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FINAL
ENVIRONMENTAL IMPACT STATEMENT
FOR
WAIMANALO STREAM IMPROVEMENT
AT
KALANIANA'OLE HIGHWAY
OAHU, HAWAII

THIS ENVIRONMENTAL DOCUMENT IS SUBMITTED
PURSUANT TO CHAPTER 343, HRS.

ACCEPTING AGENCY - GOVERNOR, STATE OF HAWAII

Responsible Official

Kazu Hayashida

Kazu Hayashida
Director and Chief Engineer
June 30, 1975

Prepared by

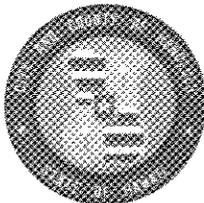
Division of Engineering
Department of Public Works
City and County of Honolulu

June 1975

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

DGP7/75-1840 (JB)

July 15, 1975

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

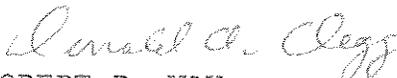
Dear Dr. Tom:

Final Environmental Impact Statement for
the Waimanalo Stream Improvement at
Kalaniana'ole Highway Project

On the basis of having 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, as the Mayor's authorized representative, hereby accepts the subject EIS.

Since State and county funds both have been allocated toward implementing this proposal, the Governor of the State of Hawaii, therefore, has the "final authority" for acceptance of the above-mentioned EIS in accordance with Section 343-4(b), HRS.

Sincerely,

for 
ROBERT R. WAY
Chief Planning Officer

RRW:fmt

cc: Department of Public Works
City and County of Honolulu

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I. INTRODUCTION

The "Waimanalo Stream Improvement at Kalaniana'ole Highway" Project is located approximately 20 miles northeast of downtown Honolulu in the Koolau District on the windward side of the Island of Oahu. The project calls for the construction of approximately 1,000 feet reinforced concrete channel ranging from 46 to 50 feet in width with an outlet structure at the downstream end of the concrete channel. The improvement begins approximately 700 feet upstream and ends 300 feet downstream of the Kalaniana'ole Highway bridge. The project also includes the construction of a pedestrian bridge on the mauka side of the existing highway bridge. The project location is shown on Exhibit No. 1 and No. 2.

The purpose of this project is to alleviate the drainage, flooding and health problems of this area. The estimated cost of this project is \$700,000 and construction funds have been appropriated in the City's FY-1975 Capital Improvement Program budget. The planning and engineering funds for this project were provided by the State of Hawaii. The construction of this project is scheduled to begin in September 1975 and will require 210 calendar days for completion.

The project will require the acquisition of some 30,000 square feet of private properties. However, no relocation of local residents will be required.

Suitable material excavated from the construction of the project will be used for backfill. Surplus material will be hauled and disposed of at the City's Kapaa Sanitary Landfill site for landfill cover material.

II. EXISTING CHARACTERISTICS OF THE PROJECT AREA

A. General Description

The Waimanalo Stream drainage basin is located on the northwest side of Waimanalo town on the windward side of Oahu and is bounded by the Koolau Range, Aniani Nui Ridge and Waimanalo Bay. The basin rises from a flat coastal plain near the ocean to the steep slopes of the Koolau mountain range with an elevation of 1,500 feet. The total drainage area is approximately 5.0 square miles (3,200 acres) and the total length of the main branch of Waimanalo Stream is over 20,000 feet.

The drainage basin consists of a network of water courses including two major streams (Kahawai Stream and Waimanalo Stream) and two reservoirs (Kailua Reservoir and Maunawili Reservoir) on the upper slope of the basin. The reservoirs were originally designed to have a total capacity of 8.0 million gallons but subsequent silting has reduced the capacity to only 5 million gallons. These reservoirs were constructed some 35 years ago and have been used to supply irrigation

water to the farms in the Waimanalo Valley. The network of water courses including Kahawai Stream merge into Waimanalo Stream at different locations in the drainage basin and drain into the Waimanalo Bay with an average flow of 0.7 million gallons per day.

The drainage basin area at the Kalaniana'ole Highway crossing encompasses about 2.16 square miles (1,380 acres) with an estimated peak discharge of 9,500 cubic feet per second (cfs) in accordance with the City's Storm Drainage Standards, which is in the neighborhood of a 50-year flood frequency (Ref. 1 and 2). The drainage basin boundaries are shown on Exhibit No. 3.

The average annual rainfall over the drainage basin is 60 inches, varying from 40 inches at the lower area to 80 inches on the upper ridge. The average annual temperature in the area is 74°F with the monthly average varying from 70°F in January to 78°F in August.

The U. S. Department of Agriculture's Soil Survey Report has indicated that the soil material in the project area is generally clay soil developed in alluvium from basic igneous rock. The surface layer, about 10 to 15 inches thick, is dark gray, silty clay with reddish mottles. The subsoil is dark grayish-brown, silty clay loam that has angular blocky structure. The soil is very strong acid to strong acid in the surface layer and neutral in the subsoil (Ref. 3).

B. Description of the Project Area

The Waimanalo Stream is a perennial stream with hardly any defined banks and is overgrown with grass and vegetation in most of its reaches (see the attached pictures).

The area in the vicinity of the project is presently zoned for residential and agricultural uses. A subdivision with approximately 20 single-family houses is located about 1,000 feet upstream from the highway bridge between the stream and Flamingo Street. Ten other single-family houses and quonset huts are scattered near the highway. The present market value of these houses is over \$50,000 per unit due to the housing shortage and lack of available land. The total population adjacent to the project area is about 100 persons and are classed in the low to moderate income category.

The upstream lands along the stream have not been urbanized and are being used mainly for farming.

The stream is overgrown with California grass which has no commercial value but hinder the flowage of stream water by reducing the flow velocity. On the other hand, these overgrown grasses have provided soil erosion protection to the banks and shelters for some organism in the stream. A small number of

trees such as koa, coconut, monkeypod, bamboo, banana and plumeria are growing on private properties. Silty material and debris have been deposited in the stream underneath the highway bridge forming stagnant water pools where mosquito and other rodents breed (see the attached pictures). This has created a health problem to the people living in the area.

The existing Kalaniana'ole Highway bridge has two (2) 24 ft. by 8 ft. openings. One of these openings is completely plugged with silt and debris. The other opening is also half-way plugged and provides a very limited waterway for stream flow. The bridge was completed in 1924 and was presumably designed and constructed to be fully open. Unfortunately, the bridge was constructed at a sharp bend of Waimanalo Stream. Subsequently, sediment built up at the inner radius of the bend, and the lack of regular maintenance caused the existing plugged condition. The present flow capacity at the bridge is approximately 1,010 cfs.

A United States Geological Survey (USGS) stream flow gage is located just upstream of the bridge. The following table shows the peak water surface elevation and flows which have caused overflow and flooding.

Waimanalo Stream Gage
(Datum Height = 18.89 Mean Sea Level)
(Bridge Bottom = 24.8 Mean Sea Level)

<u>Year</u>	<u>Gage Height</u> (ft.)	<u>Elevation (MSL)</u> (ft.)	<u>Flow (Q)</u> (cfs)
1963	10.0	28.9	4,560
1965	8.0	26.9	2,330
1967	9.54	28.4	3,810
1969	5.88	24.8	1,010
1970	6.51	25.4	1,280
1970	9.96	28.9	4,490

Sporadically spaced and irregular levees and walls have been constructed but have not been effective in preventing the overflow and flooding during heavy rainstorms.

A hydraulic evaluation and calculation based on an ideal condition of no blockage of the bridge openings have indicated that this crossing can only allow a maximum flow of 4,000 cfs to pass through without overtopping the bridge deck.

C. Past Flood Problems

As stated previously, the capacity of the Waimanalo Stream is limited because of the obstruction at the highway

bridge, the lack of stream maintenance and an inadequate stream channel.

The worst known storm on record occurred in March 1951 when 19 inches of rain fell in a 24-hour period. According to the U. S. Weather Bureau, this storm is a 100 year - 24 hour rainfall. In that storm, the Maunawili reservoir was overtopped resulting in a 60-foot wide breach along the embankment. However, there are no records of extensive damages downstream caused by flooding due to the limited development of the area at that time. Most of the development that exists today began after 1953. The 1951 breach was repaired immediately after the storm.

There have been many serious floods after the 1951 storm - March 1958, January, March and April 1963, February 1965 and December 1967. On March 5, 1958 a rainfall of 13.8 inches was recorded in a 24-hour period. Eleven families were marooned in the upper areas when water overflowed the Waimanalo Stream banks. Damages to crops and residences were reported in both the upper and middle areas and Kalaniana'ole Highway was impassable. The flood of January 1963 caused damages primarily to the lower areas where losses of \$30,000 to livestock and property were reported. The flood of March 1963 caused damages estimated at \$10,000 to livestock and property in the lower area. In the middle and upper areas, a road bridge was washed out, banana and papaya groves were destroyed, garages and houses collapsed from weakened foundations, families had to be evacuated, and a thick layer of mud was deposited in the area. The flood that followed April 1963 caused damages to residences and livestock in the middle and lower areas.

The flood of February 4, 1965 caused an estimated \$20,000 in damages to homes and property on the middle area of Waimanalo Stream. Approximately 15 cars were inundated and the inside of several homes were covered with mud. A second flood occurred on February 8, 1965 inundating the same area; however, the damages were less than that of the 4th.

In December 17-18, 1967 the area was struck by another heavy storm again. At this time, a total of 9.8 inches of rainfall was recorded at the Waimanalo Experimental Farm in a 24-hour period. It was reported that the stream overtopped the left bank and the highway deck, water flooded into private residences, tore down fences and jammed debris against houses in the area. Other damages included a broken water main. The total flood damage from this storm in this area was over \$32,000 according to the Corps' report (Ref. 4). Immediately after the storm, the area was declared as a disaster area and the Small Business Administration made loans available for the rehabilitation and restoration of properties damaged by the flood.

The U. S. Army Corps of Engineers and the U. S. Geological Survey have conducted a number of studies in this area after

the heavy storms. They have concluded that flooding has generally occurred as a result of the inability of the existing stream to cope with high stream runoffs. The Corps of Engineers also stated that, based on the benefit-cost ratio (which they figured would be over 1.1) a flood control project at Waimanalo Stream was warranted (Ref. 5).

In an attempt to alleviate the flood hazard conditions, and to prevent property damage and potential loss of life, the City and County of Honolulu has adopted Ordinance No. 2735 in 1965 and has designated the low-lying area along the existing stream from about 700 feet downstream and 2,000 feet upstream of the highway as flood prone based on these studies. Also, a flood control project to widen and improve the stream with reinforced concrete was initiated by the City in 1968. The designated flood prone boundaries along the stream is illustrated on the vicinity tax map and is shown as Exhibit No. 4.

D. Description of the Proposed Project

The stream improvement plan calls for the construction of a concrete channel extending from 300 feet downstream and 700 feet upstream of the Kalaniana'ole Highway bridge. The proposed channel is 46 feet wide in the upstream side and 50 feet wide in the downstream side of the highway. An outlet structure will be constructed at the downstream end of the concrete channel with an enlarged basin-type structure to provide a transition to the existing unlined stream bed and will serve to reduce the flow velocity. Also, a small debris barrier at the upstream end of the concrete channel will be constructed in order to prevent large size floating debris and boulders from entering the channel. The design has also provided three (3) inlet openings on the channel walls to drain overland flow from the vicinity. Exhibit 5 is the detailed plan of the project improvement.

The existing bridge, because of its plugged openings and narrow stream approaches, has caused a constriction to the stream flow which has resulted in water backing up and flooding the properties in the vicinity. Dredging and clearing of the plugged cell and paving the invert with reinforced concrete to the design channel invert grade and slope will render the bridge hydraulically adequate to convey the calculated peak storm flow. A paved channel invert at the bridge and construction of channelizing vanes through the horizontal curve upstream of the bridge will lower the design water surface to barely clear the bridge. Though any freeboard allowance is non-existent, justification for a new bridge cannot be made because of the uncertain future of Kalaniana'ole Highway at this location. The City's Road Maintenance Division will schedule regular cleaning and collection of debris from the stream to maintain a maximum opening at the bridge crossing.

A 6-foot wide pedestrian bridge will be constructed on the upstream side of the bridge. The construction of this

bridge is not related to flood control or stream improvement but is being provided for traffic safety.

The stream improvement and clearing of the bridge cells at the highway crossing will reduce the obstruction and speed up the stream flow through the project area. This may shorten the time of concentration for the flow to reach the downstream areas to Waimanalo Bay. At the present time, 90% of this area is owned by the Federal and State governments and is used by Bellows Air Force Base (BAFB), Hawaii Horse Center, and Olomana Golf Course. Most of the residential houses are located within 1,000 feet from the highway and will be protected from flooding by the proposed project.

The two reservoirs located on the upper edge of the drainage basin were studied in accordance with their present capacity to determine the after-effect of flood water to the highway bridge vicinity should a sudden structural failure of these reservoirs occur. The maximum capacity of these two reservoirs is about 5.0 million gallons; a wave of water with a peak outflow of about 740 cfs would result from a sudden failure. The time required for the water to pass from storage into the stream and routing time to the highway bridge would further reduce the effect on the peak flow at the bridge. Compared with the design flow of 9,500 cfs, the sudden failure of these reservoirs should not greatly affect the project design. Simultaneous failure of both reservoirs, coinciding with the peak storm discharge is highly unlikely.

The report entitled "Floods in Waimanalo Area, Oahu, Hawaii" (Ref. 6) has indicated that a large area below the 10.0-foot elevation west of the BAFB was flooded during the rainstorms of March 6, 1963 and November 13, 1965. The stream peak flows were recorded as 4,560 and 2,300 cfs, respectively, for these two floods and the recurrence intervals were over 30 years and only 13 years, respectively. The report also found that the Waimanalo Stream culverts in the BAFB are adequate to accommodate only about a 2-year frequency flood and that the lowland west of the base could be expected to be flooded frequently.

Guided by past flood history and flood studies made by different government agencies, the facilities in the golf course, horse center and BAFB are located outside of the flood prone area. Flood damages in these areas during subsequent floods in December 18, 1966, and November 26, 1970 were very minor.

Stream improvements downstream of the project area were also considered. However, since these areas are zoned in the General Plan for recreational, conservational and military uses, the additional improvements (over 8,000 feet to the ocean front) could not be justified. Also the cost of the total improvement to the ocean is well beyond the City's financial capabilities.

III. ENVIRONMENTAL IMPACTS OF THE PROPOSED PROJECT

The environmental impact of the proposed project will include the following:

- A. **Dust and Noise Emission:** The discharge of dust into the atmosphere will occur during the construction period. However, this is only a short-term effect on the environment and can be controlled by sprinkling of water during the excavation and backfill operations.

Some noise will be generated by construction equipment such as compressor, jackhammer and backhoe during construction. This noise level increase cannot be avoided but can be limited to only daylight hours. The Contract Specification will state that the construction work will be limited from 7:30 a.m. to 3:30 p.m. Also, the contractor will have to meet the Noise Control Requirements of Chapter 44A, State Health Department.

- B. **Water Quality:** The primary objective of this stream improvement project is to provide flood protection to the low-lying areas along the stream near the Kalaniana'ole Highway bridge. Due to the present blockage of the highway bridge opening and the lack of an adequate stream channel, flood waters overflow the existing stream bed across adjacent properties and return via overland flow downstream of the highway. Under this condition, the overland runoff would sweep a substantial amount of debris or surface pollutants from the land into the stream and eventually into the receiving waters in Waimanalo Bay. The completion of the proposed project will reduce the overflow of flood waters and the discharge of surface pollutants into the bay. Therefore, the long-term adverse effects of the proposed project on water quality in Waimanalo Stream and the receiving water are negative. Furthermore, the proposed project will not appreciably increase or decrease the current sediment load to the receiving waters because the net storm flow volume in the stream will remain essentially the same and only a 1,000 foot section of the stream will be improved. Stream bed erosion from the project area will be eliminated.

During construction, some discoloration and increased turbidity are to be expected. However, these water quality changes are only temporary. In order to minimize the short-term adverse effect, the Contract Specifications will state the following: (1) The contractor shall not pollute the stream with fuel, oils, bituminous materials, calcium chloride, acids, construction wastes, washwaters or other harmful materials; (2) Surface drainage from cuts and fills and from borrow and waste disposal areas shall, if turbidity producing materials are present, be held in suitable sedimentation ponds or shall be otherwise

regulated to control erosion wherever possible; (3) Objectionable construction discharges shall be processed, filtered, ponded or otherwise treated prior to their discharge into a waterway or drainage system; and (4) Disposal of any material, garbage, oil, grease, chemicals, trash, and other similar material on areas adjacent to streams shall be subject to the approval of the City Engineer.

- C. Air Quality: There will be no long-term effects of this project on the air environment. In the short-term, air borne emissions will be caused by equipment such as tractors, trucks, cranes and air compressors during construction. Dust control measures will be the responsibility of the Contractor, and all applicable State and City requirements will be enforced.
- D. Soil Erosion: Sampling and analysis of sediment transportation by Waimanalo Stream have been conducted by the U. S. Geological Survey in cooperation with the Hawaii State Department of Land and Natural Resources in 1968 to 1969. It was reported (Ref. 7) that the maximum sediment concentration from the stream in the sampling period was 301 mg/l. The gross estimate of sediment, based on the average flow of 0.7 million gallons per day is about 260 tons per year (based on the formula $s = 452Q^{1.53}$). To compare with the other streams on the windward side of Oahu, Waimanalo Stream contributes the least amount of sediment. Since the project is located in the flatter area of the drainage basin with a ground slope of less than 1% and will provide a basin-type outlet structure at the downstream end of the concrete channel, the flow velocity in the stream will not be significantly increased. Thus, the project will not change the present status of soil erosion in the stream.
- E. Land Use: The natural irregular cross section of the stream will be replaced by a uniform rectangular section. The new alignment and transition will require that private properties be acquired. Most of the right-of-way is presently flood prone and used for non-domestic purposes. No residential structure will be relocated. However, a hot house and a shed on TMK: 4-1-13:6 will be relocated to some other location on the same lot. Also, a house on TMK: 4-1-08:15 must be modified to clear the improvements and three coops will be relocated.

The existing stream bed outside the channel limits will be filled and any land not required or any remnant that is created from the realignment of the stream will be disposed of in accordance with the City's regulations and procedures. Lands not needed by other City agencies are declared surplus and are eventually disposed of. Long-term effect on land use is minimal.

- F. Flora and Fauna: The stream vegetation that will be removed by the stream improvement project does not involve any rare species or have any commercial value. The stream bed is overgrown with elephant grass with a small number of trees such as koa, coconut, monkeypod, banana, bamboo and plumeria. Thus, the project has no severe adverse impact on the flora.

There are a small number of mosquito fish, tadpoles, gobies and fresh water shrimps but there are no known endangered marine species within the project area.

The removal of stream side plants and bird habitats, including those for the vegetation birds such as the black-crowned night heron (Nycticorax), would reduce the number of birds in the area. This improvement would also spread the stream flow across the concrete channel and create a barrier for the fresh water gobies and shrimps which may be migrating along the stream to complete their life cycle. However, the adverse effects on the flora and fauna are small since the project covers only 1,000 feet of the total 20,000-foot length of Waimanalo Stream. The aquatic organisms will probably re-establish their life and breeding processes elsewhere along the stream. Besides, the project area is already urbanized and wildlife and fish population have been reduced to a negligible number.

- G. Archaeological and Historic Significance: There are no known archaeological or historic sites in the construction site. The lower reach of Waimanalo Stream meanders through Bellows Field beach where extensive sand dune burials and habitation areas are located. According to the Hawaii Register of Historic Places, potential for further research on an early settlement is great (Ref. 8).
- H. Socio-Economical Consideration: The proposed stream improvement will include physical, aesthetical, psychological and social benefits. The new channel section will replace the old hodge-podge of privately constructed levees, banks and rubble walls and provide protection and relief from flooding and damage to properties. Stream bank erosion in the project area will be eliminated.

The major impact on the socio-economic character of the area will be the loss of private land on the south side of the channel improvement. The total area to be acquired for the new channel right-of-way is about 30,000 square feet from parcels 18, 19, and 20 of Tax Map Key: 4-1-18. However, the properties to be acquired are located within the designated flood plain and cannot be fully utilized without the channel improvements. The City will follow

the established procedure to acquire the land and will also dispose any remnant parcels that are created.

A uniform 15-foot wide construction easement on both sides of the channel will be secured. Where the two houses on the Kailua side of the stream intrude within the 15-foot width, the easement will be reduced to five feet or less. The contractor will be required to work around these houses and fence the project area in order to provide adequate protection and safety for these houses and the general public. The disturbed and backfilled areas will be grassed after the completion of the channel improvement.

- I. Utilities: There are no known public utilities that will be affected by this project. However, the existing U. S. Geological Survey's rain gage station will be relocated.

IV. 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. Turbid conditions and some silting at the Waimanalo Stream and Waimanalo Bay outlet during the period of construction.
- C. Noise emissions caused by construction equipment.
- D. Some inconvenience to motorists, pedestrians and abutting owners will be experienced during the construction.

V. 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. This will involve almost all property owners and about 20 houses. A conservative estimate shows that a minimum of \$15,000 will be required for each property owner to regrade his lot, elevate his house and provide other measures. The total cost of this alternate is \$300,000. Since each owner will be required to voluntarily take the initiative and provide private financing, this alternative is not effective, nor practical and manageable.
- C. Use upstream detention ponds to control and regulate the stream flow. Since the stream has an estimated flow of 9,500

cfs, the minimum surface area of a detention pond will be over 20 acres. This is possible but not economical since the land prices in this area range from \$3.00 to \$5.00 per square foot. The cost of land acquisition by itself could cost \$3.5 million. The two reservoirs located on the upper edge of the drainage basin are currently used to supply irrigation water to the farms in the valley. They are not compatible for use as temporary holding ponds for flood control. In addition, the reservoirs would be of limited value because storage capacity cannot be assured at any time.

- D. Acquire and redevelop the entire flood plain area for park and recreational use and move all houses and residents to another area. This is not practical and economical because the total land involved in this alternative will be about 20 acres and only the land will cost more than \$3.0 million.
- E. Use a trapezoidal section and line with grouted rip-rap boulders. This alternative will require a larger stream cross sectional area and more private land must be acquired. The cost of this alternative is estimated to be \$1.5 million or double the cost of the rectangular channel.
- F. Maintain the natural stream but clean the plugged cells and dredge the upstream and downstream approaches to the bridge. Although this alternate will increase the stream capacity to about 4,000 cfs which is in the neighborhood of a 25-year flood frequency, this will not resolve the flooding problem in the vicinity. Besides, the Kailua side stream bank cannot be disturbed without first constructing retaining walls to provide for the lateral support of the embankment.
- G. Construct a concrete channel extending from 300 feet downstream and 700 feet upstream of the Kalaniana'ole Highway bridge and provide a basin-type outlet structure at the end of the concrete channel. also, dredge the plugged cells and pave the invert of the bridge with reinforced concrete to match the channel invert grade and slope. This proposed improvement will render the bridge and the approaches hydraulically adequate to convey the peak storm flow through the area.

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

The project will require acquisition of strips of land for the channel right-of-way. The removal of the flood hazard and the attendant upgrading of the social and economic well-being of the residents are permanent and continual benefits.

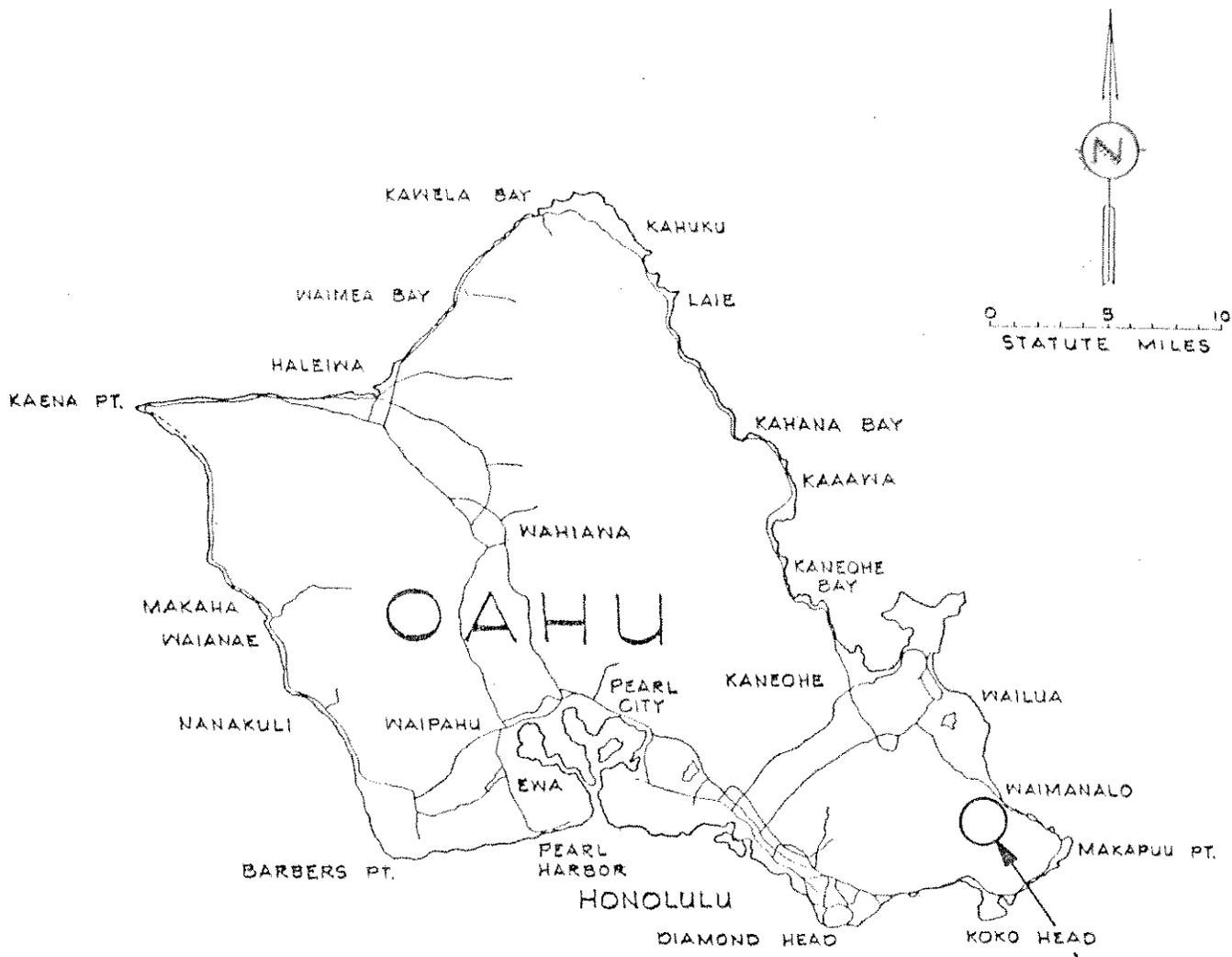
VII. IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES
WHICH WOULD BE INVOLVED IN THE PROPOSED PROJECT SHOULD IT
BE IMPLEMENTED

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

In addition, some land would be permanently converted from private to public ownership.

List of Reference

1. Department of Public Works, City and County of Honolulu, "Storm Drainage Standards," March 1969.
2. Dr. Ven Te Chow, "An Investigation of The Drainage Problem of The City and County of Honolulu," June 1966.
3. U. S. Department of Agriculture, Soil Conservation Service, "Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii," August 1972.
4. U. S. Corps of Engineers, " Post Flood Report, Storm of 17-18 December, 1967, Island of Kauai and Oahu," Circular C-47, October 1968.
5. U. S. Corps of Engineers, Personal Letter addressed to the former Honolulu Mayor dated February 28, 1968, Relating to The Waimanalo Stream Flood Control Project.
6. Reuben Lee and William C. F. Chang, "Floods in Waimanalo Areas, Oahu, Hawaii," published by the U. S. Geological Survey, 1968.
7. Department of Land and Natural Resources, State of Hawaii, "Reconnaissance Study of Sediment Transported By Streams, Island of Oahu," November 1971.
8. Department of Land and Natural Resources, State of Hawaii, " The Hawaii Register of Historic Places," 1974, p. 233.



WAIMANALO STREAM IMPROVEMENT
PROJECT LOCATION

EXHIBIT NO. 1
GENERAL MAP

TRUE NORTH
SCALE: 1" = 2000'

WAIMANALO BAY

WAIMANALO

WAIMANALO BEACH PARK

LAUMILO ST

BLUDDY ST

TINKER

BELLOWS

AIR

AIR FORCE COMMUNICATION SYSTEM

FORCE BASE

ROAD

ROAD

HIGHWAY

WAIMANALO TOWN

HIMIMANU ST

STREET

UNIV. OF HAWAII EXPERIMENTAL STA

AKIKI

MORULAMA ST

KAUKUKANU ST

KAUKUKANU ST

ST

KALANIANA'OLE

WAIMANALO OLD CEMETERY

KAKA'INA

WAIKUPA'ANANA

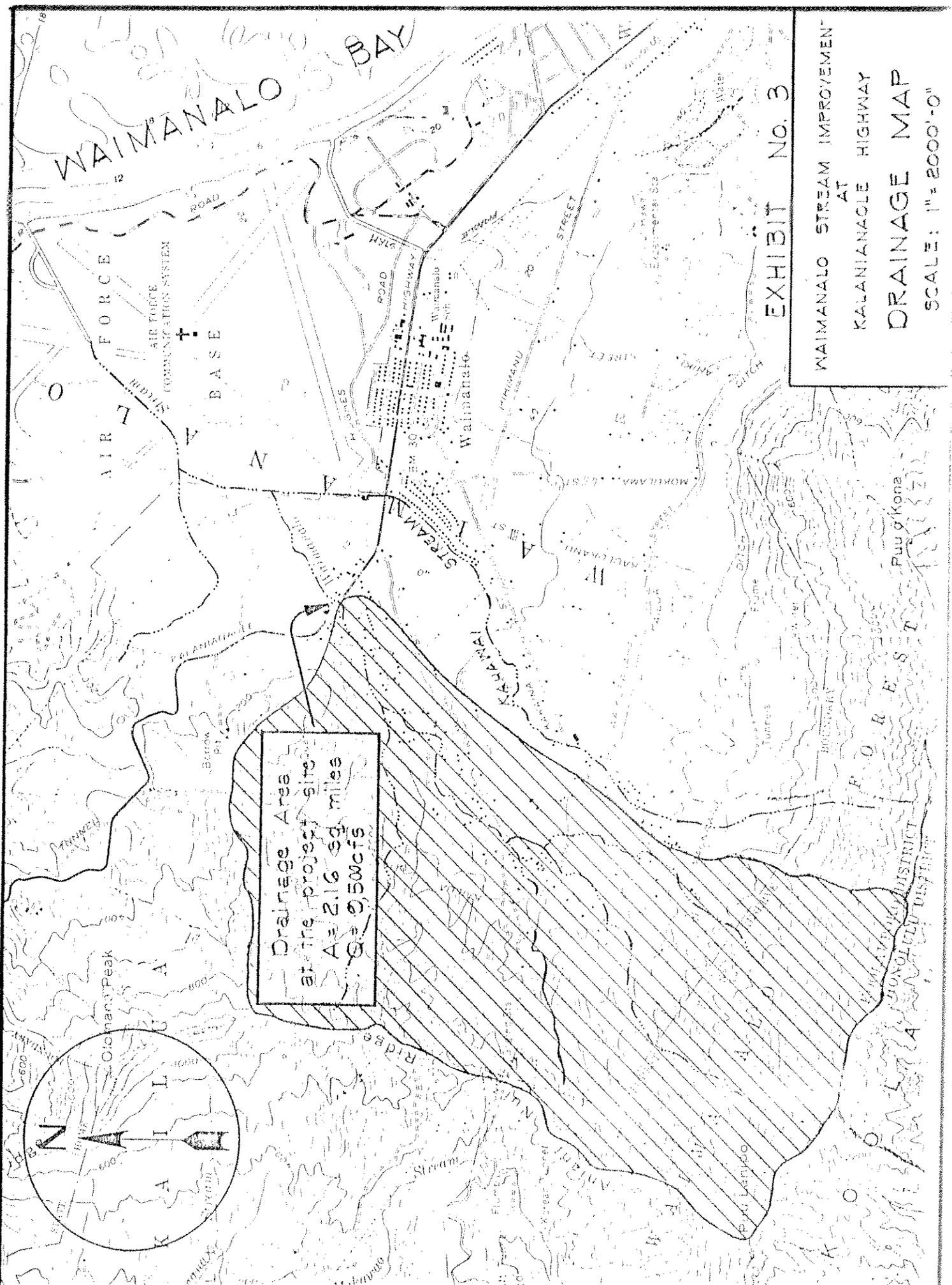
MAUNAWILI

To Honolulu

PROJECT SITE

LOCATION MAP

EXHIBIT No. 2



WAIMANALO BAY

AIR FORCE
AIR FORCE
COMMUNICATION SYSTEM
BASE

Drainage Area
at the project site
A = 2.16 sq miles
Q = 0.50wcf/s

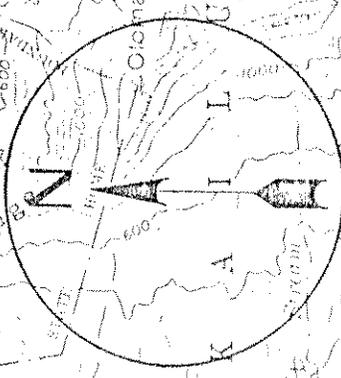


EXHIBIT No. 3

WAIMANALO STREAM IMPROVEMENT
AT
KALANIANAKLE HIGHWAY
DRAINAGE MAP
SCALE: 1" = 2000'-0"

Puu o Kona

MONOCLINAL DISTRICT

WAIMANALO DISTRICT

GEORGE R. ARIYOSHI
GOVERNOR



JOHN FARIAS, JR.
CHAIRMAN, BOARD OF AGRICULTURE

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

February 26, 1975

MEMORANDUM

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

Subject: Draft EIS for Waimanalo Stream Improvement at
Kalaniana'ole Highway, Oahu, Hawaii

The Department of Agriculture has reviewed this draft statement and finds no significant adverse agricultural impact.

The recommended alternative for channel improvement appears to provide an adequate level of protection.

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

F:d:h

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS 15th AIR BASE WING (PACAF)
APO SAN FRANCISCO 96553



REPLY TO
ATTN OF:

DEEE (Mr Kimura, 4492158)

10 APR 1975

SUBJECT: Draft Environmental Impact Statement

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

We have no comments to render relative to the draft environmental impact statements for the following projects:

1. Panaewa Zoological Garden, Hilo.
2. Wailuku-Alenalo Watershed Project, Hilo.
3. Ewa Beach Sewer System.
4. Excavation & Quarry Operation, Honokahau 2nd.
5. Construction and Operations, Mauna Kea Science Reserve.
- ✓ 6. Waimanalo Stream Improvement.
7. Palehua PD-H (Projects 2 through 5).

A handwritten signature in cursive script, appearing to read "Allan M. Yamada".

ALLAN M. YAMADA
Asst Dep Condr for Civil Engineering



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

PODEDP

21 March 1975

Dr. Richard E. Marland, Interim Director
Office of Environmental Quality Control
State of Hawaii
550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Dr. Marland:

We have reviewed the draft environmental impact statement for Waimanalo Stream Improvement at Kalaniana'ole Highway, Oahu, Hawaii, and have the following comments.

a. The statement mentions (p. 3) past failure of storage reservoirs located upstream from the project site. What consideration has been given to the effects of potential reservoir failure on the proposed project design?

b. The statement describes the Waimanalo project area in general and states that the City and County of Honolulu has designated the low-lying area along the existing stream from about 700 feet upstream and 2,000 feet downstream of the highway as flood-prone land. It is not clear what the areal limits of the flood plain for the design flood are. It is suggested that a design flood plain map or a description of the flood plain size and/or limits be included in the statement. This information would support evaluations of potential damages and potential future development which could occur with flood control improvements.

c. The design discharge of 9,500 c.f.s. appears to be adequate. Since no freeboard allowance is being provided at Kalaniana'ole Highway under project design conditions, collection of debris could increase the design water surface upstream of the bridge.

d. Based on the material provided, it is not clear how overbank flows upstream from the project will be collected into the improved channel.

Sincerely yours,


ELROY GILINN
Acting Chief, Engineering Division

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



GEORGE A. L. YUEN
DIRECTOR OF HEALTH

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

March 3, 1975

Ref: File EPHSD-SS

MEMORANDUM

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

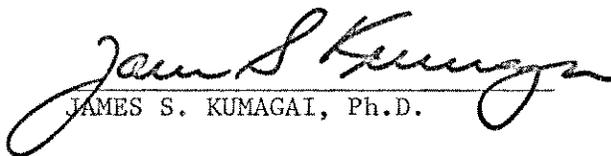
From: Deputy Director for Environmental Health

Subject: Draft Environmental Impact Statement (EIS) for Waimanalo Stream
Improvement at Kalaniana'ole Highway

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

In order to carry on operations and reduce noise levels, all trucks and motor vehicles should meet the noise level requirements of the vehicular noise control (Chapter 44A) requirements of the State Department of Health.

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.

UNIVERSITY OF HAWAII

Water Resources Research Center
Office of the Director

MEMORANDUM

March 19, 1975

TO: Richard E. Marland
Director, OEQC

FROM: Reginald H. F. Young^{RM}
Asst. Director, WRRRC

SUBJECT: Review of Waimanalo Stream Improvement Draft EIS

The following review comments are submitted for your consideration:

On page 2, relating to a peak discharge of 9,500 cfs., what is the number related to in terms of flood frequency (i.e. recurrence interval)? Under Section B, Description of the Project Area, the last paragraph states that the existing Kalaniana'ole highway bridge opening can only handle approximately 1010 cubic feet per second with no detailed explanation of the amount of vegetation causing a partial block of the channel. This tends to give the reviewer a false impression that the 2 cells under the bridge would only pass 2 x 1010 or 2020 cfs, when in reality when the invert is lowered to the proposed concrete channel it should pass 9500 cfs. Although the width of the concrete channels are specified as being 46 feet upstream and 54 feet wide downstream of the bridge, no dimension has been given for the depth so that velocities cannot be calculated to determine whether the transition outlet structure to the existing unlined stream at the end of the concrete channel is adequately or inadequately designed.

If the streambed is channelized, why not extend it 1000 feet upstream to the existing subdivision. If the stream overtops mauka of the proposed 700 feet length, the water will flow across the properties lying downstream of it and cause damage.

The construction of the project is scheduled for August 1975 and will require 210 calendar days for completion. The construction is to begin from the start of a fiscal year and is not related in anyway to a minimum environmental impact because the interval of construction includes December, January and February which are months of rainy season and flooding.

Any adverse effects from sediments or harmful construction-related materials on the downstream fauna (fish) is not addressed.

Nothing is said about what happens to the land in the existing streambed when the channel is realigned.

The proposed channel improvement should include provisions to minimize or eliminate the debris problem that plugged one of the cells underneath the existing highway bridge.

RHFY:jm

cc: Env. Center
Y. Fok
H. Gee
E. Murabayashi

BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU

630 SOUTH BERETANIA

POST OFFICE BOX 3410

HONOLULU, HAWAII 96843



JOHN HENRY FELIX, Chairman
STANLEY S. TAKAHASHI, Vice Chairman
GEORGE APDUHAN
YOSHIE H. FUJINAKA
KAZU HAYASHIDA
WALTER D. HOWARD
E. ALVEY WRIGHT

EDWARD Y. HIRATA
Manager and Chief Engineer

March 14, 1975

Dr. Richard E. Marland
Interim Director
Office of Environmental Quality Control
550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Dr. Marland:

SUBJECT: Draft Environmental Impact Statement for
Waimanalo Stream Improvement at
Kalaniana'ole Highway, Oahu, Hawaii

The project is not anticipated to have any adverse effect on our water sources or facilities.

However, we request that the construction plans be coordinated with our Engineering Division to assure that adequate provisions are made to protect our water mains within the project area. In this regard, please call Mr. Robert Nagato at 548-5201.

Very truly yours,

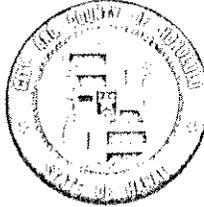
Edward Y. Hirata
Manager and Chief Engineer

DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU

SUITE 2180 PACIFIC TRADE CENTER
190 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. FASI
MAYOR

PAUL DEVENS
MANAGING DIRECTOR



GEORGE S. MORIGUCHI
DIRECTOR

WILLIAM E. WANKEY
DEPUTY DIRECTOR

75/DEIS-4(GN)

MARCH 11, 1975

MEMORANDUM

TO : DR. RICHARD E. MARLAND, INTERIM DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

FROM : GEORGE S. MORIGUCHI, DIRECTOR OF LAND UTILIZATION

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR
WAIMANALO STREAM IMPROVEMENT

Approvals related to the above proposal have been given by our department, including subdivision and construction plans approval.

The comments which follow are addressed specifically to the adequacy of the environmental impact statement as a disclosure document.

(1) Reference: General

Comments: As a matter of general practice, tax map keys should be included for ready reference by reviewers.

(2) Reference: Page 5, "Description of the Proposed Project"

Comments: Clarification and elaboration on the condition of the existing bridge is needed, since the same structure will be utilized. The success of the completed project will be correlative to the bridge modification and its adequacy to handle the extreme load of the stream.

DR. RICHARD E. MARLAND
PAGE TWO
MARCH 11, 1975

(3) Reference: Exhibit No. 4

Comments: The detailed stream improvement plan shows several homes within five feet of the finished channel edge. Questions on construction hinderance and public safety should be addressed.

Thank you for the opportunity to review and comment on this document.


GEORGE S. MORIGUCHI
Director of Land Utilization

GSM:fm

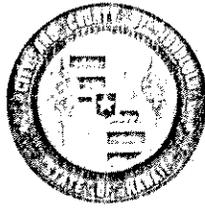
cc: Department of General Planning

APPENDIX B

Response to comments

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0424

June 13, 1975

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

Dear Dr. Marland:

YOUR LETTER OF MARCH 31, 1975, RELATING TO THE
DRAFT EIS FOR THE WAIMANALO STREAM IMPROVEMENT
AT KALANIANAOLE HIGHWAY

Thank you for your comments and suggestions on the draft EIS. The following responses are submitted:

Page 1. Health problems cited in the draft EIS are related to the vegetal overgrowth along both banks of the stream. Also, the accumulated debris and silty materials tend to form stagnant smelly water ponds where mosquito can breed.

The planning and engineering design of the project were funded by the State. No State lands are involved in this project.

Page 2. The channel inverts will be at elevation 21.7 feet and 14.5 feet above mean sea level at the upstream and downstream ends, respectively. The slope of the channel will range from 0.006 to 0.0085 feet per foot and the design flow velocity will range from 24 to 28 feet per second. The stream will flow by gravity and no stagnant water condition will be created.

Page 3. The existing Kalanianaole Highway bridge has two 24-foot wide by 7.75-foot deep openings. At the present time, one cell is almost completely plugged, and the other is half plugged. The total flow capacity under this condition is about 1,010 cfs. Under this project, the two cells will be cleared and their inverts will be paved with reinforced concrete to the design channel invert grade and slope.

The capacity, after this modification, will be increased to over 9,500 cfs and will be adequate to prevent flooding in the project area.

- Page 4. The outlet structure will be constructed at the end of the improvement and is shown on Exhibit No. 4 in the draft EIS. The outlet's capacity will be the same as the channel capacity.

The project will provide a debris barrier at the upstream end of the proposed improvement. This barrier will prevent large sized floatable debris or boulders from entering the channel. We will mention this in the final EIS.

- Page 6. The two main factors contributing to stream overflows are the plugged bridge's cells and the constrictive approaches at the highway bridge. The improvement will provide adequate capacity to contain the floodwaters within the channel. This will eliminate the possibility of storm water overflowing across the properties and around the bridge, sweeping pollutants back into the stream. Thus, less pollutant loads will be carried into the receiving water at Waimanalo Bay. We believe that the statement is sufficiently self-explanatory and further discussion is not necessary.

- Page 7. We have consulted with the local Federal and State agencies concerned with marine life. Information received have indicated that there are no endangered marine species which are permanent residents in Waimanalo Stream. However, there are some Hawaii found riparian vegetation birds which occasionally use the stream's habitats for resting and feeding. We will mention this in the final EIS.

The outlet structure will provide a smooth transition from the concrete channel to the natural stream bed and is located 9,000 feet upstream from the ocean outlet. Therefore, this project will have negligible effects on the marine life in the bay.

- Page 9. The stream improvement project will provide flood control and drainage relief to the area. A small amount of land will be reclaimed by this project. The usage of such lands will be governed by established governmental zoning and building regulations. We do not anticipate that the project will stimulate any increase in population, growth, urbanization and use of public facilities.

Dr. Richard E. Marland
June 13, 1975
Page three

Additional comments - We concur that the channelization of natural streams may reduce ground water percolation, change stream water temperature, and leave the stream in a drier state. We will mention these effects in the final EIS.

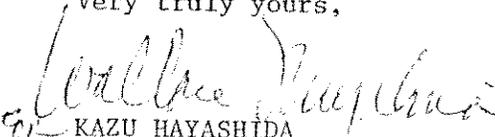
The City's Division of Road Maintenance will schedule periodic inspection, cleanup and collection of debris.

The debris originates from the upstream basin area. It includes stream grasses and plants, tree branches and roots, refuse, and garden trimmings. Merely controlling and eliminating the debris will not significantly increase the stream capacity or reduce the flood potential. Thus, we do not consider this as a viable alternative to the flood control project.

We will send written responses to each of the commentors and will incorporate their pertinent comments in the final EIS. Also, we will incorporate an appendix in the final EIS to include comments from all concerned agencies.

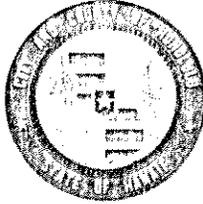
We will submit the required number of copies of the final EIS to your office at a later date. We will also send a copy to each of the agencies that made substantive comments on the draft EIS.

Very truly yours,


KAZU HAYASHIDA
Director and Chief Engineer

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0383

May 29, 1975

Dr. Doak C. Cox
Environmental Center
University of Hawaii
2540 Maile Way, Building #10
Honolulu, Hawaii 96822

Dear Dr. Cox:

YOUR LETTER OF MARCH 24, 1975 TO DR. RICHARD MARLAND
OF THE STATE OEQC, RELATING TO THE DRAFT EIS FOR THE
WAIMANALO STREAM IMPROVEMENT AT KALANIANA'OLE HIGHWAY

Thank you for your comments and suggestions on the draft EIS.
The following responses are submitted:

II. Existing Conditions of the Project Area

Para. 1. The design flow for this project is based on Plate 6 of the City's Storm Drainage Standards. The envelope curves on that plate were developed based on the peak recorded flows of streams on Oahu and are not related to frequency.

Para. 2. The two reservoirs are located on the upper edge of the drainage basin and are currently used to supply water to the farms in the Waimanalo Valley. They are not compatible for use as temporary holding ponds for flood control because the reservoir's water is utilized for irrigation. In addition, the reservoirs would be of limited value because storage capacity cannot be assured at any time.

Para. 3. The bridge was completed in 1924 and was presumably designed and constructed to be fully open. Unfortunately the bridge was constructed at a sharp bend of Waimanalo Stream. Subsequently, sediment built up at the inner radius of the bend, and the lack of regular maintenance caused the existing plugged condition. This amount of sediment, based on the average 0.7 million gallons per day and sediment concentration

Dr. Doak C. Cox
May 29, 1975
Page two

of 301 mg/l (Ref.: Circular C33, DLNR, Nov. 1971), is about 260 tons per year (use formula $S=452Q^{1.53}$).

Para. 4. The City's Division of Road Maintenance will schedule periodic inspections and maintenance for this improvement. This will be stated in the final EIS.

Para. 5. The existing plugged cell and the upstream and downstream approaches on the Kailua side cannot be cleaned out without first constructing retaining walls to provide for the lateral support for the embankment. By merely unplugging the cells and dredging the approaches, the stream capacity will be 4,000 cubic feet per second which is in the neighborhood of a 25-year flood frequency.

Para. 6. In 1965, the City Council adopted Ordinance No. 2735 to control building within flood prone areas, and the project area was included in the designation. In 1968, the Army Corps of Engineers reported that a Federal flood control project for this stream was feasible.

This project will remove the constrictions in the stream at the bridge vicinity and speed up the flow of floodwater through the project area. This may result in a shorter time of concentration for the stream flow to reach the downstream area. However, since the flow quantity in the stream is not affected substantially by this project and because only about 1,000 feet of the total 20,000 feet of stream will be channelized, the total increase of flow velocity will not be significantly noticed. Besides, the project will have an enlarged basin-type outlet structure at the end of the concrete channel in order to provide a transition back to the natural stream bed and serve to reduce the flow velocity. Thus, the present flood boundaries will remain more or less the same, and the effect of the project on flooding areas downstream will be negligible.

The project plans have been approved by the State DLNR and have been coordinated with the Federal government and property owners along the project area.

Para. 7. Minor modification to the existing bridge in addition to dredging and clearing of the plugged cells will include the lowering of the existing invert and the construction of a concrete lining.

Para. 8. There are no sufficient flow data to establish a frequency-discharge relationship for this stream. The design flow is based, as we have mentioned in the draft EIS, on the already established City's Storm Drainage Standards. Discussion of other methods to calculate peak storm runoff including frequency-discharge curve is an academic matter and is not appropriate for inclusion in the EIS.

III. Environmental Impacts of the Proposed Project

Para. 1. The Contract Specification will require that the contractor not pollute the stream water with construction wastes, wash waters and other harmful materials. The discharge of washings from concrete trucks after they have delivered their loads shall be included in the above categories and shall be prohibited.

Para. 2. Construction funds for the project have been appropriated in the current fiscal year and will lapse unless the funds are encumbered by the end of the 1975 calendar year. Attempt will be made to delay the construction contract award, if at all possible, so that the work will not start during the rainy winter season.

Para. 3. The purpose of the stream improvement is to alleviate the immediate flood problems at the project vicinity. We do not anticipate an increase of construction activities because this project will not reclaim large portions of unusable land. The present zoning requirement will not be changed by this project either. The total cost of \$700,000 will include land acquisition and damages.

Para. 4. As mentioned in II, Para. 6., the present flood boundaries below the improvement will not be materially changed.

IV. Alternatives to the Proposed Project

Para. 1. The City, by law, cannot spend public funds to upgrade private property. Federal flood insurance is available and optional to individual owners.

Para. 2. As mentioned previously, the reservoirs are not suitable for detention ponds.

Dr. Doak C. Cox
May 29, 1975
Page four

Para. 3. Stream cleaning and maintenance alternatives will be considered and discussed in the final EIS.

A copy of the final EIS incorporating your comments and suggestions will be forwarded to you at a later date.

Very truly yours,

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

KAZU HAYASHIDA
Director and Chief Engineer

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0381

May 28, 1975

Mr. Francis C. H. Lum
State Conservationist
U. S. Soil Conservation Service
440 Alexander Young Building
Honolulu, Hawaii 96813

Dear Mr. Lum:

YOUR LETTER OF MARCH 18, 1975 TO DR. RICHARD MARLAND
OF THE STATE OEQC, RELATING TO THE DRAFT EIS FOR THE
WAIMANALO STREAM IMPROVEMENT AT KALANIANA'OLE HIGHWAY

Thank you for your comments on the draft EIS.

This project will remove the constrictions in the stream at the highway bridge and speed up the floodwater flow through the project area. This may result in a shorter time of concentration of the stream flow to reach the downstream areas. However, since the flow quantity in the stream is not affected substantially by this project and because only about 1,000 feet of the total 20,000 feet of the stream will be channelized, the increase of flow velocity and decrease in the time of concentration will not be significantly noticed. Besides, the project will have an enlarged basin-type outlet structure at the end of the concrete channel in order to provide a transition back to the natural stream bed and serve to reduce the flow velocity. Thus, the present makai flood boundaries will more or less remain the same, and the effect of the project on flooding in areas downstream will be negligible.

A copy of the final EIS incorporating your comment will be forwarded to you at a later date.

Very truly yours,

Kazu Hayashida
KAZU HAYASHIDA
Director and Chief Engineer

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0378 ✓

May 28, 1975

Mr. Christopher Cobb
Chairman and Member of the Board
Department of Land and Natural Resources
State of Hawaii
P. O. Box 621
Honolulu, Hawaii 96809

Dear Mr. Cobb:

YOUR LETTER OF MARCH 19, 1975 TO DR. RICHARD MARLAND
OF THE STATE OEQC, RELATING TO THE DRAFT EIS FOR THE
WAIMANALO STREAM IMPROVEMENT AT KALANIANA'OLE HIGHWAY

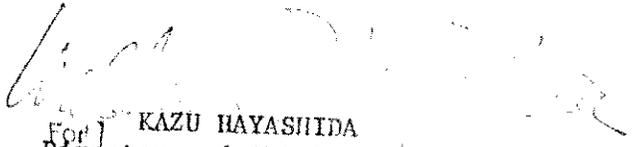
Thank you for your comments on the draft EIS.

The channelization of the stream will remove the natural habitats of aquatic organisms and may limit their migration. However, the adverse effects on the flora and fauna are small since the project covers only 1,000 feet of the total 20,000 foot length of Waimanalo Stream. The aquatic organisms will probably re-establish their life and breeding processes elsewhere along the stream. Besides, the project area is already urbanized and wildlife and fish population have been reduced to a negligible number.

The existing plugged cell and the upstream and downstream approaches at the Kalaniana'ole Highway bridge cannot be cleaned out without constructing retaining walls to provide for lateral support. Merely unplugging the bridge cells will not be adequate for flood flows.

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

Very truly yours,

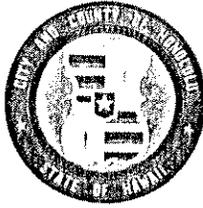

For KAZU HAYASHIDA
Director and Chief Engineer

PC/RYN:csi

cc: OEQC

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0382

May 28, 1975

Mr. Hideto Kono, Director
Department of Planning and
Economic Development
State of Hawaii
P. O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Kono:

YOUR LETTER OF MARCH 12, 1975 TO DR. RICHARD MARLAND
OF THE STATE OEQC, RELATING TO THE DRAFT EIS FOR THE
WAIMANALO STREAM IMPROVEMENT AT KALANIANA'OLE HIGHWAY

Thank you for your comments on the draft EIS.

The new stream improvement will acquire some 30,000 square feet of land from properties on parcels 18, 19 and 20 of Tax Map Key: 4-1-18. The properties to be acquired are located within the designated flood plain area and cannot be fully utilized without flood control improvements. Therefore, the acquisition will not have any adverse impact or change on the living conditions of the affected residents. Except for the loss of land area, living conditions may actually improve with the elimination of building restrictions and the fear of flooding.

We will be responding to the comments made on the draft EIS by the State Department of Land and Natural Resources. The construction plans have been approved by the DLNR.

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

Very truly yours,

A handwritten signature in cursive script, appearing to read "Kazu Hayashida", is written over a printed name.

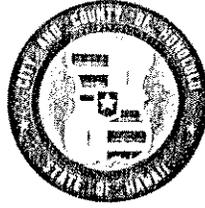
KAZU HAYASHIDA
Director and Chief Engineer

FF
PC/RYN:csi

cc: OEQC

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0379

May 28, 1975

Mr. Maurice H. Taylor, Area Supervisor
U. S. Department of the Interior
Fish and Wildlife Service
821 Mililani Street
Honolulu, Hawaii 96813

Dear Mr. Taylor:

YOUR LETTER OF APRIL 4, 1975, TO DR. RICHARD MARLAND
OF THE STATE OEQC, RELATING TO THE DRAFT EIS FOR THE
WAIMANALO STREAM IMPROVEMENT AT KALANIANAOLE HIGHWAY

Thank you for your comments and suggestions on this draft EIS.
The following responses are submitted:

1. Part II. B. We will expand the statement to give a more detailed evaluation of streamside plants such as Elephant grass. We believe that mosquitoes and rodents breed in stagnant water pools rather than in the running stream, even though the stream supports a number of mosquito fish.
2. Part II. D. We will expand the statement to give a functional description of the outlet structure. The outlet structure will provide a smooth transition to the natural streambed and serve to reduce velocity and provide erosion protection. We will also include a comparison of the bridge capacities with proper maintenance under existing conditions and with the new improvements.
3. Part III. B. The disturbed and backfill areas will be grassed.
4. Part III. D. The fish pond located downstream of Kalanianaole Highway bridge on tax map key: 4-1-13: 6 (see Exhibit No. 4 in the EIS), is a small, privately owned garden pond. The pond is not used to raise fish for commercial purposes. The

Mr. Maurice H. Taylor

May 28, 1975

Page two

pond is within the project right-of-way and will be destroyed. The property owner will be compensated for the pond as well as the land and other improvements. Reconstruction of the pond is a private matter. The City has no future project for this stream at the present time.

5. Part III. E. We will expand the statement to include a listing of birds along the stream if the information is available. We will also note that the channelization of the stream will remove the riparian vegetation bird habitat, increase the water temperature and take away a potential water bird habitat.
6. Part IV. The adverse effect on the flora and fauna is small since the project covers only 1,000 feet of the total 20,000 foot length of Waimanalo Stream. The aquatic organisms, birds and fish will probably re-establish their life and breeding processes elsewhere along the stream. Besides, the project area is already urbanized and wildlife and fish population have been reduced to a negligible number.
7. Part V. We will expand this section to include an alternative to dredge and maintain the stream and bridge cells only. A "V" notched low-flow channel design is not practical. This is because the average daily flow of the stream is too small and the temperature rise of the water flowing in the notch will possibly destroy the species during their migration. Also, we anticipate that siltation and debris will accumulate in the "V" notch and cause the channel bottom to level off. This will require more manpower and frequent maintenance.

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

Very truly yours,


FOI KAZU HAYASHIDA
Director and Chief Engineer

 PC/RYN:csi

cc: OEQC

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0352

May 16, 1975

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

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

SUBJECT: YOUR LETTER OF MARCH 11, 1975 TO DR. RICHARD MARLAND OF THE
STATE OEQC, RELATING TO THE DRAFT EIS FOR WAIMANALO STREAM
IMPROVEMENT AT KALANIANAOLE HIGHWAY

Thank you for your comments on the draft EIS. The following responses are submitted:

1. Tax Map Keys of the project area will be included in the final EIS.
2. The existing Kalanianaole Highway bridge has two 24-foot wide by 7.75-foot deep openings. At the present time, one cell is almost completely plugged and the other is half plugged. The total capacity under this condition is about 1,010 cfs. The project will unplug the cells and pave the invert with reinforced concrete to the design channel invert grade and slope. The capacity, after this modification, will be increased to over 9,500 cfs.
3. A uniform 15-foot wide construction easement on both sides of the channel will be secured. Where the two houses on the Kailua side of the stream intrudes within the 15-foot width, the easement will be reduced to five feet or less. The contractor will be required to work around these houses and fence the project area in order to provide adequate protection and safety for these houses and the general public.

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

Kazu Hayashida
for KAZU HAYASHIDA
Director and Chief Engineer

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK P. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0326

May 6, 1975

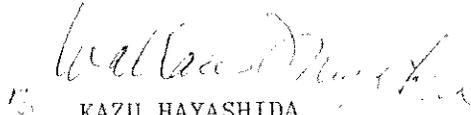
TO : MR. EDWARD Y. HIRATA, MANAGER AND CHIEF ENGINEER
BOARD OF WATER SUPPLY

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

SUBJECT: YOUR LETTER OF MARCH 14, 1975 TO DR. RICHARD MARLAND OF
THE STATE OEQC, RELATING TO THE DRAFT EIS FOR THE
WAIMANALO STREAM IMPROVEMENT AT KALANIANAOLE HIGHWAY

Thank you for your comments on the draft EIS.

The construction plans for this project were approved by the Board of Water Supply in September 1973. However, we will submit another set of plans for your review and comments to ensure that adequate provisions are being taken to protect the water systems in the project area.


KAZU HAYASHIDA
Director and Chief Engineer

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0353

May 16, 1975

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

Dear Dr. Young:

YOUR LETTER OF MARCH 19, 1975 TO DR. RICHARD E. MARLAND
OF THE STATE OEQC, RELATING TO THE DRAFT EIS FOR THE
WAIMANALO STREAM IMPROVEMENT AT KALANIANAOLE HIGHWAY

Thank you for your comments and suggestion on the draft EIS. The following response is submitted:

The design flow of 9,500 cfs is based on Plate 6 of the City's Storm Drainage Standards. The curves shown on the plate were based on an envelope of peak recorded flows and are not related to frequency.

The existing Kalanianaole Highway bridge has two 24-foot wide by 7.75-foot deep openings. At the present time, one cell is almost completely plugged and the other is half plugged. The total capacity under this condition is about 1,010 cfs. If the bottom of the bridge invert is paved with concrete to the design channel invert grade and slope, the maximum flow capacity will be increased to over 9,500 cfs.

The cause of the stream overflow is partly due to the plugged cells condition at the bridge and constricted stream approaches. Channelizing to 700 feet mauka of the bridge is considered adequate to prevent overtopping and flooding.

Construction funds for the project have been appropriated in the current fiscal year and will lapse unless the funds are encumbered by the end of the 1975 calendar year. Attempt will be made to delay the construction contract award, if at all possible, so that the work will not start during the rainy winter season.

Dr. Reginald H. F. Young
May 16, 1975
Page two

Since the adverse effects to the fauna from sediments resulting from stream excavation cannot be explicitly assessed, the contractor will be required to limit the excavation area by sections in order to control and minimize sediment losses. The contractor is also required to comply with all applicable Federal, State and City and County laws and regulations concerning environmental pollution control and abatement. Furthermore, the contractor will not be allowed to pollute the stream with fuel, oil, bituminous material and other harmful construction materials. Under these provisions, the adverse effects of construction activities on the downstream fauna will be reduced to minimum.

The existing stream bed outside the channel limits will be filled and any land not required or any remnant that is created from the realignment of the stream will be disposed of in accordance with the City's regulations and procedures. Lands not needed by other City agencies are declared surplus and are eventually disposed of.

The City's Division of Road Maintenance will schedule periodic cleanup and collection of debris.

A copy of the final EIS incorporating your comments and suggestions will be forwarded to you at a later date.

Very truly yours,


KAZU HAYASHIDA
Director and Chief Engineer

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0325

May 6, 1975

Dr. James S. Kumagai
Deputy Director for Environmental Health
State Department of Health
P. O. Box 3378
Honolulu, Hawaii 96801

Dear Dr. Kumagai:

YOUR LETTER OF MARCH 3, 1975 TO DR. RICHARD E. MARLAND
OF THE STATE OEQC, RELATING TO THE DRAFT EIS FOR THE
WAIMANALO STREAM IMPROVEMENT AT KALANIANA'OLE HIGHWAY

Thank you for your comments on the draft EIS.

The Contract Specifications will require the contractor to comply with all applicable Federal, State and City and County laws and regulations concerning environmental pollution control and abatement. The Specifications will also stipulate that the construction period will be from 7:30 a.m. to 3:30 p.m. These provisions will insure that noisy construction activities will be restricted during daylight hours. Construction vehicles will also have to meet the noise control requirements of Chapter 44A, DOH.

The construction plans for this project have been approved by your department, dated September 27, 1973.

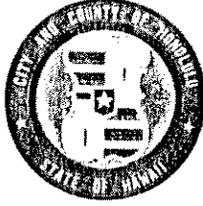
A copy of the final EIS will be forwarded to you at a later date.

Very truly yours,

Kazu Hayashida
for KAZU HAYASHIDA
Director and Chief Engineer

DEPARTMENT OF PUBLIC WORKS
CITY AND COUNTY OF HONOLULU

HONOLULU, HAWAII 96813



FRANK F. FASI
MAYOR

KAZU HAYASHIDA
DIRECTOR AND CHIEF ENGINEER

501-12-0354

May 16, 1975

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

Dear Mr. Chinn:

YOUR LETTER OF MARCH 21, 1975 TO DR. RICHARD E. MARLAND
OF THE STATE OEQC, RELATING TO THE DRAFT EIS FOR THE
WAIMANALO STREAM IMPROVEMENT AT KALANIANAOLE HIGHWAY

Thank you for your comments and suggestions on the draft EIS. The following responses are submitted:

- a. The Corps' reconnaissance report on Waimanalo Stream flood control, dated February 12, 1965, reported that a total time of fifteen minutes would be required to release all storage water from the reservoirs should an instantaneous structural failure of these reservoirs occur. The present maximum capacity of these two reservoirs is about 5.0 million gallons; a wave of water with a peak outflow of about 740 cfs would result from a sudden failure. The time required for the water to pass from storage into the stream and routing time to the highway bridge would further reduce the effect on the peak flow at the bridge. Compared with the design flow of 9,500 cfs, the sudden failure of these reservoirs should not greatly affect the project design. Simultaneous failure of both reservoirs, coinciding with the peak storm discharge is highly unlikely.
- b. A map indicating the boundaries of the flood plain area will be included in the final EIS.

Mr. Elroy Chinn, Acting Chief
May 16, 1975
Page two

- c. We concur that collection of debris at the bridge will increase the upstream water surface and the flowage at the bridge. The design of the project will provide a minimum of 3.0 feet freeboard for the channel section and a small debris barrier at the beginning of the project.
- d. The design has provided three (3) inlet openings on the channel walls to drain overland flow. The locations of these openings are shown on the Exhibit No. 4 in the draft EIS.

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

Very truly yours,

Walter Miyahira
FOR KAZU HAYASHIDA
Director and Chief Engineer

501-12-0218

April 3, 1975

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 MEMORANDUM DGP2/75-523(JW), DATED
MARCH 20, 1975, RELATING TO THE DRAFT EIS FOR
WAIMANALO STREAM IMPROVEMENT PROJECT

Thank you for your comments and suggestions on the draft EIS. Our responses are as follows:

1. Since State funds were used for the planning and engineering phase of this project, the final accepting authority of the EIS will be the Governor's Office as required under Chapter 343, HRS.
2. The proposed stream improvement will have physical, aesthetical and other benefits based on a comparison with the existing old, hodge-podge of privately constructed banks and levees. A well maintained natural watercourse with grassy slopes would be aesthetically more pleasing than the concrete channel. However, this is not the existing condition of Waimanalo Stream at the project area.

The field survey has indicated that there are about ten trees (coconut, monkeypod and banana) which are located in the new stream alignment and will be destroyed during construction. However, the adjacent property owners will be given an opportunity to relocate any of these trees or plants prior to construction.

Mr. Robert R. Way
Page two
April 3, 1975

3. We will mention that the project is shown on the DLUM in the final EIS.
 4. We will mention that the Road Maintenance Division will schedule and perform periodic maintenance of the stream in the final EIS.
- A final EIS will be forwarded to you at a later date.

Very truly yours,

Kazu Hayashida
For KAZU HAYASHIDA
Director and Chief Engineer

PC/RYN:csi

cc: OEQC

MILITARY

4-1-13 1 ST

EXHIBIT NO. 4 — PROJECT VICINITY TMK AND FLOOD PRONE AREA

MARCEL 15 OWNED BY JOSEPH ARUDA, JR & EMMA K. TIC - 814 LEASE ASSOCIATION OF HONOLULU

MARCEL 18 OWNED BY JOSEPH ARUDA, JR & EMMA K. TIC - 814 LEASE ASSOCIATION OF HONOLULU

MARCEL 15 OWNED BY JOSEPH ARUDA, JR & EMMA K. TIC - 814 LEASE ASSOCIATION OF HONOLULU

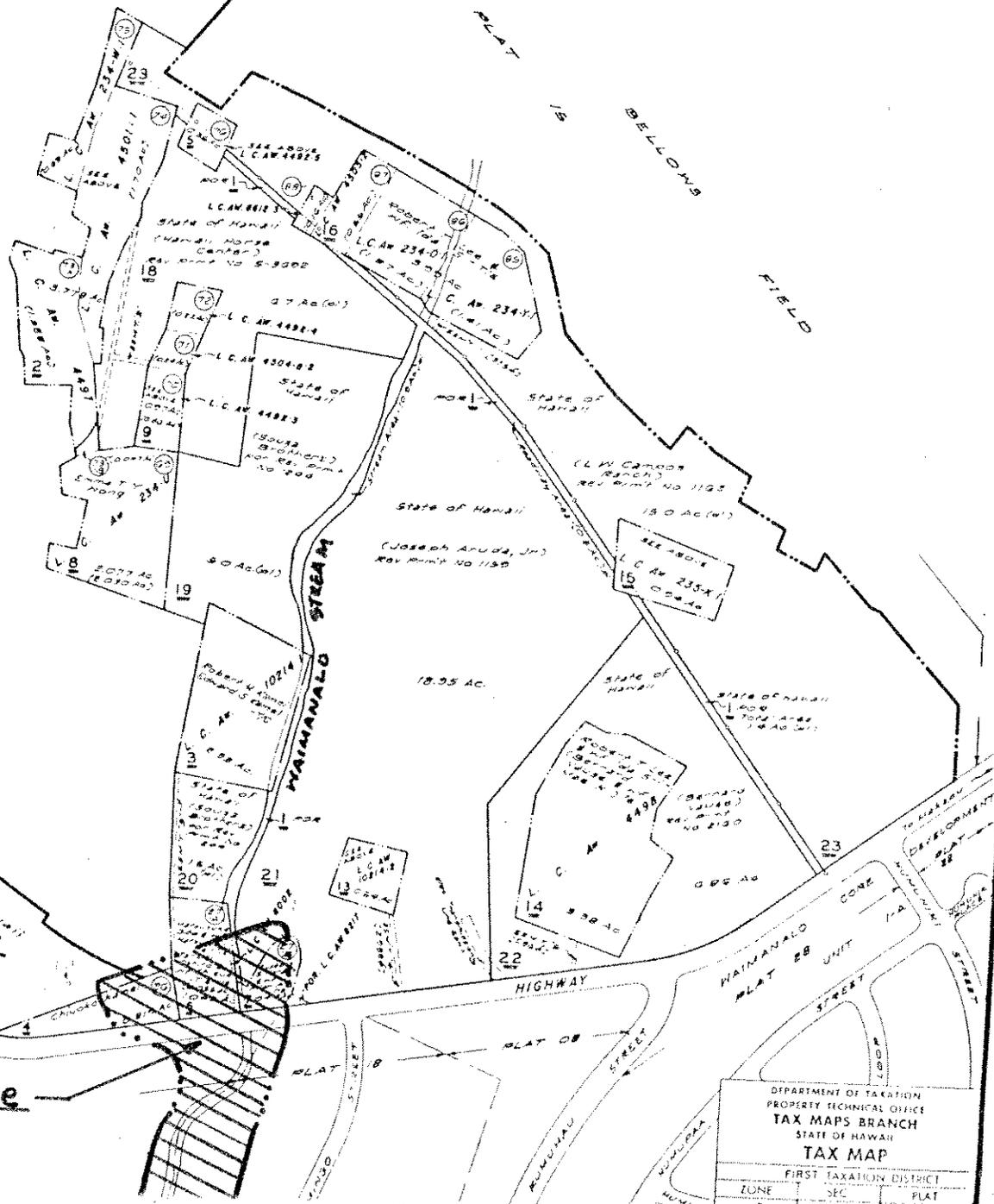
HAWAII
Inc, Inc)
08

RESERVATION

PLAT 15

BELLOWS

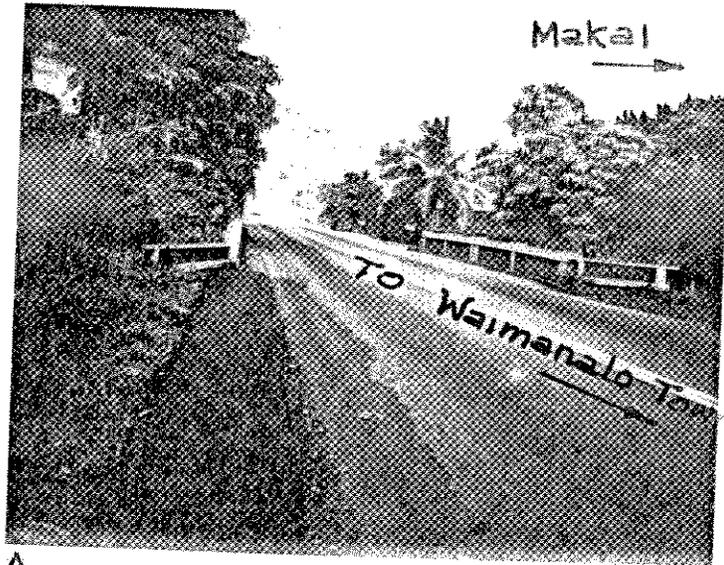
FIELD



Flood Prone

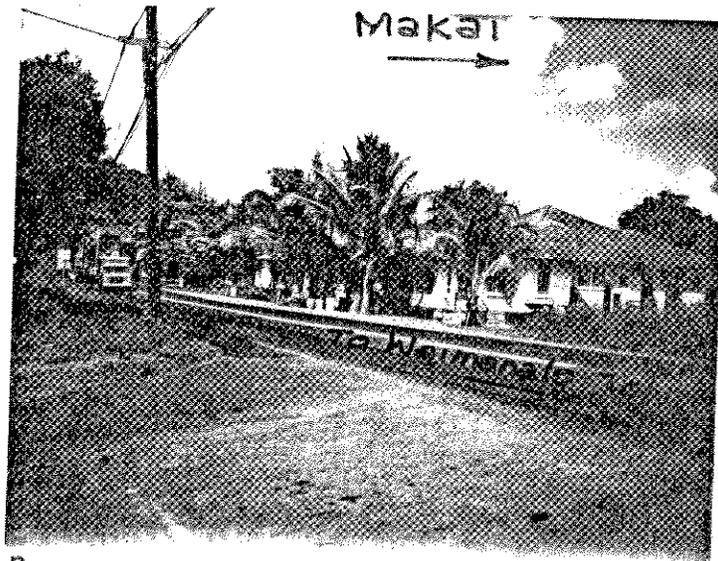
DEPARTMENT OF TAXATION PROPERTY TECHNICAL OFFICE TAX MAPS BRANCH STATE OF HAWAII		
TAX MAP		
FIRST TAXATION DISTRICT		
ZONE	SEC	PLAT
A	4	15

EXHIBIT 6 - PICTURES SHOWING THE EXISTING
CONDITIONS OF THE PROJECT AREA



A.

Picture A. Kalaniana'ole Highway Bridge at Waimanalo Stream Crossing.



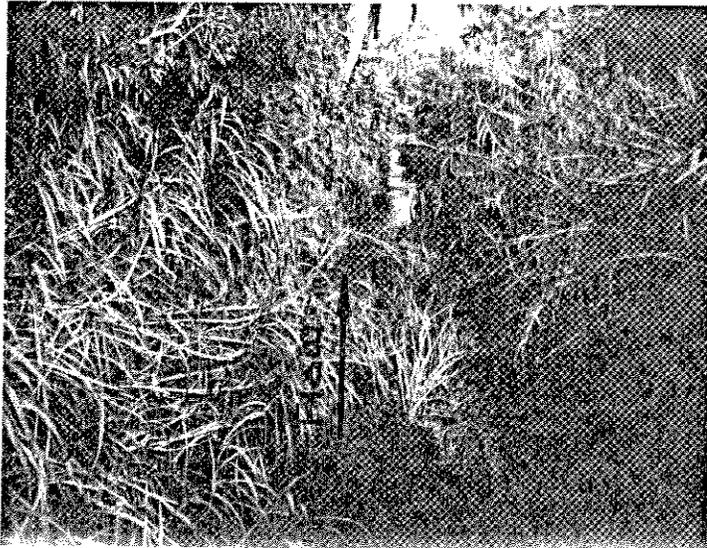
B.

Picture B. Housing development at downstream side of the highway crossing (Note: The lots are lower than the road grade).



C.

Picture C. Housing development at upstream side of the highway crossing (Note: The lot grade is lower than the road grade).



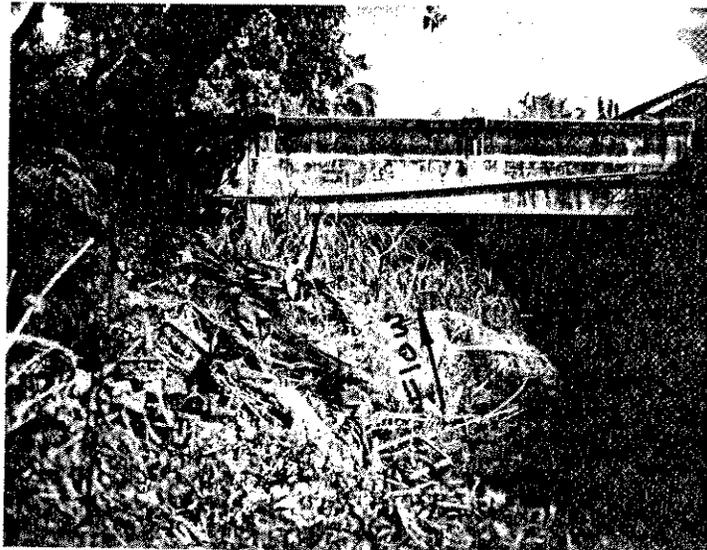
D.

Picture D. Waimanalo Stream at the makai side of the highway crossing.



E.

Picture E. Waimanalo Stream at the mauka side of the highway crossing (U.S.G.S. stream gage at the left side).



F.

Picture F. Kalaniana'ole Highway bridge opening (Note: Left cell almost completely blocked by silt and vegetation).

APPENDIX A

Comments on the Draft EIS

12195

GEORGE R. ARIYOSHI
GOVERNOR



RICHARD E. MARLAND, PH D
DIRECTOR

TELEPHONE NO.
548-6915

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
OFFICE OF THE GOVERNOR
550 HALEKAUWILA ST.
ROOM 301
HONOLULU, HAWAII 96813

DIR
DEPT
ENV

March 31, 1975

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

SUBJECT: Draft Environmental Impact Statement for Waimanalo
Stream Improvement at Kalaniana'ole Highway Oahu, Hawaii

Dear Mr. Hayashida,

As of this date, this Office has received thirteen comments on the subject above. An attached sheet lists the responding agencies.

In our evaluation of the draft EIS (dEIS) and comments provided, we have found several areas in which the final EIS should expand discussion. The following comments are offered:

- Page 1. One of the stated purposes of the project is to alleviate health problems. What are the health problems?
Does this project involve state lands or funds?
- Page 2. The project description should include the project's elevation since it affects the water flow. Because the stream is almost at sea level, the water velocity slows down, sedimentation and siltation occurs, and stagnant water conditions appear. Thus, this Office recommends a discussion on how the proposed project will affect the water flow. Will a natural gravitational flow be adequate or will measures be sought to increase the water velocity?

Page 2

✓ Page 3. If the clogged portion of the bridge handles 1,010 cfs, then the capacity of the unclogged bridge will be 2,020 cfs. However, the stream gage table indicates that the water flows have exceeded 4,000 cfs. If the bridge remains with a capacity of 2,020 cfs after it has been cleared, will it be adequate to prevent flooding at that point? Since other agencies as well as this Office find this area of great concern, we strongly recommend a discussion.

✓ Page 4. Where will the outlet structure, mentioned in the EIS, be constructed? What is the outlet's capacity?

Since it is evident that erosion, sedimentation, siltation, and debris have been responsible for clogging the bridge's opening, will there be any mitigation measures to prevent these conditions? If so, they should be discussed in the project description.

✓ Page 6. The EIS states, "The completion of the proposed project will reduce the overflow of flood waters and the discharge of surface pollutants into the bay." However, since no mitigation measures were discussed, this Office questions whether surface pollutants will enter Waimanalo Bay instead of being clogged at the bridge. In other words, we recommend a discussion of the surface run-off water into the bay.

✓ Page 7. The statement, "There are no known endangered marine species within the project area," should be documented. Also, not only should concern be towards fresh water life but ocean marine life at the outlet of the stream. What effect will the stream outlet have on the marine life in the bay?

✓ Page 9. The relationship between short-term uses vs. long-term productivity should be expanded to include future effects such as increased population, growth, urbanization, increased uses of public facilities, etc.

✓ Additional comments. Channelization of natural stream may produce some adverse effects. Increased run-off will result in reduced ground water percolation. Channelization may leave natural stream stagnant, change the water temperature in which the aquatic life may be detrimentally affected, and may leave the stream in a drier state.

Will regular maintenance of the channel be provided?

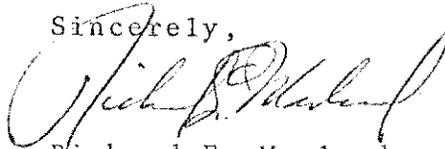
Since the bridge has been clogged with "debris", a discussion on where the "debris" originates should be included? Would elimination of the "debris" through conservation and control methods be another alternative to flood control?

For brevity and fairness, this Office did not attempt to summarize the other comments. Instead, we strongly recommend that each comment be given careful consideration.

We further recommend that (1) written responses be sent to all commentors including this Office, indicating how specific concerns were considered, evaluated, and disposed; (2) all comments and your responses should be incorporated as an appendix to the final EIS; (3) a copy of the final EIS should be sent to those individuals that provided substantive comments to the draft EIS.

We trust that these comments will be helpful to you in preparing the final EIS. Thank you for the opportunity to review the draft EIS. We look forward to the final EIS.

Sincerely,



Richard E. Marland
Director

Attachments

12402

GEORGE R. ARIYOSHI
GOVERNOR



DEPARTMENT OF
PUBLIC WORKS

RICHARD E. MARLAND, PH.D.
DIRECTOR

TELEPHONE NO.
548-6915

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

DIR [Signature]
DEPT
ENV
Engg (cc)

April 8, 1975

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

SUBJECT: Draft Environmental Impact Statement for Waimanalo
Stream Improvement at Kalaniana'ole Highway, Oahu, Hawaii

Dear Mr. Hayashida,

This Office has received a late but substantive comment from United States Department of the Interior Fish and Wildlife Service dated April 4, 1975. Please append this comment to our correspondence dated March 31, 1975, on this subject.

Your cooperation is greatly appreciated in this matter.

Sincerely,

Richard E. Marland
Director

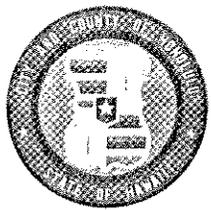
Attachment

12015

DEPARTMENT OF GENERAL PLANNING
CITY AND COUNTY OF HONOLULU
SUITE 2100 PACIFIC TRADE CENTER
190 SOUTH KING STREET
HONOLULU, HAWAII 96815

MAR 24 4 20 PM '75

FRANK F. FASI
MAYOR



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(2) Engrg

ROBERT R. WAY
CHIEF PLANNING OFFICER
DONALD A. CLEGG
DEPUTY CHIEF PLANNING OFFICER
DGP2/75-523 (JW)

MAR 20 1975

MEMORANDUM

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

FROM : ROBERT R. WAY, CHIEF PLANNING OFFICER

SUBJECT: COMMENTS ON DRAFT EIS FOR WAIMANALO
STREAM IMPROVEMENT PROJECT

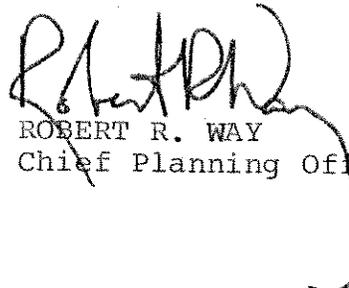
We have reviewed the subject Draft EIS and offer the following comments:

1. Please direct comments on the Draft EIS to this department. The final EIS should be submitted to this department. Following our review it will be submitted to the Environmental Quality Commission for publication. *mis. since this funds were used to ...*
2. It is questionable whether channelization of streams can be termed an aesthetic "improvement" over natural conditions. The rectangular trough design is the "least-cost" alternative, but its visual impact ought to be described without claiming it a "benefit" (Pages 7-8).

Mitigation measures might be discussed. Is it feasible, for example, to salvage any of the coconut, bamboo, monkey-pod, or banana trees mentioned and plant them alongside the channel after construction (Page 7)?
3. For the information of the reader, the EIS might mention that the right-of-way for this project is indicated on the County's Detailed Land Use Map.

Mr. Kazu Hayashida
Page 2

4. There should be a statement regarding the maintenance of the stream bed, keeping it clear of vegetative growth and sediment.


ROBERT R. WAY
Chief Planning Officer

RRW:jg

cc: Environmental Quality Commission
State of Hawaii



United States Department of the Interior

FISH AND WILDLIFE SERVICE

~~FEDERAL BUREAU OF INVESTIGATION AND CONSUMER PROTECTION~~

Division of River Basin Studies

821 Mililani Street

Honolulu, Hawaii 96813

Reference: RB

April 4, 1975

Acting Director
Office of Environmental Quality Control
350 Halekaawila Street, Room 301
Honolulu, Hawaii 96813

Dear Sir:

We have reviewed the draft Environmental Impact Statement "Waimanalo Stream Improvement at Kalaniana'ole Highway, Oahu, Hawaii" and offer the following comments:

Part II. B. Description of the Project Area, (fourth paragraph, page 2). Though the commercial value of California grass is described, we feel that the statement would be more accurate if other values, such as its use in stabilizing bank erosion, etc., are also included in the paragraph.

Third sentence, same paragraph. The problem with breeding mosquitoes should be expanded or deleted in view of a later statement (flora and fauna, page 7) which notes that the stream supports a population of mosquito fish.

Part II. D. Description of the Proposed Project, (first paragraph, page 4). This paragraph should be altered to indicate whether the outlet would be designed with an energy dissipator to reduce stream velocities and consequently minimize erosion to the existing unlined stream.

Same section (first paragraph, page 5). Flow capacities with properly maintained cells and with the proposed project at the Kalaniana'ole Highway Bridge should be compared.

Part III. B. Water Quality (page 6). A statement should be included to describe the manner in which disturbed riparian lands would be landscaped upon the project's completion.

Part III. D. Land Use, (page 7). This section should be expanded to describe the fish pond, located downstream of the Kalaniana'ole

highway Bridge, and also discuss whether it would be adversely affected by the proposed project. Furthermore, future projects proposed within the Waimanalo watershed area should be summarized.

Part III. E. Flora and Fauna, (first paragraph, page 7). This paragraph should be modified to note that with removal of riparian vegetation bird habitat, including those for the black-crowned night heron (Nycticorax nycticorax), would be reduced, stream temperatures would increase and a potential habitat for endangered water birds would be lost.

Same section (second paragraph). A species checklist from the stream survey and bird count should be included in this section or in the appendix. Sufficient detail should be provided to identify the investigator and describe the sampling method. In addition, the paragraph should be expanded to mention that the proposed project would reduce habitat diversity; it would spread stream flow across the concrete channel and would create a man-made barrier for the endemic freshwater gobies and shrimp which must migrate through the stream to complete their life cycle. Endangered ducks and water birds, such as the Koioa (Anas wyvilliana), Hawaiian Stilt (Himantopus himantopus knudseni) and Hawaiian Gallinule (Gallinula chloropus sandvicensis) that inhabit adjacent wetlands could occasionally use the project site and should be identified.

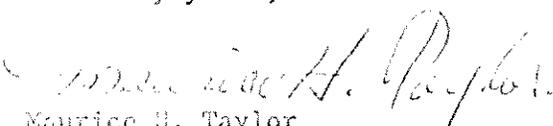
Part IV, (page 8). An additional statement should be included to note that habitat for fish and wildlife would be reduced when a 1000-foot section of natural stream is displaced by the proposed concrete channel.

Part V, (page 8). We suggest that the following alternatives be considered:

- F. Clear and maintain the stream from accumulated silt and debris.
- G. Redesign the proposed concrete channel with a rock-lined, "V" notched low flow channel. Such a design would allow native Hawaiian stream species to migrate through the barrier created by this project and enable them to complete their life cycle.
- H. Provide a green-way strip of vegetation on each side of the proposed stream project area to offset losses of riparian habitat, currently available as fish and wildlife cover.

We appreciate the opportunity to comment.

Sincerely yours,


Maurice H. Taylor
Area Supervisor

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



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

March 19, 1975

CHRISTOPHER COBB, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES

EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

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

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

Dear Dr. Marland:

EIS for Waimanalo Stream Improvement at
Kalaniana'ole Highway, Oahu

The project does not affect known park development or historic sites in Waimanalo.

Our Fish and Game Division feels that the EIS does not adequately address the probable effects of channelization on the migration of aquatic organisms such as the oopu. Also, the alternative of cleaning out the plugged cell at the Kalaniana'ole Highway bridge is not discussed.

Thank you for the opportunity to comment on the EIS.

Very truly yours,

A handwritten signature in cursive script, appearing to read "Edgar A. Hamasu".

for CHRISTOPHER COBB
Chairman and Member of the Board



DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

GEORGE R. ARIYOSHI
Governor

HIDETO KONO
Director

FRANK SKRIVANEK
Deputy Director

Kamamalu Building, 250 South King St., Honolulu, Hawaii • Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

March 12, 1975

Ref. No. 3190

MEMORANDUM

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

FROM: Hideto Kono, Director *Hideto Kono*

SUBJECT: Draft EIS for Waimanalo Stream Improvement at Kalaniana'ole Highway,
Oahu, Hawaii

We have reviewed the subject draft and have the following comments to offer.

Although the subject statement indicates that no dislocation of residences will result from the acquisition of private properties necessary for the project, it does not, however, adequately cover the impact this acquisition will have on the (living conditions) of the affected residents. In order that a more meaningful review may be conducted, we feel that this concern should be more adequately addressed and integrated into the final report.

We would also like to add that since the subject project does relate to the areas of responsibility of the Department of Land and Natural Resources, review and concurrence by that agency should be assured.

We appreciate the opportunity to review and comment on the subject statement.

UNITED STATES DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

440 Alexander Young Bldg., Honolulu, HI 96813

March 18, 1975

Dr. Richard E. Marland, Director
Office of Environmental Quality Control
550 Halekauwila St., Rm. 301
Honolulu, HI 96813

Dear Dr. Marland:

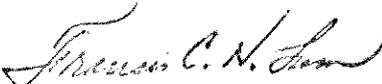
Re: Draft EIS for Waimanalo Stream Improvement at
Kalaniana'ole Highway, Oahu, Hawaii

We have reviewed the above-mentioned draft as you requested.

The draft does not discuss the effect of the project on flooding
in areas downstream from the improvements. This should be
discussed in the environmental impact statement.

Thank you for the opportunity to review this draft.

Sincerely,


Francis C. H. Lum
State Conservationist





University of Hawaii at Manoa

Environmental Center
Maile Bldg. 10 • 2540 Maile Way
Honolulu, Hawaii 96822
Telephone (808) 948-7361

Office of the Director

March 24, 1975

MEMORANDUM

TO: Richard E. Marland, OEQC
FROM: Doak C. Cox
RE: Waimanalo Stream Improvement at Kalaniana'ole Highway

The Environmental Center review of the above cited DEIS has been prepared by Doak Cox, Jerry Johnson and Jacquelin Miller, Environmental Center; Michael Chun, Public Health; and Tetsuichi Mitsuda, Civil Engineering.

From our review of the adequacy of this DEIS to accurately portray the potential environmental impact of the project we wish to raise several questions.

II. Existing Conditions of the Project Area

We assume that the estimates of peak discharge and proposed channel design are based on the "Design Curves for Peak Discharge" from the Storm Drainage Standards. If this is the case we assume the design peak discharge is that associated with the 100 year flood. Inclusion of this and other pertinent information from the Storm Drainage Standards document would greatly facilitate the evaluation of this DEIS and should be incorporated in the Final EIS.

We note in the general description of the project area (page 1) that two reservoirs in the drainage basin, Kailua and Maunawili, have a designed capacity of 8.0 million gallons "but subsequent silting has reduced the capacity to only 5 million gallons." Page 2 cites an estimated peak discharge for the drainage basin of 9,500 cfs. Could the effects of this peak discharge be significantly reduced by the removal of silt and proper maintenance of the existing reservoirs and the restoration of their capacities to those originally provided? Assuming an 8 million gallon maximum capacity, what would be the expected frequency of overtopping of these reservoirs if they were to assume the added function of temporary holding ponds for flood control? Has consideration been given to possible expansion of these reservoirs? What might be the required needs and costs?

In Section B, page 2, there is mention of the overgrown and silt-laden condition of the stream channel and area beneath the highway bridge. Further, the statement is made that "the existing Kalaniana'ole Highway bridge opening can only handle approximately 1,010 cubic feet per second (cfs)". It appears from picture F in Exhibit 5 that the stream channel may never have lined up with the bridge. Was the bridge originally fully open, i.e. both "cells" functional or was it originally constructed so as to provide only 1/2 its capacity? When was the present bridge constructed? If both cells were originally open, then sediment transport must be fairly significant in this stream to have completely filled 1/2 the opening. Have estimates been made of the amount of sediment transported by this stream?

Any stream improvement plan will be negated if adequate maintenance plans are not implemented. Annual inspection and maintenance before the onset of the wet season at the upstream and downstream sites of the improvement should be part of this program.

Page 3, C. In the discussion of past flood problems the bridge, lack of stream maintenance and inadequate channel are all mentioned as contributing to the limited capacity of the stream channel, and hence flood problem. Evaluation of the potential environmental impact of the project would be facilitated by a knowledge of the relative effects of eliminating or modifying each of these three limitations. For example, what flood protection level and capacity would be achieved by the stream channelization? What flood protection level and peak discharge capacity might be achieved by a general clean out of the grass and debris in the existing stream and sediment under the bridge without the proposed concrete channel?

Page 4, 5. Mention is made of an attempt in 1968 by the City and County of Honolulu to alleviate the flood hazard conditions. What was the result of this project? (At that time the City and County of Honolulu had designated the low-lying area along the existing stream from about 700 feet up-stream and 2000 feet downstream of the highway as a flood prone area.) What affect will the proposed stream channelization and bridge modification have on the 1700 feet flood prone area below the concrete channel? Will the flood boundaries below the channel be affected by the channelization and if so in what way?. Will a change in flood boundaries in the lower flood prone area result in a significant increase in erosion and therefore in the amount of silt entering Waimanalo Bay? If the flood boundaries are altered by the stream channelization what might be the long term impact on land use in the lower flood prone area? How many houses and structures are located in this lower flood prone area? Is the need for further channelization anticipated? Channelization of the stream as presented may reduce the flood hazard above the bridge but will almost surely increase the flood hazard below the channelized section. Details of the proposed flood control project should be reviewed with State, Federal and private land owners in the lower flood prone area to assure awareness of the environmental impact and responsibilities attendant to the project.

The existing highway bridge has a capacity of approximately 1,010 cfs (pg. 2). What "minor modifications" in addition to dredging and clearing of the plugged cell will be made so as to convey the calculated peak storm flow which we assume to be 9500 cfs (pg. 2)?

We have noted that historic records and calculations have yielded estimates of recurrence intervals of over 50 years and 13 years for peak flows of 4560 and 2300 cfs respectively (pg. 5). In examining the data on page 3 we further note that the 1963 and 1970 peak flows equaled or were within 70 cfs of the estimated 50 year level and that 4 of the 6 peak discharge flows over the 8 years equaled or exceeded the estimated 13 year frequency level. It would appear that either the design curves for peak discharge are inadequate for this area or possibly due to increased urbanization in the area, historical records of peak flow are inadequate to describe the present and predict the future conditions. Based on the most recent data, as compared with previous records, is there an indication of change in the height of peak discharge vs. frequency level? Based on the more recent data, what is the probability of occurrence and exceedance of the 9500 cfs estimated peak discharge level? Inclusion of a peak discharge-frequency curve would be appropriate in the final EIS.

III. Environmental Impacts of the Proposed Project (Pg. 6)

We were pleased to note the various contract specifications concerning the discharge of pollutants. A particularly serious and frequently lethal pollutant to stream and near-shore faunas arises from the discharge of washings from concrete trucks after they have dumped their loads. Particular attention to this potential pollutant is appropriate and is presumably covered in the specifications cited. (As a matter of curiosity, how are such contract specifications enforced?)

Records indicate that the wet months for Waimanalo Stream are from December to April. The August 1975 construction date should be moved up to the early summer months if at all feasible so that major excavation will be completed before the onset of the wet season. Contingency plans for flooding during construction should be made and the contractor informed to keep the channel open.

Page 7.

D. Will the proposed alleviation of flood danger in the area result in increased construction in the area? Does the present cost of the project (\$700,000) include the land acquisition cost? Will owners be compensated for necessary modifications and/or deletions to their houses or structures?

F. If the flood prone boundaries below the improvement project are modified, has the potential new inundation area been examined for archeological sites?

IV. Alternatives to the Proposed Project (pg. 8)

B. In the discussion of regrading and flood-proofing houses a total cost of \$300,000 is suggested. Is there any method by which the city could offer encouragement through funds or equipment, to this alternative? The availability of Federal flood insurance should be taken into consideration in analyzing the merits of this alternative.

C. Are the reservoirs previously discussed suitable for detention ponds?

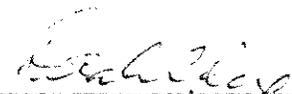
Possible alternatives to the proposed stream channelization project which should be presented include:

1. The clean out and dredging of the stream and bridge channel including the acquisition of the necessary access rights of way for maintenance,
2. The removal of silt and use of the existing reservoirs as temporary holding ponds for flood control, and
3. A combination of stream clean out and reservoirs.

Perhaps the required estimated 9500 cfs capacity could not be achieved with this alternative, but in that case, it would be well to so state.

ADDENDUM

Thanks to Mr. Pete Nishizawa of the Drainage Section, Public Works Department, additional pertinent design information was obtained which was not presented in the impact statement. This additional information would indicate that the channel bottom slopes are adequate to convey the design flood (9500 cfs) with minimal freeboard, and that the modifications to the bridge cells will provide a similar flow velocity. The channel velocities will be in the supercritical range and hence the channel proper will be self cleaning. Some backwater effects due to the shortness of the channel downstream from the bridge and the curvature of the channel approach to the bridge may be expected. The construction of the splitter from the bridge to Sta. 5+77 appears to be an excellent design feature hydraulically as well as an added insurance against large debris that may pass the upstream piling at Sta. 8+82 (as indicated in the data from Mr. Nishizawa). The evaluation of the adequacy of the hydrology and hydraulics of the project requires this data supplied by Mr. Nishizawa and thus should be incorporated into the DEIS.


Doak C. Cox, Director

DEPARTMENT OF THE ARMY
HEADQUARTERS UNITED STATES ARMY SUPPORT COMMAND, HAWAII
APO SAN FRANCISCO 96558



AFZV-SG-EC

25 FEB 1975

Richard E. Marland, PhD
Interim Director
Office of Environmental Quality Control
Room 301, 550 Halekauwila Street
Honolulu, Hawaii 96813

Dear Dr. Marland:

The Draft Environmental Impact Statement (DEIS) for Waimanalo Stream Improvement at Kalaniana'ole Highway, Oahu, Hawaii, was reviewed by this office. We have no comments to offer.

Thank you for the opportunity to comment on the DEIS.

Sincerely,

A handwritten signature in cursive script, reading "Lee C. Herwig, Jr.".

LEE C. HERWIG, JR.
Colonel, MSC
Environmental Consultant to Commander,
U.S. Army Support Command, Hawaii

GEORGE R. ARIYOSHI
GOVERNOR



E. ALVEY WRIGHT
DIRECTOR
DEPUTY DIRECTORS
DOUGLAS S. SAKAMOTO
WALLACE AOKI

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

IN REPLY REFER TO:

March 18, 1975

ATP 8.3012

Dr. Richard E. Marland
Interim Director
Office of Environmental
Quality Control
550 Halekauwila St., Room 301
Honolulu, Hawaii 96813

Dear Dr. Marland:

Subject: Draft EIS, Waimanalo Stream Improvement
at Kalaniana'ole Highway, Oahu, Hawaii

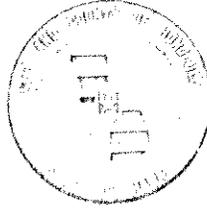
In reference to the subject environmental statement, we have no
comments to offer as it relates to and affects our transportation
system.

Sincerely,


E. ALVEY WRIGHT
Director

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
HONOLULU MUNICIPAL BUILDING
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

FRANK F. PASI
MAYOR



GEORGE C. VILLEGAS
DIRECTOR

P-74-39

April 2, 1975

Office of Environmental Quality Control
550 Halekauwila St., Rm. 301
Honolulu, Hawaii 96813

Gentlemen:

Subject: Draft Environmental Impact Statement for
Waimanalo Stream Improvement

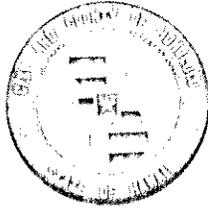
The Department of Transportation Services has no comment
on the draft Environmental Impact Statement.

Very truly yours,

A handwritten signature in cursive script that reads "Clifford Y. Nohara".

CLIFFORD Y. NOHARA
Chief, Traffic Engineering

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
CITY HALL ANNEX
HONOLULU HAWAII 96813



FRANK F. FASI
MAYOR

GEORGE C. VILLEGAS
DIRECTOR

March 3, 1975

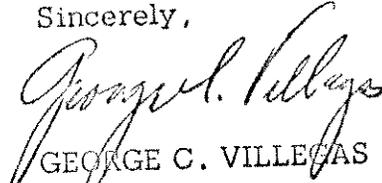
Dr. Richard E. Marland, Director
Office of Environmental Quality Control
Office of the Governor
550 Halekauwila Street, Third Floor
Honolulu, Hawaii 96813

Dear Dr. Marland:

Subject: Draft Environmental Impact Statement for
Waimanalo Stream Improvement at
Kalaniana'ole Highway, Oahu, Hawaii

In regard to the subject draft environmental impact statement, we have
no comments.

Sincerely,


GEORGE C. VILLEGAS
Director

HHB:ek

cc: K. Hirata