

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU

1000 ULUOHIA STREET, SUITE 212, KAPOLEI, HAWAII 96707
Phone: (808) 692-5159 • Fax: (808) 692-5113

JEREMY HARRIS
MAYOR



April 30, 2003

RECEIVED

'03 MAY -6 A9:27

OFFICE OF ENVIRONMENTAL
QUALITY CONTROL

FRANK J. DOYLE, P.E.
ACTING DIRECTOR

IN REPLY REFER TO:
RE 03-051

Ms. Genevieve Salmonson, Director
State of Hawaii
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Use of State or County Lands or Funds
Chapter 343, HRS
Final Environmental Assessment (FEA)

Recorded Owner: State of Hawaii
Applicant: Synagro-WTT, Inc.
Agent: Analytical Planning Consultants, Inc.
Location: 1350/1240 Sand Island Parkway
Tax Map Key: (1) 1-5-041:005
Request: Special Management Area Permit: Construction of new
In-Vessel Bioconversion Facility at the Sand Island
Wastewater Treatment Plant
Determination: A Finding of No Significant Impact is issued

We have reviewed the Final EA for the proposed project to satisfy the requirements of Chapter 343, Hawaii Revised Statutes, related to disclosure of environmental impacts. We have determined that an Environmental Impact Statement is not required and hereby issue a Finding of No Significant Impact (FONSI).

If you have any questions, please contact Don Clegg of Analytical Planning Consultants, Inc., at 536-5695 or Steven Serikaku of the Refuse Division at 692-5406.

Sincerely,

Handwritten signature of Frank J. Doyle, P.E.
FRANK J. DOYLE, P.E.
Acting Director

2003-05-08 - 0A-PEA

MAY 8 2003

FILE COPY

*FINAL ENVIRONMENTAL ASSESSMENT
FINDING OF NO SIGNIFICANT IMPACT
(FONSI)*

SAND ISLAND WASTEWATER TREATMENT PLANT

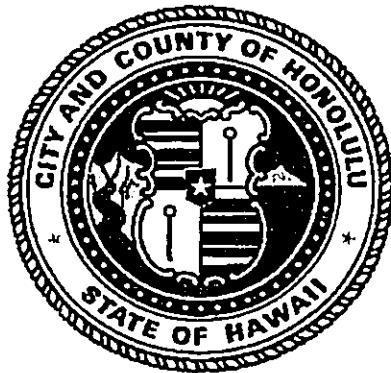
NEW IN-VESSEL BIOCONVERSION FACILITY

HONOLULU, OAHU, HAWAII

TMK: 9-1-5-41:05

Proposing Agency:

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF ENVIRONMENTAL SERVICES



This environmental document prepared pursuant to Chapter 343, HRS

Responsible Official: Frank Doyle 4/16/03
Frank Doyle /Date
Acting Director

ANALYTICAL PLANNING CONSULTANTS, INC
928 Nuuanu Ave, Suite 502
Honolulu, Hawaii 96817

April 2003

2003-05-08 - 0A-PEA

MAY 8 2003

FILE COPY

FINAL ENVIRONMENTAL ASSESSMENT
FINDING OF NO SIGNIFICANT IMPACT
(FONSI)

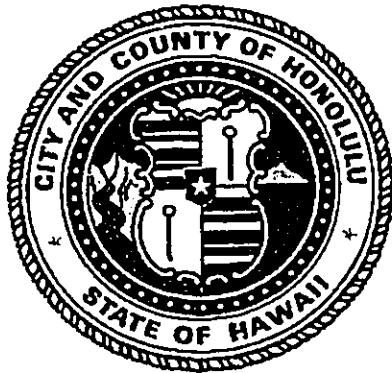
SAND ISLAND WASTEWATER TREATMENT PLANT
NEW IN-VESSEL BIOCONVERSION FACILITY

HONOLULU, OAHU, HAWAII

TMK: 9-1-5-41:05

Proposing Agency:

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF ENVIRONMENTAL SERVICES



This environmental document prepared pursuant to Chapter 343, HRS

Responsible Official: Frank Doyle 4/16/03
Frank Doyle Date
Acting Director

ANALYTICAL PLANNING CONSULTANTS, INC
928 Nuuanu Ave, Suite 502
Honolulu, Hawaii 96817

April 2003

PROJECT SUMMARY

Project Name: Sand Island Wastewater Treatment Plant
New In-Vessel Bioconversion Facility

Applicant: City and County of Honolulu
Department of Environmental Services
1000 Uluohio Street
Honolulu, Hawaii

Agent: APD
1100 Alakea Street Suite 1800
Honolulu, Hawaii 96813
Contact: Mr. Don Clegg
Phone: (808) 521-4711 Fax: (808) 538-3269

Property Owner: State of Hawaii (Lessee: City and County of Honolulu)

Approving Agency: City and County of Honolulu (Same as Applicant)

Tax Map Key: 9-1-5-41:005

Location: 1350 Sand Island Parkway
Sand Island, Honolulu, Hawaii

Property Acreage: 50.0 Acres

State Land Use District: Urban

Existing County Zoning: I-3 Waterfront Industrial District

**Development Plan
Land Use Designation:** Sand Island, Public Facility

Special Designation: Special Management Area (SMA)

**Anticipated
Determination:** Finding of No Significant Impact (FONSI)

TABLE OF CONTENTS

TABLE OF CONTENTS**EXECUTIVE SUMMARY**

SECTION I	INTRODUCTION	
	1.1 Introduction	1-1
	1.2 Environmental Assessment	1-1
	1.2.1 Purpose	1-2
	1.2.2 Project Need	1-2
	1.2.3 Proposed Action	1-2
	1.3 Project Requirements	1-3
	1.3.1 Modifications to Existing Facilities	1-3
	1.4 Land Requirements	1-4
	1.5 Utility Requirements	1-4
	1.6 Preliminary Construction Cost	1-4
	1.7 Tentative Development Schedule	1-4
SECTION II	ALTERNATIVE ANALYSIS	
	2.1 Fluidized Bed Incineration	2-1
	2.2 Composting Primary Sludge	2-2
	2.3 Beneficial Use Through Anaerobic Digestion, Sludge Heat Drying and Pelletization	2-3
	2.3.1 Egg Shaped Digesters (ESD)	2-4
	2.3.2 Dewatering and Polymer System	2-5
	2.3.3 Heat Drying and Pelletization	2-5
	2.3.4 Air Emission and Odor Controls	2-5
	2.4 No Action Alternative	2-6
SECTION III	EXISTING ENVIRONMENT	
	3.1 Sand Island Wastewater Treatment Plant Location	3-1
	3.2 Sand Island Wastewater Treatment Plant: Plant Operation	3-1
	3.3 Physical Environment	3-1
	3.3.1 Climate	3-1
	3.3.2 Topography and Geology	3-2
	3.3.3 Existing Land Use and Zoning	3-2
	3.3.4 Hydrology	3-3
	3.3.5 Water Quality	3-3
	3.4 Biological Environment	3-3
	3.4.1 Flora and Fauna	3-3
	3.4.2 Wetlands	3-3
	3.5 Archaeological and Historic Resources	3-4
	3.6 Utilities	3-4
	3.7 Air Quality	3-4

	3.8	Noise	3-6
	3.9	Traffic	3-9
	3.10	Social and Economical Environment	3-9
SECTION IV		PROJECT IMPACTS AND MITIGATION MEASURES	
	4.1	Short Term Impacts (Construction Impacts) and Mitigation Measures	4-1
	4.1.1	Operation of Wastewater Treatment Plant during Construction	4-1
	4.1.2	Surface Water and Groundwater Quality	4-1
	4.1.3	Flora and Fauna	4-2
	4.1.4	Wetlands	4-2
	4.1.5	Archaeological and Historical	4-2
	4.1.6	Air Quality	4-3
	4.1.7	Noise Quality	4-3
	4.1.8	Traffic	4-4
	4.1.9	Construction Waste	4-4
	4.1.10	Public Health and Safety	4-4
	4.1.11	Short Term Economic Impacts	4-5
	4.2	Long Term Impacts and Mitigation Measures	4-6
	4.2.1	Surface Water and Ground Water	4-6
	4.2.2	Flora and Fauna	4-6
	4.2.3	Air Quality	4-6
	4.2.4	Noise Quality	4-8
	4.2.5	Traffic	4-8
	4.2.6	Public Health and Safety	4-9
	4.2.7	Social and Economic	4-9
	4.2.8	Land Use and Planned Development	4-9
	4.2.9	Visual Impacts	4-10
	4.2.10	Coastal Zone Management (CZM)	4-15
	4.2.11	Special Management Area	4-17
SECTION V		THE RELATIONSHIP BETWEEN LOCAL SHORT TERM USES OF HUMAN ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG TERM PRODUCTIVITY	
	5.1.	Short Term Uses	5-1
	5.2	Long Term Benefits	5-1
SECTION VI		IRREVERSIBLE AND IRRETRIEVABLE COMMITMENTS OF RESOURCES	6-1
SECTION VII		NOTICE OF DETERMINATION FOR FINAL ENVIRONMENTAL ASSESSMENT	7-1
SECTION VIII		LIST OF NECESSARY PERMITS AND APPROVALS	8-1

SECTION IX	AGENCIES, ORGANIZATIONS AND INDIVIDUALS CONSULTED IN THE PREPARATION OF EA	9-1
SECTION X	EA COMMENTS AND RESPONSES	10-1
SECTION XI	REFERENCES	11-1

LIST OF FIGURES

Figure 1-1:	Project Location Map	1-5
Figure 2-1:	Sand Island WWTP Egg Shaped Digester	2-8
Figure 2-2:	Process Flow Diagram	2-9
Figure 2-3:	Footprint of Proposed Project	2-10
Figure 3-1:	Layout of Sand Island WWTP	3-11
Figure 3-2:	Sand Island WWTP Land Use Map	3-12
Figure 3-3:	Sand Island WWTP Flood Zone Map	3-13
Figure 4-1:	Elevation View of 2.3 MGL Egg Shaped Digester with Plant Structures	4-12
Figure 4-2:	Map A-1 Significant Panoramic Views	4-13
Figure 4-3:	Photographs from the Significant Panoramic Views	4-14

LIST OF TABLES

Table 3.1:	State of Hawaii and Federal Ambient Air Quality Standards	3-6
Table 3.2:	Sound Level of Typical Noise Sources and Noise Environments	3-8
Table 3.3:	Maximum Permissible Sound Levels for Stationary Noise	3-8
Table 3.4:	Actual and Forecast Key Economic Indicators for Hawaii 2002-2005	3-10

APPENDICES

EXECUTIVE SUMMARY

EXECUTIVE SUMMARY

INTRODUCTION

The Sand Island Wastewater Treatment Plant (WWTP) has used low pressure oxidation (LPO) for sludge stabilization, incineration for volume reduction and has landfilled incinerator ash since the Facility went into service in 1979. For the past decade the incinerator has not been in operation, and this has subsequently increased the quantity of dewatered sludge (cake) being diverted to the landfill. Currently the technology being used in the stabilization process is becoming harder to maintain and expensive to operate and the practice of disposing the treated dewatered sludge in the landfill continues to place a burden on the City and County of Honolulu landfill resources.

The current process of LPO and landfill disposal of dewatered sludge has become an undesirable option. Anaerobic digestion of sludge, followed by centrifuge dewatering, heat drying and pelletization is a favored alternative for stabilization, treatment and beneficial use of the dewatered sludge due to its low energy consumption, production of a renewable fuel source and the minimal environmental impacts.

ALTERNATIVE ANALYSIS

The *Final Environmental Assessment* for Sand Island WWTP New In-Vessel Bioconversion Facility (herein referred to as the Facility) evaluates several alternatives. An alternatives analysis that considers both sludge stabilization and final disposal include the following options: 1) Fluidized Bed Incineration; 2) Composting Primary Sludge; 3) Anaerobic Digestion, Sludge Heat Drying and Pelletization with the production of a beneficial product (fertilizer), and 4) No action.

The City and County of Honolulu has determined that the processes of anaerobic digestion for sludge stabilization and production of methane gas, followed by centrifuge dewatering, sludge heat drying and pelletization has become the preferred alternative. In addition, this decision has been based upon the following: 1) the fact that after nearly twenty years of service the existing LPO system is near the end of its useful life; 2) incineration practices have become extremely difficult to permit; 3) rising operations and maintenance costs for the existing practice; and 4) decrease in availability of existing landfill space.

EXISTING ENVIRONMENT

The *Final Environmental Assessment* describes the operations of the Sand Island WWTP and its existing environment and the surrounding areas. The criteria used to describe the existing environment includes location, climate, existing land use and zoning, topography and geology, drainage, archaeological and historic resources, flora and fauna, utilities, socio-economic, air quality and noise quality.

PROJECT IMPACTS AND MITIGATION MEASURES

Project impacts are assessed for both short term impacts caused by construction activities and long term impacts associated with the operation of the proposed Facility. The short

and long term impacts of the proposed Facility are anticipated to be generally the same unless otherwise indicated.

Short term impacts include the increase in noise levels during construction, which will be mitigated through proper operation of the construction equipment and maintaining work schedules during daylight hours. Construction activities may also impact air quality, which may be mitigated through the Contractor's dust control plan, ie: using dust control methods such as dust screens and suppression through watering or misting.

Long term impacts to noise levels are not anticipated due to the proposed Facility design, which is fully enclosed, and other associated equipment (ie: centrifuges and dryer) will be housed within the existing Solids Handling building. Impacts to air quality are anticipated to be minimal due to the Facility's compliance with the strict regulations concerning air and odor pollution control. The combination of the anaerobic digestion process, which is essentially odor free, and the implementation of odor control equipment, will maintain the air quality at the WWTP and the surrounding areas. The proposed Facility will be designed and built with all of the process equipment totally enclosed and any emissions generated in the processes will be treated.

The Facility will be located within the existing footprint of Sand Island WWTP and no additional land will be acquired (The proposed Facility location is depicted in Figure 3-1).

There are no known threatened, rare, or endangered species of flora and fauna inhabiting the project site. No known archaeological or historical features have been discovered on the property in past uses and it is not anticipated that the construction activities will unearth significant historical features. However, the Contractor will be trained to recognize any features that may require further investigation by the State Historic Preservation Division.

Construction waste disposal shall require the appropriate waste management plan approval from the Department of Environmental Services before removal from the project site to an approved disposal site. Public health and safety are protected and enforced by the strict regulations of the Standard Occupational Safety and Health Administration (OSHA) applied at the WWTP.

Currently, a National Pollution Discharge Elimination System (NPDES) permit allows the disposal of primary effluent from the WWTP to the Ocean Outfall. The WWTP effluent is expected to improve with the implementation of the anaerobic digestion process. The centrate¹ from the anaerobic digestion process is significantly lower in soluble biological oxygen demand² (BOD) compared to centrate produced by the current sludge stabilization process.

¹ Liquid discharge from the centrifuge

² biological oxidation of carbonaceous organic matter

Impacts to the socio-economic environment are positive due to the creation of jobs during the construction phase. The proposed Facility is in concert with planned development and existing land use.

FINAL DECISION

Based upon the evaluation and the information contained in this final EA, as well as the public review of the Draft EA and consultation process, a Finding of No Significant Impact has been determined for this project.

SECTION 1
INTRODUCTION

SECTION ONE

INTRODUCTION

1.1 PROJECT BACKGROUND

The Sand Island Wastewater Treatment Plant (WWTP) is the City and County of Honolulu's largest wastewater treatment facility, which serves the metropolitan area of Honolulu. Sand Island WWTP began operations in 1979, and since that time the facility has implemented renovations and expansions, with construction in progress of an ultraviolet (UV) disinfection unit, effluent pump station, two primary clarifiers and a new head works facility. The facility is located on Sand Island Parkway (Figure 1-1) and is a primary treatment facility with an average design flow of 82 million gallons per day (mgd).

The Sand Island WWTP has used low pressure oxidation (LPO) for liquid sludge stabilization, followed by centrifuge dewatering, incineration of dewatered sludge for volume reduction and landfilling of incinerator ash since the facility went into service in 1981. For the past decade the incinerator has not been in operation because the Department of Environmental Services (DES) has determined through annual budgetary reviews that incineration and subsequent landfilling of ash is more expensive than landfilling stabilized sludge. This has subsequently increased the quantity of dewatered sludge being diverted to the landfill. Currently the LPO process for sludge stabilization is becoming harder to maintain and expensive to operate and the practice of disposing the dewatered sludge in the landfill continues to place a burden on the City and County of Honolulu landfill resources. The proposed In-Vessel Bioconversion Facility (herein referred to as the Facility) replaces the current sludge stabilization operation with the more reliable anaerobic digestion, sludge heat drying and pelletization process to reduce volume and produce a beneficial product. With the proposed Facility, the dewatered sludge currently being produced will no longer be disposed of at the Waimanalo Gulch Sanitary Landfill. In the case of any unforeseen corrective maintenance, sludge produced beyond the facility's storage capacity (3.5 days) the sludge will be dewatered and diverted to the landfill.

In summary, the current sludge stabilization process of LPO and dewatered sludge landfill disposal has become an undesirable option. Anaerobic digestion of sludge followed by centrifuge dewatering and heat drying and pelletization is a favored alternative for stabilization, treatment and beneficial use of the dewatered sludge due to its low energy consumption, production of a renewable fuel source and the minimal environmental impacts.

1.2 ENVIRONMENTAL ASSESSMENT

The proposed Facility for Sand Island WWTP will require the use of State or County land and/or funds, which initiates Chapter 343 under the State of Hawaii's Environmental Review Law. Hawaii Revised Statute (HRS) 343 requires the preparation of an *environmental assessment* (EA) and/or *environmental impact statement* (EIA), which gives systematic consideration to the environmental, social and economic consequences of the proposed actions before permits are granted and construction, begins. The law also ensures the public the right to participate in

planning projects that may affect the community. The Office of Environmental Quality Control is responsible for ensuring compliance with this law in the State of Hawaii.

This Final Environmental Assessment (EA), Section Two, Alternative Analysis, will evaluate the alternatives of incineration, landfilling, composting, and anaerobic digestion with sludge heat drying and pelletization. Section Three, Existing Environment, describes the existing environment at the project site. Section Four, Project Impacts and Mitigative Measures, will assess the short-term and long-term impacts anticipated with the preferred alternative of anaerobic digestion and the sludge drying. Sections Five through Section Seven offer a summary of conclusions and determinations, Section Eight list the necessary permits and approvals, Section Nine list the agencies consulted in the preparation of this Final EA document. Section Ten incorporates the review comments received during the consultation process and responses.

1.2.1 Purpose

The purpose of the project is to replace the current stabilization process and sludge landfilling with the anaerobic digestion, sludge heat drying, and pelletization processes, which will produce a Class A beneficial product, while eliminating sludge disposal at the landfill.

1.2.2 Project Need

The project need is based on the fact that the current stabilization process and associated equipment has reached the end of its useful life and must be replaced with a more efficient process. Additionally the City and County of Honolulu needs to find an alternative means of disposal for the dewatered sludge other than the landfill, due to the decreased availability of the landfill capacity.

1.2.3 Proposed Action

The City and County of Honolulu has decided to replace the existing outdated stabilization and treatment process by soliciting a private contract to design, build, and operate a new sludge treatment facility that will produce Class A biosolids in full compliance with the United States (U.S.) Environmental Protection Agency (EPA) Rule 503.

The contractor shall also be responsible for marketing the final product for beneficial use. A number of potential markets or end users for the final product produced include: wholesale fertilizer distributors, wholesale growers, diversified agriculture, silvaculture, and local golf courses and recreational parks. The City and County of Honolulu shall be entitled to sixty percent (60%) of the net revenue collected from the final product (recovered materials) revenue over a base rate of twenty dollars (\$20.00) per ton. Additionally, the City will receive up to two thousand (2,000) tons per year of the final product (recovered materials).

1.3 PROJECT REQUIREMENTS

1.3.1 Modifications to Existing Facilities

New Anaerobic Digestion Complex

The new Anaerobic Digestion system will replace the current LPO system. The equipment will be located on the 1.1-acre vacant site east of the Sand Island WWTP Solids Handling Building. The complex will include one 2.3 million gallon capacity Egg-Shaped Digester (ESD), 0.53 million gallon sludge storage tank (SST), 10,000 cubic feet (ft³) biogas storage tank, hydrogen sulfide (H₂S) scrubber, and associated auxiliary equipment (i.e. piping, valves) and controls.

New Integrated Centrifuge Dewatering, Polymer Supply, Sludge Heat Drying System and Pelletization

The integrated dewatering, polymer supply, sludge heat drying and pelletizing equipment and appurtenances will be housed in the existing Sand Island WWTP Solids Handling Building. The existing non-operational equipment currently located in the Solids Handling Building will be removed. The equipment that will be utilized by the integrated system includes: two high performance centrifuges, one polymer preparation and supply system, enclosed liquid and dewatered biosolids conveyance system, one heat drying and pelletizing system. Certain equipment will be located outdoors and adjacent to the Solids Handling Building. These systems include: two building air scrubbing systems, regenerative thermal oxidizer (RTO), nitrogen supply system, coating oil storage and supply system, two storage silos and one truck scale system, propane storage tank and a fuel oil #2 storage tank. The current propane and fuel storage tanks may be used.

The retrofitted Solids building will house the necessary personnel offices and locker rooms, motor control center, control room, maintenance shop, conference room, laboratory and storage areas.

Odor and Emission Control Equipment

Equipment items are identified here by their primary functions. Control measures together with equipment interactions are presented in section 2.3.4.

An air/solids separator, polycyclones, and subcooler-condenser remove particulate material from the heat drying process air stream. Remaining particulates in the process exhaust are removed by a venturi scrubber. Condensable volatile organic compounds (VOCs) and odors are also removed in subcooler-condenser and venturi scrubber. Fugitive dust from process equipment is collected in two fabric filters.

A Regenerative Thermal Oxidizer (RTO) destroys volatile organic compounds and odors by thermal oxidation in the heat drying process exhaust before it is released to the atmosphere.

Two chemical scrubbers (one operational, one standby) remove hydrogen sulfide, ammonia, and volatile organic compounds vented from the dewatering centrifuge, sludge cake conveyors, and fabric filter. These scrubbers also treat the Solids Building air before its release to the atmosphere. A gas adsorber removes hydrogen sulfide from the biogas.

1.4 LAND REQUIREMENTS

All proposed upgrades of existing facilities and all new facilities and subsystems will be located within the current Sand Island WWTP property. No acquisition of adjacent land will be required.

1.5 UTILITY REQUIREMENTS

Currently the WWTP consumes overall; 1) 43,862 KWH per day of electrical power (per Hawaiian Electric Company, August 2002), 2) 248,930 gallons per day (gpd) of potable water and, 3) 2,776 gpd of fuel oil.

The proposed Facility is expected to consume approximately; 1) 12,600 KWH per day of electrical power, 2) 45,000 gallons per day (gpd) of potable water and, 3) 685 gpd of fuel oil, (which includes the use of the biogas). The proposed Facility is not expected to significantly increase the power or potable water consumption, while substituting biogas as renewable energy for a significant portion of the existing fuel oil use. The Facility will also recycle approximately 763,200 gpd of plant effluent during operational day. The proposed Facility will typically operate 3.5 to 5 days per week. The operation schedule is based upon the amount of feed material that is received at the plant. The remaining two to three and half days will be utilized for routine, preventative and corrective maintenance.

1.6 PRELIMINARY CONSTRUCTION COST OF PROJECT

The estimated construction costs for the proposed project is \$33.8 million dollars, which was a result of the request for proposal (RFP) bidding process.

1.7 TENTATIVE DEVELOPMENT SCHEDULE

The project schedule is dependant on the appropriation of funds, approval of the final EA, and obtaining necessary government permits and approvals. The City and County of Honolulu anticipate finalizing the design and securing the necessary permits in June 2003 with construction beginning in July 2003 and completion slated for July 2004. The anticipated startup period is August 2004.

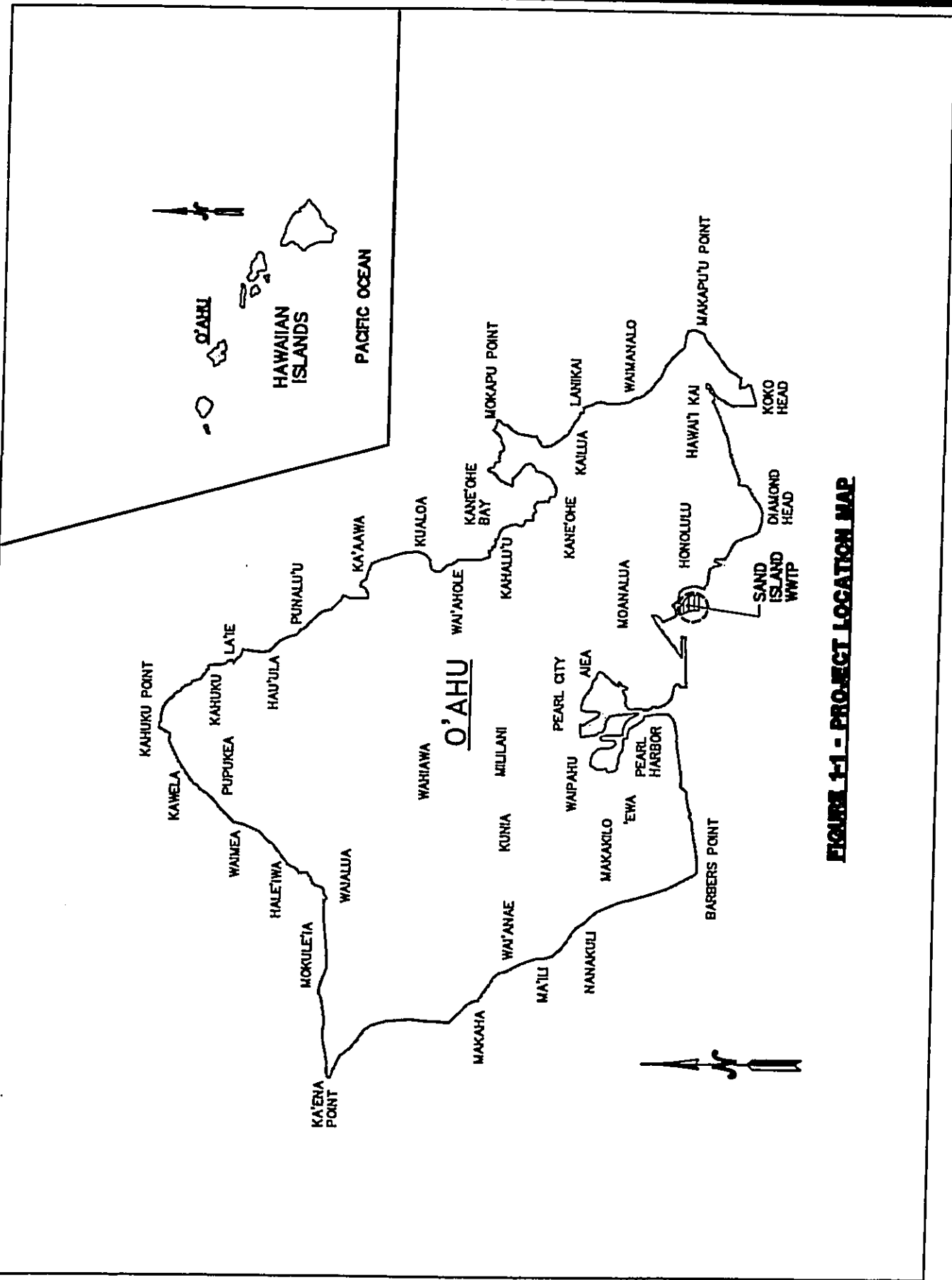


FIGURE 1-1 - PROJECT LOCATION MAP

SCH523AB

SECTION 2
ALTERNATIVE ANALYSIS

SECTION TWO

ALTERNATIVE ANALYSIS

An alternatives analysis that considers both sludge stabilization and final disposal include the following options: 1) Fluidized Bed Incineration; 2) Composting Primary Sludge; 3) Anaerobic Digestion, Sludge Heat Drying and Pelletization with the production of a beneficial product (fertilizer); and 4) No action.

Currently, liquid primary sludge is stabilized by the LPO (low pressure oxidation) process (this stabilization process heats sludge to 375⁰F for 30 minutes) at Sand Island WWTP. The third alternative (i.e. anaerobic digestion) is the only alternative that incorporates sludge stabilization. The objectives of the stabilization process are: 1) solids reduction; 2) production of a material that is easily dewatered 3) reduction of concentration of pathogens; 4) produce a material with reduced vector attraction, 5) produce a beneficial use product; and, 6) control and eliminate potential odors with minimal environmental impact.

According to the Environmental Protection Agency (EPA) Part 503 Rule 109, Class A and B biosolids are classified based on the levels of pathogens present in the biosolids that are used or disposed. If pathogens are below detectable levels, the biosolids meet the Class A designation. Biosolids are designated Class B if pathogens are detectable but have been reduced to levels that do not pose a threat to public health and the environment and as long as actions are taken to prevent exposure to the biosolids after their use or disposal.

LPO and composting produce Class A biosolids. Since the product is pathogen free it can be distributed in the market place. Conversely Class B biosolids produced through anaerobic digestion must be disposed in controlled conditions that prevent exposure to the public and the environment.

Solids reduction and dewaterability of the stabilized sludge are important in keeping treatment costs low. Solids reduction reduces the quantity of material that must be dewatered and ultimately disposed of. Production of a material that can easily be dewatered to an acceptable solids concentration reduces processing efforts and the volume of material that requires disposal. Stabilization must also result in a product that will not attract vectors when applied to beneficial use.

2.1 FLUIDIZED BED INCINERATION

Currently, the incinerator at the Sand Island WWTP has been idle for the past decade and the dewatered sludge (cake) has been sent to the landfills, Kapaa Landfill (currently closed) and Waimanalo Gulch Landfill, for disposal. A Final Environmental Assessment (R.M. Towill 2001) was conducted for the treatment plant modifications and expansion, which included a new sludge incinerator that would replace the existing two multiple hearth furnaces at the Sand Island WWTP. The feasibility of the incineration and its permitting has not progressed beyond the 2001 Environmental Assessment due in part to the fact that a contract has been awarded to

Honolulu Organic Fertilizer Company to develop the preferred alternative, which has suspended any future consideration of incineration.

In conclusion, incineration has become an undesirable option based on its high-energy consumption when incinerating primary sludge, and difficulty in permitting because of public perception of the health risks associated with air emissions. At this time the City and County of Honolulu have elected not to continue with incineration as a disposal option.

2.2 COMPOSTING PRIMARY SLUDGE

Composting is an aerobic bacterial decomposition process used to stabilize organic wastes and produce humus (compost). Compost contains nutrients and organic carbon, which are excellent soil conditioners. Composting takes place naturally on a forest floor where organic materials (leaf litter, animal wastes) are converted to more stable organic materials (humus) and the nutrients are released and made available for plant uptake. The process is slow on a forest floor, but can be accelerated under optimum conditions. The optimum conditions for composting are moisture content of about 50 %, a carbon to nitrogen ratio of about 25 to 30, and temperature of 55 °C. Because wastewater sludge is rich in nutrients, its carbon to nitrogen ratio is low (5 to 10) and it is also high in moisture. The addition of dry green waste, which is very high in carbon to nitrogen ratio, (500) can adjust both the moisture and carbon to nitrogen ratio.

The main goal of any composting facility is to produce consistent high quality compost without having any negative impact on the community in which the facility is located. The major problem is that composting appears so simple and easy that many have felt that by simply making large piles of organic material they can compost on a large scale to meet the needs of major cities. The location and size of the composting facility must comply with any existing regulatory requirements. Most installations with composting programs find that five to ten acres of fenced land is usually sufficient and successful composting programs stress the importance of establishing a buffer zone, at a minimum three miles around the composting facility to address the odor generation from the composting process. While the composting facility should be accessible by road, it should not be too near other commercial activities. An adequate buffer zone will prevent the potential for composting operations to create odors or attract vermin. With composting it is essential to find a market for the use of the end product. Failure to effectively market the compost may ultimately result in more waste being landfilled.

Presently the Sand Island WWTP is located in an industrial area that lacks the adequate buffer zone needed for a composting facility. The idea of controlling the odor issue from the treatment of municipal waste is the main reason for developing an essentially odor free treatment process. Hence odor generation and subsequent control is a vital and important consideration in assessing an alternative to processing sludge.

The option for the primary sludge produced at the WWTP to be composted is not a feasible or desirable option due to the large buffer zone required to mitigate odors developed by the process. The City and County of Honolulu request for bid (RFB) to design, build, and operate a composting facility did not generate a responsible bid.

2.3 BENEFICIAL USE THROUGH ANAEROBIC DIGESTION, SLUDGE HEAT DRYING AND PELLETIZATION

Beneficial use of sludge, termed "biosolids", includes a variety of technologies that can convert dewatered sludge to a quality-pasteurized product suitable as a soil conditioner or amendment. The term soil amendments include both soil conditioners and fertilizers. Severely disturbed soils can be reclaimed through the addition of biosolids to replace lost topsoil. According to the EPA biosolids have been used successfully to reclaim surface strip mines, large construction sites, parks, wetlands and landfills. Biosolids improve soil fertility and stability, aiding revegetation and decreasing erosion. Biosolids recycled in agriculture provide essential plant nutrients such as nitrogen, phosphorus, and zinc for healthy crops. Biosolids supply organic matter and often improve yields, both of which help control soil erosion. Biosolids are used to fertilize fields for raising crops. Agricultural uses of biosolids, that meet strict quality criteria and application rates, have been shown to produce significant improvements in crop growth and yield. Nutrients found in biosolids, such as nitrogen, phosphorus and potassium and trace elements such as calcium, copper, iron, magnesium, manganese, sulfur and zinc, are necessary for crop production and growth. The use of biosolids reduces the farmer's production costs and replenishes the organic matter that has been depleted over time. The organic matter improves soil structure by increasing the soil's ability to absorb and store moisture. Crops use the organic nitrogen and phosphorus found in biosolids very efficiently because these plant nutrients are released slowly throughout the growing season. This enables the crop to absorb these nutrients as the crop grows. This efficiency lessens the likelihood of groundwater pollution of nitrogen and phosphorus (<http://www.epa.gov/owm/mtb/biosolids/index.htm>).

Biosolids recycling is regulated and encouraged by the United States EPA and state and local authorities. Research and years of recycling experience have demonstrated that properly managed land application of biosolids is environmentally safe. Currently, Sand Island WWTP sends approximately 8,468 dry tons per year of dewatered sludge to the landfill, which could be recycled into a biosolid. The contractor responsible for marketing the biosolid product has established the markets that enable municipalities across the United States to feel confident that the pelletized biosolids will have a market for distribution. Currently the contractor has market approximately 1.5 million tons of pelletized biosolids nationwide.

As noted previously, the incinerator at Sand Island WWTP has not been in use for the past decade. Without the use of incineration, the atypically dry and autogenous cake produced by the currently LPO process is no longer an advantage. The current LPO process becomes a significant energy consumer since waste heat from the incinerator was used to generate steam for the LPO process. Without this function, fuel oil is needed to generate steam.

Therefore, when incineration is not considered as a viable alternative anaerobic digestion becomes a preferred choice for stabilization due to its low energy consumption, production of a renewable fuel and, the ability to support beneficial use technologies.

Anaerobic digestion is one of the old and most commonly used unit operations of wastewater treatment. It is a biological process that involves the decomposition of organic material in the absence of oxygen. In a digester, a consortium of organisms work together to bring about the

conversion of organic waste material to a variety of simpler end products that include: stabilized sludge, methane, carbon dioxide, and water. The conversion is thought to occur in three distinct steps: 1) hydrolysis; 2) acetogenesis (acid formation); and, 3) methane formation; and, best accomplished at a temperature of around 95°F.

The Contract For Design, Engineering, Construction and Testing of the In-Vessel Bioconversion Facility recommended that the anaerobic digestion process utilize the Egg Shape Digester (ESD).

Anaerobic digestion does not generate the offensive and pervasive odors that result from the current LPO process. Anaerobic digestion does generate hydrogen sulfide (H₂S) and other malodorous sulfide compounds, and these must be controlled due to the adjacent recreational and commercial activities that occur within the vicinity of the Sand Island WWTP. The analysis will conclude that beneficial use through anaerobic digestion and the heat sludge drying process is the preferred alternative to both sludge stabilization and final disposal. The preferred alternative was the only scenario, which solicited a responsible bid resulting from the City and County of Honolulu request for bid (RFB) process.

2.3.1 Egg Shaped Digester (ESD)

The Egg Shaped Digester (ESD) system is a continuous feed process. The ESD reduces solids and produces energy in the form of methane. The methane or biogas is used as a fuel source for the sludge heat drying system. The ESD system will also be equipped with an H₂S removal system (adsorber) to remove the H₂S from the digester gas. Figure 2-1 illustrates an ESD.

European practice has been to use Egg Shaped Digesters (ESD) with a diameter to height ratio of about 1.5. (MOP No.8., Vol II) The only supplier of ESDs in North America is CBI Walker. The proposal provided by CBI includes one digester 108.00 feet (ft) high and a major diameter of 83.5 ft. The system also includes a sludge storage tank measuring 108.5 ft high and a diameter of 30.00 ft. A gas holding tank measuring 25 ft in diameter and a vertical height of 40 ft is required. The gas holding tank will have a capacity of 10,000 cubic feet to provide a consistent supply of gas to the drying process.

The ESD is a steel fabricated structure with coal tar epoxy on interior surfaces exposed to biogas. Exterior surfaces are insulated with 2 inches of urethane foam. Surfaces above the ring wall are finished with an elastomer and below with a fire protective coating. The size and insulation of the ESD results in lower heat losses compared to other digesters.

Sludge will be introduced to the ESD through a continuous raw sludge feed system, which will provide for a more consistent digestion process with a steady gas production. The ESD proposal includes mixing and heating the sludge to ensure effective anaerobic digestion. The mixing system will incorporate an external liquid recirculation system with dual internal draft tubes. The tubes will act as internal pumps for maintaining a well-mixed digester. The operation of the dual tubes allows for complete mixing of the sludge into a nearly homogenous substrate within the vessel.

The ESD will be equipped with an external recirculation system to provide scum and foam suppression at the operating liquid level of the ESD. The recirculated sludge is discharged at a high volume rate and velocity through spray nozzles located within the dome. The function of the high velocity stream is to break up the emulsion or foam on the liquid surface. The result of this action is the release of gas, which is removed through a gas takeoff system and return liquid system. The importance of controlling the foam and scum through the suppression process is vital during times of high organic loading and start up times.

Since the ESD is a constant liquid level primary digester with a relatively small gas dome, CB&I have developed a gas-takeoff system in operation with the sludge storage tank (SST). The combination of the two systems minimizes the potential of foam carryover from the ESD. The benefits of the SST are such that a totally enclosed gas tight system is achieved. This allows for the containment and non-release of any emissions from the ESD or the SST. The process flow is detailed in Figure 2-2. The footprint of the proposed project is shown in Figure 2-3.

2.3.2 Dewatering and Polymer System

The liquid digested biosolids will be pumped from the anaerobic digestion system to the dewatering system. The biosolids will be dewatered using high solid centrifuges manufactured by Andritz. There will be two centrifuges. Each of the centrifuges will be designed to process 100% of the design flow. The spent liquid (centrate) will be returned to the WWTP along with any other liquids. The dewatered cake will be conveyed, by means of closed screw conveyors to the drying system receiving bin.

The dewatering equipment will be ventilated and kept under negative pressure while the exhaust will be treated by a chemical scrubber system, prior to any release into the atmosphere.

2.3.3 Heat Drying and Pelletization

The facility will utilize a direct heat drying and biosolids pelletization process with high rate exhaust gas recirculation. The process begins by combining heated air with the biosolids in a triple pass rotary drum dryer. The heated air comes into contact with the biosolids in the drum system where water is evaporated and a dry hard pellet is produced. The benefit of the air-drying system is high-rate exhaust gas recirculation that reduces the volume of air emissions and odors.

Biogas, a product of anaerobic digestion, will be used as a fuel resource for the dryer operation. The Facility will include equipment to maximize the benefit of full utilization and recovery of heat from the digester gas. The system will utilize the digester gas as a primary fuel, which will reduce the energy cost required for the facility

2.3.4 Air Emission and Odor Controls

Containment at the equipment and building level, recycling process air, and treatment of exhaust are used collectively to control air emissions and odors.

Liquid sludge from the raw sludge pumping station, through the digester and storage tanks, and to the dewatering centrifuges is totally enclosed. Hence, odors cannot escape. Biogas is treated to remove H₂S in an adsorber located immediately downstream of the gas holding tank. This action ultimately reduces Sulfur Dioxide (SO₂) in the exhaust from the heat dryer process.

The dewatering centrifuges, polymer preparation, centrate drain, and sludge cake conveyors are enclosed and kept under negative pressure. Air vented from this equipment is sent to a two stage chemical scrubber, which removes volatile organic compounds, hydrogen sulfide, and ammonia before release. Two scrubbers are furnished, (one operational, one standby).

The heat drying process is operated under negative pressure. The combination of an air /solids separator and polycyclones to remove particulates followed by a sub-cooler-condenser to further remove particulates and condense water and volatile organic compounds (VOC's) enables eighty-five percent of the process air to be recycled. The remaining fifteen percent is further treated in a venturi scrubber to remove any remaining particulates and VOC's. Odors and VOC's are destroyed by thermal oxidation in a regenerative thermal oxidizer (RTO) before release to the atmosphere.

The enclosed dry material handling equipment is vented to a fabric filter to capture fugitive dust. The filter exhaust is sent to the RTO before release.

The dewatering and heat drying processes are contained with the Solids Building, which is kept at negative pressure. The building exhaust is treated by the chemical scrubber before release.

The final pellets are stored in closed silos under a nitrogen blanket and coated with a vegetable oil before loaded into a truck. All three actions prevent the release of odors and dust. As a final precaution, the silo, conveyor, and pellet oiler are vented to a fabric filter. This filter exhaust is treated by the chemical scrubber before release to the atmosphere.

The following operating procedures also mitigate odor generation:

1. prompt cleanup of accidental spills,
2. processing of all dewatered sludge before shutdown,
3. operation of the building ventilation equipment and chemical scrubber during shutdown,
4. monitoring of air emission and odor control equipment.

2.4 NO ACTION ALTERNATIVE (LAND DISPOSAL)

The No Action alternative would involve no further action to modify or upgrade the existing sludge stabilization system at the facility. Currently the practice of disposing the stabilized sludge at the City and County's landfill (Waimanalo Gulch) would continue as the No action alternative for the facility.

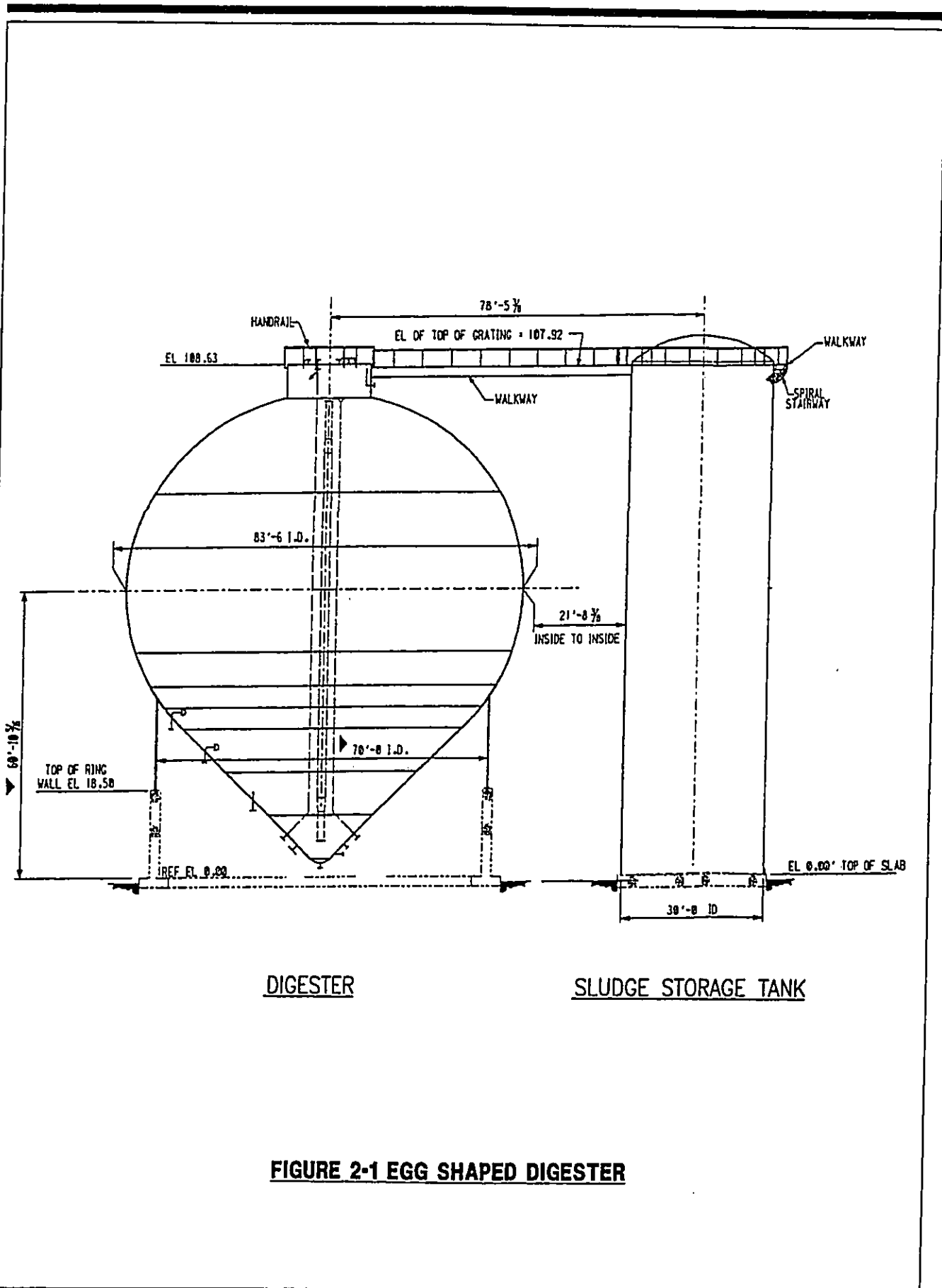
The Subtitle D program promulgated under the Resource Conservation and Recovery Act (RCRA) regulates operation of the municipal landfill. These regulations prohibit landfilling sewage sludge that does not pass the "Paint Filter Liquids Test". This test qualifies the amount

of free liquid present within the material. The City and County of Honolulu use this test to qualify all sewage sludge before disposal to the municipal landfill.

The Waimanalo Gulch Landfill is the only operating sanitary landfill on Oahu at this time. Currently the City is in the process of receiving a 15-acre expansion. This final expansion will allow the landfill to operate for five more years. The confirmation of the expansion still requires the approval of the State Department of Health, which is set to meet in April 2003, therefore, consideration should be given to its current capacity. (Department of Health March 2003).

Due to the constant concern over the limited availability of landfill space, and the extreme difficulty and expense of siting new landfill space on Oahu, the City and County of Honolulu continues to support the beneficial use of biosolids. Directed by Consent Decree 309 promulgated by the US Environmental Protection Agency (EPA) and the State of Hawaii Department of Health, the City and County of Honolulu is required to put 10 dry tons of municipal sludge per day to beneficial use. Currently the obligation of the decree is being met by the Honouliuli WWTP, in which the dewatered sludge (10 dry tons per day) is being processed by the United States Navy composting facility. The preferred alternative (beneficial use) will enable the City and County to exceed the requirements of the consent decree. Presently, 8,468 dry tons per year dewatered sludge from Sand Island WWTP is delivered to landfill. The preferred alternative will divert this quantity of dewatered sludge from the landfill.

Landfilling dewatered sludge is not a preferred alternative because the City and County is currently supporting opportunities to reduce additional loading on the landfill. The No Action Alternative would result in failure to support the beneficial use of biosolids as well as placing a continual burden on the City and County's limited availability at the landfill. Without the proposed alternative of anaerobic digestion, sludge heat drying and, pelletization, the Sand Island WWTP would continue to stabilize sewage at its existing capacity and send the dewatered sludge to the Waimanalo Gulch Landfill.



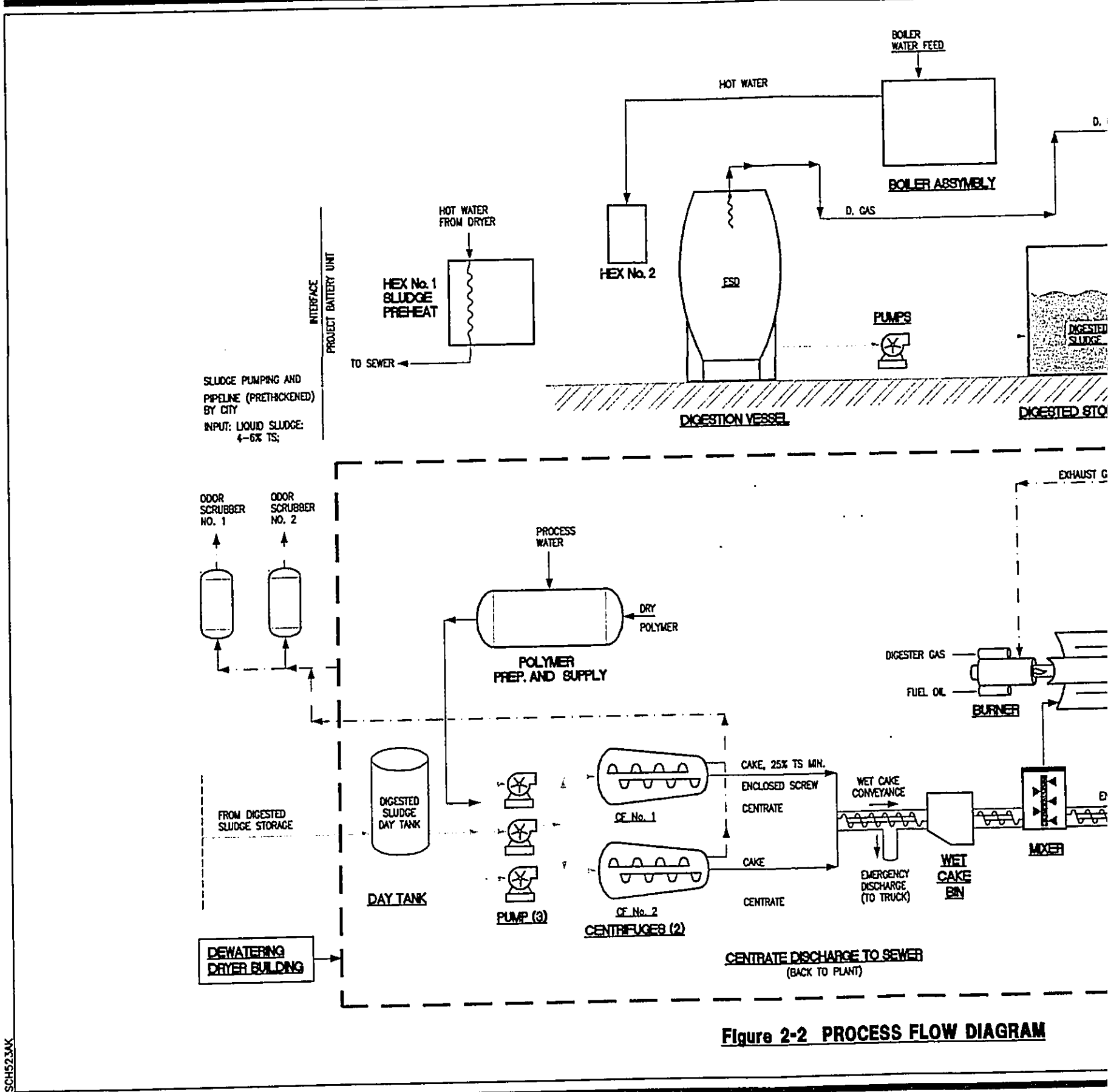
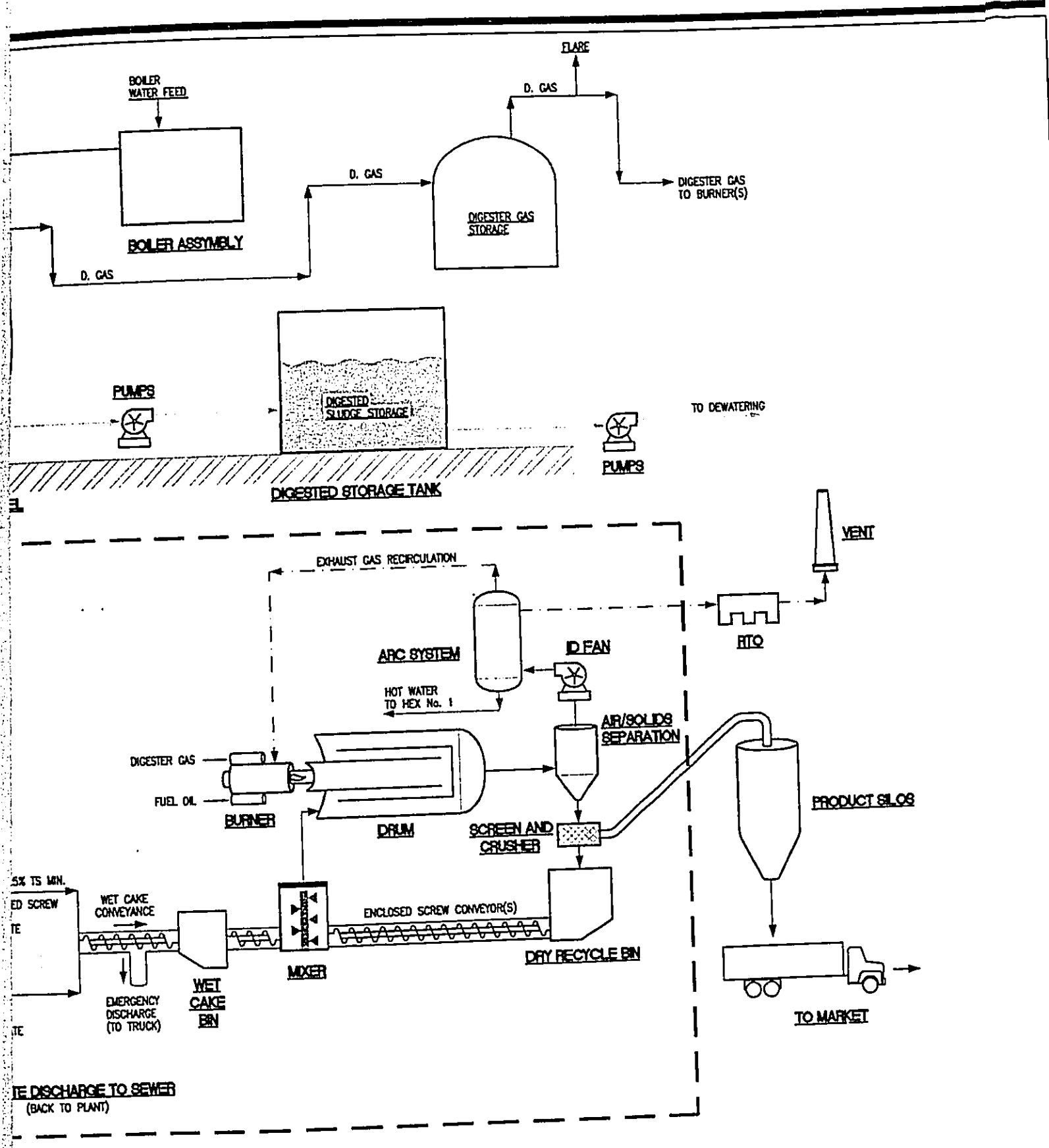


Figure 2-2 PROCESS FLOW DIAGRAM

SCH523AK



2-2 PROCESS FLOW DIAGRAM

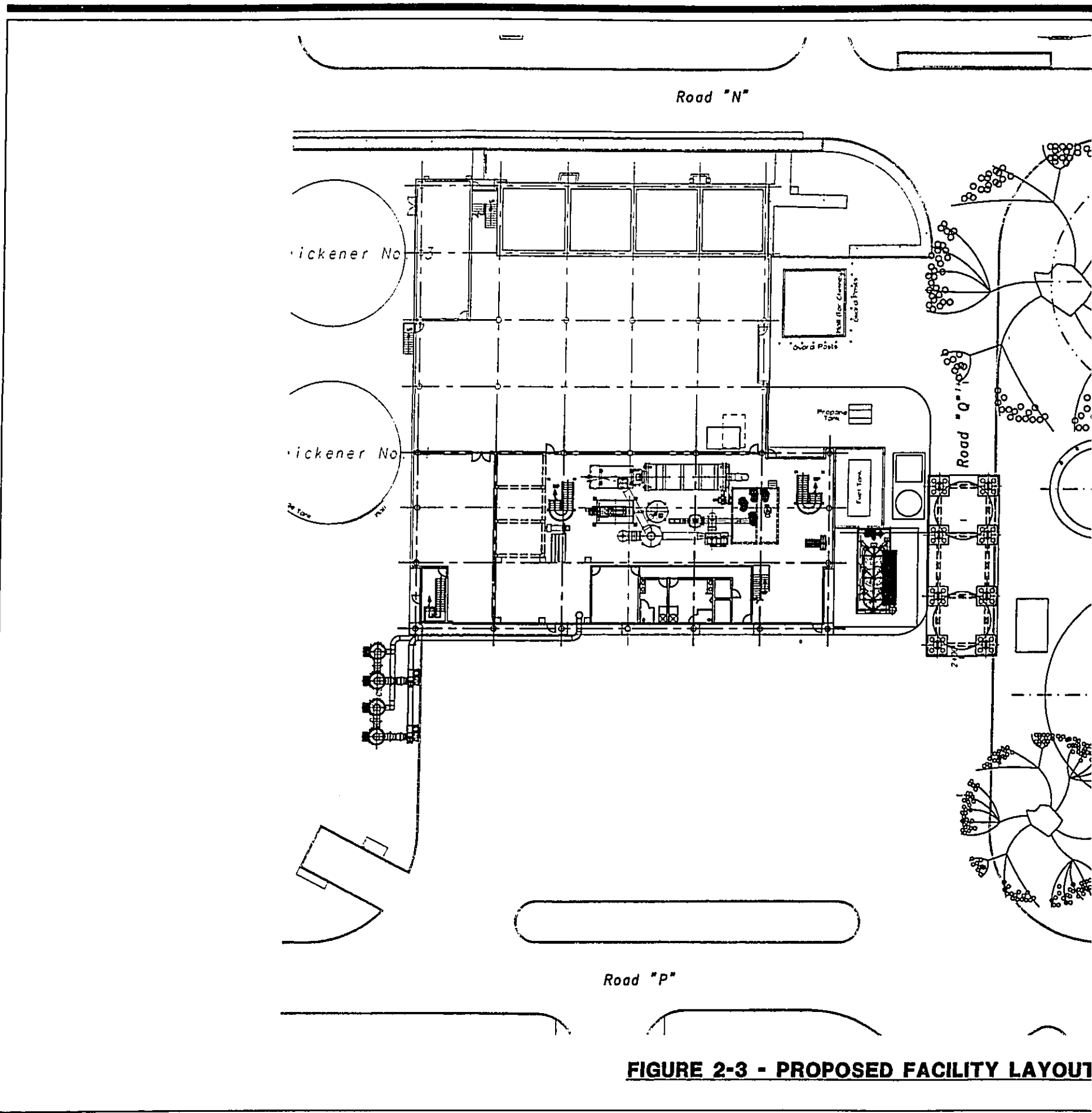
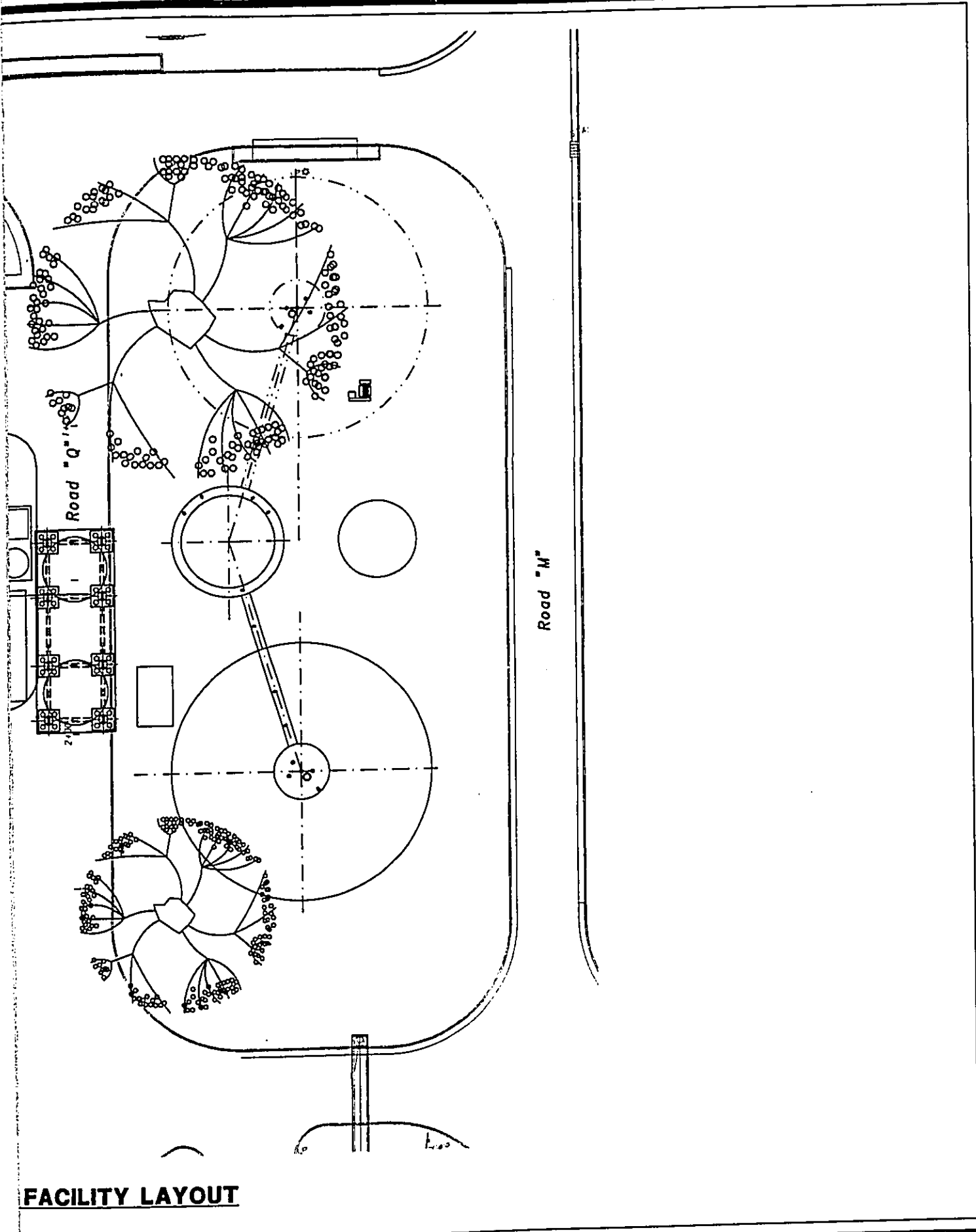


FIGURE 2-3 - PROPOSED FACILITY LAYOUT

SCH523AC



FACILITY LAYOUT

SECTION 3
EXISTING ENVIRONMENT

SECTION THREE

EXISTING ENVIRONMENT

The following section describes the existing environment in the general vicinity of the plant site.

3.1 SAND ISLAND WASTEWATER TREATMENT PLANT LOCATION

Sand Island WWTP is located on Sand Island, off the south shore of Oahu. The WWTP is owned and operated by the City and County of Honolulu and is the largest treatment plant in the State of Hawaii. The treatment plant serves the area that extends from Moanalua-Aliamanu to the Nui Valley-Paiko Peninsula. The 50-acre State owned parcel is leased by the City and County. The location of the Sand Island WWTP is shown in Figure 1-1.

3.2 SAND ISLAND WASTEWATER TREATMENT PLANT : PLANT OPERATION

The treatment processes at the facility includes bar screens, primary clarifiers, sludge thickeners, LPO (low pressure oxidation) systems, sludge dewatering, incineration, and effluent screens. The facility's treated effluent is discharged into Malama Bay through the offshore Ocean Outfall. The outfall is approximately 12,350 feet long, and located at depths ranging from 225 to 240-feet. Figure 3-1 shows the existing layout of the facility.

Primary Sludge is pumped directly from the clarifiers to a gravity thickener to increase its concentration. The thickened sludge is pumped to a blend tank and then sent to the LPO operation. This stabilization process heats sludge to 375°F for 30 minutes. The stabilized sludge is either pumped to a centrifuge, which dewateres the viscous sludge to cake, (i.e. similar in appearance and consistency to moist soil) or to a blend tank for temporary storage. Currently, the sludge cake is trucked to the landfill (Waimanalo Gulch).

The LPO equipment is approaching the end of its useful life and is being operated near its capacity. A multiple hearth incinerator was constructed to reduce dewatered sludge to a sterile ash. However, it has not been operated for the past decade.

3.3 PHYSICAL ENVIRONMENT

3.3.1 Climate

Sand Island WWTP is located within the industrial area of Honolulu. The temperature, precipitation and wind data are taken from records at the Honolulu International Airport, which is approximately one and half miles west of the WWTP. The average temperatures present at the site range from the mid 70's to the upper 80's with possible reaches into the 90's degrees Fahrenheit (F°). The average annual temperature recorded at the Honolulu International Airport was 78.6 degrees Fahrenheit. The average annual

precipitation is approximately 15 to 20 inches. The winds are primarily from the northeast direction, with an average speed of 10-15 miles per hour, with a possibility for occasional gusts greater than 40 miles per hour. The average relative humidity in Honolulu and the area surrounding the facility has ranged from 77% in the winter months to approximately 65% in the early summer months. The average annual humidity is approximately 69 to 71% (Atlas of Hawaii 1998).

3.3.2 Topography and Geology

The proposed facility will be developed within the footprint of the existing WWTP. The area has been previously graded and developed. The facility area is relatively flat with ground elevations ranging from 5 to 9 feet above mean sea level (msl).

The soils found at the proposed project site include Fill Land, mixed (FL) and Jaucas Sand (JaC) as describe by the U.S. Soil Conservation Service. The fill land primarily consists of material from excavation and dredging from adjacent areas, garbage, bagasses and slurry from sugar mills. The Fill Land, mixed (FL) consists of area filled with previously dredged or excavated material from the ocean or from nearby areas which was generated from other sources. This type of soil is primarily used for urban development and industrial facilities.

Jaucas Sand, (JaC) resides in a relatively small area of the existing facility. The soil is classified as a single grain pale sandy soil, neutral to moderate alkaline. The soil's permeability rate is rapid and runoff is slow to very slow. This soil has been classified for uses in pasture, sugarcane, truck crops and also urban development (Soil Conservation Service Survey 1972).

3.3.3 Existing Land Use and Zoning

The Tax Map Key 1-5-41:05, identifies the Sand Island WWTP. Figure 3-2 illustrates zoning for the WWTP and the surrounding areas. The land in the immediate area and the vicinity of the WWTP is used for industrial purposes. Currently a shipping container facility (Matson) and an industrial park are adjacent to the WWTP. Presently the Sand Island Recreational Area, a state owned and operated park, which is located along the shoreline to the southeast, and the Sand Island Treatment Center (SITC), located away from the facility on the east side of the parcel.

According to the State Land Use the existing and proposed facility are in the urban land use district. The current project site is a public facility in the City and County's Primary Urban Center Development Plan area. The City Land Use Ordinance classifies the zoning as I-3, Waterfront Industrial District.

Sand Island is entirely within the City and County of Honolulu, Special Management Area (SMA). Due to the SMA designation of this area, a SMA (Major) permit is required to be processed by the Department of Planning and Permitting and approved by the City Council for construction and implementation of the proposed project.

3.3.4 Hydrology

The WWTP is located in the Zone X and Zone A, according to the Flood Insurance Rate Map (FIRM 1998) (Figure 3-3). Zone X classifies areas outside the 500-year flood and Zone A classifies areas where the base flood elevations range from 5.9 to 5.7 feet above msl. The proposed project site is located in Zone X. The current facility and the proposed Facility are located outside the tsunami inundation zone (Oahu Civil Defense 1998).

3.3.5 Water Quality

The ground water in the Sand Island WWTP area and the surrounding areas is classified as brackish basal water. The facility is located seaward (makai) of the underground injection control (UIC) program. There are no drinking water sources on or surrounding the WWTP (Hawaii Department of Health 1984).

The water quality of Keehi Lagoon and the Sand Island Park area are affected by the industrial areas and activities, which are located in Honolulu Harbor. There are no permanent streams classified on Sand Island. The waters off shore of the State park are classified as Class 2 inland waters, which are classified for the use in the propagation of aquatic life as well as agricultural and industrial water supplies, shipping and navigation and recreational purposes.

3.4 BIOLOGICAL ENVIRONMENT

3.4.1 Flora and Fauna

Currently there are no proposed or listed threatened or endangered plant species found on or within the project site and the surrounding areas. The proposed project will be located within the existing WWTP facility, which is considered a previously altered environment consisting of roadways and grassed areas. The species that are common to the site include introduced flora and fauna. Several introduced fauna including the Indian Mynah (*Acridothered tristis*), House Sparrow (*Passer domesticus*), Spotted or Lace-necked Dove (*Streptopelia chinensis*), Zebra dove (*Geopelia striata*) and the Cardinal (*Carinalis cardinalis*) has been observed at the WWTP. The wildlife observed in the area includes the introduced mongoose, stray cats, rats and mice.

3.4.2 Wetlands

The current site was preliminary evaluated by the Army Corps Of Engineers to ascertain the potential for impacts to a nearby drainage ditch, which had been constructed during the establishment of the WWTP in 1974 (R.M. Towill 2001). A man-made drainage ditch at the northeast side of plant was identified to be a wetland. The wetland is a trapezoidal shaped drainage ditch with steeply inclined banks about four to five feet in

height. The canal was partly created by old fill, which was used to develop the flat land that surrounds the waterway. Of the three Army Corps of Engineer criteria that define a wetland, i.e. hydrophytic vegetation, standing water within 18 inches of the surface for at least three weeks of the growing season (hydrology), and the presence of hydric soils, the first two are met on the site.

The findings of the wetland survey indicate that its structure (canal and surrounding areas) is located approximately 300 feet north of the proposed project site. Figure 3-1 illustrates the area of the wetland.

3.5 ARCHAEOLOGY AND HISTORICAL RESOURCES

The Sand Island WWTP and the proposed project site are located on fill land and dredged material, and have been previously disturbed during the original construction of the facility. According to the State Historic Preservation Division, there are no known historical sites at the facility.

3.6 UTILITIES

Presently a new HECO substation is being constructed at the Sand Island WWTP to serve the current modifications and improvements being made to the facility. The newly installed substation will provide additional capacity for HECO's electrical infrastructure at Sand Island.

The Honolulu Board of Water Supply (BWS) is the local water utility agency on Oahu. The regional system is municipally owned, operated and maintained. BWS's regional potable water system consists of supply wells, storage reservoirs, booster pump stations, and transmission lines that carry water to distribution systems. Potable water is supplied to the plant through a single 8-inch water main that is connected to a BWS 16-inch water main located along Sand Island Parkway. Plant consumption of potable water averages 248,930 gpd.

Verizon purchased GTE Hawaiian Tel and currently is the primary island wide telephone company. Their service in the Honolulu region is provided via underground lines that are shared under the joint pole agreement established with other utility systems.

3.7 AIR QUALITY

The US Environmental Protection Agency has promulgated National Ambient Air Quality Standards (NAAQS) for sulfur dioxide (SO₂), particulate matter less than or equal to 10 microns in aerodynamic diameter (PM₁₀), nitrogen dioxide (NO₂), carbon monoxide (CO), lead (Pb), and ozone (O₃). These are commonly termed the "criteria pollutants", and information about their effects is included in Appendix A.

Two levels of protection are provided by the NAAQS. Primary NAAQS were set at levels to protect public health, while secondary NAAQS were established at levels

designed to protect welfare, including agricultural crops, building materials, national parks and forests. The State of Hawaii has promulgated its own ambient air quality standards that were patterned after the NAAQS. The State Ambient Air Quality Standards (SAAQS) are more stringent than the NAAQS for three pollutants: NO₂, CO and O₃. The State of Hawaii also promulgated a 1-hour ambient standard for hydrogen sulfide (H₂S). Table 3.1 summarizes the State of Hawaii and Federal Ambient Air Quality Standards.

The State of Hawaii currently maintains and operates a network of nine National Air Monitoring Stations/ State and Local Air Monitoring Stations (NAMS/SLAMS) on the island of Oahu. The primary purpose of the NAMS/SLAMS data collection program is to measure background air quality.

In 1997, the Hazard Evaluation and Emergency Response (HEER) Office of Hawaii Department of Health investigated the health effects associated with elevated levels of the six criteria pollutants described in Appendix A. The levels of these substances measured by HEER were found to be typical of coastal urban areas of the United States, and did not indicate any potential short term or long term health hazards in this area.

Presently emissions from the liquid process stream are collected and treated via pollution control equipment, which includes a catalytic air scrubber and an activated carbon system. The treated exhaust gas is vented to the atmosphere after prior treatment. These activities are permitted by the State Department of Health.

**TABLE 3.1
SUMMARY OF STATE OF HAWAII AND
FEDERAL AMBIENT AIR QUALITY STANDARDS**

POLLUTANT	STANDARDS		
	Hawaii State Standards	Federal Primary Standard ^a (Health)	Federal Secondary Standard ^b (Welfare)
CARBON MONOXIDE			
1 hour	10 mg/m ³	40 mg/m ³	40 mg/m ³
8 hour	5 mg/m ³	10 mg/m ³	10 mg/m ³
NITROGEN DIOXIDE			
1 hour	---	---	---
24 hour	---	---	---
Annual (Arithmetic)	70 ug/m ³	100 ug/m ³	100 ug/m ³
PM -10^c			
24 hour	150 ug/m ³	150 ug/m ³	150 ug/m ³
Annual (Arithmetic)	50 ug/m ³	50 ug/m ³	50 ug/m ³
HYDROGEN SULFIDE			
1 hour	35 ug/m ³	---	---
OZONE			
1 hour	100 ug/m ³	235 ug/m ³	235 ug/m ³
SULFUR DIOXIDE			
3 hour	1300 ug/m ³	---	1300 ug/m ³
24 hour	365 ug/m ³	365 ug/m ³	
Annual (Arithmetic)	80 ug/m ³	80 ug/m ³	---
LEAD			
3 months	1.5 ug/m ³	1.5 ug/m ³	1.5 ug/m ³
^a Designated to prevent against adverse effects on public health			
^b Designated to prevent against effects on public welfare, including effects on comfort, visibility, vegetation, animals, aesthetic values, and soiling and deterioration of materials			
^c Particulate Matter which is co microns or less in diameter			

3.8 NOISE

The proposed project site is subject to the noise generated from the existing WWTP. Other sources of noise existing currently at the site include over flights of aircraft within the 70 L_{dn} noise contour of Honolulu International Airport (L_{dn} is a measure of the decibel noise level within an area surrounding airports).

Noise is generally defined as loud, unpleasant, unexpected or undesired sound that is typically associated with human activity and which interferes with or disrupts normal activities. Although exposure to high noise levels has been demonstrated to cause hearing loss, the principal human exposure response to environmental noise is annoyance. The response of individuals to similar noise events is diverse and influenced

by the type of noise, the perceived importance of the noise and its appropriateness in the setting, the time of day and the type of activity during which the noise occurs, and the sensitivity of the individual. Table 3.2 summarizes a range of typical noise levels.

Some land uses are considered sensitive to noise. Noise sensitive receptors are land uses associated with indoor and/or outdoor activities that may be subject to stress and/or significant interference from noise. They often include residential dwellings, mobile homes, motels, hospitals, nursing homes, educational facilities and libraries.

The State of Hawaii has adopted standards to limit noise from stationary and construction noise sources (Hawaii Administrative Rules, Chapter 46).

Stationary Noise Source: The maximum permissible sound levels for stationary noise sources are summarized in Table 3.3. The applicable limits are a function of the zoning districts and the time of day. The sound levels are measured at any point at or beyond the property line of the noise source. The noise level shall not exceed the maximum permissible sound level for more than ten percent of the time within any twenty-minute period.

Construction Noise Sources: Construction activity is permitted between the hours of 7:00 am and 6:00 pm, Monday through Friday, and 9:00 am and 6:00 pm on Saturday. No specific sound level limit has been established for construction during the permitted hours.

Appendix B outlines the Federal Standards (FAA Standards PAR 150) for land use compatibility with respect to day and night average sound levels. According to Table 1 in Appendix B, utility uses are compatible with noise levels under 75 L_{dn} . The WWTP current zoning is industrial public facility. The occupied areas of the proposed Facility (i.e. control room) will incorporate the appropriate noise level reduction measures in order to comply with the noise level standards illustrated in Appendix B. The current noise sources at the WWTP include vehicular traffic and equipment.

The proposed project site is subject to the noise generated from the existing WWTP. The existing noise quality at the WWTP is in accordance with the land use. The closest residential area (i.e. Harbor Court Apartment Complex) is approximately 1.6 miles from the WWTP. Other sources of noise existing currently at the site include over flights of aircraft within the 70 L_{dn} noise contour of Honolulu International Airport (L_{dn} is a measure of the decibel noise level within an area surrounding airports). Due to the design of the proposed project, which includes enclosing of the process equipment and housing the process equipment indoors, no additional increase in noise is anticipated.

TABLE 3.2
SOUND LEVEL OF TYPICAL NOISE SOURCES AND NOISE ENVIRONMENTS
(A-weighted sound levels)

Noise Source	Scale of A-Weighted Sound Level in Decibels	Noise Environment	Human Judgment of Noise Threshold of Pain*
Military Jet Take off	140	Carrier Flight Deck	
Commercial Jet Take off	120	Airport	*32 times as loud
Pile Driver	110	Construction site	*16 times as loud
Rock Concert	110	Enclosed Arena	*16 times as loud
Ambulance (100ft)	100	Travel way	*8 times as loud
Power Lawn Mower (3ft)	100	Residential	*8 times as loud
Motorcycle (25 ft)	90	Residential	*4 times as loud
Diesel Truck, 40 mph (50 ft)	90	Residential	*4 times as loud
Garbage Disposal (3 ft)	80	Household	*2 times as loud
Living Room Stereo (15 ft)	70	Household	Moderate loudness
Vacuum Cleaner (3 ft)	70	Household	Moderate loudness
Normal Conversation	60	Business office	*half as loud
Light Traffic (100 ft)	50	Business office	*half as loud
Bird calls (distant)	40	lower limit of urban	quiet
Soft whisper (5 ft)	20	Quiet room	just audible

TABLE 3.3
MAXIMUM PERMISSIBLE SOUND LEVELS

Zoning District	Daytime 7am - 10 pm	Nighttime 10 pm - 7 am
Class A	55 dBA	45 dBA
Class B	60 dBA	50 dBA
Class C	70 dBA	70 dBA

Class A Zoning District - Includes all areas equivalent to lands zoned residential

Class B Zoning District - Includes all areas equivalent to lands zoned for multi-family dwellings, apartments, business, commercial, hotel, resort or similar type.

Class C Zoning District - Includes all areas equivalent to lands zoned agriculture, Country, industrial, or similar type.

3.9 TRAFFIC

The Sand Island WWTP is accessed from the Sand Island Parkway. According to a traffic census conducted by the Department of Transportation Highway Divisions (DOT), during a 24-hour period an average of 17,000 vehicles accessed Sand Island Parkway (DOT April 2001 Station C-202-B). The majority of traffic is to destinations other than the WWTP, and most likely to the shipping and container facilities.

3.10 SOCIAL AND ECONOMICAL ENVIRONMENT

Census 2000 recorded 1,211,537 population for the State of Hawaii. In addition, Hawaii receives approximately 7,000 visitors a day. The Sand Island WWTP is located within the industrial area of the District of Honolulu on Oahu, which recorded a population of 372,279 (Census 2000). Based on the Census 2000, the State of Hawaii has 188.6 persons per square mile, and the County of Honolulu has 1,460 persons per square mile.

Table 3.4 summarizes the actual and forecast key economic indicators for Hawaii from 2000 to 2005. Economic activity on Oahu is concentrated in the Primary Urban Center, Honolulu area, which has about three-quarters of island jobs and about half of the population. Projections to the year 2020 anticipate a decrease in job share in Honolulu to approximately 69%. The job share in the Secondary Urban Center in the Ewa Development Plan (DP) area is expected to grow at a rate of 4% a year, going from 3 percent of island jobs in 1990 to 10 percent in 2020. The City of Kapolei is expected to become the major employment center for this region.

The state of the economy has been influenced by the extraordinary events of September 2001. Visitor arrivals declined 30% in the fourth quarter of 2001, due largely to September 2001 events. During the first quarter of 2002, the decrease in visitor arrivals had been cut to 11% and 6% in the second quarter of 2002. Average daily visitor census numbers were down 3.5% in the first quarter of 2002. Hotel occupancy rates also dropped, decreasing from 70.0% in the second quarter of 2001 to 67.5% in the second quarter of 2002.

Hawaii's civilian employment was down 1.0% in the second quarter of 2002, compared to the second quarter of 2001. This marked the first quarterly decline since 1998. The unemployment rate declined in the second quarter of 2002 from 4.6% to 4.4% from the same quarter of 2002. The number of wage and salary jobs was down 0.9% measured year to year for the second quarter, which marked an improvement over the 1.2% decline recorded in the first quarter of 2002.

Three industries accounted for most of the job losses between the first quarters of 2002 and 2001. Retail Trade declined 3.3%; Transportation, Communication and Utilities declined 9.7% and Hotel jobs declined 6.1%. Increases were recorded in construction and agriculture, 4.7% and 4.2%, respectively.

The outlook for the State's economy provides optimism for the future. Visitor arrivals continue to climb toward their previous (September 2001) level, civilian employment and jobs growth have stabilized, and construction has not been immobilized. Hawaii's recovery is expected to be a function of the recovery of its visitor markets and the US and international economic performance. In the absence of any new shocks to the confidence of travelers, Hawaii visitor counts are expected to continue to improve. In 2002, total visitor arrivals are predicted to grow 3.5% and visitor expenditures are forecast to increase 3.4% from their depressed state during 2001.

Total wage and salary jobs in the state are now expected to finish 2002 at 0.2% below the 2001 total. Visitor arrivals are anticipated to increase by 6.3% in 2003 and bring the total visitor count for the year back up to the year 2000 level. This will help the overall job count manage a 1.4% increase for 2003 (DBEDT QSER September 2002).

**TABLE 3.4
ACTUAL AND FORECAST KEY ECONOMIC INDICATORS FOR HAWAII
2000 TO 2005**

Economic Indicators	2000 Actual	2001 Actual	2002 Forecast	2003 Forecast	2004 Forecast	2005 Forecast
Total population (thousands)	1,212.3	1,224.4	1,236.6	1,249.0	1,261.5	1,274.1
Visitor arrivals (thousands)	6,948.6	6,313.7	6,534.7	6,946.4	7,120.0	7,283.8
Visitor expenditures (million dollars)	10,918.1	10,140.0	10,486.4	11,282.0	11,761.1	12,263.5
Honolulu CPI-U (1982-84=100)	176.3	178.4	180.7	183.8	187.3	190.9
Personal income (million dollars)	33,763.2	34,960.9	35,951.1	37,258.4	38,711.5	40,182.5
Personal income (\$1996 million)*	32,690.7	33,451.9 p	33,962.0	34,604.0	35,282.4	35,939.5
Total wage & salary jobs (in thousands)	559.2	561.0	559.3	571.6	583.0	594.7
Gross state product (million dollars)	42,364.0	44,186.9 p	45,602.6	47,176.3	48,969.0	50,780.9
Real gross state product (\$1996 million) *	38,582.9	39,223.3 p	39,803.3	40,290.5	40,961.3	41,644.0
Gross state product deflator (1996=100)	109.8	112.7 p	114.6	117.1	119.5	121.9
Annual Percent Change						
Total population (thousands)	0.2	1.0	1.0	1.0	1.0	1.0
Visitor arrivals (thousands)	3.1	-9.1	3.5	6.3	2.5	2.3
Visitor expenditures (million dollars)	6.2	-7.1	3.4	7.6	4.2	4.3
Honolulu CPI-U (1982-84=100)	1.7	1.2	1.3	1.7	1.9	1.9
Personal income (million dollars)	4.1	3.5	2.8	3.6	3.9	3.8
Personal income (\$1996 million) *	2.3	2.3	1.5	1.9	2.0	1.9
Total wage & salary jobs (thousands)	3.0	0.3	-0.3	2.2	2.0	2.0
Gross state product (million dollars)	4.6	4.3 p	3.2	3.5	3.8	3.7
Real gross state product (\$1996 million) *	1.9	1.7 p	1.5	1.2	1.7	1.7
Gross state product deflator (1996=100)	2.7	2.6 p	1.7	2.2	2.1	2.0

p Preliminary.

Source: Hawaii State Department of Business, Economic Development and Tourism, June 25, 2002.

* Numbers expressed in the year 1996 dollars (\$) in millions

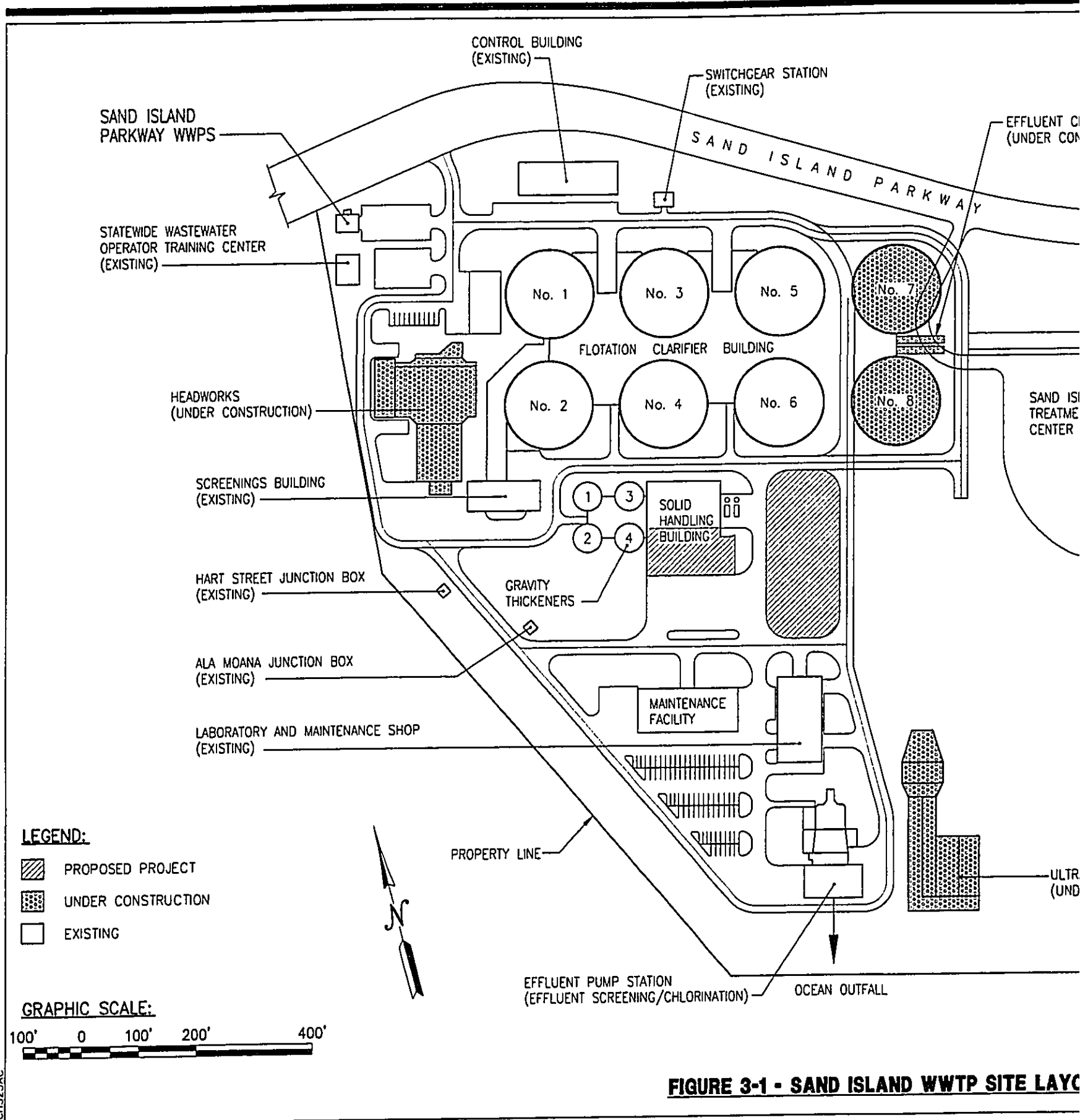
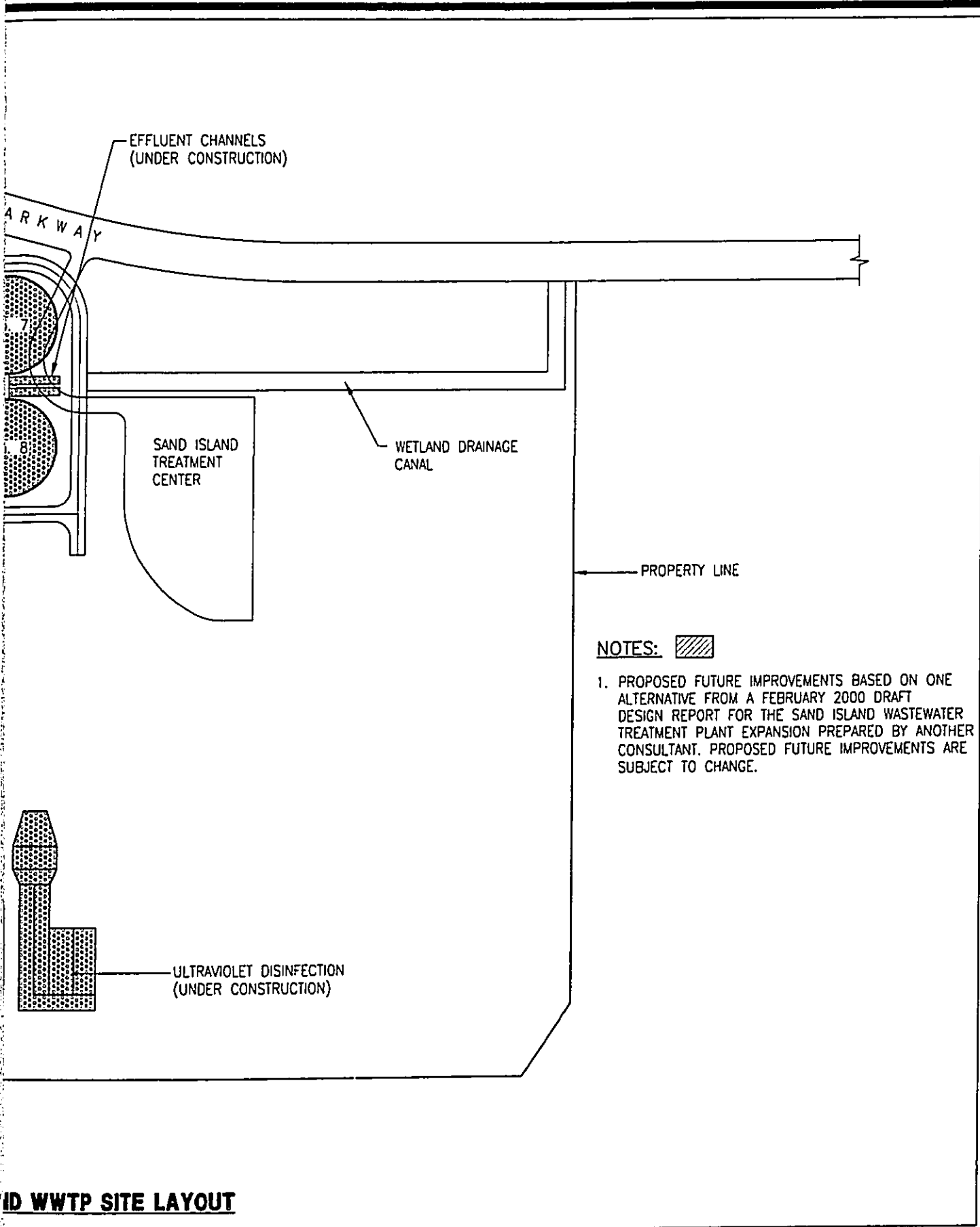
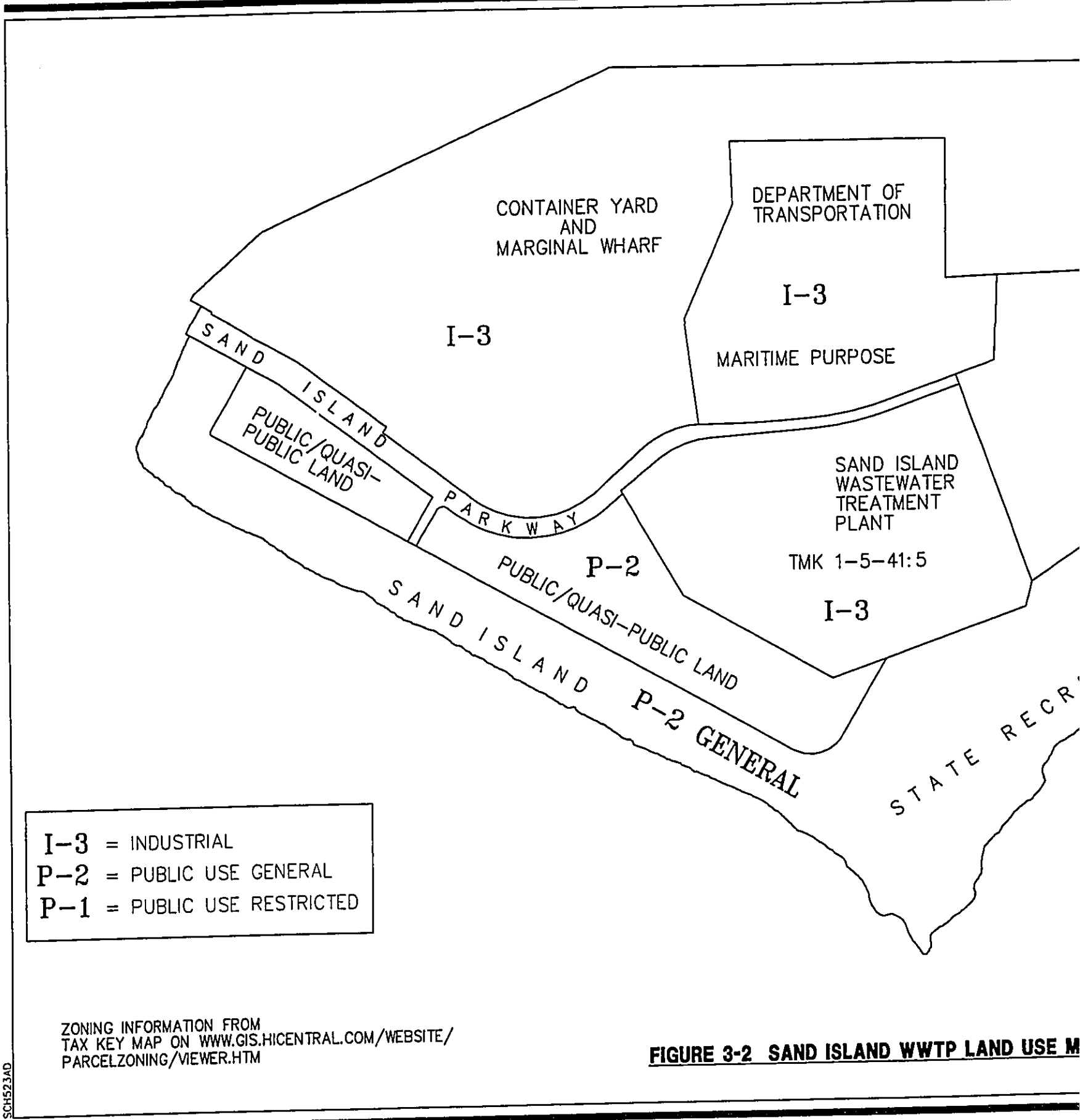


FIGURE 3-1 - SAND ISLAND WTP SITE LAYO



SAND ISLAND WASTEWATER TREATMENT PLANT (WWTP) SITE LAYOUT

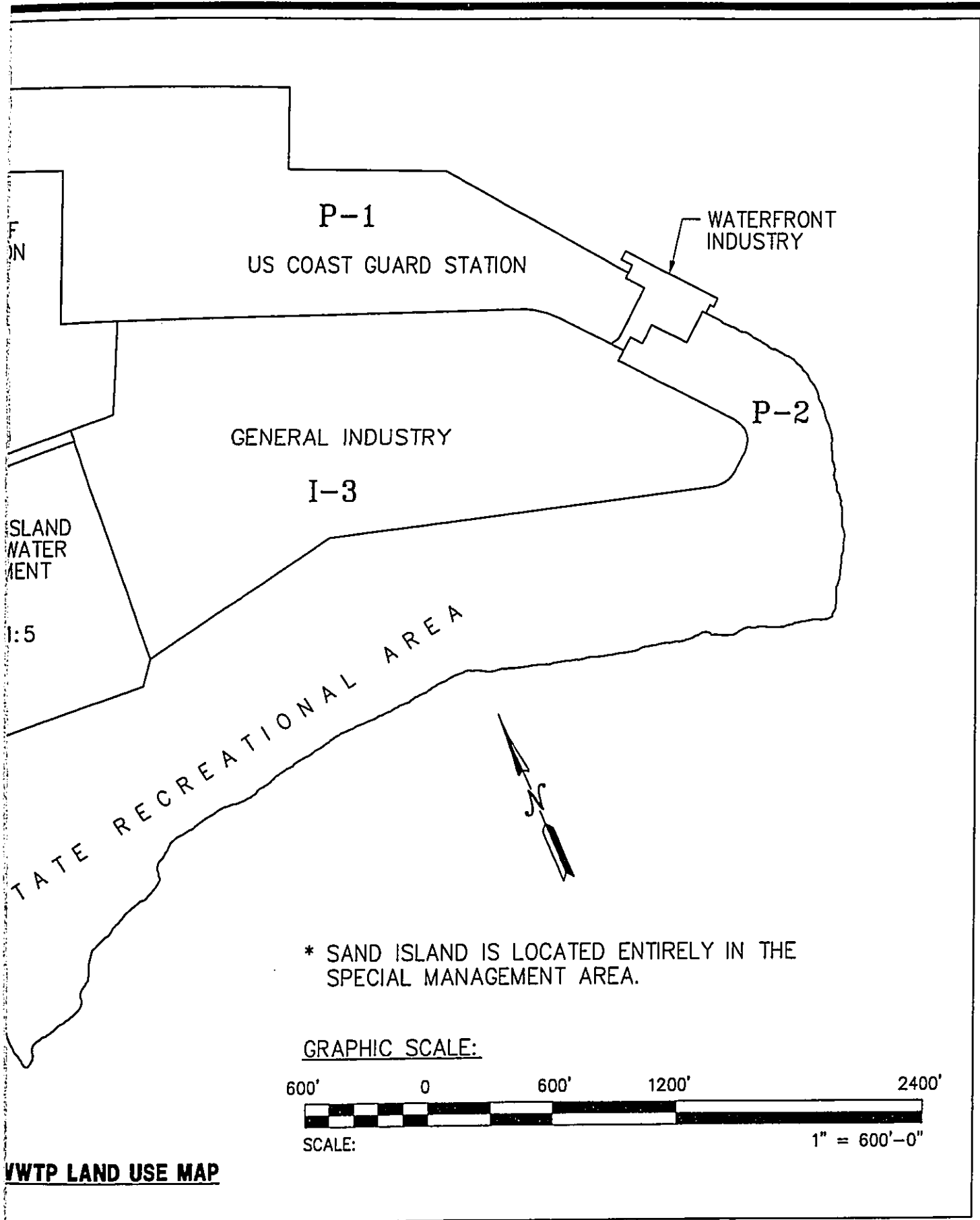


I-3 = INDUSTRIAL
P-2 = PUBLIC USE GENERAL
P-1 = PUBLIC USE RESTRICTED

ZONING INFORMATION FROM
 TAX KEY MAP ON [WWW.GIS.HICENTRAL.COM/WEBSITE/
 PARCELZONING/VIEWER.HTM](http://WWW.GIS.HICENTRAL.COM/WEBSITE/PARCELZONING/VIEWER.HTM)

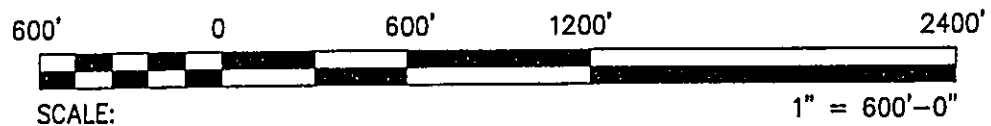
FIGURE 3-2 SAND ISLAND WWTPLAND USE M

SCH523AD



* SAND ISLAND IS LOCATED ENTIRELY IN THE SPECIAL MANAGEMENT AREA.

GRAPHIC SCALE:



SCALE: 1" = 600'-0"

WTP LAND USE MAP

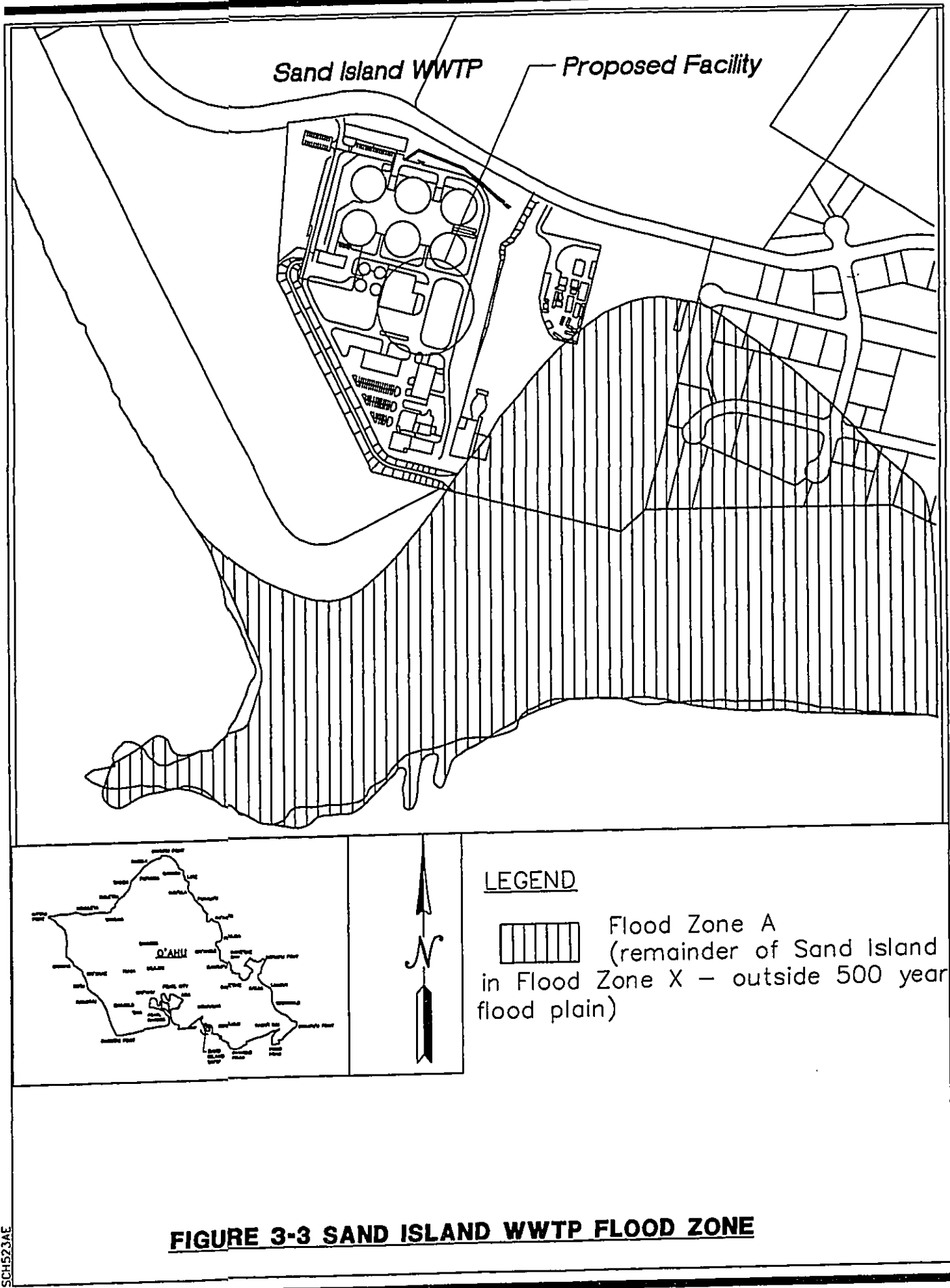


FIGURE 3-3 SAND ISLAND WWTP FLOOD ZONE

SCH523AE

SECTION 4
PROJECT IMPACTS AND MITIGATION
MEASURES

SECTION FOUR

PROJECT IMPACTS AND MITIGATION MEASURES

4.1 SHORT TERM IMPACTS (CONSTRUCTION IMPACTS) AND MITIGATION MEASURES

Short term impacts of the proposed Facility, which may affect the project site and adjacent areas, are discussed in this section. Short term impacts are generally associated with construction activities such as clearing, grading, excavating, building and landscaping.

The short term impacts shall be limited to the estimated construction period. All construction activities will be contained within the plant property.

Anticipated impacts on noise levels, traffic, air quality, water quality, soils, public health and safety, flora/fauna, economic and archaeological/historical resources as a result of the proposed action and the appropriate mitigative measures are described in this Section.

4.1.1 Operation of Wastewater Treatment Plant during Construction

The contractor will make every effort to minimize the impacts the construction of the proposed Facility will have on the existing WWTP operations. The equipment for the dewatering and drying processes will be located inside the existing Solids Handling Building. While this area is under construction it will be separated by a wall, from the rest of the ongoing treatment processes (thickening, storage and LPO operations).

The new anaerobic digester complex will be constructed on a vacant site adjacent to the existing Solids building.

As the proposed project progresses, eventually the road designated as "Q" will no longer connect roads "N" and "P". This is due to the installation of the pellet storage silos. Road "M" will continue to provide the needed connections. Figure 2-3 illustrates the facility roads affected by the proposed project.

The electrical services and requirements for the proposed Facility will be designed and phased in as not to interrupt the ongoing operations.

4.1.2 Surface Water and Groundwater Quality

Construction of the proposed project should not affect water quality in the area. The project site is not contiguous to any potable groundwater resources, streams or oceans. Drainage and erosion control plans are required as part of the permit process. These

plans shall verify that construction operations and runoff water generated by the project shall not have adverse impacts on local water quality.

Erosion control measures used to minimize runoff impacts may include: constructing berm around the construction site to contain runoff; covering or mixing soils with mulch to reduce runoff; perform clearing and grading operations during dry weather periods; and pave, landscape and/or seed area immediately after grading. If required the contractor will install a detention pond to collect sediment.

Construction activities for the proposed project are mainly contained indoors and will not restrict current operations; therefore, anticipated impact to the existing effluent from primary treatment that flows to the Outfall for final disposal are not expected.

4.1.3 Flora and Fauna

There are no identified or known threatened, rare, or endangered species of flora or fauna inhabiting the project site. Flora and fauna have previously been displaced due to past construction and operation activities at the plant. Noise produced by the construction of the proposed project may temporarily displace some of the birds and rodents found at the plant. These animals will most likely re-establish themselves on the property once construction is complete. Anticipated adverse impacts to flora and fauna are not expected.

4.1.4 Wetlands

The proposed action, is 300ft. south of the wetland, and is not anticipated to result in any adverse impacts to the wetland area. Storm water from the proposed project area will not be diverted to the wetland.

According to the Army Corp of Engineers review of the Draft EA, "the proposed activity does not involve work in the waters of the United States, including adjacent wetlands."

4.1.5 Archaeological/Historical

The project site has a history of past development. It is assumed that any site features of historic or archaeological value have been recovered or destroyed during these periods of development. Presently, no archaeological or historical resources are known to exist at the plant site.

Workers will be trained to recognize artifacts uncovered during construction. Should artifacts be discovered at the project site, they shall be clearly marked and preserved. The contractor shall immediately contact the State Historic Preservation Division to negotiate the appropriate course of action to be taken, such preservation, protection, restoration and/or relocation.

4.1.6 Air Quality

The construction phase of the project is expected to have minimal effect on air quality. Fugitive dust and fumes may result from operations and exhaust emissions from equipment and vehicles during the construction phase. The Contractor will be responsible for minimizing dust generated in compliance with the State Department of Health's Public Health Regulations, 11-60.1-33 on Fugitive Dust Control Control.

The Contractor will employ adequate dust control methods in accordance with the contractor's dust control plan. Several mitigative measures that may help prevent particulate matter from becoming airborne and travel off-site include: surrounding down-wind portions of the site with dust screens; frequently spray bare, exposed soils with water; pave, landscape and/or seed areas immediately after grading; and, cover or mix exposed soils with mulch.

Burning of cleared vegetation should be limited or prohibited. All motorized construction equipment shall be in good mechanical condition and equipped with emissions controls that meet the Department of Environmental Quality Standards. Open bed trucks shall be covered when transporting materials likely to give off airborne particulates.

With approximately half the construction activities taking place indoors, the existing emission permit will be applicable during the construction activities.

4.1.7 Noise Quality

Short term noise impacts are expected from construction activities and construction equipment. The major sources of noise will originate from excavation, development of the foundation (pile driving) and transport of equipment. The project site is located well away from any residential areas. Construction activities will be restricted to normal daylight working hours. All equipment will be properly maintained by the Contractor and shall be outfitted with noise muffling devices. Heavy vehicles utilized for construction must be in compliance with Title 11, Administrative Rules, Department of Health, Chapter 42, and Vehicular Noise Control for Hawaii. The Contractor will be required to obtain a noise permit if noise levels commonly exceed standards specified under Title 11, Administrative Rules, and DOH, CH. 43.

The ambient noise criteria set by the State's DOH for industrial areas is 70 dBA for both day and night time hours (HAR Title 11, Chapter 46). Presently there has been no record of any noise violations at the Sand Island WWTP. The new mechanical equipment such as the pumps for the digesters, will be located inside enclosed buildings. Therefore no significant noise increase is expected during the construction activity.

4.1.8 Traffic

The construction phase for the proposed Facility is not anticipated to have a significant adverse impact on the local traffic. All construction activities for the proposed project are confined within the boundaries of the existing WWTP, and therefore construction should not impact the flow on Sand Island Parkway. Mobilization of construction equipment and materials shall be conducted during light traffic periods. Work shifts may also be scheduled to coincide with light traffic periods. Construction vehicles should be required to be inspected, for example; tire safety and efficient lighting, so that no damage would be a result from poor maintenance.

Presently the WWTP is sending 56 trucks per week of stabilized sludge (162 tons per week) to the landfill. According to the DOT April 2001 traffic census, this represents about 1.0% of the traffic utilizing Sand Island Parkway. The proposed project will send on average 7 trucks per week of dried pellets to market. The proposed project reflects a 87% decrease in the amount of trucks leaving the facility.

4.1.9 Construction Waste

The Contractor shall be required to submit the necessary waste management plans to the Department of Environmental Services in accordance with State regulations for approval. The site shall be equipped with portable self-contained latrine facilities. Suitable vegetation shall be chipped and used as mulch. Unusable waste will be disposed of in an approved off-site landfill. Special measures will be taken to prevent oil or other possible hazardous substances from entering the local bodies of water, ground or drainage areas. All fuel or other possible hazardous substances will be contained in a sufficient bermed area to contain the contents in the event of a spill or leakage.

The facility and contractor will adhere to the guidelines set forth by the EPA Spill Pollution Control and Countermeasures as well as adhere to the facility's contingency plans in regards to the storage and release of petroleum products and possible hazardous materials.

4.1.10 Public Health and Safety

The Contractor shall be responsible for implementing appropriate measures to ensure public safety and health during the construction period. Construction areas will be delineated with no-trespassing and safety signs. The WWTP's existing protocol for Standard Occupational Safety and Health Administration (OSHA) requirements, which include safety glasses and hard hats at a minimal, will be maintained.

4.1.11 Short Term Economic Impacts

Construction of the proposed Facility and additional support structures will provide related jobs for local workers. Local material suppliers and retail businesses are expected to generate revenues by the project. These activities are anticipated to have a positive economic impact on the local economy.

4.2 LONG TERM IMPACTS AND MITIGATIVE MEASURES

The anticipated long term impacts associated with the operation of proposed Facility and support structures are confined to the immediate site and to the area's existing infrastructure. The following sections describe the project's long-term impacts on the criteria reviewed in Section 3 and Section 4.1.

4.2.1 Surface Water and Ground Water

There will be a small increase in covered areas (i.e. approximately 2/10ths of an acre). All storm water run-off will be contained on-site and recharged to groundwater with a ponding basin.

The plant effluent that is discharged to the Ocean outfall is expected to be improved with the implementation of the anaerobic digestion process. This positive impact results from the reduction in flow and BOD (biological oxygen demand) concentration in the centrate that is recycled to the head of the plant. While this stream will contain suspended solids, the primary treatment process can efficiently remove this material.

4.2.2 Flora and Fauna

There are no known existing native, rare or endangered plant or animal species at the project site. Vegetation removed by construction activities will be replaced by landscaping of grasses and adaptable shrubs and trees. Maintenance of grass and landscaped vegetation will be the responsibility of the WWTP maintenance.

4.2.3 Air Quality

Anaerobic Digester Complex

The anaerobic digestion process generates biogas. The biogas production is a function of temperature, solids retention time and volatile solids loading. The two main constituents of digester gas are methane and carbon dioxide. Trace amounts of nitrogen, hydrogen, and hydrogen sulfide are also produced. Containment of biogas will assist in odor control.

The biogas produced by the digester is prevented from escaping the system and entering the environment. The digester mechanical equipment, gas storage equipment and the associated piping are all gas tight to prevent the release of any emissions. The biogas generated during anaerobic digestion will be scrubbed to remove hydrogen sulfide. The process is safe and produces a non hazardous waste. This process also reduces the sulfur dioxide (SO₂) emissions, which are produced during combustion in the sludge heat drying process.

Dewatering Process

The sludge from the thickeners will be processed in the anaerobic digester and stored in a sludge/gas storage tank, prior to dewatering. The liquid biosolid handling system will be totally enclosed which will prevent the escape of any emissions. A centrifuge system (one operational, one stand-by) will be used to dewater the biosolids. The centrifuge is enclosed, which will prevent the escape of any odors. All of the piping, conveyance and the associated equipment will be totally enclosed and vented to the odor control system. Air drawn from the dewatering operations will be treated in the two-stage scrubber system prior to release to the atmosphere. A redundant scrubber system will be provided to produce continuous treatment while routine maintenance is performed on the other.

Sludge Heat Drying Process

The exhaust gas produced from the sludge heat drying process will pass through several stages of air emission and odor control treatment processes prior to release to the atmosphere. Up to eighty-five percent of the exhaust air is recycled in the drying process. An air/solid separator followed by polycyclones removes particulates, and further downstream a subcooler-condensor removes moisture, particulates and condensable odorous compounds. The remaining fifteen percent of the process air is treated in a venturi scrubber to remove any remaining particulates and then in a Regenerative Thermal Oxidizer (RTO), where volatile organic compounds and odors are destroyed by thermal oxidation prior to release to the atmosphere.

Fugitive dust will be kept to a minimum by operating the sludge heat drying process equipment under negative pressure as well as installing a fabric filter at the process equipment vents. Exhaust air from the filter will also be treated in the RTO prior to release to the atmosphere.

The Facility building housing both the dewatering and drying processes will also be kept under negative pressure and vented to the two-stage chemical scrubber.

The finished product (pellets) produced will be stored outside in silos under a nitrogen atmosphere and coated with a vegetable oil for dust control before being loaded into the trucks. Vents from the storage and coating equipment are attached to a fabric filter system to collect any fugitive dust. The filter exhaust is treated in the chemical scrubber prior to release to the atmosphere. The offsite transport of the finished product will involve covered vehicles

Waste Gas Flare

The waste gas flare (by-pass) will be operational two to three and a half days per week. The proposed Facility will produce approximately 190,000 cubic feet (ft³) of biogas per day. The biogas produced will be utilized for the operation of the dryer. During the period when the dryer is not in operation (two to three and a half days per week) the gas

will be flared. The flare will produce minimal SO₂ and nitrogen dioxide (NO_x) emissions. These emissions will be addressed in the amended air permit for the facility.

The proposed odor and emission controls when implemented are expected to result in improved ambient air quality, which will produce positive long term impacts on air quality surrounding the treatment plant.

Currently HAR Chapter 11-60, Air Pollution Control outlines the covered source air emissions permit. The existing air permit issued by the State Department of Health will be modified to include and accommodate the odor and emission control systems being proposed for the project. The existing covered source permit will be amended to address the removal of the two sludge incinerators, LPO, and waste boiler, and modified to include the addition of the hot water boiler, gas flare, sludge heat drying system, RTO and the chemical scrubber system.

4.2.4 Noise Quality

Once operational, the project facilities will have stationary noise sources similar to the existing noise generated from the WWTP. All noise generated will be required to be at the levels that are consistent with the existing standards and will be designed and operated in such a manner as to comply with the HAR Chapter 11-46, Community Noise Control. With the implantation of mitigative measures there are no anticipated adverse impacts associated with the generation of noise from stationary equipment.

Mitigative measures to address noise generated by the proposed project will include the enclosure of process equipment. The digester's mechanical equipment, including the pumps, motorized valves and heat exchangers will be enclosed within the concrete ring wall (containment wall) supporting the digester. All of the process equipment involving the sludge drying and dewatering systems will be contained within the Solids Handling building. By placing the process equipment indoors, noise transmission to the surrounding areas is mitigated.

The equipment located outside the Solids building, include the RTO, liquid nitrogen storage tank, pellet storage silos and the chemical scrubber system. This equipment is relatively benign in noise generation and will be outfitted with muffling systems if necessary.

4.2.5 Traffic

Presently the WWTP is sending 56 trucks per week of stabilized sludge (162 tons per week) to the landfill. According to the DOT April 2001 traffic census, this represents about 1.0% of the traffic utilizing Sand Island Parkway. The proposed project will send on average 7 trucks per week of dried pellets to market. The proposed project reflects a 87% decrease in the amount of trucks leaving the facility.

4.2.6 Public Health and Safety

All maintenance operations are conducted following Federal safety guidelines. The proposed facilities will be equipped (at a minimum) with fire protection, guardrails, eyewash stations, and adequate ventilation. Safety signs and lighting will be provided as well.

Storage of small volumes of liquids and potentially hazardous materials (ie: batteries, fuel, grease, degreasers, paints, solvents) will be stored in dry and secure locations. All major accidents or spills will be immediately reported to the appropriate government agencies.

4.2.7 Social and Economic

The proposed Facility will provide major benefits for the socio-economic environment. Primarily, it will help prolong the life of the City's remaining landfill space by reducing the amount of materials that will require to be landfill. Considering the limited capacity of the City and County's existing landfills and the difficulty and expense of developing new landfills on Oahu, the alternative of converting the sludge into a useful marketable product is in the public's best interest and creates a positive impact. The second beneficial impact is that the sludge will be converted from a waste to a resource, known as "biosolids". This serves both the City and County and U.S. EPA's mandate of utilizing sludge for beneficial use. Also the final product contains less phosphorous and slow release nitrogen, compared to current commercial fertilizers on the market. Additional benefits also include a significant reduction in the energy consumption at the plant, as well as the elimination of the high-strength liquid discharge from the existing LPO process.

The continuation of the No Action Alternative has the potential for negative impacts for the community. The LPO and dewatering equipment is approaching the end of its useful life, which increases the potential for equipment and system failure. Such failure would impair the plant's overall performance.

4.2.8 Land Use and Planned Development

The proposed project will be funded through the City and County of Honolulu, Capital Improvement Fund and Sewer fund. The City Charter requires that public facility improvements be consistent and supportive of City land use policies and local development plans. The State Land Use designation for the site is Urban and the City and County of Honolulu zoning for the site is I-3 Waterfront Industrial District. Both the City and State's land use designations support continued use of the site for wastewater treatment and a wastewater treatment facility.

The proposed project will expand and modify the existing wastewater treatment facility, in which therefore there are no anticipated negative adverse impacts to the existing land uses in the area.

4.2.9 Visual Impacts

The majority of the proposed project equipment will be situated inside the solids handling building and no adverse visual impacts are anticipated. Visually the locations surrounding the WWTP are industrial structures and with land uses that are generally similar to the proposed project.

Located north of the site and across from the Sand Island Parkway is the State Department of Transportation, Sand Island Container Yard and Wharf maritime use areas. West of the site is the Sand Island Parkway, which contains uncleared public lands and the boundary of the Sand Island State Recreational Park. Located south and west of the WWTP site is the Sand Island State Recreational Park. Located immediately east of the site is an alcohol treatment and rehabilitation center, which is surrounded by land that is currently undeveloped. Located beyond the WWTP site and further east, a general subdivision of auto repair, recycling and waste reclamation, and light industrial operations are situated.

The existing site has a 60 foot height restriction on structures located within the boundaries of the property. The proposed digester is designed at approximate height of 108 ft., with a major diameter of 84 ft. The sludge storage tank will be designed with a height of 108.5 ft. and a diameter of 30 ft. A gas holding tank measuring 25 ft. in diameter and a vertical height of 40 ft will also be required. The site is approximately eight feet above mean sea level. In order to incorporate the digester and the associated storage tank, the City and County will need to apply for a Height Waiver Permit from the City and County's Department of Planning and Permitting. Figure 4-1 illustrates the elevation of the digester in relation to the facility.

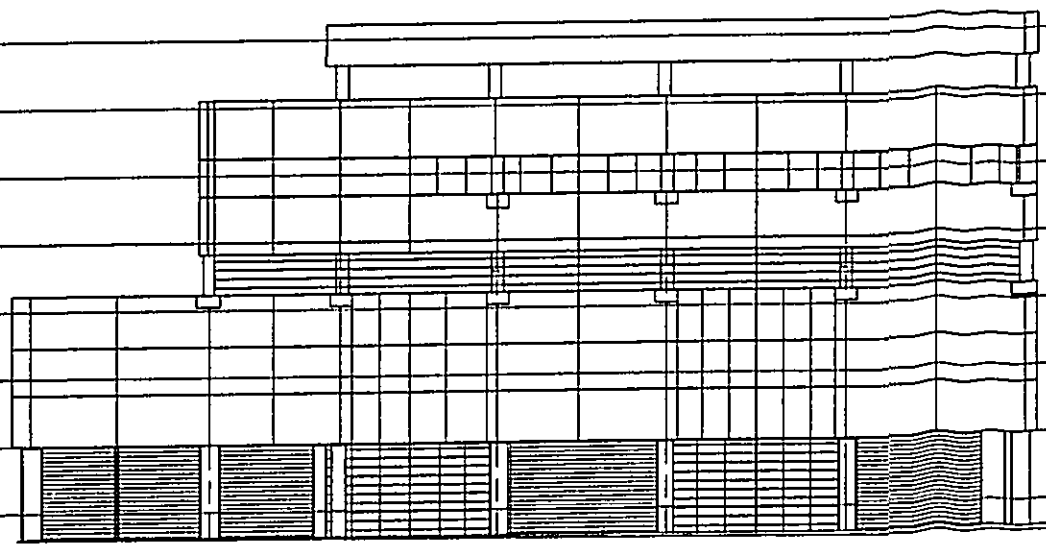
From the Sand Island Parkway the view of the digester will be blocked for the first 35 vertical ft. by the existing primary clarifier. From the existing recreational park 3310 ft away, the view of the digester will be blocked for the first 40 vertical ft. by the existing laboratory building. From the city of Honolulu, the digester will blend with other structures present in the industrial area, including the Matson Cargo container cranes, which are approximately 250 ft high (Matson Corporation 2002). The visual impact created by the digester and associated storage tanks are not anticipated to reduce or impede views from urban Honolulu to the WWTP and surrounding areas. The development of the project will be consistent with the zoning designation and any significant adverse impacts are not anticipated, due to the fact that other larger structures are present in this industrial setting.

The proposed project will not adversely affect the nearby Sand Island State Recreational Park. It is anticipated that all recreational uses of the park, will take place within the

boundaries of the park and the adjacent shoreline. While the proposed project may be visible from the park, the potential for negative adverse scenic impacts are not expected.

According to the City and County of Honolulu Primary Urban Center Development Plan Map A-1 Significant Panoramic Views, there are two recognized scenic vistas or view planes that are in sight of the Sand Island WWTP. Figure 4-2 details Map A-1 Significant Panoramic Views. The continuous views in which Sand Island is involved are designated as the view from Honolulu International Airport Runway, on Lagoon Drive, and from the west end of the Kakaako Waterfront recreational park. The distance from Lagoon Drive to the proposed project site is approximately two miles, and the distance from the recreational park to the proposed project is approximately one and a half miles. The photographs shown as Figure 4-3, demonstrate that the proposed digester and sludge storage tank will be barely visible to the unaided eye. The photographs also illustrate that by painting the digester and sludge storage tank an appropriate color, such as beige, will further enable the structures to blend in with the background.

+120'
+110'
+100'
+90'
+80'
+70'
+60'
+50'
+40'
+30'
+20'
+10'



60'-10"

TOP OF RING
WALL EL 26.50

83'

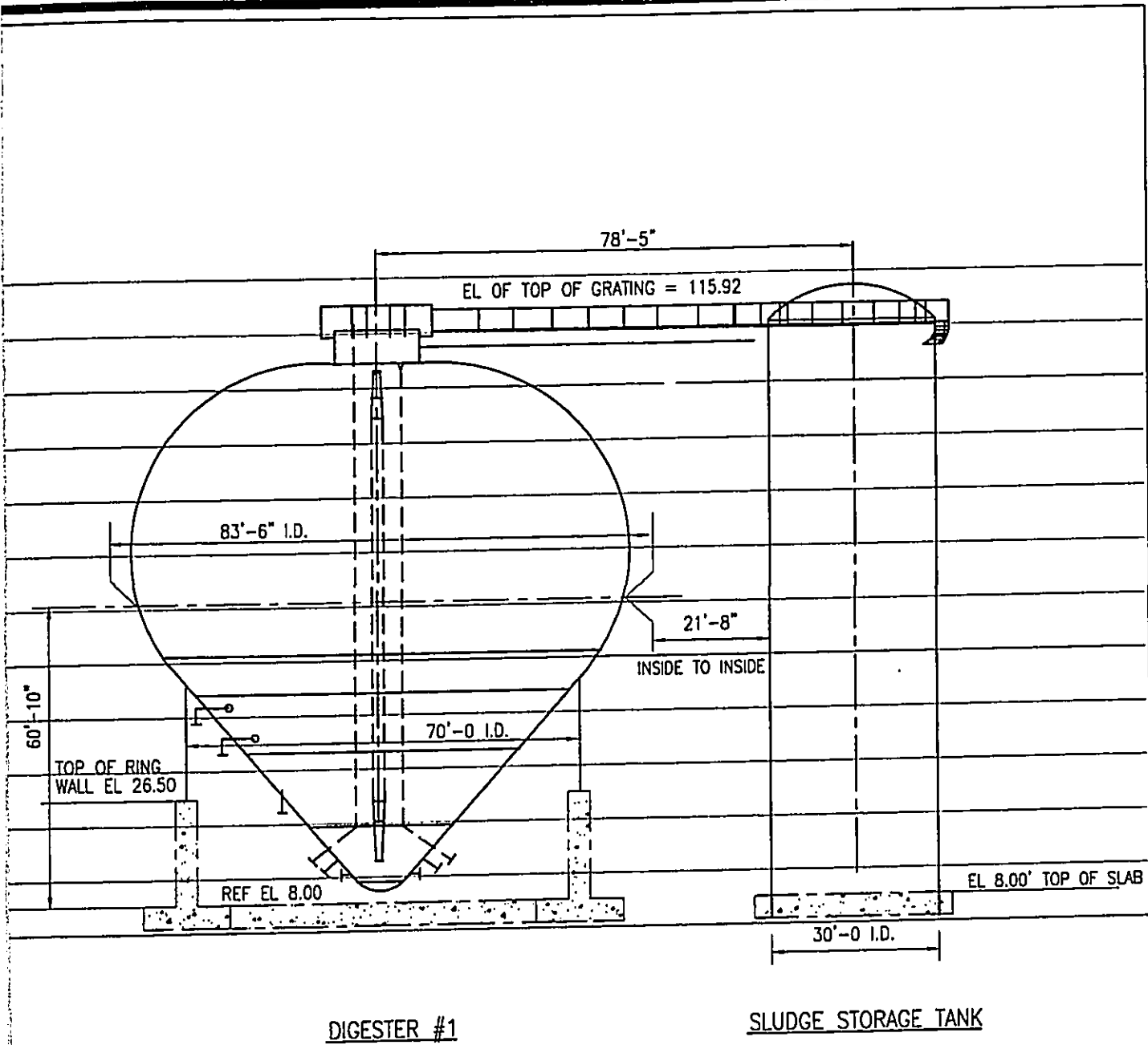
REF

SOLIDS HANDLING BUILDING
INCINERATOR AREA

Figure 4-1 SOUTH ELEVATION VIEW OF 2.3 MGAL EGG SHAPED DIGESTER

SCH523AJ

GMP HAWAII, INC.
APRIL 2003



EGG SHAPED DIGESTER WITH SOLIDS BUILDINGS

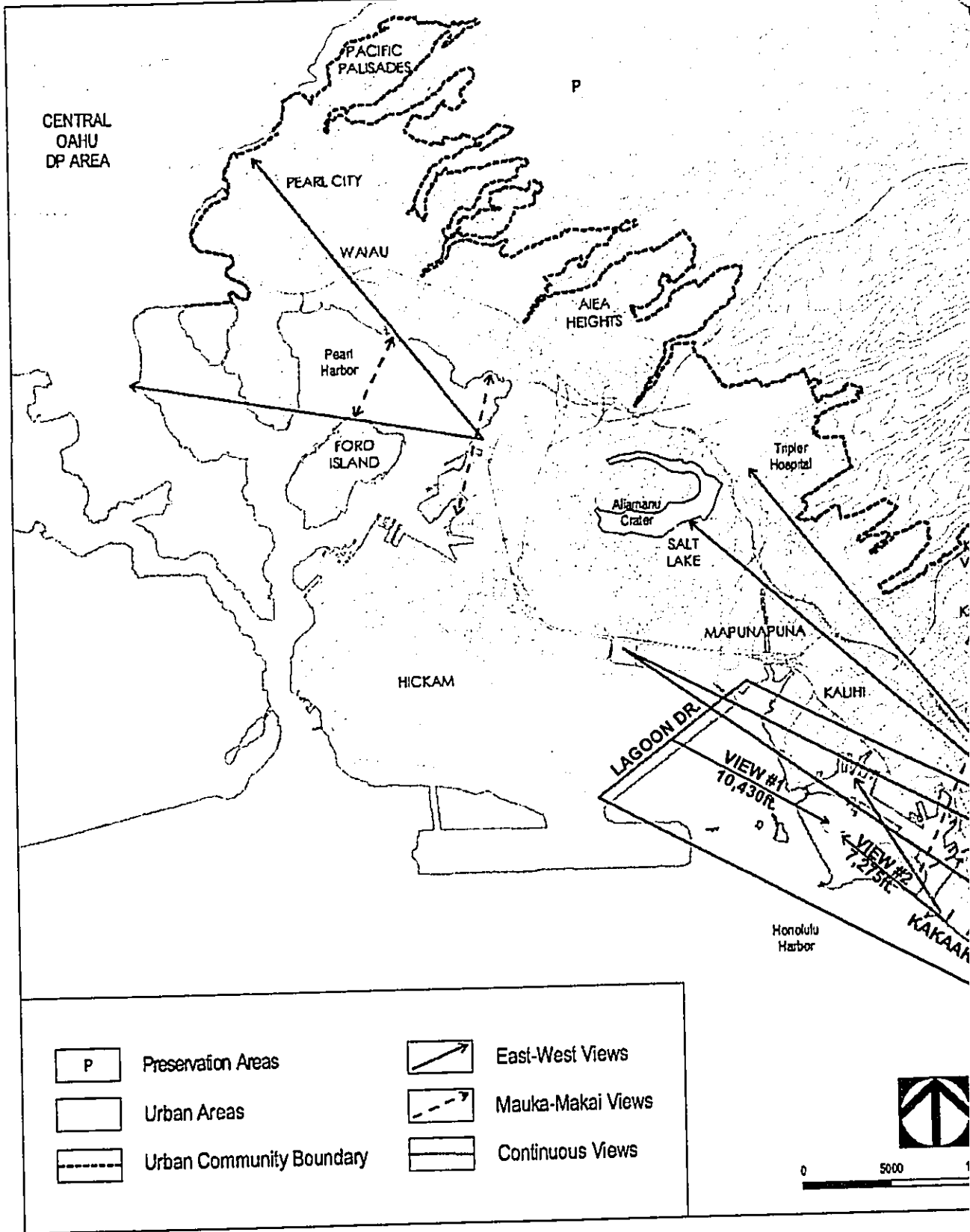
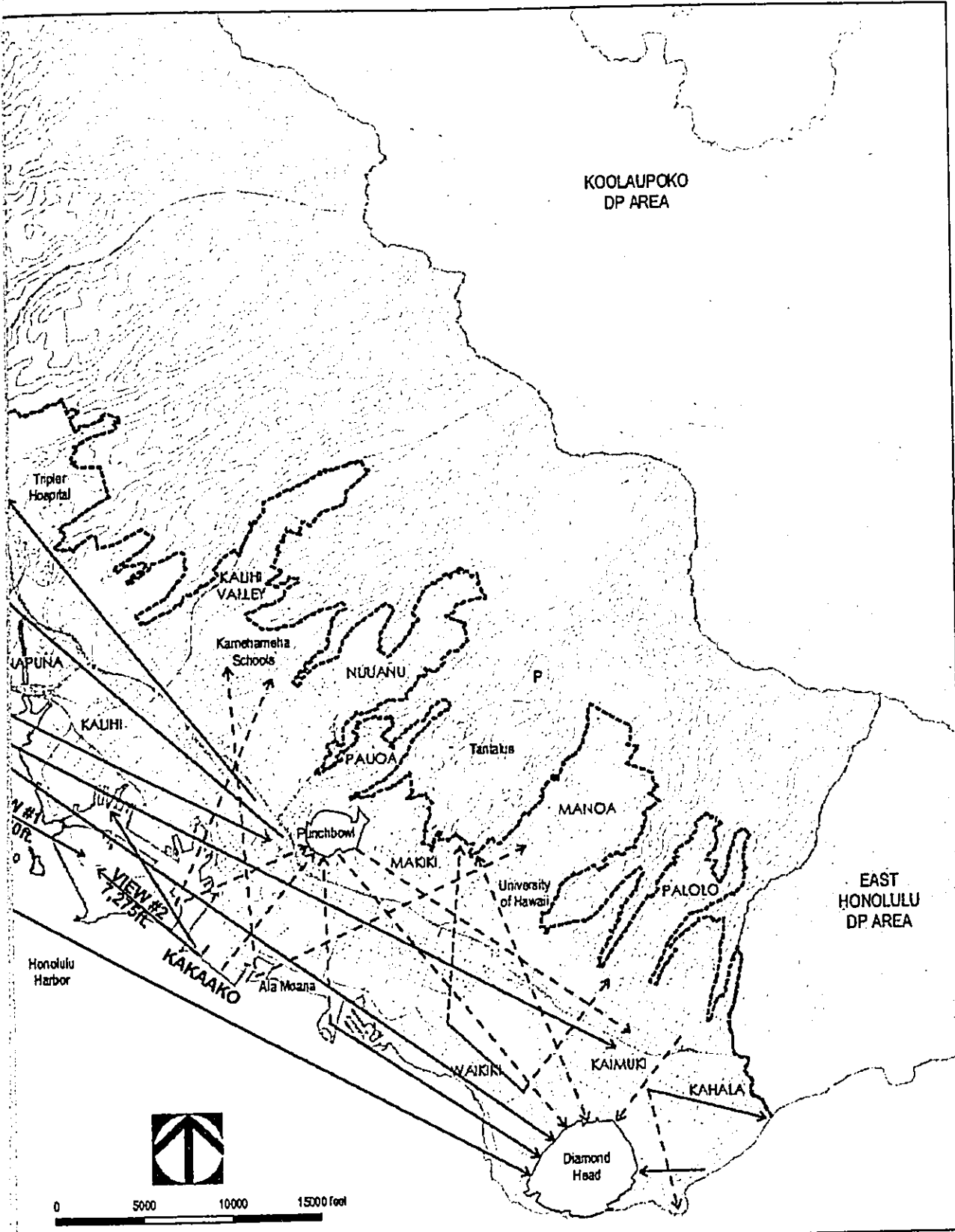


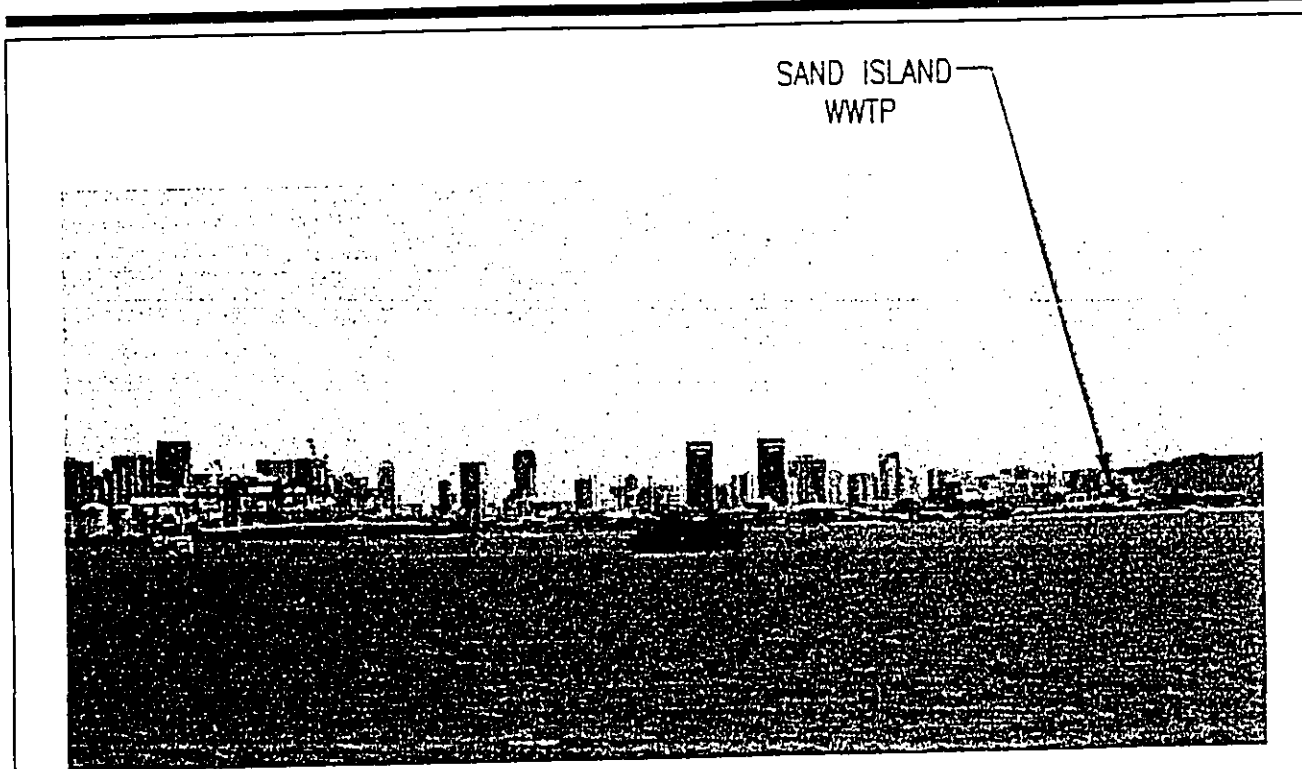
Figure 4-2 SIGNIFICANT PANORAMIC VIEW

REPRODUCED FROM MAP A.1, PRIMARY URBAN CENTER DEVELOPMENT PLAN,
CITY AND COUNTY OF HONOLULU, DEPT. OF PLANNING AND PERMITTING, MAY 2002

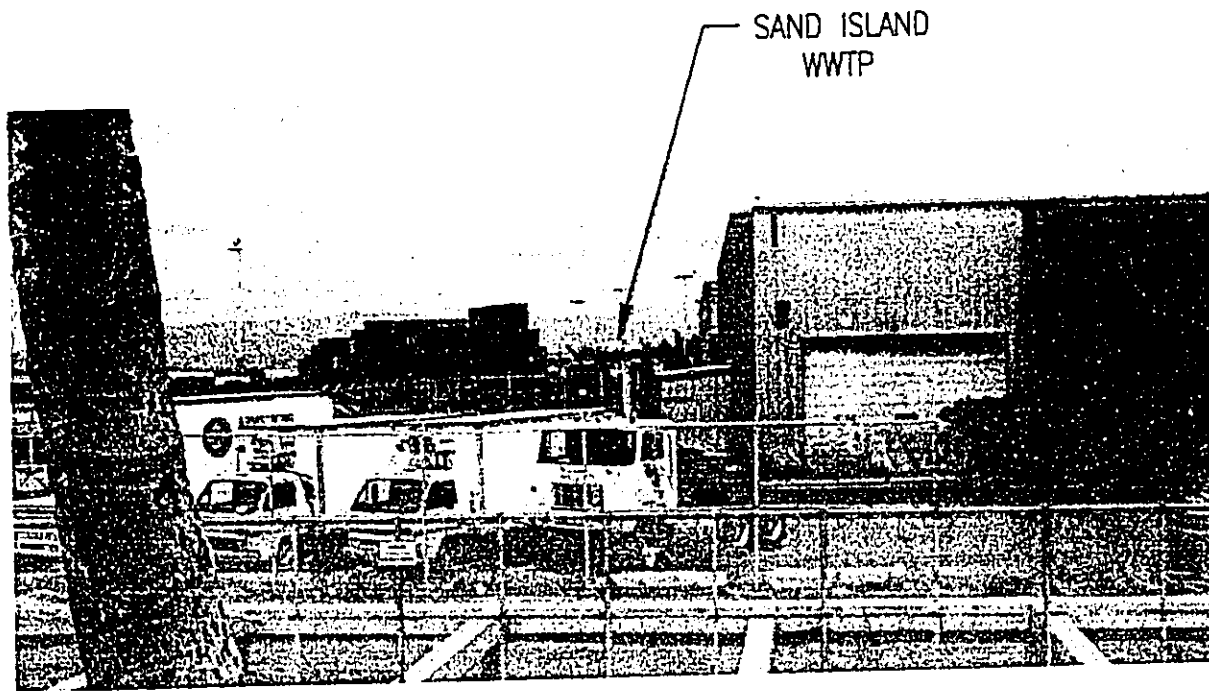


Map A.1: Significant Panoramic Views

PANORAMIC VIEWS



VIEW #1 - PHOTOGRAPH FROM LAGOON DR.



VIEW #2 - PHOTOGRAPH FROM KAKAAKO

Figure 4-3 PHOTOGRAPHS OF SIGNIFICANT PANORAMIC VIEWS #1 & #2

SCH52NAI

4.2.10 Coastal Zone Management (CZM)

The Office of Planning (OP), attached for administrative purposes to the Department of Business, Economic Development and Tourism (DBEDT), is the lead agency for administering the CZM program in Hawaii. In 1990, the Office of Planning was designated the SMA authority for Community Development Districts. The Office of planning decides on all SMA and shoreline setback approvals in these areas.

Enacted as Chapter 205A, HRS, the Hawaii Coastal Zone Management (CZM) Program was promulgated in 1977 in response to the Federal Coastal Zone Management Act of 1972. The CZM area encompasses the entire state including all marine waters seaward to the extent of the state's police power and management authority, including the 12-mile U.S. territorial sea and all archipelagic waters. The proposed project does not involve the use of Federal lands, which would ordinarily require the filing of a CZM Federal Consistency Review, however the proposed project will involve lands that are within Hawaii's designated coastal zone. The proposed project is consistent with the Hawaii Coastal Zone Management Program objectives in the following areas:

- *Recreational Resources: Provide coastal recreational opportunities accessible to the public.*

The proposed project is located in an industrial district on property owned by the City and County of Honolulu. The Sand Island State Recreational Area, adjacent to the project site, is the nearest public recreation area. Additional public recreation areas include the Keehi Lagoon Beach Park and adjoining boat harbors. Access to these recreational facilities will not be impacted by the proposed project.

- *Historic Resources: Protect, preserve, and, where desirable, restore those natural and manmade and historic and pre-historic resources in the coastal zone management area that are significant in Hawaiian and American history and culture.*

There are no known historic, cultural or archaeological resources located within the project site due to the intensive industrial use and designation of the property

- *Scenic and Open Space Resources: Protect, preserve and where desirable, restore or improve the quality of coastal scenic and open space resources.*

Except for the Sand Island State Park and Recreation Area, the area is developed and zoned for industrial use. The site is currently designated and used for a wastewater treatment plant. The proposed addition to the existing WWTP is self-contained and will not have and impact on existing scenic and open space resources.

- *Coastal Ecosystems: Protect valuable coastal ecosystems from disruption and minimize adverse impacts on all coastal ecosystems.*

The project site is not contiguous to any potable groundwater resources, streams or oceans. The project is approximately one mile from the edge of Keehi Lagoon in an industrial zoned district and 1500 feet from the ocean south of Sand Island. Drainage and erosion control plans are required as part of the permit process. These plans shall verify that construction operations and runoff water generated by the project shall not have adverse impacts on local water quality. Currently, a NPDES permit allows the disposal of primary effluent from the WWTP to the Ocean Outfall. The proposed anaerobic digestion process is expected to improve the BOD (biological oxygen demand) level in the effluent that is being discharged. The environmental assessment submitted for the project did not indicate an impact to coastal ecosystems as a result of the proposed action.

- *Economic Uses: Provide public or private facilities and improvements important to the State's economy in suitable locations.*

The purpose of the proposed project is to replace the current stabilization process with the more efficient anaerobic digestion and heat sludge drying process. The City and County of Honolulu has decided to replace the existing process and equipment by soliciting a private contract to design, build, and operate a sludge treatment and process facility that will produce a Class A biosolid in which the contractor is responsible for the marketing of the final product. Efficient handling of wastewater is necessary for the economy and the proposed location is suitable for this action.

- *Coastal Hazards: Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, and subsidence.*

The proposed project is located within Zone X of the Flood Insurance Rate Map, by the Federal Emergency Management Agency (FEMA). Zone X is identified as lying outside the 500-year flood zone. No major changes to the topography of the project site are anticipated as a result of the construction and operation of the new Bioconversion Facility on Sand Island. Land disturbing activities (i.e., grading, excavation, trenching, etc.) are expected to be accomplished only to the extent necessary to facilitate the construction of the facility and its supporting infrastructure. The nature of this work may have minor, localized, short-term erosion and sedimentation impacts during construction, but will not impact the coastal area.

4.2.11 Special Management Area

The Special Management Area (SMA) and Shoreline Setback Area are designated for more intensive management by the four counties. The SMA originally encompassed all lands extending not less than 100 yards inland from the shoreline. The shoreline is defined as the upper reaches of the wash of the waves (other than storm or seismic waves) at high tide during the season of the year in which the highest wash of the waves occurs. The shoreline is usually evidenced by vegetation growth, or the upper limit of debris left by the wash of waves.

The following considerations are specified in Chapter 25 of the ROH regarding the use of land within the Special Management Area. These concerns will be addressed as relevant to the proposed project.

1. All development in the Special Management Area shall be subject to reasonable terms and conditions set by the council to ensure that:

(a) Adequate access, by dedication or other means, to publicly owned or used beaches, recreation areas and natural reserves is provided to the extent consistent with sound conservation principles.

Access to publicly owned or used beaches, recreation area and natural reserves will remain the same as a result of the proposed project.

(b) Adequate and properly located public recreation areas and wildlife preserves are reserved.

There are no wildlife preserves on or near the property. The nearest public recreation areas are the Sand Island Recreation Area approximately 600 feet southeast of the site and Keehi Lagoon Beach Park one mile across the lagoon. There will be no impact on recreation areas from the proposed project.

(c) Provisions are made for solid and liquid waste treatment, disposition and management which will minimize adverse effects upon Special Management Area resources.

The purpose of the proposed project is to improve existing management of liquid waste. According to the Final EA, the plant effluent that is discharged to the Ocean outfall is expected to be improved with the implementation of the anaerobic digestion process. This positive impact results from the reduction in flow and BOD concentration in the centrate that is recycled to the head of the plant.

(d) Alterations to existing landforms and vegetation; except crops, and construction of structures shall cause minimum adverse effect to water resources and scenic and recreational amenities and minimum danger of floods, landslides, erosion, siltation or failure in the event of earthquakes.

The project site is on previously disturbed and developed land in an industrial area. No coastal scenic or recreational amenities are affected. +With respect to flood hazard, the project falls within Zone X, areas outside the 500-year flood plain. The project site is situated away from the coastline and lies outside the tsunami inundation zone. The facility is in earthquake zone 2A, moderate seismic hazard, and the design will meet the requirements of the UBC 1997 Standards.

2. No development shall be approved unless the council has first found that:

(a) The development: will not have any substantial, adverse environmental or ecological effect except as such adverse effect is minimized to the extent practicable and clearly outweighed by public health and safety, or compelling public interest. Such adverse effect shall include, but not be limited to, the potential, cumulative impact of individual developments, each one of which taken in itself might not have a substantial adverse effect: and the elimination of planning options.

The current sludge stabilization process of heat treatment and landfill disposal has become an undesirable option. The proposed project will upgrade the existing Sand Island WWTP making the operation more efficient with no additional environmental impacts. The City and County of Honolulu has determined that the processes of anaerobic digestion for sludge stabilization combined with a beneficial use for heat dried sludge as a fertilizer is the preferred alternative.

The WWTP will maintain operations consistent with the current standards of their National Pollutant Discharge Elimination System (NPDES) permit held with USEPA and continue to comply with all County, State and Federal regulations relating to maintaining the ambient quality of all affected airsheds, surface waters, and groundwater. The City and County of Honolulu Department of Environmental Services has reviewed the project and determined that the proposed action will not have a significant effect on the immediate or surrounding environment. Therefore, a Finding of No Significant Impact (FONSI) is issued.

(b) The development: is consistent: with the objectives and policies set forth in Section 25-3.1 and any guidelines contained in HRS Section 205A-26.

These objectives and policies are discussed in the coastal zone management section 4.2.10.

(c) The development is consistent with the county general plan, development plans and zoning.

The County General Plan has objectives to "meet the needs of the people of Oahu for an adequate supply of water and for environmentally sound systems of waste disposal". To fulfill these objectives, County policy "encourages the development of new technology which will reduce the cost of waste disposal and provide safe, efficient, and environmentally sensitive waste-collection and waste-disposal services." The proposed project will divert waste from the current landfill extending the landfill's lifespan. Co-generation, re-using energy for plant operations, will reduce the dependence on outside power sources. The process of anaerobic digestion for sludge stabilization and its ability to produce economically valuable biosolids will conform to recent USEPA programs to promote beneficial reuse of sludge. The proposed Facility will provide Sand Island WWTP with the improved operating conditions, which are necessary and important to both the welfare and public health of the community.

All land use designations for the subject property indicate that the area is to be used for industrial use and public and quasi-public services. The project conforms to the county general plan, development plans and zoning.

3. The City Council shall seek to minimize, where reasonable:

(a) Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon.

The proposed project is self-contained within the existing WWTP. No ocean or fresh water resources will be affected by the proposed project. The proposed project will not have an attributable impact on Keehi lagoon or the open ocean south of Sand Island. Any plant effluent that is discharged to the Ocean outfall is expected to be improved with the implementation of the anaerobic digestion process.

(b) Any development, which would reduce the size of any beach or other area usable for public recreation.

There are no beaches or recreation areas on the property. The nearest beach and public recreation area is the Sand Island State Recreation Area. There will be no impact from the proposed action.

(c) Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions or rivers and streams within the Special Management Area and the mean high tide line where there is no beach.

The project site is approximately 1500 feet from the shoreline of Sand Island in an industrial zoned district. The proposed project will have no effect on public access to tidal or submerged lands, beaches, rivers or streams.

(d) Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast.

The state highway nearest the coast is Nimitz Highway approximately one mile from the project site. The project will not substantially detract from the line of sight toward the sea from this coastal highway.

(e) Any development which would adversely affect water quality, existing areas of open water free of visible structures, existing and potential fisheries and fishing grounds, wildlife habitats, or potential or existing agricultural uses of land.

There are no fisheries, wildlife habitats or agricultural uses associated with the area. The proposed project is expected to have no major impact on water quality or existing areas of open water.

SECTION 5
THE RELATIONSHIP BETWEEN LOCAL
SHORT TERM USE OF THE
ENVIRONMENT AND THE
MAINTANCE AND ENCHANCEMENT
OF LONG TERM PRODUCTIVITY

SECTION FIVE

THE RELATIONSHIP BETWEEN LOCAL SHORT TERM USES OF THE ENVIRONMENT AND THE MAINTENANCE AND ENHANCEMENT OF LONG-TERM PRODUCTIVITY

5.1 SHORT TERM USES

In the short term, the construction of the proposed Facility is expected to generate a small amount of dust and noise from clearing and grading operations, as well as from building construction. Dust and noise levels will be controlled through appropriate site watering, dust fences, and exhaust mufflers and filters on heavy equipment.

The short-term benefits include increased job opportunities, and economic activity due to construction expenditures related to the project.

5.2 LONG TERM BENEFITS

Long term benefits from the proposed Facility at the Sand Island WWTP include, the diversion of waste from the current landfill, which assists in extending the landfill's lifespan. Utilization of biogas produced on-site will reduce the dependence on expensive no-renewable fuel oil. Production of beneficial use fertilizer, which is in full compliance with the US EPA Rule 503 regulations, will provide additional benefits for the local agriculture and potentially reduce the use of commercial chemical fertilizers.

The proposed Facility will provide Sand Island WWTP with the improved operating conditions, which are necessary and important to both the welfare and public health of the community. Additionally, the proposed Facility will provide the necessary infrastructure for continued economic development.

The long term impacts of the Facility are anticipated to be minimal and non-significant. The long term use of the proposed Facility for public infrastructure will provide for the enhancement of long term productivity through the efficient use of both the public treasury and the land resources of the WWTP. The WWTP will maintain operations consistent with the current standards of their National Pollutant Discharge Elimination System (NPDES) permit held with USEPA and continue to comply with all County, State and Federal regulations relating to maintaining the ambient quality of all affected airsheds, surface waters, and groundwater.

SECTION 6
IRREVERSIBLE AND IRRETRIEVABLE
COMMITMENT OF RESOURCES

SECTION SIX

IRREVERSIBLE AND IRRETRIEVABLE
COMMITMENTS OF RESOURCES

The proposed Facility requires the commitment of the unused, open space located within the existing property of the City and County's Sand Island WWTP. The construction of the facilities involves the irreversible and irretreivable uses of financial resources, energy, labor, and materials. The costs associated with the use of the resources should be considered, as a continuing benefit through the use of the site that will allow the City and County to meet the wastewater treatment needs of the community.

SECTION 7
NOTICE OF DETERMINATION FOR
FINAL ENVIRONMENTAL
ASSESSMENT

SECTION SEVEN

NOTICE OF DETERMINATION FOR FINAL ENVIRONMENTAL ASSESSMENT

The proposed Facility need is based on the fact that existing equipment is over 20 years old. The replacement of the existing equipment is difficult because the LPO process is manufactured by one source and the technology is dated.

The City and County of Honolulu has determined to change the sludge treatment process and has decided to use anaerobic digestion with biogas production, high performance centrifuge dewatering and state of the art sludge heat drying and pelletization to produce a marketable beneficial use product.

Construction and operation of the proposed Facility will conform to the applicable requirements of the State and Federal regulations, including the Clean Water Act and Clean Air Act.

As applicant for this Agency action, the City and County of Honolulu Department of Environmental Services has applied the requirements of Chapter 343, Hawaii Revised Statutes (HAR), and the necessary significance criteria of Section 11-200-12 of Title 11 Chapter 200 and has determined that the proposed project will not have significant adverse impacts on the immediate or surrounding environment including air quality, water quality, noise, wildlife habitats, archaeological sites, or existing utilities. Any anticipated impacts will be encountered during the construction phase and will only be temporary and will not adversely impact the immediate and surrounding area. The following thirteen significant criteria are evaluated below:

1. Involves an Irrevocable Commitment to Loss or Destruction of Any Natural or Cultural Resources

The proposed project will not involve the loss or destruction on any natural or cultural resources. There are no threatened, rare or endangered animal species found within the project site and surrounding areas. There are no findings of archaeological or historical sites in or around the area. The proposed project will be located within the area of the existing wastewater treatment facility, which was constructed in 1981.

2. Curtails the Range of Beneficial Uses of the Environment

The proposed project is located within the existing wastewater treatment plant facility. The proposed project is consistent with the facility's current function and therefore will not curtail the range of beneficial uses of the environment.

3. Conflicts with the State's Long Term Environmental Policies, Goals and Guidelines as Expressed in Chapter 344, HRS, and any Revisions Thereof and Amendments Thereto, Court Decisions, or Executive Orders

The proposed project is consistent with the environmental policies, goals and guidelines addressed in Chapter 344, HRS.

4. Substantially Affects the Economic or Social Welfare of the Community

The proposed project is expected to improve the stability and future development of the wastewater treatment service area by providing basic public works infrastructure necessary to the health, welfare and present and future growth of the community.

5. Substantially Affects the Public Health

The proposed project will be constructed in compliance with the Federal, State and City and County of Honolulu regulations in regards to public health and safety. The short-term impacts anticipated during the construction phase of the project with regards to air quality, water quality, noise and traffic, have been addressed in this EA document and all necessary and appropriate mitigation measures will be implemented.

6. Involves Substantial Secondary Impacts, such as Population Changes or Effects on Public facilities

The proposed project will increase the capacity and improve operations at the existing facility, which is consistent with the City and County's General Plan objectives and policies, which supports safe, efficient and environmentally sound waste collection and disposal, and support programs to recover resources from solid waste.

7. Involves substantial degradation of environmental quality

The proposed project will be designed and constructed in accordance with all Federal, State and City and County polices, including the policies of Chapter 343, HRS. The proposed project is expected to enhance the surrounding environmental quality by creating a beneficial use product and diverting the waste product from the landfill. The project is anticipated, to improve the environmental quality of the surrounding areas.

8. Is individually limited but cumulatively has considerable effects on the environment, or involves a commitment for larger actions

The proposed project is intended to provide the necessary improvements to the facility to meet the anticipated needs of a major portion of Honolulu's population while operating sufficiently and economically, as well as to divert waste from the landfill. The project is consistent with the current City and County's General Plan objectives and policies. The improvements to the facility as a result of the proposed project are anticipated to enhance the treatment of wastewater in the area and create a beneficial use product, which will allow for waste diversion from the landfill. With the implementation of appropriate mitigation measures for the proposed project, the potential for considerable effects on the environment is not expected. A commitment for larger actions is not foreseen.

9. Substantially affects a rare, threatened or endangered species or its habitat

There is no threatened, rare or endangered flora, fauna or animal species found within the project site or the surrounding areas.

10. Detrimently affects air or water quality or ambient noise levels

All possible anticipated short term impacts to air quality, water quality or noise levels most likely due to occur during the construction phase will be mitigated through the appropriate measures and Best Management Practices (BMPs) illustrated in this EA document. Over the long term, air quality in the immediate vicinity of the project is expected to improve with cleaner technology replacing older equipment. Similarly, water quality at the ocean outfall will be enhanced by improved effluent quality resulting from the implementation of the project. The ambient noise levels are expected to remain unchanged.

11. Affects or is likely to suffer damage by being located in an environmentally sensitive area, such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, fresh water, or coastal waters

The proposed project will be constructed within the existing facility footprint, which is not located in an environmentally sensitive area.

12. Substantially affects scenic vistas and view planes identified in county or state plans or studies

The proposed project is not expected to adversely affect the scenic vistas or view planes from the WWTP site to view of urban Honolulu and the ocean beyond. The proposed project is consistent with the industrial zoning designation of the site, which allows for a wastewater treatment facility.

13. Requires substantial energy consumption

The proposed project will not require any additional energy consumption. The project design calls for the replacement of the existing heat treatment process with anaerobic digestion, which provides a benefit in energy savings. The proposed project requires an energy demand that is substantially less than the existing demand. The production of biogas will allow for the application of a renewable fuel source for the dryer operation at the plant.

The City and Country of Honolulu Department of Environmental Services has applied the necessary significance criteria of Title 11 Chapter 200-12 HAR and has determined that the proposed action will not have a significant effect on the immediate or surrounding environment and an Environmental Impact Statement (EIS) will not be required. Therefore, based upon the Final Environmental Assessment document and the evaluation of determination, it is recommended that a Finding of No Significant Impact (FONSI) be applied to this project.

SECTION 8
LIST OF NECESSARY PERMITS AND
APPROVALS

SECTION EIGHT

LIST OF NECESSARY PERMITS AND APPROVALS

In addition to the approval of this Environmental Assessment, the following permits and approvals are required for the development of the Sand Island WWTP New In-Vessel Bioconversion Facility.

FEDERAL

- Federal Aviation Administration (FAA) Flight Path Clearance Permit

STATE OF HAWAII

- Operating Permit (HAR Title 11: per subchapter 1 Chapter 58.1 Solid Waste Management Control) due to the bioconversion process producing methane
Hawaii Department of Health, Solid Waste Branch.
- Air Quality Permit (Amendment of existing Air Permit to accommodate the addition of support facilities and the removal of obsolete equipment). Hawaii Department of Health, Clean Air Branch.
- NPDES Notice of Intent (NOI) Form C-Construction Stormwater Discharges. Hawaii Department of Health, Clean Water Branch.
- NPDES Notice of Intent (NOI) Form G-Discharges Involving Construction Dewatering. Hawaii Department of Health, Clean Water Branch.
- Construction Plan Review and Approval

CITY AND COUNTY OF HONOLULU

- Construction Plan Review and Approval. Department of Planning and Permitting.
- Building Permit. Department of Planning and Permitting.
- Height Variance Waiver Permit for the Digester and Sludge Storage Tank. Department of Planning and Permitting.
- Special Management Area Use Permit (Major). Department of Planning and Permitting.
- Grading, Grubbing and Stockpiling Permit. Department of Planning and Permitting.

SECTION 9
AGENCIES, ORGANIZATIONS, AND
INDIVIDUALS CONSULTED IN THE
PREPARATION OF THE EA

SECTION NINE

AGENCIES, ORGANIZATIONS, AND INDIVIDUALS CONSULTED IN THE
PREPARATION OF EA

The following agencies have been and will be consulted in the review of the Draft Environmental Assessment for the Sand Island WWTP New In-Vessel Bioconversion Facility. All of the comments that are received will be addressed in the appropriate sections of the Final Environmental Assessment.

State Agencies

*Department of Health
Environmental Management Division
Solid and Hazardous Waste Branch
919 Ala Moana Blvd.
Honolulu, Hawaii 96814

*Department of Health
Environmental Management Division
Wastewater Branch
919 Ala Moana Blvd.
Honolulu, Hawaii 96814

*Department of Health
Environmental Management Division
Clean Water Branch
919 Ala Moana Blvd.
Honolulu, Hawaii 96814

Department of Land and Natural
Resources
Division of Water Resource
Management
P.O. Box 621
Honolulu, Hawaii 96809

Department of Land and Natural
Resources
State Parks Division
P.O. Box 621
Honolulu, Hawaii 96809

Office of Environmental Quality Control
235 S. Beretania Street, Room 702
Honolulu, Hawaii 96814

Hawaii State Library
Hawaii Documents Center
478 South King St.
Honolulu, HI 96813

City and County of Honolulu Agencies

*Department of Planning and Permitting
650 S. King Street, 7th Floor
Honolulu, Hawaii 96813

*Department of Environmental Services
1000 Uluohio Street
Attention: Wilma Namumnart
Honolulu, Hawaii 96707

Federal Agencies

Department of the Army
U.S. Army Engineer District, Honolulu
808 438-9862

*Federal Aviation Administration
300 Ala Moana Blvd, Room 7-128
Honolulu, Hawaii 96850

Individuals/Organizations

Sand Island Business Association
P.O. Box 17603
Honolulu, Hawaii 96817
842-1359

Sand Island Treatment Center
P.O. Box 3045
Honolulu, Hawaii 96817

Kalihi-Palama Neighborhood Board
No. 15
Attn: Ms Bernadette Young,
Chairperson
C/o Neighborhood Commission Office
City Hall, Rm 400
Honolulu, Hawaii 96813

* Agency was consulted during
preparation of the Draft Environmental
Assessment

SECTION 10
EA COMMENTS AND RESPONSES

SECTION TEN

EA COMMENTS AND RESPONSES RECEIVED DURING THE 30-DAY
COMMENT PERIOD

SAMPLE REQUEST FOR REVIEW LETTER



PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

January 23, 2003

**RE: Draft Environmental Assessment for Sand Island
In-Vessel Bioconversion Facility**

To Whom it May Concern:

On behalf of the City and County Department of Environmental Services, Analytical Planning Consultants is processing an Environmental Assessment (EA) for the new Sand Island In-Vessel Bioconversion Facility which has been prepared by GMP Hawaii. Analytical Planning Consultants is organizing the consultation with concerned agencies and requests that your department review the enclosed draft EA.

Project Summary

The contractor, Synagro, is requesting a Special Management Area Permit from the City and County of Honolulu to construct a new In-Vessel Bioconversion Facility at the Sand Island WWTP. The WWTP has used low pressure oxidation for sludge stabilization, incineration for volume reduction, and has landfilled incinerator ash since the Facility went into service in 1981. For the past decade the incinerator has not been in operation, and LPO and landfill disposal of the sludge has become an undesirable option. The City has selected anaerobic digestion, followed by centrifuge dewatering, heat drying and pelletization as a favored alternative for stabilization, treatment and beneficial use of the dewatered sludge due to its low energy consumption, production of a renewable fuel source and minimal environmental impacts. The project will be located within the existing footprint of the WWTP and will include the addition of a 115 foot high digester and a sludge storage tank. The existing incinerator area in the Solids Handling Building will be converted to house the dryer operation.

The proposed project is anticipated to have no adverse or significant impacts to the surrounding area. Impacts to air and noise quality will be short term during construction. The proposed project will support the current and predicted increase in the plant's treatment capacity. The City and County of Honolulu Department of Environmental Services has reviewed the draft environmental assessment for the subject project, and anticipate a Finding of No Significant Impact (FONSI) determination.

If you require additional information or have comments on the EA forward them to this office to my attention.

Sincerely,

Donald Clegg, President
Agent for the Applicant

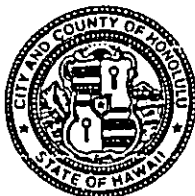
Enclosures

INCOMING COMMENTS AND RESPONSES

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR



ERIC G. CRISPIN, AIA
DIRECTOR

BARBARA KIM STANTON
DEPUTY DIRECTOR

2003/ELOG-290(GU)

March 7, 2003

Mr. Donald Clegg
Analytical Planning Consultants, Inc.
928 Nuuanu Avenue, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Clegg:

Draft Environmental Assessment
Sand Island Wastewater Treatment Plant
New In-Vessel Bioconversion Facility
Tax Map Key: 1-5-41:005

We have reviewed the above document, and have the following comments that should be considered and incorporated into the Final Environmental Assessment (FEA). The comments are generally discussed in the order in which they appear in the Draft EA.

1. The Final EA (FEA) should provide the following information as required by the DPP's *Content Guide for Preparing an Environmental Assessment Required With An Application for a Special Management Area Use Permit (SMP), Chapter 25, ROH, as amended*:
 - A. Applicant: Name; Mailing Address; Phone Number.
 - B. Recorded Fee Owner: Name; Mailing Address; Phone Number.
 - C. Agent: Name; Mailing Address; Phone Number.
 - D. Tax Map Key: Zone, Section, Plat and Parcel(s).
 - E. Lot Area: Acreage or square footage.

While Items D. & E. are found later in the document, a concise listing of all of the above items at the beginning of the document would be appropriate.

Mr. Donald Clegg
Page 2
March 7, 2003

2. The Special Management Area (SMA) Boundary should be shown on the *Land Use Map* (Figure 3-2) or on a smaller scale *Location Map* if necessary.
3. Executive Summary, Page 1, and Page 1-1 - states "For the past decade the incinerator has not been in operation, and this has subsequently increased the quantity of dewatered sludge (cake) being diverted to the landfill."

The FEA should briefly explain why the incinerator has not operated for the past ten years.

4. Executive Summary, Page 2 - Reference is made to Figure 3-1 for the proposed Facility's location. Note 1 on this Figure states "Proposed future improvements based on one alternative from a February 2000 Draft Design Report for the Sand Island Wastewater Treatment Plant Expansion prepared by another consultant. Proposed future improvements are subject to change."

The FEA should describe the potential improvement changes to which this note refers (i.e., type, size, location of facility, etc.), the factors which would cause changes, and the likelihood of such changes.

5. Executive Summary, Page 2- It would be helpful for the FEA to add brief explanations of the technical terms "centrate" and "soluble biological oxygen demand" used here.
6. Page 1-2 - States "The contractor shall also be responsible for marketing the final product for beneficial use."

The FEA should briefly describe the potential users of the final product and what potential direct benefits the City will realize from its marketing.

7. Page 1-4 - States "The proposed Facility will typically operate 3.5 to 5 days per week."

It would be helpful for the FEA to briefly explain why a 7-day operation is not required or is not possible, whichever is applicable.

8. Page 2-3 - The first paragraph describes the beneficial uses of sludge/biosolids, i.e., soil conditioner or amendment to reclaim strip mines, parks, wetlands, etc..

It would be helpful for the FEA to briefly cite specific examples of where and how these uses have been successfully applied.

9. Pages 2-6 & 2-7, Section 2.4, No Action Alternative - States "The preferred alternative (beneficial use) will enable the City and County to exceed the requirements of the consent decree. Presently, 8,468 dry tons per year dewatered sludge from Sand Island WWTP is delivered to landfill."

It is not clear from this passage whether the preferred alternative will eliminate the need to landfill all, or just a portion, of the current 8,468 dry tons per year produced at the Sand Island WWTP. The FEA should state how much of the dewatered sludge will actually be eliminated from the landfill by the proposed Facility.

10. Figure 3-1, Sand Island WWTP Site Layout - It would be helpful if the site layout identified more specifically the locations of the new anaerobic digestion complex's individual main components (i.e., ESD, sludge storage tank, biogas storage tank, hydrogen sulfide scrubbers), as well as the proposed components within the Solid Handling Building.
11. Figure 3-3 (Sand Island WWTP Flood Zone) is somewhat confusing. The proposed Facility is located within a barely visible circle, while a separate, unidentified area is outlined in bold lines.

The FEA should include a revised Figure 3-3 for clarity.

12. Page 3-2, Existing Land Use and Zoning, and Figure 3-2 - Although the text states that this Figure illustrates the zoning for the WWTP and the surrounding areas, zoning is listed only for the WWTP (I-3). Only land uses are provided for the surrounding parcels.

The FEA should include a revised Figure 3-2 that also provides the zoning for the surrounding areas.

13. Page 3-2, Section 3.3.3, Existing Land Use and Zoning - The text states that "...a SMA permit from the City Department of Planning and Permitting will be required for construction and implementation of the proposed project."

This sentence should be revised in the FEA to state that a SMA(Major) is required to be processed by the DPP and approved by the City Council.

14. Page 3-3, and Figure 3-3, Wetlands - States "A man-made drainage ditch at the northeast side of the plant was identified to be located in the area of a wetland." This section contains no further description of, or discussion about, this wetland, nor the significance of the drainage ditch to the proposed project. Further, it is not possible to discern from Figure 3-3 what the boundaries of the wetland (or drainage channel) are.

This section of FEA should include more information about the referenced wetland (i.e. size, parameters), and the drainage ditch if pertinent to the project. Also, Figure 3-3 should be revised to delineate the boundaries of the wetland as established by the U.S. Army Corps of Engineers, and the boundaries of the drainage ditch.

15. Page 4-1, Section 4.1.1, Operation of Wastewater Treatment Plant Duri g Conversion - States ... "eventually the road designated as "Q" will no longer connect roads "N" and "P". This is due to the installation of the pellet storage silos. Road "M" will continue to provide the needed connections."

The above-referenced roadways are not depicted on any of the Figures contained in the draft EA. Therefore, a new or revised existing Figure showing the roadways should be included in the FEA.

16. Page 4-2, Section 4.1.4, Wetlands - States "All work associated with the proposed project will be located away from the wetland area."

The FEA should provide an approximate distance between the area of work and the wetland.

17. Page 4-3, Section 4.1.7, Noise Quality - States "The new equipment, like the existing equipment it will replace, will be located inside enclosed buildings. Therefore no significant noise increase is expected during the construction activity."

There is no previous reference in the text or Figures of the draft EA to the anaerobic digester complex being enclosed in a building. This complex is described throughout as being sited on a vacant lot adjoining the Solid Handling Building, where the dewatering and drying components are to be located.

The FEA should be revised wherever necessary to clarify this issue..

18. Page 4-5, Section 4.2.3, Air Quality - States "The digester, gas storage equipment and the associated piping are all gas tight and enclosed to prevent the release of any emissions."

Same comment as #17 above.

19. Page 4-6, Waste Gas Flare - States "The waste gas flare (by-pass) will be operational two to three days per week for twenty-four hours."

Mr. Donald Clegg
Page 5
March 7, 2003

The FEA should briefly explain why this by-pass will only be operational for 2-3 days per week, when the Facility will be operational 3.5 to 5 days per week (Page 1-4).

20. Page 7-1, Notice of Determination - The DPP is aware that the FEA for this project will likely be the basis for the future SMA application for the project. Therefore, in accordance with the previously cited DFP *Content Guide for Preparing an Environmental Assessment* cited under #1 above, the FEA should address project impacts relative to the Coastal Zone Management objectives and policies (Section 205A-2, HRS) and the Special Management Area guidelines (Section 25-3.2, ROH).
21. The proposed project will not require an amendment to the Primary Urban Center (PUC) DP Public Facilities Map because two sewage treatment plant symbols are currently shown on the PUC DP Public Facilities Map. The symbols reflect various ongoing modifications to the facility, and may accommodate the proposed project, as well as future modifications to the Sand Island Wastewater Treatment Plant.

The proposed project is consistent with the City's General Plan, which supports safe, efficient, and environmentally-sensitive waste collection and disposal services. The entire Sand Island Wastewater Treatment Plant facility, including the project site, is currently designated Public & Quasi-Public on the PUC DP Land Use Map. The proposed project is consistent with this designation.

Should you have any questions, please contact Geri Ung of our Urban Design Branch at 527-6044.

Sincerely yours,


ERIC G. CRISPIN, AIA
Director of Planning and Permitting

EGC:nt

cc: Dept. of Env. Services - Wilma Namumnart
State Office of Environmental Quality Control

POSSE Doc. 205524



PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

April 10, 2003

Mr. Eric Crispin
City and County of Honolulu
Department of Planning and Permitting
650 S. King Street.
Honolulu, Hawaii 96813

RE: Comments Submitted Regarding the Draft Environmental Assessment for Sand Island
Wastewater
Treatment Plant (WWTP) New In-Vessel Bioconversion Facility

The following are the responses to the comments submitted:

Item 1:

Complied. A project summary has been included in the beginning of the report.

Item 2:

The Special Management Boundary encompasses Sand Island entirely. A reference regarding the SMA boundary has been made on Figure 3-2 and is referenced in the report in section 3.3.3 Existing Land Use and Zoning.

Item 3:

Complied. An explanation by the Department of Environmental Services in regards to the incinerator has been made in section 1.1 Project Background. The annual budgetary reviews evaluation for disposal options had found incineration and subsequent landfilling of ash to be more expensive than landfilling stabilized sludge.

Item 4:

Complied. The future Septage and Greaser Receiving facility on Figure 3-1 has been removed after consultation with the Department of Environmental Services.

Item 5:

Complied. Definitions for both Centrate and soluble Biological Oxygen Demand (BOD) have been included.

Item 6:

Complied. Section 1.2.3 briefly describes examples of end users for the final product as well as the direct benefits the City will receive.

Item 7:

Complied. Section 1.5 of the reports expands on the operating schedule for the proposed facility.

Item 8:

Complied. Section 2.3 of the Final EA cites examples where biosolids have been applied.

Item 9:

The entire amount produced at the facility, currently 8,468 dry tons per year, will be diverted from the landfill.

Item 10:

The Final EA includes an additional figure, Figure 2-3 which details the proposed project facility and its components.

Item 11:

Figure 3-3 has been revised for clarity

Item 12:

Figure 3-2 has been revised to include the zoning for the surrounding areas.

Item 13:

Complied

Item 14:

Complied. A detailed description of the wetland is discussed in Section 3.4.2. Figure 3-1 has been revised to delineate the boundaries of the wetland.

Item 15:

Figure 2-3 illustrates the proposed project in relation to the facility roadways.

Item 16:

Section 4.1.4 discusses the impacts the proposed project would have on the wetland located at the site and specifies the distance between the proposed project site and the wetland.

Item 17 and 18:

All of the mechanical equipment associated with the digesters such as the pumps and the gas storage mechanical equipment, will be enclosed within the digester structure. The digesters themselves will be located outside the existing solids handling building. Figure 2-3 illustrates the location of the digester complex.

Item 19:

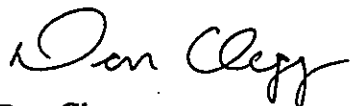
Complied. The operation schedule of the waste gas flare is discussed in section 4.2.3

Item 20:

Complied. The project impacts relative to both Costal Zone Management and the Special Management Area are included in sections 4.2.10 and 4.2.11, respectively.

We appreciate your participation in the review process.

Sincerely,



Don Clegg
Applicant for Agent

Enclosures

DOCUMENT CAPTURED AS RECEIVED

Mar 11 03 02:29p

Don Clegg

808 599-1553

p. 2

LINDA LINGLE
GOVERNOR OF HAWAII



GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
236 SOUTH BERETAMA STREET
SUITE 702
HONOLULU, HAWAII 96822
Telephone (808) 599-4100
Facsimile (808) 599-4105
Email: eeqc@hawaii.gov

March 10, 2003

Mr. Frank Doyle, Director
Department of Environmental Services
City and County of Honolulu
100 Uluohia Street, Suite 308
Honolulu, Hawaii 96707

Dear Mr. Doyle:

Subject: Draft Environmental Assessment for the Sand Island Wastewater Treatment Plant New In-Vessel Bioconversion Facility, O'ahu

Thank you for the opportunity to review the subject document. We have the following comments.

1. The existing site has a 60-foot height limit. The proposed digester is 108 feet and the sludge storage tank is 108.5 feet. Please illustrate the visual impacts of the proposed structures from public places. Photos of existing conditions taken from public viewpoints are helpful in evaluating visual impacts. Provide renderings of future structures superimposed on photos of existing views. We recommend constructing and painting the structures with materials and colors that blend with the surroundings.
2. Please proposed facility and process use various hazardous materials, oils and fuels that have potential to contaminate the land and nearby ocean. Please provide details about the mitigation plan to prevent accidental spills.
3. Please provide your findings and reasons for supporting the finding of no significant impact. Please see the enclosed example.

Sincerely,

Genevieve Salmonson
Director

c: Don Clegg, Jim Hecht



PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

April 10, 2003

Genevieve Salmonson
State of Hawaii
Office of Environmental Quality Control
235 South Beretania Street.
Honolulu, Hawaii 96813

RE: Comments Submitted Regarding the Draft Environmental Assessment for Sand Island Wastewater Treatment Plant (WWTP) New In-Vessel Bioconversion Facility

The following are the responses to the comments submitted:

Item 1:

Figure 4-2 illustrates the significant panoramic views in sight of the proposed project. Photographs taken from the scenic vistas relative to the Sand Island WWTP have been included as Figure 4-3. Section 4.2.9 discusses the possible impact to the vistas by the proposed project.

Item 2:

The proposed facility and the current facility will continue to adhere to the strict guidelines set forth by both the Federal and State government agencies in prevention and mitigation of the storage and use of petroleum products and possible hazardous substances.

Item 3:

The findings and responses for the determination of the Finding of No Significant Impact (FONSI) are presented in section 7 of the Final EA.

We appreciate your participation in the review process.

Sincerely,

Don Clegg
Applicant for Agent

Enclosures

LINDA LINGLE
GOVERNOR OF HAWAII



CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File:

03-028/epo

February 25, 2003

Mr. Donald Clegg, President
Analytical Planning Consultants, Inc.
928 Nuuanu Avenue, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Clegg:

Subject: Draft Environmental Assessment (DEA)
Sand Island Wastewater Treatment Plant & In-Vessel Bioconversion Facility
Sand Island, Honolulu, Oahu
TMK: 1-5-041:005

Thank you for the opportunity to review and comment on the subject proposal. The DEA and SMA application were routed to the various branches of the Environmental Health Administration. We have the following comments:

Wastewater Branch (WWB)

All wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems." We reserve the right to review the detailed wastewater plans for conformance to applicable rules.

If you have any questions, please contact the Wastewater Branch at (808) 586-4294.

Clean Air Branch (CAB)

Control of fugitive dust

There is a significant potential for fugitive dust emissions during all phases of construction. Proposed construction activities will occur in proximity to commercial establishments and major thoroughfares, thereby exacerbating potential dust problems. The development of a dust control management plan, which identifies and addresses all activities that have a potential to generate fugitive dust, is critical. Implementation of adequate dust control measures during all phases of development and construction activities is warranted.

Construction activities must comply with the provisions of Hawaii Administrative Rules, §11-60.1-33 on Fugitive Dust.

Mr. Donald Clegg, Preside...
February 25, 2003
Page 2

The contractor should provide adequate measures to control dust from the road areas and during the various phases of construction. These measures include, but are not limited to, the following:

- a) Plan the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing on-site vehicular traffic routes, and locating potential dust-generating equipment in areas of the least impact;
- b) Provide an adequate water source at the site prior to start-up of construction activities;
- c) Landscape and provide rapid covering of bare areas, including slopes, starting from the initial grading phase;
- d) Minimize dust from shoulders and access roads;
- e) Provide adequate dust control measures during weekends, after hours, and prior to daily start-up of construction activities; and
- f) Control dust from debris being hauled away from the project site.

If you have any questions on fugitive dust issues, please contact Barry Ching at (808) 586-4200.

Solid and Hazardous Waste Branch (SHWB)

The Solid and Hazardous Waste Branch comments were discussed in a meeting with the City and County of Honolulu and project representatives held June 12, 2002. A copy of our letter to you, documenting our discussions and our comments, is attached to this comment letter.

If you have any questions, please contact the Lene Ichinotsubo at (808) 586-4226.

Sincerely,



JUNE F. HARRIGAN-LUM, MANAGER
Environmental Planning Office

c: WWB
CAB
SHWB

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII



RE: 02-028
BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

STATE OF HAWAII
DEPARTMENT OF HEALTH
ENVIRONMENTAL MANAGEMENT DIVISION
SOLID AND HAZARDOUS WASTE BRANCH
919 ALA MOANA BLVD., #212
HONOLULU, HAWAII 96814

June 21, 2002

In reply, please refer to:
EMD/SHW

JUN 25 2002
S0611LKI

Mr. Donald Clegg
Analytical Planning Consultants, Inc.
928 Nuuanu Avenue, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Clegg:

Subject: Proposed Synagro Operation at Sand Island Wastewater Treatment Plant


Based on our meeting on June 12, 2002, with representatives from the City and County of Honolulu, Synagro, CBI Walker, and Andritz-Ruthner, we understand that you are our point of contact regarding solid waste permitting requirements. Our understanding of the proposed project is that a sludge management system, which consists of anaerobic digestion and drying, will be constructed and operated within the property limits of the Sand Island Wastewater Treatment Plant (SIWTP). This sludge management system will only manage sludge from SIWTP, and no other solid waste will be accepted. In addition, the finished product will be sold as a fertilizer, which will be required to meet 40 CFR Part 503 requirements.

With this understanding, a solid waste management permit is not required. However, please contact us if our understanding is incorrect or your plans change (for example, should you decide at a later date to accept waste from offsite sources, such as other wastewater treatment plants, or bring in other waste types such as used cooking oil). We will then reevaluate the need for a solid waste management permit. In addition, any waste product from the process, if unable to be returned to the headwork of the treatment plant, shall be properly disposed in accordance with applicable federal, state, and local laws and regulations, prior to creating a nuisance or health or environmental threat.

While a solid waste permit is not required at this point, approvals from the Department of Health's Wastewater, Clean Air, and Clean Water Branches may be required. We recommend that you continue discussions with them on your proposed project. We also recommend that you contact the Department of Agriculture on their labeling requirements if you plan to market the product as fertilizer.

Should you have any questions regarding this letter, please contact Ms. Lene Ichinotsubo of my staff at (808) 586-4226.

Sincerely,


STEVEN Y.K. CHANG, P.E., CHIEF
Solid and Hazardous Waste Branch

c: Wilma Namumnart, City and County of Honolulu
Department of Health -Clean Air, Clean Water, and Wastewater Branches



PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

April 10, 2003


June F. Harrigan-Lum
Manager
State of Hawaii
Department of Health
Environmental Planning Office
P.O. Box 3378
Honolulu, Hawaii 96801-3378

RE: Comments Submitted Regarding the Draft Environmental Assessment for Sand Island
Wastewater
Treatment Plant (WWTP) New In-Vessel Bioconversion Facility

Dear Mrs. Harrigan-Lum,

We appreciate your participation in the review process. Your comments have been noted and incorporated in the Final Environmental Assessment.

Sincerely,


Don Clegg
Applicant for Agent

Enclosures

LINDA LINGLE
GOVERNOR OF HAWAII



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

PETER T. YOUNG
CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

ERNEST Y.W. LAU
DEPUTY TO THE CHAIRPERSON

AQUATIC RESOURCES
BOATING AND OCEAN RECREATION
COMMISSION ON WATER RESOURCE
MANAGEMENT
CONSERVATION AND RESOURCES
ENFORCEMENT
CONVEYANCES
ENGINEERING
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION
KAHOOLAWE ISLAND RESERVE
COMMISSION
LAND
STATE PARKS

February 18, 2003

Donald Clegg, President
Analytical Planning Consultants, Inc.
928 Nuuanu Avenue, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Clegg:

Re: Draft Environmental Assessment (DEA) for the Sand Island In-Vessel
Bioconversion Facility

We have reviewed the DEA and have no comments to offer at this time. Thank you for
the opportunity to review the subject project.

Very truly yours,

Daniel S. Quinn, Administrator



PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

April 10, 2003


Daniel S. Quinn
State of Hawaii
Division of State Parks
P.O. Box 621
Honolulu, Hawaii 96809

RE: Comments Submitted Regarding the Draft Environmental Assessment for Sand Island
Wastewater
Treatment Plant (WWTP) New In-Vessel Bioconversion Facility

Dear Sir,

We appreciate your participation in the review process.

Sincerely,


Don Clegg
Applicant for Agent

Enclosures

LINDA LINGLE
GOVERNOR OF HAWAII



CHIYOME L. FUKINO, M.D.
DIRECTOR OF HEALTH

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

In reply, please refer to:
EMD / CWB

02035PKP.03

February 18, 2003

Mr. Donald Clegg
President
Analytical Planning Consultants, Inc.
928 Nuuanu Avenue, Suite 502
Honolulu, Hawaii 96817

Dear Mr. Clegg:

**Subject: Draft Environmental Assessment for
Sand Island In-Vessel Bioconversion Facility**

The Department of Health, Clean Water Branch (CWB) has reviewed the subject submittal, dated January 2003, and has the following comments:

1. The Army Corps of Engineers should be contacted to identify whether a Federal permit (including a Department of Army permit) is required for this project. If it is determined that a Federal permit is required for the subject project, then a Section 401 Water Quality Certification would also be required from our office.
2. If the construction project involves any of the following activities, National Pollutant Discharge Elimination System (NPDES) permit coverage is required for each activity:
 - a. Construction activities, including clearing, grading, and excavation that result in the disturbance of equal to or greater than one (1) acres of total land area. The total land area includes a contiguous area where multiple separate and distinct construction activities may be taking place at different times on different schedules under a larger common plan of development or sale. NPDES permit coverage is required before the commencement of the construction activities.
 - b. Discharges of hydrotesting water.
 - c. Discharges of construction dewatering effluent.
 - d. Discharges of treated effluent associated with well drilling activities.

Mr. Donald Clegg
February 18, 2003
Page 2

3. If the operation of the proposed facility contributes to the discharge of process wastewater and/or storm water associated with industrial activity, then NPDES permit coverage is required.
4. If the discharges mentioned above enter Class 2 or Class A State waters, then NPDES general permit coverage for each type of discharge is required. If the discharges enter Class 1 or Class AA State waters, then one NPDES individual permit covering all discharges is required.

The CWB requires that Notices of Intent (NOI) for NPDES general permits and NPDES individual permit applications be submitted 30 days and 180 days, respectively, prior to the commencement of the discharges. The amendments to HAR, Chapter 11-55, may also require a copy of the NOI or NPDES permit application to be submitted to the State Department of Land and Natural Resources, State Historic Preservation Division. The NOI and NPDES permit application forms can be picked up at our office or downloaded from our website at <http://www.state.hi.us/doh/eh/cwb/forms/index.html>.

Should you have any questions, please contact Ms. Kris Poentis of the Engineering Section, CWB, at 586-4309.

Sincerely,



DENIS R. LAU, P.E., CHIEF
Clean Water Branch

KP:ndp



PHONE (BLF): (808) 536-5695
FAX: (808) 536-1553

ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

April 10, 2003

Dennis R. Lau, P.E., Chief
State of Hawaii
Department of Health
Clean Water Branch
P.O. Box 3378
Honolulu, Hawaii 96801-3378

RE: Comments Submitted Regarding the Draft Environmental Assessment for Sand Island
Wastewater
Treatment Plant (WWTP) New In-Vessel Bioconversion Facility

Dear Sir,

We appreciate your participation in the review process. Your comments have been noted and incorporated in the Final Environmental Assessment.

Sincerely,

Don Clegg
Applicant for Agent

Enclosures



REPLY TO
ATTENTION OF

Regulatory Branch

DEPARTMENT OF THE ARMY
U. S. ARMY ENGINEER DISTRICT, HONOLULU
FT. SHAFTER, HAWAII 96858-5440

RECEIVED
GMP ASSOCIATES, INC.
January 30, 2003

2003 FEB 3 AM 9 43

Dr. Peter Melnyk, P.E.
GMP Hawaii, Inc.
1100 Alakea Street, Suite 1800
Honolulu, Hawaii 96813-2833

Dear Dr. Melnyk:

This responds to your request for review of the Draft Environmental Assessment (DEA) for the proposed Sand Island Wastewater Treatment Plant (WWTP) New In-Vessel Bioconversion Facility, Honolulu, Hawaii. We have reviewed the document with respect to the Corps' authority to issue Department of the Army (DA) permits under Section 10 of the Rivers and Harbors Act of 1899 (33 USC 403) and Section 404 of the Clean Water Act (33 USC 1344).

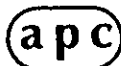
The DEA (p. 3-2) states that the proposed facility will be developed within the footprint of the existing WWTP, which has ground elevations ranging from 5 to 9 feet above mean sea level. The DEA further notes (p. 4-1) that the project site is not contiguous to any streams or the ocean and (p. 4-2) that all work associated with the proposed project will be located away from the wetland area situated on the northeast side of the WWTP.

Based on the information provided in the DEA, I have determined that the proposed activity would not involve work in waters of the United States, including adjacent wetlands; therefore, a DA permit will not be required.

File No. 200300241 has been assigned to this project. Should you have questions concerning this determination, please contact Mr. Peter Galloway of my staff by telephone (438-8416) or by fax (438-4060). Please note that requests for Corps regulatory review of projects should be directed to: Regulatory Branch (CEPOH-EC-R); U.S. Army Engineer District, Honolulu; Building 230; Fort Shafter, Hawaii 96858-5440.

Sincerely,

George P. Young, P.E.
Chief, Regulatory Branch



PHONE (BUS): (808) 536-5695
FAX: (808) 599-1553

ANALYTICAL PLANNING CONSULTANTS, INC.
928 NUUANU AVENUE, SUITE 502 • HONOLULU, HI 96817

April 10, 2003

George P. Young, P.E.
Chief, Regulatory Branch
Department of the Army
U.S. Army Engineer District, Honolulu
Building 230
Fort Shafter, Hawaii 96858-5440

RE: Comments Submitted Regarding the Draft Environmental Assessment for Sand Island
Wastewater
Treatment Plant (WWTP) New In-Vessel Bioconversion Facility

Dear Sir,

We appreciate your participation in the review process. Your comments have been noted and incorporated in the Final Environmental Assessment.

Sincerely,

A handwritten signature in black ink that reads "Don Clegg". The signature is written in a cursive, slightly slanted style.

Don Clegg
Applicant for Agent

Enclosures

SECTION 11
REFERENCES

SECTION ELEVEN

REFERENCES

Brown and Caldwell, 2000. *Final Environmental Assessment for Sand Island WWTP Disinfection Facility and Effluent Pump Station*. Dept. of Design and Construction, City and County of Honolulu.

City and County of Honolulu 1992. *General Plan: Objectives and Policies*. Dept. of Planning Honolulu.

GMP Associates, Inc. 2001. *Final Environmental Assessment for Wastewater Pump Station Modifications at Sand Island WWTP*. Prep. Dept. of Design and Construction, City and County of Honolulu.

Honolulu Organic Fertilizer Company, 2002. *Contract for Design, Engineering, Construction and Testing of an In-Vessel Bioconversion Facility*. Refuse Division, City and County of Honolulu.

State of Hawaii, Department of Business, Economic Development and Tourism 1997. "Population and Economic Projections for the State of Hawaii to 2020". Research and Economic Analysis Division.

R.M. Towill Corporation, 2001. *Final Environmental Assessment for Sand Island WWTP Modifications and Expansions*. Prep. Dept. of Design and Construction, City and County of Honolulu.

State of Hawaii, Department of Business, Economic Development and Tourism 2002. "Quarterly Statistical and Economic Report September 2002". Research and Economic Analysis Division.

State of Hawaii, Department of Health (DOH) 1997. "The State Ambient Air Quality Standards".

State of Hawaii, Department of Health (DOH) Clean Air Branch 1994-1996. "Hawaii Air Quality Data".

University of Hawaii at Hilo, Department of Geography 1998. *Atlas of Hawaii*. Third Edition S.P. Juvic and J.O. Juvic Editors, T.R. Paradise, Chief Cartographer. University Press, Honolulu.

U.S. Environmental Protection Agency. 40 CFR 50 Air Quality Standards.

Water Environment Federation, 1992. MOP No.8, Volume II, Chapter 8, page 1280.

APPENDIX A

APPENDIX A

BACKGROUND INFORMATION ON CRITERIA AIR POLLUTANTS

This Appendix provides a brief background on the pollutants for which ambient standards have been developed.

O₃ – Ozone is the main constituent in photochemical air pollution. It is formed in the atmosphere by chemical reaction of nitrogen oxides (NO_x) and volatile compounds (VOCs) in the presence of sunlight. In the upper atmosphere, O₃ shields the earth from harmful ultraviolet radiation, however, at ground level it can cause harmful effects on humans and plants.

NO₂ – Nitrogen dioxide is a brownish, highly corrosive gas with a pungent odor. It is formed in the atmosphere from emissions of nitrogen oxides (NO_x). Sources of nitrogen oxides include electric utilities, industrial boilers, motor vehicles, exhaust, and combustion of fossil fuels. NO₂ is also a component in the atmospheric reactions that produce ground level ozone.

PM₁₀ – This pollutant is particulate matter that is 10 microns or less in aerodynamic diameter. The EPA revised the NAAQS for particulate matter in 1987 to cover only PM₁₀ because these smaller sized particles have the greatest potential for respiratory health impacts.

CO – Carbon monoxide is a colorless, odorless, tasteless gas under atmospheric conditions. It is produced by the incomplete combustion of carbon fuels with the majority of emissions in urban areas from transportation sources.

Pb – Lead is a naturally occurring substance found in the environment that has been used as an ingredient in paint and gasoline. Particulates of Pb and its compounds enter the air mainly from vehicle exhaust. Lead can be inhaled or ingested and can accumulate in the blood, and soft tissue. The elimination of Pb in gasoline sold in United States has greatly reduced the amount of Pb in ambient air.

SO_x – Sulfur oxides are colorless gases which include SO₂. Emissions of SO_x are largely from sources that burn fossil fuels such as coal and oil. On the Island of Hawaii, a significant source of SO_x emissions is from the on going eruption of Kilauea Volcano.

APPENDIX B

APPENDIX B

**TABLE 1 - LAND USE COMPATIBILITY*
WITH YEARLY DAY-NIGHT AVERAGE SOUND LEVELS**

Land Use	Yearly day-night average sound level (L _{dn}) in decibels					
	Below 65	65-70	70-75	75-80	80-85	Over 85
RESIDENTIAL						
Residential, other than mobile homes and transient lodging	Y	N(1)	N(1)	N	N	N
Mobile home parks	Y	N	N	N	N	N
Transient lodgings	Y	N(1)	N(1)	N(1)	N	N
PUBLIC USE						
Schools	Y	N(1)	N(1)	N	N	N
Hospitals and nursing homes	Y	25	30	N	N	N
Churches, auditoriums, and concert halls	Y	25	30	N	N	N
Government services	Y	Y	25	30	N	N
Transportation	Y	Y	Y(2)	Y(3)	Y(4)	Y(4)
Parking	Y	Y	Y(2)	Y(3)	Y(4)	N
COMMERCIAL USE						
Offices, business and professional	Y	Y	25	30	N	N
Wholesale and retail--building materials, hardware and farm equipment	Y	Y	Y(2)	Y(3)	Y(4)	N
Retail trade--general	Y	Y	25	30	N	N
Utilities	Y	Y	Y(2)	Y(3)	Y(4)	N
Communication	Y	Y	25	30	N	N
MANUFACTURING AND PRODUCTION						
Manufacturing, general	Y	Y	Y(2)	Y(3)	Y(4)	N
Photographic and	Y	Y	25	30	N	N

optical						
Agriculture (except livestock) and forestry	Y	Y(6)	Y(7)	Y(8)	Y(8)	Y(8)
Livestock farming and breeding	Y	Y(6)	Y(7)	N	N	N
Mining and fishing, resource production and extraction	Y	Y	Y	Y	Y	Y
RECREATIONAL						
Outdoor sports arenas and spectator sports	Y	Y(5)	Y(5)	N	N	N
Outdoor music shells, amphitheaters	Y	N	N	N	N	N
Nature exhibits and zoos	Y	Y	N	N	N	N
Amusements, parks, resorts, and camps	Y	Y	Y	N	N	N
Golf courses, riding stables and water recreation	Y	Y	25	30	N	N

Numbers in parenthesis refer to notes.

*The designations contained in this table do not constitute a Federal determination that any use of land covered by the program is acceptable or unacceptable under Federal, State, or local law. The responsibility for determining the acceptable and permissible land uses and the relationship between specific properties and specific noise contours rests with the local authorities. FAA determinations under Part 150 are not intended to substitute federally determined land uses for those determined to be appropriate by local authorities in response to locally determined needs and values in achieving noise compatible land uses.

Key to Table 1

SLUCM=Standard Land Use Coding Manual.

Y (YES)=Land Use and related structures compatible without restrictions.

N (No)=Land Use and related structures are not compatible and should be prohibited.

NLR=Noise Level Reduction (outdoor to indoor) to be achieved through incorporation of noise attenuation into the design and construction of the structure.

25, 30, or 35=Land use and related structures generally compatible; measures to achieve NLR of 25, 30 or 35 dB must be incorporated into design and construction of structure.

Notes for Table 1

(1) Where the community determines that residential or school uses must be allowed, measures to achieve outdoor to indoor Noise Level Reduction (NLR) of at least 25 dB and 30 dB should be incorporated into building codes and be considered in individual approvals. Normal residential construction can be expected to provide a NLR of 20 dB, thus, the reduction requirements are often stated as 5, 10 or 15 dB over standard construction and normally assume mechanical ventilation and closed windows year round. However, the use of NLR criteria will not eliminate outdoor noise problems.

(2) Measures to achieve NLR of 25 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.

- (3) Measures to achieve NLR of 30 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (4) Measures to achieve NLR of 35 dB must be incorporated into the design and construction of portions of these buildings where the public is received, office areas, noise sensitive areas or where the normal noise level is low.
- (5) Land use compatible provided special sound reinforcement systems are installed.
- (6) Residential buildings require an NLR of 25.
- (7) Residential buildings require an NLR of 30.
- (8) Residential buildings not permitted.

SOURCE: FAA, FAR PART 150