

KAHOMA FLOOD CONTROL PROJECT

Maui, Hawaii
October, 1974
~~April 8, 1975~~

MA

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

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

TO: See Mailing List

Enclosed for your information and record is a Supplemental Information Report for the Kahoma Stream Flood Control Project, Maui, Hawaii, prepared in accordance with Corps regulations implementing the National Environmental Policy Act. The Final Environmental Statement for this project was transmitted to the Council on Environmental Quality on April 8, 1975.

Sincerely,


Kisuk Cheung
Chief, Engineering Division

Enclosures

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M A I L I N G L I S T

KAHOMA STREAM

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Enclosure

SUPPLEMENTAL INFORMATION REPORT
TO THE
FINAL ENVIRONMENTAL STATEMENT
FOR THE
KAHOMA STREAM FLOOD CONTROL PROJECT

Enclosure

SUPPLEMENTAL INFORMATION REPORT
TO THE
FINAL ENVIRONMENTAL STATEMENT
FOR THE
KAHOMA STREAM FLOOD CONTROL PROJECT

12.1 INTRODUCTION. The Final Environmental Statement (FES) for the Kahoma Stream Flood Control project was filed with the Council of Environmental Quality (CEQ) on 8 April 1975 and circulated for public review under the guidelines promulgated by CEQ. The coordination requirements of several Federal laws had not been completed at the time the FES was filed with CEQ. This supplemental information report updates project information and provides a summary of coordination actions completed since filing of the FES. No significant changes in environmental conditions, or information have occurred since the FES was filed with CEQ.

12-2 PUBLIC INVOLVEMENT, COMMENT, AND RESPONSE.

12.2.1 Public Workshops and Public Meeting. The Plan of Improvement has been given full public exposure and has been accepted by the public with no opposition to the modifications of the original Recommended Plan of Improvement.

12.2.1.1 Concerns at Public Workshops. The most recent public workshops were held on 1 February 1980 and on 3 July 1980 at the Lahaina Civic Center, Maui. Twenty-six persons attended the February workshop and 15 attended the July workshop. Public concerns voiced during the workshops were as follows:

- a. Method to obtain right-of-way for the project.
- b. Clearing of rocks and sediments at the shoreline.
- c. Effect of sediment and debris on the State's boat ramp area.
- d. Duration of the construction period.
- e. Filling of existing stream to be realigned.
- f. Removal of trees in existing stream to be filled.
- g. Adequacy and availability of funding for construction.
- h. Preparation of environmental statement.
- i. Current cost estimate.
- j. Traffic congestion during bridge construction at Front Street and the Honoapiilani Highway.
- k. Adjustment of property grades along the raised portions of Front Street.
- l. Preference for park development between the existing stream and the new channel.

- m. Desire to accelerate initiation of construction.
- n. Method of local funding for the project.

During the workshops there was no opposition to the Kahoma Stream Flood Control project. All attendees wanted the project to be implemented. The attendees were appreciative of the Corps effort to keep them informed on the project.

12.2.1.2 Concerns at the Public Meeting. A public meeting was held on 22 May 1980 at the Lahaina Civic Center, Maui. Forty persons attended the meeting. Public concerns were essentially based on why the project has taken so long to implement. The public is anxious for project construction to start. There was no opposition to the project at the public meeting.

12.3 REQUIRED COORDINATION. Coordination efforts accomplished are discussed in the following paragraphs. A list of coordination references is presented in Table 1. The correspondence are provided in the enclosed Coordination Exhibits.

12.3.1 Endangered Species. Pursuant to Section 7 of the Endangered Species Act of 1973, as amended in 1978, the U.S. Fish and Wildlife Service (FWS) in letter dated 18 September 1979, indicated that no threatened or endangered species inhabit the project site (Table 1, Item 1).

12.3.2 Fish and Wildlife Coordination. The FWS completed a 2(b) Report on 31 August 1979 (Table 1, Item 2) which made the following recommendations:

- a. Disposal sites for excess fill material will not be located in wetlands, coastal or inland waters. All fill sites will be stabilized and maintained such that wetlands, coastal and inland waters are protected.
- b. All dredged spoil will be placed above the mean higher high tide elevation behind a water tight berm.
- c. Extreme care will be taken to insure that no debris, petroleum products, or other deleterious materials be allowed to fall, flow, leach, or otherwise enter the water.
- d. All construction activities within and adjacent to the water will be conducted so as to minimize turbidity and control erosion.
- e. Tidal flow will be prevented from entering the estuarine stream section during construction.

In addition to these measures, and due to the extent of habitat losses caused by project installation, the Service recommended the following mitigation measures be employed:

- a. The outlet apron be constructed of boulders sufficiently large to preclude the need for grouting; or that it be constructed of "boulders set in concrete" as opposed to typical "grouted riprap."
- b. Lands adjacent to the new channel be revegetated with shade trees and shrubs to form a greenway.

c. A low-flow channel should be installed along one side of the bottom of the stream channel. This feature should contain sufficient protruding rocks/boulders set in concrete to provide a riffle system which would aid in organism migration.

12.3.2.1 The Corps responded to the FWS 2(b) Report recommendations on 21 September 1979 (Table 1, Item 3) as follows:

a. Recommendation: The outlet apron be constructed of boulders sufficiently large to preclude the need for grouting; or that it be constructed of boulders set in concrete as opposed to typical grouted riprap.

Response: Consideration will be made to construct the outlet apron of rocks set in concrete. The use of plain boulders would require more excavation on the reef flat to set the larger boulders level with the reef surface.

b. Recommendation: Lands adjacent to the new channel be revegetated with shade trees and shrubs to form a greenway.

Response: Plans call for landscaping of the berms and the filled areas in the abandoned streambed. We will landscape with grass, shrubs and trees within the project easement. However, the selection of shrubs and trees must insure that the root network does not touch the concrete structure, and would not interfere with maintenance or emergency access.

c. Recommendation: A low-flow channel should be installed along one side of the stream channel. This feature should contain sufficient protruding rocks and boulders set in concrete to provide a riffle system which would aid in organisms' migration.

Response: Kahoma Stream is dry about 90% of the time. No diadromous species were found by your office above Honoapiilani Highway. However, the channel bottom is designed with a V-shape which will contain low stream flows along the centerline within the straight channel and along the inner edge of the curve through the curve portions of the channel. Protruding boulders can cause turbulent flow conditions and are undesirable for high-velocity flows. In lieu of protruding boulders, consideration will be made to roughen a 1- to 3-foot-wide section along the V-shaped section to simulate a riffle system under low-flow conditions within the limits of the hydraulic design criteria.

12.4 SECTION 404 EVALUATION AND WATER QUALITY CERTIFICATION. Based on an evaluation using Section 404(b)(1) Guideline promulgated by the U.S. Environmental Protection Agency (EPA), the shoreline area of the project was determined to be suitable for the discharge of dredged or fill material into waters of the United States (see Table 1, Item 4). A Water Quality Certification for the project was obtained from the State Department of Health on 13 March 1980 and reaffirmed on 5 June 1981 based on recent Section 404(b)(1) guidelines dated 31 March 1981 (see Table 1, Item 5).

12.5 PRIME AGRICULTURAL LANDS. Approximately half of the proposed concrete channel alignment (6.8 acres) is located within the State Land Use Agricultural District and other half (5.6 acres) within the Urban District.

All of the "Prime Agricultural Lands" are located within the State Land Use Agricultural District and the "Other Important Agricultural Lands" are located within the Urban District. Although existing agricultural land will be affected by the project, the Corps finds that the loss of 6.8 acres of prime and 5.6 acres of other important agricultural lands will be unavoidable with the implementation of the flood control project. (See Coordination with State of Hawaii Department of Planning and Economic Development and with Pioneer Mill Company referenced in Table 1, Items 6 and 7.)

12.6 HISTORIC RESOURCES.

a. Lahaina National Historic District Landmark. The National Park Service in their letter of 11 June 1979 (See Table 1, Item 8) stated "... that while the project is in the vicinity of the Lahaina National Historic District Landmark, it appears to have no effect upon the landmark, a property listed in the National Register of Historic Places.

b. Eligibility of Properties Determination. Historical and archeological studies (Table 1, Items 9 and 10) were prepared for the project in 1979 and 1980, respectively, by Hawaii Marine Resources. These reports are on file at the Pacific Ocean Division. Based on the findings and conclusions of these reports, the Corps has determined that there are no sites eligible for the National Register of Historic Places in the upper or lower Kahoma Stream area that will be directly affected by project construction activities. However, due to the possible presence of burial sites within the southern or left streambank near the stream mouth area, the construction documents will provide for an on-call archeologist to monitor excavation in this area. The State Historic Preservation Officer, in his letter of 22 August 1980 (See Table 1, Item 11) concurs with the Corps' determination.

12.7 COASTAL ZONE MANAGEMENT CONSISTENCY DETERMINATION. A Federal Consistency Determination for the State of Hawaii Coastal Zone Management Program was prepared on 28 February 1980 for this project in accordance with the Federal Coastal Zone Management Act of 1972. The determination is listed as Item 12 in Table 1.

12.8 SOCIO-ECONOMIC CHANGES. Since publication of the Environmental Statement in 1975, the urban area in the vicinity of the proposed project has undergone changes which include the construction of the Mala boat launching ramp and recent urban growth and development. However, these changes will not modify the impacts attributed to the proposed project. The impacts of the project and its modifications upon the existing community are insignificant, and environmental or economic impacts upon the community will more likely result from the ongoing urban development, rather than from the project or its modifications.

12.9 ENVIRONMENTAL CONSEQUENCES OF PROJECT MODIFICATIONS. The authorized plan of improvement in the FES of 1975 is shown on Plate 1. Since publication of the FES, modifications have been made to the authorized plan of improvement, as shown on the Recommended Plan on Plate 2. These modifications consist of (a) relocation of the debris basin downstream so that the basin is contiguous with the upstream end of the concrete channel, (b) deletion of the sill and levee, (c) widening of the base width for the channel and bridges, and (d) widening of the outlet apron. These modifications were

made in order to preserve more of the upstream area of the stream in its natural condition, to maintain a low profile for the channel improvements, and to preserve the integrity of the shoreline area. The modified plan of improvement still conforms to all environmental regulations, guidelines, and the Environmental Statement. The new location of the debris basin is considered environmentally superior since less stream and vegetation material will be disturbed upstream of the project channel. In addition, all project features described in the plan of improvement will be connected with no inter-element gaps and the need for the sill and the levee of the original plan will be eliminated. The widening of the channel would reduce channel and bridge heights resulting in more aesthetically pleasing effects. Widening of the outlet apron would control eddies and resultant erosion seaward of the channel improvements and would have negligible visual environmental impact. In summary, the collective changes to the project will not significantly modify the environmental consequences attributed to the project. The proposed action will not result in any significant adverse environmental effects.

12.10 FINDINGS. On the basis of the analysis of environmental impacts of the project modifications and of project coordination since publication of the Final Environmental Statement in 1975, the U.S. Army Corps of Engineers has determined that no new significant environmental impacts will be created and that there will be a net reduction of overall impacts compared to the authorized plan of improvement in the FES. Therefore a supplemental FES is not required.

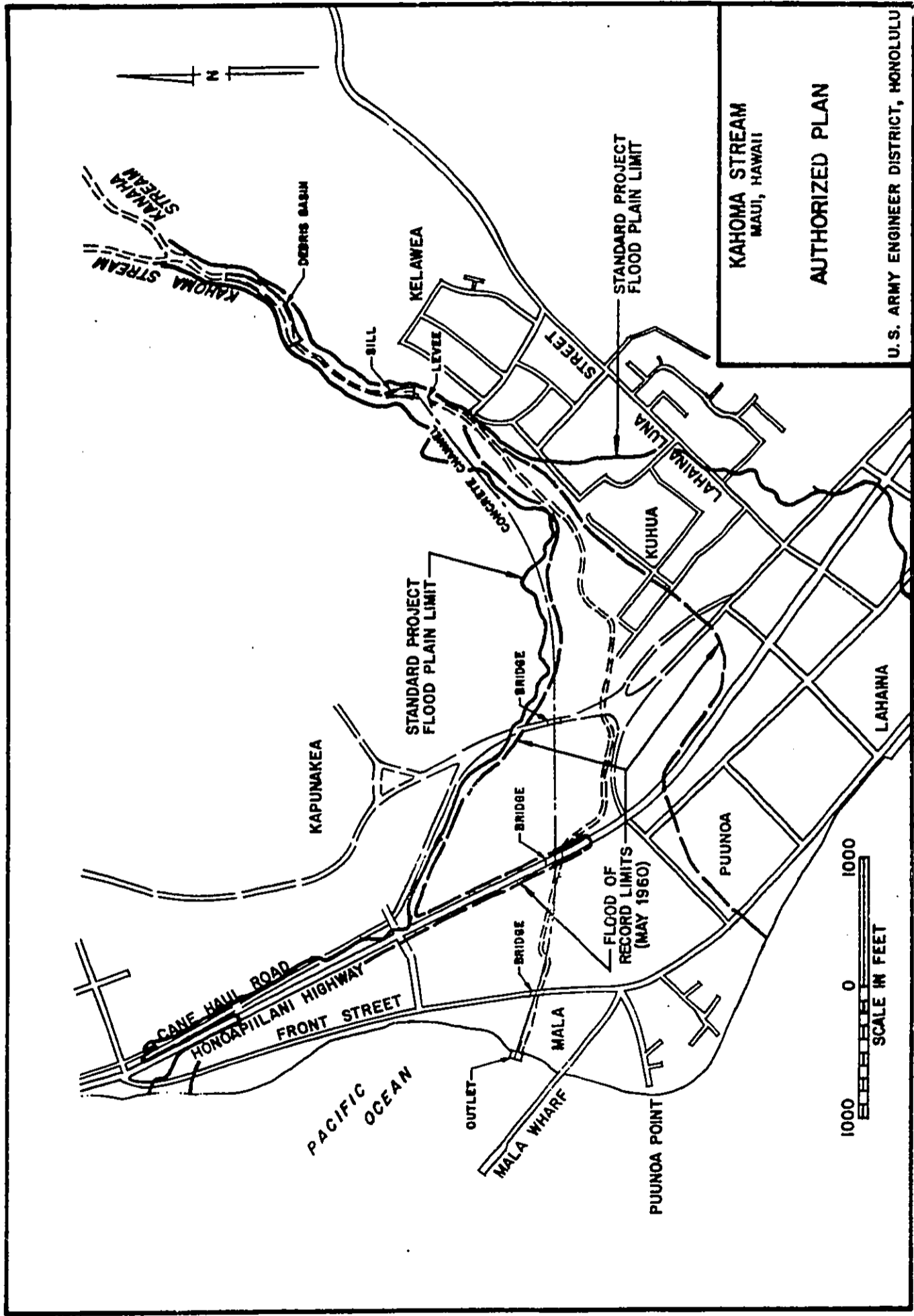
TABLE 1. COORDINATION REFERENCES

<u>Item</u>	<u>References</u>	<u>Exhibit</u>
1	US Fish and Wildlife Service response letter of coordination for endangered or threatened species (18 September 1979).	F
2	US Fish and Wildlife Service 2(b) Report (31 August 1979).	H
3	Corps of Engineers comments on FWS 2(b) Report (21 September 1979).	I
4	Evaluation Based on Section 404(b)(1) Guidelines.	L
5	State Department of Health Letters of Water Quality Certification (13 March 1980 and 5 June 1981).	N
6	State Department of Planning and Economic Development letter. No objection to project if sugar mill operations are not affected. (26 September 1979).	O
7	Pioneer Mill Company letter of support for the project (31 October 1979).	R
8	National Park Service letter stating no effect of project upon Lahaina National Historic Landmark (11 June 1979).	G

TABLE 1. COORDINATION REFERENCES (Contd)

<u>Item</u>	<u>References</u>	<u>Exhibit</u>
9	A Cultural History Overview of the Kahoma Stream Flood Control Project, Lahaina, Maui and Ma'alaea Small Boat Harbor Project, Ma'alaea, Maui, Hawaii; Hawaii Marine Research, Inc., Report (September 1979).	<u>1/</u>
10	Archaeological Test Excavations Near the Mouth Area of Kahoma Stream, Lahaina Maui: Hawaii Marine Research, Inc., Report (11 July 1980).	<u>1/</u>
11	State Historic Preservation Officer letter concurring with Corps Determination of Effect (22 August 1980).	P
12	Federal Consistency Determination, State of Hawaii Coastal Zone Management Program (28 February 1980).	K

1/ Reports on file at POD.



KAHOMA STREAM
MAUI, HAWAII

AUTHORIZED PLAN

U.S. ARMY ENGINEER DISTRICT, HONOLULU

PLATE 1

PLATE 1

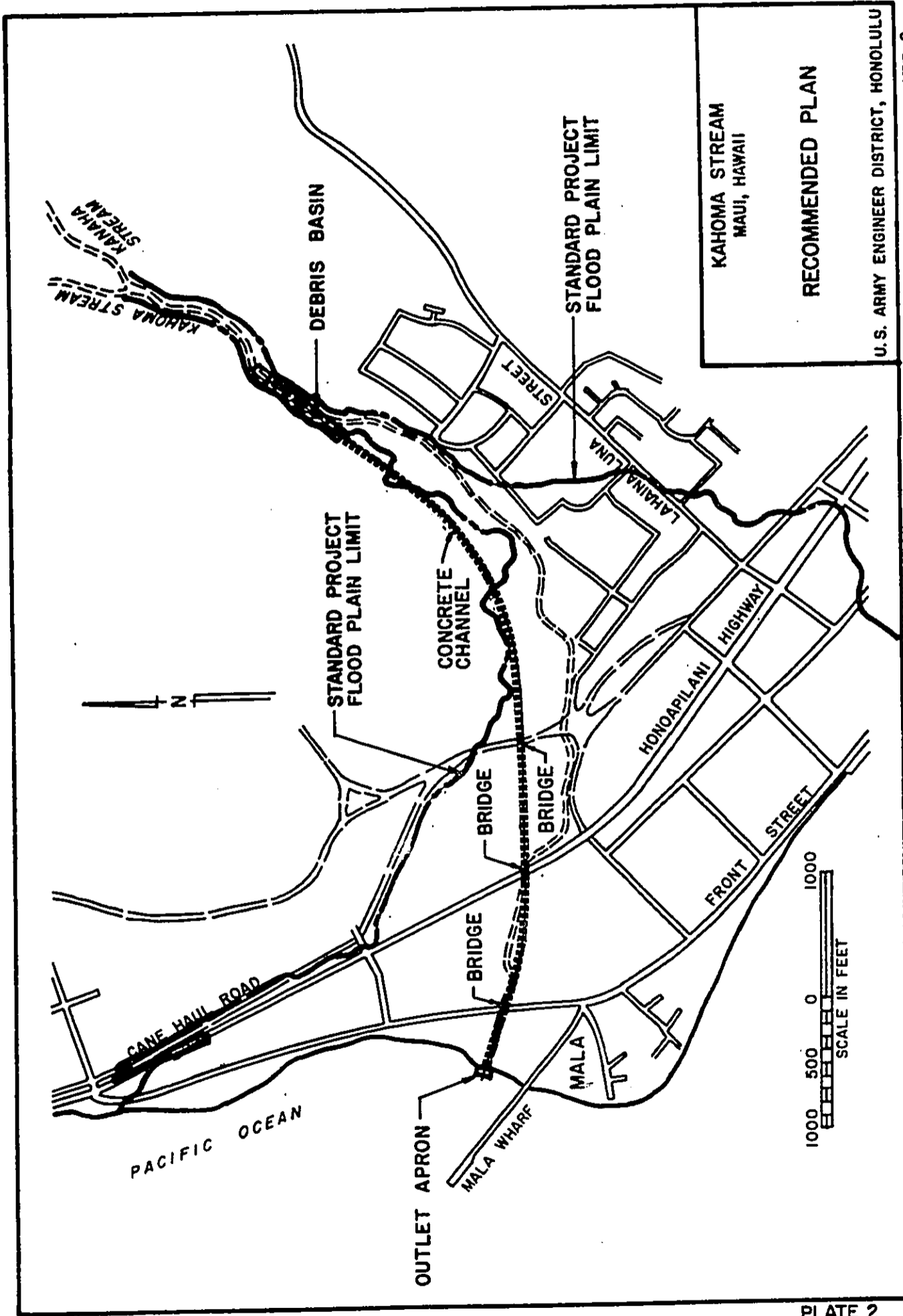


PLATE 2

PLATE 2

COORDINATION EXHIBITS

Enclosure 1



United States Department of the Interior

FISH AND WILDLIFE SERVICE
LLOYD 500 BUILDING, SUITE 1692
500 N.E. MULTNOMAH STREET
PORTLAND, OREGON 97232

September 18, 1979

In reply refer to:
AFA-SE

Mr. Kisuk Cheung
Engineering Division
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858

Dear Mr. Cheung:

This replies to your request of June 28, 1979, pursuant to Section 7 of the Endangered Species Act of 1973, as amended in 1978, for information on endangered or threatened species, listed or proposed, which may be present in the site of the Kahoma Stream Flood Control Project, Lahaina, Maui, Hawaii.

There are no endangered or threatened species, listed or proposed, present on the proposed project area.

Thank you for sharing our concern for conserving endangered species.

Sincerely yours,


K. Karler Meinertson
Regional Director

EXHIBIT F



United States Department of the Interior

FISH AND WILDLIFE SERVICE

300 ALA MOANA BOULEVARD
P. O. BOX 50167
HONOLULU, HAWAII 96850

IN REPLY REFER TO:

ES
Room 6307

August 31, 1979

Colonel Peter D. Stearns
U.S. Army Engineer District Honolulu
Building 230
Fort Shafter, Hawaii 96858

Re: Kahoma Stream Flood
Control Project,
Lahaina, Maui, Hawaii

Dear Sir:

This is the detailed report of the U.S. Fish and Wildlife Service on plans developed by the Honolulu District U.S. Army Corps of Engineers for a flood protection project in Kahoma Stream, island of Maui, Hawaii. This constitutes the report of the Secretary of Interior on the project as defined by Section 2(b) of the Fish and Wildlife Coordination Act (48 Stat. 401, as amended; 16 U.S.C. 661 et seq.).

This report has been prepared under the authority of and in accordance with the provisions of the Fish and Wildlife Coordination Act and other authorities mandating Department of Interior concern for environmental values. It is also consistent with the intent of the National Environmental Policy Act.

This project is being conducted under the authority of Section 205 of the 1948 Flood Control Act, as amended. Our analysis and recommendations are based on various materials provided by the Corps and other sources as noted in the literature cited section. Biological resource data were obtained from U. S. Fish and Wildlife Service field surveys and reports, materials received from other Federal and state agencies and other literature sources.

Project Area

The project area is located in the lower reach of Kahoma Stream on the west coast of the island of Maui, Hawaii (Fig. 1). Kahoma's 5.3-square-mile drainage basin is bisected about 1.5 miles above its mouth by Panaewa Ridge with the main stem to the north and Kanaha Stream tributary to the south. The stream is confined to narrow, deeply incised valleys in the headwaters (average slope about 700 feet/mile)



EXHIBIT H

Save Energy and You Serve America!

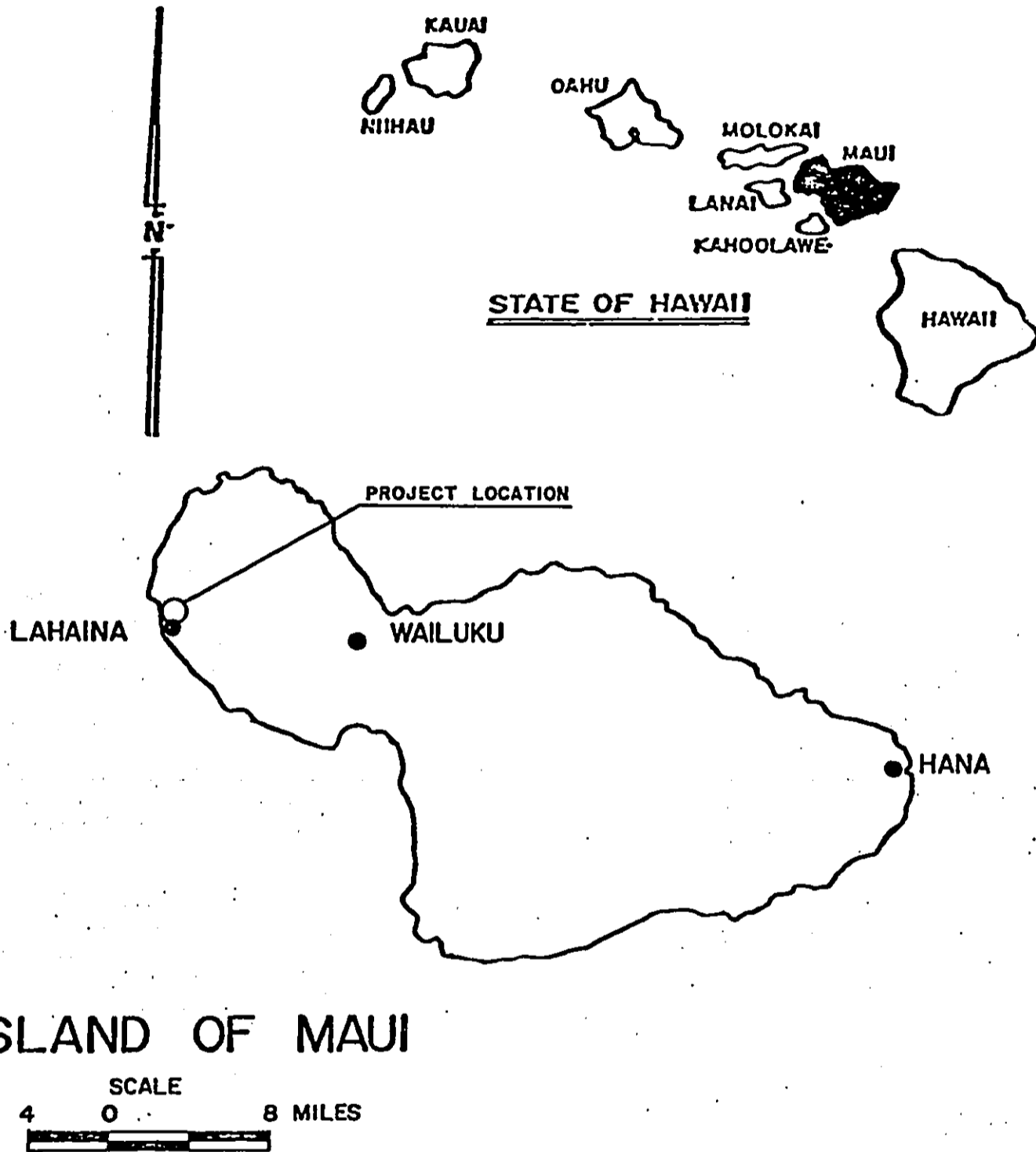


Figure 1. Kahoma Stream Flood Control Project Location Map.

EXHIBIT H

which primarily drain forest reserve lands. The lower reach flows through agricultural (sugarcane), commercial and residential lands (USACE 1974). Concrete rubble masonry (CRM) walls have been constructed along the banks of the lower 3500-foot reach of Kahoma Stream (Fig. 2).

Kahoma Stream is considered a continuous watercourse in its natural state (USFWS 1978). However, extensive upstream diversions for sugarcane irrigation and domestic water supply have dewatered the lower reaches so that flow to the ocean now occurs only during periods of heavy rainfall (USACE 1973, 1974). U.S. Geological Survey (USGS) data over a 14-year period from gaging station 6385 indicates that the average annual discharge of Kahoma Stream below the diversions is about 3.5 cubic feet per second (cfs) (Fig. 3). Records for the 1974-1977 water years indicate that flows only occur between 9 and 22 percent of the year with mean flows ranging from 0.4 cfs to 2.5 cfs (USGS 1975, 1976, 1977, 1978). Isolated pools are scattered throughout the streambed below the stream diversions during times of low stream flow.

Kahoma Stream discharges immediately north of the Mala Wharf and an adjacent riprap protected boat ramp. Piles of cobbles, gravel and fines along the south bank of the stream mouth suggest that a bar is cleared periodically from the mouth.

Project Description

At the upstream end of project will be a trapezoidal-shaped 670-foot long debris basin with a base width up to 120-feet. The basin will have an earth bottom with tie sides constructed of boulders set in concrete. Basin capacity is 49,000 cubic yards. The basin joins a 5380-foot stream channel which is trapezoidal in cross section with a base width of 50-feet. Three concrete bridges will be constructed with a clear span of 50-feet. At the stream mouth will be a grouted riprapped outlet apron approximately 90-feet wide and extending about 70-feet seaward. Side slopes on all trapezoidal sections is 1:2 (Fig. 4.) Materials dug during construction of the new channel will be used to fill the existing stream course. Large materials such as boulders and trees will be taken to a landfill.

Environmental Setting Without-the-Project

Aquatic Resources

Kahoma Stream discharges on a shallow, flat, limestone reef immediately north of Mala Wharf and small boat ramp (Fig. 4). Mala Wharf is a popular fishing, sunbathing and swimming area for local residents despite its hazardous condition and signs discouraging public access (USACE 1976). Within the project area, 70 feet off the stream mouth,

LEGEND

- (A) AGRICULTURE
- (R) RESIDENTIAL
- (C) COMMERCIAL
- (I) INDUSTRIAL
- (U) UNDEVELOPED
- (P) PUBLIC
- ooo CRM WALL

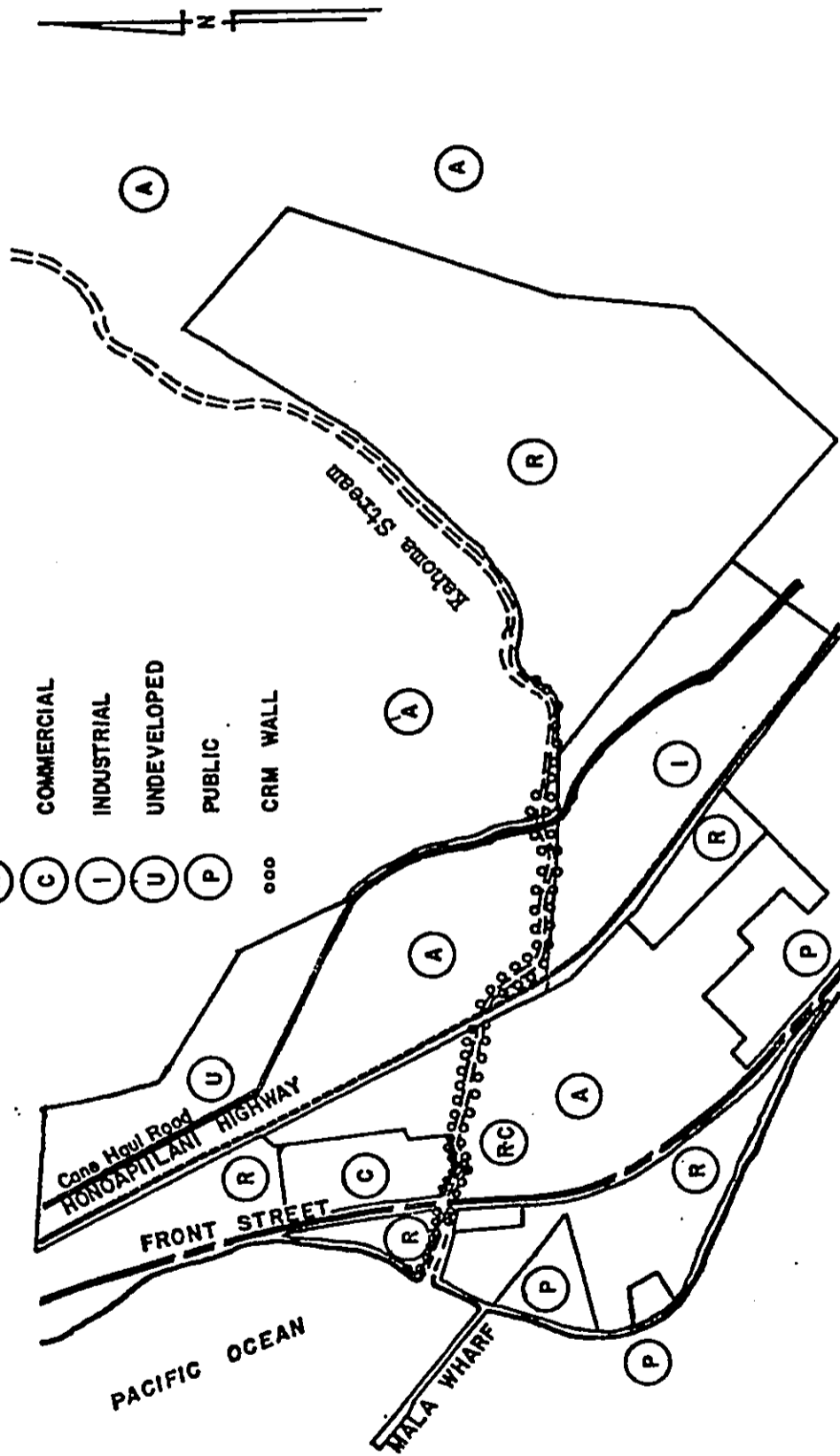
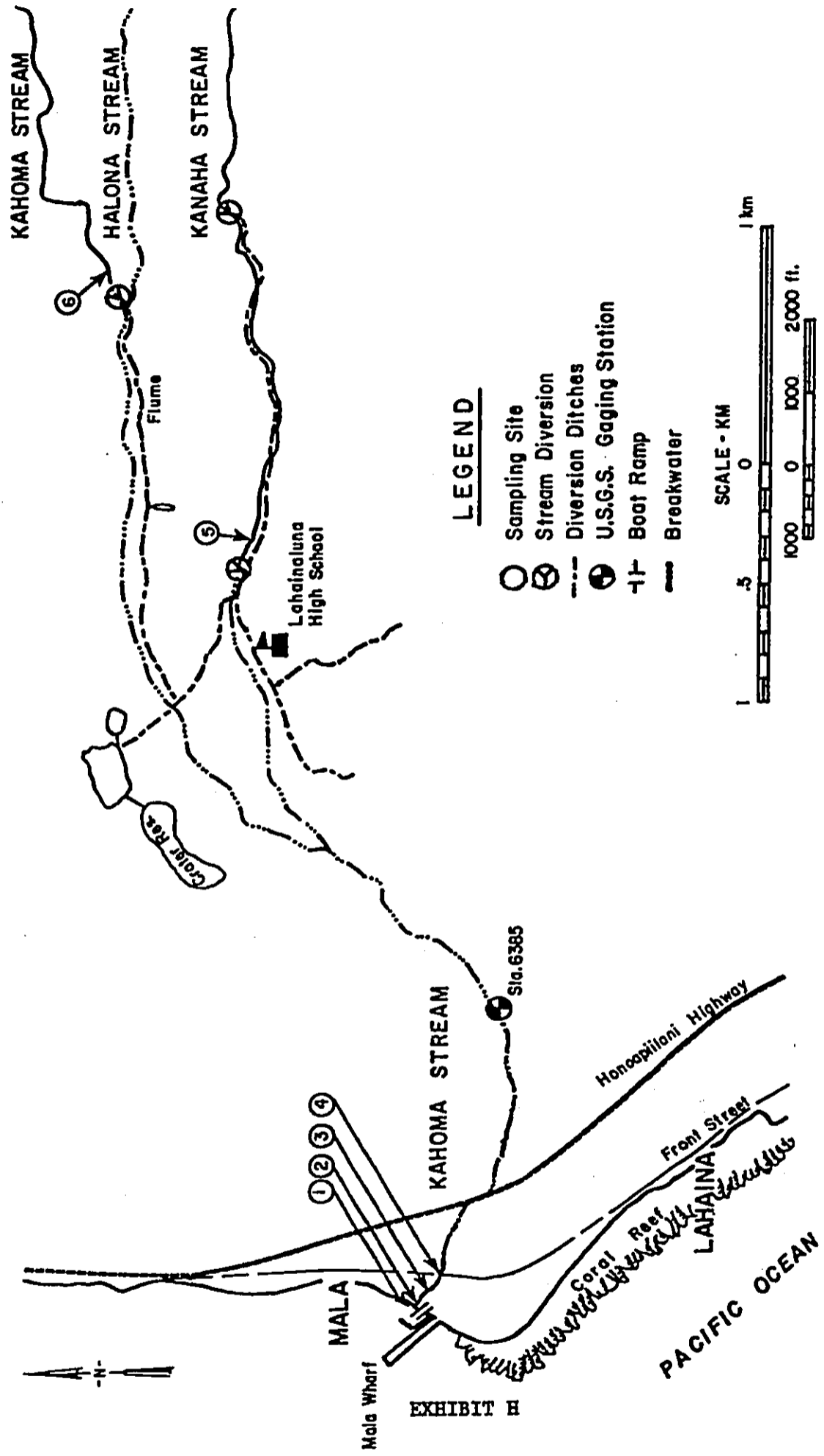


EXHIBIT H

Figure 2. Existing Land Use Map, Kahoma Stream, Maui, Hawaii



Figure 3. Areas Sampled in Kahoma Stream and Mouth During March 21-23, 1979.



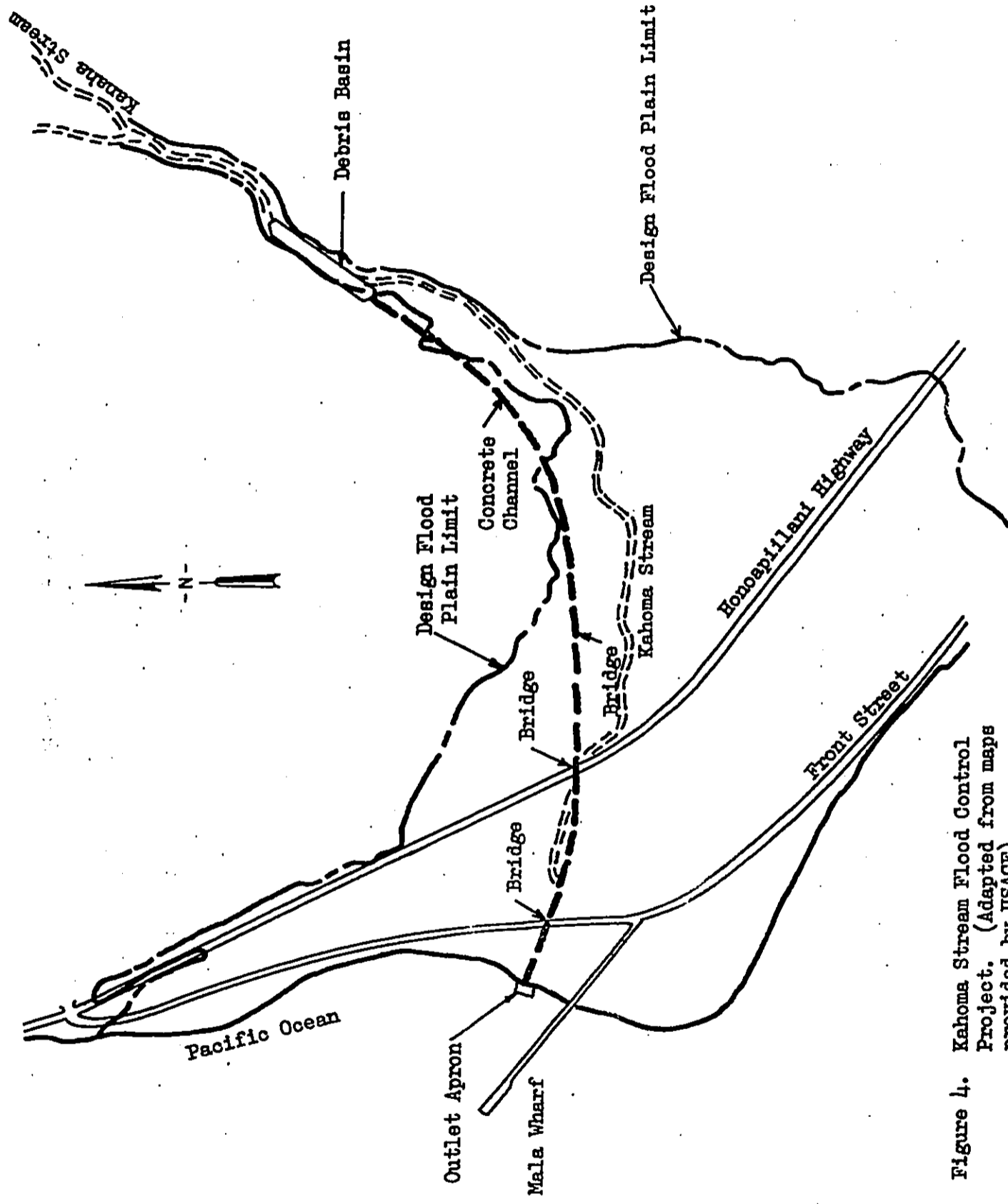


Figure 4. Kahoma Stream Flood Control Project. (Adapted from maps provided by USACE)
 Scale: 1"=1000 Feet

EXHIBIT H



the reef flat is covered with various species of algae which form a thin algal mat. Small coral heads are scattered along the outer edge of the project site, however most are dead. Further offshore from the immediate project site, corals increase in diversity and abundance, and several species of reef fish and echinoderms are present (Table 1). The near-shore area is turbid with the reef flat covered by a thin layer of silt. Dredging in conjunction with the construction of a small boat ramp in 1978 and recent stream mouth clearing have altered the stream mouth and adjacent areas. In addition, a sewer outfall is located about 1000 feet south of Mala Wharf.

A small estuary extends about 650 feet upstream, depending on tidal phase, and provides habitat for the young of several fish species (Table 1) including aholehole, 2 species of mullet and 3 species of hinana or juvenile gobies. Density estimates of the juvenile mullet and hinana observed in the upper portion of the estuary were 56 and 124 per square meter, respectively. Other aquatic species observed in the estuary and isolated pools above the Front Street bridge included low numbers of grapsid crabs, prawns (oeha'a), guppies and various insects. Scattered, isolated pools occur throughout Kahoma Stream below the upstream diversions. Those near Front Street bridge are brackish, probably perennial, and maintained by ground water seepage and tidal intrusion. Salinity decreases rapidly in the upstream direction, as does the number and types of organisms. Above Honoapiilani Highway only freshwater pools with sparse populations of aquatic insects are found. These pools are probably ephemeral and formed by occasional rainfall and sugarcane irrigation activities.

Above the stream diversions in upper Kahoma and Kanaha Streams (Fig. 3), flows are perennial. At the lower diversion structure in Kahana Stream behind Lahainaluna High School, the only vertebrates collected by electroshocking were guppies, and the only invertebrates collected were chironomids, densities of which were 15-20/square inch in some locations. Some caddisfly and mosquito larvae, waterstriders, water-boatmen, dragonflies and damselflies were observed but not collected (Table 1). The stream above the diversion structure in the main stem (north branch), was also sampled with an electroshocker. The aquatic macrofaunal community consisted of insects only. No diadromous species were collected in Kahoma or Kanaha Stream's upper reaches.

Terrestrial Resources

Aside from sugarcane under cultivation above Honoapiilani Highway, vegetation observed along the upstream banks in the project area included monkeypod, mango, koa haole and Java plum. Hau, kiawe, koa haole, various grasses and forbs were seen near the mouth (Table 2).

Table 1. Species List of Aquatic Resources in the Kahoma Stream
Flood Control Project Area.

<u>SPECIES NAME</u>	<u>COMMON NAME</u>
<u>FLORA</u>	
Chlorophyta (green algae)	
<u>Enteromorpha</u> sp.	
<u>Ulva</u> sp.	sea lettuce
Phaeophyta (brown algae)	
<u>Padina</u> sp.	
Rhodophyta (red algae)	
<u>Gelidium</u> sp.	
<u>Liagora</u> sp.	
<u>Spyridia filiamentosa</u>	
Cyanophyta (blue-green algae)	
<u>Ocellatoria</u> sp.	
<u>FAUNA</u>	
Invertebrata	
ANTHOZOA	
Seriatorporidae	
<u>Pocillopora meandrina</u>	coral
<u>Montipora verrucosa</u>	"
Poritidae	
<u>Porites lobata</u>	coral
MOLLUSCA	
Neritidae	
<u>Nerita</u> sp.	pipipi
Littorinidae	
<u>Littorina</u> sp.	Littorine snail
Thiaridae/Melanidae	
<u>Thiara</u> sp.	thiarid snail

EXHIBIT H

Table 1. (Cont'd.)

<u>SPECIES NAME</u>	<u>COMMON NAME</u>
<u>FAUNA</u>	
ECHINODERMATA	
Echinoidea	
<u>Echinometra</u> sp.	urchin
<u>Trineustes</u> <u>gratillia</u>	sea urchin
INSECTA	
Diptera	
Chironomidae	midge larvae
Culicidae	mosquito larvae
Trichoptera	
<u>Cheumatopsyche</u> <u>analis</u>	caddisfly larvae
Hemiptera	water striders, water boatmen
Odonata	
<u>Anax</u> sp.	dragonfly
<u>Melagrion</u> sp.	damsel fly
CRUSTACEA	
Grapsidae	
<u>Metapograpsus</u> sp.	rock crab, ama
Vertebrata	
PICES	
Gobiidae	
<u>Awaous</u> <u>stamineus</u>	o'opu nakea
<u>Sicydium</u> <u>stimpsoni</u>	o'opu nopili
Eleotridae	
<u>Eleotris</u> <u>sandwicensis</u>	o'opu akupa
Poeciliidae	
<u>Poecilia</u> <u>reticulata</u>	guppy
Mullidae	
<u>Mugil</u> <u>cephalus</u>	gray mullet
<u>Chelon</u> <u>engeli</u>	Samoan mullet
Kuhliidae	
<u>Kuhlia</u> <u>sandwicensis</u>	aholehole

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Table 1 (Cont'd.)

<u>SPECIES NAME</u>	<u>COMMON NAME</u>
FAUNA	
Vertebrata	
PICES	
Labridae	
<u>Stethojulis balteata</u>	omaka
<u>Thalassoma duperreyi</u>	hinalea
Pomacentridae	
<u>Abudefduf abdominalis</u>	maomao
Acanthuridae	
<u>Acanthurus triostegus sandvicensis</u>	manini

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Table 2. Species List of Terrestrial Resources in the Kahoma Stream Flood Control Project Area.

<u>SPECIES NAME</u>	<u>COMMON NAME</u>
<u>FLORA</u>	
<u>MONOCOTYLEDONS</u>	
Chenopodiaceae	
<u>Chenopodium murale</u>	nettle-leaved goose-foot
Compositae	
<u>Bidens pilosa</u>	ko'oko 'olau, Spanish needle
Gramineae	
<u>Cenchrus echinatus</u>	sand burr
<u>Panicum maximum</u>	guinea grass
<u>Setaria verticillata</u>	bristly foxtail
<u>Saccharum officinarum</u> hybrid	ko, sugarcane
Solanaceae	
<u>Solanum nigrum</u>	popolo, black
<u>DICOTYLEDONS</u>	
Anacardiaceae	
<u>Mangifera indica</u>	mango
Leguminosae	
<u>Leucaena leucocephala</u>	koa haole
<u>Prosopis pallida</u>	kiawe
<u>Samanea saman</u>	monkeypod
Malvaceae	
<u>Hibiscus tiliaceus</u>	hau
Myrtaceae	
<u>Eugenia cuminii</u>	Java plum
<u>FAUNA</u>	
<u>AMPHIBIA</u>	
Bufonidae	
<u>Bufo marinus</u>	marine toad
<u>AVES</u>	
Ardeidae	
<u>Nycticorax nycticorax hoactli</u>	aukuu, black-crowned night heron
<u>Bulbucus ibis</u>	cattle egret

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Table 2 (Cont'd.)

<u>SPECIES NAME</u>	<u>COMMON NAME</u>
<u>FAUNA</u>	
AVES	
Phasianidae	
<u>Alectoris graeca chukar</u>	chukar partridge
<u>Francolinus erckelii</u>	Erckel's francolin
<u>Phasianus colchicus torquatus</u>	ring-necked pheasant
Charadriidae	
<u>Pluvialis dominica</u>	American golden plover
Scolopacidae	
<u>Heteroscelus incanus</u>	wandering tattler
<u>Arenaria interpres</u>	ruddy turnstone
<u>Calidris alba</u>	sanderling
Columbidae	
<u>Streptopelia chinensis chinensis</u>	spotted dove
<u>Geopelia striata striata</u>	barred dove
Strigidae	
<u>Asio flammeus sandwichsis</u>	pueo, Hawaiian owl
Zosteropidae	
<u>Zosterops japonica japonica</u>	mejiro, Japanese white-eye
Sturnidae	
<u>Acridotheres tristis</u>	common mynah
Ploceidae	
<u>Passer domesticus</u>	house sparrow
Fringillidae	
<u>Carpodacus mexicanus frontilis</u>	house finch
MAMMALIA	
Rodentia	
Muridae	
<u>Mus musculus</u>	house rat
<u>Rattus rattus</u>	roof or black rat
<u>R. exulans exulans</u>	Polynesian rat
<u>R. norvegicus</u>	Norway rat
Carnivora	
Viverridae	
<u>Herpestes auropunctatus</u>	Indian mongoose
<u>auropunctatus</u>	

Table 2 (Cont'd.)

<u>SPECIES NAME</u>	<u>FAUNA</u>	<u>COMMON NAME</u>
MAMMALIA		
Felidae		
<u>Felis domesticus</u>		Feral Cat
Canidae		
<u>Canis familiaris</u>		Feral Dog

EXHIBIT H

The stream mouth, riparian vegetation, and isolated pools scattered along Kahoma Stream's lower reaches provide limited habitat for occasional migratory shorebirds, e.g. wandering tattler, black-crowned night heron, and various introduced birds (Table 2).

Introduced mammals, such as the mongoose, mouse and rat, as well as feral dogs and cats are found in the general project area (Table 2). No animals included in the Federal Endangered or Threatened Species List are known to inhabit the general project area.

Environmental Setting With-the-Project

Aquatic Resources

Replacement of the lower 1600 feet of Kahoma Stream's watercourse with a concrete-lined trapezoidal channel would destroy riparian vegetation and much of the estuarine habitat. The adverse effects on estuarine species in the area would occur during and prevail after project construction as species recruitment would be limited by reduced cover, increased insolation and other changes in the physiochemical character of the estuary.

The proposed rock-revetted outlet at the mouth of Kahoma Stream would replace about 700 square yards of shallow limestone reef flat. Although this reef flat is adversely affected by sharp changes in salinity and siltation during periods of high stream discharge and discharges from the nearby sewer outfall, the marine habitat improves markedly with increased distance from shore. As evidenced during dives in the area, corals and reef fishes increase significantly beyond the breakwater (Fig. 3). About a dozen people were fishing or swimming along Mala Wharf during our survey which indicates that these activities are popular in the area. Unless precautions are taken, these activities and resources could be impacted by turbidity and siltation during project construction.

Terrestrial Resources

Project implementation will cumulatively remove about 3200 feet of riparian vegetation along both banks of Kahoma Stream between its mouth and Honoapiilani Highway. Above Honoapiilani Highway, approximately 1400 feet of riparian vegetation will be eliminated at the proposed debris basin. If the abandoned section of existing stream is filled, (approximately 5000 linear feet), additional riparian vegetation, as well as watering sites, will be removed from wildlife use. If the area adjacent to new channel's banks are replanted with trees and shrubs, the lost habitat may eventually be replaced for game and songbird use.

Discussion

Kahoma Stream was a continuous watercourse that has been dewatered by extensive upstream water diversion and channelized in its lower reaches. Due to the stream's infrequent flows in the project area, it provides only ephemeral pools above the estuary. The small estuarine portion of Kahoma Stream below Front Street provides habitat for an abundance of juvenile fishes such as mullet, aholehole and o'opu. Similarly, the reef flat near the stream mouth provides habitat for a variety of marine species, as well as fishing and swimming opportunities for the local community. If the proposed rock revetted outlet off the stream mouth is not grouted, it would provide increased habitat for estuarine and nearshore aquatic fauna in the project area.

Although the Corps has indicated that the outlet apron must be grouted to prevent rock movement during periods of high discharge (letter of July 3, 1979), it would seem that utilization of sufficiently large stone could eliminate this need. At the very least, implementation of a "boulder set in concrete" configuration would provide some additional habitat over that which would be provided with the proposed design. Either of these measures would mitigate habitat losses in the already limited estuarine zone.

The State of Hawaii is currently working toward the establishment of minimum streamflows for the protection of instream values. In addition agricultural activities in the State are in a state of flux such that there has been a long-term reduction of sugarcane production. These two factors could in the future result in either a reduction in the amount of water removed from Kahana Stream or the necessity to allow for downstream releases. As designed, the proposed project would preclude the possibility of organism migration even with adequate flow volumes.

Terrestrial habitat values in the area are quite limited as a result of extensive sugarcane cultivation, residential development and their associated activities. The implementation of the proposed plan would encourage development of those areas afforded flood protection, including agricultural lands now in sugarcane production. This would further impact wildlife habitat through land clearing, and possibly affect stream habitat through increased pressures for diversion of stream waters in the Lahaina area.

Riparian habitat losses could be mitigated through the planting of trees and shrubs adjacent to the new stream course. This would replace some lost terrestrial bird cover and food supplies.

EXHIBIT H

Recommendations

The Service is pleased to note that the following measures are being incorporated into project design and implementation:

1. Disposal sites for excess fill material will not be located in wetlands, coastal or inland waters. All fill sites will be stabilized and maintained such that wetlands, coastal and inland waters are protected.
2. All dredged spoil will be placed above the mean higher high tide elevation behind a water tight berm.
3. Extreme care will be taken to insure that no debris, petroleum products, or other deleterious materials be allowed to fall, flow, leach, or otherwise enter the water.
4. All construction activities within and adjacent to the water will be conducted so as to minimize turbidity and control erosion.
5. Tidal flow will be prevented from entering the estuarine stream section during construction.

In addition to these measures, and due to the extent of habitat losses caused by project installation, the Service recommends the following mitigation measures be employed:

1. The outlet apron be constructed of boulders sufficiently large to preclude the need for grouting; or that it be constructed of "boulders set in concrete" as opposed to typical "grouted riprap".
2. Lands adjacent to the new channel be revegetated with shade trees and shrubs to form a greenway.
3. A low-flow channel should be installed along one side of the bottom of the stream channel. This feature should contain sufficient protruding rocks/boulders set in concrete to provide a riffle system which would aid in organism migration.

EXHIBIT H

Please inform us of any further changes in project design so that, if necessary, we may provide report revisions in a timely fashion.

Sincerely yours,

Maurice H. Taylor.

Maurice H. Taylor
Field Supervisor
Division of Ecological Services

cc: PIA
AE(Environment) Portland, OR
HDF&G
NMFS
HCFRU

EXHIBIT H

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EXHIBIT H



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96850

PODED-PV

21 September 1979

Mr. Maurice Taylor
Field Supervisor
Division of Ecological Services
U.S. Fish and Wildlife Service
300 Ala Moana Blvd.
P.O. Box 50167
Honolulu, Hawaii 96850

Dear Mr. Taylor:

We have reviewed your report for the Kahoma Stream Flood Control Project prepared under Section 2b of the Fish and Wildlife Coordination Act of 1958. Corrections and comments on the content of the report are provided in Inclosure 1.

The following responses to your recommendations are provided:

a. Recommendation: The outlet apron be constructed of boulders sufficiently large to preclude the need for grouting; or that it be constructed of boulders set in concrete as opposed to typical grouted riprap.

Response: Consideration will be made to construct the outlet apron of rocks set in concrete. The use of plain boulders would require more excavation on the reef flat to set the larger boulders level with the reef surface.

b. Recommendation: Lands adjacent to the new channel be revegetated with shade trees and shrubs to form a greenway.

Response: Plans call for landscaping of the berms and the filled areas in the abandoned stream bed. We will landscape with grass, shrubs and trees within the project easement. However, the selection of shrubs and trees must insure that the root network does not touch the concrete structure, and would not interfere with maintenance or emergency access.

EXHIBIT I

PODED-PV
Mr. Maurice Taylor

21 September 1979

c. Recommendation: A low-flow channel should be installed along one side of the stream channel. This feature should contain sufficient protruding rocks and boulders set in concrete to provide a riffle system which would aid in organisms' migration.

Response: Kahoma Stream is dry about 90% of the time. No diadromous species were found by your office above Honoapiilani Highway. However, the channel bottom is designed with a V-shape which will contain low stream flows along the center line within the straight channel and along the inner edge of the curve through the curve portions of the channel. Protruding boulders can cause turbulent flow conditions and is undesirable for high velocity flows. In lieu of protruding boulders, consideration will be made to roughen a 1- to 3- foot wide section along the V-shaped section to simulate a riffle system under low flow conditions within the limits of the hydraulic design criteria.

You will be informed of any further significant changes to project design should such changes occur.

Sincerely yours,

1 Incl
As stated

B. R. SCHLAPAK
Lt Col, Corps of Engineers
District Engineers

CF:
Dale Coggeshall
Pacific Islands Administration
U.S. Fish and Wildlife Service
P.O. Box 50167
Honolulu, Hawaii 96850

Mr. R. Kahler Martinson
Regional Director
U.S. Fish and Wildlife Service
U.S. Department of Interior
Lloyd 500 Building, Suite 1692
500 N.E. Multnomah Street
Portland, Oregon 97232
ATTN: AE (Environment)

Corrections to Project Information

1. **Project Authority:** The authority for the project is Section 201 of the 1965 Flood Control Act, as amended, rather than Section 205 of the 1948 Flood Control Act.
2. **Project Description:** The clear span under the three bridges varies from 60-70 feet rather than a set distance of 50 feet. The span will be 60 feet at the Cane Haul Road and Honoapiilani Highway bridges, 70 feet at the Front Street bridge.
3. **Figure 2.** The Mala Boat Launching Ramp is not shown on the figure as public property.
4. **Terrestrial Resources:** The length of existing stream to be filled is 4,300 linear feet rather than 5,000 linear feet. The length of stream between the stream mouth and Honoapiilani Highway is 1,700 feet rather than 3,500 feet.

Comments on the Report

1. Field techniques and methodology used in conducting the field surveys were not presented in the report. As a result generalized terms are used to describe density of organisms to describe raising questions on how these data were obtained. For example, the scattered coral heads offshore on the reef flat was not quantified. The density estimates of juvenile mullet and hinana were exact (56-124 fish per square meter) but did not take into account distribution and schooling characteristics of the species. Salinity measurements were not presented but salinity was found to decrease at the stream mouth.
2. Identification of turbidity impacts were too general to determine specific problems and possible mitigative measures.
3. The determination that a reduction in sugar cane agriculture and establishment of minimum in-stream flows could restore Kahoma Stream may be optimistic. The Hawaii Water Resources Regional Study indicate that the Lahaina region will experience water shortages in the future as demand will exceed supply. By the year 2000 water demand is expected to equal water supply, and sugar cane will be a major user. As resort and residential growth continues, the demand for potable water will increase. Presently potable water supplies are available from high elevation wells and stream diversions. While establishing minimum in-stream flow may be a possibility, organism migration in Kahoma Stream will continue to be hampered by the diversion structures even if organisms were able to migrate pass the flood control structure.
4. The discussion suggests that implementation of the flood control plan will encourage development in those areas afforded flood protection. Based on land use plans for the area, development will occur with or without the

EXHIBIT I

flood control project. At present, agricultural lands on the outskirts of Lahaina are already being converted to commercial and resort land uses. Other agricultural lands below Honoapiilani Highway will probably remain fallow in anticipation of urban expansion.

5. The analysis of habitat conversion and replacement by revegetation disregards the abandoned stream, which will also be revegetated and available as wildlife habitat. Cutting of trees in and along the abandoned stream will be minimized.

EXHIBIT I

21 September 1979

PODED-PV
Mr. Maurice Taylor

Mr. Richard Shomura, Director
Hawaii Laboratory
National Marine Fisheries Service
P.O. Box 3020
Honolulu, Hawaii 96812

Regional Director
National Marine Fisheries Service
300 South Ferry Street
Terminal Island, CA 97301

Mr. Susumo Ono, Director
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96813
ATTN: Division of Fish and Game

Hawaii Cooperative Fisheries Research Unit
2538 The Mall
Honolulu, Hawaii 96822

EXHIBIT I



DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858

5 March 1980

PODED-PV

Mr. George Yuen, Director
Department of Health
State of Hawaii
1250 Punchbowl Street
Honolulu, Hawaii 96813

Dear Mr. Yuen:

As part of the procedure for implementing the Kahoma Stream Flood Control Project, the US Army Corps of Engineers needs to obtain water quality certification in order to comply with Section 404(r) of the Clean Water Act of 1977. If the State of Hawaii does not have a formal certification process in effect, a letter from the State Department of Health is required which evaluates the water quality effects of the discharge of dredged or fill material with recommendations, if any, to minimize harmful effects. If appropriate, the letter should provide the opinion and concurrence of the Department of Health that the discharge of fill material and its probable impacts on water quality are acceptable and have been mitigated to the fullest extent practicable, and that the discharge of the fill material will conform to State water quality standards.

We are providing an evaluation of the effects of the discharge of fill material (Incl 1) based on Section 404(b)(1) guidelines promulgated by the US Environmental Protection Agency, for your use and evaluation. We would appreciate a response on this matter by 31 March 1980 so that we can proceed to the next step of planning.

Sincerely,

1 Incl
As stated

B. R. SCHLAPAK
Colonel, Corps of Engineers
District Engineer

EXHIBIT L

Evaluation of the Effects of the
Discharge of Dredged or Fill Material into the Waters of the U.S.
Based on Section 404(b)(1) Guidelines

1. Project Description.

a. Description of the proposed discharge of dredged or fill materials.

(1) General characteristics: Crushed basalt rock, large basalt boulders and concrete will be discharged into Kahoma Stream to construct a ~~concrete~~-lined flood control channel.

(2) Quantity of Material to be Discharged: Material to be incorporated into the construction includes the following items:

24,200 cubic yards of concrete
18,000 cubic yards of crushed basalt rock
2,930 cubic yards of basalt rock

(3) Source of Material: The concrete and crushed aggregate can be obtained from existing commercial sources on Maui. Basalt rock can be obtained from existing stream or from commercial sources on Maui, if necessary.

b. Description of the Proposed Discharge Site.

(1) Location: The discharge site extends from approximately 70 feet offshore from the mouth of Kahoma Stream to approximately 6,100 feet upstream from the shoreline. A location map is shown on Figure 1 (Incl 1).

(2) Type of Discharge Site: The discharge site is an intermittent stream whose mouth is subject to tidal influence.

(3) Method of Discharge: The material will be placed in the project reach of the stream during the course of constructing the flood control channel. Cranes, front-end loaders, bulldozers and manpower could be used to place the material in the stream. Concrete will be placed into forms.

(4) Date of Discharge: The discharge is expected to occur during the construction period between 1982 thru 1983. The construction period of the entire project is estimated to be 2 years, beginning in 1982.

(5) Life of the Discharge Site: The discharge is a one-time occurrence. The flood control channel has an economic life of 50 years.

(6) Bathymetry (if open water): Not applicable.

2. Physical Effects.

a. Potential Destruction of Wetlands: No wetlands are located within the entire project reach.

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Page 1

b. Other Physical Effects.

(1) Area of bottom covered: The fill material will cover the entire stream bottom within the project reach and 6,300 square feet offshore of the stream mouth.

(2) Change in bottom geometry and substrate composition: The new channel will approximate the same invert grade as the existing stream along the channel alignment, but will be sloped to the center and consist of concrete rather than irregular and natural material. Alluvial material may settle in the new channel, partially reestablishing a natural stream bottom. The flood control channel will realign the portion of the existing stream upstream of the Honoapiilani Highway. The old stream bed will be filled with material excavated during construction.

(3) Water circulation and flushing characteristics: No change. Upon completion of the project, the lower 500 feet of the new channel will be subject to tidal influence, and the stream flow will continue to be intermittent.

(4) Salinity distribution and gradients: No effect.

(5) Natural drainage characteristics and flood and stormwater drainage areas: Floodwaters will be confined to the flood control channel and will not overflow the banks and flood lands outside the channel. The new channel will be the major drainage feature in the flood plain and will continue to convey stream flows as presently conveyed by the existing stream.

(6) Groundwater levels and recharge: No effect. The project will not increase water withdrawal from groundwater sources and will not have any significant effect on groundwater recharge.

3. Chemical-Biological Interactive Effects.

a. The material to be discharged is exempt from elutriate and bioassay testing requirements because it meets the Environmental Protection Agency exclusion criteria. The crushed rock and boulders are larger than silt size and have a composition similar to material within stream beds. The concrete will be made from natural materials and will not contain prohibited or contaminated materials. After the concrete is placed and set, the material will constitute the channel structure.

b. Impacts on the Water Column.

(1) Reduction of light transmission: Turbidity will increase only during construction of the tidal portions of the stream or if erosion of open areas occurs during stream flows.

(2) Degradation of water aesthetics: Water aesthetics will be affected by temporary increases in water turbidity. However, the waters at the mouth of Kahoma Stream are normally highly turbid nearshore due to wave action stirring up fine sand and silt. Floatable trash from Kahoma Stream, Lahaina, and the sewer outfall at Puunoa Point accumulate in the area. The water sometimes contains debris and smells of sewage from the sewer outfall.

(3) Direct destructive effects on nektonic and planktonic populations: None anticipated. Kahoma Stream is intermittent, supratidal, and does not support a large nektonic and planktonic population. The fill material will not contain toxic substances.

(4) Contaminant concentrations: None

(5) Elutriate test results: Excluded from elutriate testing.

(6) Comparison of elutriate test results with water quality standards: Not applicable.

(7) Zone of mixing: Not required because of lack of contaminated material.

c. Impacts on the Benthos.

(1) Benthic area covered: The basalt rock apron at the mouth of the stream will cover about 6,300 square feet of existing intertidal area. The apron will be the new intertidal substrate replacing the natural substrate.

(2) Changes in community structure or function: No change. The intermittent stream provides very little aquatic habitat. Portions of the tidal reach of the stream will be dry during each tidal cycle and during periods of low wave activity. A stream delta comprised of cobbles, mud, sand, and gravel will be present before and after the project is constructed.

(3) Effects of chemical constituents on benthos: The discharged material does not contain any contaminants and is excluded from bioassay testing.

d. Site Comparisons.

(1) Comparison of total sediment analysis results: Not required. The discharge material does not contain prohibited or contaminated materials and a zone of mixing is not required.

(2) Comparison of biological community surveys: Not required. The discharge material does not contain prohibited or contaminated materials and a zone of mixing is not required.

4. Impacts of the Discharge at the Discharge Site.

a. Need for the Proposed Activity. Kahoma Stream passes through urbanized areas in Mala and Lahaina. The discharge is needed to realize the flood protection plan developed for the Lahaina and Mala communities. Kahoma Stream has been a flood hazard for the community since 1879 due to the stream restrictive bends, high velocity flows and inadequate bridges.

b. Availability of Alternative Discharge Sites. No other sites are available for the discharge. The flood protection project is site specific to Kahoma Stream.

c. Impacts.

(1) Chemical, physical, and biological integrity of the aquatic ecosystem: No effect. Kahoma Stream is intermittent and most of its perennial flow is diverted for irrigation and domestic use above the project reach. The stream within the project reach does not provide any significant aquatic habitat.

(2) Food chain and trophic level: No effect, since there is no aquatic ecosystem.

(3) Diversity of plant and animal species: No effect. The lands bordering the project reach are developed for agriculture and residential uses.

(4) Movement into and out of feeding, spawning, breeding, and nursery areas: No effect. Kahoma Stream is intermittent and does not provide a significant feeding, spawning, breeding or nursery area for any diadromous or neritic fishes.

(5) Wetlands that have significant functions of water quality maintenance: No effect. No wetlands will be affected by the discharge.

(6) High or flood water storage areas: The completed project channel will confine flood waters to the reconstructed stream course with the completed project. Flood waters are not expected to overflow the stream banks and flood the lower coastal areas as presently occurs.

(7) Degradation of water quality: During construction, water quality can be affected by turbidity during heavy rains when stream erosion may occur.

d. Methods to Minimize Turbidity. Measures will be taken to confine silt laden waters to the project site. Erosion control measures will be taken to minimize erosion hazards, thus reducing silt input to the coastal waters. The control measures may include such items as silt curtains, berms, regulating the amount of land excavated, grassing, hydromulching, or by other means for erosion control.

e. Methods to Minimize Degradation of Aesthetics, Recreation, and Economic Values: The discharge will not affect boat launching activities at Mala Boat Launching ramp or the surf sites at Puunoa Point. Recreational activities on Mala Wharf will not be restricted or obstructed. The project will reduce flood damages and improve economic values in the flood prone area.

f. Other Methods Investigated to Minimize Possible Harmful Effects:

(1) The Environmental Protection Agency and State of Hawaii, Department of Health, were involved in the project planning and review of the project documents. These agencies are responsible for water pollution control within the nation and state.

(2) No other harmful effects outside of water turbidity are expected.

g. Impacts on Water Uses:

(1) Municipal Water Supply Intakes: No municipal water supply intakes are located at the discharge site.

(2) Shellfish: No productive, harvestable shellfish beds are located at the discharge site.

(3) Fisheries: No commercial fisheries are located at the discharge site. Recreational fishing involving the catch of small fish, if any, will be temporarily interrupted, but will be available upon completion of the project.

(4) Wildlife: The discharge will not displace significant wildlife habitat community structure or trophic levels.

(5) Recreational Activities: The discharge will not decrease the numbers or diversity of fish; will not create eutrophic conditions; will not introduce pathogenic organisms, and will not release harmful quantities of oil and grease. As previously indicated, trash accumulation, sewage effluent, and wave action presently affect the water aesthetics at the project site.

(6) Threatened and endangered species: No threatened or endangered species are found at the discharge site. The endangered humpback whale seasonally migrate through the waters off Lahaina.

(7) Benthic life: The discharge will not significantly damage benthic life. The rubble apron will provide rocky habitat which can be colonized if not buried by alluvium. The stream is intermittent and does not support an aquatic or estuarine ecosystem.

(8) Wetlands: The discharge will not affect any wetlands, because they are not present at the discharge site.

(9) Submersed vegetation: The discharge will not destroy submersed vegetation beds having significant biological productivity. Seagrass and edible limu beds are not present at the discharge site.

(10) Size of the disposal site: The discharge will not involve the use of existing ocean disposal sites in Hawaii.

(11) Coastal zone management programs: The discharge is determined to be consistent with Coastal Zone Management Programs in the State of Hawaii.

5. Determinations.

a. An ecological evaluation was made following the evaluation guidance in the Environmental Protection Agency regulations, 40 CFR 230.4 in conjunction with the evaluation considerations in the Environmental Protection Agency regulations 40 CFR 230.5.

b. Appropriate measures have been identified and incorporated in the proposed project plans to minimize adverse effects on the aquatic environment which may result from the discharge.

c. Consideration has been given to the need for the proposed activity, the availability of alternate sites and methods of discharge that are less damaging to the environment, and compliance with water quality standards as are appropriate and applicable by law.

d. No wetlands will be affected by the discharge of fill material.

6. Findings: The discharge site for the construction of the Kahoma Stream Flood Control Channel is allowable and specified through the application of the Section 404(b)(1) guidelines promulgated by the Environmental Protection Agency.

7. Economic Impact on Anchorage and Navigation: The evaluation of the discharge including Section 404(b) guidelines indicates that the discharge site is acceptable and that an economic impact analysis on anchorage and navigation is not warranted.

2 Incl
As stated

B. R. SCHLAPAK
Colonel, Corps of Engineers
District Engineer

EXHIBIT L

6

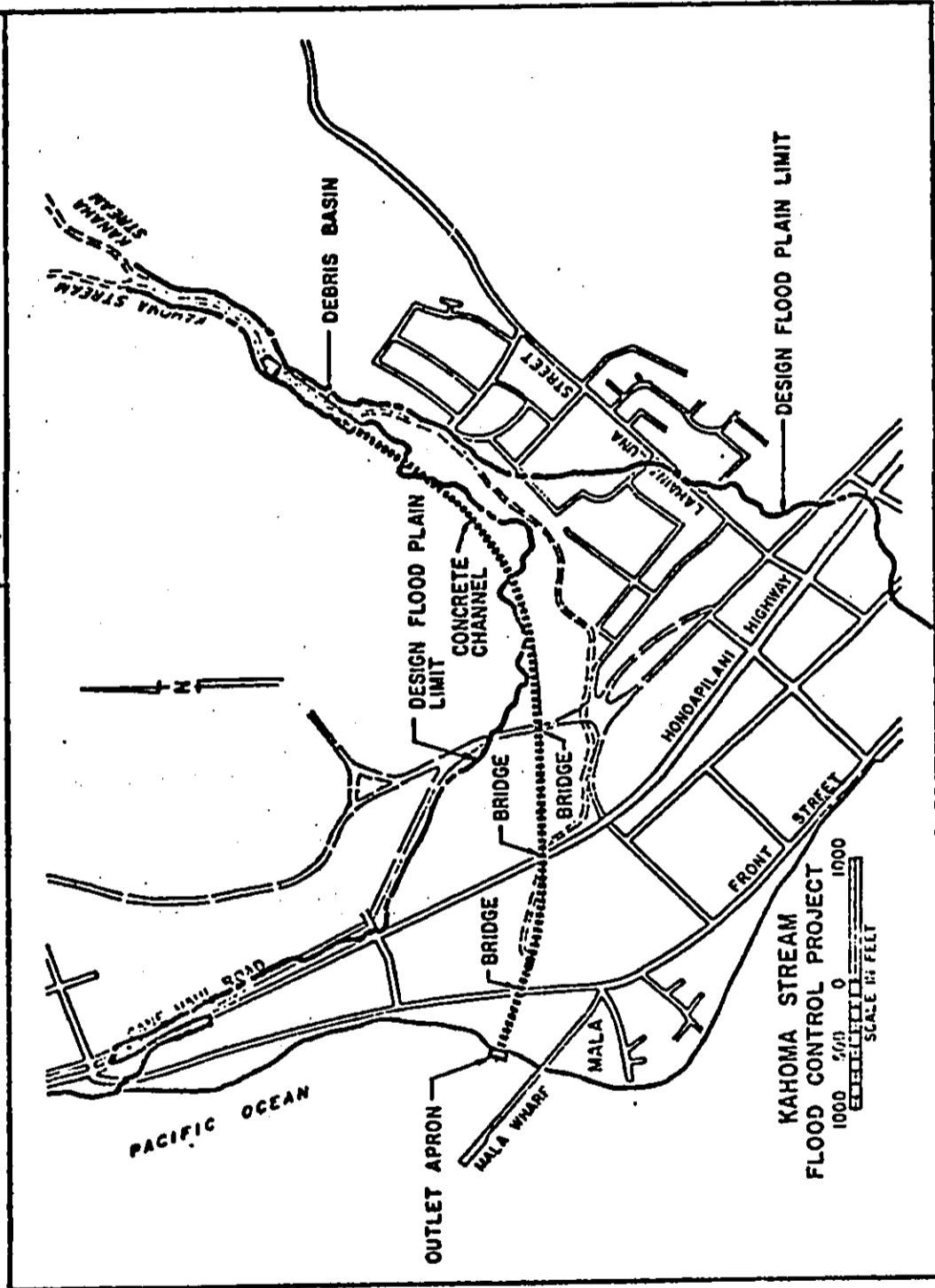
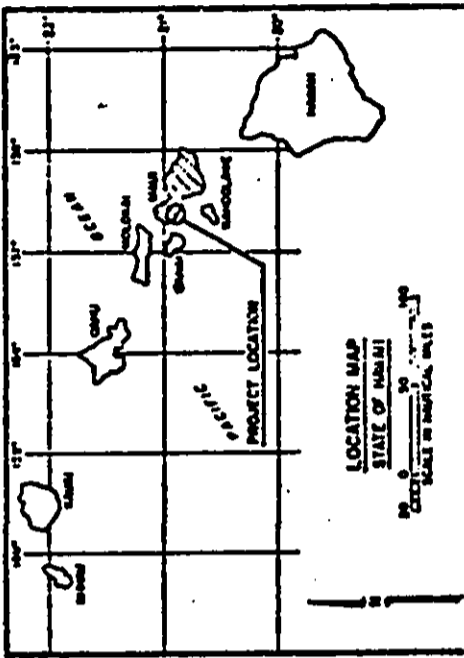


Figure 1

EXHIBIT L

Figure 1

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



STATE OF HAWAII
DEPARTMENT OF HEALTH

P.O. BOX 3378
HONOLULU, HAWAII 96801

June 5, 1981

GEORGE A. L. YUEN
DIRECTOR OF HEALTH

JOHN F. CHALMERS, M.D.
DEPUTY DIRECTOR OF HEALTH

HENRY N. THOMPSON, M.A.
DEPUTY DIRECTOR OF HEALTH

MELVIN K. KOIZUMI
DEPUTY DIRECTOR OF HEALTH

ABELINA MADRID SHAW, M.A., J.D.
DEPUTY DIRECTOR OF HEALTH

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

Mr. Kisuk Cheung
Chief, Engineering Division
U.S. Army Engineer District, Honolulu
Department of the Army
Ft. Shafter, Hawaii 96858

Dear Mr. Cheung:

Subject: Updated 404 Evaluation for Kahoma Stream Flood Control Project

The conclusions in our previous Water Quality Certification dated March 13, 1980 are still valid for this updated evaluation.

Sincerely,

A handwritten signature in dark ink, appearing to read "Melvin K. Koizumi".

For: MELVIN K. KOIZUMI
Deputy Director for
Environmental Health

EXHIBIT N

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



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

March 13, 1980

GEORGE A. L. YUEN
DIRECTOR OF HEALTH

VERNE C. WAITE, M.D.
DEPUTY DIRECTOR OF HEALTH

HENRY N. THOMPSON, M.A.
DEPUTY DIRECTOR OF HEALTH

JAMES S. KUMAGAI, PH.D., P.E.
DEPUTY DIRECTOR OF HEALTH

TADAO BEPPU
DEPUTY DIRECTOR OF HEALTH

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

B. R. Schlapak
Colonel, Corps of Engineers
Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Dear Col. Schlapak:

Subject: Kahoma Stream Flood Control Project

The discharge of fill material from the subject project and its probable impacts on water quality are acceptable and have been mitigated to the fullest extent practicable, and that the discharge of the fill material will conform to State water quality standards.

Sincerely,

Melvin K. Koizumi
MELVIN K. KOIZUMI
Deputy Director for
Environmental Health

EXHIBIT N



DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

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

GEORGE R. ARIYOSHI
Governor

HIDETO KONO
Director

FRANK SKRIVANEK
Deputy Director

September 26, 1979

Mr. Kisuk Cheung
Chief, Engineering Division
Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Dear Mr. Cheung:

Thank you for allowing us to comment on the proposed Kahoma Stream Flood Control Project as it relates to the loss of prime and other important agricultural lands.

Upon review of the proposed flood control channel for the Kahoma Stream Project, we find that approximately half of the proposed concrete channel is within the State Land Use Agricultural District and the other half within the Urban District. We also note that the lands within the Agricultural District that the proposed channel bisects are classified as "other important agricultural land" under the State Department of Agriculture's classification system.

We do not have any objections if the loss of the agricultural lands resulting from the proposed flood control channel does not affect the sugar operations of Pioneer Mill Company.

Sincerely,

Frank Skrivaneck
for Hideto Kono

EXHIBIT 0

PIONEER MILL COMPANY, LIMITED

Growers of sugar cane and producers of raw sugar

P. O. Box 727
Lahaina, Hawaii 96761

October 31, 1979

Mr. Kisuk Cheung
Chief, Engineering Division
Department of the Army
U. S. Army Engineer District, Honolulu
Building 230
Ft. Shafter, Hawaii 96858

Subject: Kahoma Stream Flood Control Project

Dear Mr. Cheung:

Thank you for your letter of October 22, 1979 requesting our comments on the above subject and the resulting loss of approximately 13 acres of cane land.

As an agricultural entity, land represents the base on which Pioneer Mill Company was founded and is the resource that keeps Pioneer Mill Company a viable business. As such, it is our policy to maintain as many acres as possible under cultivation.

As with any loss of cane land, the 13 acres along the flood control channel is of concern. We recognize the need for a flood control channel and have worked with the U. S. Army Corps of Engineers on various proposed channel alignments. Because of the meandering nature of the stream, none of the channel alignment alternatives could avoid the loss of some cane lands.

Pioneer Mill Company has endorsed the Kahoma Flood Control Project from the very beginning. It is our opinion that the benefits provided by the project in the protection of adjoining lands from flood damage and the safety and welfare of the residents of Lahaina far outweigh the potential loss of the agricultural lands.

Sincerely,

PIONEER MILL COMPANY, LIMITED

R. T. Vorfeld

R. T. Vorfeld
President and Manager

CFB:ms

EXHIBIT R



IN REPLY REFER TO:

United States Department of the Interior

NATIONAL PARK SERVICE

HAWAII STATE OFFICE
300 ALA MOANA BLVD., SUITE 6305
BOX 50165
HONOLULU, HAWAII 96850

L7423

June 11, 1979

Mr. Kisuk Cheung
Chief, Engineering Division
Department of the Army
U. S. Army Engineering District,
Honolulu
Building 230
Ft. Shafter HI 96858

Dear Mr. Cheung:

Thank you for the opportunity to comment on the proposed Kahoma Stream Flood Control Project, Lahaina. We concur with the comment of the State Historic Preservation Officer--while the project is in the vicinity of the Lahaina National Historic Landmark, it appears to have no effect on the landmark, a property listed in the National Register of Historic Places.

The study is being returned for your future use.

Sincerely yours,

Robert L. Barrel
State Director

EXHIBIT G

GEORGE R. ARIYOSHI
GOVERNOR OF HAWAII



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

SUSUMU ONO, CHAIRMAN
BOARD OF LAND & NATURAL RESOURCES
EDGAR A. HAMASU
DEPUTY TO THE CHAIRMAN

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

August 22, 1980

Mr. Clarence S. Fujii
Acting Chief, Engineer Division
Corps of Engineers
Department of the Army
Building 230
Fort Shafter, Hawaii 96858

Dear Mr. Fujii:

Subject: EIS Supplement
Kahoma Stream Flood Control Project
Lahaina, Maui, TMK 4-5-05:Various

Our office has continued its review of the proposed undertaking, and it is our opinion that the Corps of Engineers has met its obligations pertaining to the protection of historic and cultural properties, as contained in 36 CFR 800 and other Federal regulations. Several archaeological studies have been performed in the area.

Our office has reviewed the most recent report on the area, "Archaeological Test Excavations Near the Mouth Area of Kahoma Stream, Lahaina, Maui", and concur with its conclusions and recommendations.

There are no sites eligible for the National Register of Historic Places in the lower Kahoma Stream mouth area that will be directly affected by project construction activities. However, due to the known existence of human burials in the stream mouth area, we recommend that an archaeologist be on hand to monitor ground-disturbing activities in the burial area, and that an archaeological report be written and sent to this office for review (regardless of whether burials are encountered during construction).

EXHIBIT P

Mr. Clarence S. Fujii
Page 2
August 22, 1980

Our office concurs with your determination that Alamihi Pond does not meet the criteria of eligibility for inclusion on the National Register, and that there are no cultural resources in the project area which are eligible for the National Register.

Sincerely yours,

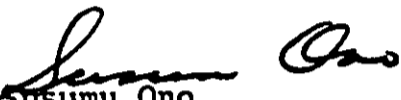

Susumu Ono
Chairman of the Board and
State Historic Preservation
Officer

EXHIBIT P



DEPARTMENT OF PLANNING
AND ECONOMIC DEVELOPMENT

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

GEORGE R. ARIYOSHI
Governor

HIDETO KONO
Director

FRANK SKRIVANEK
Deputy Director

June 30, 1980

Ref. No. 1638

Mr. Kisuk Cheung, Chief
Engineering Division
U.S. Army Corps of Engineers
Building 230
Fort Shafter, Hawaii 96858

Dear Mr. Cheung:

Subject: Kahoma Stream Flood Control Project, Lahaina,
Maui

We have reviewed your analysis of the subject project's consistency with the Hawaii Coastal Zone Management (CZM) Program and concur with your consistency determination with the following condition.

Inasmuch as portions of the proposed project are located within the Maui County Special Management Area (SMA), the appropriate application for an SMA permit should be obtained prior to implementation of the flood control project.

Your assistance and cooperation in complying with the substantive and procedural requirements of the CZM Program are very much appreciated.

Sincerely,

Frank Skrivaneck
for Hideto Kono

cc: Mr. Tosh Ishikawa, Director
Department of Planning, County of Maui

EXHIBIT K



**DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
BUILDING 230
FT. SHAFTER, HAWAII 96858**

PODED-PH

29 February 1980

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

Dear Mr. Kono:

We have prepared a coastal zone management consistency determination for the Kahoma Stream Flood Control project in accordance with Section 307(c)(1) and (2) of the National Coastal Zone Management Act of 1972. The final environmental statement, completed in October 1974, was filed with the Council on Environmental Quality in April 1975. Construction plans and specifications will be completed next year.

The determination consists of a summary statement of consistency (Incl 1) and a copy of the final environmental statement (Incl 2) to provide additional comprehensive information on the project. We would appreciate your review and comments on the determination by 1 April 1980. If there are any questions on the inclosed information, please contact Mr. Clarence Lee, Planning Branch, at 438-2627.

Sincerely,

**2 Incl
As stated**

**KISUK CHEUNG
Chief, Engineering Division**

EXHIBIT K

FEDERAL CONSISTENCY DETERMINATION
STATE OF HAWAII, COASTAL ZONE MANAGEMENT PROGRAM
28 February 1980

1. The Kahoma Stream Flood Control Project, located in Lahaina on the island of Maui (see Figure 1), is proposed for construction in the coastal zone management area. The project involves construction of a debris basin located about 1.1 miles upstream from the shoreline and a trapezoidal-shaped concrete-lined channel to convey flows from the debris basin to the ocean over a revetted outlet apron extending about 70 feet offshore at about elevation zero mean sea level. The following consistency determination summarizes the project's conformance with the objectives and policies of the Hawaii State Coastal Zone Management Program.

2. The project meets the objectives and policies of the CZM program as follows:

SECTION 205A-2(b)(1). Recreational Resources.

OBJECTIVE: "Provide coastal recreational opportunities accessible to the public."

POLICIES:

a. "Improve coordination and funding of coastal recreation planning and management." The project will not impact on the coordination and funding of coastal recreation planning and management.

b. "Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area." The project will not impact on the adequacy, accessibility, or diversity of recreational opportunities in the coastal zone management area.

SECTION 205A-2(b)(2). Historic Resources.

OBJECTIVE: "Protect, preserve, and where desirable, restore those natural and man-made historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture."

POLICIES:

a. "Identify and analyze significant archaeological resources." Archaeological surveys were performed and are continuing, thus assuring that possible significant archaeological resources are identified and properly analyzed in the project planning and design. Archaeological resources of interest in the project area include agricultural terraces, a nonfunctional fishpond and a cemetery. The significance of the cultural resources are being analyzed in coordination with the State Historic Preservation Officer and the Heritage Conservation Recreation Service.

b. "Maximize information retention through preservation of remains and artifacts or salvage operations." Preservation of any significant archaeological sites in the project limits is preferred, but salvage and data recovery will be performed if project impacts are significant and unavoidable. Any salvage plans will be coordinated with the State Historic Preservation Officer and the

EXHIBIT K

Encl 1

Advisory Council on Historic Preservation to insure compliance with State and Federal statutes and policies.

c. "Support State goals for protection, restoration, interpretation, and display of historic resources." Coordination of project plans with the State Historic Preservation Officer will insure the broadest support of State goals for protection, restoration, interpretation and display of historic resources.

SECTION 205A-2(b)(3). Scenic and Open Space Resources.

OBJECTIVE: "Protect, preserve, and where desirable, restore or improve the quality of coastal scenic and open space resources."

POLICIES:

a. "Identify valued scenic resources in the coastal zone management area." The project flood plain is a valued scenic resource in the coastal zone management area.

b. "Insure that new developments are compatible with their visual environment by designing and locating such development to minimize the alteration of natural land forms and existing public views to and along the shoreline." Land forms will slightly be altered by stream realignment through agricultural lands. Public views will not be obstructed by the project.

c. "Preserve, maintain and, where desirable, improve and restore shoreline open space and scenic resources." The project will not affect shoreline open space and scenic resources.

d. "Encourage those developments which are not coastal dependent to locate in inland areas." Not applicable to the project.

SECTION 205A-2(b)(4). Coastal Ecosystems.

OBJECTIVE: "Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems."

POLICIES:

a. "Improve the technical basis for natural resources management." Subsurface foundation investigations at the project site have improved knowledge of the area, which may be useful in the management of natural resources.

b. "Preserve valuable coastal ecosystems of significant biological or economic importance." The project does not affect coastal ecosystems of significant biological or economic importance.

c. "Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs." Not applicable. Stream is intermittent with a major portion of the flow presently diverted for irrigation.

d. "Promote water quantity and quality planning and management practices which reflect the tolerance of fresh water and marine ecosystems and prohibit land and water uses which violate State water quality standards." Not applicable to the project.

SECTION 205A-2(b)(5). Economic Uses.

OBJECTIVE: "Provide public or private facilities and improvements important to the State's economy in suitable locations."

POLICIES:

a. "Concentrate in appropriate areas the location of coastal dependent development necessary to the State's economy." Not applicable to the project.

b. "Insure that coastal dependent development such as harbors and ports, visitor industry facilities, and energy-generating facilities are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area." Not applicable to the project.

c. "Direct the location and expansion of coastal dependent developments to areas presently designated and used for such development and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when (a) utilization of presently designated locations is not feasible; (b) adverse environmental effects are minimized; and (c) important to the State's economy." Not applicable to the project.

SECTION 205A-2(b)(6). Coastal Hazards.

OBJECTIVE: "Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence."

POLICIES:

a. "Develop and communicate adequate information on storm wave, tsunami, flood, erosion, and subsidence hazard." Information related to flood and erosion hazards was communicated to public agencies through a project report and meetings with agency officials and to the general public by public meetings and public workshops.

b. "Control development in areas subject to storm wave, tsunami, flood, erosion, and subsidence hazards." The project would influence the control of development in areas not protected by the flood control works. The project provides protection only from riverine flooding.

c. "Insure that developments comply with requirements of the Federal Flood Insurance Program." Not applicable to the project.

d. "Prevent coastal flooding from inland projects." The project will prevent riverine flooding of low-lying coastal area within the flood plain.

EXHIBIT K

SECTION 205A-2(b)(7). Managing Development.

OBJECTIVE: "Improve the development review process, communication, and public participation in the management of coastal resources and hazards."

POLICIES:

a. "Effectively utilize and implement existing law to the maximum extent possible in managing present and future coastal zone development." The project planning process utilizes and implements existing federal, state, and county laws and ordinances as well as existing federal and US Army Corps of Engineers regulations.

b. "Facilitate timely processing of application for development permits and resolve overlapping or conflicting permit requirements." The implementation of project planning has facilitated timely processing of permit applications to the maximum extent practicable.

c. "Communicate the potential short-and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the general public to facilitate public participation in the planning and review process." The project is not a significant coastal development.

EXHIBIT K

**KAHOMA STREAM
FLOOD CONTROL PROJECT**

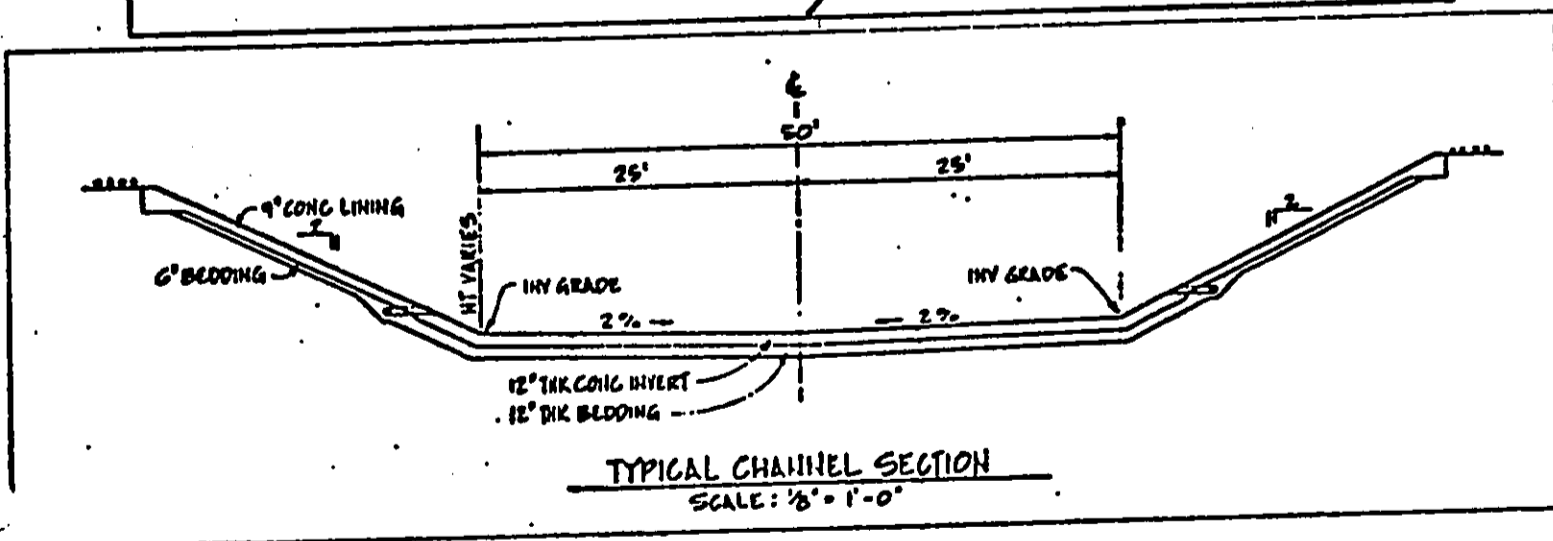
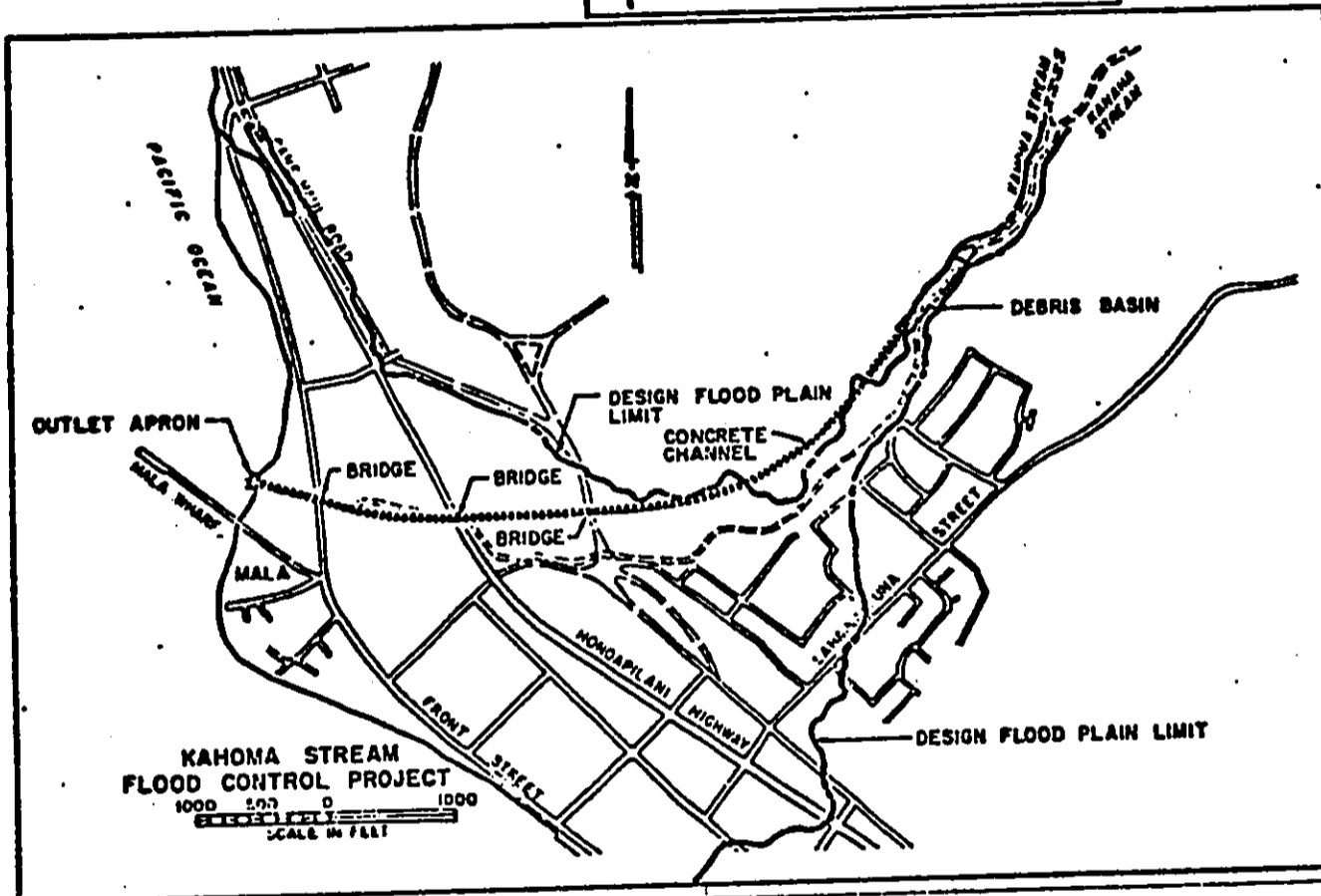
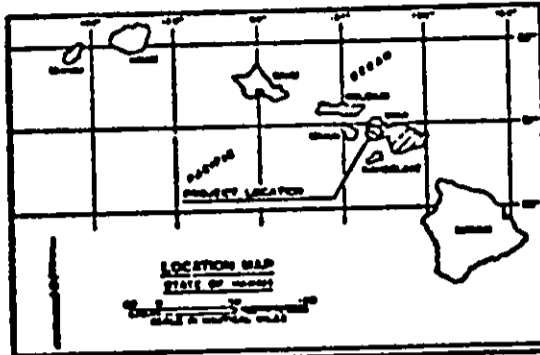


EXHIBIT K

Figure 1

Sheet 1 to Sheet 1