

**PARKS PLANNING BRANCH
DEPT. OF DESIGN & CONSTRUCTION**

**MAKAHA BEACH PARK
MASTER PLAN REPORT**

**Prepared
for**

**Department of Parks & Recreation
City & County of Honolulu**

By

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March 1998

Introduction

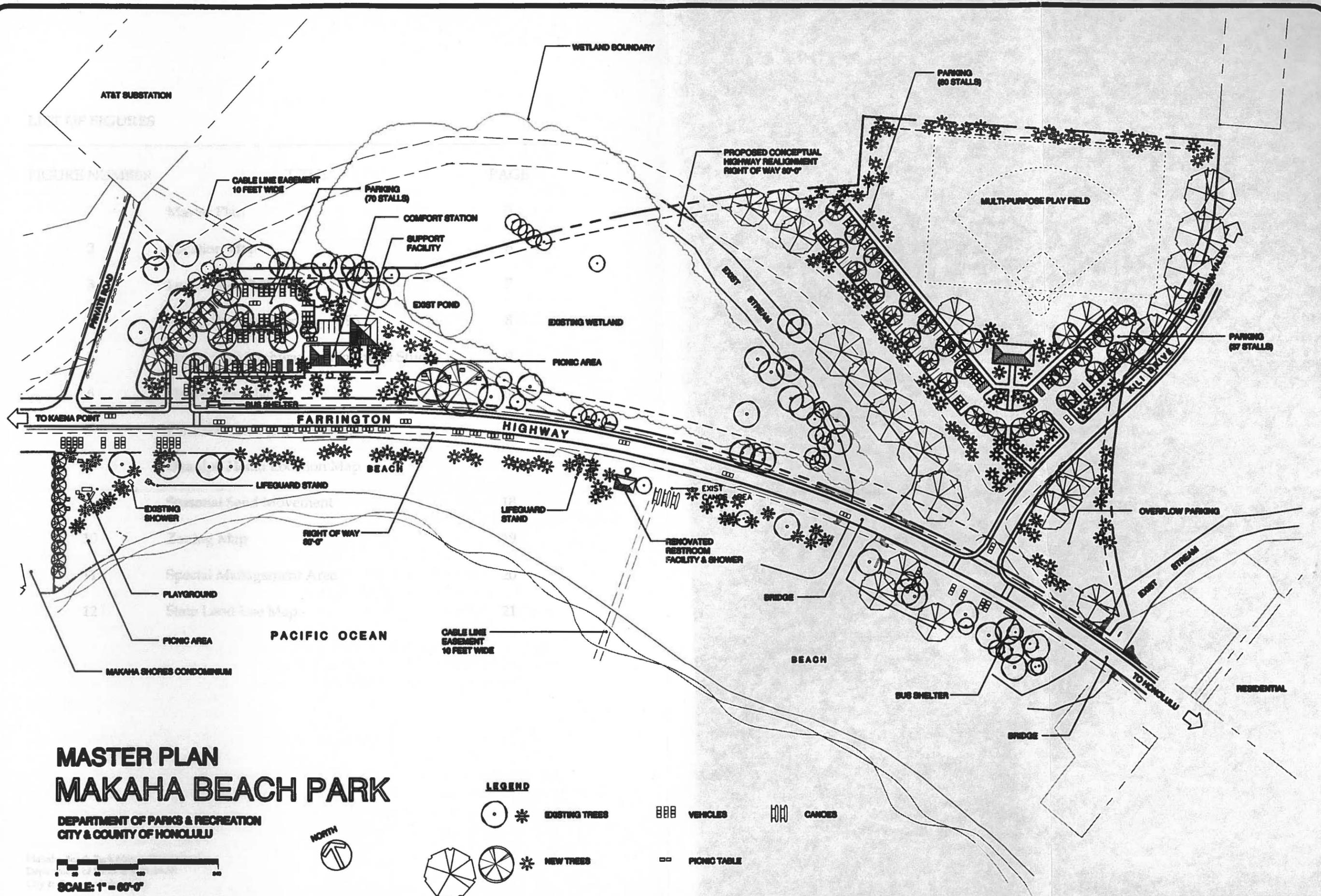
It is the intent of the City & County of Honolulu Department of Parks and Recreation to propose a master plan for the future development of Makaha Beach Park.

The master plan will provide new comfort stations, parking lots, multi-purpose fields and landscaped picnic areas. The proposed comfort stations are being designed to supplement the existing restroom facility (Figure 1). Additional parking will be provided to alleviate the congestion that occurs during the peak surfing season.

A Draft Detailed Project Report and Environmental Impact Statement was prepared by the U.S. Army Corps of Engineers in November 1985 for the protection of Farrington Highway. The report presented four proposals to preserve the existing shoreline at Makaha Beach Park. The preferred proposal was to realign the existing Farrington Highway towards the mauka side of the proposed project site. This will increase recreational use, expand the beach, provide additional parking, eliminate highway repairs due to the beach erosion and storm waves and insure access in and out of the west end of the island of Oahu.

Based on this recommendation a conceptual study was done with an inland realigned highway to show how it might affect the park (Figure 5). From the conceptual study, the master plan was developed. Should the highway be realigned inland in the future, the current proposed facilities will be minimally be affected. A conceptual highway realignment is indicated on the master plan.

The proposed master plan is not anticipated to generate any significant adverse impacts on the environment. The purpose of this plan is to expand and enhance recreational opportunities at this world renown surfing beach park.



MASTER PLAN MAKAHA BEACH PARK

DEPARTMENT OF PARKS & RECREATION
CITY & COUNTY OF HONOLULU

SCALE: 1" = 80'-0"



LEGEND

- EXISTING TREES
- NEW TREES
- VEHICLES
- CANOES
- PICNIC TABLE

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Makaha Beach Park Master Plan Report Waianae, Oahu, Hawaii

The Department of Parks and Recreation, City and County of Honolulu and the Makaha Beach Park Advisory Committee has prepared a Makaha Beach Park Master Plan, for park lands located in the ahupua'a of Makaha, Waianae District, Island of Oahu, State of Hawaii (Figure 2). Owned by the City and County of Honolulu, Makaha Beach Park is identified as tax map key 8-4-01: 12 and 8-4-02: 47 with an estimated land area of 20.622 acres. A location map is shown in Figure 3.

Purpose and Need. Makaha Beach is a world famous surfing beach. The beach and its waters are also used for activities such as swimming, diving, boogie boarding, body surfing, sunbathing, fishing and canoe racing.

Improvements in the past to Makaha Beach Park have been made without the guidance of a park master plan. Facilities have been built in the areas subject to wave damage and beach erosion. In the early 1960's a caretakers residence/comfort station was built along the shoreline. Since its construction, both beach park and highway facilities has sustained moderate to severe damage due to storm wave action. In 1983, strong waves eroded a 200-foot -wide by 500-foot-wide area of the park, destroying a picnic area, comfort station and Farrington Highway shoulder (Figure 4). The shoulder was repaired and a temporary comfort station was constructed to replace the former comfort station.

The State Department of Transportation and the City and County of Honolulu, Department of Parks and Recreation requested that the US Army Corps of Engineers conduct a shore protection study following this severe damage. In 1985 the US Army Corps of Engineers concluded that Farrington Highway should be realigned further inland to protect the highway from future wave damage. To protect park facilities from beach erosions and storm wave damage, the City acquired additional park properties mauka of Farrington Highway and lobbied the State to fund the relocation of the highway inland. All attempts to have the highway realignment failed.

The community has waited a long time for the temporary comfort station to be replaced with a permanent comfort station. The City has waited for Farrington Highway to be realigned before proceeding with developing a master plan for Makaha Beach Park. It is not likely that the highway will be realigned in the near future and therefore the City has proceeded to develop a master plan with the current highway alignment. It will continue its effort to lobby for the

realignment of Farrington Highway further inland to protect the highway from future wave damage, improve safety for its park users and provide better park facilities for this world renown surfing beach park.

Planning Goals and Objectives. The Master Plan is based on the following goals and objectives derived from community input gathered at a site visit, a workshop and from comment sheets submitted to the Department of Parks and Recreation.

1. Maintain the unique character of the park while enhancing and expanding the park facilities.
 - a. Keep Park in character with the Waianae Coast.
 - b. Commemorate the park as a World Class Surfing Beach.
 - c. Make use of native plants and trees suitable for this coastal environment.
 - d. Select materials that blend in with the existing surroundings.
2. Expand and enhance recreational opportunities for both residents and visitors of all ages and abilities.
 - a. Provide a range of passive and active shoreline and non shoreline activities throughout the park.
 - b. Provide park facilities and site furnishings that will complement expanded recreational opportunities.
 - c. Provide a venue for cultural and recreational activities such as surf meets.
3. Protect and restore some of the cultural resources within and surrounding the park.
 - a. Protect Wetland and provide irrigation for new landscape.
 - b. Minimize pollution from stream runoff on to the beach and into the ocean.
 - c. Restore the flow of water from the mountain side to the pond.
 - d. Areas disturbed by construction will be landscaped and properly maintained to keep path of stream to clear to flow.

4. Provide a park setting that is safe and accessible for all people.
 - a. Provide a safe access from beach to public facilities.
 - b. Site and design facilities to discourage vandalism and other illicit behaviors.
 - c. Meet Federal Americans with Disabilities Act.
 - d. Provide facilities to ensure the safety of the park users.
 - e. Provide bus shelters at bus stops.
 - f. A proposal is to secure the comfort station at night and provide lighting for security.
5. Minimize destruction by future natural causes.
 - a. Design and site facilities to minimize destruction from natural causes.
 - b. Comfort stations to be located on a stable area on the site.
6. Provide improvements to enhance and improve the quality of the park.
 - a. Provide a comfort station out of reaches of the surf and fitting for this world class surfing beach.
 - b. Provide parking for park users that is safe from traffic and vandalism.
 - c. Consider the nearby neighborhood's safety and privacy when expanding and enhancing the park by minimizing conflicts between park users and adjacent condominium dwellers.
 - d. Design the park amenities and facilities to be low maintenance and durable.

Proposed Facilities and Improvements. The intent of the master plan is to expand and enhance recreational opportunities and to locate facilities in more protected areas of the park. The master plan will serve the local and island wide communities as well as visitors to Oahu.

Improvements made to the park will include new comfort stations, parking lots, recreational facilities and landscaped picnic areas. Construction of the various facilities will be as follows:

Phase 1. The proposed facilities are being designed to provide a permanent comfort station and a paved parking lot. The new comfort station will provide a larger facility to the existing temporary restroom facility located on the beach. The new parking lot will assist in reducing the amount of vehicles parked along Farrington Highway.

The following are spaces located within the proposed comfort station for Phase 1.

1. Comfort Station
 - a. Men's Restroom
 - b. Women's Restroom
 - c. General Utility & Storage Room
 - d. Electrical Closet
 - e. Storage Room
2. Miscellaneous Items
 - a. Drinking Fountains
 - b. Outdoor Shower
 - c. Trash Enclosure
 - d. Picnic Tables
3. Parking lot with approximately 70 stalls including 3 accessible stalls
4. Renovation to existing temporary restroom facility.

Phase 2. Development of the portion of land adjacent to Kili Drive for recreational activities.

1. Multi-Purpose Play Field
2. Parking Lot with approximately 100 stalls
3. Comfort Station
 - a. Men's Restroom
 - b. Women's Restroom
 - c. Maintenance/Utility Storage Room
 - d. Electrical Closet
4. Miscellaneous Items
 - a. Drinking Fountain
 - b. Trash Enclosure
 - c. Picnic Benches

Economic Characteristics. Construction for Phase 1 is approximately 4 to 6 months. Funding for this phase has been allocated. Currently funds are not available for Phase 2 or the implementation of the project. Therefore, the Phase 2 will follow when funding is available.

Phase 1:

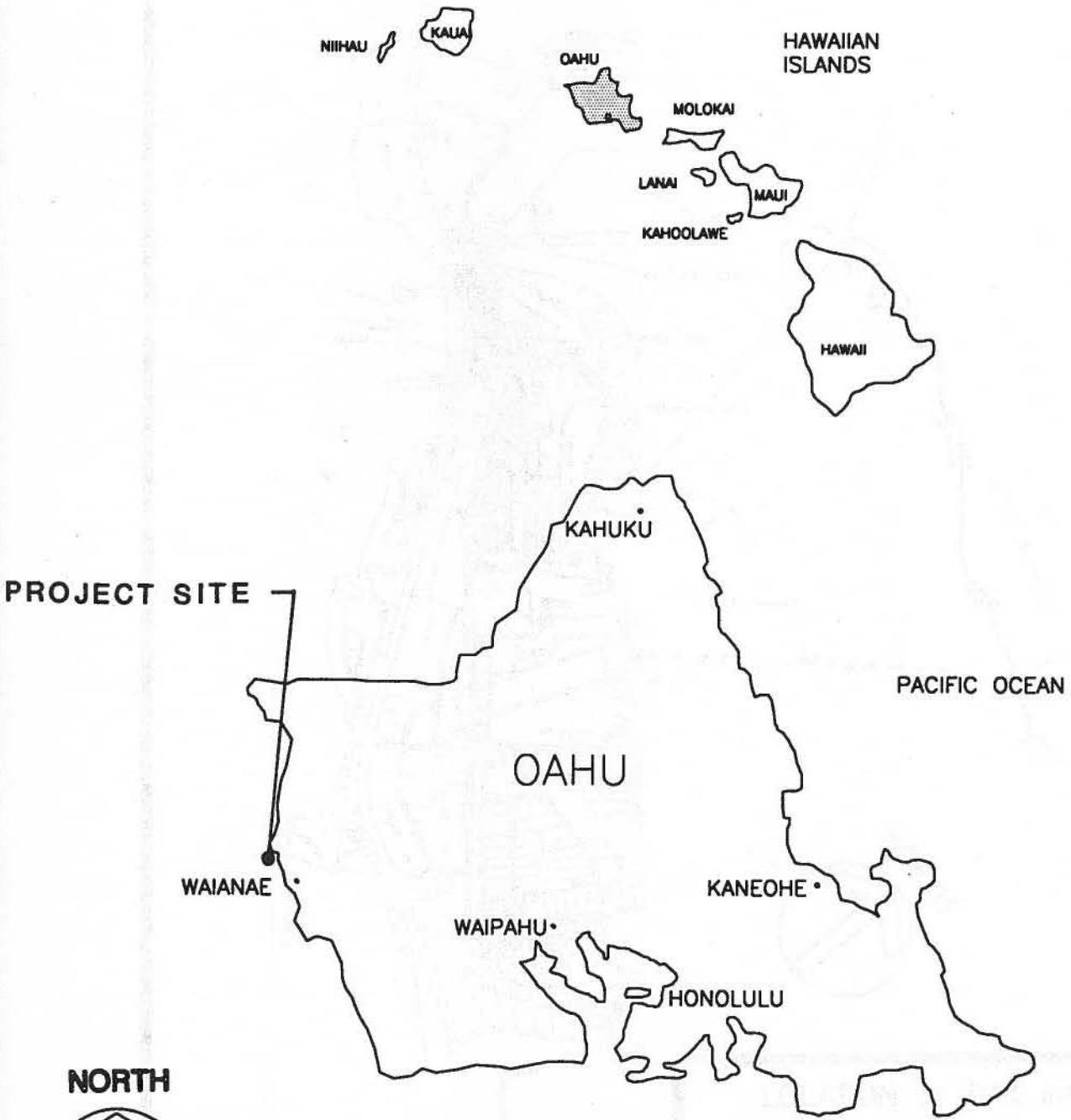
New Comfort Station, Parking Lot & Renovation of Temporary Comfort Station
Approximate Construction Cost-\$675,000

Phase 2:

Recreational Facilities & Parking Lot
Approximate Construction Cost-\$2,135,000

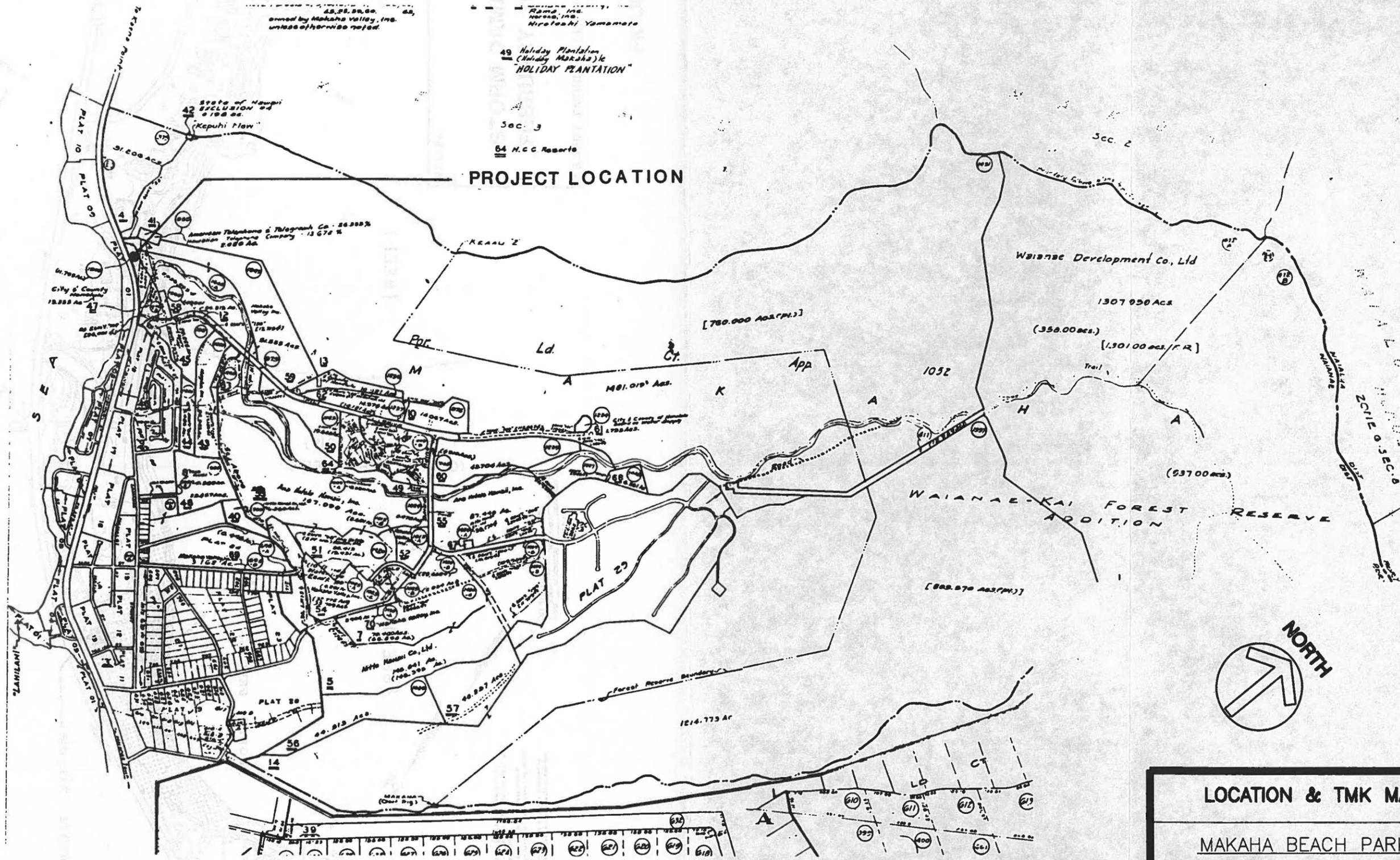
Total Cost of development of Makaha Beach Park

Approximate Construction Cost-\$2,810,000



LOCATION MAP

FIGURE 2



PROJECT LOCATION

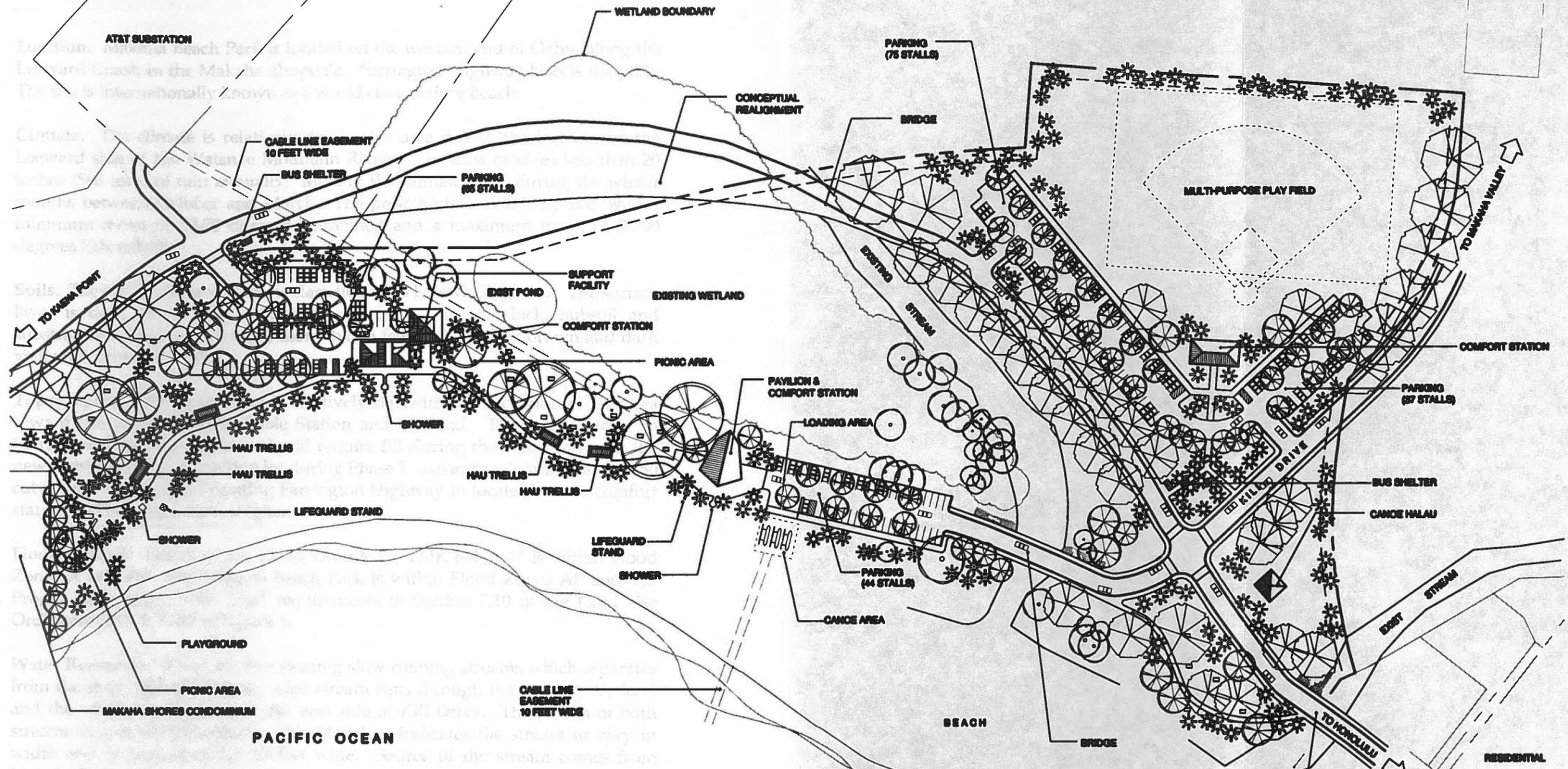
LOCATION & TMK MAP

MAKAHA BEACH PARK

TMK: 8-4-01: 12 AND 8-4-02: 45, 47 & 59

FIGURE 3

SCALE: NTS



CONCEPTUAL HIGHWAY REALIGNMENT STUDY MAKAHA BEACH PARK

DEPARTMENT OF PARKS & RECREATION
CITY & COUNTY OF HONOLULU

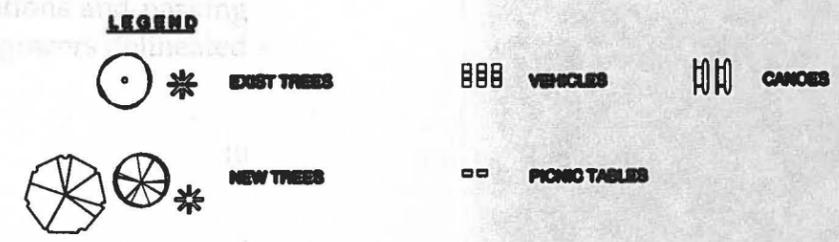
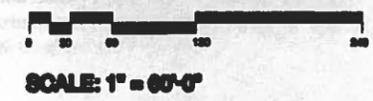


FIGURE 5

Location. Makaha Beach Park is located on the western end of Oahu, along the Leeward Coast, in the Makaha ahupua'a. Farrington Highway bisects the park. The site is internationally known as a world class surfing beach.

Climate. The climate is relatively dry in this area due to the location on the Leeward side of the Waianae Mountain Range. The area receives less than 20 inches (508 mm) of rain annually. Most of the rainfall occur during the winter months between October and March. The project site is relatively hot, with a minimum mean of 60-70 degrees Fahrenheit and a maximum mean of 80-90 degrees Fahrenheit.

Soils. The soil at the project site is classified as a Haleiwa Silty Clay. The surface layer is dark brown Silty clay approximately 17 inches thick. Subsoil and substratum extend to a depth of more than 5 feet and are dark brown and dark yellowish brown Silty clay.

Topography. The topography is relatively flat with the exception of the area toward the AT&T Makaha Cable Station and Wetland. The area adjacent to Farrington Highway is low and will require fill during the construction of the new comfort station & parking lot during Phase 1. An approximate area of 8,750 cubic yrds will be filled fronting Farrington Highway to locate the new comfort station and parking lot on a higher elevation.

Flood Hazard. Based on the Flood Zone Map, TMK 8-4-2: 47 is within Flood Zones A and AE and Makaha Beach Park is within Flood Zones AE and VE. Project will comply with flood requirements of Section 7.10 of the Land Use Ordinance (LUO) Refer to Figure 6.

Water Resources. There are two existing slow running streams which separates from the main Makaha Stream. One stream runs through the existing Wetland and the other runs adjacent to the east side of Kili Drive. The mouth of both streams end at Makaha Beach. Tax Map Key indicates the stream to vary in width and is approximately 10 feet wide. Source of the stream comes from Makaha Valley.

Wetland. Wetland is located within the park. A topography survey plan was submitted to the U.S. Army Corps of Engineers for review. The proposed project for Phase 1 and 2 will not affect this area since the comfort stations and parking lots will not encroach into the Wetland. U.S. Army Corps of Engineers delineated the area considered wetland.

The north end of the wetland has a large pool of open water. The near circular shaped of the pool suggests that the pool is man-made. The U.S. Fish and Wild Life Services National Wetland Inventory maps designate this pool as an excavated palustrine open water habitat.

During construction, Wetlands will be protected by complying with provisions of Hawaii Chapter 11-60.1, "Air Pollution Control", Section 11-60.1-33 on Fugitive Dust.

Flora & Fauna. The wetland area includes Batis maritima, Cynodon dactylon var. maritimus, Pennisetum setosum (or Cenchrus ciliaris), Prosopis pallida (Kiawe), Pluchea symphytifolia, P. indica, Solanum nigrum and Amaranthus viridis. Other trees existing in the park are Cocos nucifera (coconut tree), Hibiscus tiliaceus (Hau), Terminalia catappa (False Kamani) and Pandanus Odoratissimus (Pandanus).

Wild life in the wetland and surrounding areas include the blackcrowned night heron (Nycticorax nycticorax hoactli), cattle egret (Bubulcus ibis), Pacific golden plover (Pluvalis dominica fulva), mynah (Acridotheres tristis), house sparrow (Passer domesticus), barred dove (Geopelia striata striata), mockingbird (Mimus polyglottos), American cardinal (Cardinalis cardinalis), Brazilian cardinal (Paroaria coronata), Japanese white-eye (Zosterops japonica japonica) and Shama trush (Copsychus malabaricus). The standing pools contained mosquito fish (Gambusia affinis) and Sarotherodon mossambica.

Two endangered Hawaiian stilts (Himantopus mexicanus knudseni) were observed by service biologists on July 25, 1997 near the existing pond. Since construction of the comfort station is not within the area of the pond and Wetland, that area will not be affected. During construction, Wetland will be protected by complying with dust control guidelines.

Cultural Features. It is highly unlikely that significant historic sites are present in the project area. If the construction work encounters any historical artifacts or burial remains, the work shall be halted and the contractor shall notify the Department of Land and Natural Resources Historical Preservation Division.

There are two heiaus located in Waianae but are not within the location of the project site. Kaneaki Heiau is located approximately 2.3 miles (3.7 km) inland of the project site. The other major heiau of the region is Ukanepo Heiau located on the west side of Makua Valley, approximately 4.3 miles (6.9 km) away. Refer to Figures 7 and 8 for location of Kaneaki Heiau and Ukanipo Heiau.

A prominent stone known as Pohaku O Kane which was said to be used by cannibals, robbers and murderers to spot their victims in Hawaiian History , is located outside of the park boundaries.

Marine Features. Hawaii has four primary wave types, the northeast tradewind waves, south swell, Kona storm waves and North Pacific swell. The North Pacific swell occurs between October and March and is produced by severe winter storms in the Aleutian area and the mid-latitude low pressure areas. Through refraction and diffraction, any north swell approaching Oahu from the west of north will produce surf at Makaha. The north swell waves with periods of 10 to 16 seconds and heights of 5 to 15 feet, break on the reef at Kepuhi Point to the north of Makaha sand channel. South swells, generated by southern hemisphere storms are most prevalent between April and October and are long, low waves and produces moderate surf at both the north and south ends of Makaha Beach. The long, low waves approach from the southeast to the southwest with periods of 12 to 20 seconds with deep water heights of 1 to 6 feet. Kona storms generated by intense winds with locate fronts or low pressure systems generated waves which have periods ranging from 6 to 10 seconds and heights up to 25 feet. These waves generally approach from the southwest.

Makaha appears to have a yearly cycle of longshore and transport with sand moving from the north end of the beach toward the south during the winter periods of northwest swell and returning to the north end during the summer periods of south swell, possibly with little change in total sand volume. (Figure 9).

The intertidal habitat is primarily confined to a narrow raised bench along the western edge of the area. The bench supports a variety of algae including palahalaha (Ulva fasciata), hulu'ilio (Giffordia breviarticulata), Padina japonica, Ralfsia pangoensis, kala (Sargasuum echinocarpum), Acanthophora spicifera and Galaxaura fastigiata. The mollusk, pipipi (Nerita picea) and the rock crab, "a'ama" (Grapsus tenuicrustatus) were also identified.

Offshore benthic habitats and fishery resources include the corals, Porites lobata, Pocillopora meandrina, Pavona varians, Montipora ssp.: the algae, Halimeda opuntia, Padina sp., and approximately 64 fishes including (Myripistis marginatus), aweoaweo (Priacanthus spp.) and blueline snapper (Lutjanus rasmira). The Hawaiian humpback whale and the green sea turtle are also spotted offshore.

Public Facilities. There are water and electrical utilities located within the adjacent area which serves the existing temporary restroom facility. Overhead

utility poles are located along Farrington Highway on across the beach park. The new comfort station and parking lot will be serviced by these existing utilities.

According to Department of Planning City & County of Honolulu, the Waianae Development Plan Public Facilities shows a symbol for publicly funded sewers system (Makaha Beach Trunk Sewer) within six years. This sewer system is along Farrington Highway which bisects the subject site.

Land Use Approvals. The proposed project is zoned P-2 and also in partial A-1 zone. (Figure 10).

Special Management Area. The project site is within the Special Management Area (SMA). (Figure 11).

State Land Use Map. The project site is zoned Urban by the State Land Use Map. (Figure 12).

Park Use and Activities. Makaha Beach Park is a very popular beach for water related recreation such as swimming, diving boogie boarding, body surfing, sunbathing, fishing (shore casting and netting), boating, canoe racing and big wave surfing. Several surf meets and canoe club events are held annually at Makaha Beach Park. Some surf meets have attracted national television coverage. It is also known to tourist for its natural beauty, pristine beach, clear waters and rural setting.

A small picnic area with a play structure is located at the north end of the park. The north end of the beach is the safest area for young children to swim.

Beach attendance varies throughout the year, with December being the slowest month (1996-approximately 14,000 visitors) and February the busiest month (1996-approximately 51,500 visitors).

Roads and Parking. Farrington Highway provides the only main access route to the west end of Oahu. It is a two-lane State Highway with a 22 feet pavement width, a 80 foot wide right-of-way and a posted speed limit of 35 mph through the park.

Traffic volumes are heaviest on the weekends and holidays and are increased during the peak surfing season running from January to June.

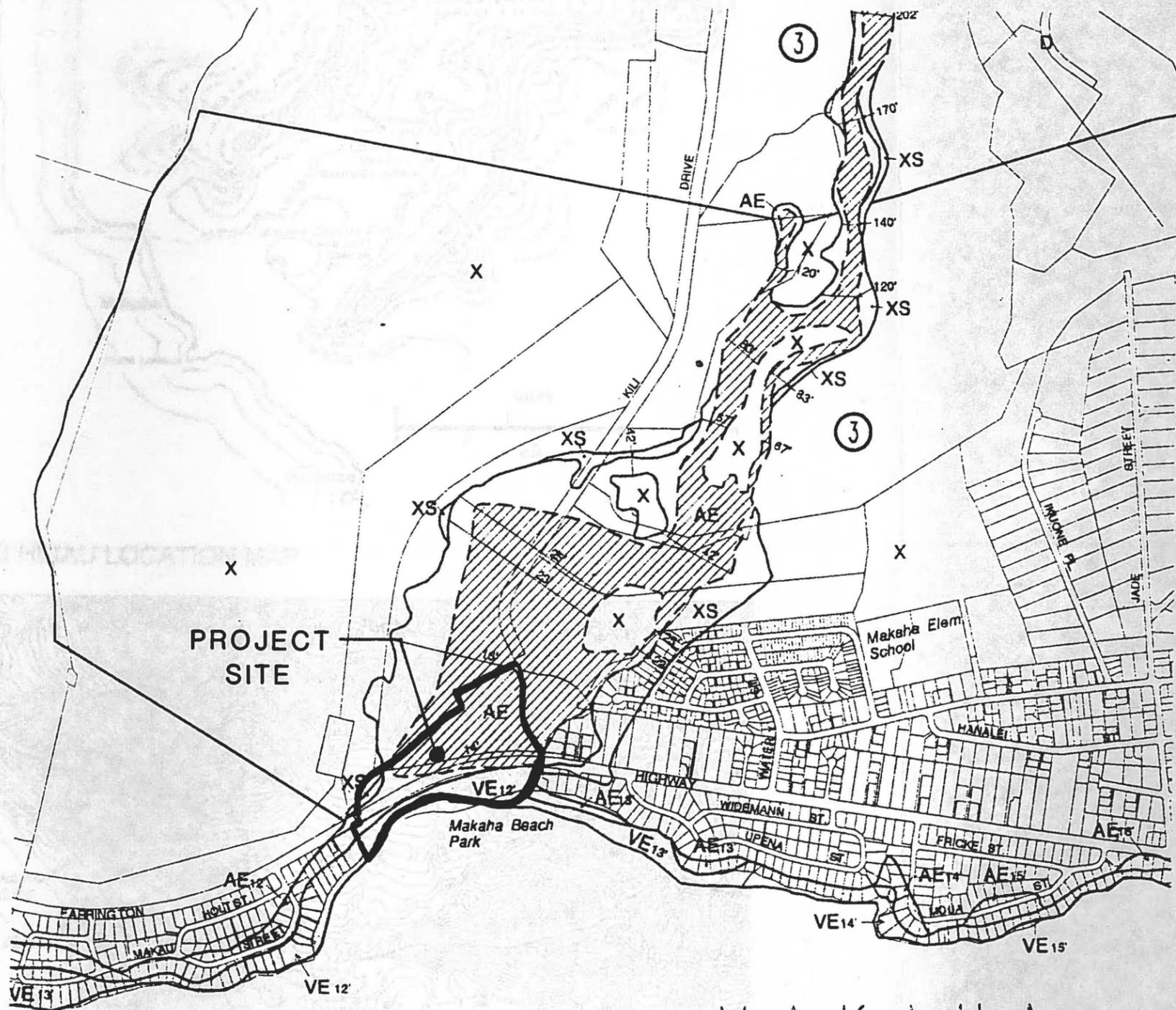
Crosswalks and bus stops are sporadically located along Farrington Highway. Crosswalks are proposed at Kili Drive and at the entrance of Phase 1 parking lot. An existing Honolulu bound bus stop is located at the south end of the park. A Kaena Point bound bus stop is proposed at the Phase 1 parking lot entrance.

Currently, parking by beachgoers normally occurs along the highway frontage of Makaha Beach and, when conditions are crowded, occurs on the mauka side of Farrington Highway.

On the weekends and during the peak surfing conditions, the highway frontage of Makaha Beach is typically filled with vehicles. This often creates a hazardous condition when vehicles back up into Farrington Highway. On a typical crowded day, it is estimated as much as 70 vehicles park in the frontage area. The new parking areas is intended to alleviate the chaotic situation fronting the beach. The new parking lots will have a single ingress/egress control point resulting in less hazardous conditions and less traffic disruptions on the highway.

Summary. The Master Plan was formulated from ideas, comments and recommendations from the community and the Makaha Beach Park Advisory Committee. It represents the most desirable park layout in terms of facilities and uses. The Master Plan expands and enhances recreational opportunities for both residents and visitors, minimizes destruction of facilities due to natural causes and protects the existing wetlands.





LEGEND

SPECIAL FLOOD HAZARD AREAS INUNDATED BY 100-YEAR FLOOD

- ZONE A NO BASE FLOOD ELEVATIONS DETERMINED.
- ZONE AE BASE FLOOD ELEVATIONS DETERMINED.
- ZONE AH FLOOD DEPTHS OF 1 TO 3 FEET (USUALLY AREAS OF PONDING); BASE FLOOD ELEVATIONS DETERMINED.
- ZONE AO FLOOD DEPTHS 1 TO 3 FEET (USUALLY SHEET FLOW ON SLOPING TERRAIN); AVERAGE DEPTHS DETERMINED. FOR AREAS OF ALLUVIAL FAN FLOODING VELOCITIES ALSO DETERMINED.
- ZONE A99 TO BE PROTECTED FROM 100 YEAR FLOOD BY FEDERAL FLOOD PROTECTION SYSTEM UNDER CONSTRUCTION; NO BASE ELEVATION DETERMINED.
- ZONE V COASTAL FLOOD WITH VELOCITY HAZARD (WAVE FEDERAL FLOOD PROTECTION SYSTEM UNDER CONSTRUCTION; NO BASE ELEVATION DETERMINED.
- ZONE VE COASTAL FLOOD WITH VELOCITY HAZARD (WAVE ACTION); BASE FLOOD ELEVATIONS DETERMINED.

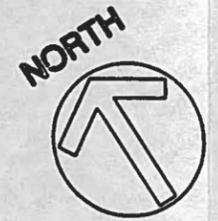
FLOODWAY AREAS IN ZONE AE

OTHER FLOOD AREAS

- ZONE X AREAS OF 500 YEAR FLOOD; AREAS OF 100-YEAR FLOOD WITH AVERAGE DEPTHS OF LESS THAN 1 FOOT OR WITH DRAINAGE AREAS LESS THAN 1 SQUARE MILE; AND AREAS PROTECTED BY LEVEES FROM 100-YEAR FLOOD.

OTHER AREAS

- ZONE X AREAS DETERMINED TO BE OUTSIDE 500-YEAR FLOOD PLAIN.
- ZONE D AREAS IN WHICH FLOOD HAZARDS ARE UNDETERMINED.



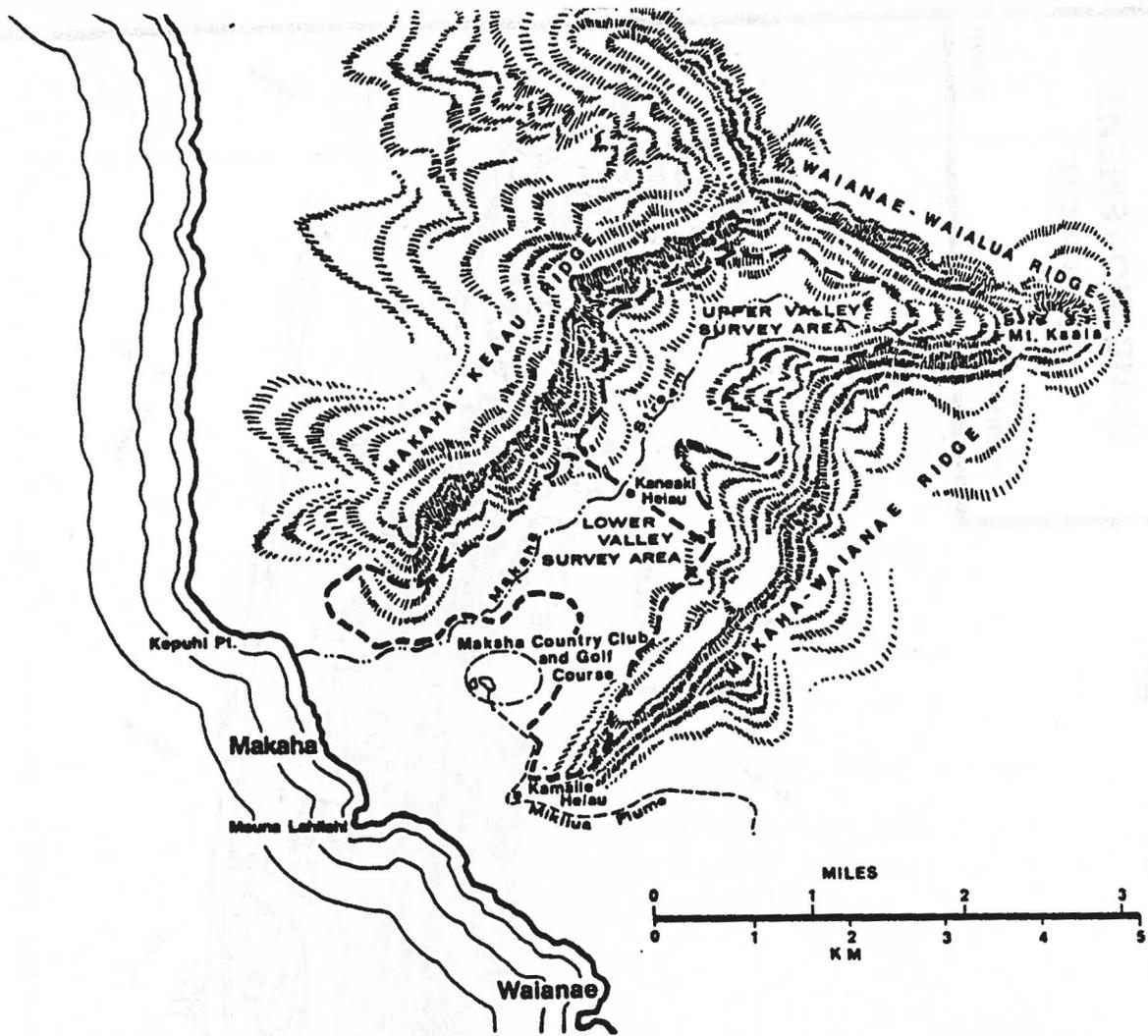
FLOOD ZONE MAP

MAKAHA BEACH PARK

TMK: 8-4-01: 12 AND 8-4-02: 45, 47 & 59

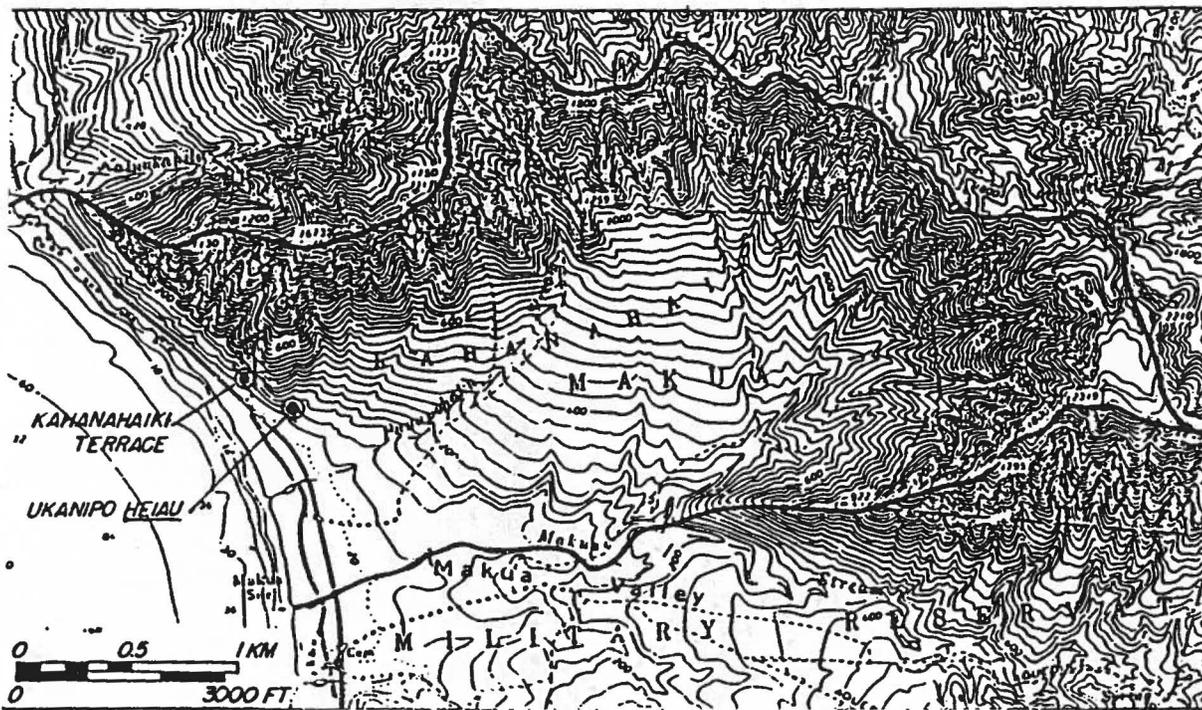
FIGURE 6

SCALE: 1" = 1000'



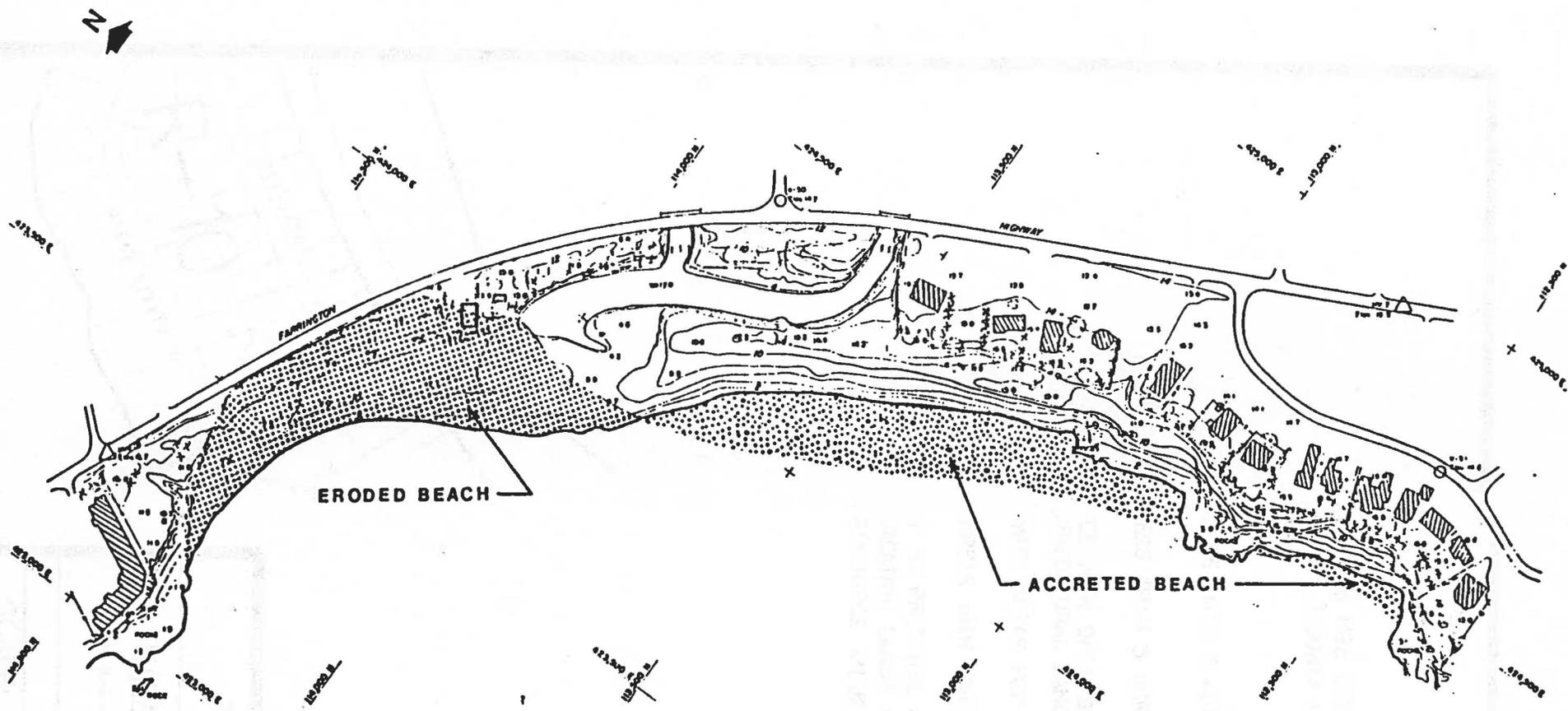
KANEAKI HEIAU LOCATION MAP

FIGURE 7



UKANIPO HEIAU LOCATION MAP

FIGURE 8



LEGEND:

March 1979
Shoreline

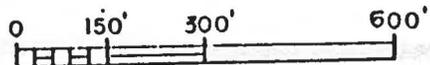
March 1983

-  Eroded Beach
-  Accreted Beach

NOTES:

- 1 Compiled by photogrammetric methods from aerial photography taken March 13, 1979 at 2400' A.M.S.L.
- 2 Dashed contour map by subcontractor
- 3 Elevation based on Mean Lower Low Water (MLLW)
- 4 Photo map for this sheet was prepared by direct photo enlargement, scale is approximate

Contour Interval: 2'
Origin of Coordinates: N.P.C.S.



SCALE: 1" = 300'

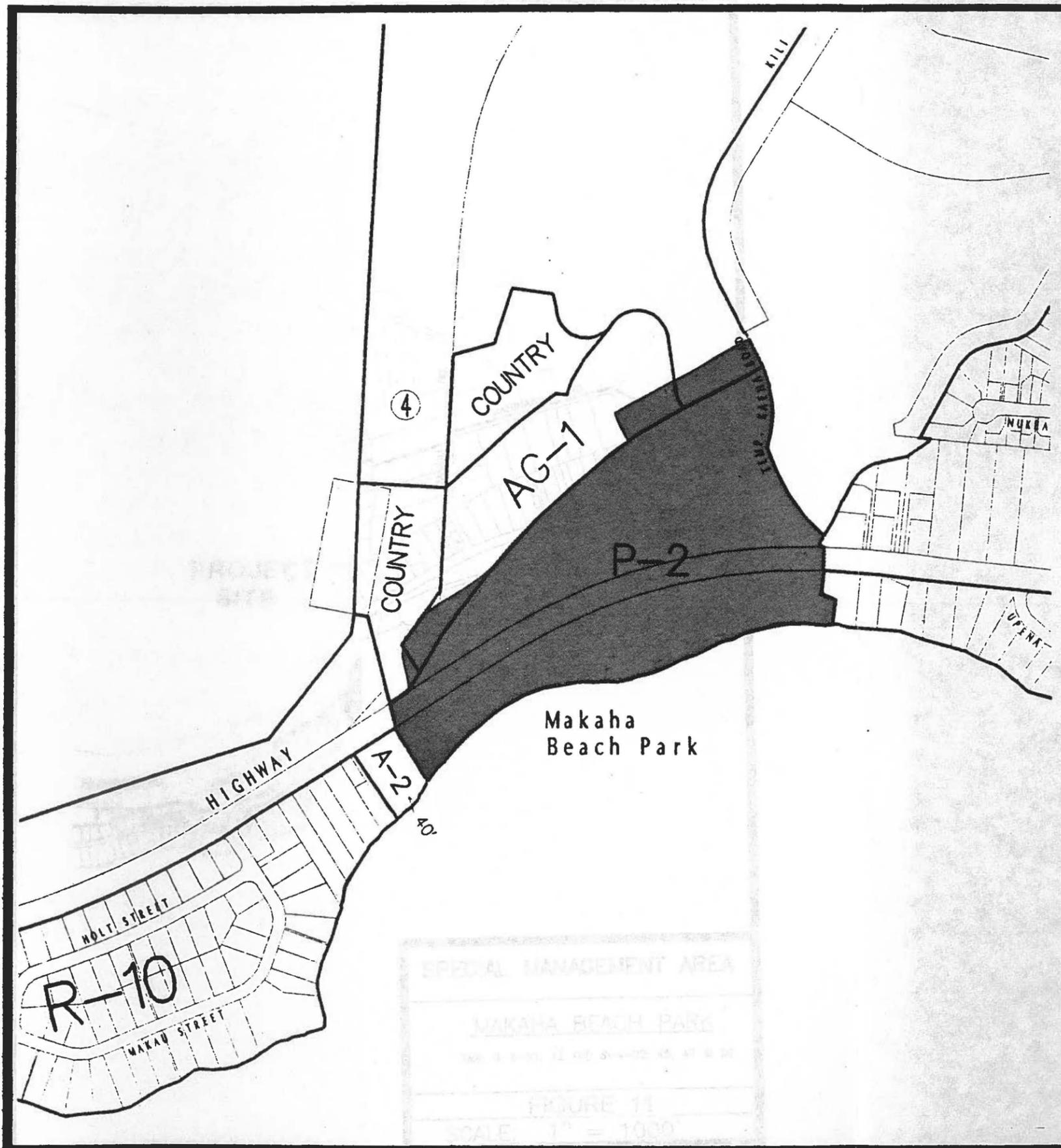
MAKAHA BEACH

HAWAII

**SEASONAL
SAND MOVEMENT**

U.S. ARMY ENGINEER DISTRICT, HONOLULU

FIGURE 9



LEGEND

THE FOLLOWING IS A SUMMARY FROM LAND USE ORDINANCE
DEPARTMENT OF LAND UTILIZATION, CITY & COUNTY OF HONOLULU
AUGUST 1993

- AG-1 AGRICULTURAL LAND MORE THAN 5 ACRES IN SIZE
- AG-2 AGRICULTURAL LAND LESS THAN 5 ACRES IN SIZE
- COUNTRY AGRICULTURAL ACTIVITIES WITH OPEN SPACE AND RURAL QUALITY OF AGRICULTURAL LANDS IS DESIRED
- R-5 RESIDENTIAL DISTRICT WITH AREAS FOR URBAN DEVELOPMENT
- R-10 RESIDENTIAL DISTRICT AREAS WITH LARGE DEVELOPMENTS
- P-2 PRESERVATION DISTRICT TO PRESERVE AND MANAGE MAJOR OPEN SPACE AND RECREATION LANDS AND LANDS OF SCENIC AND OTHER NATURAL RESOURCE VALUE

SPECIAL MANAGEMENT AREA
MAKAHA BEACH PARK
FIGURE 11
SCALE: 1" = 1000'



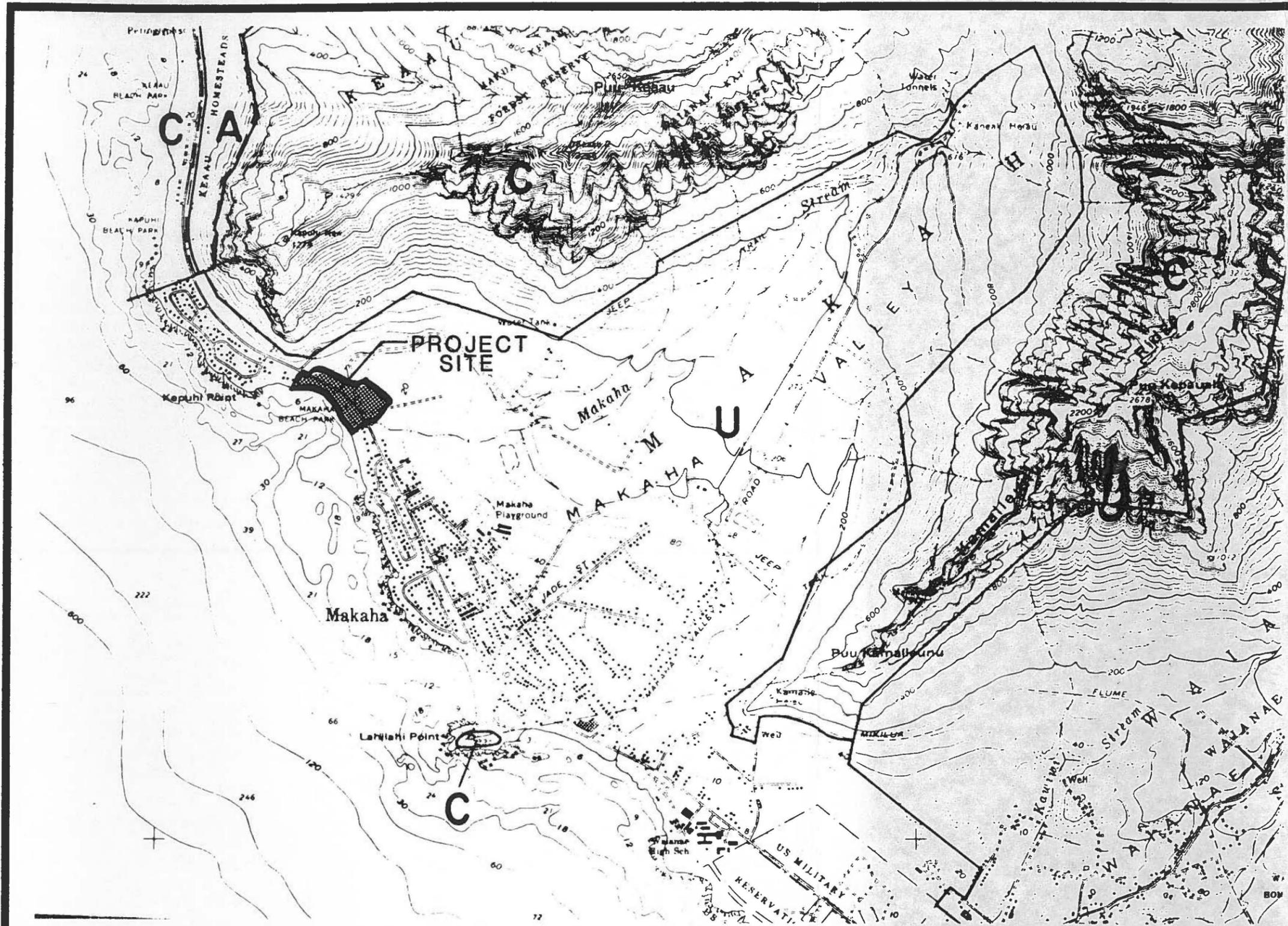
ZONING MAP

MAKAHA BEACH PARK

TMK: 8-4-01: 12 AND 8-4-02: 45, 47 & 59

FIGURE 10

SCALE: 1" = 400'



STATE LAND USE MAP

LEGEND

A AGRICULTURE
 C CONSERVATION
 U URBAN

FIGURE 12

SCALE: 1" = 2000'