Ms. Letitia N. Uyehara, Director  
Office of Environmental Quality Control  
550 Halekauwila Street, Room 301  
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Based on the recommendation of the Office of Environmental Quality Control, I am pleased to accept the revised environmental impact statement for the Kaneohe-Kailua wastewater facilities as a satisfactory fulfillment of the requirements of Chapter 343, Hawaii Revised Statutes.

This environmental impact statement will be a useful tool in deciding whether this project should be allowed to proceed. My acceptance of the statement is an affirmation of its adequacy under applicable laws and does not constitute an endorsement of the proposal.

When the decision is made regarding this action, I expect the proposing agency to carefully weigh the societal benefits against the environmental impact which will likely occur. This impact is adequately described in the statement, and, together with the comments made by reviewers, provides a useful analysis of alternatives to the proposed action.

With warm personal regards, I remain,

Yours very truly,

George R. Ariyoshi
Revised
Environmental Impact Statement
for
Kaneohe-Kailua Wastewater Facilities

March 1984

GMP
associates, inc.
Revised
Environmental Impact Statement
for
Kaneohe-Kailua Wastewater Facilities

TAX MAP KEYS: 4-2, 4-3, 4-4, 4-5 and part of 4-6
This document is prepared pursuant to Chapter 343, HRS.

Proposing Agency: DEPARTMENT of PUBLIC WORKS
CITY and COUNTY of HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

Accepting Authority: GOVERNOR, STATE of HAWAII
and DEPARTMENT of LAND UTILIZATION
CITY and COUNTY of HONOLULU

Responsible Official: MICHAEL J. CHUN
Director and Chief Engineer

Date: March 8, 1984

Prepared for:
DIVISION of WASTEWATER MANAGEMENT
CITY and COUNTY of HONOLULU

By:
GMP
associates, Inc.
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SUMMARY

This document addresses facilities actions being proposed in the Kaneohe-Kailua Wastewater Facilities Plan. These actions will improve cost effectiveness and/or environmental features of the Kaneohe-Kailua-Kahaluu wastewater management system for the planning period 1985 to year 2005. During these 20 years, a moderate population increase from 89,000 to 100,000 is projected. Meanwhile, the two major wastewater treatment plants at Kaneohe and Kailua are already 20 years old and have several shortcomings which must be corrected.

Six categories of alternatives are evaluated, namely:

(1) Centralization/Decentralization Alternatives
(2) Primary/Secondary Treatment Alternatives
(3) Sludge Disposal Alternatives
(4) Flow Reduction Alternatives
(5) Odor Control Alternatives
(6) Energy Conservation Alternatives

Present environments, as well as environmental impacts stemming from proposed actions, are described. The following facilities actions are proposed:

(1) Facilities at the Kailua Sewage Treatment Plant will be upgraded to provide centralized treatment for the entire planning area.

(2) Ahuimanu Sewage Treatment Plant will be reduced to a pretreatment and pumping facility.
(3) Treatment plants at Pohakupu, Kukanono, Maunawili Park and Maunawili Estates will be closed. Sewage will be transported to the Kailua Sewage Treatment Plant collection system via a new sewer interceptor and new sewage pump stations.

(4) Kaneohe sewage treatment plant will be reduced to a pretreatment and pumping facility.

(5) Collection systems within the area will be expanded to accommodate about 12,000 persons in areas which now use cesspools for sewage disposal.

There will be a few minor short-term, local adverse impacts resulting from construction activities as the above proposed actions are implemented. Favorable water quality impacts and odor reduction will result from the closure of Ahuimanu STP and the four interim treatment plants near Kawaihui Marsh. Substantial savings in operational costs and a reduction in odor problems near the Kaneohe STP will result from reducing Kaneohe STP to a pretreatment and pumping facility. A major improvement will result from the positive strategy for odor control at Kailua STP.
1 Introduction and Objectives
CHAPTER 1
INTRODUCTION AND OBJECTIVES

1.1 INTRODUCTION

1.1.1 Objective of Facilities Plan & EIS

The objective of the Kaneohe-Kailua Facilities Plan is to present alternatives and recommendations for wastewater facilities which are cost effective and environmentally acceptable.

The entire Kaneohe-Kailua-Kahaluu Wastewater Management "System" includes the following components:

(1) Collection Facilities - Sewer Districts and Sub-districts

(2) Major Sewer Lines, including force mains and pump stations

(3) Treatment Facilities & Processes

(4) Mokapu Outfall

Primary emphasis in the Kaneohe-Kailua Wastewater Facilities Plan is on treatment facilities and processes.

Centralized treatment at Kailua Sewage Treatment Plant (STP) has been recommended in the Facilities Plan. Accordingly, the primary objective of this EIS is to present environmental impacts of centralized treatment alternatives at the Kailua STP. The Facilities Plan and this EIS also include the broader aspects of the entire Wastewater Management System in some detail.

1-1
The basic format of this EIS follows Environmental Protection Agency (EPA) guidelines. Minor modifications are included to adapt to State of Hawaii EIS regulations. This document also serves as an Environmental Assessment in the Federal environmental review process.

1.1.2 Scope of Study for the Facilities Plan

The Scope of Study for the Kaneohe-Kailua wastewater Facilities Plan requires review of optimal location(s) and processes for wastewater collection and treatment for the planning period 1985 to 2005. Recommendations in the Plan are based on cost effectiveness, pollution abatement efficiency, operational simplicity and flexibility, odor abatement efficiency, conservation of energy and pertinent environmental considerations.

A prime task is to determine whether decentralized, partially centralized, or centralized treatment will be most economically as well as environmentally and operationally sound. The original Scope of Study, prepared in 1980, required that two determinations be made for two cases of effluent quality, namely:

(1) Present effluent quality requirements of 30 milligrams per liter (mg/l) for both five day Biochemical Oxygen Demand (BOD₅) and Suspended Solids (SS) as stated in the National Pollutant Discharge Elimination System (NPDES) Permits issued by the State Department of Health (DOH) in 1977 for both Kaneohe STP and Kailua STP.
Revised effluent quality requirements for a 30 day average concentration as requested in a waiver proposal to EPA dated September 7, 1979.

These requirements, using the trickling filter as a treatment method, were proposed as follows:

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<th>Wastewater Parameter</th>
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<td>BOD₅ (mg/l)</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>SS (mg/l)</td>
<td>45</td>
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Secondary treatment was a general requirement for all STPs prior to 1982. Subsequently, an amendment to the Clean Water Act permitted municipalities to request a waiver of the requirement for secondary treatment if it could be shown that no adverse environmental impacts in water quality would result from the lesser degree of treatment. The City intends to reapply to EPA during 1983 for a waiver or the secondary treatment requirements to allow primary effluent to be discharged through Mokapu Outfall.

It is important to note that federal law presently limits a waiver to five years. If there are no congressional amendments to the Clean water Act that extend the period, upgrading to secondary treatment will be required if another waiver is not granted.

Recent legislation provides revised definitions of secondary treatment that now qualify biological trickling filters as a secondary treatment process. Accordingly, there is no legal requirement to consider activated sludge or other
alternative secondary treatment processes at Kailua STP. Review of such other alternatives may be, however, desirable as part of the planning process.

It was prudent to amend the Facilities Plan study scope, in view of the above, to examine two revised treatment strategies at Kailua STP. It is expected that EPA will approve one of these strategies. These revised treatment strategies are:

(1) Strategy A

Use primary treatment only. This strategy infers that trickling filters will not be required. Future limits for Mokapu Outfall effluents will be established by EPA after submission of the City's next request for waiver. It is assumed that both BOD$_5$ and SS will be somewhat over 100 mg/l.

(2) Strategy B

Use secondary treatment. This strategy infers that trickling filters will be included in the treatment process with effluent limits in the range of 45 to 55 mg/l for BOD$_5$ and SS.
2 Wastewater Management Overview
CHAPTER 2
WASTEWATER MANAGEMENT OVERVIEW

2.1 FACILITIES HIGHLIGHTS

Locations of the Kaneohe-Kailua wastewater service areas are shown in Figure 1. The Kaneohe service area will, for the future purposes of wastewater management, include four sub-areas of the Kahaluu area.

Figure 2 shows major wastewater facilities in the service areas which are either in existence or for which decisions have been made. The present and proposed sewered areas in the Kaneohe-Kailua service area are illustrated in Figure 3. Figures 4 and 5 are aerial views of the Kaneohe STP and Kailua STP showing relationships to the surrounding area. The project which will evolve from the Facilities Plan involves centralized treatment facilities at Kailua STP. Details are presented in Chapter 6.

2.1.1 Use of Public Funds and/or Lands

Major wastewater facilities (treatment plants and collection systems) in the service areas of the Facilities Plan, are government operated and are on land owned or controlled by the City. Public funds, administered by the City, will be used for any facilities improvements, operations and maintenance.
Currently, federal funds have generally been available for 75 percent of capital improvement costs of wastewater treatment facilities. The state has provided 10 percent of the funding; the City has provided 15 percent. The funding participation will change after October 1, 1984. The anticipated breakdown is: Federal - 55%, State - 18%, City - 27%.\(^1\)

2.1.2 Historic Perspective

A decade ago, the windward suburban communities were growing rapidly and were continuing to change in character from rural to suburban. Much of the Kailua, Kaneohe and Kahaluu service areas had cesspools and were unsewered. These communities, along with the rest of Oahu, were expressing serious concern about coastal water quality, particularly in Kaneohe Bay. Wastewater treatment plants had been built in Kailua (1964), Kaneohe (1962) and Ahuimanu (1967). These plants received average influent flows of about 3, 3 and 0.5 million gallons per day (mgd) in the early 1970's. Treated effluents were discharged from the Kapoho Point Outfall into the northwest edge of Kailua Bay, from the Kaneohe Outfall into South Kaneohe Bay, and from the Ahuimanu STP into Ahuimanu Stream. Residential areas in the southwest section of the Kailua service area were then, as now, served by four interim wastewater treatment plants whose combined capacity was about 0.5 mgd. Effluent from these four

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\(^1\) Verbal communication with Wastewater Treatment Works Construction Grants Branch, State Department of Health. September 23, 1983.
plants, i.e., Pohakupu, Kukanono, Maunawili Park and Maunawili Estates, then, as now, flowed to tributaries of Kawainui Marsh or directly into the marsh.

No major facility changes were made at any of the treatment plants during the 1970's. Average flows at the Kaneohe and Kailua treatment plants had, by 1980, increased to about 4 and 5 mgd, respectively.

Windward suburban areas, like other areas of Oahu, experienced a growth of about 20 percent during the decade of the 1970's. Sewer service replaced cesspool service in most areas. The old Kaneohe Bay Outfall and the old Kapoho Point Outfall were discontinued and replaced by the new (1977) Mokapu Ocean Outfall. This was a major step in the cleanup of Kaneohe Bay. A new (1977) force main now carries effluent from the Kaneohe and Kailua treatment plants to the ocean outfall.

The Kaneohe Marine Corps Air Station (KMCAS) Wastewater Treatment Plant, built in 1947, also lies geographically within the Kaneohe-Kailua Sewerage District but is under military jurisdiction. The KMCAS plant was upgraded in 1973 from primary to secondary treatment. Average daily flows during the 1970's were in the range of 1.2 to 1.4 mgd. This same flow range is projected to the year 2005. About 0.2 mgd is used for irrigation of the golf course and for landscaping near the station entrance and around one barracks. The remaining effluent is pumped to the effluent pump station at Kailua STP and is then discharged through the Mokapu Ocean Outfall. All effluent was discharged into a Kaneohe Bay Outfall until completion of the Mokapu Ocean Outfall.
As part of planned system improvements, it has been determined that the Ahuimanu STP will close in the mid 1980's. Wastewater collected within and near the Ahuimanu tributary sewer area from four sub-areas of Kahaluu will be directed to a pump station at the present STP location and then through a new force main to the Kaneohe STP. The four small interim treatment plants near Kawainui Marsh, in addition, will cease operations in the mid 1980's. Wastewater collected in that area will be directed to the Kailua STP.

Construction of the Ahuimanu Sewage Pump Station and Force Main began during 1983. Specific wastewater collection system details in five improvement districts of Kahaluu were presented in the 1980 Facility Plan and companion Environmental Impact Statement for the Kahaluu Wastewater Treatment and Disposal System.

It is expected that centralized facilities recommended for Kailua STP in the Facilities Plan will be constructed in the mid 1980's.
3 Present Environment
CHAPTER 3
PRESENT ENVIRONMENT

3.1 COMMUNITY LOCATIONS

Community locations for the windward Oahu suburban areas of Kaneohe, Kailua, and Kahalu‘u are shown in Figure 1 (page 2-2).

3.1.1 Service Areas

Figure 6 is an aerial view showing the general character of the service areas. Single-family residential areas predominate with substantial open space. A few acres are devoted to commercial-industrial use.

3.1.2 Communities Within Service Areas

The Kailua service area includes the following neighborhoods:

(1) Kailua proper
    (between Kawainui Marsh and Kailua Bay)
(2) Lanikai
(3) Enchanted Lakes (around Kaelepu‘u Pond)
(4) Keolu Hills (south of Kaelepu‘u Pond)
(5) Pohakupu
(6) Maunawili

3 - 1
The Kaneohe service area includes the following:

(1) Kaneohe proper
(2) Kokokani
(3) Heeia

The four sub-areas of Kanaluu which will, in the future, be part of Kaneohe service area are:

(1) Ahuimanu
(2) Kahaluu East
(3) Kahaluu North
(4) Kahaluu South

3.1.3 Topography

Overall topography varies considerably. There is precipitous, almost vertical, terrain at the Koolau crest which forms the southwestern boundary of the planning area. This changes to an almost flat shoreline area along most of the northeastern boundary.

The southern portion of the planning area has some steep to moderately steep slopes. Substantially flat areas predominate around Kaelepulu Pond and Kawainui Marsh. Steep to moderately steep slopes separate the Kailua service area from the Kaneohe service area. Moderate slopes of less than ten percent prevail in much of the Kaneohe area.
3.1.4 Geology

The project is in an area of volcanic origin. The continuing processes of erosion, deposition, weathering and soil formulation have formed valleys and deposits of alluvial material. The Koolau rift zone, along the Koolau Range, is made up of a series of vertical, parallel dikes which store infiltrating rainfall and form a storage area for ground water supply. Coralline sand predominates at the surface along the Kailua Bay coastline for several thousand feet inland.

3.1.5 Climate

The planning area has a mild subtropical climate with strong northeast tradewinds about 75 percent of the time. Mean annual temperature is 75°F. The extremes constitute occasional temperatures in the upper fifties in January and February and a little over 90°F during August through October. Mean annual rainfall averages 50" along the coast and 150" along the crest of the Koolau Range. Heavy rains often occur during November through April with only about 30 percent of the annual rainfall occurring May through October.

3.1.6 Air Basin

The air basin of the Kaneohe-Kailua area has been designated as an attainment area under the Federal Clean Air Act.
The implication of this designation is that National ambient air quality standards are being maintained.

There have been odor problems for over a decade at the residential subdivision of Aikahi Gardens, across the road to the southwest of Kailua STP, about 500 feet from the trickling filters. Figure 5 shows the relationship of Kailua STP to adjacent residences.

The odors continue to be an occasional problem although they have been reduced over the past decade and daily chemical treatment, at considerable expense, is utilized to minimize odors.

There are currently no Federal or State ambient air quality standards for hydrogen sulfide \( \text{(H}_2\text{S}) \); a gas which is a principal component of STP odors. The State Department of Health is currently, however, proposing a state-wide ambient standard of 100 parts-per-billion. The threshold for detection of \( \text{H}_2\text{S} \) odors varies in the range of 5 to 130 parts-per-billion.

3.1.7 Community Type

The service areas are designated as "urban-fringe" in the 1977 General Plan of Honolulu as shown in Figure 7. The City's policy with respect to "urban fringe" is to "reduce, or at most maintain, the 1975 proportion of the Island's rural and urban fringe populations" during the period to year 2000.
3.1.8 **Major Economic Activities**

Kaneohe Marine Corps Air Station is the only large employer in the planning area. Although there are a number of jobs in the neighborhood commercial areas and minor institutions, the major locations of employment are on the leeward side of the Koolau range. The service areas are primarily "bedroom" communities.

Only one percent of land in the service area is devoted to industrial use, and about two percent to commercial uses.

3.1.9 **Housing Type and Mix**

Table 3.1 shows a breakdown of dwelling units in the service areas by type for 1975.

3.1.10 **Present Population**

Resident populations for Kailua, Kaneohe and Kahaluu were 41,291, 35,216, and 12,119, respectively, for a total of 88,626, based on 1980 census data. It is of interest that the 1980 military population of Kaneohe Marine Corps Air Station was 11,578. The breakdown of populations for sewered and non-sewered areas are shown in Table 10.1.
### TABLE 3.1
**DWELLING UNITS BY TYPE - 1975**

<table>
<thead>
<tr>
<th>Dwelling type</th>
<th>Kaneohe</th>
<th></th>
<th>Kailua</th>
<th></th>
<th>Kahaluu</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Units</td>
<td>%</td>
<td>Units</td>
<td>%</td>
<td>Units</td>
<td>%</td>
</tr>
<tr>
<td>Single-family</td>
<td>7,319</td>
<td>78.97</td>
<td>10,476</td>
<td>88.44</td>
<td>2,840</td>
<td>74.70</td>
</tr>
<tr>
<td>Low density</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>multifamily</td>
<td>481</td>
<td>5.19</td>
<td>208</td>
<td>1.76</td>
<td>839</td>
<td>22.10</td>
</tr>
<tr>
<td>High density</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>multifamily</td>
<td>1,468</td>
<td>15.84</td>
<td>1,161</td>
<td>9.80</td>
<td>121</td>
<td>3.20</td>
</tr>
<tr>
<td>Total</td>
<td>9,268</td>
<td>100.00</td>
<td>11,845</td>
<td>100.00</td>
<td>3,800</td>
<td>100.00</td>
</tr>
</tbody>
</table>

3.1.11 **Major Botanical Features**

Landscaping of residential areas is the predominant botanical feature in the Kaneohe and Kailua service areas. Natural vegetation at lower elevations includes pili grass, kiawe, haole koa, and finger grasses. There are, at higher elevations, guava, christmas berry, California grass, java plum and lantana.

Coconut trees, Bermuda grass, and a variety of grasses and weeds are features on and adjacent to the sites at the Kaneohe and Kailua STPs. The flora, at the present Kapaa landfill site used for sludge disposal and at the proposed Kalaheo Landfill site, includes haole koa, christmas berry, java plum, monkey pod, guinea grass, California grass, and napier grass.

3.1.12 **Important Fish and Wildlife**

Wild animal life within the Kaneohe and Kailua service areas includes the mongoose, rat, wild pig, and feral cats and dogs.

The coastal regions include natural habitats and feeding areas for many introduced exotic birds such as cardinals, linnets, sparrows, mynah birds, thrush, and doves. Native herons habituate and feed in the fish ponds of Molii, Kahaluu and Heeia. The Hawaiian Owl, Pueo, is generally found in the open grassland areas. The State of Hawaii considers this species as endangered on Oahu.
The marshy wetlands along the shoreline, near mouths of streams and fish ponds, are the natural habitat for endangered species of waterbirds.

Near the STPs and at Kawaihui Marsh near Kapaa Sanitary Landfill, there have been sightings of endangered waterbirds. Figure 8 shows bird habitat and feeding areas near major waste water facilities in the planning area. Endangered bird species include Hawaiian Stilt or Aeo (HIMANTOPUS HIMANTOPUS KNUDSENI), Hawaiian Coot or Alae Keokeo (FULICA AMERICANA ALAI), Hawaiian Gallinule or Alae Ula (GALLINULA CHLOROPUS SANDWICENSIS), and Hawaiian Duck or Koloa (ANAS WYVILLIANA). There are no legally defined critical habitats at or immediately adjacent to wastewater facilities. However, Nuupia Pond, near Kailua STP, is biologically significant to recovery plans for the Hawaiian stilt.

3.1.13 Wetlands

Figure 9 shows wetlands in the planning area. Note that the Army Corps of Engineers has recently designated a portion of the lower Maunawili Valley, immediately mauka of Kailua Road, as a wetland.

3.1.14 Wild and Scenic Rivers

There are no wild and scenic rivers in the planning area.

3.1.15 Environmentally Sensitive Areas

The wetlands (Figure 9) and the entire coastline and coastal waters are considered environmentally sensitive within
Figure 8
BIRD HABITAT AND FEEDING AREAS

Scale: Feet
NORTH
the planning area. These environmentally sensitive areas are all "Special Management Areas" (SMA) and, as such, are subject to special Coastal Zone Management (CZM) regulations under State statute administered by the City and County of Honolulu. The proposed projects are consistent with CZM requirements. Figure 10 shows SMA boundaries within the planning area. Note that Kaneohe STP is within an SMA and Kailua STP is adjacent to an SMA. Maunawili Park STP, Kukanono STP, and Pohakupu STP are also located within an SMA.

3.1.16 Ground Water Resources

There are no present or planned withdrawals of potable ground water within the inhabited portions although there is ground water underlying wastewater facilities in the planning area. As an added precaution against contamination of ground water, the Board of Water Supply has established a "no-pass" line for cesspools. Except for a few "grandfather" cases, cesspools are prohibited farther inland than this line which is shown in Figure 11.

3.1.17 Environmentally Significant Agricultural Lands

There are no such lands within the planning area.

3.1.18 Cultural Resources

Registered historical and archeological sites in the planning area are shown in Table 3.2. Kawainui Marsh is
Legend

--- Special Management Area

Source: Dept. of Land Utilization, City and County of Honolulu
Figure 11
LIMIT LINE FOR CESSPOOLS

Legend
- Areas where Cesspools exist, or have existed until recently
- "No Pass" Line
- Project Planning Area


Scale: Feet
<table>
<thead>
<tr>
<th>Site Description</th>
<th>Tax Map Key</th>
<th>Registered Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>319 Kahaluu Fishpond</td>
<td>4-7-11-1</td>
<td>N 3/14/73</td>
</tr>
<tr>
<td>327 Heeia Fishpond</td>
<td>4-6-5-1</td>
<td>N 1/17/73</td>
</tr>
<tr>
<td>329 Leleahina Heiau</td>
<td>4-6-14-5</td>
<td>N 3/20/73</td>
</tr>
<tr>
<td>354 Kawaewai Heiau</td>
<td>4-5-33-1</td>
<td>N 8/21/72</td>
</tr>
<tr>
<td>359 Puhukini Heiau</td>
<td>4-2-15-3</td>
<td>N 9/11/72</td>
</tr>
<tr>
<td>371 Ulu Po Heiau (near Pohakupu STP)</td>
<td>4-2-13-31</td>
<td>N 11/09/72</td>
</tr>
<tr>
<td>1017 Mokapu Sand Burials</td>
<td>4-4-8-1</td>
<td>N 11/15/72</td>
</tr>
<tr>
<td>1153 Kapapa Island Complex</td>
<td>4-4-8-4</td>
<td>N 8/21/72, S 1/29/81</td>
</tr>
<tr>
<td>1165 Kahaluu Taro Lo'i</td>
<td>4-7-51-2</td>
<td>N 3/14/73</td>
</tr>
</tbody>
</table>

1. **TMK**: Tax Map Key designation
2. **Registered status**: N = National, S = State

**SOURCE**: Historic Sites Section, Division of State Parks Outdoor Recreation and Historic Sites, Department of Land and Natural Resources, 1151 Punchbowl, Honolulu. March 1981.
eligible for inclusion in the National Register of Historic Places. Pahukini Heiau is located within the Kapaa Landfill site. Adequate measures have been taken by the City and County of Honolulu to preserve the Heiau site. No other historic/archeological sites are located within wastewater facilities property boundaries, but Ulo Po Heiau is located close to Pohakupu STP.

3.1.19 Flood-Prone Areas

Figure 12 shows that Kaneohe STP is within a flood-prone area at the mouth of Kawa Stream. Construction of wastewater facilities within flood prone areas should be avoided. When, however, it is unavoidable, every precaution should be taken during the design and construction to safeguard facilities against costly flood damage. Details of the safeguards will be addressed in the Step II and Step III phases.
Legend

Flood-Prone Area


[Map withlegend and labels such as "Existing Ahuimanu STP (to be terminated)" and "Existing Kaneohe STP"]
4 Present Facilities
CHAPTER 4
PRESENT FACILITIES

4.1 GENERAL DESCRIPTION

Figure 2 (page 2-3) depicts the location of major wastewater facilities in the Kaneohe-Kailua service areas. Design capacities, and 1979 and 1983 flows of the three largest treatment plants, Kailua STP, Kaneohe STP and Ahuimanu STP, are presented on Table 4.1. No data are available to determine how much of the above flows are from commercial/industrial sources; however, such flows are considered minor. A general description of wastewater collection, treatment, and disposal facilities and their conditions follows.

4.1.1 Kaneohe STP

4.1.1.1 Description

Kaneohe STP is a secondary treatment plant approximately 20 years old with a design capacity of 4.3 mgd as shown on Table 4.1. The last major expansion of the plant was in 1968. Figure 13 shows the site layout.

Treatment consists of degritting and mechanical screening of raw sewage followed by primary sedimentation using clarifiers, biological treatment using high-rate trickling filters, and secondary clarification and micro-screening.
<table>
<thead>
<tr>
<th>Metro Area</th>
<th>Design Average Daily Wastewater Flow (mgd)</th>
<th>Average 1979 Daily Wastewater Flow (mgd)</th>
<th>Average 1983 Daily Wastewater Flow (mgd)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kailua STP</td>
<td>7.0</td>
<td>4.9</td>
<td>5.1</td>
</tr>
<tr>
<td>Kaneohe STP</td>
<td>4.3</td>
<td>4.1</td>
<td>4.0</td>
</tr>
<tr>
<td>Ahuimanu STP</td>
<td>1.4</td>
<td>0.4</td>
<td>0.6</td>
</tr>
</tbody>
</table>

1 City and County of Honolulu Wastewater Management Division Annual Report
The removed solids are anaerobically digested, dewatered by sludge drying beds, or by a mobile centrifuge, and disposed of at the Kapaa Sanitary Landfill.

4.1.1.2 General Condition

Effluent BOD$_5$ and SS concentrations from Kaneohe STP were 43 and 36 mg/l, respectively during FY 1981 - 1982. The Kaneohe STP has not been achieving its effluent quality requirements of 30 mg/l BOD$_5$ and 30 mg/l SS in recent years. The problem stems primarily from the fact that the plant was not designed to produce effluent of this quality. Inability to directly control recycle flow rate to the trickling filters and the inadequacy of flow division between parallel wet stream processes compounds this problem. Additional problems at the STP include the inadequacy of the sand sludge drying beds in Kaneohe's wet climate; the excessive soil subsidence causes some piping and minor structural settlement and cracks. The majority of process equipment at Kaneohe STP is estimated to have ten years or less remaining useful life with the exception of the relatively new effluent pump station.

4.1.1.3 Kaneohe Collection System

The Kaneohe collection system covers a service area of 3,300 acres. The majority of the system has gravity flow and
consists of 65 miles of line. Seven sewage lift stations are operated and maintained by the City and County of Honolulu while three additional stations are maintained by private entities. Average age of the system is between 20 and 25 years. The infiltration/inflow analysis in Chapter 4 of the Kaneohe-Kailua Wastewater Facilities Plan gives some insight into the condition of the Kaneohe collection system.

Infiltration is defined as the intrusion of groundwater into the collection system. Groundwater enters the system through breaks or joint separations in collection lines which lie below the groundwater table. The magnitude of infiltration depends on both the condition of lines and joints and on the elevation of the groundwater table relative to the sewer pipe.

Inflow is the second way that extraneous water can enter a collection system. Strictly speaking, it represents that amount of water entering the collection system due to a specific rainfall. A simple example of inflow is the surface runoff entering a system through unsealed manhole covers.

Infiltration and inflow result in an increase in both capital and operational costs for a treatment plant. Often it is cost-effective to improve the collection system in order to minimize infiltration and inflow rather than to treat the entire load. The infiltration/inflow analysis for the Kaneohe collection system shows that infiltration is significant but not of such magnitude as to justify the expense of rehabilitation.
4.1.2 Kailua STP

4.1.2.1 Description

Kailua STP is a secondary treatment plant about 15 years old with a design capacity of 7 mgd, and a present flow of about 5 mgd. Figure 14 shows the site layout.

Treatment consists of mechanical screening of raw sewage followed by primary sedimentation, biological treatment using a high-rate trickling filter, and secondary clarification and microscreening. Sludge is gravity thickened followed by anaerobic digestion. Sludge is then dewatered by centrifugation and disposed of at Kapaa Sanitary Landfill.

4.1.2.2 General Condition

Average effluent BOD$_5$ and SS concentrations from Kailua STP were 23 and 18 mg/l, respectively during FY 1981 - 1982. The Kailua STP has met its effluent quality requirement of 30 mg/l BOD$_5$ and 30 mg/l SS during recent years. Much of its process equipment will, however, require replacement in the near future as it reaches the limits of its useful life. Kailua has, in addition, an inherent reliability problem due to a lack of treatment unit redundancy.

4.1.2.3 Kailua Collection System

The Kailua collection system covers a service area of 3,000 acres. The majority of the system is gravity flow
consisting of 70 miles of line. Six sewage lift stations are operated and maintained by the City and County of Honolulu. There are no private lift stations within the system. The average age of the system is estimated to be between 20 and 25 years. The infiltration/inflow analysis in Chapter 4.3 of the Kaneohe-Kailua Wastewater Facilities Plan shows that infiltration is higher than in the Kaneohe collection system, but no major collection system rehabilitation is considered necessary. Table 4.11 in the Facilities Plan shows that, in 1979, infiltration constituted about 31 percent of average flow at Kaneohe STP and 35 percent of average flow at Kailua STP.

4.1.3 KMCAS STP

This plant is owned, operated and maintained by the U.S. Government and serves the Kaneohe Marine Corps Air Station. It is a high-rate trickling filter facility of about 2 mgd design capacity and it provides secondary treatment for daily flows in the range of 1.2 to 1.4 mgd. The plant was upgraded from primary to secondary treatment level in the early 1970's and is in generally good condition.

4.1.4 Interim Treatment Plants

There are four interim treatment plants within the Kailua service area. Effluent from each facility is chlorinated

1 Not within the scope of this study.
and discharged directly into Kawainui Marsh or into Maunawili Stream, which discharges into Kawainui Marsh. All four plants are scheduled to be phased out. Wastewater will then be conveyed to the Kailua STP for treatment. Meanwhile, because present flows are close to design values at three plants, there is a moratorium on sewer connections in the areas served by Maunawili Estates STP, Maunawili Park STP and Kukanono STP. A brief description of each interim treatment plant follows.

4.1.4.1 Pohakupu STP

Pohakupu STP is a trickling filter package plant serving a population of 2,600. The plant uses an anaerobic digester and sludge drying beds. Pohakupu STP was put into operation in 1958 and, at present, its general condition is good. Design capacity is 0.43 mgd. Average flow in 1983 has been 0.26 mgd.

4.1.4.2 Kukanono STP

Kukanono STP is an extended aeration plant designed to serve Castle Hospital and a population of 400. Kukanono STP began service in 1961. Occasional problems are experienced with inadequate sludge settling, but it can be considered to be in fair condition. The plant does not have adequate headworks and lacks solids handling units. Design capacity is 0.07 mgd. Average flow in 1983 has been 0.04 mgd.
4.1.4.3 Maunawili Park STP

Maunawili Park STP is an extended aeration plant designed to serve a population of 1,300. Maunawili Park STP began operation in 1965 and is in good condition but lacks solids handling units. Design capacity is 0.14 mgd. Average flow in 1983 has been 0.10 mgd.

4.1.4.4 Maunawili Estates STP

Maunawili Estates STP is an extended aeration plant designed to serve a population of 900. Maunawili Estates STP began service in 1965 and is in good condition but lacks solids handling units. Design capacity is 0.095 mgd. Average flow in 1983 has been 0.16 mgd.

4.1.5 Ahuimanu STP

Ahuimanu STP is a secondary treatment facility with capabilities for nutrient removal. Effluent is chlorinated and discharged into a polishing pond and then into Ahuimanu Stream which, in turn, flows into Kaneohe Bay. The Ahuimanu STP is scheduled to be abandoned. Wastewater generated thereafter in four sub-areas of Kahaluu will be pretreated and pumped by a future Ahuimanu sewage pump station via force main to a pre-treatment facility at Kaneohe and then to Kailua STP for centralized treatment.
4.1.6 **Kapaa Sanitary Landfill**

Sewage sludge from all wastewater treatment plants in the Kaneohe-Kailua service areas is disposed of at the City-operated Kapaa Sanitary Landfill. Landfill design and operations meet criteria specified by the 1976 Resources Conservation and Recovery Act (RCRA). These stringent criteria preclude any environmental degradation from leachate.

4.1.7 **Present Effluent Disposal**

Combined flows from the Kaneohe and Kailua STPs, as well as from KMCAS STP, are discharged through the Mokapu Ocean Outfall. Flow from Ahiimanu STP is discharged into Ahiimanu Stream and then into Kaneohe Bay. Flows from the four interim STPs are discharged into Kawainui Marsh.

Discharge ports of the Mokapu Outfall are one mile off-shore from Mokapu Point at a depth of 100 feet. Receiving water standards are those for Open Coastal Waters Class A. Water quality monitoring data indicate that current standards are being met. This data was presented in the Application to EPA for Secondary Treatment Modifications, Kaneohe and Kailua Treatment Facilities, City and County of Honolulu. (Ref. 12)
5 Water Quality Problem
CHAPTER 5
WATER QUALITY PROBLEM

5.1 DISCUSSION

Effluents from the Kaneohe, Kailua and KMCAS STPs, as presently operated, pose no potential water quality problem. A report to the Environmental Protection Agency (Application for Secondary Treatment Modification, Kaneohe and Kailua Treatment Facilities) of September 7, 1979 (12) provides full documentation that present effluent discharge causes no significant interference with recreational activities, public water supplies, or with the protection and propagation of balanced indigenous ecosystems. The Mokapu Outfall was constructed in order to eliminate the harmful impacts of sewage effluents which were previously discharged into Kaneohe Bay from the Kaneohe and KMCAS STPs and into Kailua Bay, through the old Kapoho Outfall, from the Kailua STP. The design objective for the Mokapu Outfall was to avoid degradation of coastal waters near Mokapu Point, including Kailua Bay. The outfall presently discharges secondary treated effluent from the three STPs. The Outfall has been performing in accordance with its design objective since it began service in December 1977.

The City's letter of September 1979 to EPA (12) requested permission to discharge effluents with a degree of treatment less than secondary. The waiver specifically requested approval of the following effluent requirements:

5 - 1
<table>
<thead>
<tr>
<th>Parameter</th>
<th>Kailua</th>
<th>Kaneohe</th>
</tr>
</thead>
<tbody>
<tr>
<td>BOD$_5$ (mg/l)</td>
<td>60</td>
<td>60</td>
</tr>
<tr>
<td>SS (mg/l)</td>
<td>45</td>
<td>60</td>
</tr>
</tbody>
</table>

These are 30-day arithmetic averages which are not to be exceeded.

The City has had a Water Quality Monitoring Program in effect since the construction of Mokapu Outfall. The City, in addition, conducted baseline water quality studies to evaluate the impact of Mokapu Outfall on the marine environment prior to construction. Consultants to the City have reported on the impact of Mokapu Outfall on phytoplankton communities (13), zooplankton and larval fish (14) and benthic ecosystems and fish populations (15). Data from the above studies, as well as the continuing quarterly monitoring data from stations in Kailua Bay south and west of Mokapu Outfall and from stations north and west of the Outfall, indicate little or no adverse impact on the marine environment from nutrients, pathogenic organisms, settleable solids, or floatables as the result of present effluent discharges.

There is some consensus among the local scientific professional community that no environmental problems will result if primary effluent is discharged, i.e., water quality standards will continue to be met. This is because of the depth and location of the Outfall, the relatively low discharge rate, and the fairly strong and variable currents around Mokapu Peninsula. Monitoring data will continue to be recorded and analyzed to support such a conclusion.
Effluent from the present Ahuimanu STP poses a water quality problem because of its nutrient load. This mass nutrient load into Ahuimanu Stream, which subsequently flows into the Class AA waters of Kaneohe Bay, is approximately 33 pounds total nitrogen and 15 pounds phosphorus per day. Continued discharge of effluent into Ahuimanu Stream is incompatible with a goal of the Water Quality Program for Oahu (16) which is to eliminate all wastewater discharges into Kaneohe Bay.

Effluents from the four interim treatment plants which discharge into Kawainui Marsh and Maunawili Stream also pose a water quality problem primarily because of nutrient loading. The Pohakupu and Kukanono facilities presently discharge their effluents directly into Kawainui Marsh while both Maunawili facilities discharge directly into Maunawili Stream which empties into Kawainui Marsh. The rate of input for various constituents into the marsh from the sewage treatment plants is provided in Table 5.1.

It is estimated that 87 percent of the total phosphorus content and 80 percent of the total nitrogen in Maunawili Stream is attributable to sewage discharge.

The wetland vegetation in the marsh has the capability of assimilating the wastewater nutrients (16). The vegetative overgrowth resulting from such nutrients can, however, choke or displace other plants, choke open water areas, and significantly modify the habitat for endangered species of waterbirds. Accordingly, the Kawainui Marsh Resource Management Plan recommends the discontinuance of the sewage discharges.
<table>
<thead>
<tr>
<th></th>
<th>Direct Discharge Into Kawainui Marsh</th>
<th>Discharge Into Maunawili Stream</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow, mgd</td>
<td>0.33</td>
<td>0.23</td>
</tr>
<tr>
<td>Biochemical oxygen demand, lbs/day</td>
<td>95.00</td>
<td>35.00</td>
</tr>
<tr>
<td>Suspended solids, lbs/day</td>
<td>66.00</td>
<td>19.00</td>
</tr>
<tr>
<td>Total nitrogen, lbs/day</td>
<td>201.40</td>
<td>22.20</td>
</tr>
<tr>
<td>Total phosphorus, lbs/day</td>
<td>146.72</td>
<td>22.20</td>
</tr>
<tr>
<td>Fecal coliform count/100 ml</td>
<td>5</td>
<td>6</td>
</tr>
</tbody>
</table>

1 1980 Data from Division of Wastewater Management.

The wastewater discharge from these plants poses no threat to potable water sources.

No water quality problem is anticipated at the present sludge disposal site, Kapaa Sanitary Landfill, nor at the probable future Kalaheo Landfill sludge disposal site adjacent to Kapaa Landfill. The City has had a leachate monitoring program in effect at Kapaa Landfill and plans to institute a monitoring program at Kalaheo when the landfill opens. No leachate generation has yet been detected. If generation is detected, it is planned to recirculate such liquid back through the refuse mass.

Ground water in the area of the present and future landfills is not an existing nor potential potable water source.
6 Proposed Project
CHAPTER 6
PROPOSED PROJECT

6.1 CENTRALIZED TREATMENT FACILITIES

The Facilities Plan recommends centralized treatment at Kailua STP. Designs will be prepared in such a manner that additions and modifications can be constructed to provide either primary or secondary treatment. Level of treatment will depend on whether EPA approves the City's request for changing effluent quality requirements at Mokapu Outfall. If secondary treatment is required, trickling filters are favored at this time to meet that requirement.

At Kaneohe, the present STP will be abandoned after a new diversion line and pretreatment facility are constructed and the Kaneohe Bay South Pump Station is modified. Kawa: Pump Station will be closed. Wastewater will flow by gravity to the new pretreatment facility.

The following specific actions will be required at Kailua STP to provide Primary Treatment if EPA approves a waiver.

- Construct diversion line on the existing Kailua STP site
- Construct pretreatment facility
- Refurbish existing final clarifier
- Construct new primary digester and sludge holding tank
- Refurbish existing primary clarifier
- Refurbish existing primary digester, sludge thickener, and sludge holding tank
- Refurbish raw sewage pump station
- Odor control
- Upgrade laboratory facility
- Construct new administration/maintenance facility

Construction of a new primary clarifier, trickling filter, final clarifier, and DAF sludge thickener will be necessary, in addition to what is mentioned above, if EPA does not grant a waiver and secondary treatment is required at Kailua STP.

All plant additions and modifications at Kailua STP will be within the fenced boundary of the present STP site. Figures 15 and 16 show site plans for the proposed centralized primary treatment plant and secondary treatment plant at the present Kailua STP site.

Capital costs and operating costs for centralized primary and secondary treatment and for odor control are shown in Table 6.1 based on 1980 dollars. Note that pretreatment costs at Kaneohe are included.

Facilities proposed at Kailua STP will incorporate energy conservation alternatives including use of digester gas and wind energy. Energy conservation details and odor control details are discussed in Chapter 8. The Facilities Plan strategy for odor control is to de-emphasize chemical treatment of the wastewater itself and substitute a more positive strategy, i.e., cover all points of contact between sewage and atmosphere and withdraw the off-gases through a caustic or catalytic scrubbing process. Activated carbon can be used as a polishing step and to provide redundancy and back-up.
CORRECTION

THE PRECEDING DOCUMENT(S) HAS BEEN REPHOTOGRAPHED TO ASSURE LEGIBILITY
SEE FRAME(S) IMMEDIATELY FOLLOWING
# TABLE 6.1

**COST FOR CENTRALIZED TREATMENT**  
(1980 Dollars)

<table>
<thead>
<tr>
<th></th>
<th>Non-Waiver</th>
<th>Waiver</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Capital and Operating Costs for Wastewater Treatment</strong>¹</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Capital Cost</td>
<td>$9,898,000</td>
<td>$4,992,000</td>
</tr>
<tr>
<td>Annual Operational Cost</td>
<td>1,027,000</td>
<td>738,000</td>
</tr>
<tr>
<td>Annual Energy Cost</td>
<td>369,000</td>
<td>239,000</td>
</tr>
</tbody>
</table>

| **Capital and Operating Costs for Odor Control** |                  |                 |
| Capital Cost              | $2,214,000       | $535,000        |
| Annual Operational Cost   | 365,000          | 115,000         |
| Annual Energy Cost²       | 60,000           | 18,000          |

| **Total Capital and Operating Costs**  
(1980 dollars) |                  |                 |
| Capital Cost            | $12,112,000³     | $5,527,000³     |
| Annual Operational Cost | 1,392,000        | 853,7004        |

| **Total 20-Year Present Worth Costs**⁵  
(1980 dollars) |                  |                 |
| Capital Costs and       | $26,438,000      | $14,304,000     |
| Operational Costs       |                  |                 |

---

¹ Exclusive of odor control  
² Energy included as part of operational costs on line above; savings from alternate energy sources not included  
³ Capital cost of $967,000 at Kaneohe is included  
⁴ Operations cost of about $170,000 at Kaneohe is included  
⁵ Present worth factor is 10.29, based on 20-years at 7 3/8 percent interest; salvage value is considered to be zero
6.2 DISCUSSION

Two significant facts are evident from the cost analysis presented in Table 6.1, namely:

(1) Total Capital and Operating Costs for Kailua STP over the 20 year period will be about $26,000,000 if secondary treatment is required, and about $14,000,000 if primary treatment is allowed. If there is convincing evidence that primary effluent discharge from Mokapu Outfall will cause no environmental degradation, a saving of over $12,000,000 can be realized. Available evidence will be presented to EPA in the City's forthcoming Request for Waiver.

(2) Odor control costs are much higher if secondary treatment is required due to the greater number of potential odor generating processes. Present worth capital and operating costs in 1980 dollars, over 20 years at 7 3/8 percent interest, will be approximately $5,970,000 if secondary treatment is required at Kailua STP. These costs will be approximately $1,718,000 if primary treatment is allowed.

6.3 OTHER WASTEWATER MANAGEMENT ACTIONS

Facilities projects for the Kaneohe-Kailua area and their tentative construction schedules are summarized in Table 6.2. Details on specific locations of sewer projects are shown in Appendix A.
<table>
<thead>
<tr>
<th>Project</th>
<th>Tentative Starting Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kailua STP Modifications</td>
<td>1985</td>
</tr>
<tr>
<td>Kaneohe Pretreatment Facility</td>
<td>1985</td>
</tr>
<tr>
<td>Ahuimanu SPS and FM</td>
<td>Started in 1983</td>
</tr>
<tr>
<td>Maunawili WWPS and FM</td>
<td>1986</td>
</tr>
<tr>
<td>Kukanono WWPS and FM</td>
<td>1986</td>
</tr>
<tr>
<td>Kailua Road Interceptor Sewer</td>
<td>1986</td>
</tr>
<tr>
<td>Kaneohe Sewers Section 8 I.D.</td>
<td>1985</td>
</tr>
<tr>
<td>Kailua Sewers Section 9 I.D.</td>
<td>1984</td>
</tr>
<tr>
<td>Kailua Sewers Section 10 I.D.</td>
<td>Beyond 1990</td>
</tr>
<tr>
<td>Kaneohe Bay Sewers I.D.</td>
<td>Beyond 1990</td>
</tr>
<tr>
<td>Kaneohe Sewers Section 9 I.D.</td>
<td>1987</td>
</tr>
<tr>
<td>Kaneohe Sewers Section 10 I.D.</td>
<td>1990</td>
</tr>
<tr>
<td>Kaneohe SPS No. 5 and FM</td>
<td>Beyond 1990</td>
</tr>
</tbody>
</table>
6.4 PREVIOUSLY PLANNED WASTEWATER MANAGEMENT ACTIONS

Section 6.1 described centralized treatment facilities which are proposed at Kailua. Other key features of the Facilities Plan are listed below. Each of these features other than the centralized treatment facilities, has been the subject of previous planning and design analysis, environmental impact analysis, and discussion with the public and interested institutions and agencies. These features are as follows.

(1) Ahuimanu STP will be terminated.

(2) A new pump station at the site of the present Ahuimanu STP, with a booster pump and force main, will send sewage from four sub-areas of Kahaluu to Kailua STP via a pre-treatment facility and pump station at the site of the present Kaneohe STP.

(3) All Kaneohe wastewater will be pretreated at Kaneohe and sent to the Kailua STP for treatment.

(4) The four small interim STPs near Kawainui Marsh will be closed. A new sewer interceptor and new SPSs will convey collected sewage to the Kailua Road SPS; from there, it will be delivered to Kailua STP.

(5) Mokapu Ocean Outfall will continue discharging treated effluent from the entire Kaneohe-Kailua-Kahaluu planning area including flows from KMCAS.

(6) All present trunk sewers and pumping stations will continue to operate. Several new pump stations will be added.

(7) There will be an expansion of sewered areas to accommodate about 12,000 additional persons between now and the year 2005; these persons, until now, have been served by cesspools.
7 Relationship of Project to Other Plans
7.1 GENERAL PLANNING

The Facilities Plan is consistent with applicable primary general planning documents which are:

This document states policies to be used for directing Honolulu's development, including control of population growth and distribution.

This document provides more detailed guidelines on proposed land use within the service areas.

7.2 WATER QUALITY PLANNING

The following documents have guided water quality planning in the subject service areas during the past decade:

This plan evaluated pollutant loads, estimated costs and benefits of general alternative wastewater management systems, and outlined a phased program for implementation of alternative systems.


7 - 1
The Kaneohe-Kailua Wastewater Facilities Plan is consistent with the above plans, although the concepts of centralized treatment at Kailua STP and closure of STPs at Ahuimanu and Kaneohe have evolved since the publishing of the 208 Plan.
8 Project Alternatives
CHAPTER 8
PROJECT ALTERNATIVES

8.1 CENTRALIZATION/DECENTRALIZATION ALTERNATIVES

Figure 17 depicts centralization/decentralization alternatives which were considered during development of the Facilities Plan. Centralized treatment at Kailua is clearly more cost-effective than continuing treatment at both Kaneohe and Kailua. Centralized treatment costs over the project life under waiver and non-waiver conditions have been estimated at $14,000,000 and $26,000,000, respectively.\(^1\) Decentralized treatment costs over the project life have been estimated at about $3,000,000 and $7,000,000 higher, respectively, than costs for centralized treatment.\(^2\) Additional facts supporting closure of Kaneohe STP are as follows:

1. Kaneohe STP lies within a flood plain
2. Kaneohe STP structures are near the end of their useful life and are subject to ground settlement
3. Termination of present facilities at Kaneohe STP and substitution of pretreatment facilities will minimize odor problems in that area

With centralized treatment, there will be substantially higher sewage flows at Kailua STP than if the present decentralized system were continued. This could intensify odor problems

---

\(^1\) Facilities Plan Tables 8.30 and 8.17
\(^2\) Facilities Plan Section 7.2.1.2
**Figure 17**

ALTERNATIVES FOR CENTRALIZATION/DECENTRALIZATION

**DECENTRALIZED SYSTEM**

KAHALUU KANEHOE → [Influent] → SCREEN, DEGRIT → PRIMARY TREATMENT → SECONDARY TREATMENT → [Effluent] → MOKAPU Ocean Outfall

KAILUA → [Influent] → SCREEN, DEGRIT → PRIMARY TREATMENT → SECONDARY TREATMENT

**CENTRALIZED SYSTEM**

KAHALUU KANEHOE → [Influent] → SCREEN, DEGRIT

KAILUA → [Influent] → SCREEN, DEGRIT → PRIMARY TREATMENT → SECONDARY TREATMENT → [Effluent] → MOKAPU Ocean Outfall

--- → WAIVER OPTION
at Kailua if there were no change in method used for odor control. However, the odor control strategy proposed in the Facilities Plan is considered to give positive assurance of adequate odor control. Accordingly, odor is not considered to be a major factor in the centralization vs decentralization decision.

8.2 PRIMARY/SECONDARY TREATMENT ALTERNATIVES

Chapter 6 presents discussion and costs of primary/secondary treatment alternatives. The level of treatment to be used will depend upon EPA response to the City's 1983 request for waiver of secondary treatment requirements.

8.3 SLUDGE DISPOSAL ALTERNATIVES

The City is considering a centralized sludge composting facility for Windward Oahu in the Waimanalo area. If a composting facility is constructed, sludge from Kailua STP will be taken to Waimanalo for composting. Kailua STP sludge disposal will otherwise continue at the City's Windward Sanitary landfill.

8.4 FLOW REDUCTION ALTERNATIVES

Flow reduction devices in showers and toilets of residences in the area are one means of water conservation. Total water usage for toilets and showers is relatively small, however, compared to other water uses, and compared to
infiltration/inflow quantities. Accordingly there is little opportunity for reduction in sizes of wastewater treatment equipment through use of flow reduction devices. There would be, however, minor reductions in energy requirements for wastewater treatment. A rough estimate for the Kaneohe-Kailua wastewater service areas is that wastewater flows and corresponding pump energy requirements might be reduced by two to three percent if a significant majority (90 percent) of the residents cooperated fully in the use of such devices.

8.5 ODOR CONTROL ALTERNATIVES

The odor control method proposed in the Facilities Plan offers the most positive assurance of no odors beyond the STP property lines although other techniques are available. The design and operating objectives of the odor control measures proposed at Kailua STP in the Facilities Plan are to insure that odors are not detectable beyond STP property lines. The strategy proposed for odor control involves capture of gas directly at locations where gas from the sewage is released into the atmosphere. Captured gas is then absorbed in a scrubber using either a caustic or catalytic scrubbing agent. Activated carbon will remove final traces of all odor producing components. An estimate of present worth capital and operating costs for this method is $1,718,000 and $5,970,000 for waiver and non-waiver situations, respectively.¹

¹ Present worth factor is 10.29 for 20 years at 7 3/8% interest
Other odor control strategies involve use of oxidants such as chlorine, ozone, or hydrogen peroxide at one or more points in the sewage stream. These alternatives have been investigated and are not considered to provide the same reliability of odor control. Kailua STP currently uses hydrogen peroxide at an annual cost of over $300,000.

8.6 ENERGY CONSERVATION ALTERNATIVES

Opportunities for use of wind power and digester gas from sewage sludge as alternative energy sources, for all or part of electrical needs at Kailua STP are discussed in the Facilities Plan. A wind power feasibility analysis for Kailua STP was conducted by Curtis (11). A copy of this analysis appears as an Appendix in the Facilities Plan. The following discussion summarizes the alternative energy investigations.

Table 8.1 projects Kailua STP energy requirements for primary or secondary treatment in 1990 and 2005. The twenty year present worth costs of purchasing electricity to meet these energy needs are projected to be on the order of $2,500,000 for primary treatment and $4,000,000 for secondary treatment.

The best possible site wind analysis is clearly fundamental to a decision concerning feasibility of effective use of wind energy. The energy of wind is proportional to the cube of its speed, so feasibility is very sensitive to speed, which must be thoroughly investigated.
<table>
<thead>
<tr>
<th>Function</th>
<th>Primary Treatment KWH per year</th>
<th>Secondary Treatment KWH per year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wastewater Treatment</td>
<td>2,360,000</td>
<td>2,170,000</td>
</tr>
<tr>
<td>Odor Control</td>
<td>140,000</td>
<td>130,000</td>
</tr>
<tr>
<td>Total KWH Per Year</td>
<td>2,500,000</td>
<td>2,300,000</td>
</tr>
</tbody>
</table>
The Wind Energy Map for Oahu in Reference 10 indicates that Kailua STP is in Wind Class 2 which is indicative of marginal usefulness in energy production. There is known to be, however, significant variation within these general zones, and anemometer measurements at a 50 foot height during September and October 1981 at the site did not indicate a more favorable regime.

Meteorological kite measurements at the site supplemented the 50 foot findings with vertical profiles. The observation is made that under trade wind conditions, speed increases rapidly with height. The Kailua STP site data was compared with concurrent data from nearby Kaneohe Marine Corps Air Station and Honolulu International Airport. It is concluded that an average wind of 15.5 mph can be expected at an elevation of 100 feet, and this suggests a wind class of at least 3 (II).

The Facilities Plan specifically recommends the installation of one wind turbine generator (WTG) having a power output of 30 to 50 kw. Installed costs are estimated to be $125,000 and annual maintenance costs are estimated to be $2,500. The WTG is expected to generate 175,000 KWH per year. The 1980 present worth of the electricity generated is $180,000. The WTG will more than pay for itself while making a small contribution to reducing Hawaii oil importation. It will, more importantly, provide details on the long term wind speed and direction at the site as well as data on maintenance and the operation of the WTG.

If most of the energy requirements of the STP were to be supplied by wind power, an array of more than ten machines
of this size would be required. There is a space limitation at
the site which precludes such an array. There is, furthermore,
digester gas available from on-site sewage sludge which can
provide part of the STP energy requirement.

WTG technology is in an early stage of development, but
the recommended size and type of machine for this STP applica-
tion is currently available. Data and experience gained with
the first machine will make it possible to make the wisest
design choices for any subsequent use of WTGs at the site.

The WTG tower at the Kailua STP site will be about
100 feet high inasmuch as wind energy is proportional to the
cube of its speed, and wind speed is significantly better at
100 feet than at 50 feet. Some persons may have aesthetic
objections while others may find intrinsic beauty in the sight
and thought of a machine developing energy from the wind.
Figure 18 depicts the visual aspects of a WTG on a 100 foot
tower at Kailua STP.

There are environmental concerns about possible
television interference (TVI), electro-magnetic interference
(EMI), and noise. Since minimum TVI and no EMI problems have
been reported in observations of current operating WTGs at
Kahuku, no major problems are expected to arise from WTGs in
the Kailua area. The Wind Power Feasibility Analysis (11)
indicates that the WTG to be sited at Kailua STP will meet
Honolulu Comprehensive Zoning Code noise requirements and Oahu
Community Noise Code requirements of 55 dBA day and 45 dBA
night at the property boundaries of the nearest residential
areas.
Figure 18

VISUAL ASPECT OF A WIND TURBINE GENERATOR AT KAILUA STP
(View looking toward Mokapu Point from west side of Kailua STP)
The possibility of wind energy for pump stations in the collection system has been considered. However, electrical demand at the pump stations is considerably less than at the STP's. For example in FY 82 - 83 electricity consumption at the Kailua Heights pump station was 121,000 KWH compared to 1,600,000 KWH for the Kailua STP. The demand at all other pump stations is considerably smaller. Also, it appears that each of the pump stations is likely to be in a zone of Class 2 where economic feasibility is questionable at this time. However, if the price of small WTGs is significantly reduced in future years, the possibility of utilizing wind energy at pump stations may deserve re-examination.

Digester gas is the other alternate energy source which shows promise for minimizing purchases of electricity for Kailua STP. Gas from the digesters can be used for substantial power generation using the existing engine generators. Acoustical shielding may be necessary to ensure that noise levels at the STP property boundary do not exceed Community Noise Code requirements of 45 dBA night and 55 dBA day.
9 Primary Impacts and Mitigations
CHAPTER 9

PRIMARY IMPACTS AND MITIGATIONS

9.1  CHECKLIST OF PRIMARY IMPACTS

The most significant impacts of actions recommended in the Facilities Plan are as follows:

• The recommended Kailua STP facilities will make it possible to reduce Kaneohe STP to a pretreatment facility with substantial savings in STP operational costs and reduction of odor problems near the Kaneohe STP

• The Kailua STP facilities will make it possible to close four small interim treatment plants, thus eliminating effluent discharge into Maunawili Stream and Kawainui Marsh

• Ahuimanu STP will be closed, thus eliminating discharge into Ahuimanu Stream and Kaneohe Bay

• Odor problems in the residential subdivisions downwind of Kailua STP will be eliminated when the recommended revision in odor control strategy is fully implemented

There will be some minor noise and other disturbances relative to construction requirements at Kailua STP located adjacent to the Nuupia Pond Wildlife Refuge. However, Figure 8 shows that the minimum distance between any construction and the pond will be about 500 feet. Most of the pond is more than 2,000 feet distant; therefore, there should be little disturbance of birds.

9 - 1
There will be minor temporary and localized impacts such as noise, dust and traffic inconvenience from some of the required construction activities for collection sewers, transmission sewers, and pump stations.

No agricultural land will be urbanized as a result of the project.

The checklist in Table 9.1 summarizes primary impacts of planned actions relating to the entire Kaneohe-Kailua wastewater management system.
<table>
<thead>
<tr>
<th>Area of Impact</th>
<th>Impacted</th>
<th>Mitigated</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>2. Ground water</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4. Floodplain</td>
<td>X</td>
<td></td>
<td>Beneficial Impact. When Kaneohe STP is closed and reduced to a pretreatment facility, there will be reduced activity in a flood plain.</td>
</tr>
<tr>
<td>5. Environmentally significant agricultural land</td>
<td>X</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Area of Impact</td>
<td>Impacted</td>
<td>Mitigated</td>
<td>Remarks</td>
</tr>
<tr>
<td>--------------------------------</td>
<td>----------</td>
<td>-----------</td>
<td>----------------------------------------------------------</td>
</tr>
<tr>
<td>7. Important vegetation types</td>
<td>X</td>
<td></td>
<td>Beneficial Impact. Kawaihui Marsh vegetation will no longer be subjected to STP effluent.</td>
</tr>
<tr>
<td>8. Threatened or endangered</td>
<td></td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>10. Environmentally sensitive</td>
<td></td>
<td>x</td>
<td>Remarks under Nos. 1, 4, 6, and 9 concerning beneficial impacts also apply here.</td>
</tr>
<tr>
<td>11. Other - Odors in residential area</td>
<td></td>
<td>x</td>
<td>Beneficial Impacts. Reduced odors near all treatment plant sites.</td>
</tr>
<tr>
<td>12. Open space recreation</td>
<td>X</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
10 Secondary Impacts and Mitigations
CHAPTER 10
SECONDARY IMPACTS AND MITIGATIONS

10.1 CHECKLIST OF SECONDARY IMPACTS

If a facilities project inherently stimulates population growth, such growth itself can create environmental impacts which are called secondary impacts. Table 10.1 summarizes present and projected population and sewage flows as a basis for reviewing such impacts in Kaneohe-Kailua. It is important to note in Table 10.1 that the Facilities Plan provides for a population increase of only 11,000 persons, from 89,000 to 100,000 in a period of over two decades. This is equivalent to less than one-half percent per year.

Centralized treatment facilities proposed for Kailua STP provide for only a very modest increase in flow rates between 1985 and 2005. This is because projected flow rates are based on the Table 10.1 population projections and distributions derived from the General Plan of Honolulu. The General Plan specifies control of population growth and distribution as part of its objectives.

The facilities proposed in the Facilities Plan are all for environmental improvements and/or for cost-effectiveness of the system. The proposed facilities are consistent with the Koolaupoko Development Plan approved in 1983. The facilities have not been designed to accommodate a significant population growth. Accordingly, no significant secondary impacts are anticipated.
The following is a checklist used for alerting interested parties to potential secondary impacts in the Kaneohe-Kailua service areas.

**CHECKLIST OF SECONDARY IMPACTS**

<table>
<thead>
<tr>
<th>Area of Impact</th>
<th>Impact Clearly Defined</th>
<th>Impact Uncertain</th>
<th>No Impact</th>
<th>Yes Mitigated</th>
<th>No Mitigated</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Air quality</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>2. Environmentally significant agricultural lands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>3. Transportation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>4. Housing</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>5. Business activity</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>6. Open space recreation</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>7. Infrastructure</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>8. Wetlands</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>9. Floodplain</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>10. Ground water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>11. Creeks and rivers</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>12. Coastal zone</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>13. Threatened or endangered species</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>14. Critical habitats</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
<tr>
<td>15. Environmentally sensitive areas</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>x</td>
</tr>
</tbody>
</table>

10 - 2
### TABLE 10.1

**POPULATION AND SEWAGE FLOWS – PRESENT AND PROJECTED**

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Kaneohe:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sewered to Kaneohe STP</td>
<td>32,120</td>
<td>42,825</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Unsewered</td>
<td>2,880</td>
<td></td>
<td></td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>35,000</td>
<td>42,825</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kailua:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sewered to Kailua STP</td>
<td>33,530</td>
<td>44,300</td>
<td></td>
<td>5</td>
</tr>
<tr>
<td>10 - 3</td>
<td></td>
<td></td>
<td></td>
<td>151</td>
</tr>
<tr>
<td>Sewered to Interim Package Plants</td>
<td>5,200</td>
<td>44,300</td>
<td>-</td>
<td></td>
</tr>
<tr>
<td>Unsewered</td>
<td>3,370</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>42,100</td>
<td>44,300</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kahuluiu:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sewered to Ahuimanu STP</td>
<td>4,400</td>
<td>-</td>
<td></td>
<td>0.4</td>
</tr>
<tr>
<td>Unsewered (non-Ahuimanu)</td>
<td>7,100</td>
<td>1,440</td>
<td></td>
<td>0</td>
</tr>
<tr>
<td>Sewered to Kaneohe STP (from Ahuimanu SPS)</td>
<td>-</td>
<td></td>
<td></td>
<td>11,560</td>
</tr>
<tr>
<td></td>
<td>11,500</td>
<td>13,000</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kaneohe-Kailua-Kahaluu Totals</strong></td>
<td>88,600</td>
<td>100,125</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Kaneohe-Kailua-Kahaluu Sewered Totals</strong></td>
<td>75,250</td>
<td>98,685</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Flow projection includes infiltration increases projected in Facilities Plan
11 Relationships - Short Term and Long Term
CHAPTER 11
RELATIONSHIPS - SHORT TERM AND LONG TERM

11.1 DISCUSSION

Implementation of the Facilities Plan, with centralized wastewater treatment at Kailua, will result in substantial long term benefits. These benefits include reduction in total system costs, water quality improvements in Kaneohe Bay, Kawainui Marsh, Maunawili Stream and Ahuimanu Stream, odor reduction in the neighborhood of Kaneohe STP and the interim STPs near Kawainui Marsh, odor elimination in the vicinity of Kailua STP, and localized improvements where new collection sewers replace defective cesspools. These long term benefits will far outweigh the disturbances of noise, dust and traffic which occur during construction.
12 Irreversible and Irretrievable Commitment of Resources
CHAPTER 12
IRREVERSIBLE AND IRRETRIEVABLE COMMITMENT OF RESOURCES

12.1 DISCUSSION

No significant land acquisition will be required to implement this Wastewater Facilities Plan. Some minor easements and/or acquisition may be necessary for new sewer lines or pump stations. Conversely, some of the land now occupied by Ahuimanu STP, Kaneohe STP, and the four small interim STPs may be made available for other commitments.

Major one-time commitments consist of manpower, materials and funds necessary for new construction and/or rehabilitation of each of the facilities proposed in the Facilities Plan. Continuing commitments will consist of funds and manpower necessary for operations and maintenance. The continuing O&M commitment at Kailua STP will be at a cost lower than would be necessary if Kaneohe STP, Ahuimanu STP, and the four small interim plants were to be retained.
13 List of Necessary Approvals
CHAPTER 13

LIST OF NECESSARY APPROVALS

* Clearance for Coastal Zone Management consistency will be required from the Hawaii State Department of Planning and Economic Development.

* Clearance for Historic and Archeological Sites will be required from the Historic Sites Section, Division of State Parks and Outdoor Recreation, Hawaii State Department of Land and Natural Resources.

* Kailua STP proposed plant modifications will require National Pollutant Discharge Elimination System (NPDES) Permit approval from the Hawaii State Department of Health and the U.S. Environmental Protection Agency.

* Pump station modifications at the Kaneohe STP site, the Kaneohe Bay Sewers Improvement District, and part of the Kailua Road Interceptor Sewer are all within a Special Management Area (SMA) and therefore require an SMA Permit from the Department of Land Utilization, City and County of Honolulu.

* New structures and modifications at Kailua STP and other locations require a Building Permit from the Building Department, City and County of Honolulu.

* Prior to construction for any facilities including sewers, plans and specifications must be approved by the Hawaii State Health Department and State Department of Transportation (for projects affecting State highways) and by the Board of Water Supply.
14 Unresolved Issues
CHAPTER 14
UNRESOLVED ISSUES

The question of whether primary or secondary treatment will be required at Kailua STP is unresolved at this time. It will be resolved when the City submits a Waiver Request to the U.S. Environmental Protection Agency (EPA) and EPA responds.
15 Organizations and Persons Consulted
CHAPTER 15
ORGANIZATIONS AND PERSONS CONSULTED

The following organizations and persons were consulted during preparation of this EIS. A total of 29 letters were received in response to the EIS Preparation Notice, of which ten had comments requiring a response. Only those letters which required responses are reproduced in the Appendix.

FEDERAL AGENCIES

15th Air Base Wing, U.S. Air Force
Farmers Home Administration, U.S. Department of Agriculture
Federal Highway Administration
Fish and Wildlife Service, U.S. Department of the Interior
Pacific Division,
   Naval Facilities Engineering Command, Pearl Harbor
Public Works Department, Kaneohe Marine Corps Air Station
U.S. Army Corps of Engineers, Honolulu District
U.S. Army Support Command, Fort Shafter
U.S. Department of Housing and Urban Development
U.S. Environmental Protection Agency
U.S. Naval Base, Pearl Harbor
STATE AGENCIES

Department of Agriculture
Department of Hawaiian Home Lands
Department of Planning and Economic Development
Department of Transportation
Division of Aquatic Resources,
  Department of Land and Natural Resources
Division of Forestry & Wildlife,
  Department of Land and Natural Resources
Environmental Center, University of Hawaii
Environmental Protection & Health Services Division,
  Department of Health
Hawaii Housing Authority
Historic Sites Section,
  Department of Land and Natural Resources
Kaneohe Regional Library
Kailua Library
Office of Environmental Quality Control
Water Resources Research Center, University of Hawaii
CITY AGENCIES

Board of Water Supply
Department of General Planning
Department of Housing and Community Development
Department of Land Utilization
Department of Parks & Recreation
Department of Transportation Services
Office of Information & Complaint
GOVERNMENT OFFICIALS

Honorable Daniel Inouye
Honorable Spark Matsunaga
Honorable Daniel Akaka
Honorable Cecil Heftel
Senator Ralph Ajifu
Senator Mary George
Senator Charles Toguchi
Representative Whitney Anderson

Representative Marshall Ige
Representative John Medeiros
Representative Robert S. Nakata
Representative Terrance Tom
Representative Norma Wong
Councilwoman Welcome Pauwett
Councilman David Kahanu
PRIVATE AGENCIES AND COMMUNITY ASSOCIATIONS

Ahuimanu Homeowners' Assn.
Aikahi Gardens Assn.
Aikahi Park Community Assn.
Alii Shores Community Assn.
Building Industry Digest
Congress of Hawaiian People
Conservation Congress
Council of Presidents

Crown Terrace Community Assn.
Environmental Law Center of the Pacific
Gardenia Manor Owners' Assoc.
GASCO, Inc.
Kaapuni Community Assn.
Kaelepuu Neighborhood Assn.
Kahaluu Colony Village Owners' Assn.
Kahinani Place Assn.
Kailua Chamber of Commerce
Kailua Community Council
Kailua Improvement Assn.

Haiku Plantation Community Assn.
Haiku Village Community Assn.
Hawaii Thousand Friends
Hawaiian Telephone Company
Hokulua Homeowners' Assn.
Honolulu Advertiser
Honolulu Star-Bulletin
Joint Public Affairs Office Community Relations
KGU Radio
K-LEI Radio
Ka Lama
Kaala View Acres Community Assn.
Kaneohe Bay Community Assn.
Kaneohe Business Group
Kaneohe Community Council
Kaneohe Neighborhood Board #30
Kaneohe Outdoor Circle
Kokokahi Community Assn.
Ruulei Tract Assn.
<table>
<thead>
<tr>
<th>Organisation</th>
<th>Organisation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kailua Neighborhood Board #31</td>
<td>Lanikai Assn.</td>
</tr>
<tr>
<td>Kailua Satellite City Hall</td>
<td>Lani-Kailua Outdoor Circle</td>
</tr>
<tr>
<td>Kinalu Park Homeowners' Assn.</td>
<td>League of Women Voters</td>
</tr>
<tr>
<td>Kalaheo Hillside Community Assn.</td>
<td>Legal Aid Society</td>
</tr>
<tr>
<td>Legislative Information Service of Hawaii</td>
<td>Pacific Business News</td>
</tr>
<tr>
<td>Life of the Land</td>
<td>Pacific Resources, Inc.</td>
</tr>
<tr>
<td>Mauka Bluff Community Assn.</td>
<td>Save Our Surf</td>
</tr>
<tr>
<td>Ms. Scoops Kreger (MS FIXIT)</td>
<td>Sierra Club</td>
</tr>
<tr>
<td>Napali Gardens Owners' Assn.</td>
<td>Sun Press Newspapers</td>
</tr>
<tr>
<td>Oahu Development Conference</td>
<td>Temple Valley Shopping Center, Merchants Assn.</td>
</tr>
<tr>
<td>Ocean Cablevision and Pacific Network</td>
<td>Tropic Shore Realty</td>
</tr>
<tr>
<td>Office of Hawaiian Affairs</td>
<td>Waiahole-Waikane Community Assn.</td>
</tr>
<tr>
<td>Olomana Community Assn.</td>
<td>Yacht Club Knolls Owners' Assn.</td>
</tr>
<tr>
<td>Outdoor Circle</td>
<td>Yacht Club Terrace Owners' Assn.</td>
</tr>
</tbody>
</table>
COMMUNITY MAILING LIST

Mr. Albert Aguiar
Mrs. Bacque
Mr. W. E. Bliss
Mrs. Lilian Chung
Mr. Wilfred D. Darling
Mrs. Virginia Forsyth
Mrs. S. Hanson
Ms. Valerie Humphries
Mr. Carl W. Johnson
Mrs. Paul Kahn

Mr. Frederick K. Kamada
F. S. Marsh
Mrs. Mary Mateo
Mrs. Euple Medley
Mr. Barry Nakamura
Mrs. Norris
Mrs. Rock
Mr. Jack Shedletsky
Mr. John Terada
Mr. A. Tsuji
Mr. Frank White
16 References
CHAPTER 16

REFERENCES


(3) U.S. Environmental Protection Agency - Environmental Assessment Format - as forwarded to GMP by City Department of Public Works letter of April 21, 1980.


(5) Plan of Study for the Step 1 Addenda to the Kaneohe and Kailua Facility Plans [and Appendix]. Prepared by the Division of Wastewater Management, Department of Public Works, City and County of Honolulu. January 1980.


16 - 1


16 - 2
APPENDIX A

PROPOSED SEWER AND COLLECTION SYSTEMS
Appendices
APPENDIX B

EISPN COMMENTS AND RESPONSES
In the Record, in reporting impact for completed work purchase.

The object of this interior restroom plan was to install, within the

527-5292. Should there be any questions, please call customer

service department in this planning office.

MC. Director:

City and County of Honolulu
Department of Public Works

October 12, 1993

October 12, 1993.
Mr. Szymon

October 12, 1992

337-3773. In any questions, phone call 337-3773.

We appreciate your interest in the planning effort.

We received your concern with regard to the ESZ. We will

2-1

DEPARTMENT OF PLANNING

ECONOMIC DEVELOPMENT

RECEIVED

MAILED

Mailed 12-30-89

State 1989

in the Willow Creek

Department, 1-9-90

INTERSTATE 41

WISCONSIN STATE POLICE

255-5555
To: Gordon Koh, Planning Office
From: B.J. Coffman
Subject: Kalanianaole Wastewater Treatment Facility Plan

The proposed undertaking is in an urban area, and the proposed development will be made in accordance with the State Historic Preservation Office's recommendations. There will be some minimal impacts on the immediate property, but the overall site impact will be limited. If the proposed undertaking is implemented as planned, the environmental impacts of the project will be minimal. The site may possibly be used for other beneficial purposes. If the project is implemented as planned, the overall site impact will be minimal.
accept only $75.00 worth with minimum $5.00 profit.

Subject to approval of new consonant pattern, the 1939 consonant pattern is still considered to be
the best practice for consonant pattern development.

We appreciate your interest in this promotion.

October 12, 1939

Mr. John Miller

October 12, 1939

Mr. John Miller
APPENDIX B

EISPN LETTERS WITH RESPONSES

(1) Sierra Club - letter of November 8, 1981

(2) State of Hawaii, Department of Land and Natural Resources -
    letters of January 5 and 8, 1982

(3) State of Hawaii,
    Department of Planning and Economic Development -
    letter of November 4, 1981

(4) City and County of Honolulu
    Department of General Planning -
    memorandum of November 10, 1981

(5) United States Department of the Interior,
    Fish and Wildlife Service -
    letter of November 9, 1981

(6) City and County of Honolulu,
    Department of Land Utilization -
    memorandum of November 9, 1981

(7) University of Hawaii at Manoa,
    Water Resources Research Center -
    letter of October 30, 1981

(8) Department of the Army,
    U. S. Army Engineer District, Honolulu -
    letter of October 27, 1981

(9) Realty Management
    and Sales Corporation for Aikahi Gardens -
    letter of October 28, 1981

(10) Aikahi Gardens Association of Owners -
    letter of November 5, 1981
EISP IN LETTERS WITH NO COMMENT

(11) U.S. Department of Agriculture,
Agricultural Stabilization and Conservation Service-
letter of October 13, 1981

(12) State Department of Hawaiian Home Lands -
letter of December 1981

(13) Board of Water Supply,
City and County of Honolulu -
memorandum of October 21, 1981

(14) Kaneohe Marine Corps Air Station -
letters of October 20 and November 6, 1981

(15) Hawaii Housing Authority -
letter of October 22, 1981

(16) State Department of Agriculture -
letter of October 23, 1981

(17) City Department of Transportation Services -
memorandum of October 23, 1981

(18) State Department of Transportation -
letter of October 23, 1981

(19) State Department of Health -
letter of October 26, 1981

(20) Federal Department of Housing and Urban Development -
letter of November 3, 1981

(21) City Department of Housing and Community Development -
memorandum of October 27, 1981
Page 53 - It is difficult to understand how "no impact" can be alleged "as a result of population growth accommodated by the proposed project." All 15 of the named subject areas will be impacted to a greater or lesser degree; the proposed population growth is largely dependent on the proposed wastewater project. The EIS ought to recognize this.

I hope these comments will be helpful. We look forward to receiving and commenting on the draft EIS.

Sincerely,

Susan E. Miller
Honolulu Group Conservation Chairman
Sierra Club, Hawaii Chapter

Ms. Susan Miller
Conservation Chairman, Honolulu Group
Sierra Club, Hawaii Chapter
P.O. Box 22037
Honolulu, Hawaii 96822

Dear Ms. Miller:

Subject: Environmental Impact Statement Preparation Notice
for Kaneohe-Kailua Wastewater Facilities Plans

Thank you for your letter concerning the EIS Preparation Notice for the Kaneohe-Kailua Facilities Plans. There has been some delay in response because of basic changes in federal criteria concerning the project. Our responses to several points in your letter are set forth below:

- Funding availability for the construction of facilities in the Plan is anticipated, but not guaranteed. The facilities proposed at Kailua STP are a relatively high public works priority.
- Figures 2 and 3 were prepared in 1981. The Lanikai pump station has since been added to the revision of Figure 2.
- Proposed sewer areas will be consistent with the Koolau-ke-feo Development Plan map.
- It is appropriate to describe the communities as predominantly composed of single family residences with substantial open space.
- Koolau and Olowalu were considered as part of the Pupukea and Waianae area, respectively.
- The wind rose data for Figures 4 and 5 of the EIS are were taken from Kaneohe Marine Corps Air Station records collected over a number of years.

October 12, 1983

Ms. Susan Miller
Conservation Chairman, Honolulu Group
Sierra Club, Hawaii Chapter
P.O. Box 22037
Honolulu, Hawaii 96822

Ms. Susan Miller
Conservation Chairman, Honolulu Group
Sierra Club, Hawaii Chapter
P.O. Box 22037
Honolulu, Hawaii 96822

Subject: Environmental Impact Statement Preparation Notice
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- Proposed sewer areas will be consistent with the Koolau-ke-feo Development Plan map.
- It is appropriate to describe the communities as predominantly composed of single family residences with substantial open space.
- Koolau and Olowalu were considered as part of the Pupukea and Waianae area, respectively.
- The wind rose data for Figures 4 and 5 of the EIS are were taken from Kaneohe Marine Corps Air Station records collected over a number of years.

October 12, 1983
Mr. Michael J. Chun
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Res: Environmental Impact Statement Preparation Notice (EISP)
Kaneohe-Kalana Wastewater Facilities Plan,
Kaneohe-Kalana, Oahu, Hawaii

Dear Mr. Chun:

The Honolulu Group of the Sierra Club, Hawaii Chapter appreciates the opportunity to comment on the subject EISP. Our comments, with page annotations, follow.

Page 3 - Funding: What is the expected availability of Federal funds—i.e., how much is already committed and how much is speculative?

Page 4 - When were Figures 2 and 3 prepared? Is a person actually aware of the area (southeastern half of Lanikai) where the pump station and sewer improvements shown as "proposed" on the figures are already in place?

On Figure 3, does the Iolena section area (shown as "future populated area to be served") area on the Ko'olau Development Plan map? Also, is the area shown as "future populated area" around upper Kualoa Marsh and in the Hama-Will Valley consistent with the expansion limitation of 800 persons incorporated in the EIS for the Olomana-Waianae sewer projects? It appears too large—the Kualoa Marsh portion alone covers most of the original Kualoa Marsh Residential Subdivision proposal which was to have some 700 units.

Page 15: "Service Areas," the second sentence is accurate with respect to the pictured area. However, the picture does not cover Ko'olau or Kahulu. The former has a substantial light industrial area and three shopping complexes (one "regional" being built and two existing). The latter area will have a sizable commercial/light industrial area along Kaneohe Highway on recent Development Plan changes.

Community Within Service Areas: are Kakanui and Oloina considered subsumed in Pohakau and Waianae respectively?

Page 17: Climate: Could you please cite sources for the figures given in the paragraph? The figures for wind direction are of particular interest in light of the known odor problem associated with the Kalua Site.

---

Mr. Michael J. Chun from Miller
8 November 1981

Page 2

Page 17 - Climate. cont'd: 1981 may be an atypical year but there had been essentially no trade winds up to late summer and they still are scarce. I gather that the circular graphs accompanying Figures 4 and 5 are meant to indicate the percentages of the time the wind is in a given direction—from what data were these compiled?

Page 18 - "Major Economic Activities": Source for figures on industrial and commercial land use?

Page 20 - "Major Botanical Features": Is the proposal for a "Kalama landfill site" visible in the fact that the adjacent H-3 spur was built with Federal funds and the Federal Highway Beautification Act should therefore apply to the site?

Page 22 - "Cultural Resources": Is the statement regarding the adequacy adequate for Pahuini Heiau supported by archaeologists familiar with the site? E.g., Ak Simoto of the B. P. Bishop Museum?

Page 40 - "Present Receiving Water Quality": Source for statement that "receiving water...is essentially that of pristine open ocean"

Page 41 - Would the waiver to permit subsidiary effluent discharge be pursued if the centralized alternative is selected?

Page 42 - Re他先生 from Kapaa Sanitary Landfill: Is it possible that the drain system is not where the leasehold is, rather than the (implied) lack of lease? What about surface run-off from the landfill?

Page 47 - "General Planning": Since the Ko'olau Development Plan has been approved by an apparently veto-proof majority in the City Council, should not the Facility Plan Addenda use the land use distributions found in that document and its associated map? This would affect the specifically industrial and commercial land use categories.

Page 49 - I would suggest that one alternative for sluage disposal be use as fertilizer in commercial agricultural applications. With the increasing cost of both production and transport of petrochemically-derived fertilizers, the economics of sluage as fertilizer should not be overlooked. In addition, this use of sluage would be revenue-producing in what is otherwise a completely revenue-consuming operation. Figure 15 does not have any apparent relation to the secondary-subsecondary treatment alternatives. The figure simply details three alternatives with no indication as to which alternative configuration relates to which treatment one.

Page 51 - What about temporary impacts during construction? Such activity would seem to impact upon at least the following:

Wetlands (noise, dust, runoff); Threatened or Endangered Species (noise, dust, runoff, fumes); Environmentally Sensitive Areas (sea wetlands above); Other—noise, traffic, fumes.

If the capacity expansion lies between the present layout and Kaneohe Bay Drive, visually screening the plant will be more difficult than presently.
MEMORANDUM

TO: Mr. Michael N. McElroy, Director
Department of Land Utilization

FROM: Michael J. Chun, Director and Chief Engineer

SUBJECT: Environmental Impact Statement Preparation Notice
For Kamehameha-Waianae Wastewater Facilities Plan

October 12, 1983

Thank you for your memorandum concerning the EIS Preparation Notice for the Kamehameha-Waianae Wastewater Facilities Plan. There has been some delay in response because of basic changes in federal criteria concerning the project.

The EIS to be published in October 1983 states the City's intention to submit a revised Waiver Request in 1983 concerning effluent quality reduction at the Mapuapua Outfall. It appears that such reduction would be a prudent wastewater management action that would save substantial expenditure of public funds and improve odor control at the Waianae STP. Water quality monitoring evidence to date near Mapuapua Outfall indicates no degradation of the marine environment generally, and Waianae Bay specifically, would result if effluent standards were relaxed.

We appreciate your interest in this planning effort.

Should there be any questions, please call Geraldine Lux at extension 5392.

Michael J. Chun
Director and Chief Engineer

Dr. Michael J. Chun
Director and Chief Engineer
Department of Public Works
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Dr. Chun:

Subject: EIS Preparation Notice Kamehameha-Waianae Wastewater Facilities Plan, Kamehameha-Waianae, Oahu, Hawaii, September 30, 1981

We have reviewed the subject EIS Preparation Notice and offer the following comments:

1. BOD (Biochemical Oxygen Demand) was used in this report (pp. 11, 41, and 43). To avoid confusion, it would be advisable to specify whether "BOD" (five-day BOD) or "BOD" (oxygen demand) was used.

2. P. 41. A less than secondary treatment was proposed for the Waianae STP effluent, i.e., BOD = 60 mg/l, SS = 45 mg/l) which is probably adequate, we would suggest a detailed waste assimilative capacity analysis be conducted to determine the exact amount of allowable waste loading from this treatment facility.

3. The cessation of sewage effluent flow into Waianae ponds will have an impact due to the termination of nutrient inflow. Whether or not this will be beneficial or detrimental is the issue to be addressed. Nutrients having been added for 23 years started in 1958 with the Pohakupuna STP. There will undoubtedly be an environmental impact on the flora and fauna if this is now stopped. The EIS should present ecological information on Waianae Fish before the introduction of sewage, the changes during the past 23 year period (if possible those attributable to the STP effluent), and the anticipated changes resulting from the cessation of sewage effluent inflow.

4. P. 37, Fig. 10. The location of the STP's are not indicated.

5. Are the STP's in tsunami prone areas?

AN EQUAL OPPORTUNITY EMPLOYER
Thank you for the opportunity to comment. This material was reviewed by HEC and affiliate personnel.

Sincerely,

Edwin T. Hurabayashi
EIS Coordinator

cc: E. Gee
    T.S. Fok
    C. Liu

Mr. Edwin T. Hurabayashi
EIS Coordinator
University of Hawaii at Manoa
Water Resources Research Center
Holmes Hall 203
2546 Dole Street
Honolulu, Hawaii 96822

October 12, 1983

Dear Mr. Hurabayashi:

Subject: Environmental Impact Statement Preparation Notice
          for Kaneohe-Kailua Wastewater Facilities Plan

Thank you for your letter concerning the EIS Preparation Notice
for the Kaneohe-Kailua Wastewater Facilities Plan. There has
been some delay in response because of basic changes in federal
criteria concerning the project.

Our responses to your several points are set forth below:

- BODs terminology will be used as you suggested.
- The City's permit application to the Corps of Engineers for
  Olomana-Maunawili Sewer Projects August 1981 states:
  "The completed Olomana District Interceptor and Maunawili
  District Trunk Sewer systems would eliminate the need for
  the four existing wastewater treatment facilities, releasing
  the lands for private or other public uses such as pumping
  stations, depending on the plan selected. Secondary treated
  sewage would no longer be discharged into the marsh, elimi-
  nating noxious odors from the existing sewage treatment
  plants and the health hazards associated with sewage
  discharge. Secondary sewage effluent into the marsh. The
  reduction of nutrients into the marsh would benefit water
  quality and ecology of Oneawa (Kawainui) Canal, Kailua Bay,
  and Kawainui Marsh."
Mr. Edwin T. Murabayashi -2- October 12, 1983

The DPED August 2, 1982 draft of the Kawaiolal Marsh Resource Management Plan recommends elimination of the sewage treatment plant discharges. Closure of the four plants will save taxpayers well over $1,000,000 during the 30-year planning period.

Regarding Hakalau Outfall, water quality monitoring and other studies to date give substantial evidence that reduction in effluent standards would not result in environmental degradation of the marine environment generally, nor Kailua Bay water quality data at the Wastewater Management Division give further details.

- Although Figure 10 indicates the words "Sewage Disposal" at sites of Kailua STP and Kaneohe STP, the BIS revised Figure 16 will highlight these locations.

- As seen in figure 12 of the BISPN, the Kaneohe STP is in a flood-prone area.

We appreciate your interest in this planning effort.

Should there be any questions, please call Geraldine Lum 527-5392.

He e aloha puelehana,

MICHAEL J. CHUN
Director and Chief Engineer

Mr. Michael J. Chun
Director and Chief
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, HI 96813

Dear Mr. Chun:

Thank you for the opportunity to review the Environmental Impact Statement: Preparation Notice for the Kaimana-Kailua Wastewater Facilities Plan sent to us on 6 October 1981. Based on our review, we provide the following comments.

a. Proposed sewer lines and pumping stations in streams or wetlands may need Department of the Army permits.

b. Reference page 31, figure 12, "Flood Areas," and page 22 of text: A portion of the proposed major sewer alignment in the Kahaluu area lies in the riverine flooding (Zone A). The 100-year flood has a one percent chance of being equalled or exceeded in any given year. Proposed public utilities and facilities in flood-prone areas should be located and constructed to minimize flooding damage and infiltration of flood waters into the system. Most of the areas of undeveloped land or flood debris (Zone C) at the Kahaluu area are taken from the Federal Insurance Administration's flood insurance study for the Island of Oahu.

c. Reference Section IX, Item 1 (page 51) of the Preparation Notice: This checklist indicated that wetlands will not be impacted by the proposed project. However, wetlands may occur within the proposed project area and may be impacted. We suggest that you contact the US Army Corps of Engineers, Operations Branch at 438-5258 for information regarding jurisdictional areas and Department of the Army requirements.
6. We suggest that the Environmental Impact Statement (EIS) identify the relationship of the proposed project to the Olomana-Haunui Sewer Project. For example, will raw sewage from these completed sewer projects be pumped via the Kaliua Sewage Pumping Station (SPS) to one of the Sewage Treatment Plants (STP) finally selected for the Kaneohe-Kailua Wastewater Facilities Plan? In addition, we suggest that the EIS confirm that the selected STP will have sufficient capacity to process this additional raw sewage from the Olomana-Haunui sewer projects to the secondary treatment level.

Page 21, Figure 3. When referring to this figure in the text of the EIS, the preparer should caveat the legend item "Future Populated Areas to be Sewered (Potentially)" by relating that designation to the "Service Area Boundary" in the figure in Attachment 2 of the US Army Engineer District, Honolulu Final Environmental Impact Statement." US Department of the Army Permit Application for Olomana-Haunui Sewer Projects, Kailua, Hawaii, 20th August 1981.

f. Page 22 and Table 2. The list of cultural resources potentially affected by portions of the plan should be amended by adding the Kaimuki Heritage District, Archaeological and Cultural District, which was determined eligible for inclusion on the National Register of Historic Places on 13 July 1979. We suggest that the cultural sites also be shown on a figure.

g. Page 45. In all discussions of the project alternatives, existing environment and environmental impacts, the City and County EIS should avoid 4.18, regarding the design population in the Olomana-Haunui sewer sub-district. These specific socio-economic impacts were prepared in conjunction with the staff of the City and County Department of Public Works. We suggest that the discrepancy between the City and County EIS and the Federal EIS on the subject of design population be eliminated. The City and County EIS should closely monitor the conditions imposed by the US Environmental Protection Agency on the construction grant for the proposed marsh or alternative alignments under the Olomana-Haunui Sewer Project (see paragraph 4.14 of the Federal EIS).

Sincerely,

[signature]
Chief, Engineering Division

Mr. Rimiku Cheng, Chief
Engineering Division
Department of the Army
U. S. Army Engineer District, Honolulu
Wahiawa, Hawaii 96786

October 12, 1983

Dear Mr. Cheng:

Subject: Environmental Impact Statement Proposal Notice for Kaneohe-Kailua Wastewater Facilities Plan

Thank you for your letter concerning the EIS Proposal Notice for the Kaneohe-Kailua Wastewater Facilities Plan. There has been some delay in response because of basic changes in federal criteria concerning the project.

- The potential requirement for Army permits is acknowledged.
- The Kahalu'u sewer alignment has had EIS approval and will be constructed. Flood hazard concerns will be considered.
- Comments concerning wetlands will be incorporated in the EIS.
- Sewage from the proposed Olomana - Haunui sewer will be pumped to Kailua SPS where sufficient capacity for adequate treatment will exist.
- The "Service Area Boundary" shown in Attachment 2 of the Army EIS shows precise limits for areas to be sewered. Figure 3 in the Facilities Plan EIS shows these areas symbolically, with no intention of being precise.
- The note concerning eligibility for the National Register will be incorporated in the EIS.
- A minor discrepancy in projected populations is acknowledged. The magnitude, however, is not sufficient to significantly effect Facilities Plan actions.
Mr. Kinuk Cheung

October 12, 1981

The City is continuing an attempt to satisfactorily resolve alignment problems of the Olowalu — Haanawili Sewer.

We appreciate your interest in this planning effort.

Should there be any questions, please call Geraldine Lum — 527-5392.

Me ke aloha punehana,

MICHAEL J. CHEUN
Director and Chief Engineer

Dr. Michael S. Chun, Ph.D.
Director & Chief Engineer
Department of Public Works
City & County of Honolulu
850 5th Ave.
Honolulu, HI 96813

Re: Aikahi Gardens

Dear Dr. Chun:

On behalf of the Board of Directors for Aikahi Gardens, I would like to take this opportunity to state that the Board requests your assistance in an action for the curtailment of the odor problem which may ensue due to the Koolau sewer waste water facilities which may be studied by the City and County of Honolulu.

At the present time, the odor problem is a subject of great debate among the members of the Association of Apartment Owners at Aikahi Gardens. If there is more waste processed at the facility, then the odor will increase, causing great discomfort to the Association.

Your comments on this problem will be appreciated.

Sincerely,

REALTY MANAGEMENT & SALES CORP.

Nicholas G. Sores
Property Manager-Managing Agent
for Aikahi Gardens

cc: Jack Shedletsky, President, Board of Directors
for Aikahi Gardens

Nich
October 12, 1983

Mr. Nicolas G. Sofo
Property Manager-Managing Agent
for Aikahi Gardens
O/o Realty Management and Sales Corp.,
1580 Makaha St., Suite 888
Honolulu, Hawaii 96814

Dear Mr. Sofo:

Subject: Environmental Impact Statement Preparation Notice for Kaneohe-Kalua Wastewater Facilities Plan

Thank you for your letter concerning the EIS Preparation Notice for the Kaneohe-Kalua Wastewater Facilities Plan. There has been some delay in response because of basic changes in federal criteria concerning the project.

We acknowledge the odor nuisance from Kalua STP which has affected Aikahi Gardens from time to time despite our best efforts and considerable expense for chemical abatement of the odors. We believe that the positive steps for odor control, as specified in the Facilities Plan, will reduce odors to acceptable levels.

We appreciate your interest in this planning effort.

Should there be any questions, please call Geraldine Lum - 527-5392.

He ko aloha tokeana,

Michael J. Chun
Director and Chief Engineer

November 5, 1983

Dr. Michael J. Chun, Ph.D
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
600 Ka'eo St., King Street
Honolulu, HI 96813

Dear Mr. Chun:

This letter is in regard to the EIS preparation notice for the Kaneohe-Kalua Wastewater Facilities Plan.

The most serious problem that Aikahi Gardens homeowners are faced with is the odor from the Kalua sewage treatment facility. It is our desire to reduce and eliminate the odor.

Your preliminary EIS report implies the odor will affect nearby homeowners although it can be mitigated. Mitigation would not be sufficient. It is imperative for the welfare and health of hundreds of Aikahi Gardens residents that any plan for modification of sewage treatment include procedures for curtailment of the odor. Any increase could not be tolerated.

Sincerely,

Jack Shedletsky
President
Aikahi Gardens Board of Directors
(aka Realty Management & Sales Corp.)
1580 Makaha St., Ste. 888
Honolulu, HI 96814
Dr. Willard T. Chow
December 28, 1983

The revised year 2005 population projection given in the Kaneohe-Kailua Facilities Plan** is given below:

<table>
<thead>
<tr>
<th></th>
<th>Population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kahaluu Tributary Area</td>
<td>13,000</td>
</tr>
<tr>
<td>Kaneohe Tributary Area</td>
<td>42,825</td>
</tr>
<tr>
<td>Kailua Tributary Area</td>
<td>44,200</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td>100,025</td>
</tr>
</tbody>
</table>

It is evident from the two population projections listed above that the latter projections have decreased over 50 percent from the original master plan. In terms of volume, the Nokupu outfall should have no hydraulic problems in handling year 2005 wastewater flows from all three tributary areas.

In the Facilities Plan, capacity of the recommended centralized treatment plant at Kailua has been limited to specific, modest population growth limits. Those limits are in accordance with public growth control policies in the 1977 Honolulu General Plan and the 1983 Koolau School Properties. In our comments to the EIS for the Island School Properties, we stated that flows from the non-urban designated areas such as the proposed development cannot be included in the expansion of the plant. This design limit for the capacity of the treatment plant is in itself a policy to ensure that sewage facilities are consistent with the facilities based on the Development Plans and do not induce growth and use policies and not infrastructure availability should be used to determine growth in an area.

We appreciate your interest in this planning effort. Should there be any questions, please call Geraldine Lom at extension 5392.

MICHAEL J. CHEN
Director and Chief Engineer

**Kaneohe-Kailua Facilities Plan, Volume 1, prepared by GNP Associates, Inc., prepared for the City & County of Honolulu, Department of Public Works, October 1983, Table 5.1, page 5-4.
December 30, 1983

Honorable Kent H. Keith
Department of Planning and Economic Development
P.O. Box 2359
Honolulu, Hawaii 96804

Dear Mr. Keith:

Subjects: EIS for Kaneohe-Kailua Wastewater Facilities Plan

This is in response to your November 22 comment on the EIS for Kaneohe-Kailua Wastewater Facilities.

The EIS will be revised to show the Corps of Engineers recent designation of a portion of lower Hauwaii Valley, immediately north of Kailua Road, as a wetland.

With respect to the comment about odor at Kailua STP, the odor reduction which will occur at Kailua STP when the Facilities Plan is implemented is considered to be a positive impact.

There is presently an occasional odor problem at Kailua. Although the added inflow will contain components capable of causing even more odor in the community than at present, the new design for Kailua will minimize or eliminate release of all odors, an improvement over the present situation. Accordingly, no negative impact will be created which requires mitigation.

We appreciate your interest in this planning effort. Should there be any questions, please call Geraldine Law at 517-5392.

Aloha pueo, pueo,

Michael J. Chun
Director and Chief Engineer

The United States Department of the Interior
Fish and Wildlife Service

Ms. Leslie H. Uchida
Office of Environmental Quality Control
550 Malakauila Street, Room 301
Honolulu, Hawaii 96813

Dear Mr. Uchida:

The U.S. Fish and Wildlife Service (FWS) has reviewed the Environmental Impact Statement (EIS) which was forwarded with your letter of October 18, 1983 concerning the Kaneohe-Kailua Wastewater Facilities. The EIS is incomplete in addressing appropriate marine resources within the Hauwaii outfall area (our letter of November 9, 1981). The EIS needs to include a description of the outfall site and a thorough discussion of primary and secondary long-term effects of increased, primary effluent on fish and benthic resources. Additionally, we offer the following specific comments:

1. Page 3-9. The Short-eared Owl (Pueo). Asio flammeus sandwichensis is not listed by FWS as an Endangered or Threatened species (50 CFR 17.11 & 17.12); however, the State considers this species Endangered on Oahu (Title 13, Subtitle 5, Part 2, Chapter 11e).

2. Page 3-10. The statement that “there are no critical habitats at or immediately adjacent to wastewater facilities” is highly misleading. Hupapa Ponds, which are adjacent to the Waterlots Recovery Facility, are considered in the EIS Endangered Kailua Wastewater Facility and are an area essential to the recovery of Hawaiian Stilt. Although the area is not yet legally defined as Critical Habitat (50 CFR 424), this should not detract from Hupapa Ponds’ biological significance to Hawaiian Stilts.

We recommend that the final EIS clarify these minor discrepancies and expand discussion of the outfall area. We appreciate this opportunity to comment.

Sincerely,

[Signature]

[Name]
Acting Project Leader
Office of Environmental Services

cc: Oahu OPM EPA, San Francisco

Save Energy and You Serve America!
MEMORANDUM

TO: MR. KAZU HAYASHIDA
    MANAGER AND CHIEF ENGINEER
    BOARD OF WATER SUPPLY

FROM: MICHAEL J. CHIN
    DIRECTOR AND CHIEF ENGINEER

SUBJECT: EIS FOR KANEOHE-KAIOLA
          WASTEWATER FACILITIES PLAN

This is in response to your November 15, 1983 comments on the
October 1983 EIS for Kaneohe-Kailua Wastewater Facilities. We
acknowledge each of the three Board of Water Supply requirements
which may be applicable when the Facilities Plan is implemented.

We appreciate your interest in this planning effort. Should
there be any questions, please call Geraldine Lam at extension
5392.

Michael J. Chin
Director and Chief Engineer

Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control
State of Hawaii
550 Kalakaua Avenue, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Kaneohe-Kailua Wastewater Facilities
Environmental Impact Statement

Our comments are as follows.

Although documentation is available indicating that
the present effluent discharge from Mokapu Outfall is not
causing significant degradation of coastal waters, the report
does not establish that similar results can be expected
under the proposed centralised system which calls for the
phasing out of Aahumanu and Kaneohe Sewage Treatment Plants
as well as the treatment plants at Pohoku, Kualoa,
Maunawili Park and Maunawili Estates. Nor is there an
indication that the coastal waters will be able to handle
future loads of the service area when sewerage services are
expanded to meet the needs of presently unserved areas and
urban area expansions in Kailua, Kaneohe and Kailua to the
year 2005. The total discharge volume and cumulative impact
of the effluent into the receiving coastal waters should be
discussed.

Secondary unplanned growth impact is presently beginning
to appear in the Kaneohe area in the form of Island School's
State land use application to re-designate conservation lands
into urban use. One basis the applicant uses to justify the
project is the adequacy and availability of sanitary sewer
services to accommodate the projected estimated average flow
from its development. Because public projects, in particular
Ms. Letitia N. Uyehara  
Page 2  
November 22, 1983

those that involve the construction and improvement of public facilities, may well stimulate or induce these types of secondary effects, the EIS may need to discuss severe policies applicable to future development requests which are inconsistent with the City's Development Plan.

Sincerely,

Ralph Kawanoto  
Planner

APPROVED:

WILLARD T. CHOW  
CC: DLU  
DPW  
GHP Associates, Inc.

MEMORANDUM

TO: DR. WILLARD T. CHOW  
CHIEF PLANNING OFFICER

VIA: ANDREW T. CHANG  
MANAGING DIRECTOR

FROM: MICHAEL J. CHUN  
DIRECTOR AND CHIEF ENGINEER

SUBJECT: EIS FOR KANEHOE-KAILUA WASTEWATER FACILITIES PLAN

Thank you for your letter of November 21, 1983 on the Kaneohe-Kailua Wastewater Facilities Plan EIS.

The wastewater flows generated from the Kahaluu, Kaneohe and Kailua areas were included in the original design of the Hokapu Outfall. The master plan report* prepared in 1972, used as a basis for the design of the Hokapu Outfall, gave the following year 2000 population projection:

<table>
<thead>
<tr>
<th>Population</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kahaluu Tributary Area</td>
<td>23,000</td>
</tr>
<tr>
<td>Kaneohe Tributary Area</td>
<td>82,000</td>
</tr>
<tr>
<td>Kailua Tributary Area</td>
<td>100,000</td>
</tr>
<tr>
<td>TOTAL</td>
<td>205,000</td>
</tr>
</tbody>
</table>

University of Hawaii at Manoa
Water Resources Research Center
Holoman Hall 205 • 1408 Dole Street
Honolulu, Hawaii 96822
8 December 1983

Dr. Michael J. Chun
Director & Chief Engineer
Department of Public Works
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Dr. Chun:

SUBJECT: Environmental Impact Statement for Kaneohe-Kailua
Wastewater Facilities, October 1983

We have reviewed the subject EIS and have no comment to offer.
Thank you for the opportunity to comment. This material was reviewed
by WRC and affiliate personnel.

Sincerely,

Edwin T. Murakami
EIS Coordinator

cc: Letitia Uyehara
    Michael McElroy
    CDP Associates

AN EQUAL OPPORTUNITY EMPLOYER
November 15, 1983

COPY

Mayor's Office

Department of Public Works

Notice: CCH

If you have any questions, please call Extension 222.

Director of Public Works

City and County of Honolulu

Office of Public Works

Mayor's Office

City and County of Honolulu
MEMORANDUM

TO:       Michael J. Chun, Director & Chief Engineer
          Department of Public Works

FROM:    Joseph K. Conant

SUBJECT: Environmental Impact Statement Preparation Notice
          Kaneohe-Kalua Wastewater Facilities Plan,
          Kaneohe-Kalua, Oahu, Hawaii

We have reviewed the information on the subject project and
have no comments to offer at this time.

Thank you for allowing us the opportunity to review and
comment on this matter.

[Signature]

[Signature]

JOSPEH K. CONANT
MEMORANDUM

TO: MICHAEL J. CHUN, DIRECTOR AND CHIEF ENGINEER
   DEPARTMENT OF PUBLIC WORKS

FROM: ROY A. PARKER, DIRECTOR

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE FOR KANEHOE-KAILUA WASTEWATER FACILITIES PLAN
   KANEHOE-KAILUA, OAHU, HAWAII

We have no comments on the EIS Preparation Notice for the Kanehoè-Kailua Wastewater Facilities Plan.

ROY A. PARKER

Mr. Michael J. Chun, Ph. D.
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Chun:


Thank you for the opportunity to participate in the preparation of the EIS for the subject project.

We have no substantive comments to offer to assist you in your work.

Very truly yours,

Ryoichi Nigashima
Director of Transportation
Mr. Michael J. Chun
Director and Chief Engineer
Department of Public Works
City of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Chun:

Subject: Request for Comments on Proposed Environmental Impact Statement (EIS) for Kaneso-Kailua Wastewater Facilities Plan, Kaneso-Kailua, Oahu, Hawaii

Thank you for allowing us to review and comment on the subject proposal EIS. Please be informed that we do not have any comments or objections to this project at this time.

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

Sincerely,

[Signature]
Deputy Director for Environmental Health

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

Dear Mr. Chun:

Subject: Environmental Impact Statement Preparation Notice

The Environmental Impact Statement Preparation Notice for the subject project was reviewed for HUD concerns and projects in the area.

We have no substantive comments to offer at this time but look forward to receiving the Draft EIS.

Sincerely,

Calvin Law
Acting Area Manager
Mr. Jack Shedletsky, President  
Aikahi Gardens Board of Directors  
c/o Realty Management & Sales Corp.  
1060 Makalani Street, Ste. 388  
Honolulu, Hawaii 96814

Dear Mr. Shedletsky,

Subject: Environmental Impact Statement Preparation Notice  
for Kanohe-Kailua Wastewater Facilities Plan

Thank you for your letter concerning the EIS Preparation Notice  
for the Kanohe-Kailua Wastewater Facilities Plan. There has  
been some delay in response because of basic changes in federal  
criteria concerning the project.

We acknowledge the odor nuisance from Kailua STP which has  
affected Aikahi Gardens from time to time despite our best  
efforts and considerable expense for chemical abatement of the  
project. We believe that the positive steps for odor control, as  
specified in the Facilities Plan, will reduce odors to acceptable  
levels.

We appreciate your interest in this planning effort.

Should there be any questions, please call Geraldine Lum  
527-3392.

Me ke aloha punehana,

MICHAEL J. CHUN  
Director and Chief Engineer

October 13, 1981

Mr. Michael J. Chun  
Director & Chief Engineer  
City & County of Honolulu  
650 S. King Street  
Honolulu, Hawaii 96813

Dear Mr. Chun:

Subject: EIS Preparation Notice  
Kanohe-Kailua Wastewater Facilities Plan  
Kanohe-Kailua, Oahu, Hawaii

Thank you for letting me review the EIS for the above mentioned  
project.

I have no comments on the proposed project.

Yours very truly,

Mark J. Carey  
Hawaii State ASCS Office
Dr. Michael J. Chun
Director and Chief Engineer
Department of Public Works
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Dr. Chun:

SUBJECT: Environmental Impact Statement Preparation Notice
Kaneohe-Kailua, Wastewater Facilities Plan,
Kaneohe-Kailua, Oahu, Hawaii

The Department of Hawaiian Home Lands has reviewed the Environmental Impact Statement Preparation Notice for the subject project and has no comments.

Thank you for the opportunity to review and comment.

Sincerely yours,

[Signature]

Chairman

EXP:00:01

TO: DR. MICHAEL J. CHUN
DIRECTOR AND CHIEF ENGINEER
DEPARTMENT OF PUBLIC WORKS

FROM: KAZU HAYASHIDA
BOARD OF WATER SUPPLY

SUBJECT: YOUR LETTER OF OCTOBER 6, 1981 ON THE ENVIRONMENTAL IMPACT STATEMENT PREPARATION NOTICE FOR THE KANEOHE-KAILUA WASTEWATER FACILITIES PLAN, KANEOHE-KAILUA, OAHU, HAWAII.

We anticipate no impact on potable groundwater from the proposed project.

If you have any questions, please contact Lawrence Whang at 548-5221.

[Signature]

KAZU HAYASHIDA
Manager and Chief Engineer
Mr. William A. Bonnet  
Department of Transportation Services  
(City and County of Honolulu)

Mr. Joseph K. Conant  
Department of Housing and Community Development  
(City and County of Honolulu)

Captain M. M. Dallam, USN  
Headquarters, Naval Base Pearl Harbor

Mr. Douglas G. Gibb  
Chief of Police  
(City and County of Honolulu)

Mr. Ryokichi Higashionna  
Director of Transportation (Hawaii)

Mr. Shuzo Kimura  
Headquarters, 15th Air Base Wing (PACAP)

Mr. Melvin K. Koizumi  
Department of Health (Hawaii)

Mrs. Emiko I. Kudo  
Department of Parks and Recreation  
(City and County of Honolulu)

Mr. Francis C. H. Lum  
U. S. Department of Agriculture

Major Jerry M. Matsuda  
Department of Defense (Hawaii)  
Office of the Adjutant General

Mr. Michael M. McElroy  
Department of Land Utilization  
(City and County of Honolulu)

Mr. Rikio Nishioka  
State Public Works

Mr. Melvin M. Nonaka  
Fire Chief  
(City and County of Honolulu)
LETTERS NOT REQUIRING RESPONSES (continued)

Ms. Georgianna K. Padeken
Department of Hawaiian Home Lands (Hawaii)

Commander J. E. Schwartz
Fourteenth Coast Guard District

Mr. Jack Suwa
Department of Agriculture (Hawaii)

Mr. Roy H. Tanji
Director and Building Superintendent
(City and County of Honolulu)

Mr. M. A. Yoshinaga, P. E.
Kaneohe Marine Corpsos Air Station

Mr. Edwin T. Murabayashi
Water Resources Research Center
Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control
550 Kekuanaoa Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

The Fourteenth Coast Guard District has reviewed the EIS for Kaneohe-Kalua Wastewater Facilities and has no objection or constructive comments to offer at the present time.

Sincerely,

[Signature]

J. E. SCHWARTZ
Commander, H. R. Coast Guard
District Planning Officer

By direction of
Commander, Fourteenth Coast Guard District

Copies to:
Department of Land Utilization, CEC of Hl.
Department of Public Works, CEC Hl.
GMP Associates, Inc.

To: Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control

Subject: Environmental Impact Statement (EIS) for Kaneohe-Kalua Wastewater Facilities

The Department of Agriculture has reviewed the subject EIS and has no comments to offer.

Thank you for the opportunity to comment.

[Signature]

J. E. SCHWARTZ
Commander, H. R. Coast Guard

cc: Mr. Michael M. McIlroy
Dept. of Public Works, CEC
GMP Associates, Inc.
November 1, 1982

Ms. Letitia N. Uyehara
Interim Director
Office of Environmental Quality Control
540 Kakaako Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Kaneohe-Kailua Wastewater Facilities
Koolauqko, Oahu

We have reviewed the EIS for Kaneohe-Kailua Wastewater
Facilities and have no comments.

Thank you for the opportunity to review the EIS.

Very truly yours,

ROY N. TAKI
Director and Building Superintendent

抄送: Dept. of Public Works
GP Assoc., Inc.
J. Marada
Ms. Letitia H. Uyehara, Interim Director
Office of Environmental Quality Control
State of Hawaii
550 Hahamalu Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Draft Environmental Impact Statement (EIS) for
Kaneohe-Kailua Wastewater Facilities

We have reviewed the subject Draft EIS and found that it adequately addresses all of our concerns.

If there are any questions, please contact John Makagawa of our staff at 527-5030.

Very truly yours,

MICHAEL H. MCILROY
Director of Land Utilization

Mr. Michael McIlroy
Director
Department of Land Utilisation
City & County of Honolulu
Honolulu, Hawaii

Subject: Kaneohe-Kailua Wastewater Facilities
Environmental Impact Statement

We have reviewed the subject environmental impact statement and have no comments to offer.

Thank you for the opportunity to review the environmental impact statement.

Very truly yours,

RICK MISHIOKA
State Public Works Engineer

Ms. Letitia Uyehara
U.S. Michael Chun
GMP Associates, Inc.
October 27, 1981

Ms. Leticia Uyehara
Interim Director
Office of Environmental
Quality Control
550 Kalakaua Avenue, Room 101
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

SUBJECT: Kaneohe-Kalana Wastewater Facilities

Reference is made to your letter of October 18, 1983, requesting comments on the subject project.

The Department of Hawaiian Home Lands has reviewed the Environmental Impact Statement for the subject project and has no comments to offer at this time as the proposed project does not affect our lands.

Thank you for affording us the opportunity to respond to the Environmental Impact Statement.

Sincerely yours,

[Signature]

Georgiana K. Padaken
Chairman

CC: Michael Chung, Director
Department of Public Works
650 South King Street, 11th floor
Honolulu, HI 96813

JMP Associates, Inc.
1427 Wiliwili Drive, Suite 209
Honolulu, HI 96817
December 13, 1983

Mr. William R. Kramer
Acting Project Leader
Office of Environmental Services
Fish and Wildlife Service
U.S. Department of the Interior
P. O. Box 99187
Honolulu, Hawaii 96850

Dear Mr. Kramer:

Subject: EIS for Kaneohe-Kaliua Wastewater Facilities

Thank you for your letter of November 16, 1983 concerning the EIS for Kaneohe-Kaliua Wastewater Facilities.

The EIS did not evaluate the impact of primary-treated effluent on Nokapa receiving waters because this and other criteria of the secondary waiver Section 301 of the regulations will be addressed in a separate application to EPA. If approved by EPA, the public will be given ample opportunity to comment at a public hearing required by the Section 301(b) regulations. Primary-treated effluent will not be discharged until a modified NPDES permit allowing the discharge is issued.

Additional statements concerning the Short-eared Owl and about Hupaia Pond's habitat for the Hawaiian Stilt will be included in the Revised EIS.

We appreciate your interest in this planning effort. Should there be any questions, please call Geraldine Lum at 527-5192.

Mo ke aloha punchana,

MICHAEL D. CHUN
Director and Chief Engineer

HAWAIIAN ELECTRIC COMPANY, INC.

Ms. Lotita M. Uyehara
Interim Director
Office of Environmental Quality Control
550 Mailiakewila Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

Subject: Kaneohe-Kaliua Wastewater Facilities

Koolapaua, Oahu

We have reviewed the Environmental Impact Statement for the Kaneohe-Kaliua Wastewater Facilities and have the following comments:

1. The various proposed wastewater facilities may have an effect on HECO's facilities.

2. There is no mention of the effects to HECO's facilities for the purchase of excess electrical power produced by wind power and/or sewage sludge digester gas for operation of the Kaliua Sewage Treatment Plant (SPP) and the various pumping stations. HECO's Distribution Engineering Department should be consulted regarding purchased power.

Thank you for letting us comment on the above subject project.

Sincerely,

Richard L. O'Connell
Manager, Environmental Department

SLC: cal

cc: Mr. Michael McElroy, Director
C&O, DLU

Dr. Michael J. Chun, Director
C&O, BPM

GNP Associates, Inc.
December 13, 1983

Mr. Lettle Hiriyama, Interim Director
Office of Environmental Quality Control
550 Kamehameha Street, Room 301
Honolulu, Hawaii 96813

Dear Mr. Hiriyama:

We appreciate the opportunity to review the draft environmental impact statement (EIS) for the proposed modifications to the Kaneohe-Kailua wastewater facilities.

In our January 8, 1982 letter to the Department of Public Works, we suggested that the forthcoming EIS should address potential impact on aquatic resources. We recently received a response to our letter. Essentially, that response, dated October 12, 1983, states:

1) The impact on aquatic organisms of shutting down the Alakona Sewage Treatment Plant 126 yard/yard cover stated in the Environmental Impact statement on the Kahaluu wastewater system.
2) Mitigation measures necessitated by construction of the Kahaluu Interceptor is also stated in the EIS statement.
3) The consequences of increased EOD (biological oxygen demand) and SS (suspended solids) levels from discharges through the Mahanai outfall will be covered by the draft we have just reviewed.

Inasmuch as the shutting down of the Alakona facility will have an effect on the flow to the Kailua plant, we think it appropriate that the impact of the shut down on aquatic organisms be covered. If it were covered in a 1979 document, then appropriate sections may be referred to. We concede that if construction of the Kahaluu Interceptor is complete, a discussion of mitigative measures for that work would be pointless, but not otherwise. Finally, the environmental impact statement fails to discuss the impacts of increased discharge at Makaha under relaxed water quality standards. Insofar as these impacts may be addressed in a September 1979 report to the Environmental Protection Agency, they ought to be incorporated into the EIS.

As indicated on page 10-3, the flow into Kailua falls for waters may be tripled between 1980 and the year 2000. At the same time, it is proposed that water quality standards be relaxed, doubling the levels of EOD and SS discharges (pp. 1-2 and 1-3). This a change of five years at a time. Moreover, treatment at Kailua is said to be unreliable due to lack of backup equipment (pp. 1-4).
MEMORANDUM

To: Ms. Letitia H. Uyehara, Interim Director, DOH
   Mr. Michael N. McKiernan, Director of Land Utilization,
   City & County of Honolulu

From: Deputy Director for Environmental Health

Subject: Environmental Impact Statement (EIS) for Kaneohe-Kailua Wastewater Facilities, Koolauloa, Oahu

Thank you for allowing us to review and comment on the subject EIS. On the basis that the project will comply with all applicable Administrative Rules, please be informed that we do not have any objections to this project.

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

cc: Dr. Michael Chom
    GNP Associates

Ms. Letitia H. Uyehara
Interim Director
Office of Environmental Quality Control
550 Haukou Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uyehara:

SUBJECT: ENVIRONMENTAL IMPACT STATEMENT (EIS) FOR THE PROPOSED KANEHOE-KAILUA WASTEWATER FACILITIES

We have reviewed the EIS for the wastewater facilities and do not anticipate any negative impacts on parks and recreation facilities in proximity to the project sites.

Thank you for the opportunity to review the EIS.

Sincerely yours,

(Mrs.) ENIKO T. KUO, Director

cc: DOH

EIK13.
November 16, 1983

Ms. Letitia W. Uyehara, Interim Director
Office of Environmental Quality Control
550 Kalakaua Street, Room 301
Honolulu, HI 96813

Dear Ms. Uyehara:

Subject: Environmental Impact Statement for Kanaha-Kalalu
Wastewater Facilities, Kulaupapa, Maui, HI

We have reviewed the subject environmental impact statement and have
no comments to make.

Thank you for the opportunity to review the document.

Sincerely,

Francis H. Imai
State Conservationist

Copy: Mr. Michael McElroy, Director
Department of Land Utilization
City & County of Honolulu
650 South King Street, 7th Floor
Honolulu, HI 96813

Dr. Michael J. Chun, Director
Department of Public Works
City & County of Honolulu
650 South King Street, 11th Floor
Honolulu, HI 96813

GDP Associates, Inc.
1457 Dillingham Blvd., Suite 209
Honolulu, HI 96817

Ms. Letitia W. Uyehara, Interim Director
Office of Environmental Quality Control
550 Kalakaua Street, Room 301
Honolulu, HI 96813

Dear Ms. Uyehara:

Thank you for providing us the opportunity to review the proposed project,

We have completed our review and have no comments to offer at this time.

Sincerely,

Hiro M. Kato
Deputy Manager

Copy: Mr. Michael McElroy, Director
Dept of Land Utilization GAC of Mol
Dr. Michael Chun, Director
Dept of Public Works, GAC of Mol

GDP Associates, Inc.,
Env. Quality Comm w/SIS
Ms. L. M. Uchida, OHEC  
Kaneohe-Kailua Wastewater Facilities  
Page Two  
Page 2 of 2

Here discussion of effluent quality is not the same as discussing environmental impact. For any given volume and quality of discharge, there will be impacts on various elements of the environment. Our interest lies in protecting aquatic resources and the recreational use of Kailua Bay. We regret our January 6, 1992 letter failed to make this clear.

It is suggested that a supplemental statement be prepared to cover the obvious inadequacies of the present draft. It may also be desirable for the supplement to cover points raised by the Department of Land Utilization on November 9, 1991 and the Water Resources Research Center on October 30, 1991.

Sincerely,

Susan Ono  
Chairperson

cc: DPW, CSC Honolulu  
WasteWater-Bureau

December 15, 1992

Honorable Susumu Ono, Chairperson  
State of Hawaii  
Board of Land and Natural Resources  
P.O. Box 621  
Honolulu, Hawaii 96809

Dear Mr. Ono:

Subject: EIS for Kaneohe-Kailua  
Wastewater Facilities Plan

Thank you for your letter of November 31, 1993 on the Kaneohe-Kailua Wastewater Facilities Plan EIS.

The transmission of wastewater between Ahehau Sewage Treatment Plant (STP) and Kaneohe Sewage Treatment Plant will be via the Ahehau Force Main, Sections 1 and 2, which are presently under construction. Conversion of Ahehau STP to a pump station is also under construction. Environmental concerns were covered in the Environmental Impact Statement (EIS) of December 1990 and the revised EIS of March 1991 for the Kailua Wastewater Treatment and Disposal System.

The EIS did not evaluate the impact of primary-treated effluent on Hoopu receiving waters because this and other criteria of the secondary waiver Section 301(b) regulations will be addressed in a separate application to EPA. If approved by EPA, the public will be given ample opportunity to comment at a public hearing required by the Section 301(b) regulations. Primary-treated effluent will not be discharged until a modified NPDES permit allowing the discharge is issued.

We appreciate your interest in this planning effort. Should there be any questions, please call Geraldine Tan at 527-5392.

Me ke aloha puahana,

Michael J. Chun  
Director and Chief Engineer
November 5, 1985

Ms. Letitia L. Lyohara
Interim Director
Office of Environmental Quality Control
850 South King Street
Honolulu, Hawaii 96813

Dear Ms. Lyohara:

Subject: IUI for Kaneohe-Kailua Wastewater Facilities

We have no comments on the subject IUI.

Sincerely,

William A. Conner

cc: Dept. of Land Utilization
    Dept. of Public Works
    SDP Associates, Inc.

Mr. Michael McElroy, Director
Department of Land Utilization
City and County of Honolulu
850 South King Street, 7th Floor
Honolulu, Hawaii 96813

Dear Mr. McElroy:

Subject: Environmental Impact Statement
Kaneohe-Kailua Wastewater Facilities
Koolau, Oahu

We appreciate the opportunity to review and comment on the Kaneohe-Kailua Wastewater Facilities Environmental Impact Statement.

We note that the service areas of the proposed facilities include the Windward Oahu suburban areas of Kaneohe, Kailua and Kahaluu. Resident population for these areas amounts to 80,000 people. The proposed facilities will accommodate an additional 12,000 or a total of 92,000 persons between now and the year 2005.

We will retain the EIS report for our files.

Sincerely,

cc: Michael J. Chun, Department of Public Works
    SDP Associates, Inc.
    1427 Dillingham Blvd., Suite 209
    Honolulu, Hawaii 96817
DEPARTMENT OF THE ARMY
PACIFIC OCEAN DIVISION, CORPS OF ENGINEERS
FT. SHAFTER, HANALEI BAY

November 15, 1983

Dr. Michael Chou, Director
Department of Public Works
City and County of Honolulu
650 South King Street, 11th Floor
Honolulu, Hawaii 96813

Dear Dr. Chou:

Thank you for the opportunity to review and comment on the environmental impact statement for Kaneohe-Rancho Wastewater Facilities. The following comments are offered:

a. It is unclear if any fill in wetland areas is needed. If fill is required in Rancho Marsh or other wetland areas, a Department of the Army permit may be required.

b. Page 3-17, Section 3.1.10 Flood-prone Areas and Figure 12. The most updated map of flood-prone areas in the Kaneohe-Rancho areas is the Flood Insurance Rate Map (FIRM), prepared as part of the Flood Insurance Study for the City and County of Honolulu by the Federal Insurance Administration. The FIRM (dated September 2, 1982) identifies the riverine flood plain areas within the proposed wastewater facilities improvement district. Under the requirements of the National Flood Insurance Program, public utilities and facilities should be located and constructed to minimize or eliminate flood damage, and adequate drainage is provided to reduce exposure to flood hazards.

Sincerely,

[Signature]

Encl.
December 15, 1983

Mr. Kluu Chaung, Chief
Engineering Division
Pacific Ocean Division
Corps of Engineers
Ft. Shafter, Hawaii 96858

Dear Mr. Chaung:

Subject: EIS for Kaneohe-Kailua Wastewater Facilities Plan

This is in response to your November 15, 1983 comments on the October 1983 EIS for Kaneohe-Kailua Wastewater Facilities Plan.

a. Construction in the wetland areas is not contemplated for projects in this Facilities Plan.

b. The requirement for minimizing public facilities hazards in flood plain areas is recognized. Accordingly, wastewater facilities which must remain at or near the plant will be designed to minimize flood damage.

We appreciate your interest in this planning effort. Should there be any questions, please call Geraldine Lam at 527-5392.

Ke ke aloha pueoana,

Michael J. Chun
Director and Chief Engineer

November 16, 1983

OMP Associates, Inc.,
4727 Dillingham Blvd., Suite 209
Honolulu, Hawaii 96813

REFERENCE: EIS FOR KANEOHE-KAILUA WASTEWATER FACILITIES

Dear Sirs:

At the regular October 27, 1983 meeting of Kaneohe Neighborhood Board, we voted to support the centralized wastewater system for the population projected for the year 2000 in the Kailua-Kaneohe-Kalakaua area. The Department of Public Works should be commended for reducing the cost for a greatly improved sewer system to Kaneohe as well as for eliminating environmental pollutants presently impacting the Kahuku Stream, Kawaihae Stream and Kaneohe Bay. The Board also makes the following comments:

1. With such a physically extensive wastewater system to a centralized, single outfall, we are amazed to find no mention being made of what happens to all that sewage in polluted electrical outages. Is the outfall and any waste in our homes and running in our streets? Windward Sewer has frequent, extensive and, at times, prolonged electrical failures. Also, due to the location of the above ground transmission lines over the Koolau Mountains will always have that potential. Are there to be back-up generators or batteries every pumping site? Or, as in the past, will there be booms pumping at the old DIP sites of our sewage into the nearby streams, baylands, and Kaneohe Bay? Are there to be outlet pipes left in place at the closed DIPs for this purpose?

2. In Chapter 8, energy conservation is addressed with the primary discussion being the use of solarpower at the above DIP and the possibility of some use for the discounted rates in the operation of the stations. But find that no mention is made of the possibility of other alternate energy such as at the pumping stations or Kaneohe DIP. The use of photovoltaic
University of Hawaii at Manoa
Environmental Center
Crawford 327 • 2500 Campus Road
Honolulu, Hawaii 96822
Telephone (808) 956-1001

November 19, 1983
RE: 8394

Mr. Michael McElroy, Director
Department of Land Utilization
City and County of Honolulu
654 South King Street
Honolulu, Hawaii 96813

Ms. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control
518 Halona Avenue
Honolulu, Hawaii 96813

Dear Sir/Madam:

Draft Environmental Impact Statement
Kaneohe-Kailua Water supply Facilities
Kaneohe-Kailua, Koolau, Oahu

This project proposes to:
1) centralize sewage treatment in the Kailua-Kaneohe area by expansion of the Kailua Sewage Treatment Plant (STP),
2) terminate certain existing Interim STPs and
3) discharge the collected effluents, after primary treatment, through the Mokapu outfall thus eliminating existing effluent discharges to Manawai and Alahine streams, Kaneohe Bay, and Kawainui Marsh.

We appreciate the opportunity to review the draft DEIS. Our Environmental Center review has been prepared with the assistance of Alison Kay, Zoology Adviser, General Science, Matthew S. Oliver, Anthropology, Lee Hirasaki, Jacqueline Miller, and Mark Ingledew, Environmental Center. The following comments are offered for your consideration.

FIS Format and General Content

In addition to comments on the content of the DEIS, we would like to offer some comments on the general format and style of this document. The one of the exceptionally heavy paper facebound dividers for the heading of each chapter and the double and triple spacing of the text has resulted in a physical volume more than double that necessary.

AN EQUAL OPPORTUNITY EMPLOYER

Ms. Michael McElroy
Ms. Letitia N. Uyehara
November 19, 1983

Not only is the DEIS too bulky to handle, but we assume it costs more than necessary to reproduce. Furthermore, the reader is obliged to wade through unnecessary "fluff" in his review. We suggest that consideration be given to the drafting of future DEISs to reducing their bulk through more concise print format and the elimination of separate, heavy weight, chapter dividers.

Archaeology

Further clarification of what sewer diversion lines will be installed due to the proposed project needs to be outlined in the revised DEIS. Page 6-8 does not mention the planned waste water planning that does not clearly state which of their "features" are included in the present project nor how they relate to the assessment of impacts. These "features" include potential negative impacts on archaeological remains. Clarification should be provided in the final DEIS.

Water Quality

Our reviewers agree with the "consensus" (page 5-3) that it is unlikely that significant impacts will occur from the release of primary treated effluent from the Mokapu outfall.

A brief summary of the results of the situation cited in this DEIS would be helpful to identify what impacts have occurred from the release of secondary treated effluent at Mokapu outfall and thus the rationale for the determination of no significant impact.

The following reference should be included in the revised DEIS:


In addition to comments (Chapter 4) should be included (when available) in the reference list to facilitate further literature searches.

Impacts of elimination of present discharges

As is recognized in the DEIS (Chapter 4) discharges of sewage to Alahine Stream, Manawai Stream, and Kawainui Marsh have resulted in excessive nutrients and degradations of receiving waters. The proposed closure of the discharging Interim STPs and redaction of their effluents to the Mokapu outfall will eliminate this source of pollutant/nutrient loading in these receiving waters. One factor which seems to have overlooked in the analysis of the impacts of the proposed action on these streams and Kawainui Marsh is that of concentrating the streams and reduction of water supply in the marsh. While we recognize the need to eliminate pollutants, we wonder whether the elimination of these STP discharges will significantly reduce the flows in the streams or the water supply to the marsh and, if so, whether mitigative measures will be necessary to avoid significant impacts to the stream and marsh habitats?

It would be helpful to provide, in the revised DEIS, simple water budgets comparing present water flows into Kawainui Marsh and flows after the effluent is diverted to Mokapu outfall. The reduction of flow may be critical to the surviving wetland habitats of Kawainui Marsh and may have significant effects on open water space.
Mr. Michael McIlroy  
Ms. Letitia H. Okubara

November 18, 1983

Digest Gas

The discussion of wind turbine energy production and its impact is thorough and
helpful. Similar treatment of digest gas potentials, limitations and impacts would also
be helpful (pages 8-10).

Yours truly,

Doak C. Cox
Director

cc: GMP Associates, Inc.  
    Alison Kay
    Sheila Concert
    Matthew Byrnes
    Lee Hanah
    Jacqueline Miller
    Mark Inegali
    Michael J. Chun

Dr. Doak C. Cox  
University of Hawaii  
Environmental Center  
Crawford 317  
2550 Campus Road  
Honolulu, Hawaii 96822

December 13, 1983

Dear Dr. Cox:

Subject: EIS for Kaneohe-Kualoa Wastewater Facilities Plan

The following response is offered to your comments on the October
1983 EIS for Kaneohe-Kualoa Wastewater Facilities.

EIS Format

Consideration will be given to reduction of EIS bulk.

Archaeology

Appendix A of the EIS shows alignments for proposed sewer lines.  
These alignments are not known to pass through any sites of  
archaeological significance.

Water Quality

The additional reference is appreciated and will be included in  
the revised EIS.  Insufficient or no adverse impacts have  
been noted in any references, it is considered that any further  
summaries will not contribute to the EIS.

Impacts of Elimination of Present Discharges

It is acknowledged that the closure of four interim STPs, which  
now discharge a total of about 0.5 mgd into Kawaiola Marsh, will  
reduce water input to the marsh.  However, without a detailed  
study of many complex variables, it is considered that a simple
HEADQUARTERS
NAVAL BASE PEARL HARBOR
W. 2385

Ms. Letitia N. Uehara, Interim Director
Office of Environmental Quality Control
553 Halalealani Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uehara:

Environmental Impact Statement
Kaneohe-Kailua Wastewater Facilities

The EIS for the Kaneohe-Kailua Wastewater Facilities has been reviewed
and the Navy has no comments to offer.

Thank you for the opportunity to review the EIS.

Sincerely,

M. M. DAULAM
CAPTAIN, CEC, U. S. NAVY
EXECUTIVE ENGINEER
BY EXECUTION OF THE COMMANDER

Copy to:
Department of Public Works, OIC. Navy.

OHI Associates, Inc.

October 13, 1973

Ms. Letitia N. Uehara, Interim Director
Office of Environmental Quality Control
553 Halalealani Street, Room 301
Honolulu, Hawaii 96813

Dear Ms. Uehara:

As Kaneohe-Kailua Wastewater Facilities III
we have no comments relating to this project. The EIS is being referred to
the Civilian.

Thank you for the opportunity to comment.

Sincerely,

[Signature]

[Printed Name]

[Title]

ATTACH:

1. Department of Environmental Quality Control
2. OHI Associates, Inc.
Department of the Air Force
Headquarters (USAF Aerospace Systems Division)
300 Senator Frank H. Minority, Suite 601
Washington, D.C. 20310

November 1, 1993

To: Mr. Letitia N. Uyehara, Interim Director
Office of Environmental Quality Control
550 South King Street, Room 201
Honolulu, HI 96813

Dear Ms. Uyehara:

Ranoa-Kaliu Wastewater Facilities

Thank you for the opportunity to review the subject Environmental Impact Statement.

We have no substantive comments to make that would alter the document.

Very truly yours,

[Signature]
Director of Transportation

cc: Mr. Michael Chun, EPA, City of Honolulu

DEPARTMENT OF THE AIR FORCE
HEADQUARTERS (USAF AEROSPACE SYSTEMS DIVISION)
WASHINGTON, D.C. 20310 (HHOF)

DEPARTMENT OF THE AIR FORCE
DEPARTMENT OF DEFENSE

24 OCT 93

Subject: Environmental Impact Statement for the Ranoa - Kaliu Wastewater Facilities

1. This office has reviewed the subject EIS and has no comment relative to the proposed project.

2. We greatly appreciate your cooperative efforts in keeping the Air Force apprised of your project and thank you for the opportunity to review the document. The EIS is returned for your file.

[Signature]
Acting Chief, Engrg & Environ Div EIS
Directorate of Civil Engineering

Cc: Mr. Michael Chun, Director of Wastewater Control
City of Honolulu
650 South King Street, Room 101
Honolulu, HI 96813

Dr. Michael J. Chun, Director of Civil Engineering
Department of Public Works
City of Honolulu
650 South King Street, Room 101
Honolulu, HI 96813

Honolulu, HI 96817
APPENDIX C

EIS COMMENTS AND RESPONSES
EIS LETTERS WITH RESPONSES

Mr. Kisuk Cheung
Army Corps of Engineers

Ms. Nancy Clingan
Kaneohe Neighborhood Board

Dr. Doak C. Cox
Environmental Center

Mr. James A. Gammon
Kailua Resident

Mr. Kazu Hayashida
Board of Water Supply

Dr. Willard T. Chow
Department of General Planning

Mr. Kent M. Keith
Department of Planning and Economic Development

Mr. William R. Kramer
U. S. Department of the Interior, Fish and Wildlife Service

Mr. Richard L. O'Connell
Hawaiian Electric Company, Inc.

Mr. Susumu Ono
Board of Land and Natural Resources

WP: 2140/978
APPENDIX A

This Appendix presents site details for five major sewers and six collection systems (Improvement Districts) proposed as part of the Kaneohe-Kailua Wastewater Management system.

Maunawili Trunk Sewer, Section 2
Maunawili WWPS and FM
Kukanono WWPS and FM
Kailua Road Interceptor Sewer
Kailua Sewers Section 9 I.D.
Kailua Sewers Section 10 I.D.
Kaneohe Sewers Section 8 I.D.
Kaneohe Sewers Section 9 I.D.
Kaneohe Sewers Section 10 I.D.
Kaneohe Bay Sewers I.D.
Kaneohe Bay SPS No. 5 and FM

Construction of the Ahuimanu Sewage Pump Station and Force Main began during 1983. Site plans and planning data for five Collection System Improvement Districts in Kahaluu were presented in the FACILITY PLAN FOR THE KAHALUU WASTEWATER TREATMENT AND DISPOSAL SYSTEM published in January 1980 by the Division of Wastewater Management, Department of Public Works, City and County of Honolulu.

A-1