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

SUBJECT: Environmental Impact Statement for the  
Proposed Kamehameha Highway - Hunaahi  
Street Relief Drain, Kahaluu

We have reviewed the environmental impact statement for the proposed relief drain and do not anticipate any adverse effects to potable groundwater resources or our water system facilities in the area.

Please call Mr. Lawrence Whang at 548-5221 if further information is needed.

Very truly yours,

EDWARD Y. HIRATA

Manager and Chief Engineer

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DIV OF PUBLIC WORKS  
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March 23, 1976

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

*EDW M  
Engng*

Dear Mr. Hayashida:

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED  
KAMEHAMEHA HIGHWAY-HUNAACHI STREET RELIEF DRAIN,  
KAHALUU, OAHU, HAWAII 601-12-0135

We, the undersigned, are in substantial agreement to the proposed Kamehameha Highway - Hunaahi Street Relief Drain Project as presented in your letter of March 3, 1976 and the enclosures to Mr. and Mrs. Benjamin R. Fleming, Sr.

We note the proposed project is composed of two systems: (1) the construction of approximately 350 feet of relief drain system from the intersection of Hunaahi at Iuiu Streets to Kamehameha Highway and a corresponding 12 feet wide concrete channel with a new box culvert under Kamehameha Highway at Hunaahi Street; (2) the construction of approximately 800 feet of drainage system including catch basins and drain lines along Kamehameha Highway from the east end to the west end of Mio Mio Loop.

As we the undersigned are property owners along the length of proposed system two, we appreciate the City's efforts to eliminate a recurring problem along Kamehameha Highway. We have experienced considerable inconvenience from flooding and to overflows from the existing drainage ditch mauka of the Highway and from surface flows from driveways on the mauka side of the road. In addition, Kamehameha Highway is super-elevated in this section and all roadway runoff currently collects on the makai side of the roadway. Percolation of this runoff is slowed due to saturated soil conditions during periods of heavy rainfall. Because of this condition, the shoulders of the roadway become rutted and extremely difficult to maintain.

After examining the contents of the EIS preparation notice for the proposed project, we wish to make the following suggestions and observations which may strengthen the forthcoming EIS document:

A. The proposed system two indicates a drainage line varying from 24 to 36 inches in diameter along the makai side of the Highway. If it be feasible from an engineering viewpoint, we would suggest placing the system two drain line along or in the existing drainage ditch corridor. We believe it would be a more economical alternative as it would minimize the amounts of excavation and back-fill as well as avoiding underground water lines. Individual catch basins on the makai side, placed as required for proper drainage of surface flows, could then be connected to the new drainage line.

B. Additionally, a rolled asphalt curb along the makai shoulder would aid in directing surface flow to the catch basins.

C. We also suggest that specific mention be made in the forthcoming project EIS that the proposed actions are solely for the amelioration of existing drainage problems in the project area. Such a statement would greatly aid in the proper clarification of the scope and nature of the improvement project.

D. Slides indicating the present drainage problem during heavy rainfalls are available should you and your staff desire further documentation.

4-7-30-29

BR Fleming  
Property Owner  
47-227 Kam Hwy  
Address

Kenneth Campbell by  
Property Owner  
H. M. Cornell  
47-225 Kam Hwy  
Address

Peter Hin Pung Ho  
Property Owner  
47-235 Kam Highway  
Address 4-7-30-27

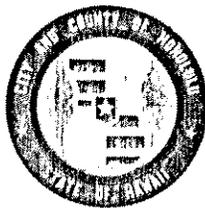
[Signature]  
Property Owner  
47-234 Kam Hwy  
Address  
4-7-30-26

Sandra J Harle  
Property Owner  
47-233 Kam Hwy  
Address  
4-7-30-28

[Signature]  
Property Owner  
47-212 Kam Hwy LP  
Address

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK F. FASI  
MAYOR

KAZU HAYASHIDA  
DIRECTOR AND CHIEF ENGINEER

601-12-0265

May 13, 1976

Mr. Benjamin R. Fleming (et. al.)  
47-227 Kamehameha Highway  
Kaneohe, Hawaii 96744

Gentlemen:

SUBJECT: YOUR LETTER OF MARCH 23, 1976, RELATING  
TO THE EIS PREPARATION NOTICE FOR THE  
KAMEHAMEHA HIGHWAY-HUNAAHI STREET  
RELIEF DRAIN

Thank you for your comments and suggestions. The following is our response to your suggestions.

A. Placing System No. 2 along the mauka side of Kamehameha Highway was considered in the preliminary design. However, the existing situation is that the storm runoff presently flows across the highway, ponds along the makai shoulder and then overflows into the adjacent properties. This occurs because the highway grade is very flat with hardly any slope and the lack of a drainage system on the makai side. Placing System No. 2 on the mauka side would not eliminate the need to construct gutters and inlets along the makai side. Placing System No. 2 along makai shoulder will provide the positive collection and drainage to preclude flooding and standing waters.

B. Asphalt curb along the makai shoulder of Kamehameha Highway is not necessary if the proposed system is completed. Additional flood protection measures should be installed at the discretion of and paid for by the individual property owner.

Mr. Benjamin R. Fleming (et. al.)

Page 2

May 13, 1976

C. We will mention that one of the purposes of the project is for the amelioration of the existing drainage problem in the area.

D. We will contact you should we need the slides showing the drainage problem.

Very truly yours,

  
KAZU HAYASHIDA  
Director and Chief Engineer

Department of Public Works, City & County of Honolulu

650 South King Street

Honolulu, Hawaii 96813

Dear Mr. Hayashida:

SUBJECT: 601-12-0135 ENVIRONMENTAL IMPACT STATEMENT  
FOR THE PROPOSED KAMEHAMEHA HY.-HUNAHI ST. RELIEF  
DRAIN, KAHALOO, OAHU, HAWAII.

The Life of the Land approves the proposed Kamehameha Highway-Hunaahi Street Relief Drain Project as presented in your March 3rd. letter and attachments.

I. The following property owners have been interviewed in the project area and the need for the project to be undertaken before the next rainy season established:

1. Mrs. Chiyako Anduha, 47-212 Mio Mio Loop, corner of Kam. Hy., reports rainwater runoff from mauka Kam. Hy. flows across Hy., and seeks low spots on her property. The water often comes dangerously close to flooding her ground floor, single-family home and carport. The City/County property at this corner location is quite wide and is below the Hy. level. The grassy area becomes saturated with water. When cars run onto this area to park, deep ruts are formed which make mowing difficult.
2. Mr. & Mrs. Horace Cornell (renters), 47-225 Kam. Hy., report property owned by the City/County in front of their address also becomes rutted and muddy where the mail truck and garbage trucks drive over it during the rainy season.
3. Mr. & Mrs. Ben Fleming, 47-227 Kam. Hy., mentioned that water stands in a deep pool at the entrance to their driveway. Deep ruts are formed by their mail box and the grassed area owned by the City and County intended eventually as a sidewalk area.
4. Mrs. Sandra (Garcia) Harle, 47-233 Kam. Hy., reports that driveway entrance is considerably lower than the Hy., and there is always a pool of water standing there even after several days of dry weather. The grassy sidewalk area on either side of her driveway is low and cars that park there

5. Mr. & Mrs. Peter Ho, 47-235 Kam. Hy., reported that the City & County sidewalk area in front of their property is lower than the Highway and the water stands in pools and makes access and exit on foot hazardous. To make matters worse - the cesspools on the opposite side of the Hy. at 47-234 Kam. Hy., runs over frequently. The sewage water flows across the highway into the property of Mr. & Mrs. Ho. It is very unpleasant to smell as well as miserable to have to walk through.

6. Mr. & Mrs. Frank Lopez, 47-227 Kam. Hy., have the same problems as the other residents on the makai side of the Hy. In addition, they also have a cesspool problem--one that needs frequent pumping. Their house is the oldest home on the makai side of Kam. Hy. between the two ends of Mio Mio Loop. Evidentially the ground fill at their location is not as absorbent as that in the other areas of Mio Mio Loop. (Mio Mio Loop area was at one time a fish pond. It was filled in about 1950 with coral and other fill materials. Except for the Lopez property, no other home owners on Mio Mio Loop and makai Kam. Hy. have cesspool problems. Most of them have never been pumped since the cesspools were installed.

7. Mr. & Mrs. Rod Ferreira, 47-315 Mio Mio Loop, have a home that overlooks Kaneohe Bay. Since there is a sewage drain which pipe under Kam. Hy. drains the runoff from Kam. Hy. and Honekoa Street, there is often a stench and considerable debris at this point in the Bay. Additional drainage into the Bay at this point will not add any appreciable amount of pollution to the Double AA Classification of the water.

The City and County Road Maintenance crews periodically clean the mauka Kam. Hy. ditch and drainage pipe under the Hy. leading into the Bay. At certain specified times of the year the City sends out equipment to lift the debris from the pipe opening. This relieves the stench from decaying vegetable and animal matter.

8. Mrs. Charles Rice, 47-189 Iuiu Street, says she has no real drainage problem at her address. However, she can often smell the overflowing cesspools on the mauka side of the street. The water runs down Iuiu Street toward Hunaahi and into an underground pipe. This is carried down Hunaahi Street and across the Hy. into the ditch which carries it out to the ocean.
9. Mr. William Cook, 47-190 Iuiu Street, has a severe cesspool problem at his address. The soil is strictly clay and the walls of the pool have become hardened and impenetrable. The condition is complicated by the subterranean water from the steep slopes behind his house. Mr. Cook said he was told he would have to put in a second cesspool. However, he said, that there really wasn't room for a second pool. When a septic tank or an aerobic system was recommended to him as being better than putting down a second pool, Mr. Cook's answer was that it would be too expensive. (Where a second pool has been tried at other locations, it seldom rectifies the problem for very long.)
10. The property at 47-234 Kam. Hy. has two cesspools now. Before the State Health Department cited the previous owner for an improperly operating cesspool, the single pool was seen to be running over almost all the time. The pumpers would just leave from pumping the pool, and it would begin again. For months the address had a "standing order" to

pump the pool twice a week. It's only been about a year since the second pool was installed, yet the two pools run over frequently--especially during and after heavy rains. (After H7-234 was cited by the Health Dept., a new owner turned the single-family dwelling into a duplex. None of the property owners in the area were ever notified of any request on the part of the new owner for a variance to the zoning permitting her the privilege. The owner merely hired a carpenter and made the necessary changes to the two-story house--installing a kitchen, etc. and proceeded to rent both sections as separate units. Eventually, the party that converted the house into a duplex sold out at a terrific profit to another buyer. The new owner is probably not aware that he is not legally entitled to use the property as a duplex.) Four adults and one child now reside in the duplex. If the cesspool problem continues, the residents on the makai side of Kam. Hy. intend to take action through the State Health Dept. (Refer to Frank Sakata, State Health Dept. Inspector for Kahaluu.)

RECOMMENDATIONS:

1. During the months of November through April, the mauka ditch on Kam. Hy. frequently overflows onto the Highway and onto the properties makai of the Highway. This is a dangerous curved section of Kam. Hy. as is. The fine silt and water added by the overflow provides a traffic hazard. The overflow to the makai side of the road increased by the slope of the Highway in that direction causes much concern and inconvenience to the property owners in the makai location. To prevent the overflows from the ditch, it is recommended that the ditch be given more frequent cleaning by the City and County Main-

inconsiderate about their trash disposal. They frequently use the ditch as a convenient depository for grass clippings, hedge and shrubbery trimmings, banana trees, tree branches, and coconuts. Beer bottles, cans, soda cups, paper plates, paper napkins etc. find their way into the ditch by way of the passing cars. Pipes under the driveways become plugged with debris

2. The existing mauka ditch has become shallower in the last five years because the Road Maintenance Crew seldom, if ever, shovels out the silt which collects at the bottom of the ditch. The ditch has become shallower in the last five years. Consequently, the ditch overflows more frequently. It is recommended that the top soil that is filling up the ditch be frequently be removed by the City and County Road Maintenance.
3. When lots were cleared and construction begun on houses at 47-224, 47-226, and 47-230 Kam Hy., it was suggested to the City Engineer's office that a grating be installed at the entrance of the driveways over the drainage ditch so that water flowing down the driveways during heavy rains would flow into the ditch rather than across the Highway to the mauka side. The property owners on the makai side of the Highway were told that a grating would cost more money and the City would not be able to do it. Now, as a result, the runoff flows like a torrent down the steep driveways and across the Highway onto the properties on the makai side.
4. When the driveway at 47-228 Kam. Hy. was resurfaced recently, it was again recommended that the City and County install a grating at the foot of the driveway next to the Highway. Again, the City Engineer's office refused. All the water during heavy storms and even during the time the owners

irrigate their plantings and wash their cars comes down this driveway and onto the driveway on the makai side -- 47-227 Kam. Hy. The water has come within an inch of flooding the lower floor of the Flemings' home. The driveway and carport become covered with mud and water--causing great inconvenience and sometimes property damage to tools, etc., stored in the carport.

5. The one remaining vacant lot at 47-236 Kam. Hy. is presently being bulldozed in preparation for a new house construction. It is recommended that a grating be installed over the ditch where the driveway meets the Highway. When the ground cover is removed and 2/3 of the lot covered with house and impermeable material, there will be more runoff into the mauka drainage ditch than before. It is also recommended that the property owner be informed of the cesspool difficulties in the area, and especially the fact that two cesspools do not handle the problem for very long. It would be more economical to install a septic tank or aerobic system in the beginning than to find out later that it was necessary.
- 6/ There have been no improvements to the drainage system on Iuiu Street above Kam. Hy. since the sub-division was opened in 1957. It is recommended that an additional drain pipe be installed between Iuiu Street and Kam. Hy. on Honekoa, carrying the runoff under Kam Hy. into the Bay at this point. It was necessary for the property owners at the corner of Kam. Hy. at Honekoa (Kaneohe side of the street) to install a second cesspool, as their one pool was overflowing too often.

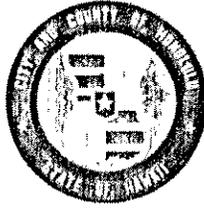
Respectfully submitted,

FOR LIFE OF THE LAND  
Lois L. Fleming

*Lois L. Fleming*

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK F. FASI  
MAYOR

KAZU HAYASHIDA  
DIRECTOR AND CHIEF ENGINEER

601-12-0268

May 13, 1976

Mrs. Lois L. Fleming  
Life of the Land  
404 Piikoi Street, Room 209  
Honolulu, Hawaii 96813

Dear Mrs. Fleming:

YOUR LETTER OF APRIL 4, 1976, RELATING  
TO THE EIS PREPARATION NOTICE FOR THE  
KAMEHAMEHA HIGHWAY-HUNAAHI STREET RELIEF  
DRAIN

Thank you for the flood information showing the need for the project and the recommendations. The following is our response to your recommendations.

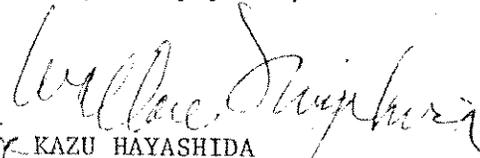
1. The ditch is normally cleaned about every 4 to 6 months but is inspected more often. The last cleaning was in December 1975 and is scheduled to be cleaned this May. The ditch will be graded for proper water flow as well as to prevent any ponding in the ditch. However, we cannot control or police the people from throwing their trash into the ditch. We would welcome community action and cooperation to assist the City in reducing our maintenance work.
2. We have told our maintenance division to remove the silt deposits and vegetation when cleaning the ditch.
- 3 and 4. We do not doubt that a grating over the ditch at the driveway ramps would intercept and drain runoff flowing down the driveway and alleviate the flooding problem. Although we are sympathetic for the affected property owners, the City by Statute cannot expend public funds to enhance private properties. Also, the City's Driveway Standards do not require that a grating be installed by the property owner in this case.

Mrs. Lois L. Fleming  
May 13, 1976  
Page two

5. As indicated above, the City does not have the authority to force a property owner to install a grating over the ditch. We will forward a copy of your letter to the State Department of Health for appropriate action on the cesspool problems.
6. Our record shows that a drainage system was installed along Iuiu and Honekoa Streets with the development of the Kahaluu Bay View Tract, Unit I, Subdivision. The system consisting of five inlets and two intake boxes was constructed near the Iuiu-Honekoa Streets intersection. The pipe system is located along Honekoa Street and Kamehameha Highway and discharges into Kaneohe Bay through outlet No. 1. We have evaluated this drainage situation and have found that the system is adequate.

The cesspool problem will be referred to the State Department of Health as indicated in the previous item.

Very truly yours,

  
KAZU HAYASHIDA  
Director and Chief Engineer

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Mr. Kazu Hayashida  
Director and Chief Engineer  
Department of Public Works  
City and County of Honolulu  
680 King Street  
Honolulu, Hawaii 96813

RE: ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED  
KAMEHAMEHA HIGHWAY-HUNAAHI STREET RELIEF DRAIN,  
KAHALUU, OAHU, HAWAII

Dear Mr. Hayashida:

I have read the preparation notice for the subject E. I. S. The project appears to have merit for its benefits to the area's residents. I would like to ask, however, if your E. I. S. research considered the cumulative effect on the marine eco-system of Kaneohe Bay of this project and other similar ones.

The decline of water quality and the vast changes in the marine life in the bay, including the destruction of the corals, is the result of many disparate and often seemingly insignificant acts. I must emphasize that it has been a gradual loss caused by many separate actions, and not one or two catastrophic events.

The north end of the bay has escaped the worst of these effects simply by being removed from the location of intense urbanization. It is obvious that this urbanization is expanding northward. Are we to perpetuate our past errors until the entire bay is an open sewer, unable to perform its natural self-cleansing action? This will do greater damage to the residents than the drainage problems this project addresses.

I realize that this proposed relief drain is a fairly insignificant project. I agree that it will probably provide needed protection for the area's residents. But it must be designed with a weather eye to the cumulative effects of such projects. For the reasons stated above I object to the preparation notice's apparently casual conclusion in Section V that " the adverse effects on the fauna in this area are insignificant. " A three hundred foot long ditch would seem like a vast area to an omaka or manini, contrary to the preparation notice's conclusion.

Mr. Kazu Hayashida  
Relief drain E. I. S.  
April 1, 1976  
Page 2

I ask that your designers study means for lining the three hundred feet of widened ditch that would avoid the proposed sterile concrete lining. The preparation notice's statement that this area is submerged by tidal changes leads me to believe that it could be a rich breeding ground, a conclusion opposite to that reached in the preparation notice. It is highly probable that your engineers working in concert with marine biologists could design a system of channel lining which would enhance rather than destroy the area's function as a breeding ground, at no additional expense or maintenance requirement. In fact it may be less expensive. One distinct possibility that comes to my mind is a "rip-rap" lining of boulders. This might have the additional attraction of mitigating the point-discharge problem.

In summary, I believe the project can and should be accomplished, but that equal consideration must be given to Kaneohe Bay's violated ecosystem as to the needs of the area's homeowners. The two cannot be separated.

Thank you for this opportunity to contribute. I hope you will seriously consider my comments.

Sincerely,



Huston Eubank  
47-386 Lulani Street  
Kahaluu, Hawaii

DEPARTMENT OF PUBLIC WORKS  
**CITY AND COUNTY OF HONOLULU**

650 SOUTH KING STREET  
HONOLULU, HAWAII 96813



FRANK F. FASI  
MAYOR

KAZU HAYASHIDA  
DIRECTOR AND CHIEF ENGINEER

601-12-0269

May 13, 1976

Mr. Huston Eubank  
47-386 Lulani Street  
Kaneohe, Hawaii 96744

Dear Mr. Eubank:

SUBJECT: YOUR LETTER OF APRIL 1, 1976 RELATING  
TO THE EIS PREPARATION NOTICE FOR THE  
KAMEHAMEHA HIGHWAY-HUNAAHI STREET  
RELIEF DRAIN

Thank you for your comments. The following is our response.

The overall degradation of Kaneohe Bay water quality is due to many factors; primarily, the increased population and urbanization. The Kaneohe Bay Urban Water Resources Study by the U. S. Army Engineer District, Honolulu, now underway will identify problem areas, the nature and extent of non-point source of pollution, the cause and effect relationship specific to the bay, and develop alternative plans and necessary control measures needed. This study, part of the State 208 planning (PL 92-500) of a particular water quality segment, should provide solutions to the concerns expressed in your letter. The Army Corps of Engineers and the Hawaii Institute of Marine Biology have been consulted with respect to this project as part of the EIS assessment process. The project will not stimulate a population growth in this area and should not be included in the factors causing the degradation of the bay.

A marine biologist was engaged to study the potential effects of the proposed project on the marine environment. The consultant has submitted a reconnaissance report on the areas immediately seaward of the project area. The report indicates that live corals are found at least 200 feet offshore from the two outlets and fauna and flora appear to be more concentrated at

least 100 feet seaward from the outlet. The report concludes that the increased flow rates from the storm runoff should have little, if any, detrimental effects on the biological environment adjacent to the outlets. We believe that the effects of the proposed project will be insignificant with respect to the cumulative adverse effects on the water quality of the bay. This is based on a quantitative comparison of total pollution loads discharging into the water with or without the project. The amount of storm runoff which cannot be accommodated in the drainage system will flow overland across private lands to reach the bay. In this case, more pollutants, such as trash, residual of pesticides, herbicides and fertilizer and animal waste will be carried by the flood water into the bay. The proposed project will provide additional drainage capacity to prevent the overflow from occurring and reduce the pollutant loads discharging into the bay.

A change in the originally proposed concrete channel has been made to an all rock wall and rock bottom channel in order to maintain the natural condition of the area and to minimize the adverse impacts to the macrofauna which may use the existing ditch as a breeding area. We believe this change, which was suggested by the Hawaii Institute of Marine Biology, and proper maintenance of the drainage system along Kamehameha Highway will add to the enhancement of the area.

Very truly yours,

  
K. P. KAZU HAYASHIDA  
Director and Chief Engineer

XIII. LIST OF COMMENTS RECEIVED DURING THE EIS PERIOD AND RESPONSE TO THE COMMENTS

1. Federal government

U.S. Fish and wildlife services

\*U.S. Air force-15th ABW

2. Hawaii State Government

Office of Environmental Quality Control

\*Department of Agriculture

\*Department of Health

\*Department of Defense

\*Department of Social Services and Housing

\*Environmental Center, University of Hawaii

Water Resource Research Center, University of Hawaii

3. City and County of Honolulu

\*Department of Transportation Services

\*Department of Housing and Community Development

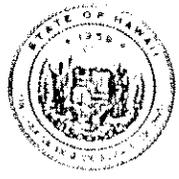
\*Building Department

\* denotes no comments

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GEORGE R. ARIYOSHI  
GOVERNOR

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RICHARD E. MARLAND, PH.D.  
DIRECTOR

TELEPHONE NO  
548-6915  
TO: *Evill*  
*Engig*

STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL  
OFFICE OF THE GOVERNOR  
550 HALEKALUWILA ST  
ROOM 301  
HONOLULU HAWAII 96813

August 18, 1976

Mr. Kazu Hayashida  
Director and Chief Engineer  
Department of Public Works  
City and County of Honolulu  
Honolulu, Hawaii 96813

SUBJECT: Environmental Impact Statement for the Kamehameha  
Highway-Hunaahi Street Relief Drain, Kaneohe, Oahu.

Dear *Kazu*

This Office has reviewed the above EIS and offers the following comments:

- 1.) Project Description. A contour map of the subject area and a cross-section of the proposed drainage ditch should be included with the technical description of the project.
- 2.) What is the relationship between the flooding problems and the overflowing cesspools mentioned in the comments by Life of the Land to the EIS Preparation Notice? Will this project aid in alleviating the overflowing cesspool problem?
- 3.) The usage of the terms herbicide and pesticide is redundant. (The generic term pesticide includes the more specific term herbicide.) What herbicides are swept into the bay by over-land flow, as stated on page 4? How is this statement supported?
- 4.) What flora and fauna were found in the receiving waters near existing outlets during the marine biological reconnaissance? A listing is recommended.

For brevity and fairness, this Office did not attempt to summarize comments made by other reviewers. Instead, we strongly recommend that careful consideration be given to each comment by the reviewers. We also recommend that a copy of the revised EIS be provided to those persons and agencies that have provided substantive comments on the EIS.

Please find attached a list of comments that this Office has received to date.

We trust that these comments will be helpful to you in preparing the revised EIS. Thank you for the opportunity for review of this EIS.

Sincerely,



Richard E. Marland  
Director

Attachment

cc: Robert Way, Dept. of General Planning  
with attachments

September 14, 1976

Dr. Richard E. Marland  
State Office of Environmental  
Quality Control  
550 Halekauwilla Street, Room 301  
Honolulu, Hawaii 96813

Dear Dick:

SUBJECT: YOUR LETTER OF AUGUST 18, 1976, RELATING TO THE  
EIS FOR THE KAMEHAMEHA HIGHWAY - IUNAAHI STREET  
RELIEF DRAIN, KANEONE, OAHU

Thank you for your comments on the EIS. The following is our response to your comments.

1. A contour map with 20 foot intervals of the subject area was already included in the EIS on Figure I -Location Map. A cross section of the proposed rock channel will be included in the revised EIS.
2. Overflowing of cesspools in this area is due to many factors, including soil condition and capacity and conditions of the cesspool itself. There is no relationship between the flooding problem in the area and the cesspool overflowing problem noted in the response from Life of The Land. The flooding in the area is caused by intense rainstorms causing surface runoff which cannot be handled by the existing drainage system. This surface runoff cannot enter the cesspool if the cesspool is constructed and covered properly. The proposed project will not alleviate the overflowing cesspool problem in this area. However, we have referred this problem to the State Health Department for appropriate action.

Dr. Richard E. Marland

Page 2

3. The herbicide and pesticide mentioned in the EIS refer to the common types of weed and pest killing chemical compounds obtainable from any general garden shop in town. The statement was made after visiting the local residents in the area and they mentioned of using the chemicals on their lawns.
4. The flora and fauna found near the outlets during the marine biological reconnaissance were the common types of small fishes (blennies, gobies, nehu, mullet, and aholehole), invertebrates (sea cucumbers, snapping shrimps, sponges, and molluscs), and algae (Acanthophora, Ulva, Bryopsis, Fetocarpus, and Dictyosphaeria). We will include this list in the revised EIS.

Copies of the revised EIS will be sent to the individual reviewers who have made substantial comments on the EIS.

Very truly yours,

KAZU HAYASHIDA  
Director and Chief Engineer

①

cc: Chew Lun Lau



# United States Department of the Interior

FISH AND WILDLIFE SERVICE  
Division of Ecological Services  
821 Mililani Street  
Honolulu, Hawaii 96813

Reference: ES

August 4, 1976

Interim Director  
Environmental Quality Commission  
550 Halekauwila Street, Room 301  
Honolulu, Hawaii 96813

Dear Sir:

We have reviewed the environmental impact statement for Kamehameha Highway-Hunaahi Street Relief Drain, Kaneohe, Oahu, Hawaii, and offer the following comments for your consideration.

Section IV, item 1, Temporary Impacts, page 4. Although sub-item (d) states that special attention and care will be used to provide for drainage of storm waters during construction of the channels, no mention is made as to how this will be accomplished. In addition, no soil erosion control measures to minimize turbidity in adjacent waters during construction is indicated. Such control measures could include: (1) placing excavated spoil behind bermed areas to preclude its entering navigable waters through runoff; (2) providing silt screens at the outlet mouths to contain possible turbid waters; (3) schedule construction activities during periods of low precipitation and/or low stream flow. If no control measures will be taken, then we suggest that a statement to that effect be included in this section.

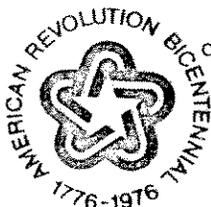
Section IV, item 4, Sediment, page 6. Paragraph 2 indicates that possible runoff of excavated materials may be minimized by scheduling operations to reduce exposed areas and stockpiling of excavated spoil along the project areas. We suggest the statement be expanded to indicate how operations scheduling can be accomplished.

We appreciate the opportunity to comment on this environmental impact statement.

Sincerely yours,

Maurice H. Taylor  
Field Supervisor

cc: ARD, AE



601-12-0474

September 1, 1976

Mr. Maurice H. Taylor,  
Field Supervisor  
U. S. Dept. of Interior  
Fish and Wildlife Service  
821 Millilani Street  
Honolulu, Hawaii 96813

Dear Mr. Taylor:

SUBJECT: YOUR LETTER TO THE STATE EQC DATED AUGUST 4, 1976  
RELATING TO THE EIS FOR THE KANEHEHEA HIGHWAY --  
HONAAHI STREET RELIEF DRAIN, KANEHEHE

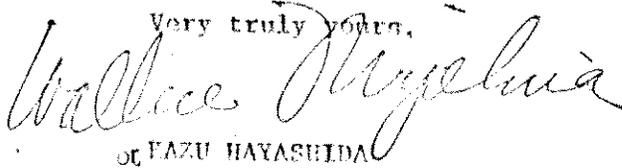
Thank you for your comments on the EIS. The following is our response to your suggestions.

In controlling the possible water pollutions during construction, the project specifications will require that the contractor not pollute water resources with fuel, oils, bituminous materials, calcium chloride, acids, construction wastes, wash waters or other harmful materials. Also, the specifications will require that the surface drainage from cuts and fills whether or not completed, from borrow and waste disposal areas, and from dewatering operations, if turbidity producing materials are present, shall be held in suitable sedimentation ponds or shall be prevented or treated to meet acceptable limits, as determined by the Engineer. Objectionable construction discharges shall be processed, filtered, ponded, or otherwise treated prior to their discharge into a waterway or drainage system. We will revise the EIS to include the above statement in Section IV, Sub-section 1.

In order to control exposed and excavated areas and the stockpiling of excavated materials, the contractor will be required to excavate the project in sections no greater than what can be handled properly. The City will have a project inspector on the site to control the contractor's operations so that a minimum of sediment will reach the bay during construction.

A copy of the revised EIS incorporating your comments will be sent to you at a later date.

Very truly yours,



of FAZU HAYASHIDA  
Director and Chief Engineer

TC/RNH/aa

cc: Chew Lun Lau

DEPARTMENT OF THE AIR FORCE  
HEADQUARTERS 15th AIR BASE WING (PACAF)  
APO SAN FRANCISCO 96353



DELIVER TO: DEEE (Mr. Nakashima, 4492158)

12 AUG 1976

SUBJECT: Environmental Impact Statements

TO: Environmental Quality Commission  
550 Halekauwila Street, Room 301  
Honolulu, Hawaii 96813

1. This headquarters has no comment to render relative the environmental impact statements listed below:

- a. Lahaina Small-Boat Harbor  
Lahaina, Maui, Hawaii
- ✓ b. Kamehameha Highway - Hunaahi Street Relief Drain  
Kaneohe, Oahu, Hawaii

2. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your development projects throughout the State and the opportunity to review the statements.

A handwritten signature in black ink, appearing to read "Ben D. Kosa".

BEN D. KOSA  
Dcp Dir of Civil Engineering



76 05405



RECEIVED DEPARTMENT OF THE ARMY  
HEADQUARTERS UNITED STATES ARMY SUPPORT COMMAND HAWAII  
APO SAN FRANCISCO 96558 PUBLIC WORKS

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AUG 25 2 15 PM '76  
TO ENVILL  
Engg  
19 AUG 1976

AFZV-FE-EE

Director and Chief Engineer  
Dept. of Public Works  
City & County of Honolulu  
650 S. King Street  
Honolulu, Hawaii 96813

Gentlemen:

Reference is made to the Environmental Impact Statement for Kanehameha Highway - Hunaahi Street Relief Drain, Kaneohe, Oahu, Hawaii.

We have reviewed the EIS and have no comments to offer.

Thank you for the opportunity to review this document.

Sincerely yours,

CARL P. RODOLPH  
Colonel, CE  
Director of Facilities Engineering

CF:  
Dept. of General Planning  
City & County of Honolulu  
650 S. King Street  
Honolulu, HI 96813





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 U. S. ARMY ENGINEER DISTRICT, HONOLULU  
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 SAN FRANCISCO 96558

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19 July 1976

TO ENV/CM  
 Engg

Mr. Robert R. Way  
 Chief Planning Officer  
 Department of General Planning  
 City & County of Honolulu  
 650 S. King Street  
 Honolulu, Hawaii 96813

Dear Mr. Way:

We received the Environmental Impact Statement for Kamehameha Highway-Hunaahi Street Relief Drain on 14 July 1976. We have reviewed the EIS and find it to have satisfactorily addressed all significant issues.

Thank you for the opportunity to provide comments.

Sincerely yours,

KISUK CHEUNG  
 Chief, Engineering Division

Copy furnished:

Mr. Kazu Hayashida  
 Director and Chief Engineer  
 Dept of Public Works  
 City & County of Honolulu

Chairman, Envir Quality Com  
 State of Hawaii  
 550 Halekauwila Street, Rm 301  
 Honolulu, Hawaii 96813



7605343

UNITED STATES DEPARTMENT OF AGRICULTURE  
SOIL CONSERVATION SERVICE

440 Alexander Young Building, Honolulu, HI 96815 '76

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TO ENV 11 August 20, 1976

*Engr*

Mr. Kazu Hayashida  
Director and Chief Engineer  
Department of Public Works  
City and County of Honolulu  
650 South King Street  
Honolulu, HI 96813

Dear Mr. Hayashida:

Subject: EIS - Proposed Kamehameha Highway-Hunaahi Street  
Relief Drain, Kaneohe, Oahu, Hawaii

We have reviewed the above-mentioned document and have no comments  
to offer.

Sincerely,

*Francis C. H. Lum*

Francis C. H. Lum  
State Conservationist

cc:  
Dept. of General Planning  
City & County of Honolulu  
Honolulu, Hawaii 96813



GEORGE R. ARIYOSHI  
GOVERNOR



JOHN FARIAS, JR.  
CHAIRMAN, BOARD OF AGRICULTURE

YUKIO KITAGAWA  
DEPUTY TO THE CHAIRMAN

STATE OF HAWAII  
DEPARTMENT OF AGRICULTURE  
1428 SO. KING STREET  
HONOLULU, HAWAII 96814

July 15, 1976

MEMORANDUM

To: Environmental Quality Commission

Subject: Kamehameha Highway - Hunaahi St. Relief Drain  
C&C Public Works  
TMK: I - 4-7-35 Koolaupoko

The Department of Agriculture has reviewed this Environmental Impact Statement (EIS) and has no additional comments. The copy is returned to your files.

Thank you for the opportunity to comment.

*for Yukio Kitagawa*  
John Farias, Jr.  
Chairman, Board of Agriculture

JK:d:d



GEORGE R. ARIYOSHI  
GOVERNOR OF HAWAII

STATE OF HAWAII  
DEPARTMENT OF HEALTH  
P.O. Box 3378  
HONOLULU, HAWAII 96801

August 2, 1976

GEORGE A. L. YUEN  
DIRECTOR OF HEALTH  
Audrey W. Mertz, M.D., M.P.H.  
Deputy Director of Health  
James S. Kumagai, Ph.D., P.E.  
Deputy Director of Health  
Henry N. Thompson, M.A.  
Deputy Director of Health

In reply, please refer to:  
File: EPHS-SS

MEMORANDUM

To: Dr. Richard E. Marland, Director  
Office of Environmental Quality Control

From: Deputy Director for Environmental Health

Subject: Environmental Impact Statement (EIS) for Kamehameha  
Highway-Hunaahi Street Relief Drain, Kaneohe, Oahu

Thank you for allowing us to review and comment on the subject EIS. Please be informed that we have no objections to this project.

We realize that the statements are general in nature due to preliminary plans being the sole source of discussion. We, therefore, reserve the right to impose future environmental restrictions on the project at the time final plans are submitted to this office for review.

  
JAMES S. KUMAGAI, Ph.D.

cc: Dept. of General Planning  
Dept. of Public Works



VALENTINE A. SHEPHERD  
1ST DEPT. CLERK  
ADJUTANT GENERAL

STATE OF HAWAII  
DEPARTMENT OF DEFENSE  
OFFICE OF THE ADJUTANT GENERAL  
FORT RUGER, HONOLULU, HAWAII 96816

HIENG

16 JUL 1976

Dr. Albert Tom, Chairman  
Environmental Quality Commission  
550 Halekauwila Street  
Honolulu, Hawaii 96813

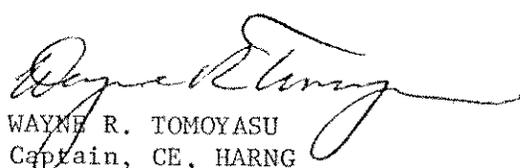
Dear Dr. Tom:

Kamehameha Highway-Hunaahi Street Relief Drain

Thank you for sending us a copy of the Environmental Impact Statement for the proposed "Kamehameha Highway-Hunaahi Street Relief Drain." We have received the publication and have no comments to offer.

We are returning the Environmental Impact Statement for the proposed project per your request.

Yours truly,

  
WAYNE R. TOMOYASU  
Captain, CE, HARNG  
Contr & Engr Officer

Enclosure

7605018

GEORGE R. ARIYOSHI  
GOVERNOR

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OFFICE OF THE GOVERNOR  
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*EAV*  
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E. ALVEY WRIGHT  
DIRECTOR

DEPUTY DIRECTORS  
WALLACE AOKI  
RYOKICHI HIGASHIONNA  
DOUGLAS S. SAKAMOTO  
CHARLES O. SWANSON

TO  
STATE OF HAWAII  
DEPARTMENT OF TRANSPORTATION  
869 PUNCHBOWL STREET  
HONOLULU, HAWAII 96813

IN REPLY REFER TO:

August 3, 1976

STP 8.3788

Mr. Kazu Hayashida  
Director and Chief Engineer  
Department of Public Works  
650 So. King Street  
Honolulu, Hawaii 96813

Dear Mr. Hayashida:

Subject: Kamehameha Highway - Hunaahi  
Street Relief Drain

We have no adverse comments to offer. However, any work contemplated below the high water mark at the shoreline will require a Shorewaters Construction Permit from our Harbors Division.

Sincerely,

*Douglas S. Sakamoto*  
E. ALVEY WRIGHT  
Director

76 04842

GEORGE R. ARIYOSHI  
GOVERNOR

ANDREW I. T. CHANG  
DIRECTOR OF SOCIAL SERVICES & HOUSING



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CITY OF ENGINEERING  
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STATE OF HAWAII  
DEPARTMENT OF SOCIAL SERVICES AND HOUSING

P.O. Box 110  
Honolulu, Hawaii 96809  
To  
July 27, 1976

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Environmental Quality Commission  
550 Kalia Avenue, Room 301  
Honolulu, Hawaii 96813

Re: Kalia

Kalia Highway - Kalia Street  
Solid Drain

We are returning this AIS for your further usage. Other than the fact that the installation of the proposed drain would afford much needed relief from excess water overflow in this area, we have no further comment.

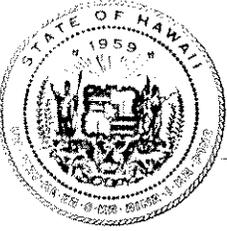
*[Handwritten signature]*  
Director

Attachment

CC: Department of General Planning  
City & County of Honolulu  
Honolulu, Hawaii 96813

Department of Public Works  
City & County of Honolulu  
Honolulu, Hawaii 96813

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RECEIVED  
DEPARTMENT OF PLANNING AND ECONOMIC DEVELOPMENT  
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GEORGE B. ARIYOSHI  
Governor  
HIDETO KONO  
Director  
FRANK SKRIVANEK  
Deputy Director

Kamamalu Building, 250 South King St., Honolulu, Hawaii • Mailing Address: P.O. Box 2369, Honolulu, Hawaii 96804

July 27, 1976

ENV  
Engng

Ref. No. 1699

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

Dear Mr. Hayashida:

Subject: Environmental Impact Statement for the Proposed Kamehameha Highway-Hunaahi Street Relief Drain, Kaneohe, Oahu, Hawaii

We have reviewed the subject statement and find it to be reasonably adequate in its coverage of the probable environmental impacts of the proposed improvement.

We were pleased to note that instead of the originally proposed all-concrete channel, plans now call for rock wall and rock bottom channel construction. We agree that this alteration represents a more visually compatible solution and should assist in minimizing any adverse effects upon macro-fauna breeding activity.

We have no further comments to offer, but appreciate the opportunity to review this statement.

Sincerely,

*Frank Skrivaneck*  
for HIDETO KONO

# University of Hawaii at Manoa

Water Resources Research Center

## MEMORANDUM

August 9, 1976

MEMO TO: Environmental Quality Commission

FROM: Reginald H. F. Young <sup>RHFY</sup>  
Asst. Director, WRRC

SUBJECT: EIS For Kamehameha Highway--Hunaahi Street Relief Drain

The subject EIS was reviewed in our offices principally by Henry Gee, Yu-Si Fok, and myself. We have no comment with respect to aspects of water quality and consider the EIS adequate in coverage of possible water pollution in Kaneohe Bay.

In Item VI, page 7, Dr. Fok suggests that a further alternative may be considered. That is, with some modifications of the existing drainage systems, potential flooding may be alleviated by pumping. The initial costs for pumping should be less than the cost of the proposed project.

A profile map of the proposed drainage pipe system and rock-lined channel would be a useful addition to the EIS for those individuals who would like to know the design slopes in order to check the system capacity. Similarly, contour plots on the site plan (Figure II) would also be useful.

RHFY:jmn

cc: H. Gee  
Y. Fok  
Env. Ctr.

601-12-0473

September 31, 1976

Dr. Reginald W. F. Young,  
Assistant Director  
Water Resources Research Center  
University of Hawaii at Manoa  
Honolulu, Hawaii 96822

Dear Dr. Young:

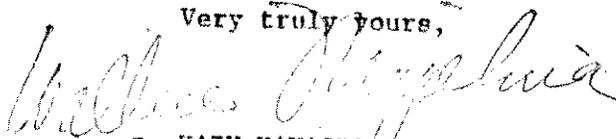
SUBJECT: YOUR LETTER TO THE STATE EQC DATED AUGUST 9, 1976  
RELATING TO THE EIS FOR THE KANEHANA HIGHWAY -  
HUNAAHI STREET RELIEF DRAIN, KANEHANA

Thank you for your comments on the EIS. The following is our response to your suggestions.

Item VI: We do not agree that the initial cost of a pumping station for this drain system is less than the cost of the proposed project. The City recently received a low bid for the construction of a drainage pump station in Waimalu, Oahu. The pump station consists of three pumps for a total capacity of 150 cubic feet per second (cfs). The proposed Kanehena Highway-HunaaHI Street Relief Drain project will have a total flow of more than 400 cfs, and based on the Waimalu project cost, although the engineering design may be different from each other, the suggested alternative would not be cheaper than the proposed project. Also, there is no suitable site for a pump station in the project area.

We also do not concur that a profile map of the drainage system should be included with the EIS. Those individuals who wish to evaluate the design and capacity of the system could check with the responsible agency. We do not believe that detail design data and plans should be a part of the EIS. The engineering design is done by professional consultants in accordance with our Storm Drainage Standards. A copy of the revised EIS will be sent to you at a later date.

Very truly yours,



For KAZU HAYASHIDA

Director and Chief Engineer

PC/RVH:sa

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AUG 2 1976

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PL 3028-76

Environmental Quality Commission  
550 Halekauwila St., Rm. 301  
Honolulu, Hawaii 96813

Gentlemen:

Subject: LIS for Kamehameha Highway-Hunaahi  
Street Relief Drain

We have reviewed the subject LIS and have no adverse comments  
on the project.

*George C. Villagas*  
\_\_\_\_\_  
GEORGE C. VILLEGAS  
Director

cc: Dept. of General Planning  
Dept. of Public Works /

KH:wt

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*Engg.*

July 19, 1976

Environmental Quality Commission  
550 Halekauwila Street, Room 301  
Honolulu, Hawaii 96813

Gentlemen:

Subject: Environmental Impact Statement for Kamehameha  
Highway-Hunaahi Street Relief Drain  
Location: Kaneohe, Oahu, Hawaii  
Tax Map Key: 4-7-30, 34, 35 and 44

The Department of Housing and Community Development has reviewed the "Environmental Impact Statement for Kamehameha Highway-Hunaahi Street Relief Drain." We have no comments to make relating to this agency's program or workload. We thank you for the opportunity to review this matter.

We are returning the copy of the EIS for your further use.

Sincerely yours,

WILLIAM BLACKFIELD

WILLIAM BLACKFIELD  
Director

Enc.

cc: Department of General Planning, C&C of Honolulu  
Department of Public Works, C&C of Honolulu

CITY AND COUNTY OF HONOLULU  
BUILDING DEPARTMENT

ENVIRONMENTAL QUALITY COMMISSION

St., Rm. 301

Honolulu, Hawaii 96813

Phone: 535-6915

\*\*\*\*\*

COMMUNICATIONS SECTION \*

\*\*\*\*\*

TO: Environmental Quality Commission

RECEIVED  
BUILDING DEPARTMENT  
C & C OF HONOLULU  
JUL 14 3:53 PM '76  
REFERRED TO  
Date: 7/13/76  
1-14-76

Title: KAMEHAMEHA HIGHWAY - HUNAAHI STREET RELIEF DRAIN

Attached for your review is an Environmental Impact Statement (EIS) prepared pursuant to Chapter 343, Hawaii Revised Statutes and its Rules and Regulations.

If you should have any comments to offer, please submit one copy each to:

1) ACCEPTING AUTHORITY: Dept. of General Planning, City & County of Honolulu  
Honolulu, Hawaii 96813

2) PROPOSING AGENCY: Dept. of Public Works  
City and County of Honolulu, Honolulu, Hawaii 96813

Your comments must be received or postmarked by: AUGUST 23, 1976

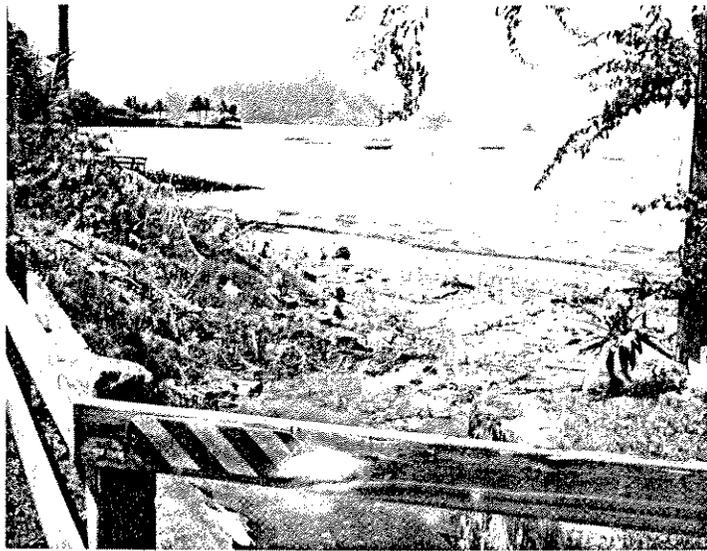
If you have no future use for this EIS, the Environmental Quality Commission would appreciate your copy returned to us as soon as possible.

Thank you for your participation and cooperation in this EIS process.

NO COMMENTS

REFERENCE

1. "The State of Hawaii Data Book," by State Department of Planning and Economic Development, Honolulu, Hawaii, November 1974.
2. "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii," by U. S. Department of Agriculture, Soil Conservation Service, August 1972.
3. "Marine Biological Reconnaissance of Two Nearshore Areas, Adjacent to Momi Loop, in Kaneohe Bay," by Dr. Ralph L. Bowers, April 1976.
4. "Wastewater Effluents and Surface Runoff Quality," by M. J. Chun, R. H. F. Young, and G. K. Anderson, WRRC Technical Report No. 63, University of Hawaii, November 1972.
5. "Baseline Quality Data for Kalihi Stream," by K. Gordon, et. al., WRRC Technical Report No. 71, University of Hawaii, June 1971.
6. "Water Quality Program for Oahu With Special Emphasis on Waste Disposal, Projection of Other Pollutant Loads," Final Report Work Area 3., Sunn, Low, Tom and Hara, Inc., 1971.

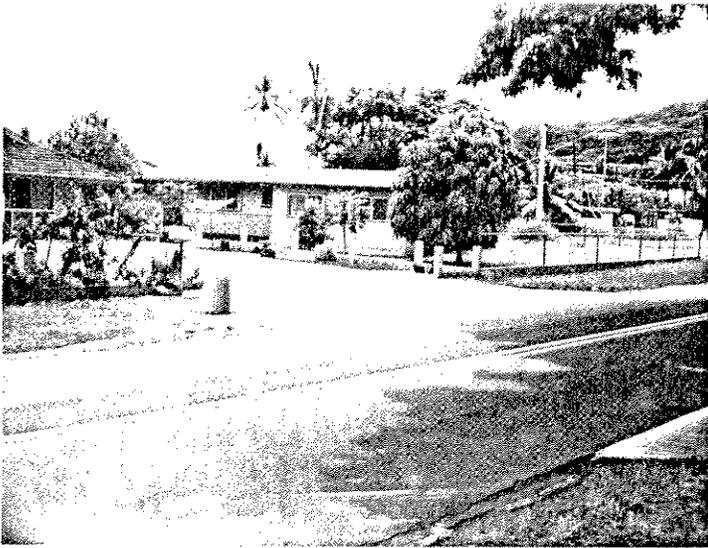


Existing Outlet No. 1.



Outlet No. 1

Picture A. Existing Outlet No. 1 Vicinities

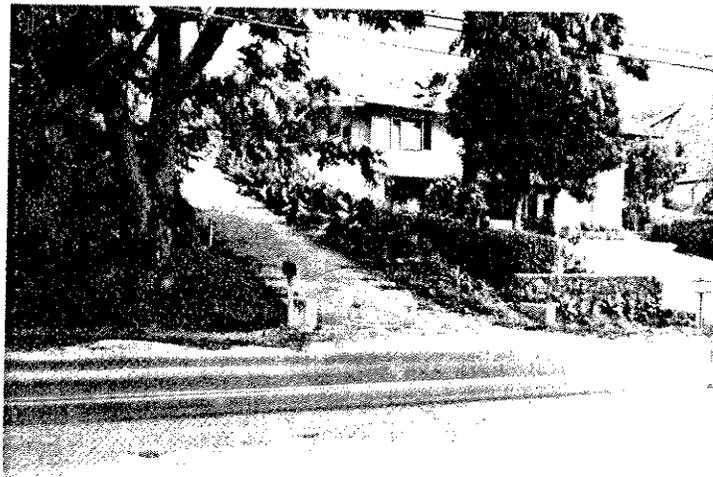


4-7-30-20

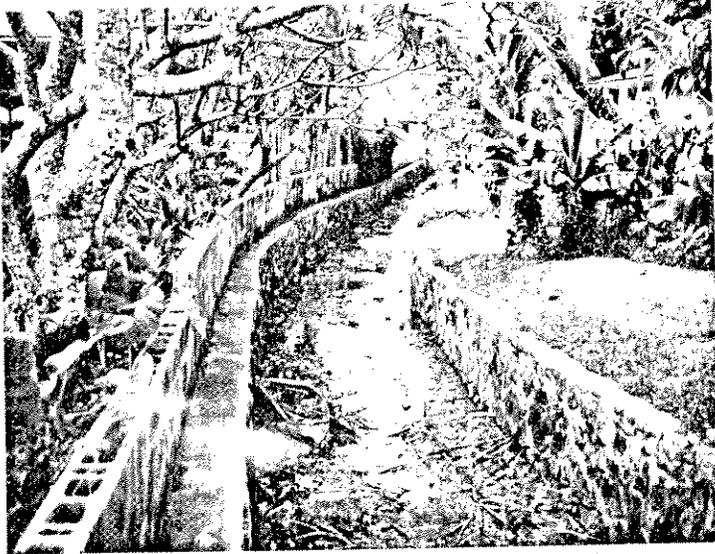


4-7-30-21

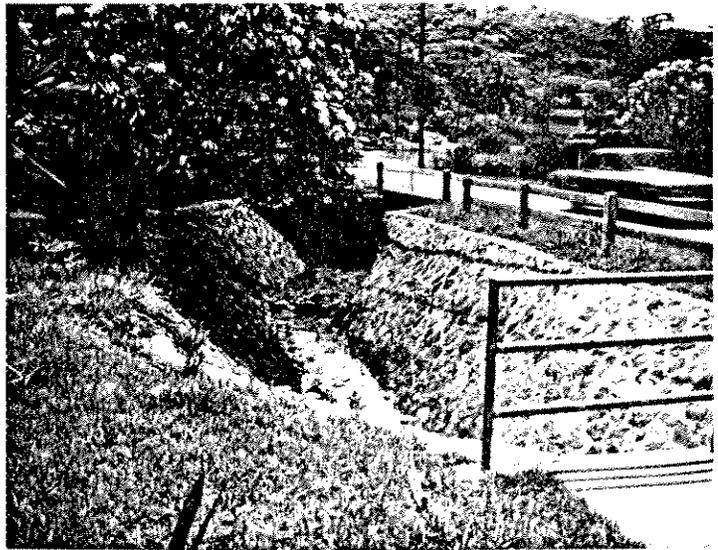
Picture C. Typical Makai Properties Adjoining Kamehameha Highway



Picture D. Typical Mauka Properties Adjoining Kamehameha Highway



Open Ditch Across Hunaahi Street



Kam. Hwy. Culvert Box near Hunaahi St.



Picture B.  
Existing Outlet No. 2  
Vicinities