FINAL
ENVIRONMENTAL ASSESSMENT

WAILUA FACILITY PLAN

Prepared for:

County of Kauai
Department of Public Works
Division of Wastewater Management

April 2008

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EXHIBIT "I-64"

Project Summary

Project:	Wailua Facility Plan
Proposing Agency:	County of Kauai, Department of Public Works Division of Wastewater Management
Contact Person:	Mr. Edward Tschupp, P.E. Division of Wastewater Management Chief
Purpose:	A planning study for the expansion and management of the Wailua wastewater system to the year 2025
Anticipated Determination:	Finding of No Significant Impact (FONSI)
Location:	Wailua, Island of Kauai, State of Hawaii
Wailua WWTP Service Area	
Tax Map Key:	Fourth District, Third Zone, Ninth Section Fourth District, Fourth Zone, First Section Fourth District, Fourth Zone, Third Section Fourth District, Fourth Zone, Fifth Section Fourth District, Fourth Zone, Sixth Section
Property Owner:	Various
State Land Use Classification:	Various
County Zoning Ordinance:	Various
Wailua WWTP	
Tax Map Key:	Fourth District, Third Zone, Ninth Section, Sixth Plat, Nineteen Parcel
Property Owner:	County of Kauai
State Land Use Classification:	Urban
County Zoning Ordinance:	Open
Pre-assessment Consultation:	State Department of Hawaiian Home Lands County of Kauai, Department of Planning County of Kauai, Department of Public Works U.S. Fish and Wildlife Services National Oceanic and Atmospheric Administration (NOAA), The Pacific Islands Regional Office of the National Marine Fisheries Service (NMFS)

I. INTRODUCTION

A. PROJECT SUMMARY

The purpose of this project is to develop a comprehensive wastewater facility plan for the Wailua Wastewater System, County of Kauai, State of Hawaii.

The planning period for this project encompasses the period from the present to the year 2025. This report will be used to help improve water quality, protect public health, and accommodate planned future growth. The plan includes estimates of future wastewater flow based on population growth projection up to the year 2025. The plan also evaluates future wastewater treatment and effluent disposal alternatives and estimates costs and pricing data for the alternatives. These considerations will be used to determine the expansion needs for the Wailua Wastewater Treatment Plant (WWTP) and other construction within the Wailua wastewater system, and determine the timing for when the improvements should be implemented.

For the overall planning period, three planning intervals were selected as follows: near term, middle term, and far term. The near term improvements should be implemented within the next few years (present-2010). The middle term improvements are in the following five years (2010-2015). The far term improvements are in the following 10 years (2015-2025) or beyond after middle term improvements.

The projects described in this plan may be funded by Federal Funds through the State of Hawaii Clean Water State Revolving Fund Program. The projects will be required to meet all National Environmental Policy Act (NEPA) and Hawaii State Revolving Fund Program (HSRFP) requirements.

B. BACKGROUND

The Wailua WWTP was originally constructed in 1964 and receives wastewater from the Kapaa, Papaloa, Waipouli, and Wailua areas. The plant was originally designed to treat an average flow of 0.5 million gallon per day (mgd). The plant has gone through four phases of construction, the most recent in 1992 to expand to the current design average daily flow of 1.5 mgd and a design peak flow capacity of 5.03 mgd. However due to age and a harsh salt air environment, the actual treatment capacity is reduced to 1.0 mgd. Moreover, the treatment capacity of 1.0 mgd is not reliable due to a lack of standby units. Several processes are in poor condition and in need of repair. However, the lack of standby units makes it difficult to remove these units from service for repair and maintenance.

The existing collection system consists of gravity lines, pump stations, and force mains. The collection system is centered in the coastal area along the Kuhio Highway. The project location map is shown on Figure 1.

There are several projects, either public or private, that may affect portions of the Wailua-Kapaa sewage system, including:

- As part of the renovations to the Coco Palms Resort, it may be possible to allocate land to the County for the construction of a new Coco Palms sewer pump station (SPS). The location and size of the parcel will be subject to negotiation.

- The State Department of Transportation (DOT) is planning to widen Kuhio Highway in the vicinity of the Coco Palms SPS. The highway-widening project will encroach on the pump station site. This project is expected to begin construction at the end of 2007.

Careful planning and coordination of construction activities will be necessary.

C. PROJECT TECHNICAL DESCRIPTION

1. Existing Facilities

The Wailua WWTP is located on approximately 2.1 acres of County owned land next to Lydgate Park. The treatment plant is designated as an R-2 facility, which means the plant provides secondary treatment and disinfection. This meets the minimum requirements for wastewater treatment per Hawaii Administrative Rules (HAR) Title 11, Chapter 62. The current plant layout is shown on Figure 2.

In the Wailua-Kapaa area, wastewater treatment is accomplished with Individual Wastewater Systems (IWS), such as cesspools or septic tanks, or at the County owned and operated Wailua WWTP. Figure 3 shows the parcels in the Wailua-Kapaa area that have water and sewer service. IWSs are assumed to be used in the parcels that have water service but no sewer service. Based on that assumption, there are approximately 4,300 residential cesspools in the Wailua-Kapaa area. The discharge of raw waste water directly into the ground is not beneficial to the environment; therefore, Department of Health (DOH) now limits the construction of any new cesspools. Approximately 12% of the cesspools in the Wailua-Kapaa area have reported failures.

The Wailua WWTP currently uses two methods of effluent disposal, which are an ocean outfall and water reuse for irrigation at the adjacent Wailua Golf Course. Treated effluent is conveyed to the golf course by pumping out of the effluent chamber downstream of the chlorine contact basin. Effluent sent to the ocean outfall flows by gravity to the ocean through an overflow pipe. When effluent is sent to the golf course, it is stored in a reservoir located at the golf course and is pumped out as required for irrigation.

TABLE 1
Summary of Recommendations, Wailua Wastewater Facility Plan

PHASE & IMPROVEMENT TYPE	PROJECT NAME	PROJECT JUSTIFICATION	ESTIMATED COST
Near Term (<5 Years)			
Repair/Rehab Collection System	Upgrade or Replace Coco Palms SPS	Site Location Marginal, Capacity Inadequate	$4,240,000
Repair/Rehab WWTP	1. WWTP Process, Electrical & Disinfection Equip. 2.Restore/Upgrade Treatment Process	1. Electrical System Inadequate, Equipment in need of Upgrade/Replace 2. WWTP capacity limited to 1.0 MGD (permitted for 1.5 MGD). Capacity will be inadequate by mid-term	$7,800,000 $8,000,000
Mid Term (5 - 10+Yrs)			
Repair/Rehab Collection System	Replace SPS 3,4 & 5	Age & Condition	$7,000,000
Repair/Rehab WWTP	Replace On-site Pump Station	Age & Condition	$600,000
Far Term (>10+ Yrs)			
Repair/Rehab Collection System	Parallel sewer line on Leho Dr.	Existing sewer inadequate	$637,000
Expand/Upgrade Collection System	1. Expand Sewers to Lower Kapaa [1] 2. Expand sewers to Wailua House Lots[1] 3. Expand Sewers to Wailua Homesteads[1] 4. Expand sewers to upper Kapaa[1]	Sewer areas with chronic cesspool problems Expand collection system Expand collection system Expand collection system	$36,400,000 $40,200,000 $105,000,000 $60,000,000
Expand/Upgrade WWTP	1. Wailua WWTP Expansion to 2.0 MGD 2. Construct new Kapaa WWTP[2]	1. Capacity Projected to be Inadequate 2. WWTP for expanded collection system	$23,000,000 $25,900,000

Notes:

1. Term of sewer collection system is undetermined and is subject to availability of funds.
2. Term of Kapaa WWTP is undetermined and is subject to growth and expansion of the collection system

D. LAND ACQUISITION

The Wailua WWTP will require additional land to expand the treatment plant for the middle term flows. Approximately 1.6 acres of land east of the existing treatment plant are needed for this expansion. The land adjacent to the treatment plant is owned by the County of Kauai and is part of the Wailua River State Park. Transfer of this property to the Department of Public Works (DPW) is necessary.

The County will also need to acquire land to construct a new treatment plant in Kapaa. The County should engage in discussions with landowners of properties that may be suitable for acquisition for a future WWTP site. Early negotiation with landowners will allow the County to reserve the land so that it is available when needed.

The County will also need to acquire new sites to replace the existing old pump stations. The County should continue negotiations with the owners of the Coco Palms Resort to acquire a site for the new Coco Palms SPS. The County should begin negotiations with the landowners of the resorts along Papaloa Road and Aleka Loop to acquire land for new pump station(s) there.

E. DEPARTMENT OF HAWAIIAN HOME LANDS

The DHHL development in Wailua is currently not in the Wailua-Kapaa service area. The development area is designated Agricultural and outside the Urban land use of County & State General Plans. The projected wastewater flow from the DHHL development is approximately 0.35 mgd in the middle term and an additional 0.30 mgd in the far term. Connection to the County system will have a significant impact on plant flow and expansion plans. Connecting to the County collection system could accelerate the need of a new Kapaa WWTP. If DHHL connects to the County collection system during the middle term, incoming wastewater flow will be approximately 1.74 mgd, which exceeds the projected middle term capacity of 1.5 mgd. The following facilities recommended for the far term would have to be moved up to the middle term to accommodate the DHHL flow and increase plant capacity to 2.0 mgd:

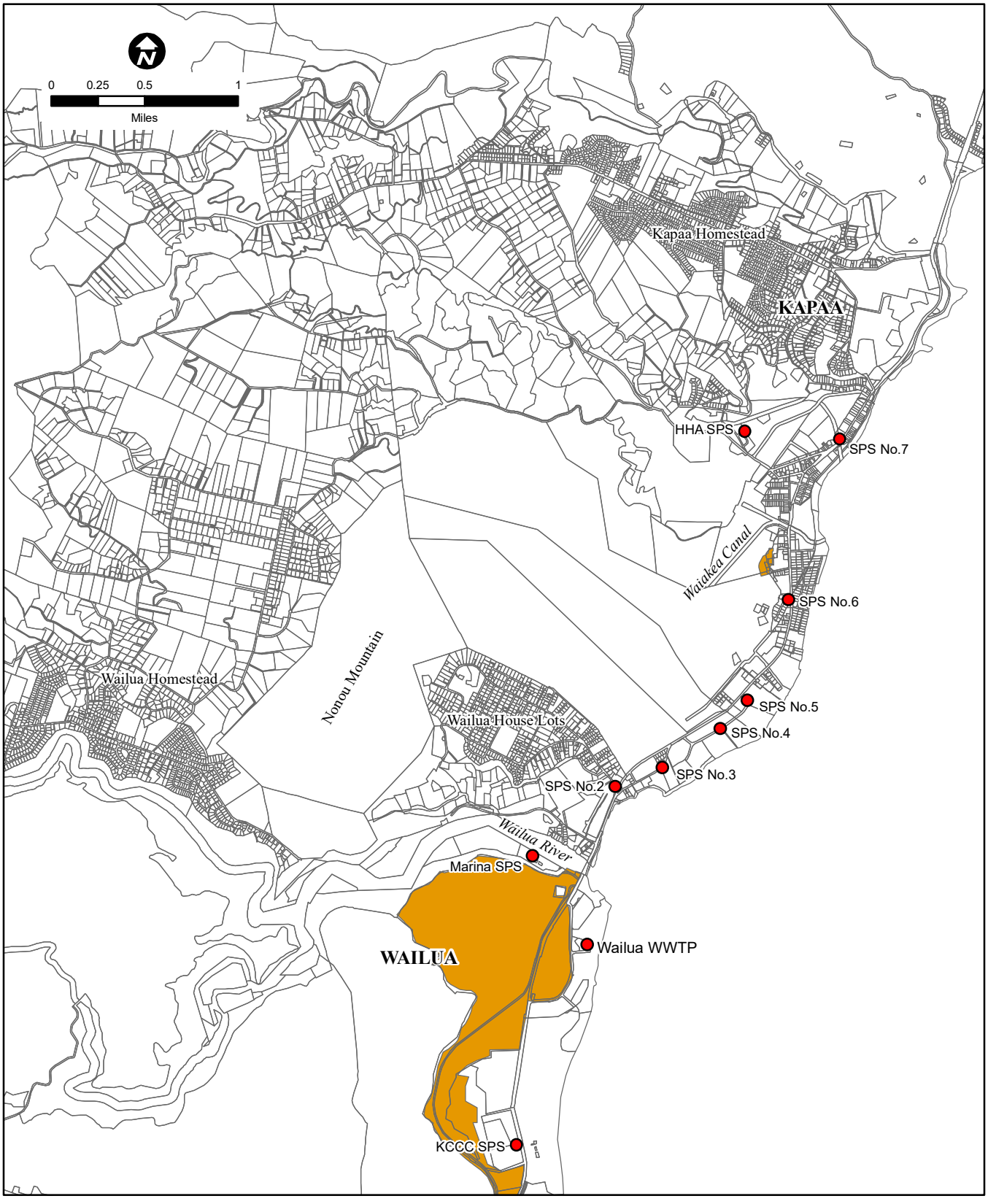
- Construct an influent gravity line parallel to the 24" line recently installed.

The far term expansion to 2.0 mgd will not have sufficient capacity to accommodate the DHHL flow. The estimated flows for far term (1.72 mgd) and an additional flow from DHHL (0.65 mgd) will bring the average daily flow to approximately 2.37 mgd. The following additional facilities will be required for the far term to accommodate the DHHL flow and increase plant capacity to 2.5 mgd:

- Construct additional membrane tanks, including permeate pumps, RAS pumps, and blowers.
- Construct additional surge basins adjacent to the existing basins.
- Construct additional effluent disposal facilities.

Beyond the far term, if all non-agricultural properties in the Wailua and Kapaa area are connected to the County collection system, the service area will be divided between the Wailua WWTP and a new Kapaa WWTP. The total wastewater flow to the Wailua WWTP (including DHHL) will be approximately 2.33 mgd.

Figure 7 shows the proposed DHHL development.



LEGEND:

Proposed DHHL Development

WAILUA FACILITY PLAN **Proposed DHHL Development**

COUNTY OF KAUAI
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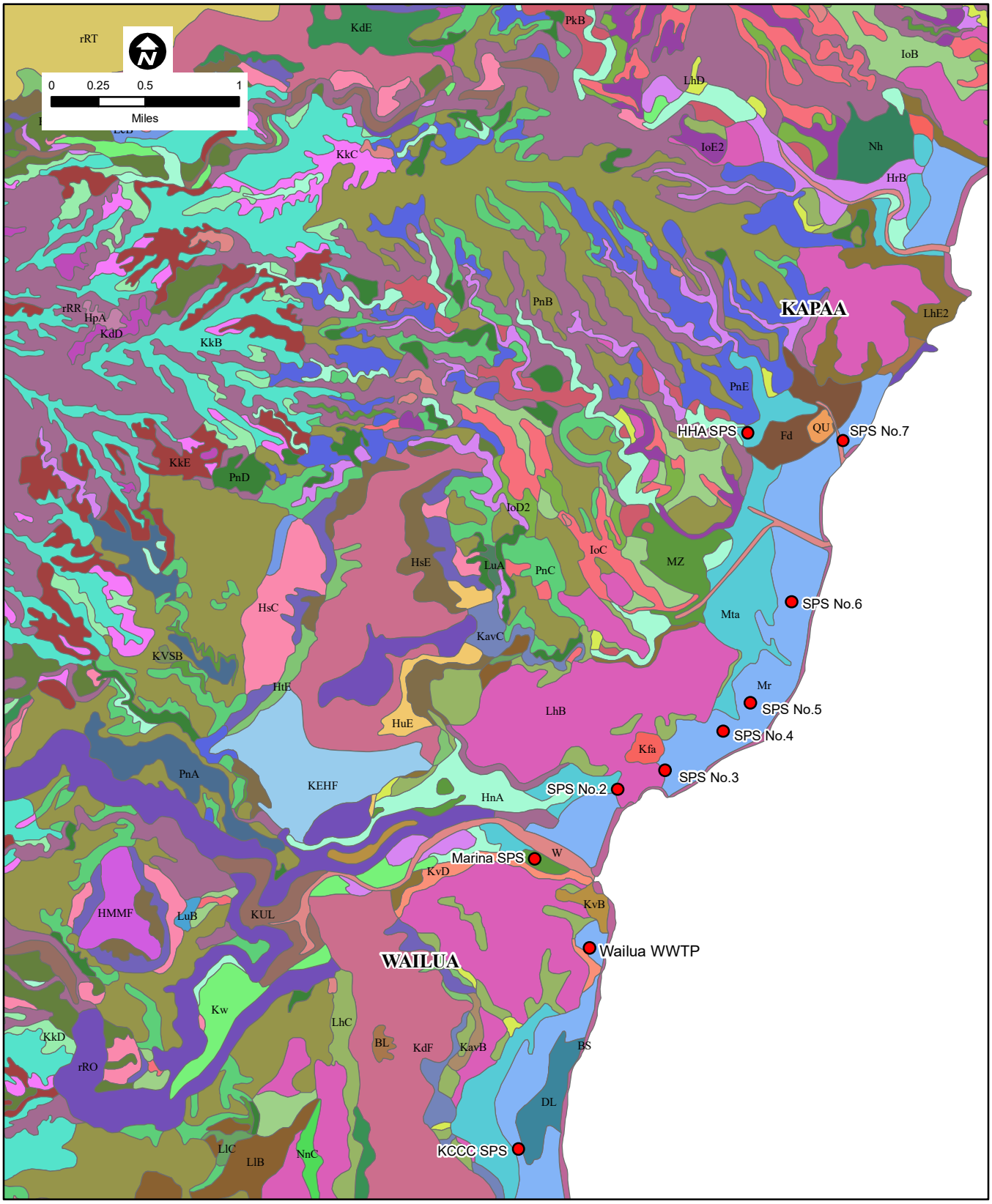
FIGURE 7



LEGEND:

LhB Lihue silty clay, 0 to 8 percent slopes (SPS No.2)
Mr Makuleia fine sandy loam (SPS No.3,4,5,6,7, KCCC SPS, Wailua WWTP)
Mta Makuleia clay loam, poorly drained variant (HHA SPS)
MZ Marsh (Marina SPS)

WAILUA FACILITY PLAN **USDA SCS Soils Map**

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FIGURE 13

8. Climate

   The climate of Wailua is generally warm and subtropical with mild seasonal changes throughout the year. The variations in temperature encountered in the area range between 70.4 and 78.5^{o} F on the average for the coolest and warmest month, respectively.

   The Wailua area is characteristic of the windward coastal region where the prevailing winds, known as the trade winds, are generally from the northeast direction. The average rainfall in Wailua is approximately 49 inches per year per data collected by the National Climatic Data Center between the years 1971 and 2000 (reference 5).

9. Flood and Tsunami

   The Flood Insurance Rate Map (FIRM), issued by the Federal Emergency Management Agency (FEMA), indicates that the Wailua WWTP is located in Zone X. This is an area determined to be outside of the 100 year flood plain. SPS No.3, 4, 5 and HHA SPS are also located within Zone X, while Marina SPS, KCCC SPS, SPS No.2, 6, and 7 are located Zone A, which is the 1% annual chance in 100 year. Figure 15 shows the flood zones for the Wailua area.

   Recent Tsunami Evacuation Maps, as published by the Civil Defense Agency, indicates that the existing Wailua WWTP is not currently in a Tsunami Evacuation Zone. SPS No.3, 4, 5, 7 and the Marina SPS are located in a Tsunami Evacuation Zone, as shown in Figure 16. In the event of a tsunami warning, people in all areas within the Tsunami Evacuation Zone must be evacuated and follow additional instructions issued by the Civil Defense Agency.

   Historical tsunami data indicated a wave height ranged from 12 to 20 feet along the shoreline near the project areas during both the 1946 and 1957 tsunamis.