

FINAL
ENVIRONMENTAL STATEMENT

Office Of Environmental Quality Control
Office Of The Governor
550 Halekuanila Street
Tanu Office Building, Third Floor
Honolulu, Hawaii 96813

NAWILIWILI SMALL BOAT HARBOR

KAUAI, HAWAII

Prepared by

DEPARTMENT OF THE ARMY
Pacific Ocean Division, Corps of Engineers
Building 96, Fort Armstrong
Honolulu, Hawaii 96813

29 March 1973

KA
101

1/27/71
1/27/71
1/27/71
1/27/71

NOTICE

ALL reference material borrowed from this library will be on a 30-day loan period, limited to ONE RENEWAL ONLY.

If borrowed material is not returned when DUE, is DAMAGED, or LOST, there will be a REPRODUCTION CHARGE OF 25¢ PER PAGE.

OEQC LIBRARY - PHONE 548-6915
550 HALEKAUWILA STREET ROOM 301

NAWILIWILI SMALL BOAT HARBOR

KAUAI, HAWAII

() Draft (X) Final Environmental Statement

Responsible Office: U.S. Army Engineer Division, Pacific Ocean

1. Name of Action: (X) Administrative () Legislative

2. Description of Action: The construction of a small boat harbor in Nawiliwili Bay with a design capacity of about 166 small craft will consist of a breakwater and revetted dike, a stub breakwater, and navigation channels. Local interests will provide for the incremental development of the harbor interior, berthing facilities, and necessary shoreside facilities. Construction of the initial increments by the State of Hawaii will result in berthing area for about 50 craft.

3a. Environmental Impacts: Implementation of the proposed plans will alter a portion of the existing tidal flat area of Nawiliwili Bay to a light draft vessel harbor complex of about 18 acres. The harbor would improve berthing conditions, stimulate boating conditions for all small craft, and enhance the recreational use of the bay. Although reduced in size, estuarine portions in the bay should remain unchanged, and the biological communities unaffected, with the exception of the crab community in the immediate project area. No rare or endangered species nor any areas of historical significance will be affected by the project.

b. Adverse Environmental Effects: Adverse environmental effects include the various short-term impacts of the construction period and the loss of crab habitat in the immediate project boundaries.

4. Alternatives: Alternatives considered include (1) an alternate location in the Lihue vicinity, (2) alternate sites within Nawiliwili Bay, (3) alternate entrance channel alignments at the proposed project site, and (4) no-action.

5. Comments Received:

U.S. Department of Commerce
U.S. Department of Health, Education and Welfare
U.S. Coast Guard, Department of Transportation
State of Hawaii, Office of Environmental Quality Control (Clearinghouse)
State of Hawaii, Department of Health
State of Hawaii, Department of Transportation

6. Final Statement sent to CEQ 27 APR 1973.

1. Project Description.

The detailed project study to provide a small boat harbor in Nawiliwili Bay on the southeast coast of Kauai was conducted under the authority of Section 107 of the River and Harbor Act of 1960, at the request of the State of Hawaii. The report was completed and submitted to the Chief of Engineers in 1963. The project was authorized in 1964; however, following a public meeting in June, 1971, the harbor site was relocated from the Niimalu Park vicinity to its present proposed site. Plans and specifications for this proposed plan are now underway, and a second public meeting was held on 9 January 1973. Construction of the proposed harbor is scheduled to begin in June, 1973 and extend for about twelve months.

The preparation of this environmental statement is pursuant to the National Environmental Policy Act of 1969 and primarily addresses the impacts of the Federal project which includes construction of the primary navigation channels and harbor protective structures. The proposed small boat harbor will be located within the bay, southwest of the existing deep-draft harbor and adjacent to an existing coral fill area (Plates 1 and 2). The harbor complex will encompass a total area of 24.8 acres which includes 12.6 acres of water surface.

The proposed project provides for:

- a. A 830-foot-long, 120-foot-wide, and 12-foot-deep entrance channel;
- b. A 280-foot-long, 200-foot-wide, and 12-foot-deep turning basin;
- c. A 690-foot-long, 80-foot-wide, and 8 to 10-foot-deep access channel;
- d. A 460-foot-long breakwater with a 12-foot top width at elevation +7 foot MLLW (side slopes, 1 vertical on 2 horizontal);
- e. A 1,855-foot-long revetted dike, continuous with the breakwater with 18-foot top width at elevation +7 foot MLLW.
- f. A 500-foot-long stub breakwater adjoining the fill area covering about 1.9 acres, 12-foot-wide top width and elevation +7 foot MLLW.

This statement also addresses the secondary impacts related to development, use, and maintenance of the harbor which will be accomplished under the direction of the State of Hawaii.

Concurrent with the Federal construction of the channels and protective structures, the following items will be constructed for the State of Hawaii:

- (1) a berthing area, 260 feet wide and 360 feet long, created by dredging to provide space for about 50 craft;

(2) 1,015 lineal feet of revetment and 400 lineal feet of unrevetted beach slope for containment of the backup fill area;

(3) 2,010 lineal feet of spoil disposal dikes to encompass a compartmentalized disposal area of about 8 acres, at elevation +7 to +8 feet;

(4) waste water discharge weirs with appropriate control measures to minimize sediment discharge into the harbor from the disposal area.

In addition to these initial construction items, the construction of necessary shoreside facilities and future expansion will be accomplished by the State of Hawaii in accordance with their master plan for the harbor, the demand for future action, and with the available State appropriations. Incremental items include launching ramps, a repair yard, comfort stations, a general purpose building, parking, pedestrian promenade, and appropriate landscaping. According to the master plan, the total berthing area of 3.9 acres can accommodate about 166 craft when fully developed by the year 2020.

Approximately 71,000 cubic yards of material must be dredged to create the main channels and basin, and an additional 24,000 cubic yards will be dredged for the State of Hawaii initially to provide for interior access channels and berthing areas. The dredged material will be deposited within the designated spoil disposal area, including approximately 3.2 acres of new land area contiguous to the existing coral fill promontory. Material from the existing coral fill area would be utilized to create the necessary dike and containment structures. Shoreside facilities such as parking areas will be developed upon the spoil disposal sites.

2. Environmental Setting Without The Project

Nawiliwili Bay is located approximately 1 mile southwest of Lihue on the island of Kauai. It is about 1.3 miles long and about 1 mile wide at its entrance, encompassing an area of about 510 acres. The bay is partially sheltered to the north by a high bank in the vicinity of Kukii Point, and to the south by a low mountain ridge.

The Nawiliwili Deep-Draft Harbor is situated in the central portion of the bay. This commercial harbor is protected by a 2,045-foot-long breakwater and consists of a 2,400-foot-long S-shaped entrance channel and a 63.3-acre basin. The shoreside facilities include piers, docks, warehouses, roadways, parking, and utilities which have been constructed by the State of Hawaii. The harbor is the principal facility of its kind on Kauai, and goods such as bulk sugar, molasses, and pineapple are exported while merchandise, building materials, and petroleum products are imported. The harbor was initially constructed in 1930 and enlarged in 1956 to its present dimensions. Much of the channel was deepened to 40 feet at that time, and the coral-fill promontory was constructed with the dredged material. Additional rehabilitation of the breakwater, dredging of the northern

side of the inner entrance, and dredging of the southern side of the entrance near the breakwater head were completed in 1960.

To the northeast of the commercial harbor is Kalapaki Bay. The beach front has been developed by resort interests, and the waters of the bay are extensively used for swimming, bathing, and surfing. Nawiliwili Stream, which has a drainage area of 4.9 square miles, flows into Kalapaki Bay near Nawiliwili Park.

Two streams flow into the western and innermost portion of the bay. The Niimalu Stream has a drainage area of 1.8 square miles and enters the bay to the west of the coral promontory. This fill area has been designated for maritime-related light industrial activity. It remains essentially undeveloped and covered with ironwood-haole koa (Leucaena glauca) brush. On the west bank of the Niimalu Stream is Niimalu Park. Its facilities include a small pavilion with restrooms and a boat launching ramp.

The Huleia River which has a drainage area of 27.2 square miles flows into the bay from the southeast. For several miles inland, the banks of this river are densely covered with mangrove and other vegetation. Of the three streams entering Nawiliwili Bay, the Huleia River makes the greatest contribution to the bay ecosystems in terms of providing primary food sources (phytoplankton and zooplankton) and nutrients. In this way, the Huleia River is one of the most dominant factors in the maintenance of the existing conditions of Nawiliwili Bay. The river has a steady flow of 10 MGD 75% of the time.

In addition to shipping activities, hotel-resort development, and parks, uses of the lands tributary to the bay include sugarcane cultivation, cattle ranching, and commercial and residential development.

The results of salinity and dye tracer studies on the tidal flats, in the Nawiliwili and Kalapaki bays, and the area outside of the breakwater, indicate that the inner Nawiliwili Harbor undergoes very little mixing and transport. The Huleia River discharges are sufficient to maintain estuarine conditions on the tidal flats and inner harbor. Pronounced salinity gradients exist in the inner harbor with the mass transport occurring principally in the surface layer. The transport magnitude is dependent upon the Huleia River flow. The bottom currents appear weak and the mass transport appears to be a diffusion-type process. At the mouth of Nawiliwili Harbor the mass transport was seaward and vertical gradients of salinity appeared weak indicating vertical mixing. In Kalapaki Bay wave action causes more pronounced vertical mixing. The lack of sediment deposits derived from the Huleia River, indicate that mixing and net mass transport out of Kalapaki Bay must be pronounced. Outside of the breakwater the bottom is predominantly sandy, hard bottom, with no evidence of sediment deposition and buildup. Wave surges are strong and could keep sediment in suspension for seaward transport. Outside the wave surge zone, there is no evidence of sediment buildup in the pockets of sand. A summary of the aquatic environment of Nawiliwili Bay is presented in Plate 3.

Plankton surveys found the highest concentrations and densities of Zooplankton and Phytoplankton in the Huleia River. The most predominant zooplankton was copepods, which feed on phytoplankton and which serve as food for fish and other animals. High phytoplankton values were also observed near ship piers and in the middle of Kalapaki Bay, and the lowest near the entrance of the bay by the breakwater. A variety of fish ranging from algae feeders, such as surgeon fish; to complete carnivores, such as goat fish, pompano and silversides; have been observed in various parts of the bay. Fishing activity is primarily confined to the deeper portions of the bay while the tidal flat area is popular for crabbing.

The benthic community of the existing tidal flat area at the planned harbor site is principally made up of crabs. Almost no infaunal organisms were found in the bottom samples of the area and few fish were noted. Also, few attached organisms were found on the few hard surfaces, such as buoy anchor chains in the area, although such surfaces in Nawiliwili Harbor proper and further seaward are profusely overgrown. This dearth of fish and attached organisms is probably due to the rapid fluctuation of salinity in this shallow area of the estuary. The lack of infaunal organisms is possibly due to heavy feeding pressures by the crab population. The crabs appear to sustain on the organic debris washed down from the upstream ecosystems of Huleia River and Niumalu Stream, and also dead and infaunal organisms.

The bay waters are designated Class A, (State Water Quality Standards) but it is Class B around the docks where shipping activities occur. The waters in the bay do not now meet the Class A standards for nutrient levels, especially in the estuarine portion and in the Huleia River. The present state of water quality is heavily influenced by the hydrologic elements and the contribution of the Huleia River, and conformance to the present Water Quality Standards would require drastic alterations to the life and hydrologic processes of both the river and bay ecosystems.

3. Environmental Impact of the Proposed Action

The changes that are brought about by the proposed boat harbor can be grouped and discussed under the headings of hydrological, water quality, biological, societal, and aesthetic impacts. Some of the anticipated changes can be classified as beneficial, others are clearly detrimental, while others appear to be changes without any obvious value judgment association.

a. Hydrological Impact

The location of the proposed boat harbor in the inner Nawiliwili Bay just below the confluence of Huleia River and Niumalu Stream necessarily reduces the tidal flat area. Hydraulic and foundation materials evaluations show that although the proposed harbor reduces the total flow area in the tidal flats, flood stages from Huleia River flows would not be significantly

affected since the existing channel bottom material is highly erodable. Studies show that with a design peak discharge of 35,800 cubic feet per second, representing a 100-year recurrence interval flood for Huleia River, no significant changes in the extent of flooding would be evidenced from the proposed harbor project. The banks near the mouth of the river are presently rural and sparsely developed in nature with only about two structures located within areas subject to flooding by river waters.

Flooding along the banks of the Niupalu Stream is controlled by the restrictive bridge that crosses it near the Niupalu Park. Consequently, the construction of the harbor will not have a significant effect upon flooding of this area.

It is anticipated that some sedimentation will take place within the proposed harbor because of the relatively quiescent conditions there. Periodic maintenance dredging will be required to keep the harbor and entrance channel at the design depths.

Sediment deposition within the deep-draft harbor will be increased initially by about 30,000 cubic yards following the construction of the proposed small boat harbor due to scouring of the tidal flat area by the Huleia River. Thus, the maintenance requirements for the deep draft harbor will be increased temporarily until the bottom stabilizes in the tidal flats. No long-term increases are expected once the initial scouring occurs since the sediment load of the river will not change as a result of the project.

The project construction may have some impact upon the bottom conditions and sedimentation patterns in the tidal flat area. The major amount of sediment is carried by the Huleia River and is deposited in the deep-draft harbor. Under low flow conditions, the Niupalu Stream contributes comparatively small amounts of sediments and under high flow conditions, the sediment load would be carried out to deeper waters. As described earlier, the flooding on the Niupalu Stream is controlled by the restrictive bridge, and dispersion of the floodwaters over land into the low lying areas is expected. In this case, the dispersion and ponding may serve to settle out some of the sediments carried by floodwaters. These conditions on the Huleia and Niupalu flows might be expected to continue with the addition of the harbor. Thus, no significant net change in the accumulation of sediments from existing conditions in the tidal flat area is anticipated. Some scouring within the tidal flat along the harbor structures would be expected during high flows, with redeposition during low flows. Land accretion along the shores of Niupalu Park will be most affected by further extension of the mangrove community if park maintenance does not prevent its encroachment on the tidal flat.

b. Water Quality Impact

During construction there will be an increase in turbidity of the water in Nawiliwili Bay around the project site. This effect will be minimized

through dredging techniques and settling basin provisions and should be less than the turbidity increases that accompany the several rainstorms each year.

Because of the deepening of the entrance channel and the harbor and because of the strong salinity stratification known to exist in the inner Nawiliwili Bay during times of low river flow, it is anticipated that the bottom water layers in the new harbor will be near sea water salinity. This change will strongly influence the balance of benthic organisms within the harbor. Further discussion of this point is made in the section dealing with the biological impact.

Probably the most pronounced water quality impact associated with boat harbors is the probable increase in debris and floatables which may include fuel and oil spills that inevitably accompany boating activity. However, it must be noted that no permanent live-aboards are planned for the harbor and that provisions will be made to dispose of the oily wastes from the planned service station away from the site. The harbor restrooms will temporarily discharge into an aerobic sewer system until a sewerage system can be constructed to export sewage out of this basin. These restroom facilities will be constructed by 1975 according to the State's preliminary master plan for the harbor. Since some limited use of the harbor will occur prior to 1975, the State is considering provision of interim facilities as soon as the proposed harbor area is opened for public use.

Because of the prevailing trade winds, the floating debris, oil, and fuel from minor spills, as well as that washed in from the parking lot will accumulate against the inside corner of the proposed dike. This will facilitate maintenance cleanup operations.

c. Biological Impact

The construction of the proposed boat harbor will eliminate some of the tidal flat area and therefore some of the crab habitat. It will tend to change the population balance among the three species of crabs within the harbor by the increase in salinity anticipated with deepening of the site. The red crab (Podophthalmus vigil or Mo'ala) is generally found in high salinity areas, the Samoan crab (Scylla serrata) is most often found in low salinity waters, while the white crab (Portunus sanguinolentus or Papa'ikau-nonu) is found in intermediate or fluctuating salinity areas. It is therefore estimated that the deepened area within the harbor and entrance channel, after the reestablishment of a soft bottom, will tend to be repopulated by red and white crabs with few Samoan crabs. Outside the proposed harbor, the additional reduction of tidal flat due to scouring and subsequent decrease in salinity in the tidal flat area should result in more Samoan crabs there.

There is a possibility that more attached organisms will establish themselves on the various hard surfaces in the deeper areas of the proposed harbor because of the more constant salinity conditions and constant

submersion. With increased depth, more fish may be found within the new harbor site. No significant interference with fish spawning is foreseen, since there is no alteration of the estuarine conditions of the bay.

The proposed construction will not alter the contributions of fresh water flow and nutrient sources of the Huleia River, nor will it significantly alter the transport and mixing characteristics of the inner harbor and Kalapaki Bay. Therefore, the estuarine conditions in the bay as a whole should be unchanged and the estuarine biological communities should not be adversely affected, with the exception of the crab community in the immediate project area.

d. Societal Impact

The construction of the proposed Nawiliwili Harbor is recommended in the master plans of both the State of Hawaii and the County of Kauai. The existing small craft mooring area in the deep harbor is subject to surge action and backwash from the movements of deep-draft vessels, both of which can cause damage to the smaller craft. The new boat harbor would eliminate these potential hazards. It would provide needed mooring and launching facilities for the many boat users of Kauai, where there are more boats and launchings per capita than any other county in the State.

On the other hand, some interference between the maneuvering area of the deep-draft vessels and the traffic of the smaller craft might be encountered. The alignment of the proposed entrance channel, its proximity to the deep-draft basin, and the joint use of the entrance to the bay from the ocean all contribute to this potentially adverse situation. In view of the fairly limited number of large ships entering the bay, and recognition of the need for developing harbor regulations, this situation can be fully controlled, and serious conflict is not expected.

The proposed development of a boat harbor would increase recreational and boating activity in the Nawiliwili-Niumalu area. Onshore commercial activity associated with a small boat harbor would gradually increase with the incremental development of the State's shoreside facilities. Zoning controls by local government agencies should provide the necessary restrictions for orderly and systematic development of the area.

The area presently used by crab fishermen will be reduced by the construction of the boat harbor.

There are no historical or archaeological sites in the vicinity which will be affected by the project.

e. Aesthetic Impact

Aesthetic evaluations are necessarily individualistic and time-dependent. The present large expanse of water reflecting the green, rugged headlands of the opposite shore has appeal as does a well-designed, clean harbor with

colorful boats and abundant greenery. A landscape architect will participate in the layout of the harbor area which will include small trees and other plants on the dike enclosing the harbor. It is imperative that conscientious maintenance of the harbor area be performed to keep the facility aesthetically acceptable.

4. Adverse Environmental Effects Which Cannot be Avoided Should the Project be Implemented

The probable adverse effects due to construction are temporary and will be minimized to some extent by the control methods to be incorporated into the construction specifications. Among the measures to reduce turbidity during dredging are determination of the type of dredging methods to be used, the use of settling basins for dredged materials, and the order in which the construction of structures and dredging will be accomplished. In general, most of the turbidity which is not contained by construction precautions, will settle out in the deep-draft harbor, and impact at Kalapaki Bay should be small, if any.

Destruction of marine habitats within the proposed harbor boundaries cannot be avoided. About 18.4 acres of tidal flat area will be converted to harbor structures and deeper water. The primary marine organism affected will be the crab population. Some recovery should occur after completion of the construction, although only those species which favor higher salinities may develop within the harbor area.

5. Alternatives to the Proposed Action

An alternate location in the Lihue vicinity was considered at the Ahukini Landing, Hanamaulu Bay. This site is approximately 3 miles north of Lihue, and the bay is frequently subject to severe surging. The abandoned boat landing was used until about 1947 for sugar shipment and is presently used by local pole fishermen. Repair and extension of the existing rubblemound breakwater would be extremely costly. In addition, the location offers very limited area for the development of necessary facilities. Finally, the reduction or elimination of the surge conditions in order to assure safe navigation under most conditions would be difficult, if not impossible.

Development within Nawiliwili Bay was first considered at a location adjacent to Niualu Park. The harbor facility was consistent with the State's harbor master plan prepared in 1962. Development at this location was presented at a public meeting in June 1971. Following discussion at the meeting and additional studies, the location was changed from the Niualu Park site to a site further east and adjacent to the coral fill area. The new site was selected as a better overall location for several reasons. First, this site has less impact on the crabbing and fishing activities in the tidal flat area off Niualu Park. Second, the proposed plan does not infringe on Niualu Park. The coral fill area has been designated for maritime-related light industrial use by the State, making the small boat harbor location there compatible with its designated use. Both construction and maintenance at this location are less expensive than at the previous Niualu site.

Two alternate entrance channel alignments were considered for the selected site adjacent to the coral fill area. The first alternate channel approached the harbor from the easterly direction while the other alignment provides for a northern entrance. Either alignment is reasonably navigable and adequately protected against waves, although the northern alignment can be more easily navigated by boats. While the eastern entrance alternate has a lower initial construction cost, significant amounts of sediment generated by stormflows from the Huleia and Niimalu Streams would be deposited within this channel alignment. Resulting high maintenance costs and spoil disposal problems would also be associated with the first alignment.

The primary advantage in selecting the northern entrance alternate for the proposed plan is that it provides a location away from the direct exposure to the sediments, reducing the amount of anticipated sediment deposition, and consequently, reducing some maintenance requirements. Some maintenance dredging would still be required.

The alternative of no action was considered early in the planning, but eliminated because it does not provide a meaningful solution to Kauai's boating needs. In the Lihue area which is the island's population center, the nearest developed all-weather small boat harbor is 21 nautical miles away at Port Allen Harbor on the southwest coast of Kauai. In addition, a small boat harbor is located 12 nautical miles south of Nawiliwili at Kukuiula. It has a very limited capacity and is untenable during storm conditions. There are no small boat harbors on the 80-mile north and east coasts of the island.

According to a recent Statewide study for a master plan for boat-launching facilities prepared for the State Harbors Division, Kauai has by far the highest number of per capita boat ownership in the State of Hawaii. In reassessing the boat-launching needs of the counties through 1990, the study suggested that small boat ramps be eliminated gradually in the deep-draft harbor at Nawiliwili and that small boat facilities be relocated in the proposed new small-boat harbor.

In view of the interest in fishing and boating and the related need for an adequate number of safe boating facilities, a decision to forego the project would restrict boaters to the limited areas within the deep-draft harbor where boat damages due to surge and backwash have been incurred or to other limited facilities on the island. On the other hand, the tidal flat area would remain essentially in its existing conditions.

6. The Relationship Between Local Short-Term Uses of Man's Environment and the Maintenance and Enhancement of Long-Term Productivity

The project area is used for recreational purposes including some fishing, crabbing, and limited boating. These activities would be affected during the construction of the harbor facility but are expected to return to active use upon completion of the harbor. Beach-related activities, including swimming and wading are presently limited and potential increase

in this use of the area is unlikely. The harbor would provide park-like activities as a part of its master plan for total development, benefiting non-boaters as well.

The proposed improvement will provide an urgently needed harbor for light-draft vessels which now suffer damages during storm periods. Long-term benefits to recreational boating and fishing and commercial fishing as well can be anticipated.

7. Irreversible and Irretrievable Commitments of Resources Which Would be Involved in the Proposed Action Should it be Implemented

A total of 24.8 acres would be committed for the complete harbor facility of which 18.4 acres is presently tidal flat area, popular for crabbing. In addition to the direct loss of natural environment, construction impacts would involve the loss of some crab habitat.

The project will require the commitment of 21,300 cubic yards of rock for the protective structures which will be obtained from a local commercial quarry.

8. Coordination with Others

a. Public Meeting:

A public meeting was held at Lihue, Kauai on 15 June 1971 and 9 January 1972. Comments and recommendations from these meetings were incorporated in the Draft Environmental Statement, which was circulated for review and comment.

b. Government Agencies:

(1) U.S. Department of Commerce

Comment: Discuss effects of periodic maintenance dredging on the marine environment.

Response: The effects of periodic maintenance dredging should be similar to the deep draft harbor maintenance dredging, i.e., increase in turbidity, destruction and recolonization of bottom substrate and effects associated with ocean or land disposal.

Comment: Discuss impact of Huleia River scouring action on tidal flat marine benthic environment.

Response: This comment is discussed in the text.

Comment: Fully describe the types of dredging methods and settling basin provisions.

Response: The comment is not within the scope of the statement. State and Federal control will be implemented when the work is accomplished.

The mode of dredging is open to contract bidding in order to achieve the lowest cost to the Government.

Comment: Expand discussion on expected circulation pattern and flushing of the harbor.

Response: Text has been expanded to provide more information on circulation and flushing patterns in the harbor.

Comment: Expand discussion on salinity patterns and their effects on plankton and crabs.

Response: The text has been expanded to discuss the comment.

Comment: Substantiate the comment that spawning occurs in low salinity regions of the harbor.

Response: The text was changed to more accurately reflect the data and conditions of the harbor.

Comment: Substantiate claims that transport and mixing characteristics of the inner harbor and Kalapaki Bay will not be significantly altered by the proposed project.

Response: Results of salinity and dye tracer studies are presented in the text.

Comment: Plates 2 and 3 could be marked like Plate 1 to show harbor structures.

Response: Plates 1 and 2 were interchanged to sequentially reflect the project site and proposed project. Plate 3 reflects the present ecosystem conditions and was not changed.

(2) U.S. Department of Health, Education and Welfare:

A review of the material submitted does not indicate any problems of direct concern to this Department.

(3) U.S. Coast Guard, 14th Coast Guard District, Department of Transportation:

Staff review has been completed on subject statement and no objections are presented to implementation of the proposed project.

(4) State of Hawaii, Office of Environmental Quality Control:

Summary of comments from other agencies.

Comment: Discuss the need for the small boat harbor.

Response: Discussions for the need of the small boat harbor can be found in the State Master Plan for the area.

Comment: What is the relationship between the construction and maintenance cost for such facilities and the user charges.

Response: The comment should be directed to the State Harbors Division for relationship between maintenance costs and user charges. The Corps of Engineers construction cost is compared with monetary benefits to the user. User charges are set by the operating agency, in this case the State of Hawaii.

Comment: Discuss the increase in demand for parking space.

Response: State and County systematic long-range development planning must provide for the overall needs of the area.

Comment: Will the breakwater present a hazard to the public?

Response: The breakwater is designed to protect the small boat harbor. Recreational use of the breakwater by the public will not be limited nor will it be encouraged.

Comment: Expand discussion of adjacent zoning and comprehensive planning.

Response: The zoning uses and comprehensive planning of the project area are presented in the State and County Master Plan. The Corps of Engineers is not changing zoning, but the project will compliment existing plans for the area.

Comment: Will the project decrease water circulation and water quality in the bay?

Response: The estuarine conditions of the bay are dependent upon the Huleia River. There are no alterations to the Huleia River, so the estuarine conditions will not be altered.

Comment: Would there be any possible conflict between increased boating uses and other water-contact recreation?

Response: The bay is limited in water-contact recreation usages due to poor water quality at present. Fishing and crabbing are prime recreational activities with very limited swimming. After construction of the small boat harbor it is unknown how many crab fishermen will be displaced nor is it known how many boaters will utilize the facility. In summary there should be a minimum of conflict but there will be a loss of some crabbing area.

(5) State of Hawaii, Department of Health:

Comment: Discuss the need for better sewage facilities at the proposed small boat harbor.

Response: The draft text erroneously reflected the use of cesspools. Aerobic septic tanks will be utilized and have so been noted in the final text.

Comment: Recommend that a collection sewer system be constructed for comfort stations and restrooms.

Response: Details for long-range planning for these facilities are to be found in the State Master Plan.

Comment: Recommend boats utilize holding tanks and there be construction of pump out facilities in the harbor.

Response: Criteria for these facilities will have to be established and implemented by the State.

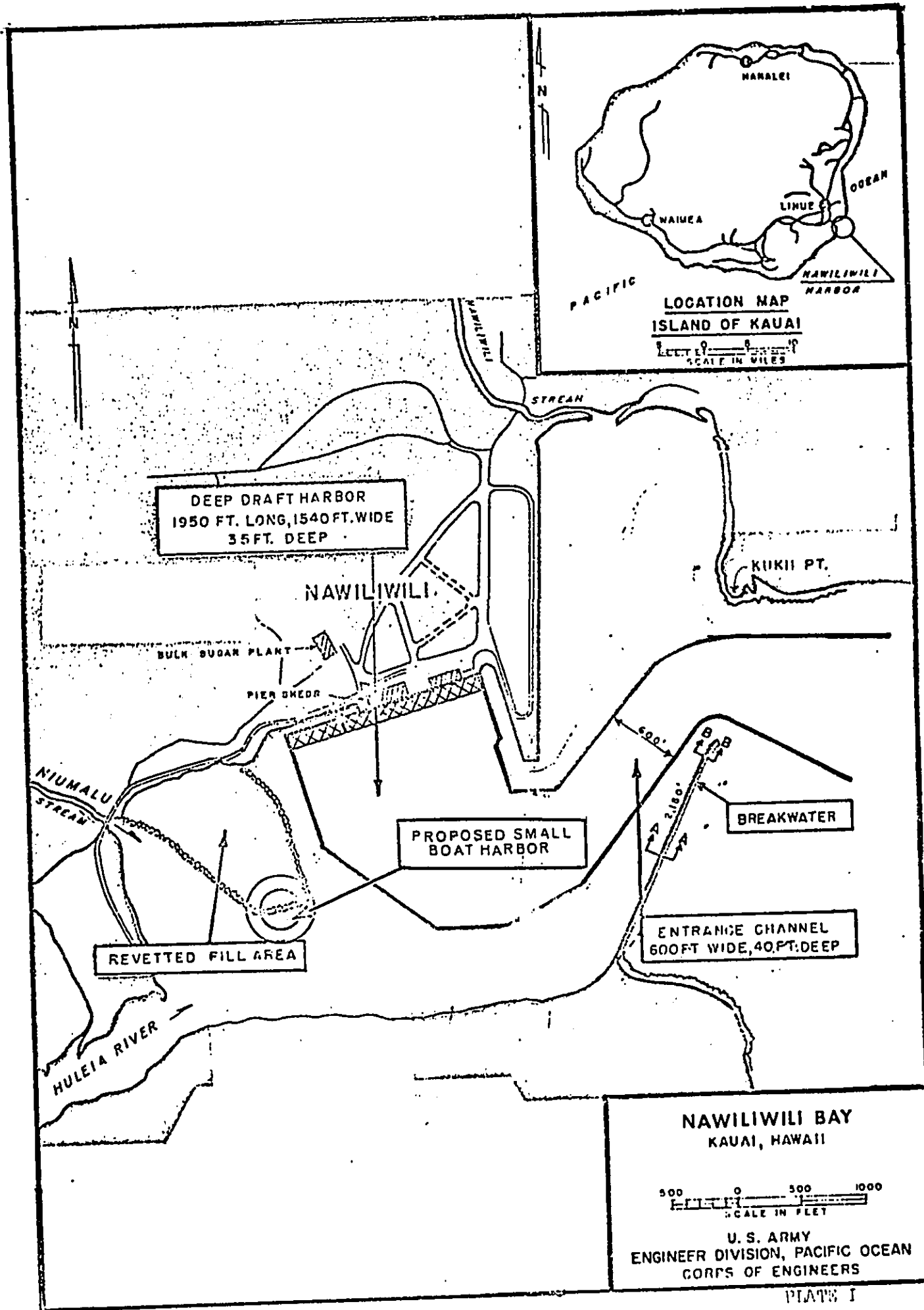
(6) State of Hawaii, Department of Transportation:

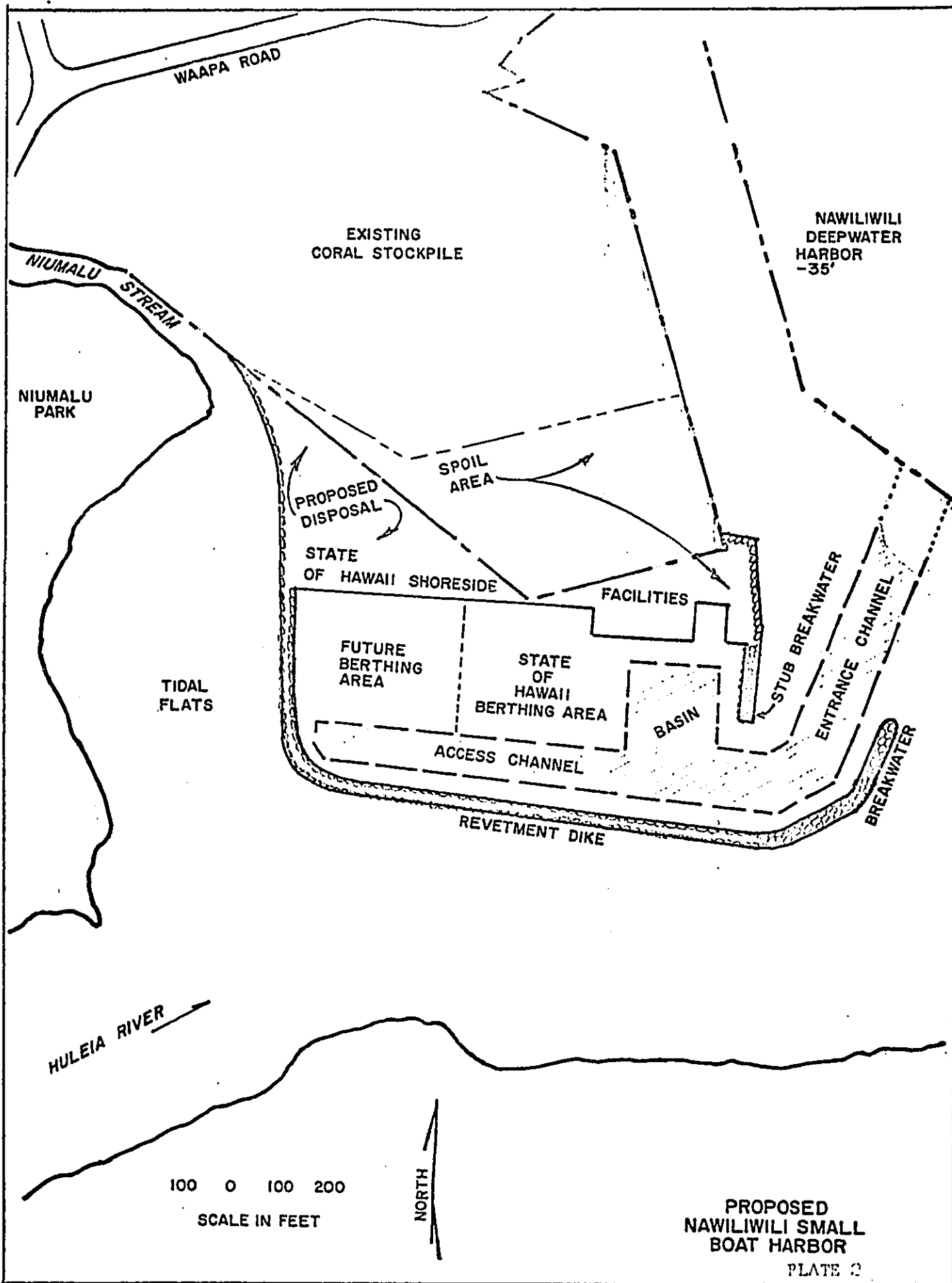
Comment: Would like to emphasize that the schedule for providing aerobic sewage treatment facilities is tentative and subject to changes and the availability of appropriations from the State Legislature.

Response: The Corps is utilizing the time table established by the State Master Plan.

Comment: Clarify the number of boat launches per boater.

Response: Clarification is made in the text.





WAAPA ROAD

EXISTING CORAL STOCKPILE

NAWILIWILI DEEPWATER HARBOR -35'

NIUMALU STREAM

NIUMALU PARK

SPOIL AREA

PROPOSED DISPOSAL

STATE OF HAWAII SHORESIDE

FACILITIES

TIDAL FLATS

FUTURE BERTHING AREA

STATE OF HAWAII BERTHING AREA

BASIN

STUB BREAKWATER

ENTRANCE CHANNEL

ACCESS CHANNEL

BREAKWATER

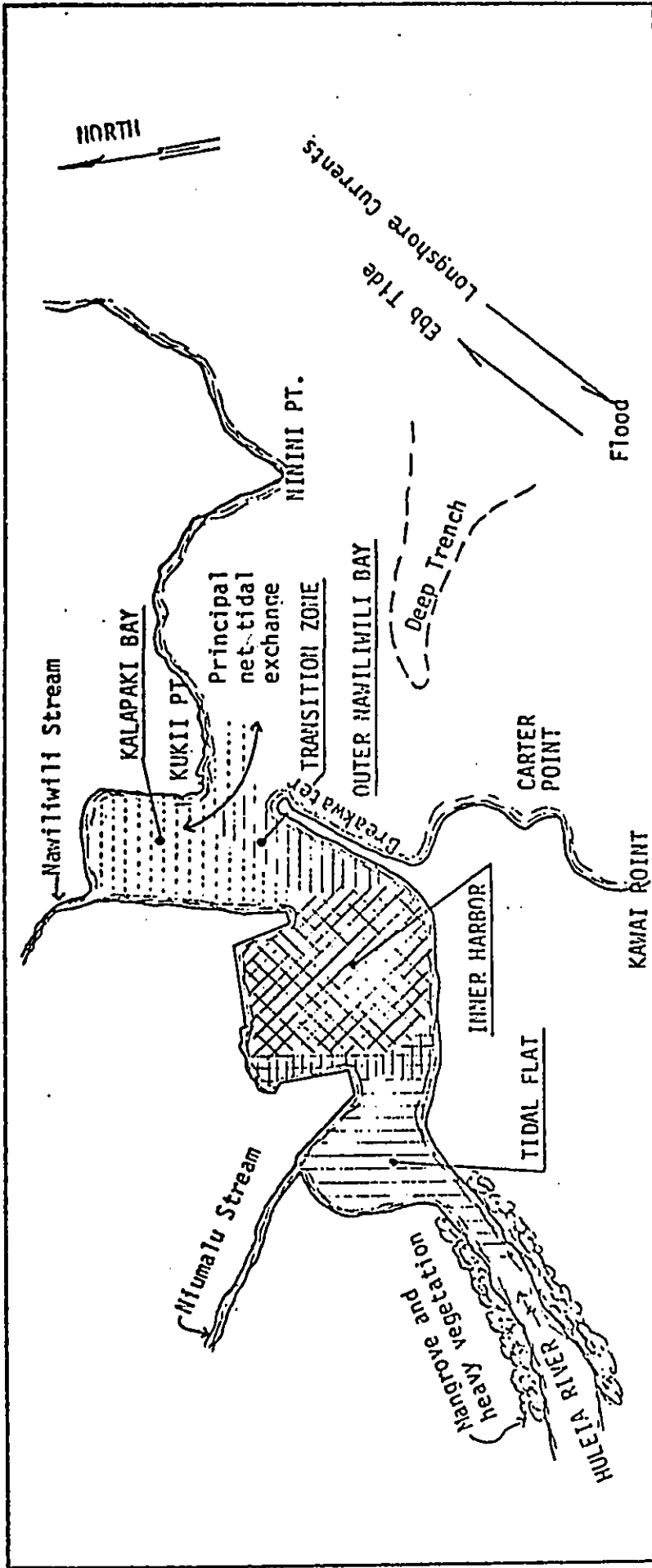
REVTMENT DIKE

HULEIA RIVER

100 0 100 200
SCALE IN FEET

NORTH

PROPOSED NAWILIWILI SMALL BOAT HARBOR
PLATE 2



		Descriptive Values FROM SUNNY, LOU, TOM & HARA, APRIL 1972						
Section	Characteristic Depth (ft)	Vertical Mixing	Surface Salinity(%)	Crabs	Chlorophyll-a (mg/l)	Dominant Zooplankton	Bottom Condition (% clay)	
Huleia River	5	stratified	13	Samoan	5	Copepods	sandy silt	
Tidal Flat	4	stratified	14	White Samoan Red	4	Copepods Crab Larvae Fish Larvae	sandy silt (20)	
Inner Harbor	35	stratified	25	Red	2	Copepods Crab Larvae	silty clay (40)	
Transition	40	mixed	35	-	0.3	---	silty clay (48)	
Kalapaki Bay	15	mixed	33	-	-	---	sand (0.01)	
Outer Bay	45	mixed	37	-	-	---	sandy, hard bottom	

PLATE 3 DESCRIPTIVE SUMMARY OF AQUATIC ENVIRONMENT OF NAWILIWILI BAY



THE ASSISTANT SECRETARY OF COMMERCE
Washington, D.C. 20230

March 14, 1973

Mr. R.L. Nichols
Chief, Engineering Division
Honolulu District, Corps of Engineers
Building 96, Fort Armstrong
Honolulu, Hawaii 96813

Dear Mr. Nichols:

The draft environmental impact statement for Nawiliwili Small Boat Harbor, Kauai, Hawaii, which accompanied your letter of January 29, 1973, has been received by the Department of Commerce for review and comment.

The Department of Commerce has reviewed the draft environmental statement and has the following comments to offer for your consideration.

The location is protected, thus only minimal wave action effects will occur; the proposed breakwaters and revetment dike should insure stability from wave action.

Currents within Nawiliwili Harbor are small and there is no reason to believe that there will be large-scale sediment redistribution which will significantly alter the underwater topography. Sedimentation as described in the statement will occur due to the quiescent conditions in the small boat harbor. This however will not be a net increase in sediment in Nawiliwili Bay.

In the past tsunamis have caused high current velocities mainly at the entrance to the bay. At the location of the small boat harbor there should be relatively low currents in the event of a tsunami.

Environmental Impact of the Proposed Action

a. Hydrological Impact → Reference is made to the need for periodic maintenance dredging of the new harbor and entrance channel. The effects of such dredging on the marine environment should be discussed.

It is predicted that there will be a scouring of the existing tidal flat area by the Huleia River following construction of the proposed small boat harbor. The effects of sedimentation from that scouring are mentioned, but the impact of the scouring itself on the benthic biota of the tidal flat should also be discussed, perhaps in the subsection on Biological Impact.

b. Water Quality Impact - It is stated that turbidity effects "will be minimized through dredging techniques and settling basin provisions." The types of dredging methods and settling basin provisions should be fully described.

This section does not address itself to the expected circulation patterns in the proposed boat harbor or to the mechanisms of water flushing. In a Corps of Engineers report dated December 11, 1972, and entitled "Environmental Considerations for Nawiliwili Small Boat Harbor," it is stated that "the inner Nawiliwili Harbor undergoes very little mixing due to tidal cycles. Net transport out of the harbor is prevalent only in the surface area." The implications of the above statement should be discussed in the environmental impact statement. Since the proposed harbor is essentially a cul-de-sac, with no through flow of water (due to the revetment dike), further discussion of the expected circulation pattern and flushing of the harbor is warranted.

c. Biological Impact → A discussion of the salinity patterns and their direct effect on the various species of crabs is presented. What is not presented is the effect

of the salinity patterns on the food sources of the crab populations. In section 2, Environmental Setting Without the Project, it is stated that "the Huleia River makes the greatest contribution to the bay ecosystems in terms of providing primary food sources (phytoplankton and zooplankton) and nutrients." It is also stated that "The crabs appear to be principally sustained by the organic debris washed down from the upstream ecosystems of the Huleia River and Niumalu Stream." Presumably, alternation of existing salinity patterns will not only directly affect the survival of the plankton, but will also, through increased stratification, affect the settling of that plankton and other organic matter. These possibilities should be considered in the environmental impact statement.

It is predicted that "No significant interference with fish spawning is foreseen because most spawning ... within the estuary occurs in the lower salinity regions further upstream." This conclusion should be substantiated by whatever studies were available when this determination was made.

This section also claims that the transport and mixing characteristics of the inner harbor and Kalapaki Bay will not be significantly altered by the project. This assertion should also be substantiated.

Plates 1, 2, and 3

For the purposes of reference, it would be helpful if some of the harbor structures indicated in Plate 1 were also marked in Plates 2 and 3. This would aid the reader in relating the overall project to the geographical situation without the project.

We hope these comments will be of assistance to you
in the preparation of the final statement.

Sincerely,

Sidney R. Galler
Sidney R. Galler
Deputy Assistant Secretary
for Environmental Affairs



DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
REGIONAL OFFICE
50 FULTON STREET
SAN FRANCISCO, CALIFORNIA 94102

OFFICE OF
THE REGIONAL DIRECTOR

March 14, 1973

Your Reference: PODED-P

Mr. R. L. Nichols
Chief, Engineering Division
Honolulu District, Corps of Engineers
Department of the Army
Building 96, Fort Armstrong
Honolulu, Hawaii 96813

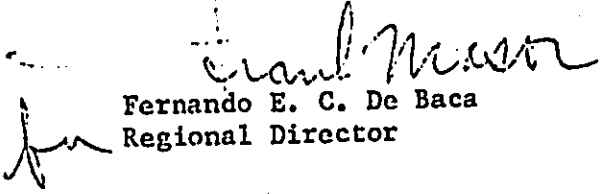
Dear Mr. Nichols:

This letter will acknowledge receipt of the draft environmental impact statement for the proposed Nawiliwili Small Boat Harbor, Kauai, Hawaii.

A review of the material submitted does not indicate any problems of direct concern to this Department.

The opportunity to review this statement is appreciated.

Sincerely yours,


Fernando E. C. De Baca
Regional Director



DEPARTMENT OF TRANSPORTATION
UNITED STATES COAST GUARD

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

3160
Serial 5704
22 February 1973

From: Commander, Fourteenth Coast Guard District
To: Division Engineer, Pacific Ocean Division

Subj: Nawliwili Small Boat Harbor - Environmental Statement Evaluation

1. Staff review has been completed on subject statement enclosed with your letter PODED-P of 29 January 1973. The Coast Guard has no objections to implementation of the proposed project.

W. C. Behan
W. C. BEHAN
By direction

Copy to:
COMDT (GWEP/73)

JOHN A. BURNS
GOVERNOR



RICHARD E. MARLAND, PH.D.
INTERIM DIRECTOR

TELEPHONE NO.
548-6915

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

March 21, 1973

Mr. R. L. Nichols, Chief
Engineering Division
U. S. Army Corps of Engineers
Building 96, Fort Armstrong
Honolulu, Hawaii 96813

Dear Mr. Nichols:

Thank you for allowing us to review and process the Draft Environmental Impact Statement for the proposed Nawiliwili Small Boat Harbor.

In reviewing the comments submitted in response to the Draft Statement, we recommend that you give special attention to the comments offered by the Department of Transportation and the Department of Health. These comments relate to the proposed sewage treatment facilities and related impact on water quality. The final environmental impact statement should address the adequacy of the proposed disposal system.

Our Office has the following comments to offer:

Need for the Small Boat Harbor: Although the Draft Statement describes the high number of boat launchings per capita per year, there is no analysis presented for the need for wet storage facilities. The high number of per capita boat launchings may, in fact, be an indication of the undesirable high cost for wet storage. If this was the case, perhaps it would be more appropriate to build more launching ramps rather than boat harbors for wet storage. Community petitions for such facilities, occupancy of existing boat harbors, income and boat ownership per capita, and other statistical information may be appropriate for indicating the need for such facilities. We hope that there will be some discussion on the need for wet storage facilities on Kauai in the final impact statement.

Costs: What is the relationship between the construction and maintenance costs for such facilities and the user charges.

Parking: The increased boating uses will increase the demand for parking and roadway improvements. The adequacy of such facility should be discussed in the final statement.

Page 2
March 21, 1973

Safety: The construction of the breakwater may encourage the public to walk, fish, crab, swim etc., directly off the walls of the breakwater. Will there be any safety measures to accommodate for these activities? The final statement should address this potential problem.

Adjacent Zoning and Comprehensive Planning: The statement "zoning controls by local government agencies should provide the necessary restrictions for orderly and systematic development of the area", does not contain sufficient information. Existing and proposed development plans should be presented to indicate any possible conflicts (or compliments) to the comprehensive development of Nawiliwili Harbor and adjacent shoreline uses.

Water Quality: The Draft Statement indicates that the waters of Nawiliwili does not comply to the State's Class A standard. Will the proposed harbor decrease water circulation and increase nutrient loads to a point where eutrophication may become a problem?

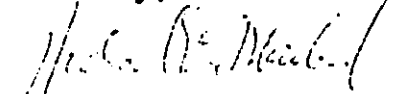
Societal Impact: How many crab fishermen will be likely to suffer displacement, and how many boaters would be likely to benefit from the harbor should the harbor be implemented? Would there be any possible conflict from increased boating uses to any existing areas used for water contact sports?

We believe that the above concerns should be clarified in order to alter agencies of the possible environmental risks associated with this project.

In finalizing this Environmental Impact Statement, we would be grateful if the Army Corps of Engineers would provide us with a copy of the preliminary final impact statement. Should we receive any late comments, we will promptly forward them to you.

Thank you again for allowing us to review and process this Draft Environmental Impact Statement. Should you have any questions or comments concerning this project, please do not hesitate to call us.

Sincerely,



RICHARD E. MARLAND
Interim Director

Enclosures

SUMMARY SHEET

Agencies Responding:

1. Environmental Center (March 14)
2. Senator Hiram L. Fong (February 6)
3. Department of Agriculture (February 27)
4. Planning Department, County of Hawaii (February 14)
5. Hawaiian Telephone Company (February 6)
6. Congressman Spark Matsunaga (February 5)
7. Department of Public Works, County of Kauai (March 6)
8. Department of Transportation (March 8)
9. Department of Health (March 16)

JOHN A. BURNS
GOVERNOR OF HAWAII



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

WALTER B. QUISENBERRY, M.P.H., M.D.
DIRECTOR OF HEALTH

WILBUR S. LUMMS JR., M.S., M.D.
DEPUTY DIRECTOR OF HEALTH

RALPH B. BERRY, M.P.H., M.D.
DEPUTY DIRECTOR OF HEALTH

HENRI P. MINETTE, M.P.H., DR.P.H.
DEPUTY DIRECTOR OF HEALTH

March 16, 1973

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

From: Director of Health

Subject: Draft Environmental Impact Statement for the Proposed Nawiliwili
Small Boat Harbor, Kauai, Hawaii

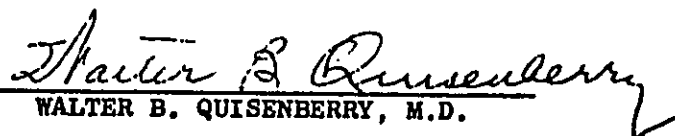
Thank you for permitting this Department to comment on the subject draft Environmental Impact Statement (EIS). Our engineering staff has reviewed the subject statement and would like to make the following comments:

It has been our experience that coral fill material is not a good filtering material and would cause the cesspools to be ineffective. We are concerned with the failure of cesspools and the effluent overflowing or infiltrating into the harbor. Such contamination can severely affect the designated uses of the small boat harbor and adjacent waters.

It is our recommendation that the comfort stations and restrooms at the proposed facility be served by a collection system and the sewage transported to a mechanical sewage treatment plant with suitable disposal.

It is further recommended that the boats using the proposed facility be equipped with marine sanitation devices as approved by this Department. To complete the package, the proposed boat harbor should provide an adequate number of pump out facilities to transport the sewage to the treatment plant.

We realize that the above statements address the draft EIS, which is preliminary in nature. We therefore reserve the right to address future environmental problems not addressed by the EIS.


WALTER B. QUISENBERRY, M.D.

JOHN A. BURNS
GOVERNOR



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

FUJIO MATSUDA
DIRECTOR
E. ALVEY WRIGHT
DEPUTY DIRECTOR
LAWRENCE F. O. CHUN
DEPUTY DIRECTOR
MUNNY Y. M. LEE
DEPUTY DIRECTOR
DOUGLAS S. SAKAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
ATP 8.2146

March 8, 1973

MEMORANDUM

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

FROM: FUJIO MATSUDA, DIRECTOR OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL IMPACT STATEMENT FOR THE PROPOSED
NAWILIWILI SMALL BOAT HARBOR, KAUAI, HAWAII

We have reviewed the above subject Draft Environmental Statement and make the following comments:

1. Page 5, last Paragraph and continued on Page 6:

We would like to make a clarification that restroom facilities will temporarily discharge into an aerobic sewage treatment system and not just a regular cesspool. In regards to the 1975 construction schedule for the restroom facilities, we would like to emphasize that this is only a tentative desired schedule and subject to changes and the availability of appropriations from the State Legislature.

2. Page 9, 2nd Paragraph:

The statement on the number of average boat launches per boater (57) should be rephrased to indicate that this is an average annual figure.

Transmitted is a copy of Memo HAR-K dated February 20, 1973, from our Kauai District Manager on comments made by others on Kauai relative to the subject project. Also attached is a newspaper article regarding a study of the Niuaulu area.

E. Alvey Wright
FUJIO MATSUDA
for Director

Enclosures

STATEMENT OF FINDINGS

NAWILIWILI BAY, KAUAI, HAWAII PROPOSED NAVIGATION IMPROVEMENTS

1. In consideration of the overall public interest, I have reviewed and evaluated the pertinent information and stated views of other interested government agencies and the concerned public on the various practical alternatives for constructing the Nawiliwili Small Boat Harbor. The development of the harbor project was reviewed and evaluated to determine its engineering feasibility and to assess its environmental, social, and economic effects in accordance with the guidelines of Section 122 of the River and Harbor Act of 1970. Other factors bearing on my review include the stated desires of boating interests, local government officials, and residents for development of a plan which would meet the area's boating needs and be compatible with other developments planned for the area, such as the expansion of the Niumalu Park.

2. Initial plans for the harbor were developed in 1963 and approved by the Chief of Engineers in 1964. This plan proposed development of a harbor adjacent to Niumalu Park and was consistent with the State of Hawaii's harbor master plan which was prepared in 1962. Although approved in 1963, funds for preparation of the plans and specifications were not provided until 1971. During that year, coordination with local government agencies and the views of the general public expressed during a public meeting held in June showed that the harbor site adjacent to Niumalu Park was incompatible with current plans for development of the Nawiliwili-Niumalu area. In particular, the harbor would interfere with the desired future expansion and recreational use of Niumalu Park.

3. Based on the comments received during the coordination process and subsequent studies, the harbor was relocated from the site adjacent to Niumalu Park to a site contiguous to the coral fill area which parallels the eastern boundary of the existing Nawiliwili Deep-Draft Harbor. The relocated site would better serve the overall needs of the community for several reasons. First, this site would reduce the adverse impact on crabbing and fishing activities in the tidal flat area off Niumalu Park. Second, the harbor would not infringe on Niumalu Park. Third, the harbor would be compatible with the State's designated use of the coral fill area for maritime-related light industrial activities. Finally, development and maintenance costs for a harbor at the relocated site would be less than those for a harbor adjacent to Niumalu Park.

4. Because of the physical constraints of the harbor site, alternative harbor configurations were limited to consideration of two alternative channel alignments. The first alignment provided for entrance into the harbor from the northeast end. The alternative of no action, considered early in the project reformulation, was eliminated because it would not provide a meaningful solution to the boating needs of the island which has the highest per capita boat ownership in the State. Although the no action alternative would retain existing conditions within Nawiliwili Bay, it would restrict boaters to the limited areas within the deep-draft harbor where berthing and mooring

facilities are not designed for small craft. Consequently, boat damages due to surge and backwash would continue to be major problems.


5. The possible consequences of the alternative plans were evaluated from the standpoints of engineering feasibility, economic impacts, and environmental acceptability which were considered to be equally important objectives. The adverse effects of each alternative were compared against its beneficial effects. This process led to selection of the second alternative because of its slight advantage from the navigation standpoint (more direct access to the harbor) and from the economic standpoint (lesser maintenance requirements). The environmental impacts of the two alternatives were similar. The selected plan essentially consists of an 830-foot-long, 120-foot-wide, 12-foot-deep entrance channel approaching the harbor from the northeast end; a 690-foot-long, 80-foot-wide, 8- to 10-foot-deep access channel; a 280-foot-long, 200-foot-wide, 12-foot-deep turning basin; a 460-foot-long breakwater extending from the western end of a 1,855-foot-long revetted dike; and a 500-foot-long stub breakwater adjoining the coral fill area. The harbor has a design capacity of 166 craft. The shoreside facilities and berthing areas would be developed in increments by the State of Hawaii, in accordance with their master plan for the harbor, and as dictated by the demand for berths, and available State funds.

6. I have reviewed the comments received through project coordination and public meetings (June 1971 and January 1973), and in response to the draft environmental statement which was distributed in January 1973. No objections to the project have been received to date. Most of the comments received concerned expansion of the impact statement to include more detailed description of the project such as dredging methods, effects of periodic maintenance dredging, impact on circulation patterns and flushing of the harbor, and the effects of changes in the salinity pattern on plankton and crabs. Questions were also raised about harbor operations which are local interests' responsibility and have yet to be developed by them.

7. I believe that all necessary investigations commensurate with the scope of the harbor development project have been made, and sufficient data and information on the engineering, economic, and environmental aspects of the alternatives considered have been reviewed to facilitate making a sound decision.

Based on my evaluation, I find that no alternative plan considered would fulfill the project objectives and the socio-economic needs of the residents of the island of Kauai as effectively as the selected plan. I conclude that the public interest would best be served by construction of the Nawiliwili Small Boat Harbor.

30 March 1973


LEONARD EDELSTEIN
Colonel, Corps of Engineers
District Engineer

I concur in the District Engineer's findings.

30 March 1973

William D Falck

WILLIAM D. FALCK
Colonel, Corps of Engineers
Division Engineer