DEPARTMENT OF DESIGN AND CONSTRUCTION
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 11TH FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8480 • Fax: (808) 768-4567
Web site: www.honolulu.gov

KIRK CALDWELL
MAYOR

ROBERT J. KRONING, P.E.
DIRECTOR

MARK YONAMINE, P.E.
DEPUTY DIRECTOR

WW.PE 15-032

February 23, 2015

Ms. Jessica Wooley, Director
Office of Environmental Quality Control (OEQC)
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Wooley:

SUBJECT: Sand Island Wastewater Treatment Plant
Draft Environmental Assessment (DEA) for
Ultraviolet Disinfection and Effluent Pump Station
Odor Control System
Tax Map Key (1) 1-5-041: 005
Honolulu, Island of Oahu, Hawai'i

The Department of Design and Construction, City and County of Honolulu has reviewed the Draft Environmental Assessment (DEA) for the subject project, and anticipates issuing a Finding of No Significant Impact (FONSI) determination. Please publish notice of availability of the DEA for public comment in the next OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and one (1) hard copy of the DEA. An electronic word processing copy of the project summary and a PDF copy of the DEA were submitted to oeqchawaii@doh.hawaii.gov. Should you or your staff have any questions please contact Trudy Hamic at 768-8740, or contact our consultant James Niermann of R. M. Towill Corporation at 842-1133.

Very truly yours,

for M. Yonamine

Robert J. Kroning, P.E.
Director

Enclosures

AGENCY ACTIONS
SECTION 343-5(B), HRS
PUBLICATION FORM (FEBRUARY 2013 REVISION)

Project Name **Sand Island Wastewater Treatment Plan, Ultraviolet Disinfection and Effluent Pump Station Odor Control System.**
Island: **Oahu**
District: **Honolulu**
TMK: **(1) 1-5-041: 005**
Permits: **Special Management Area Permit, Air Permit Modification, National Pollutant Discharge Elimination Permit, Building Permit, Grading and Stockpiling Permit**

Proposing/Determination Agency:
(*Address, Contact Person, Telephone*)
Department of Design and Construction
City and County of Honolulu
650 South Beretania Street
Honolulu, Hawai'i 96813
Robert J. Kroning, P.E., Director, 768-8480

Accepting Authority:
(*for EIS submittals only*)
N/A

Consultant:
(*Address, Contact Person, Telephone*)
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai'i 96819
James Niermann,842-1133
Email: JimN@rmtowill.com

Status (check one only):

_**X**_DEA-AFNSI — Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.

__FEA-FONSI — Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

__FEA-EISPN — Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqchawaii@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.

__Act 172-12 EISPN — Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqchawaii@doh.hawaii.gov). NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.

__DEIS — The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.

__FEIS — The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list,

along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqchawaii@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.

__ Section 11-200-23 Determination

The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.

__Section 11-200-27 Determination

The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.

__Withdrawal (explain)

Summary (Provide proposed action and purpose/need in less than 200 words. Please keep the summary brief and on this one page)**:**

The City and County of Honolulu, Department of Design and Construction proposes to construct improvements to the existing Ultraviolet Disinfection and Effluent Pump Station (UV/EPS) at the Sand Island Wastewater Treatment Plant (WWTP) with the installation of an Odor Control System (OCS) facility. The proposed OCS improvements consist of covering all channels and sealing all openings, constructing fans and ductwork to convey airflow, constructing new carbon scrubbers to treat foul air, and constructing new exhaust stacks to discharge treated air. A condition assessment study of the facility conducted in 2012 concluded that a dedicated UV/EPS OCS be installed to contain and treat foul air being released by this facility. The purpose of the proposed improvements is as follows:

1) Ensure continued compliance with Hawai'i State Non-covered Source Permit (NSP) No. 0216-05-N.
2) Increase the reliability of the Sand Island WWTP by reducing hydrogen sulfide odor and odor-related corrosion impacts.
3) Improve operating conditions at the Sand Island WWTP by reducing foul air.

DRAFT ENVIRONMENTAL ASSESSMENT

Prepared in Accordance with Chapter 343, Hawai‘i Revised Statutes

Sand Island Wastewater Treatment Plant
Ultraviolet Disinfection and Effluent Pump Station
Odor Control System Facility
TMK (1) 1-5-041: 005

Honolulu, O‘ahu, Hawai‘i

February 2015

PROPOSING AGENCY:
Department of Design and Construction
City and County of Honolulu
650 South Beretania Street, 11th Floor
Honolulu, HI 96813

DRAFT ENVIRONMENTAL ASSESSMENT

Prepared in Accordance with Chapter 343, Hawai‘i Revised Statutes

Sand Island Wastewater Treatment Plant
Ultraviolet Disinfection and Effluent Pump Station
Odor Control System Facility
TMK (1) 1-5-041: 005

Honolulu, O‘ahu, Hawai‘i

February 2015

PROPOSING AGENCY:
Department of Design and Construction
City and County of Honolulu
650 South Beretania Street, 11th Floor
Honolulu, Hawai‘i 96813

PREPARED BY:
R. M. Towill Corporation
2024 North King Street, Suite 200
Honolulu, Hawai‘i 96819-3494
Job No. 21840-40

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ACRONYMS

AC/h	Air changes per hour
BMPs	Best Management Practices
BTF	bio-trickling filter
CAB	Clean Air Branch, DOH, State of Hawai‘i
CCH	City and County of Honolulu
CFS	Cubic Feet per Second
CWA	Clean Water Act of 1972, as amended
CWB	Clean Water Branch, DOH, State of Hawai‘i
CWRM	Commission on Water Resources Management, DLNR, State of Hawai‘i
CY	Cubic yards
CZM	Coastal Zone Management
CZMP	Coastal Zone Management Program, Office of Planning, State of Hawai‘i
DAR	Division of Aquatic Resources, DLNR
DDC	Department of Design and Construction, CCH
DLNR	Department of Land and Natural Resources, State of Hawai‘i
DOH	Department of Health, State of Hawai‘i
dP	Differential pressure
DPP	Department of Planning and Permitting, CCH
EA	Environmental Assessment (343 HRS)
EIS	Environmental Impact Statement (343 HRS)
ENV	Department of Environmental Services, CCH
EPS	Effluent Pump Station
ESA	Environmental Site Assessment
ESD	Egg-Shaped Digester
FEMA/FIRM	Federal Emergency Management Agency, Flood Insurance Rate Map
FONSI	Finding of No Significant Impact
FPM	Feet per minute
FRP	Fiberglass reinforced plastic
GAC	Granular activated carbon
GT	Gravity thickener
HAR	Hawai‘i Administrative Rules
HECO	Hawaiian Electric Company
HEER	Hazard Evaluation and Emergency Response, DOH, State of Hawai‘i
HRS	Hawai‘i Revised Statutes
ICFB	Inorganic Chemical Feed Building
LF	Linear feet
LUO	Land Use Ordinance (Chapter 21, ROH)
mgd	Million Gallons per Day
MS4	Municipal Separate Storm Sewer System

MSL	Mean Sea Level (elevation in relation to)
NOI	Notice of Intent, NPDES Permit
NPDES	National Pollutant Discharge Elimination System Permit
NSP	Non-covered Source Permit
OCCL	Office of Conservation and Coastal Land, State of Hawaii
OCS	Odor control system
PS	Pump Station
PUC	Primary Urban Center
PPB	Parts per billion
PPM	Parts per million
RMTC	R. M. Towill Corporation
ROH	Revised Ordinances of Honolulu
SCP	Sustainable Community Plan
SF	Square feet
SIHP	State Inventory of Historic Places
SISB	Sand Island Sewer Basin
SLUD	State Land Use District
SMA	Special Management Area (CCH Jurisdiction)
SRA	State Recreation Area
TMK	Tax Map Key
USACE	United States Army Corps of Engineers
USDA	US Department of Agriculture
USEPA	US Environmental Protection Agency
USFWS	US Fish and Wildlife Service
UV	Ultraviolet
UV/EPS	UV Disinfection and Effluent Pump Station
VOC	Volatile organic compounds
WSST	Wet Sludge Storage Tank
WWTP	Wastewater Treatment Plant

SECTION 1
PROJECT SUMMARY

Project:	Sand Island Wastewater Treatment Plant (WWTP) Ultraviolet Disinfection and Effluent Pump Station (UV/EPS) Odor Control System (OCS) Facility
Proposing Agency:	Department of Design and Construction (DDC) City and County of Honolulu (CCH)
Determination Agency:	DDC, CCH
Agent:	R. M. Towill Corporation James Niermann, Planning Project Coordinator 2024 North King Street, Suite 200 Honolulu, Hawai‘i 96819 (808) 842-1133
Location:	Sand Island, Honolulu, O‘ahu, Hawai‘i
Tax Map Key:	(1) 1-5-041: 005
Proposed Action:	The CCH, DDC proposes to construct improvements to the existing UV/EPS at the Sand Island WWTP with the installation of an OCS facility consisting of covers, ducting, fans, scrubber system, and exhaust stack.
Purpose and Need:	Recommendations from the *Phase 1 Condition Assessment, December 2012* concluded that a dedicated UV/EPS OCS be installed to contain and treat foul air being released by this facility. The purpose of the proposed improvements are as follows: 1) Ensure continued compliance with Hawai‘i State Non-covered Source Permit (NSP) No. 0216-05-N. 2) Increase the reliability of the Sand Island WWTP by reducing hydrogen sulfide odor and odor-related corrosion impacts. 3) Improve operating conditions at the Sand Island WWTP by reducing foul air.
Land Area:	Approximately 1,500 square feet of land for the UV/EPS facility and ductwork. Additional area within the Sand Island WWTP Soil Management Area to dispose of approximately 170 cubic yards of excavated soils.
State Land Use District:	Urban
PUC DP Long-Range Land Use Vision:	Industrial (Map A.5 Land Use Map, PUC – Central)
County Zoning District:	I-3, Waterfront Industrial
Special Management Area:	Yes
FEMA/FIRM Designation:	Flood Zone X (Outside the 0.2 percent annual chance floodplain)

Permits Required:	*Clearances and permits needed from the various Federal, State and City and County of Honolulu agencies include but are not limited to the following.* **City and County of Honolulu** **DDC** • Finding of No Significant Impact **Department of Planning and Permitting (DPP)** • Special Management Area Permit • Construction plan review and approval • Building Permit • Grading and Stockpiling Permit • Zoning Height Variance (if exhaust stack is to exceed 60 feet in height) **State of Hawai‘i** **Department of Health (DOH)** • Construction plan review and approval • NPDES Permit for Construction Stormwater if project site exceeds one acre • Air Permit modification (Non-Covered Source Permit No 0216-05-N) • Construction plan review and approval **Department of Land and Natural Resources** • Determination of "no effect" on historic properties from the State Historic Preservation Division (SHPD). See **Appendix A**.

SECTION 2
INTRODUCTION

2.1 PROJECT OVERVIEW

The City and County of Honolulu (CCH), Department of Design and Construction (DDC) proposes to construct a new odor control system (OCS) to serve the existing ultraviolet (UV) disinfection and effluent pump station (EPS) facility at the Sand Island Wastewater Treatment Plant (WWTP). The planned OCS improvements consist of the installation of an activated carbon scrubber system, fans, ducts, and covers on the existing UV/EPS facility. The UV/EPS facility is part of the Sand Island WWTP liquid treatment stream process. The installation of a dedicated UV/EPS OCS to contain and treat foul air generated by the UV/EPS facility is supported by the *Phase 1 Condition Assessment* prepared for DDC (RMTC 2012).

All proposed improvements and alternatives discussed in this EA are located within the Sand Island WWTP on land owned by the State of Hawai‘i and identified by Tax Map Key (TMK) parcel (1) 1-5-041: 005. The State of Hawai‘i grants use of the land to the CCH in accordance with Executive Order No. 3939, issued in 2002. See **Figure 2-1, Project Location**, below. The CCH Department of Environmental Services (ENV) owns and operates the Sand Island WWTP facility. The CCH, DDC is responsible for overseeing the design and construction of facilities at the Sand Island WWTP.

2.2 PROJECT PURPOSE AND NEED

The purpose of the project is to:

1) Ensure continued compliance with Hawai‘i State Non-covered Source Permit (NSP) No. 0216-05-N which requires that the hourly average concentration of Hydrogen Sulfide (H_2S) at the property line of the Sand Island WWTP be less than 25 parts per billion (ppb);
2) Increase the reliability of the Sand Island WWTP by reducing the amount of H_2S odor and odor-related corrosion in the UV/EPS facility; and
3) Improve operating conditions of the Sand Island WWTP by reducing foul air.

In compliance with the NSP, WWTP personnel monitor and test twelve fence line stations weekly. See **Figure 2-2, Sand Island WWTP General Site Plan.** A *Phase 1 Condition Assessment*, was performed for the Sand Island Sewer Basin (SISB) involving extensive odor monitoring throughout the Sand Island WWTP, with particular focus on the UV/EPS facility. The *Phase 1 Condition Assessment* concluded that the UV/EPS facility was the main source of the H_2S measured at fence line Station 7. To ensure continued compliance with the NSP, a dedicated UV/EPS odor control system (OCS) is necessary to contain and treat foul air being released by this facility.

Figure 2-1: Project Location

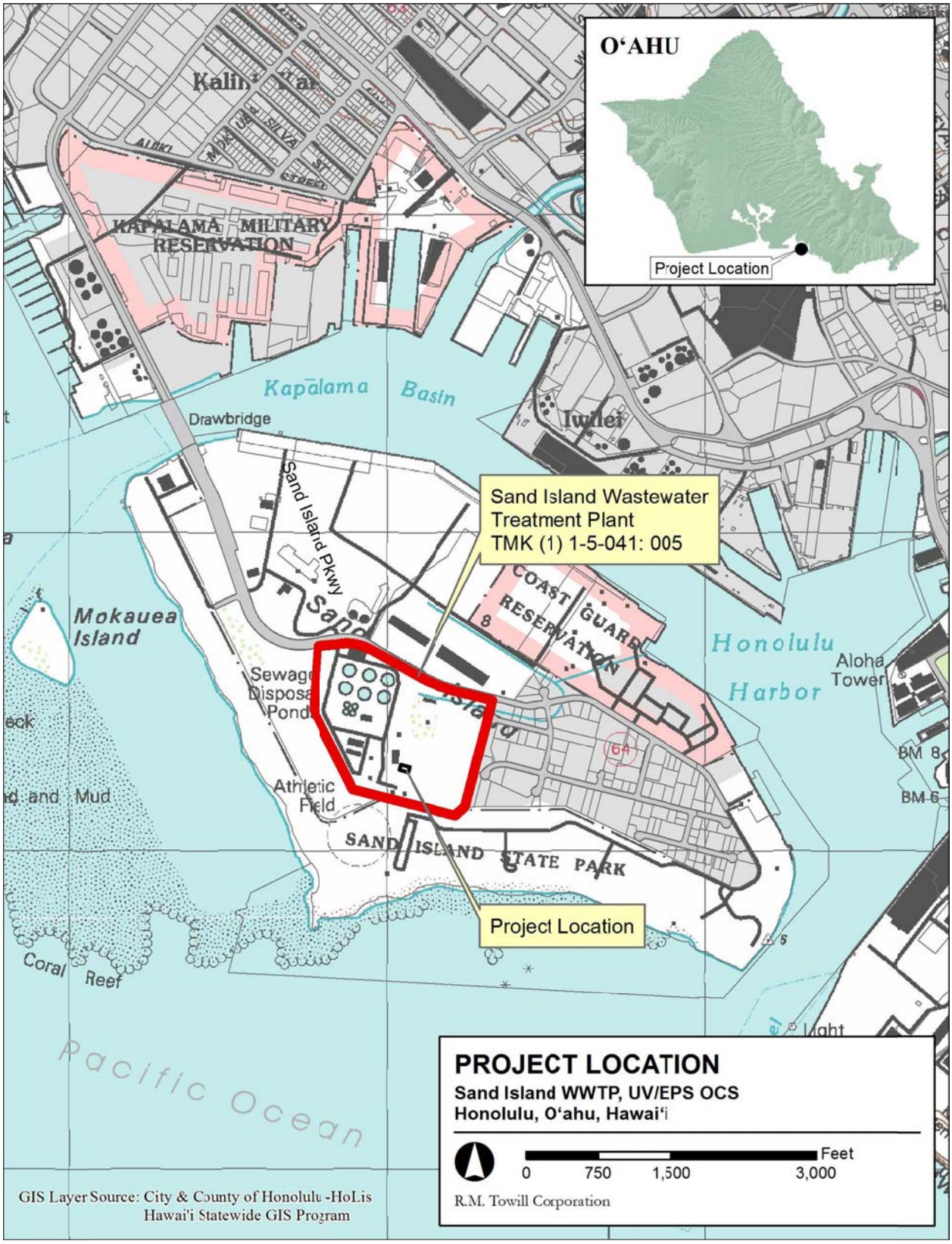
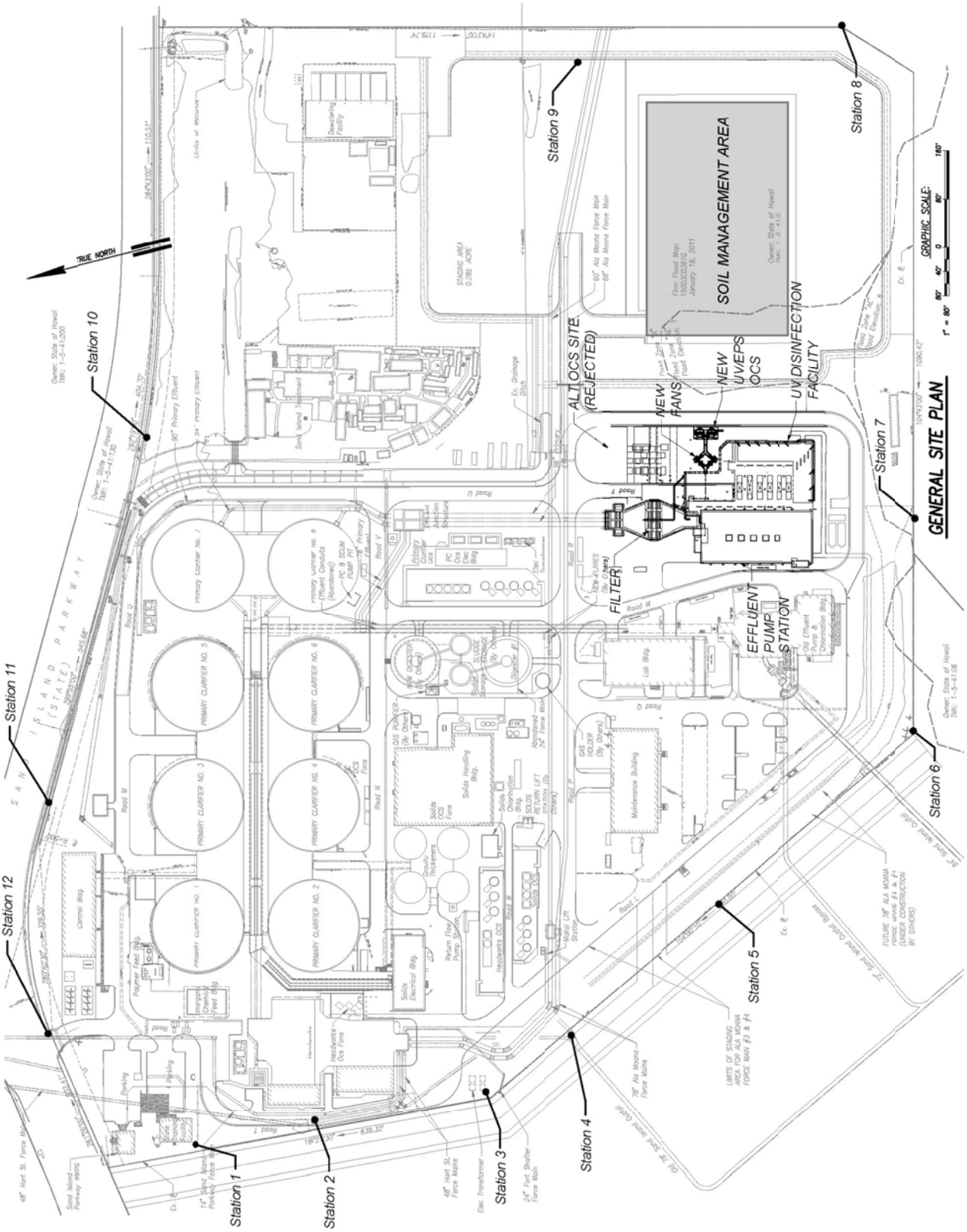


Figure 2-2: Sand Island WWTP General Site Plan



2.3 BASIS FOR THE ENVIRONMENAL ASSESSMENT

In accordance with Chapter 343, Hawai‘i Revised Statutes (HRS), Section 5, this project involves the following actions that require the preparation of an EA:

(1) Propose the use of state or county lands or the use of state or county funds;

In addition, the project is located within the Special Management Area (SMA), therefore the proposed activity is subject to the preparation of an EA per the requirements of Chapter 25, Revised Ordinances of Honolulu, (ROH), and Chapter 205A, HRS.

Pursuant to the requirements of Chapter 343, HRS, and Chapter 11-200, Hawai‘i Administrative Rules (HAR), the proposing agency, DDC, has determined that the proposed project is not expected to have significant environmental effects. Based on analysis and review of environmental conditions, project effects, and proposed mitigation measures, it is anticipated that a Finding of No Significant Impact (FONSI) will be issued for this project.

2.4 PROPOSING AGENCY AND DETERMINATION AGENCY

The project is being undertaken with funds from the DDC. In accordance with Chapter 343, Section 5, HRS, and Sections 11-200-4 and 11-200-9, HAR, the proposing agency and determination agency for this Draft EA is the CCH DDC.

SECTION 3
PROJECT DESCRIPTION AND ALTERNATIVES

3.1 BACKGROUND INFORMATION

3.1.1 PROJECT LOCATION

The project site is located on Sand Island on the south side of the Sand Island WWTP, adjacent to the existing UV/EPS facility. See **Figure 2-2, Sand Island WWTP General Site Plan**. The entrance to the Sand Island WWTP is located on Sand Island Parkway, approximately 0.5 miles southeast from the Bascule Bridge. See **Figure 2-1, Project Location**, above.

3.1.2 OWNER INFORMATION

The Sand Island WWTP is located on land owned by the State of Hawai‘i and operated by the CCH, ENV in accordance with Executive Order No. 3939 issued in 2002. The property is identified by TMK parcel (1) 1-5-041: 005. The CCH ENV owns the WWTP facilities and infrastructure. The CCH DDC is responsible for overseeing the design and construction of facilities at the Sand Island WWTP.

3.1.3 SAND ISLAND WWTP HISTORY

The Sand Island WWTP began operations in 1978 as a primary treatment wastewater treatment plant. The facility treats all of the wastewater flows generated in the SISB service area, which extends from Niu Valley in the east, to Salt Lake / Aliamanu in the west.

The Sand Island WWTP has undergone a number of major modifications in the past decade, including programmed modifications, permit-related modifications and plant expansion work (DDC, 2001). As a result of these projects, the facility capacity was expanded to an average daily flow rate of 90 million gallons per day (mgd) and peak wet weather hydraulic capacity of 271 mgd. The current design data for the existing facility is presented in **Table 3-1**. The facility treatment process is described below in terms of liquid waste streams and solid waste streams.

Table 3-1: Sand Island WWTP – 2009 Design Information

Flows	
Design Average Flow	90 mgd
Intraday Elevated Flow	113 mgd
Design Peak Wet Weather Flow	271 mgd
Design Storm	2 year 6 hour

3.2 EXISTING FACILITIES

3.2.1 LIQUID WASTE STREAM PROCESSES

The project is being proposed to improve odor control in the liquid stream process of the Sand Island WWTP. A process flow diagram is shown in **Figure 3-1**, below. The new OCS will be installed after the effluent junction structure leading to the UV fine screen and UV Disinfection and Effluent PS. The following is a description of the major liquid stream facilities:

Headworks: This facility was placed in operation in 2005 and replaced the original Screenings Building. An influent receiving area receives flows from the Ala Moana Pump Station (PS), Hart Street PS, Sand Island Parkway PS, and the Fort Shafter PS. The Headworks facility consists of six bar screens with associated screenings washers and compactors for screenings removal, six Parshall flumes for flow measurement and four aerated grit chambers for grit removal. Screenings and grit are conveyed and discharged into a dump truck for disposal at the Waimānalo Gulch landfill.

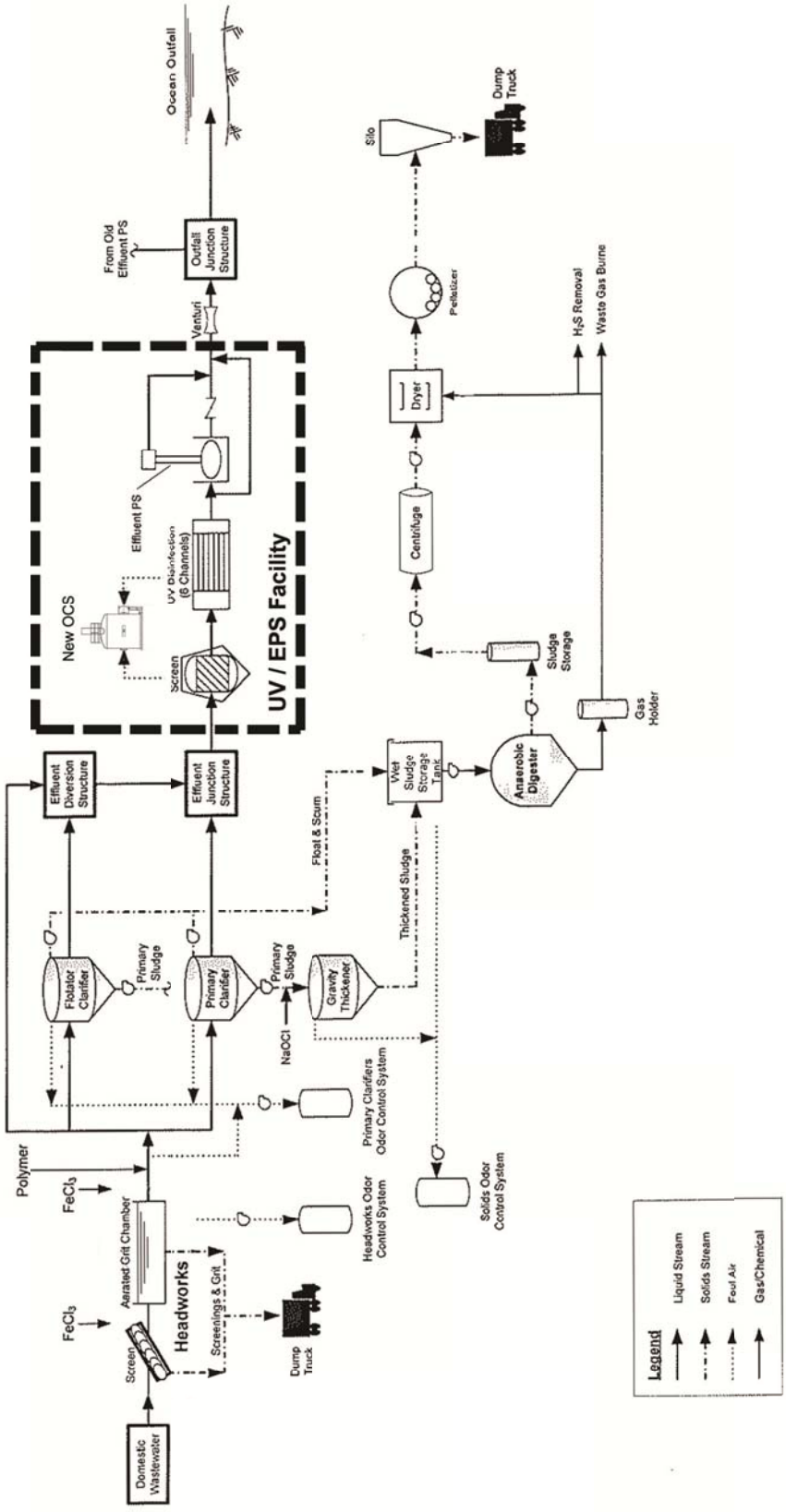
Flotator Clarifiers and Primary Clarifiers: The plant consists of six flotator clarifiers (FCs) and two primary clarifiers (PCs). The original Sand Island WWTP had only six flotator clarifiers to provide advanced primary treatment. Primary Clarifiers 7 and 8 were added to increase the capacity of the clarification system to an average daily flow of 90 mgd. The flotator clarifiers were originally designed to utilize dissolved air flotation to "float" the solids to the surface where surface skimmers remove the solids. In recent years, the six flotator clarifiers and the primary clarifiers have all been operated in gravity mode as traditional primary clarifiers. The six flotator clarifiers are currently being converted to primary clarifiers. Three clarifiers are used under normal operations, typically including Primary Clarifiers 7 and 8 and one of the original six clarifiers.

Inorganic Chemical Feed Building: The building allows the injection of chemicals used for chemically enhanced primary treatment. Currently iron chloride ($FeCl_3$, ferric chloride) is being utilized for advanced primary treatment and odor control. Polymer is also being used for flocculation.

Ultraviolet Disinfection Facility and Effluent Pump Station: The existing facility consists of three effluent screens, six UV disinfection channels, and an effluent PS. Five of the six UV disinfection channels are currently populated with UV lamps. The UV system has room for expansion from the current six UV disinfection channels to ten. Four channels are used under normal operations. During high flow conditions the effluent pump station is used to provide additional pumping head to discharge the treated primary effluent through the 84-inch diameter ocean outfall pipeline. At low flow conditions effluent is discharged through the 84-inch ocean outfall pipeline by gravity.

Ocean Outfall: Effluent is discharged through an 84-inch diameter ocean outfall extending nearly two miles offshore to a depth of over 220 feet. The total length of the outfall is approximately 14,000 linear feet (LF). The final outfall pipe diffuses wastewater through approximately 3,400 LF of the outfall pipe.

Figure 3-1: Sand Island WWTP Process Schematic



3.2.2 SOLID WASTE STREAM PROCESSES

The major solid waste stream processes are as follows:

Gravity Thickeners (GT): Primary sludge from the flotator clarifiers and primary clarifiers is pumped to three of the four gravity thickeners where ferric chloride and polymer are added to control odors and assist in thickening.

Wet Sludge Storage Tanks (WSST): Thickened sludge from the GTs and primary scum from the clarifiers are pumped to the four existing WSSTs. Typically, one WSST is used under normal operations, but all four may be called into service at any time. The WSSTs were originally designed to serve as sludge equalization tanks for the original solids handling processes, which formerly included a thermal conditioning system, centrifuges and sludge incinerators. These systems have been replaced with the sludge drying and pelletizing system now in operation.

Anaerobic Digester: The anaerobic digester involves a continuous feed process from the WSST into the Egg-Shaped Digesters (ESDs). The digesters reduce solids and produce energy in the form of methane. The methane or biogas is used as a fuel source for the sludge heat drying system. A biogas holding tank, hydrogen sulfide scrubber, and associated auxiliary equipment (i.e., piping, valves) and controls are part of the anaerobic digestion process. After completion of the digestion process, the liquid digested biosolids are pumped to the sludge drying and pelletizing system. One digester is currently in operation with another digester under construction (DDC, 2013).

Sludge Drying and Pelletizing System: The sludge drying and reuse system consists of digestion containment, centrifuges and final drying and pelletizing. Pelletized sludge is available for use as fertilizer. The anaerobic digester operations, sludge drying and pelletizing system are owned by the City and operated by Synagro WWT, Inc. under an Operation and Maintenance contract. The pellets produced at the facility are beneficially reused as fertilizer for land applications at agricultural farms, golf courses and parks. Residual pellet material not suitable for marketing is disposed of at the Waimānalo Gulch landfill. The majority of the pellet material is being non-commercially used for fertilizer.

3.2.3 ODOR CONTROL SYSTEM

Foul air emissions for the Sand Island WWTP operations are governed by Non-covered Source Permit (NSP) No. 0216-05-N, Application for Renewal No. 0216-13, issued to CCH on August 13, 2009. NSP coverage includes operations from the initial stages of WWTP processing including the headworks, clarifiers, gravity thickeners, and wet sludge storage tanks. Prior to NSP No. 0216-05-N expiring on August 12, 2014, ENV had submitted a re-application which was accepted by State Department of Health (DOH) – Clean Air Branch (CAB). Therefore, until a new NSP is issued by DOH, the old NSP is administratively extended allowing operations of the Sand Island WWTP to continue. Four electric/diesel engine effluent pumps are covered by the same non-covered source permit governing the foul air systems. Limits on operational hours

and emission opacity are included in the permit. The new UV/EPS OCS facility may require processing an application to modify the NSP.

Foul air emissions from solids stream process, including operations of the anaerobic digester, gas holder, sludge storage, centrifuge, dryer, and the pelletizer, are governed under a separate Covered Source Permit, No. 0216-06-C. No change is proposed to the Covered Source Permit or to the solids stream process as part of this project.

Currently there are three main odor control systems operating at the Sand Island WWTP. See **Table 3-2**, below, for a summary of the three existing OCS. Odor and emission controls have resulted in improved ambient air quality, which will continue to produce positive long-term impacts on air quality surrounding the treatment plant. Headworks improvements were installed in April 2012 shortly after the installation of Primary Clarifiers and solids improvements in August and December 2011, respectively.

Table 3-2: Existing OCS at the Sand Island WWTP

OCS Name	Design System Airflow (cfm)	Installation Completed	First Stage	Second Stage	Process Air Treated
Headworks	40,000	April 2012	2 + 1 Fans 20,000 cfm	2 + 1 Fans 20,000 cfm	Influent Receiving Area Screening Channels Aerated Grit Chambers Screening Hoppers Grit Hopper Truck Bay Area Bio-trickling Filters
			3 +1 BTFs 10,000 cfm ea.	2 + 1 GAC filters 20,000 cfm ea.	
Primary Clarifiers (PC)	50,000	August 2011	3 + 1 Fans 16,700 cfm ea.	3 + 1 Fans 16,700 cfm ea.	FC 1-6 Launders PC 7 & 8 Launders Influent Channels Effluent Channels Bio-trickling Filters
			4 + 1 BTFs 10,000 cfm ea.	3 + 1 GAC filters 16,700 cfm ea.	
Solids	30,000	December 2011	2 + 1 Fans 15,000 cfm ea.	2 + 1 Fans 15,000 cfm ea.	Gravity Thickeners Wet Sludge Storage Tanks Return Flow Pump Station Sludge Division Box Makai Lift Station Bio-trickling Filters
			3 + 1 BTFs 7,500 cfm ea.	2 + 1 GAC filters 15,000 cfm ea.	

Notes: (i) GAC = Granular Activated Carbon, (ii) BTF = Bio-Trickling Filter

3.2.4 ELECTRICAL POWER

Electrical power is provided by a 11.5 kV distribution system within the Sand Island WWTP. The system is serviced by two HECO 11.5 kV feeder lines (Sand Island 1 and 2) that connect to a Primary Switching Station Building along Sand Island Parkway. In the event of a utility power

outage, a system of backup generators located throughout the plant automatically start and provide power to essential equipment.

3.2.5 WATER

Water is provided to the Sand Island WWTP through a 12-inch water main which is connected to a Board of Water Supply (BWS) 16-inch water main located along Sand Island Parkway.

3.3 PROJECT DESCRIPTION / PREFERRED ALTERNATIVE

The CCH DDC proposes to install a new OCS at the existing UV/EPS facility. The UV/EPS facility is part of the Sand Island WWTP liquid stream process. Proposed improvements to the existing UV/EPS include covering all channels and sealing all openings, constructing fans and ductwork to convey airflow, constructing new carbon scrubbers to treat foul air, and constructing new exhaust stacks to discharge treated air. Major components of the project are described below. A site layout showing the existing UV/EPS and proposed location of the OCS is shown in **Figure 3-2**, and **Figure 3-3**. The project area will be approximately 1,500 square feet (SF). See **Table 3-3** for a summary of the proposed design features for the new OCS.

Table 3-3: UV/EPS OCS Design Parameters

	Parameter	**Value**
Cover	Type Material	Flat Aluminum Alloy 6061
Duct	Shape Material Size (Max. diameter)	Round FRP 48 in.
Fan	Type No. of Units	FRP Backward inclined 1 + 1 standby (2 total)
Odor Treatment	Type No. of Units Airflow, each Unit Diameter Media Configuration Media Type Inlet H_2S Concentration, Peak Inlet H_2S Concentration, Average Effluent H_2S Concentration	Carbon Scrubber 1 + 1 standby (2 total) 18,000 cfm 14 ft. Dual, deep bed Midas (or similar) 3 ppm 0.2 ppm < 0.1 ppm

Figure 3-2: UV/EPS OCS Site Plan

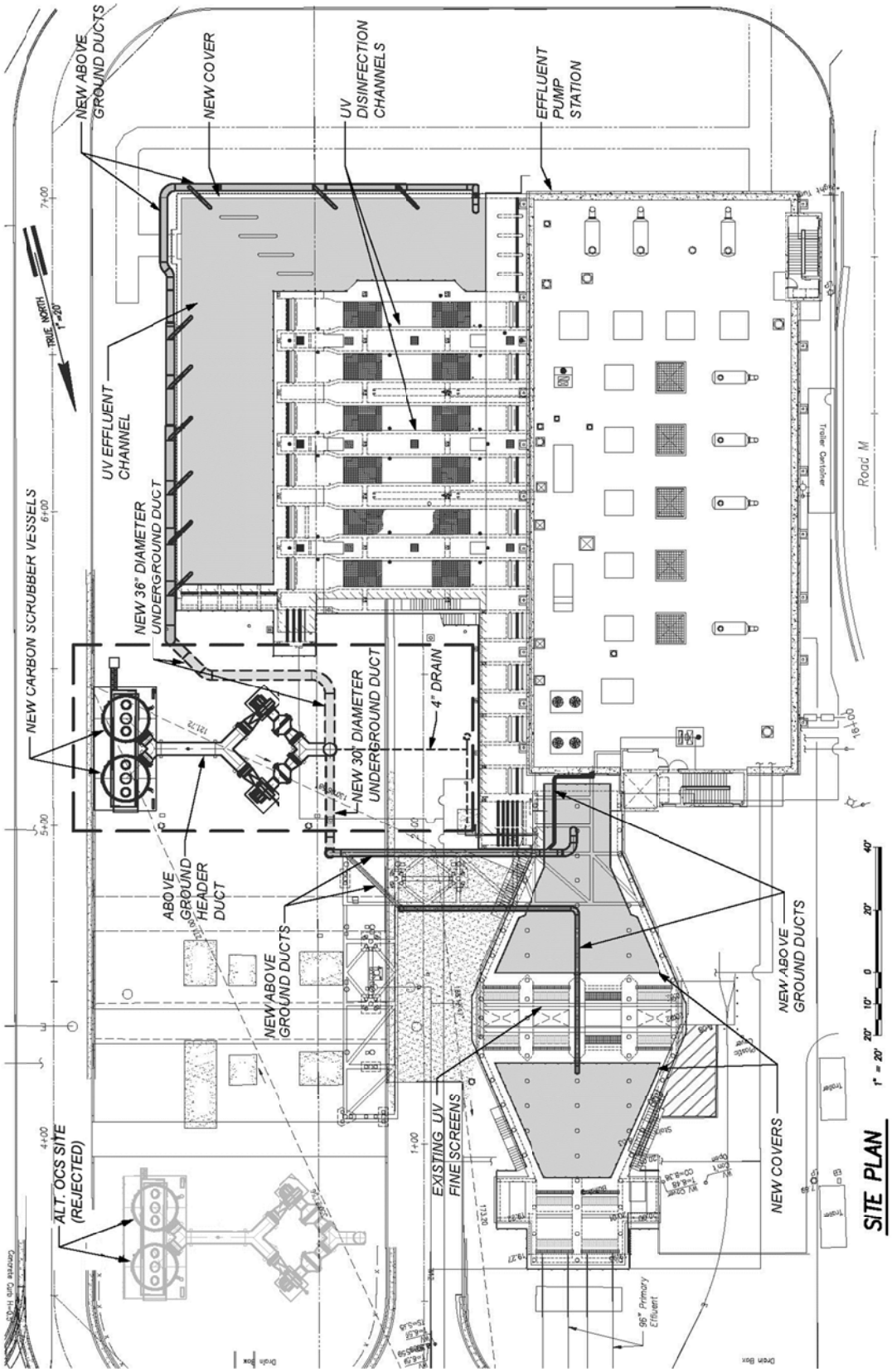
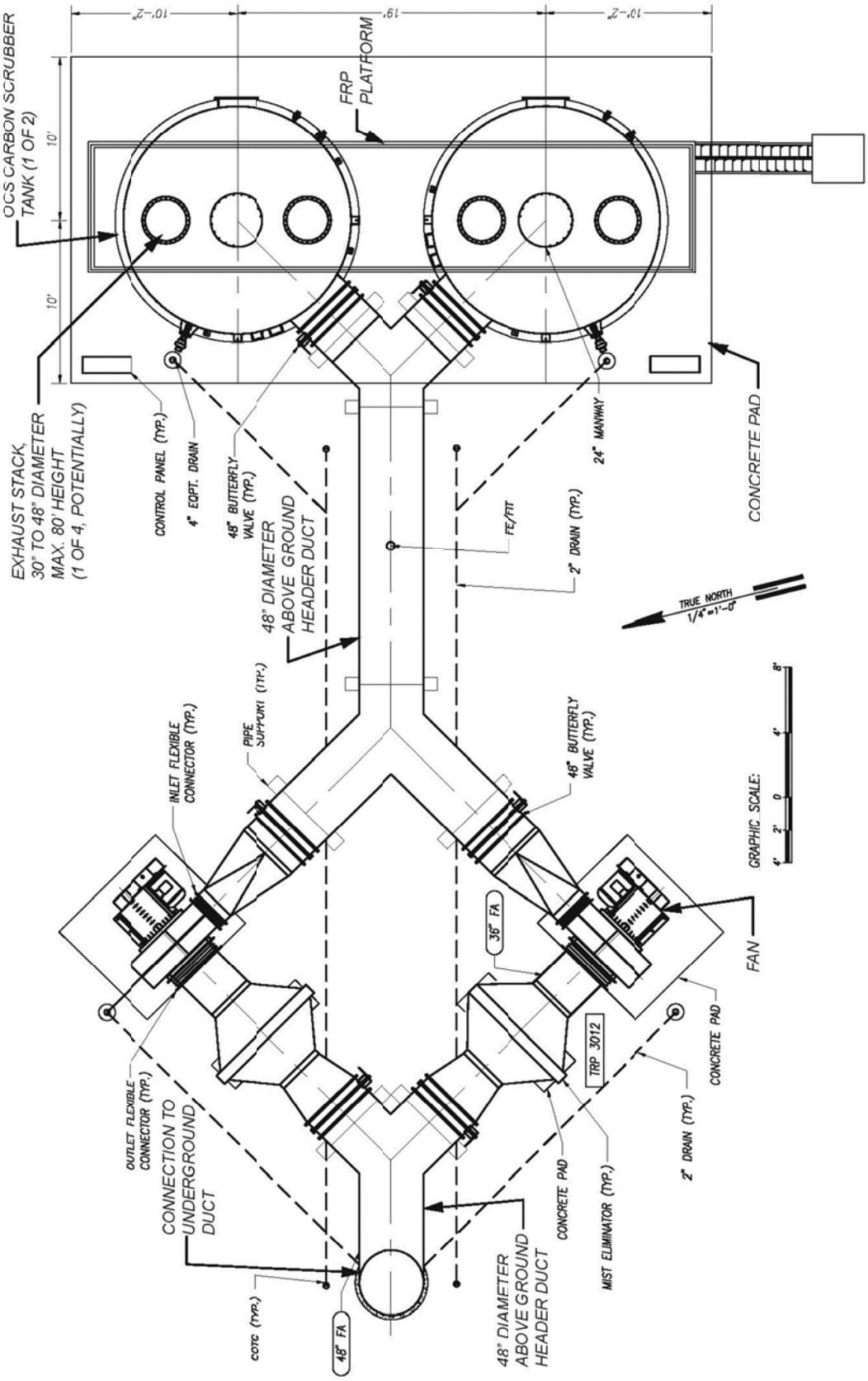


Figure 3-3: OCS Plan



3.3.1 COVERS / ENCLOSURES

The existing UV/EPS facility is mostly uncovered. All uncovered channels and openings are proposed to be sealed to minimize the release of foul air from the liquid stream flows into the environment. Thus, covers will enclose the forebays both before and after the UV Fine Screens and over the UV Effluent Channel. The openings around the pump shafts in the EPS will also be sealed. Flat covers are recommended to be installed to enclose all influent and effluent channels in the existing UV/EPS facility to provide odor containment. Covers will be manufactured from marine grade aluminum due to its light weight, low cost, and resistance to corrosion. See **Figure 3-2** above.

3.3.2 DUCTS

Approximately 800 LF of new air ducts will be installed to convey airflow between the UV/EPS facility and the new OCS. See **Figure 3-2** above. Proposed new ducts consist of the following:

- Approximately 600 LF of above-ground ducts ranging from 8 to 36 inches in diameter will be mounted to and through the existing UV/EPS buildings.
- Approximately 115 LF of new ducts will be installed underground to minimize above-ground conflicts. Underground ducts will range in size from 30 to 36 inches in diameter. Soils excavated for the new ducts will be disposed of at the on-site Sand Island WWTP Soil Management Area.
- Approximately 85 LF of 48-inch diameter header ducts will be installed above-ground to connect the duct system to the OCS fans, carbon scrubbers and exhaust stacks. The header ducts are sized to allow for a maximum airflow velocity of 1,500 feet per minute (fpm) in order to reduce ambient noise. The duct system will provide system airflow of approximately 18,000 cubic feet per minute (cfm) with an estimated a ventilation rate of four air changes per hour (AC/h), sufficient to provide a continuous negative pressure below the aluminum covers.

Fiberglass reinforced plastic (FRP) is the recommended duct material for the UV/EPS OCS due to its high corrosion resistance and cost effectiveness.

3.3.3 FANS

Fans represent the “heart” of the odor control system by creating negative pressure at the odor source, providing containment, delivering odors to the scrubber or filter, and discharging the treated air to the atmosphere via a exhaust stack. The new OCS will have two fans, one dedicated fan and filter online with one fan and filter on standby. This design will provide full redundancy to reduce the risk of interruptions to OCS operations, and will minimize the amount of equipment to operate.

Each fan and filter will be sized for the maximum anticipated airflow and system headloss. The OCS fans will utilize backward-inclined FRP blades and a 316 stainless steel shaft due to the corrosion resistant properties of FRP and 316 stainless steel. This type of fan is identical to the

first and second stage fans currently installed in the existing odor control systems at the Headworks, PCs, and Solids processing facilities.

3.3.4 SCRUBBER SYSTEM

A granular activated carbon (GAC) scrubber system is proposed for the UV/EPS OCS to treat foul air prior to discharge through the exhaust stack(s). Activated carbon has been used to control odors for over 100 years. GAC removes odors primarily through absorption, in which molecules in the airstream become trapped on the surface of a solid. The GAC media has a very high surface-to-volume ratio which provides a large surface area for odors to be absorbed. GAC scrubbers are a dry operating system and no water is required in the process of absorption. Since GAC odor control is a non-biological system, intermittent operation does not adversely affect the system's H_2S removal efficiency. GAC scrubbers are currently in operation at the WWTP and treatment plant personnel are familiar with this technology. GAC scrubbers are simple to operate, have the second lowest area requirement after chemical scrubbers, and a low capital cost. The minimum replacement interval for GAC media is 5 years.

The proposed UV/EPS OCS GAC system will consist of a maximum of two GAC vessels. One GAC vessel will be used for normal OCS operations. A second vessel may be installed to provide system redundancy. Each vessel will be approximately 14 feet in diameter and 18 feet tall, and will be sized to accommodate system airflow of 18,000 cfm to achieve the required UV/EPS facility ventilation rate of four air AC/h. The proposed carbon media for the UV/EPS OCS is a high-capacity, non-regenerative catalytic carbon, such as Midas carbon which is already being used in the existing GAC scrubbers at Sand Island WWTP. The GAC scrubber system will be designed for a maximum influent H_2S concentration of 3 ppm and a maximum effluent H_2S concentration of 0.1 ppm. A maximum effluent of 0.1 ppm would ensure continued compliance with the NSP air quality monitoring standard at fenceline Station 7 under normal operating conditions.

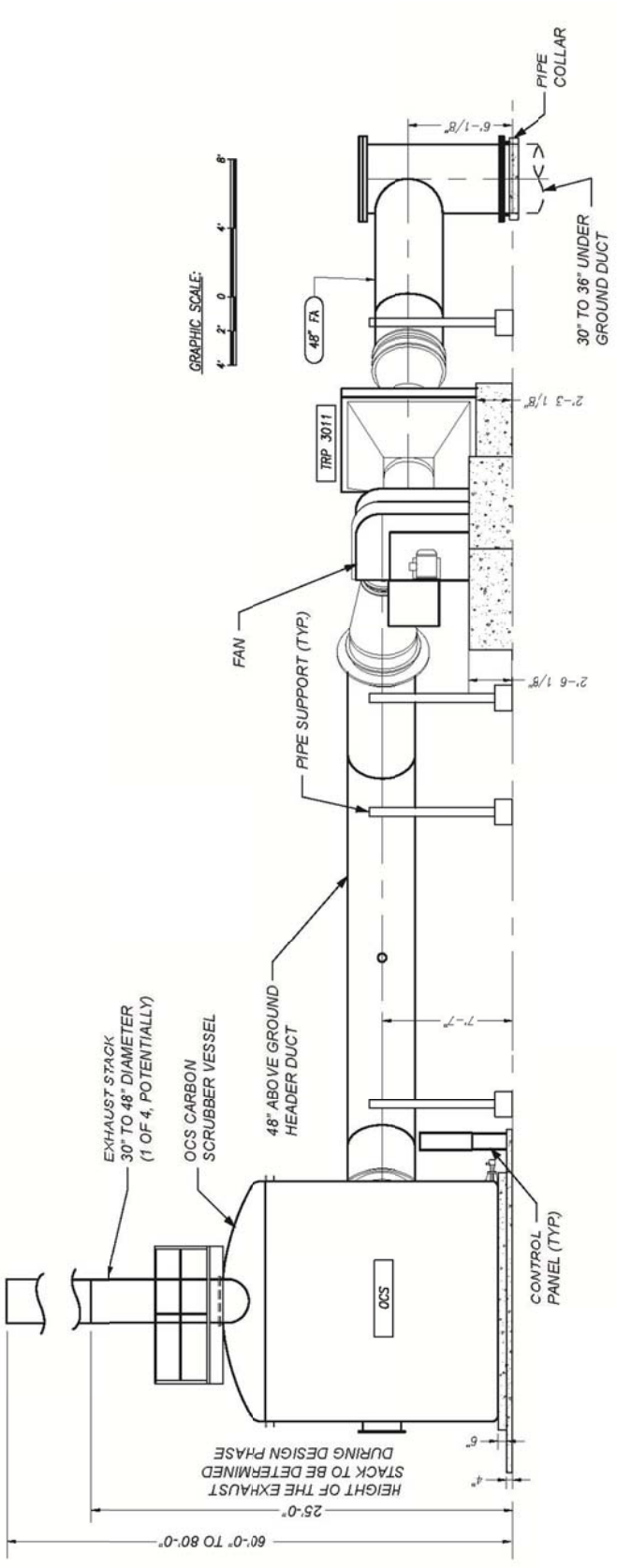
3.3.5 EXHAUST STACKS

Once air is treated it will be released to the atmosphere through an exhaust stack or stacks. A maximum of four exhaust stacks (two per GAC) are proposed. The exhaust stack(s) will be between 30 inches to 48 inches in diameter. Each exhaust stack(s) will likely have a height of approximately 25 feet but could potentially be up to 80 feet in height. The final number, diameter and height of the exhaust stacks will be determined based on system performance modelling conducted during the OCS design phase. See **Figure 3-4**, for an elevation of the proposed OCS. The proposed UV/EPS OCS system is shown in **Figure 3-3**.

3.3.6 PROJECT SITING

Two potential locations at the Sand Island WWTP were considered for the UV/EPS OCS. Based on discussion with the operations staff at the Sand Island WWTP, the preferred location, shown

Figure 3-4: UV/EPS OCS Elevation



in **Figure 3-2**, is the recommended site due to its central location which allows for minimal duct runs and overall reduced airflow headloss of the system. The alternative site, located north of the large electrical transformers was seen as less preferable since it would require air ducts to cross the electrical transformers, which operations staff would like to avoid.

3.4 PROJECT SCHEDULE AND COST

3.4.1 SCHEDULE

Completion of permits	First quarter of 2016
Start of construction	Second quarter of 2016
Completion of construction	Third quarter of 2017

3.4.2 COST

Initial construction costs are calculated at approximately $3.4 million. A preliminary 20-year life-cycle cost estimate for the UV/EPS OCS facility, including initial construction, maintenance and operations, is $4.7 million.

3.5 ALTERNATIVES CONSIDERED

3.5.1 NO ACTION

State legislation requires that a "no-action" alternative be considered to serve as a baseline against which potential actions can be measured. The no action alternative would involve no effort to construct a new OCS at the UV/EPS facility. Under this alternative, project costs and environmental impacts resulting from work activities would be avoided, however no improvements would be made to the existing UV/EPS facility to ensure continued compliance with NSP No. 0216-05-N and State air quality standards. In addition, without a new OCS there will be no reduction in the amount of H_2S odor and odor-related corrosion in the UV/EPS facility which could adversely affect system reliability. Finally, under the no-action alternative, there will be no improvement in the operating conditions in the UV/EPS facility. For these reasons, the "no-action" alternative was rejected from further consideration.

3.5.2 DELAYED ACTION

Delayed action would postpone necessary improvements to an unspecified future date. Under this alternative, environmental impacts resulting from work activities would be delayed, but are anticipated to be generally the same as with the proposed project. No action would be taken in the short term to curtail existing H_2S emissions. Project costs would also be postponed to a later date. It is reasonable to assume that future costs for labor and materials will be greater than present day costs due to inflation. Delayed action would fail to address in a timely manner

existing levels of H_2S emissions, and would result in increased costs when the improvement work is inevitably undertaken. For these reasons, "delayed action" was eliminated from further consideration.

3.5.3 ODOR CONTROL SYSTEM ALTERNATIVES

Four OCS technologies were evaluated for treatment of the UV/EPS airstream at the Sand Island WWTP, including: a chemical scrubber system, two different biological systems, and the proposed activated carbon system. These four alternative systems are described in the following subsections.

Beyond these primary alternatives, two other options were eliminated from consideration based on the low H_2S concentrations recorded at the UV/EPS facility: these include combined systems and chemical addition.

Odor control technologies can sometimes be combined to take advantage of their specific strengths, such as the combined bio-trickling filter (BTF) / GAC systems currently operating at the Sand Island WWTP. However, a combination system was deemed unnecessary for the UV/EPS OCS due to the low H_2S concentrations recorded at the facility.

Chemical addition to the wastewater for liquid-phase odor control were also not considered a viable treatment option due to its high cost and limited availability. In addition to the cost of shipping, transporting, and handling, the chemical dose would need to be extremely high to be effective at the low H_2S concentrations recorded at the UV/EPS. Therefore chemical addition was eliminated from consideration.

3.5.3.1 CHEMICAL SCRUBBER SYSTEM

Chemical scrubbing is an odor control process whereby a chemical solution is distributed over a bed of inert plastic media while foul air is forced up through the media. The most common chemical solution is comprised of caustic (NaOH) and sodium hypochlorite (NaOCl). The media, called "packing", is used to break up the chemical flow and create large liquid/gas interface surfaces where chemical reactions take place. This brings the odorous gas into close contact with the liquid, where the gas is absorbed and oxidized into a stable compound.

Typically, the chemical reaction involves the conversion of an odorous compound to a non-odorous, soluble salt. With sufficient chemicals in solution, the reactions are fast and continuous requiring only two or three seconds of media contact time. Thus, chemical scrubbers are able to quickly respond to changes in odor concentration. Additional considerations pertaining to chemical scrubber systems are as follows:

- Manufacturers will generally guarantee a 99% removal efficiency of inlet H_2S concentrations of 10 ppm or greater. For less than 10 ppm they will only guarantee a discharge concentration of 0.1 ppm. The technology cannot achieve outlet H_2S

concentrations lower than this. Therefore, chemical scrubbers are not ideal for treating low H_2S concentrations (< 10 ppm).

- Compared to other odor control technologies, chemical scrubbers require the smallest land area.
- Chemical scrubbing is the most maintenance intensive odor control process and requires several types of specialized pumps and probes, electrical power and instrumentation systems in a wet and chemically corrosive environment.
- The use of hazardous chemicals is required. Transportation, storage and use of these chemicals on a daily basis requires safety training and procedures, supply of safety equipment and implies a certain level of legal responsibility.
- Chemical scrubbers typically have the highest life cycle cost of all odor control technologies due to chemical, energy, and operations and maintenance costs.
- Chemical scrubbers require large volumes of water, water softeners and conditioning processes along with periodic media cleaning with hydrochloric acid (HCl) to remove scale build-up.

Chemical scrubbers are not considered an appropriate treatment technology for the UV/EPS OCS facility based upon the operational complexity of the system, operations and maintenance requirements, and the cost of chemicals and energy. For these reasons, this alternative was eliminated from consideration.

3.5.3.2 BIOLOGICAL SCRUBBER SYSTEM

Biological odor control systems use common bacteria to remove a variety of odor compounds from the airstream. The foul air is passed up through the media upon which the bacteria live. The odor is removed in a simultaneous two-step process. The first step is the physical absorption of the odor compounds into moisture on the media surface. The second step is the biological uptake and oxidation of the odor compound by the bacteria.

There are two main types of biological technology used to treat wastewater odors: biofilters and BTFs. BTFs are analyzed in **Section 3.5.4.3**.

Biofilters are a type of odor control system that uses microorganisms growing on a soil-based or organic media. Biofilters have been successful in treating H_2S, low concentrations (< 15 ppm) of ammonia, organic-sulfur odors and volatile organic compounds (VOCs) from municipal wastewater treatment plants, pump stations, composting facilities, rendering plants and other solids processing facilities.

Biofilter media can be organic (wood chips, compost) or inorganic (sand, gravel). Inorganic media requires nutrients to be added while organic media does not. However, inorganic media does not require replacement due to compaction, the "greatest enemy" of organic biofilter media. Selecting the right type of media is critical to biofilter success. Incorrect media selection is the most common cause of premature biofilter failure, which subsequently can cause biofilter operation to be maintenance-intensive due to the frequency of media replacement required.

Biofilters require little operations and maintenance, are cost effective, and can be landscaped to blend in with the surrounding area. While biofilters have a higher initial capital cost, they generally have the lowest life cycle cost of all odor treatment technologies. The biggest drawback to biofilters is that they require more land area than vessel technologies and media replacement is a labor intensive process. In addition, biofilters require a steady flow of foul air to sustain the bacteria.

In general, there are two types of biofilter arrangements: in-ground and package systems. In-ground biofilters are constructed in two layers. The top layer consists of the filter medium where most of the odor removal takes place. The lower layer is called the 'plenum' and is used to evenly distribute the air through the unit. The most commonly used air distribution system consists of PVC headers with perforated laterals in an acid-resistant stone bed (i.e. trap rock or silica).

Package biofilters are constructed in prefabricated stainless steel, concrete, or fiberglass containers. The plenum in the bottom of the unit is used to distribute air to the media and drain irrigation water from the vessel. The package units are delivered to the site complete and can be operated once they are filled with media and connected to the system.

Under the low H_2S concentrations observed and expected at the facility (< 5 ppm), a biofilter odor control system would be unable to sustain the bacteria population necessary for effective odor removal. This alternative was therefore eliminated from further consideration.

3.5.3.3 BIO-TRICKLING FILTER (BTF) SYSTEM

BTFs systems use bacteria growing on a surface of plastic or other inert media located inside a vessel. The media is irrigated with a nutrient solution while the foul air flows upward. If treated secondary effluent is available, this water is often used for irrigation instead of the nutrient solution. Since water is a requirement for this technology, the humidity in the influent airstream does not affect H_2S removal performance.

BTFs can be prefabricated or custom designed. Custom BTFs typically use lava rock as media, but improvements in media design have made lava rock less common. Lava rock BTFs can provide 85 to 98% removal of H_2S whereas synthetic plastic media consistently provides removal of 99% and above. Lava rock is also much heavier, requiring stronger containers, and harder to replace when the media has reached the end of its useful economic life. Manufacturers of synthetic plastic media will typically estimate a media lifetime of 10 years, or more. The following are some additional facts about BTFs:

- The BTF technology was invented to remove only H_2S, and is not particularly effective at removing VOCs.
- BTFs require moderate operations and maintenance and may require addition of nutrients if secondary effluent is not available on-site.

- BTFs are effective at removing very high concentrations of H_2S (up to 1000 ppm), but are not effective on airstreams containing less than five ppm H_2S gas.
- Being a vessel technology, the footprint required for a BTF is smaller than what is required for a biofilter.

In order for either a biological scrubber system or BTF system to achieve optimum performance, conditions inside the scrubber must be ideal for bacteria to thrive. This includes supplying a steady stream of H_2S and nutrients, oxygen, and water. Sudden spikes or drops in any of these parameters will affect the scrubber's odor removal ability. In addition, a biological OCS cannot easily adjust to large peaks ("shock loads") or rapid fluctuations in influent H_2S concentrations. A shock load is generally defined as 2.5 to 3 times the average H_2S concentration. Unlike non-biological odor control scrubbers, biological odor control units must be operated continuously under steady-state conditions to maintain the bacteria population and therefore maintain optimum H_2S removal.

In general, biofilters and BTFs have become the odor control technology of choice in the wastewater industry, replacing chemical scrubbers because of their ability to achieve low-cost, high H_2S/odor removal without using hazardous chemicals. BTFs are currently in operation at the Sand Island WWTP at the Headworks, PCs, and Solids OCS with treatment plant personnel being familiar with this technology. However, under the low H_2S concentrations observed and expected at the new UV/EPS OCS facility (< 5 ppm), a biological odor control system would be unable to sustain the bacteria population necessary for effective odor removal. This alternative is therefore eliminated from further consideration.

3.5.3.4 CARBON SCRUBBER SYSTEM

Three different carbon scrubber systems were evaluated for use within the UV/EPS OCS. The alternatives considered, including the recommended high-capacity, non-regenerative catalytic carbon scrubber system, are described below.

Activated Carbon

Activated carbon is frequently impregnated with sodium hydroxide (NaOH) or potassium hydroxide (KOH) to increase the carbon's removal efficiencies and capacities. Impregnated carbons are used in applications where the primary objective is H_2S removal since the impregnate reduces the carbon's capacity to absorb other odorous compounds. Impregnated carbon is often not preferred because of its low ignition temperature when compared to other activated carbons (200 to 225°C). In addition, impregnated carbon can be hazardous for operations staff to handle. For these reasons, activated carbon was eliminated from further consideration.

Virgin Carbon

Virgin carbons have a higher capacity than impregnated carbon to absorb volatile and organic compounds but have a relatively low capacity to absorb H_2S. Therefore, virgin

carbons are less common in wastewater applications. The ignition temperature of virgin carbon is nearly double that of impregnated carbons (380 to 425°C). Because of its low capacity to absorb H_2S, virgin carbon was eliminated from further consideration.

Catalytic Carbon

Catalytic carbon is an unimpregnated activated carbon with enhanced catalytic activity. The catalytic sites on the carbon promote a reaction between H_2S and oxygen, allowing for greater absorption of H_2S than virgin carbon. Catalytic carbon is more expensive than traditional impregnated or virgin carbon but combines the benefits of both. Two types of catalytic carbon were evaluated: partially regenerative and non-regenerative.

Partially regenerative catalytic carbon can be regenerated on-site by washing the carbon with water until other odor compounds exhaust the carbon's capacity. However, water washing requires a significant volume of water, and more maintenance and operating labor than other carbons. For these reasons, regenerative catalytic carbon was eliminated from further consideration.

Non-regenerative catalytic carbon does not require water washing, and achieves high H_2S loading rates without excessive labor or maintenance. Non-regenerative catalytic carbon is currently used in the existing GAC filters at Sand Island WWTP. Procurement, handling and disposal of this material are well-established in plant operations. For these reasons, the recommended carbon media for the UV/EPS OCS is high-capacity, non-regenerative catalytic carbon. See **Section 3.3** for additional description of the preferred alternative.

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SECTION 4
DESCRIPTION OF ENVIRONMENT, POTENTIAL IMPACTS AND MITIGATION MEASURES

4.1 PHYSICAL ENVIRONMENT

4.1.1 CLIMATE

The project is located at Sand Island within an industrialized sector of urban Honolulu on the south shore of O‘ahu. Temperatures range from mid-70° F (degrees Fahrenheit) to the upper 80°s F with occasional reaches into the 90° F and above (Atlas of Hawai‘i, 1998). The average annual temperature recorded at nearby Honolulu International Airport is 77.5° F.

Winds are primarily northeasterly trade winds. Occasionally, during the winter months, storms are accompanied by winds from the south. Average wind speeds for Honolulu range from approximately 10 to 15 miles per hour with occasional gusts of 40 miles per hour and greater (Hawai‘i State Data Book, 2009).

Rainfall for the Honolulu area ranges from approximately four to five inches monthly from November through January, to less than one inch during the drier summer months. Annual rainfall averages approximately 15 to 20 inches throughout the remainder of the year (Atlas of Hawai‘i, 1998).

Average relative humidity in Honolulu has historically ranged from a high of 77.2 percent during January, to a low of 64.8 percent which is typically reached in June. The average annual humidity level is approximately 69 to 70 percent (Atlas of Hawai‘i, 1998).

Impacts and Mitigation Measures

The proposed project will have no significant impacts on the existing climate of the region. The UV/EPS OCS will be designed to carry a minimum wind load of 105 mph in compliance with American Society of Civil Engineers (ASCE) and International Building Code (IBC) standards for wind exposure, and Revised Ordinances of Honolulu (ROH) Chapter 16. Additional mitigation measures are not required.

4.1.2 TOPOGRAPHY, GEOLOGY, AND SOILS

The proposed project will be constructed within the existing Sand Island WWTP on man-made terrain comprised of dredged fill material. The project site is virtually flat with a ground elevation of eight feet above mean sea level (MSL). The existing grades were established during the original construction of the Sand Island WWTP.

Soils underlying the project site are identified as Fill Land, mixed (FL). Fill land, mixed soils occur mostly near Pearl Harbor and in areas of Honolulu adjacent to the ocean. FL soils consist of areas filled with material dredged from the ocean or hauled from nearby areas, garbage and

debris, and general material from other sources. This land type is used for urban development including airports, housing areas, and industrial facilities (USDA 1972). See **Figure 4-1, Soils**.

A 9-acre portion of the land on the south side of the Sand Island WWTP parcel is designated as a Soil Management Area. See **Figure 2-2, General Site Plan** for location of SMA. This area is a semi-permanent containment structure designed to facilitate on-site storage of soils impacted by low-level PCB (polychlorinated biphenyls) and other contaminants that have been excavated from other areas of the Sand Island WWTP. Ground excavations from various improvement projects which contain PCB concentrations less than 25 mg/Kg are stored in the Sand Island WWTP Soil Management Area.

The Soil Management Area is surrounded by a concrete reinforced geomembrane wall. The area contains approximately 80,000 cubic yards (CY) of contaminated soils. Portions of the area have been capped with asphalt or gravel cover and are 10 to 12 feet higher in elevation than the rest of the Sand Island WWTP. Other portions of the area are still open and exposed for acceptance of additional contaminated soil.

A 2009 study of soil issues at the Sand Island WWTP concluded that: 1) the source of PCBs could not be identified; and 2) in addition to PCBs, other contaminants exceeding regulatory thresholds include heavy metals, petroleum hydrocarbons (TPH-gas and TPH-diesel), xylenes and benzo(a)pyrene. Unlike PCBs, these contaminants have been identified only in localized areas and not at levels requiring remediation.

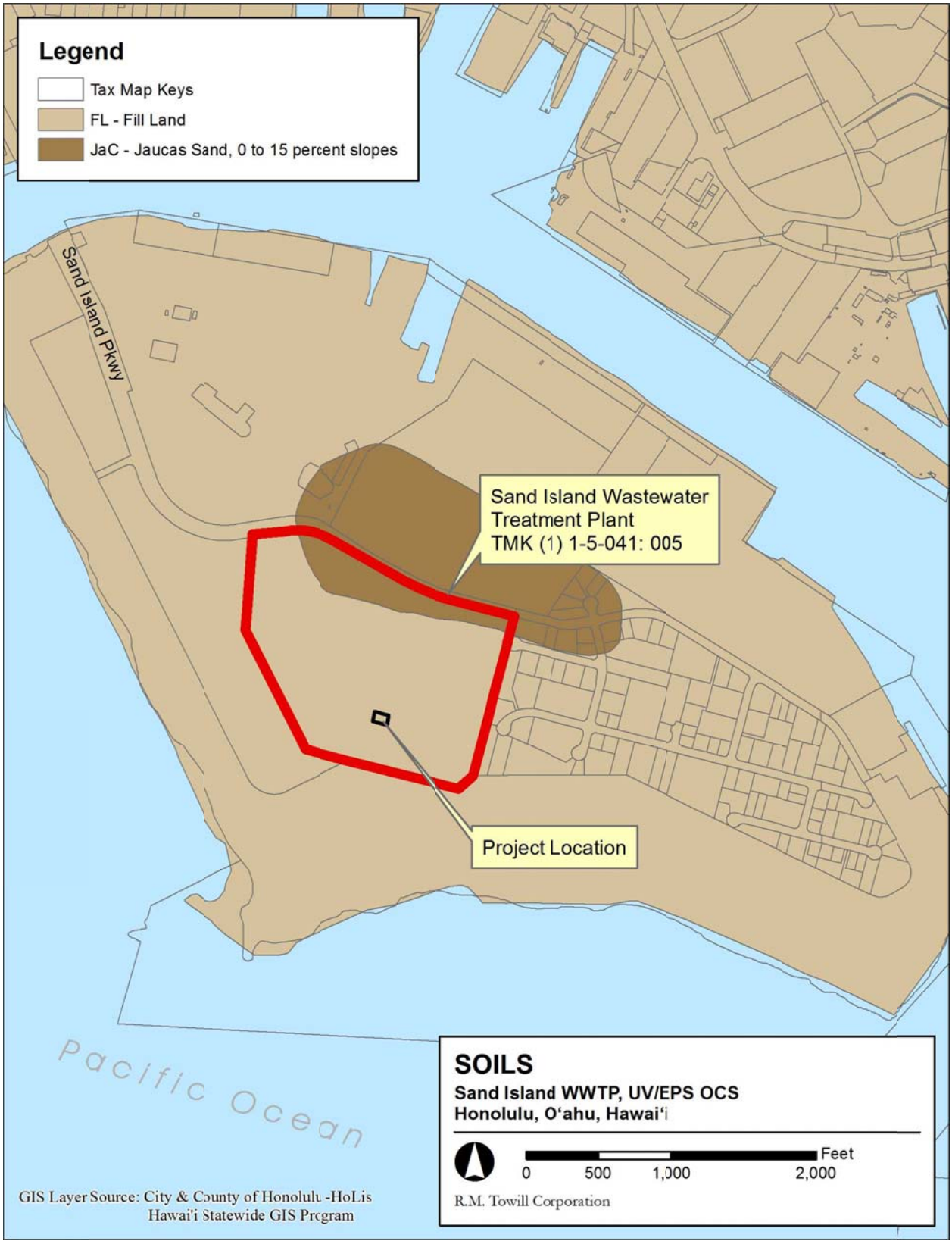
The study noted that human health risk assessments, incorporating data from all known site investigations, concluded that the risk to Sand Island WWTP operators from exposure to various contaminants is "acceptable" under current conditions. This conclusion was based on standards adopted by the US Environmental Protection Agency (EPA) and State DOH.

Impacts and Mitigation Measures

The proposed project will not have a significant effect on the topography or soils of the area. The proposed UV/EPS OCS facility will be similar in shape and size to the existing facilities. The OCS and above ground duct work will be secured atop concrete pads. A stable base of fill material will be required for utility duct lines, including new pipes to connect the existing services to the new facility. Underground ducts sized between 30 to 36 inches in diameter will connect the UV facility and EPS facility with the new OCS. Approximately 170 CY of excavation will be required to install the concrete pad, underground duct work and drain line. See **Figure 3-2**.

Excess soils will be tested, characterized, and disposed of within the Sand Island WWTP Soil Management Area in compliance with requirements of the State of Hawai‘i, DOH. Soil placed within a designated portion of the Soil Management Area must be handled and secured in accordance with the facility's long-term Maintenance and Monitoring Plan in order to prevent and mitigate exposure of contaminated soils. No additional mitigation measures are required or recommended.

Figure 4-1: Soils



4.1.3 SURFACE WATERS AND HYDROLOGY

There are no standing water bodies, streams, or other surface water features in the immediate vicinity of the project site. Rainfall and stormwater runoff from the site is directed to the Sand Island WWTP's existing storm drain system consisting of catch basins and underground piping that discharge into a man-made drainage ditch located at the north side of the facility. The drainage ditch begins east of the existing Flotation Clarifier Nos. 7 and 8 and extends eastward approximately to the edge of the treatment plant property, then northward for approximately 120 feet to a 6-foot by 8-foot box culvert that passes under the Sand Island Parkway and nearby cargo container yard located north of the WWTP, and discharges to Honolulu Harbor.

Impacts and Mitigation Measures

The project is not expected to have adverse effects on surface waters or ground waters. Best Management Practices (BMPs) will be installed and maintained during all phases of construction activities to ensure that sediments and other contaminants are not discharged in runoff water from the site. Implementation of BMPs will serve to protect the wetland conditions in the ditch and the drainage system outfall waters of Honolulu Harbor. Long-term impacts from construction will result in a slight increase of storm water runoff from the construction of an approximately 1,500 SF new impervious structure. The amount of additional runoff from the construction of the OCS is negligible and will be directed to the existing Sand Island WWTP storm drainage system. All effluent from hydrotesting will be contained onsite or processed through the WWTP.

4.1.4 AIR QUALITY

Hawai‘i lies within the Northern Hemisphere Hadley Cell, which is responsible for persistent northeast trade winds. Consequently, air quality is relatively good with the exception of occasional Kona or leeward storms that produce a low pressure system that brings southerly winds and precipitation. Sand Island is located within an industrial area of O‘ahu that generally receives favorable trades.

The State DOH-CAB maintains an air quality monitoring station along Sand Island Parkway, near the entrance to the Sand Island State Recreation Area (SRA) to the east of the project area. The station monitors for ozone (O_3), and PM2.5 (particulate matter 2.5 micron size or smaller), as well as wind speed and direction. Monitoring at this station consistently shows readings well in compliance with State and Federal air quality standards for the measured parameters. The most current published summary of State air quality data books, which includes measurements from the years 2011 to 2013, records no instance where measured parameters at this station exceed air quality standards (DOH, 2013).

The DOH-CAB monitors the ambient air in the State of Hawaii for various gaseous and particulate air pollutants. The Environmental Protection Agency (EPA) has set national ambient air quality standards for six criteria pollutants: carbon monoxide (CO), nitrogen dioxide (NO_2), sulfur dioxide (SO_2), lead (Pb), ozone (O_2), and particulate matter (PM10 and PM2.5). The DOH-CWB established local standards for H_2S concentrations. The Sand Island WWTP

operators monitor and record operational data from the OCSs twice per shift (6 times per day). Recorded data includes total system airflow, first stage influent and effluent H_2S concentrations, daily nutrient and water usage, pH and temperature levels for each effluent stack. The H_2S concentration in the effluent stack is monitored and recorded once per week.

Based on operators' monitoring data and observations of H_2S from the *Phase 1 Condition Assessment*, all three OCSs are performing very well. The first stage BTFs of all three systems, Headworks, Primary Clarifiers and Solids, are removing almost all the incoming H_2S, and the H_2S concentrations recorded at the stack are always below detection limit (< 0.003 ppm).

Existing OCS facilities at the Sand Island WWTP are described in **Section 3.2.3**. The installation of three OCS at the Headworks, Primary Clarifiers and Solids have resulted in improved ambient air quality, which will continue to produce positive long-term impacts on air quality surrounding the treatment plant. A non-compliance event has not been observed at the Sand Island WWTP Since installation of the three OCS at Sand Island WWTP, only one air quality non-compliance event has been observed, in July 2012. However, elevated levels of H_2S have been recorded at perimeter air quality monitoring stations near the UV/EPS facility during routine maintenance activities. As a result, UV/EPS facility operators have had to modify maintenance procedures to ensure that H_2S concentrations remain in compliance. The proposed project is required to ensure continued compliance with air quality standards without compromising operational efficiency at the facility.

The EPA is tasked with establishing ambient air quality standards in accordance with the Clean Air Act and Section 40 of the Code of Federal Regulations, Part 51. The DOH-CAB establishes local air quality standards and administers ambient air quality through the issuing of permits. Non-covered Source Permit (NSP) No. 0216-05-N regulates the impact of the Sand Island WWTP on ambient air quality by requiring monitoring of localized air quality at twelve stations around the perimeter of the WWTP. Prior to the expiration of NSP No. 0216-05-N in August 2014, ENV submitted a re-application which was accepted by DOH. Until a new NSP is issued, the old NSP has been administratively extended by DOH-CAB.

Impacts and Mitigation Measures

The purpose of the project, as described in **Section 2.2**, is to ensure continued compliance with the NSP, reduce odor-related corrosion, and improve operating conditions through the reduction of H_2S emissions at the UV/EPS facility. The new OCS and installation of covers to the existing UV/EPS facility will reduce the amount of H_2S emitted from the operation of the Sand Island WWTP.

Dust and exhaust emissions will be generated from construction vehicles and equipment including backhoes, trucks, pile driving equipment, generators, fuel tanks, etc., during construction. Mitigation of fugitive dust generated during construction will be handled through the use of periodic site watering and applicable on-site BMPs. Additional measures as provided in Chapter 11-60.1, Air Pollution Control, HAR, will also be followed and will include, but not limited to, the following:

- The planning of project construction operations will focus on: minimizing the amount of dust-generating materials and activities; centralizing material transfer points and onsite vehicular traffic routes; and, locating potentially dusty equipment in areas of least impact;
- An adequate water source at the site will be provided prior to start-up of construction activities for dust control wet-down application;
- Disturbed soils will be stabilized as soon as possible by means of grassing, hydromulch, geo-fabric, or other methods of cover;
- Dust will be controlled by stabilizing ground conditions at project entrances to prevent dirt tracking onto adjacent access roads, and by covering or wetting down construction vehicles carrying dust-generating materials; and,
- Adequate dust control measures will be provided on weekends, after hours, and prior to daily start-up of construction activities.

Vehicle and construction equipment exhausts are a source of air pollution. Mitigation of potential adverse effects associated with use of construction equipment, fuel tanks, and vehicle exhausts will be handled through adherence to applicable Federal, State and County regulations. As required, all machinery and vehicles will be required to be in proper working order with appropriate use of mufflers. Construction impacts are short-term impacts that will cease upon completion of project construction.

4.1.5 NOISE

The project site is subject to noise generated from the existing Sand Island WWTP. Other existing sources of noise include overflights of aircraft within the 70 DNL (decibel noise level) noise contour of Honolulu International Airport; industrial activities from light industrial parcels located east of the site involving auto repair, metals recycling and recovery, and related activities; and traffic from the nearby Sand Island Parkway.

Impacts and Mitigation Measures

Construction activity will result in short-term noise impacts associated with the proposed project. Construction related noise will be generated by use of construction equipment and machinery such as bulldozers, backhoes, compressors, and pile driving equipment. Management of short term noise impacts will involve use of mufflers and related noise reduction technologies. As required, construction equipment with mufflers in poor working condition shall be replaced or repaired. Noise generated by the construction activities will be similar in character and intensity as the existing noise conditions in the surrounding industrial areas and is not expected to have an adverse effect.

Once operational, the project facilities will have slight stationary noise from the operation of the electronic fan. 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. No long-term noise impacts are anticipated. No long-term noise mitigation is required.

4.1.6 NATURAL HAZARDS

Tsunami

A tsunami involves the generation of a series of destructive ocean waves that can affect all shorelines. These waves can occur at any time with limited or no warning. Persons in low lying shoreline or beach areas are advised to immediately go to higher ground.

On the Tsunami Evacuation Zone Map prepared by the Department of Emergency Management (DEM), approximately half of the property is located within the evacuation boundary. A majority of the project site is located outside the boundary within an area considered to be safe from wave action and that would not likely be subject to inundation by a tsunami. However, a portion of the project site and the proposed construction work area at the makai end of the project site is located partially within the evacuation zone depicted on the DEM map. See **Figure 4-2, Tsunami Evacuation Zone**.

Seismic Hazard

The Islands of Hawai‘i experience thousands of earthquakes each year but most are so small that they can only be detected by instruments. Some are strong enough to be felt and a few cause minor to moderate damage. Most of Hawai‘i’s earthquakes are directly related to volcanic activity and are caused by magma moving beneath the earth's surface. The seismic design category as defined in the International Building Code 2003 (IBC) is a classification assigned to a structure based on its seismic use group and the severity of potential earthquake ground motion at the site. The seismic design category recognizes that building performance during a seismic event depends not only on the severity of sub-surface rock motion in a particular location, but also on the type of soil upon which a structure is founded. The seismic design category is thus a function of location (seismic zone), building occupancy (seismic use group), and soil type (site class). There are six seismic design categories: A, B, C, D, E, and F, with F having the highest seismic load effect on a structure and A having the lowest seismic load effect. The UV/EPS OCS facility will have a seismic design category rating of D.

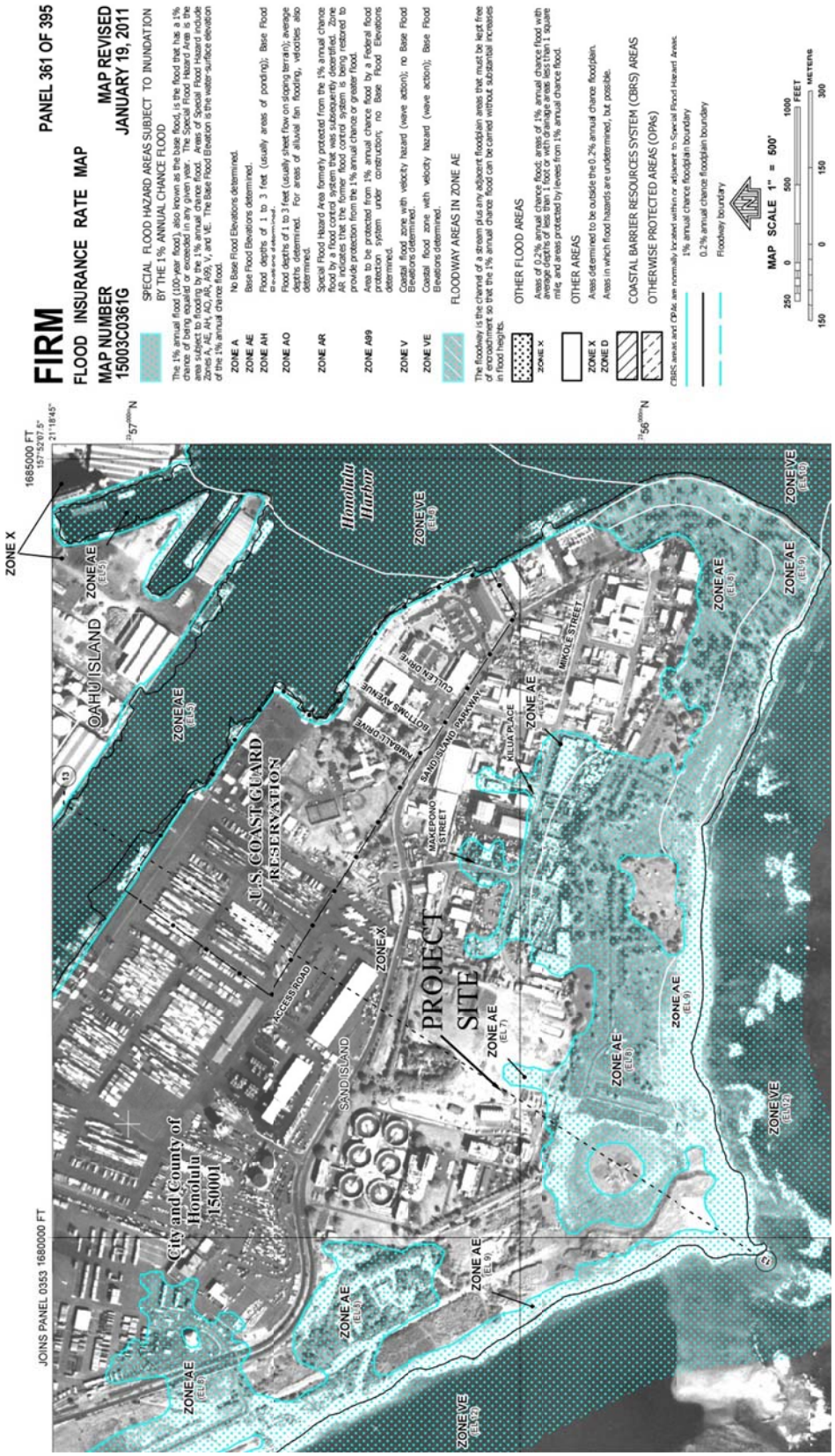
The seismic use group in the IBC corresponds to the occupancy importance factor in seismic design. For proposed project structures, the Seismic Use Group III should be considered (Chapter 16, Table 1604.5 ROH). Seismic Use Group III structures are those having essential facilities that are required for post-earthquake recovery and those containing substantial quantities of hazardous substances. The design of the proposed project will be in accordance with all applicable CCH standards.

Flood

As shown on FIRM panel 15003C0361G, dated January 19, 2011, the project site is located within FEMA Flood Zone X, which designates areas outside of the 0.2 percent annual chance (500 year) floodplain. See **Figure 4-3, FEMA-FIRM Map.**

Figure 4-2: Tsunami Evacuation Zone

Figure 4-3: FEMA-FIRM Map Panel 15003C0361G (January 19, 2011).



Hurricane and Wind

The Hawaiian Islands are seasonally affected by Pacific hurricanes from the late summer to early winter months. The State has been affected by significant hurricanes a few times 1982, ‘Iwa in 1982, ‘Iniki in 1992, and more recently Iselle and Ana in 2014. During hurricanes and storm conditions, high winds can cause strong uplift forces on structures, particularly on roofs. Wind-driven materials and debris can attain high velocity and cause devastating property damage and harm to life and limb. It is difficult to predict these natural occurrences, but it is reasonable to assume that future events will occur. The project area is, however, no more or less vulnerable than the rest of the island to the destructive winds and torrential rains associated with hurricanes.

Sea Level Rise

The site is located at elevation eight feet above MSL within FEMA Flood Zone X. The construction of the UV/EPS OCS facility is not anticipated to have any adverse effects to human health or safety associated with flooding.

Sea level rise could potentially affect all coastal land uses in the State of Hawai‘i, including the Sand Island WWTP. Sea level projections vary widely. Research at the University of Hawai‘i, School of Ocean and Earth Science and Technology indicates that sea level has risen in Hawai‘i by approximately 0.6 inches per decade (1.5 mm per year) over the past century (SOEST, 2012). At this rate, the Sand Island WWTP facilities would remain above sea level into the next century, but would be increasingly susceptible to coastal inundation and flooding due to storm surge and tsunamis.

Impacts and Mitigation Measures

Construction and operation of the UV/EPS OCS facility is not anticipated to create conditions that could exacerbate the effects of a tsunami. In the event of a tsunami warning, personnel at the Sand Island WWTP will follow Tsunami Emergency Procedures in accordance with the Department of Environmental Services, Division of Wastewater Treatment and Disposal, Directive No. O-22, dated October 28, 2011. The Directive establishes procedures for the continued operation of the WWTP before, during and after a tsunami event, and for the safe evacuation and temporary relocation of personnel and equipment from facilities located within the tsunami evacuation zone. No further mitigation measures related to the potential threat of a tsunami are proposed.

Earthquakes pose a threat throughout Hawai‘i, but disruptive seismic events are relatively uncommon in this region. Design and construction of the proposed UV/EPS OCS will be in accordance IBC design category rating D and Seismic Use Group III, per CCH standards. No further mitigation measures related to seismic disturbance are proposed.

The potential for hurricanes, while relatively rare, is present. The site facilities are designed to withstand hurricane force winds. To safeguard against hurricane damage, the new UV/EPS OCS facility will be designed in compliance with ASCE and IBC standards for wind exposure, and will carry a design wind load of 105 mph (Chapter 16, ROH).

When considered over the life cycle of the facility, the potential effects of sea level rise constitute complex planning challenges. The DDC recognizes the importance of planning for sea-level rise and supports the establishment of state-wide policies to guide state and county agency responses and the development of appropriate adaptation measures. The DDC will continue to participate in the State Office of Planning's efforts to develop appropriate policies.

4.1.7 FLORA AND FAUNA

The proposed project is located within an existing wastewater treatment facility in a highly altered environment. Consequently, no rare, threatened or endangered flora or fauna species have been observed to exist at the project site. Species most commonly frequented at the site are typical of urbanized areas and consist of common introduced flora and fauna. Several introduced fauna including the Common Indian Mynah (*Acridotheres tristis*), House Sparrow (*Passer domesticus*), Spotted or Lace-necked Dove (*Streptopelia chinensis*), Zebra Dove (*Geopelia striata*), and Cardinal (*Cardinalis cardinalis*) have been observed at the project location. Mammals such as stray cats, rats, mice and mongooses have also been observed in the vicinity. Vegetation at the project site is limited to sparse, opportunistic growth of introduced weeds and grasses, including Centipede Grass (*Eremochloa ophiuroides*) and Bermuda Grass (*Cynodon dactylon*). No other landscape plantings or natural vegetation occurs in the project vicinity.

Some migratory seabirds and native waterfowl are known to visit areas within the wider coastal region. Endangered native species such as the Hawaiian hoary bat (*Lasiurus cinereus semotus*) and Short-eared owl or Pueo (*Asio flammeus sandwichensis*) do occur on rare occasions in the lowlands of O'ahu, but due to the high level of development and human activity are highly unlikely to visit areas where project activities will occur.

Impacts and Mitigation Measures

Potential adverse effects to flora and fauna are not anticipated. The project site is located within the Sand Island WWTP. No listed or protected plant species are known from the project area. Rare, threatened, or endangered fauna are not known to utilize the site for either habitat or foraging purposes. Construction activities may temporarily disrupt routine behavior of common faunal species in the immediate project area, but will not result in permanent displacement, or adversely affect regional distribution of affected fauna. Once project activities are complete, faunal activity in the vicinity of the work site is expected to return to pre-existing conditions.

Although there is no evidence of migratory seabirds and native waterfowl species using the project site for breeding or habitation, some are known to visit areas within the wider project study area. No adverse impacts resulting from the project are anticipated. However, measures to prevent adverse effects to avifauna from night lighting will include the following:

- During construction activities, all nighttime lighting will be shielded and angled downward to reduce glare and disruption of bird flight.

- Following construction, permanent light sources will be shielded and angled downward to eliminate glare that could disturb or disorient animals.

No other mitigation measures are proposed.

4.2 SOCIO-ECONOMIC ENVIRONMENT

4.2.1 LAND USE

The new UV/EPS OCS is proposed to be installed on the east side of the existing UV/EPS facility located near the south boundary of the Sand Island WWTP. Uses on the surrounding properties include industrial harbor facilities to the north; the Sand Island Industrial Park to the east; the Sand Island State Recreation Area (SRA) to the south-east and immediate south of the WWTP; and the State Department of Transportation, Harbors Division container yard to the west. The project site is located on land zoned I-3, industrial waterfront, by the CCH. See **Figure 4-4**. The existing Sand Island WWTP and the proposed UV/EPS OCS facility are permitted "public uses" in the I-3 zoning district.

Impacts and Mitigation Measures

The proposed UV/EPS OCS facility comprises a needed addition to the existing Sand Island WWTP facilities. The UV/EPS OCS is consistent with the CCH's I-3 zoning district and with the existing Sand Island WWTP facility. It will not result in significant changes in land use at the WTTP and will not detract from or induce changes to the existing land uses on the surrounding properties. No mitigation measures are proposed.

4.2.2 HISTORIC AND ARCHAEOLOGICAL RESOURCES

The project site is situated within artificially created Fill Land, mixed which was entirely submerged by the ocean during pre- and post-contact periods. In addition, the project site was subject to extensive ground disturbance and modification during construction of the existing Sand Island WWTP. As a result, no archaeological sites are known or expected to be encountered at the project site.

Impacts and Mitigation Measures

The proposed project is not expected to result in adverse effects on archaeological resources due to the artificially created, mixed fill soils found at the project site. A review of records with the DLNR, State Historic Preservation Division (SHPD), also indicates that there are no known historic sites at the project location. See **Appendix A** for a consultation letter from SHPD dated March 5, 2001, which states the plant is built upon fill soils and will likely have "no effect" on historic sites. However, in the event of unexpected discovery of historic or archaeological resources, the SHPD will be immediately notified for appropriate response and action.

Figure 4-4: Zoning

4.2.3 CULTURAL RESOURCES AND PRACTICES

The project site and surrounding Sand Island WWTP facility are not used for traditional, customary, or cultural practices. The project site is located on artificially created land comprised of mixed fill soils in an area that was submerged by the ocean until modern times. The site was heavily modified during construction of the Sand Island WWTP. Plants found at the site are introduced grass species not associated with cultural gathering or use activities. The artificial creation and developed condition of the site is not conducive to the presence of wahi pana (storied place) or other sites associated with cultural practices.

Impacts and Mitigation Measures

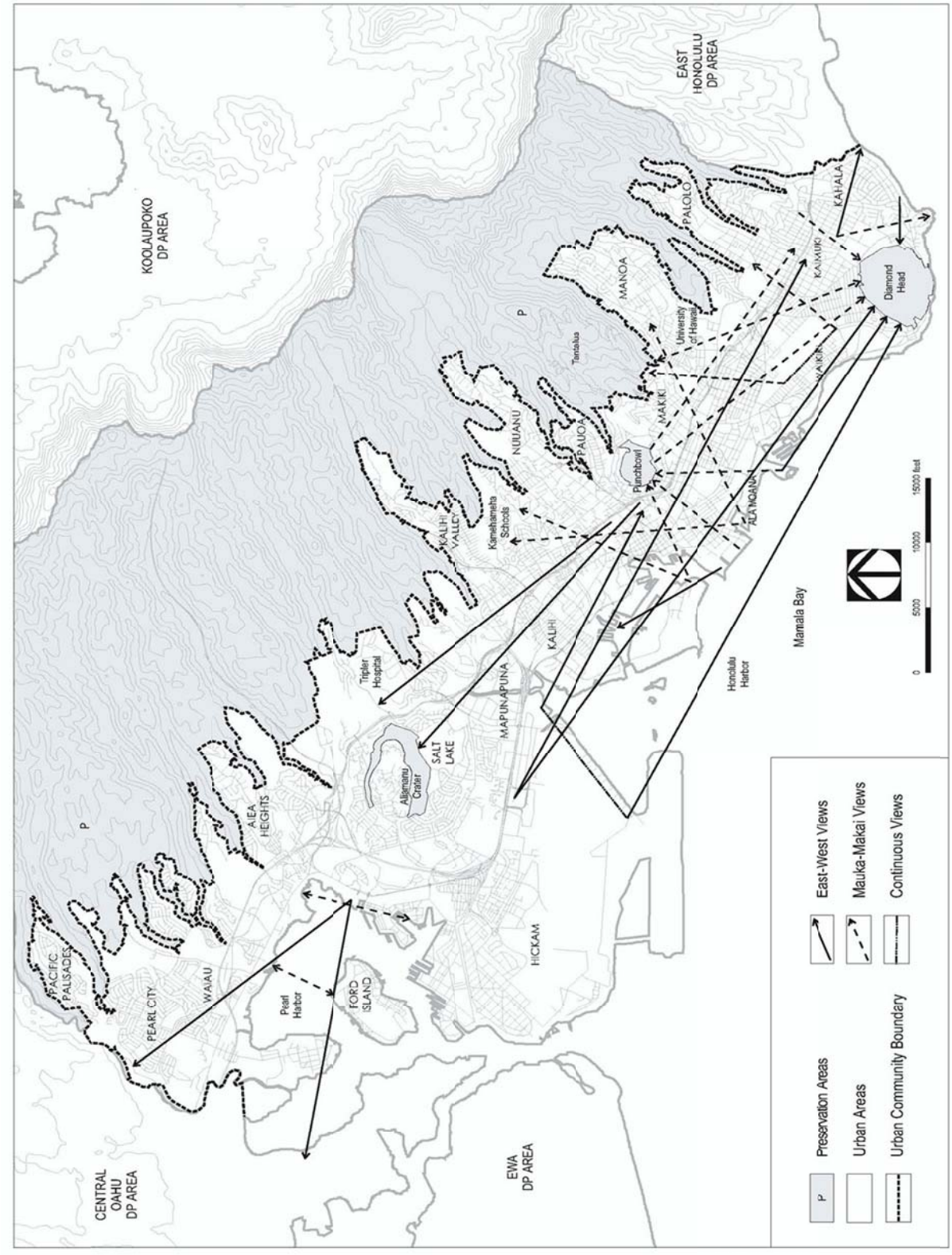
Based on the above, the potential for adverse effects on traditional and cultural practices is not anticipated. Construction of the UV/EPS OCS will not disturb traditional sacred sites or traditional cultural objects; will not result in the degradation of resources used by native Hawaiians for subsistence or traditional cultural practices; will not obstruct landforms or wayfinding features; and will not result in loss of access to the shoreline or other areas customarily used by Hawaiians or others for resource gathering or traditional cultural practices. No mitigation measures are proposed.

4.2.4 SCENIC AND VISUAL RESOURCES

According to the CCH Primary Urban Center (PUC) Development Plan, there are two recognized scenic vistas or view planes which are proximate to the Sand Island WWTP. See **Figure 4-5, 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 Kaka‘ako 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 Sand Island WWTP is located in an industrial harbor area containing large commercial / industrial buildings, fuel tanks, and tall cranes used for container shipping operations. The WWTP facilities include several prominent structures, including clarifier tanks, gas tank (40 feet tall), incinerator building (80 feet tall), and the anaerobic digester towers (113 feet tall). These facilities are visible from the ocean, from Ke‘ehi Lagoon, from various vantages within urban Honolulu and the immediate surrounding properties, and from areas with elevations exceeding 100 feet above sea level, including Punchbowl, Diamond Head, and high-rise buildings along Ala Moana Boulevard and Nimitz Highway. Within view planes from the urban coastal areas laterally down the shoreline or towards the sea, the Sand Island WWTP facilities are subordinate to the much taller cargo facility loading cranes (approximately 250 feet in height) and are consistent in appearance with other industrial facilities on Sand Island. Most of Sand Island, including the project site is zoned to have a 60-foot building height limit.

Figure 4-5: Significant Panoramic Views



Source: DPP, CCH, PUC Development Plan

Impacts and Mitigation Measures

No significant adverse impacts to scenic or visual resources are anticipated from the project. The main visible component of the new facility will be the exhaust stack(s) (see **Section 3.3.5**). A maximum of four exhaust stacks are proposed. The exhaust stacks will be between 30 inches to 48 inches in diameter. The heights of the exhaust stack(s) is preliminarily estimated at 25 feet, however the exhaust stack(s) could potentially be up to 80 feet in height, and therefore may potentially exceed the 60 foot zoning height limit. The final number, diameter, and height of the exhaust stack(s) will be determined based on system performance modeling conducted during the OCS design phase. If the height of the proposed exhaust stack exceeds the maximum building height of 60 feet for the underlying zoning district, a zoning height variance will be required.

The proposed UV/EPS OCS facility will be located near the south side of the WWTP and will be consistent with the industrial character of the existing facilities. The UV/EPS OCS facility, including the exhaust stacks, will be significantly shorter than the nearby Egg-Shaped Digesters and Sludge Storage Tanks (ESD/SST) which measure 113 feet in height. When viewed from nearby areas of urban Honolulu, the proposed new facilities will blend with other existing structures in the industrial area. The visual impact created by the UV/EPS OCS is not anticipated to reduce or impede views from urban Honolulu to the WWTP and surrounding areas. The proposed facility will not disrupt significant panorama views identified in **Figure 4-5**, above.

The UV/EPS is located on the south portion of the WWTP in close proximity to the Sand Island SRA. Some components of the new OCS may be visible from some locations within the SRA, however the new OCS structures will blend in with adjacent buildings and nearby industrial facilities in regards to character and height.

4.2.5 AIR NAVIGATION

Notice to the Federal Aviation Administration (FAA) is required if construction or alteration is proposed at a greater height than an imaginary surface extending outward and upward at a slope of 100:1 for a horizontal surface of 20,000 feet from the nearest point of the nearest runway with at least one runway more than 3,200 feet in actual length, excluding heliports (Title 14 Part 77, 2010).

The proposed UV/EPS OCS facility is located approximately 10,000 feet from the edge of the Honolulu International Airport reef runway. Since the new facility stack is proposed to be less than 100 feet in height, it does not exceed the 100:1 slope requiring notice to the FAA.

Aeronautical studies have been performed by the FAA to determine whether the aeronautical effects of the prior actions would constitute a hazard to air navigation. Previously for structures including the 113 feet tall 84 foot diameter ESDs, the FAA has issued *A Determination of No Hazard to Air Navigation* concluding that the construction will exceed an obstruction standard but would not have a substantial impact to air navigation.

Impacts and Mitigation Measures

The proposed facility stack will be less than 100 feet in height. Based on the FAA's 100:1 slope limitation and a distance of approximately 10,000 feet from the Honolulu International Airport reef runway, notice to FAA is not required. The proposed project would pose no hazard to air navigation. No further action is necessary.

4.2.6 RECREATIONAL FACILITIES

Located on Sand Island at the entrance to Honolulu Harbor, the Sand Island SRA is an approximately 141-acre coastal recreational area managed by the DLNR, Division of State Parks (DSP). Sand Island was extensively used by the military during WWII for coastal defense with bunkers and lookout towers still present throughout the Sand Island SRA. Sand Island was known as Quarantine Island during the nineteenth century when it was used to quarantine ships believed to hold contagious diseases. During World War II, Sand Island was used to camp Japanese-American citizens and foreign nationals from Germany, Italy, and other countries as part of the wartime effort.

Approximately 97 acres of the Sand Island SRA, at the east end of Sand Island adjacent to the Honolulu Harbor Channel, is existing developed park area. Facilities in this area include picnic tables, BBQs, campgrounds, open lawn passive recreation areas, baseball diamonds, exercise and play apparatus, multi-use paths, covered pavilions, shade trees, and comfort stations. The park provides a wide sand beach that is over a half-mile long.

The remaining approximately 44 acres of the Sand Island SRA extends along the south and southwest facing shores of Sand Island, and includes the lands makai of the Sand Island WWTP. The area is relatively undeveloped. Existing facilities include a marine education and training center, boat ramp, canoe pavilion, and parking at the mouth of the Kapālama Basin Kalihi Channel. The remaining area, comprising approximately 30 acres, is currently used as an off-highway vehicle (OHV) recreation area under a pilot project managed by the DLNR Na Ala Hele program. There are no other recreational resources in the vicinity of the project site.

Impacts and Mitigation Measures

The proposed project will not have an adverse effect on recreational resources. The UV/EPS OCS facility will be located near the south boundary of the Sand Island WWTP and blend with other existing industrial facilities in the area. Public access and use of the park and shoreline areas will remain unaffected by project activities. The proposed project will be visible from the park but will be consistent in height and character of adjacent structures. No mitigation measures are proposed or anticipated to be required.

4.2.7 FIRE, POLICE AND MEDICAL SERVICES

The nearest fire station is Kakaʻako Fire Station located on Queen Street approximately one mile from the project site. The closest Police Station is on South Beretania Street, roughly two miles

from the project site. And the closest hospital is The Queen's Medical Center, approximately 1.5 miles from the project site.

Impacts and Mitigation Measures

The proposed project is not expected to have an adverse effect on or result in an increase in calls for fire, police or medical services. Planned improvements will not result in an increase in population. Emergency vehicle access will be maintained throughout the construction site for the duration of the project. Following construction, operation of the UV/EPS OCS facility will not result in significant or noticeable change from existing operations at the WTTP facility. No mitigation measures are required or recommended.

4.2.8 SOCIO-ECONOMIC CONDITIONS

The service area for the existing Sand Island WWTP is metropolitan Honolulu from Moanalua-Aliamanu to Niu Valley-Paiko Peninsula and includes the U.S. Army facilities at Fort Shafter and Tripler Army Medical Center. The facility serves a combined urban resident and visitor population of approximately 403,000. From 2000 to 2008, the service area experienced only a 0.8 percent growth in population, the smallest growth among all counties in Hawai‘i. The rest of O‘ahu gained 5.1 percent in population during the same time period, and statewide population growth was 6.3 percent. The median age among residents in the service area in 2010 is 43 years, three years older than the county-wide median age among residents.

Households in the Sand Island WWTP service area somewhat smaller than households island wide (2.5 versus 2.9 persons per household, respectively). This finding is consistent with the older population, and therefore fewer children present in households. The number of housing units in the service area has remained fairly consistent over the past several years, increasing by less than one percent between 2005 and 2008. Countywide, the number of housing units has increased at double the rate during the same time period. A large proportion of the residents of the service area live in high-rise accommodations, with 44 percent of all the housing units in structures with 20 or more units. These units also tend to be older, with approximately half of them constructed more than 30 years ago.

The Sand Island WWTP service area contains the central business district, Waikīkī and numerous other tourist attractions, industrial areas at Sand Island, Kaka‘ako, and Mapunapuna, and is home to approximately three-quarters of jobs statewide. Waikīkī alone accounts for an estimated eight percent of Hawai‘i's Gross State Product. This region also contains Honolulu Harbor and the Honolulu International Airport, which have relatively small work forces and total revenues, but together facilitate nearly all of the commercial activity in the State. While the number of jobs in the Honolulu area is expected to remain generally consistent for the foreseeable future, the composition of job types will likely change as more commercial and government growth occurs in west and central O‘ahu.

Impacts and Mitigation Measures

The UV/EPS OCS facility will provide needed odor control for the WWTP. The project will not have an adverse effect on area demographics or economic conditions. The urban Honolulu service area of the WWTP has grown relatively slowly compared to the remainder of O‘ahu and the State of Hawai‘i as a whole. The proposed improvements will not accommodate or induce an increase or change in population.

Construction of the UV/EPS OCS facility will result in a temporary, positive economic activity in the form of construction jobs and material procurements. Construction effects will be temporary and will cease upon project completion. Facility operations following construction will remain generally unchanged from existing conditions. No mitigation measures are recommended or required.

4.3 INFRASTRUCTURE AND UTILITIES

4.3.1 TRAFFIC AND TRANSPORTATION SYSTEMS

Sand Island Parkway Road (State Highway 64) is the major thoroughfare serving Sand Island. It is the continuation of Sand Island Access Road, which extends from Nimitz Highway to and across Bascule Bridge, which crosses the Kalihi Channel between Sand Island and Kalihi Kai. The majority of the traffic near the project site is generated by surrounding activities, including the transportation of shipping containers from Honolulu Harbor to other locations; the U.S. Coast Guard Station Honolulu; the Sand Island SRA; and a number of small businesses and industries located in the area.

Impacts and Mitigation Measures

No significant increase in long-term traffic associated with the proposed UV/EPS OCS facility is expected. On a short-term basis, construction-related traffic may be temporarily noticeable on Sand Island Access Road. Construction-related traffic will not significantly alter the total volume of traffic on Sand Island Access Road. The contractor will be required to keep all construction vehicles in proper operating condition and ensure that material loads are properly secured to prevent dust, debris, leakage, or other adverse conditions from affecting public roadways. No other mitigation measures are required or recommended.

Should any proposed construction activities require the temporary closure of a traffic lane, parking, etc., on a local street, a street usage permit from the Department of Transportation Services will be obtained by the DDC.

4.3.2 DRAINAGE SYSTEM

Rainfall and stormwater runoff from the site are directed to the Sand Island WWTP’s existing storm drain system consisting of catch basins and underground piping and discharges into a man-made drainage ditch located at the north side of the facility. The drainage ditch has a valve to

isolate the drainage system. The drainage ditch begins near the existing Flotation Clarifier Nos. 7 and 8 and extends eastward approximately 700 feet to the edge of the treatment plant property, then northward for approximately 120 feet to a 6-foot by 8-foot box culvert. The box culvert passes under the Sand Island Parkway and nearby cargo container yard located north of the WWTP, and discharges to Honolulu Harbor.

Impacts and Mitigation Measures

No adverse effects to the drainage system or receiving waters are expected to result from the project. The project does not involve any modifications to the existing drainage system and will not result in an increase in impervious area. The project contractor will employ construction stormwater BMPs to prevent sediment or other pollutants from discharging in stormwater runoff from the site.

A National Pollutant Discharge Elimination System (NPDES) Permit from the DOH, Clean Water Branch (CWB) for construction stormwater discharges is required when the project's area of ground disturbance, including on-site and off-site staging and stockpile areas, exceeds one acre. The planned OCS construction site, staging area, and soil disposal area within the Sand Island WWTP Soil Management Area, combined, is anticipated to be smaller than one acre. Therefore, an NPDES permit for construction stormwater runoff is not expected to be required. However, if during final design the total disturbed area is determined to exceed one acre in area, then a NPDES permit for construction storm water discharges will be obtained from the DOH CWB.

The project is not anticipated to require construction dewatering. Effluent from hydrotesting will be contained on-site or in tanker trucks and processed on-site at the Sand Island WWTP. Thus, NPDES Construction Dewatering and Hydrotesting permits are not anticipated to be required.

4.3.3 WATER SYSTEM

Water is provided to the Sand Island WWTP through an existing 12-inch water main which is connected to a Board of Water Supply (BWS) 16-inch water main located along Sand Island Parkway.

Impacts and Mitigation Measures

Construction and use of the proposed project will not disrupt or otherwise adversely affect the water system. Construction activities will require use of water for dust control, vehicle wash down, concrete mixing, general housekeeping activities, and for pipe pressure testing. These uses will be intermittent and of short duration and will cease upon project completion. Quantities of water required for these uses are relatively minor. The existing water system has sufficient capacity to accommodate the temporary demands from construction activities.

Upon completion of construction, the proposed UV/EPS OCS facility will not require additional water use for routine operations. The existing water system is adequate to

accommodate the operation of the UV/EPS OCS facility. No mitigation measures are required or recommended.

4.3.4 WASTEWATER SYSTEM

Wastewater generated by personnel and maintenance activities at the Sand Island WWTP is conveyed to the Makai Lift Station located within the Sand Island WWTP property. Influent is then pumped through an 8-inch force main directly to the Sand Island WWTP headworks. The facility provides primary wastewater treatment.

The liquid stream treatment process is described in **Section 3.2**, above. Treated effluent is disposed through a deep ocean outfall. The solids handling building, located close to the project site, contain toilets and wash basins for use by facility personnel.

Impacts and Mitigation Measures

Construction and use of the UV/EPS OCS facility will not disrupt or otherwise adversely affect wastewater systems. Construction activities will not generate a significant quantity of wastewater. Construction personnel will have access to existing restroom facilities or be provided with Port-a-Johns. No other mitigation measures are recommended or required.

4.3.5 ELECTRICAL SYSTEMS

Electrical service for customers on Sand Island is provided by HECO. Sand Island is served by two HECO 46kV transmission lines, Iwilei 1 and 2. These two 46 kV circuits are run overhead through Kalihi Kai, cross Kalihi Channel as submarine cables, and continue underground to the HECO Sand Island Substation located near the east end of Bascule Bridge, adjacent to Kalihi Channel. The Sand Island Substation steps the 46 kV transmission voltage down to 11.5 kV for distribution on Sand Island. The 11.5 kV distribution feeders are designated Sand Island 1 and 2. The feeder lines are overhead lines supported on utility poles.

The two 46 kV lines extend from the HECO Sand Island Substation to the Mokuone Substation to support loads at the Sand Island WWTP. Mokuone Substation steps the 46 kV transmission voltage down to 11.5 kV for distribution on Sand Island. The two 11.5 kV distribution feeders from the Mokuone Substation are designated as Mokuone 1 and 2.

On-site electrical power distribution systems at the Sand Island WWTP consist of a combination of underground HECO-owned and City-owned 11.5 kV, 3-phase systems serviced by the Mokuone 1, and Sand Island 1 and 2 feeder lines. The system is serviced by the Sand Island 1 and 2 11.5 kV feeders which connect to primary switch gear located in the Primary Switching Station Building along Sand Island Parkway. The main switchgear then feeds City-owned and maintained 11.5 kV feeders, transformers, and primary distribution equipment within the Sand Island WWTP. A single HECO meter located within the primary switchgear is used to measure use.

In the event of a utility power outage, a system of backup generators located throughout the Sand Island WWTP automatically starts and provides power to the pumps and essential equipment.

Impacts and Mitigation Measures

Construction of the UV/EPS OCS facility will not adversely affect the provision of electrical power at the facility. The existing HECO system has adequate capacity to meet the power requirements during construction activities. The UV/EPS OCS facility will increase power demand slightly. No mitigation measures are required or recommended.

4.3.6 SOLID WASTE DISPOSAL

Solid waste collection, transport and disposal operations are the responsibility of the CCH ENV Refuse Division. Solid waste is collected and disposed of at either the Waimānalo Gulch Landfill in the ʻEwa district, or the H-Power facility at Campbell Industrial Park. PVT Land Company operates a privately owned and operated, licensed solid waste facility for recovery of recyclable materials and disposal of construction and demolition materials. The PVT Landfill accepts waste on a pre-arranged basis from registered contractors. Waste loads are screened to remove recyclable materials and the remaining wastes are landfilled.

Current annual average biosolids production at the Sand Island WWTP is approximately 12.1 dry tons per day (T/d). Generally speaking, this is the amount of treated biosolids material that leaves the facility. Of this amount, approximately 10 T/d of pelletized biosolids is beneficially reused for land application such as fertilizer. The remaining biosolids, consisting of digested waste cake and rejected pellet product, is directed to the landfill.

Impacts and Mitigation Measures

Construction activities will result in the generation of small amounts of construction and demolition debris. Construction and demolition debris will be disposed of at the PVT Landfill in accordance with CCH and State DOH regulations and provisions of the PVT facility license. Non-construction solid waste generated by project activities may be collected and disposed at the Waimānalo Gulch Landfill or H-Power. Project activities are not expected to generate significant excess excavated material. Excess soils resulting from excavation activities will be disposed by storage at the Sand Island WWTP Soil Management Area.

SECTION 5
RELATIONSHIP TO STATE AND COUNTY LAND USE PLANS AND POLICIES

5.1 THE HAWAI‘I STATE PLAN

The Hawai‘i State Plan, adopted in 1978, and promulgated in HRS, Chapter 226, consists of three major parts:

> Part I, describes the overall theme including Hawai‘i’s desired future and quality of life as expressed in goals, objectives, and policies.
> Part II, Planning Coordination and Implementation, describing a statewide planning system designed to coordinate and guide all major state and county activities and to implement the goals, objectives, policies, and priority guidelines of the Hawai‘i State Plan.
> Part III, Priority Guidelines, which express the pursuit of desirable courses of action in major areas of statewide concern.

The proposed project is consistent with the objectives and policies of the Hawai‘i State Plan. Specifically, the UV/EPS OCS facility provides necessary odor control in the wastewater treatment process. Described below are sections of the Hawai‘i State Plan’s goals, objectives, and policies that are relevant to the proposed action.

> *§226-15 Objectives and policies for facility systems--solid and liquid wastes. (a) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:*
> *(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.*
> *(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.*
> *(b) To achieve solid and liquid waste objectives, it shall be the policy of this State to:*
> *(1) Encourage the adequate development of sewerage facilities that complement planned growth.*
> *(2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.*
> *(3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes. [L 1978, c 100, pt of §2; am L 1986, c 276, §14]*

The proposed project supports the State Plan objectives and policies related to the adequate development of sewerage facilities. The project will provide necessary odor control improvements in the wastewater treatment process.

5.2 STATE LAND USE LAW

The State Land Use Commission classifies all lands in the State of Hawai‘i into one of four land use designations: Urban, Rural, Agricultural and Conservation. The project site is located in the State Land Use Urban District with all adjacent lands also in the Urban District. Wastewater treatment facilities are an approved public use within this District. Land uses within the Urban District are regulated through the CCH Land Use Ordinance, Chapter 21, ROH. No action from the State Land Use Commission is required to implement the proposed project. See **Figure 5-1, State Land Use**.

5.3 CITY AND COUNTY OF HONOLULU GENERAL PLAN

The General Plan, a requirement of the CCH Charter, is a written commitment by CCH to a future for the Island of O‘ahu. The current plan, approved in 2002, is a statement of the long-range social, economic, environmental, and design objectives and a statement of broad policies which facilitate the attainment of the objectives of the plan.

Wastewater facilities are considered utilities. Therefore, the most relevant section of the General Plan is Section V, entitled “Transportation and Utilities”. Also included in discussion of the General Plan is Section VII, Physical Development and Urban Design.

Section V, Transportation and Utilities

Objective B: To meet the needs of the people of O‘ahu for an adequate supply of water and for environmentally sound systems of waste disposal.

Policy 3 - Encourage the development of new technology which will reduce the cost of providing water and the cost of waste disposal.

Policy 5 - Provide safe, efficient, and environmentally sensitive waste-collection and waste-disposal services.

Objective C: To maintain a high level of service for all utilities.

Policy 1 - Maintain existing utility systems in order to avoid major breakdowns.

Policy 2 - Provide improvements to utilities in existing neighborhoods to reduce substandard conditions.

Policy 3 - Plan for the timely and orderly expansion of utility systems.

Objective D: To maintain transportation and utility systems which will help O‘ahu continue to be a desirable place to live and visit.

Policy 1- Give primary emphasis in the capital-improvement program to the maintenance and improvement of existing roads and utilities.

Policy 2 - Use the transportation and utility systems as a means of guiding growth and the pattern of land use on O‘ahu.

Policy 4 - Evaluate the social, economic, and environmental impact of additions to the transportation and utility systems before they are constructed.

Figure 5-1: State Land Use

The proposed project is consistent with Section V, Objective B, concerning environmentally-sound utility systems. Implementation of the project will promote safe, efficient, and environmentally sensitive waste disposal by increasing system reliability through the reduction of H_2S odor and odor-related corrosion impacts. Objective C is aimed at maintaining a high level of service for all utilities under the jurisdiction of CCH, including wastewater collection and treatment. The UV/EPS OCS will aid in providing the means to maintain a high level of infrastructure utility service. With regard to Objective D, maintaining utility systems, the planned improvements are intended not only to maintain, but to improve, wastewater treatment process.

Section VII, Physical Development and Urban Design

Objective A: To coordinate changes in the physical environment of Oahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.

Policy 1 - Plan for the construction of new public facilities and utilities in the various parts of the Island according to the following order of priority: first, in the primary urban center; second, in the secondary urban center at Kapolei; and third, in the urban- fringe and rural areas.

Policy 2 - Coordinate the location and timing of new development with the availability of adequate water supply, sewage treatment, drainage, transportation, and public safety facilities.

The proposed project is consistent with Section VII, Objective A, concerning the potential impacts to the built environment. Construction of the UV/EPS OCS will be undertaken to ensure continued compliance with NSP No. 0216-05-N and mitigate the ongoing emissions of H_2S from the UV/EPS facility. The facility is being constructed within the Primary Urban Center, within the existing Sand Island WWTP.

5.4 CCH ZONING AND LAND USE ORDINANCE

The project site is located in the CCH I-3 (Waterfront Industrial) zoning district, as defined in Chapter 21, ROH, the "Land Use Ordinance" (LUO):

"Sec. 21-3.130 Industrial districts--Purpose and intent.

(f) The intent of the I-3 waterfront industrial district is to set apart and protect areas considered vital to the performance of port functions and to their efficient operation. It is the intent to permit a full range of facilities necessary for successful and efficient performance of port functions. It is intended to exclude uses which are not only inappropriate but which could locate elsewhere. (Added by Ord. 99-12)"

According to ROH Table 21-3, Master Use Table, the Sand Island WWTP facilities, including the proposed UV/EPS OCS, are defined as "public uses and structures" and are permitted in the I-3 zoning district. In accordance with Table 21-3.5, *Industrial and Industrial Mixed Use Districts, Development Standards* from the ROH, the lot area is greater than the minimum 7,500

SF with dimensions complying with the minimum 60 foot width and FAR of 2.5. The project is thus consistent with the purpose and uses of the land's associated zoning district classifications under the CCH LUO. The maximum allowable building height under the existing zoning is 60 feet. If the OCS exhaust stack(s) exceeds 60 feet in height, then a zoning height variance will be required. See **Figure 5-2, Zoning Height Limit**.

5.5 PRIMARY URBAN CENTER (PUC) DEVELOPMENT PLAN

The PUC Development Plan, most recently updated in 2004, implements the objectives and policies of the General Plan for the PUC, which is described as the "cultural, governmental and economic center of both O'ahu and the State." The PUC Development Plan is incorporated into Ordinance 04-14 by reference. The proposed project is consistent with the policies described in the PUC Development Plan, Chapter 4.2, Wastewater.

Section 4.2.2 Policies

- *Implement adequate and timely upgrades/expansion of wastewater treatment facilities to meet the growth demands of the PUC.*

Although the proposed UV/EPS OCS facility does not provide additional capacity for wastewater processing, the proposed project is intended to increase system reliability and maintain a satisfactory standard of treatment processes. The new facilities also will help to ensure that the Sand Island WWTP will be able to continue to provide reliable wastewater treatment in response to planned growth while ensuring that air quality standards and NSP conditions are maintained. The project will not spur additional growth within the urban Honolulu.

The project site is located within land area envisioned for "Major Parks and Open Space" use adjacent to the "Industrial" use on the PUC DP Map A.5: Land Use Map PUC – Central. See **Figure 5-3, Primary Urban Center – Land Use Map.** Wastewater treatment facilities are consistent with the long-range industrial land use vision but not the Major Parks and Open Space suggested by the PUC Development Plan Land Use Map.

The project is consistent with the PUC Development Plan, Section 3.4.2.4, "Military, Airport, Harbor, and Industrial Areas Policy" which states: "Promote compatibility with the surrounding urban and natural environment. Where industrial areas are mixed with or adjacent to residential communities or natural areas, mitigate visual, noise, and other environmental impacts by adopting performance standards." The UV/EPS OCS facility will blend with other existing industrial facilities in the area. Noise in the vicinity of the project site will be generated during construction by heavy equipment, internal combustion vehicles, and power tools used during construction. Due to the distance between the project site and the Sand Island SRA, and the intervening industrial structures, construction-generated noise is not expected to adversely affect public enjoyment of the recreation area. Construction noise will cease upon project completion. Operation of the UV/EPS OCS facility will not result in noticeable changes in sound levels compared to existing operations.

Figure 5-2: Zoning Height Limit

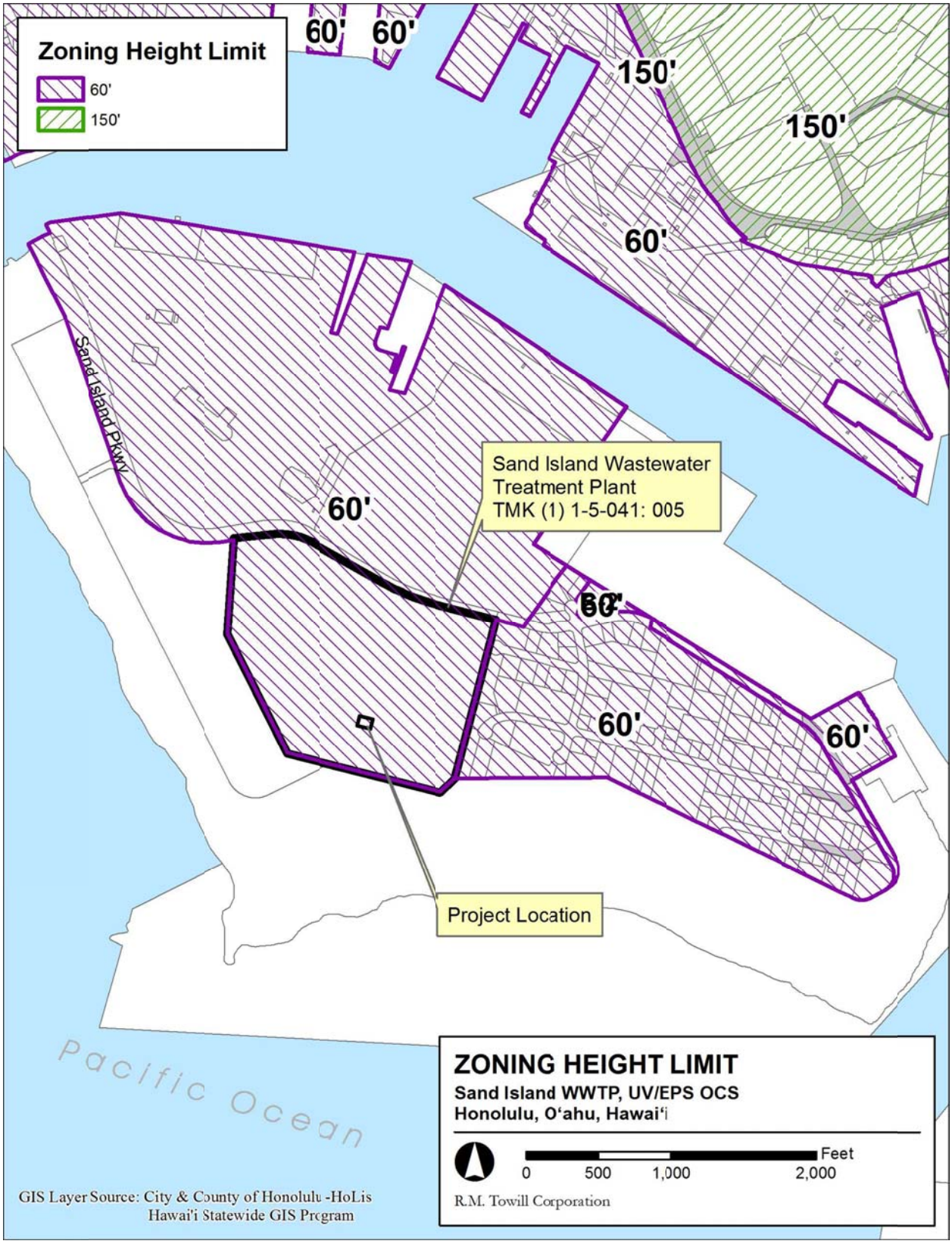
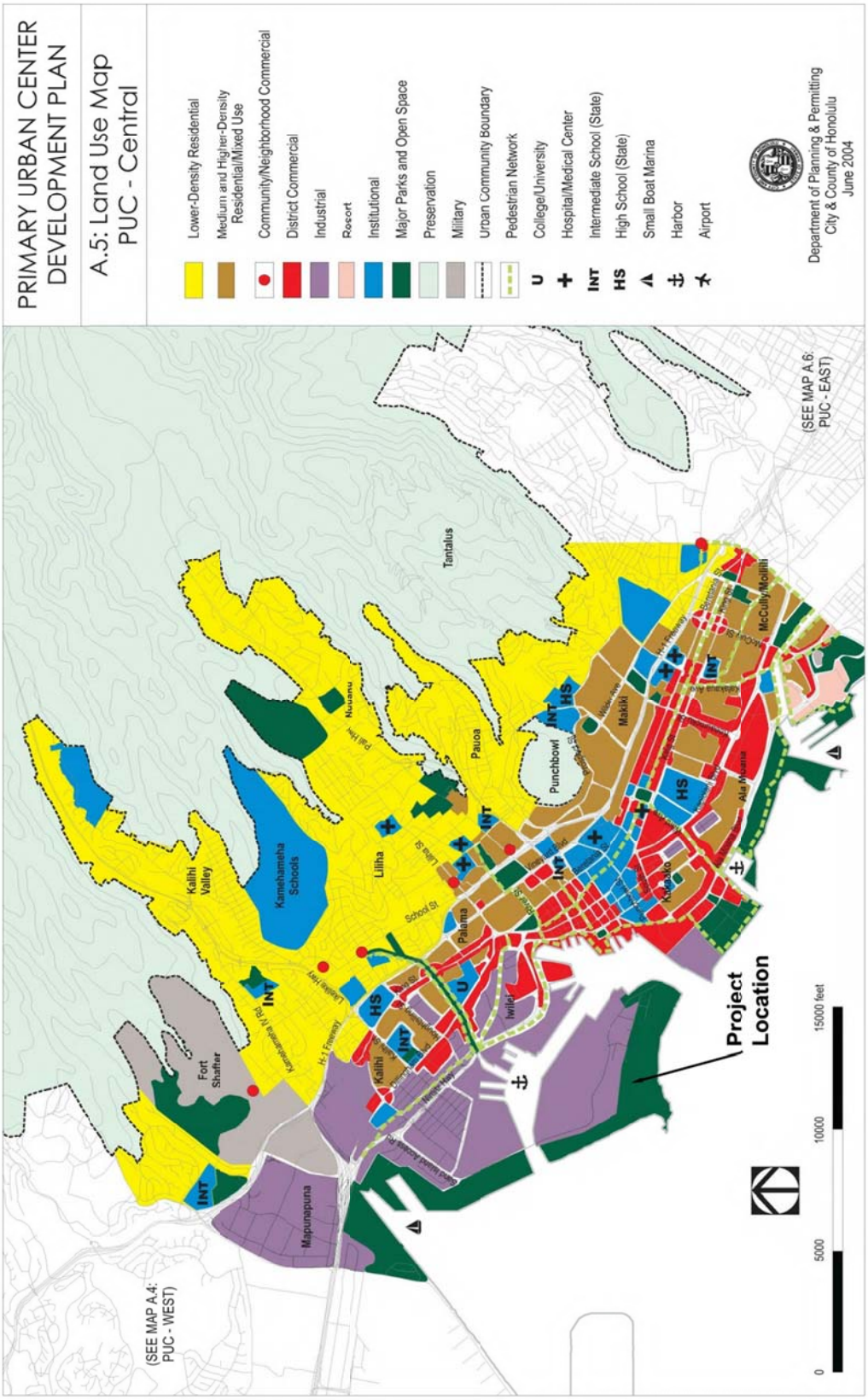


Figure 5-3: Primary Urban Center – Land Use Map



Source: PUC Development Plan (DPP, 2004)

5.7 SPECIAL MANAGEMENT AREA RULES AND REGULATIONS

The City and County of Honolulu has designated the shoreline and certain inland areas of O‘ahu as being within the SMA. SMA areas are designated sensitive environments that should be protected in accordance with the State’s Coastal Zone Management policies, as set forth in ROH, Section 25, Shoreline Management, and HRS, Section 205A, Coastal Zone Management.

The entire area of Sand Island, including the Sand Island WWTP and proposed project site, is located within the SMA. See **Figure 5-4, Special Management Area**.

5.7.1 SPECIAL MANAGEMENT AREA, CHAPTER 25, ROH

The potential effects of the proposed project are evaluated based on the review guidelines in the ROH, Section 25-3.2. The following is a discussion of the applicability of the guidelines to the planned construction of the UV/EPS OCS facility.

> *(a) All development in the special management area shall be subject to reasonable terms and conditions set by the council to ensure that:*
>
> > *(1) 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;*

The project site is located within the Sand Island WWTP facility. Access to beaches, the Sand Island SRA, and natural reserves will not be affected by project activities or operation of the UV/EPS OCS facility following construction.

> > *(2) Adequate and properly located public recreation areas and wildlife preserves are reserved*;

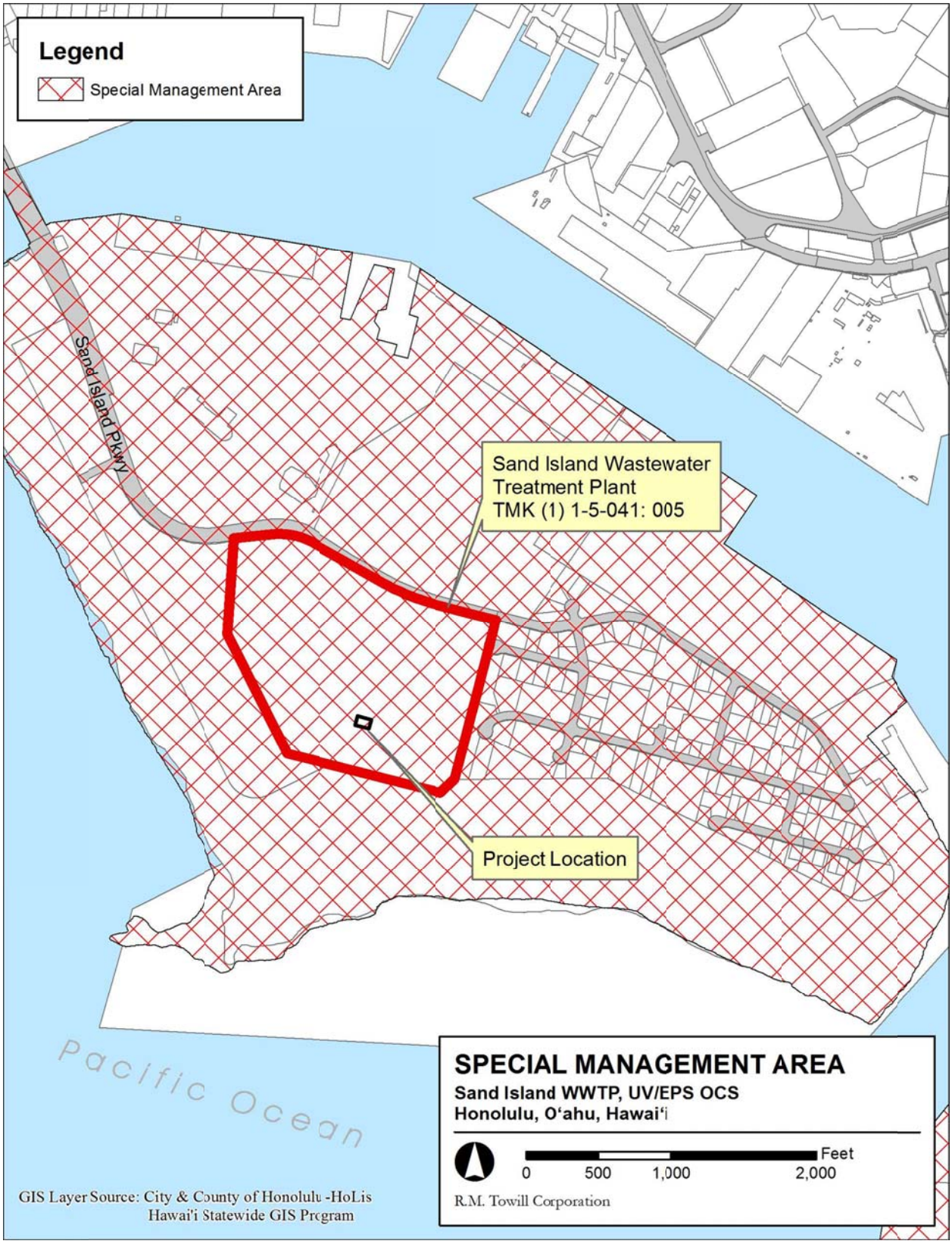
The project consists of improvements within an existing, established WWTP facility. Public recreation areas and wildlife preserves will not be affected by project activities or operation of the UV/EPS OCS facility following construction.

> > *(3) Provisions are made for solid and liquid waste treatment, disposition and management which will minimize adverse effects upon special management area resources; and,*

Construction activities will not generate a significant quantity of wastewater. Construction personnel will have access to existing restroom facilities at the solids handling building or be provided with Port-a-Johns. No other mitigation measures are recommended or required. Construction and use of the proposed project will not disrupt or otherwise adversely affect wastewater systems. The UV/EPS OCS facility will benefit the Sand Island WWTP by minimizing H_2S odor and odor-related corrosion impacts.

Construction activities will result in the generation of small amounts of construction and demolition debris. Construction and demolition debris will be disposed of at the PVT Landfill in accordance with CCH and State DOH regulations and provisions of the PVT facility license.

Figure 5-4: Special Management Area



Non-construction solid waste generated by project activities may be collected and disposed at the Waimānalo Gulch Landfill or H-Power. Excess soils resulting from excavation activities would be disposed by storage at the Sand Island WWTP Soil Management Area.

> *(4) Alterations to existing land forms 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 earthquake.*

The new OCS facility is being constructed in a vacant area adjacent to the existing UV/EPS facility near the south boundary of the Sand Island WWTP. The project site is flat with an existing elevation of approximately eight feet above MSL, and is not susceptible to landslides or erosion. There are no surface waters in the immediate vicinity. BMPs will be undertaken during construction activities to ensure that silt and dust will not escape the project site during ground disturbing activities. The site is located in FEMA Flood Zone X, which designates areas with 0.2 percent annual chance of flooding, thus is exposed to minimal risk from flooding. The site is located outside of the tsunami evacuation zone. All structures will be constructed to meet International Building Code 2003 standards for seismic design category rating 'D', which designates the highest load effect on a structure; and seismic use group III (Chapter 16, Table 1604.5, ROH), which designates essential facilities that are required for post-earthquake recovery and those containing substantial quantities of hazardous substances.

The proposed UV/EPS OCS facility will be consistent with the industrial character of the existing facilities. Many of the existing nearby industrial facilities are of greater height than the proposed OCS exhaust stack including the 80-foot tall Sand Island WWTP clarifier tanks, and the 113-foot tall ESD/SSTs. Also in the vicinity are substantially taller industrial structures and equipment, including the 250-foot tall cargo cranes operated at the Matson Container Yard. When viewed from nearby areas of urban Honolulu, the proposed new facility will blend with other existing structures in the industrial area. The visual impact created by the new facility is 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 visual impacts are not anticipated, due to the fact that other larger structures are present in this industrial setting.

> *(b) No development shall be approved unless the council has first found that:*
>
> > *(1) 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 proposed project is not anticipated to involve a substantial degradation of environmental quality. The site has long been developed and in use as Honolulu's primary wastewater treatment

facility. The planned construction and operation of the UV/EPS OCS facility will result in improved air quality, but otherwise will not substantially alter environmental conditions at the project site. Planning and design for the project includes mitigation measures to prevent or minimize potential adverse environmental effects. The project will not result in cumulative impacts, will not involve a commitment to larger actions, and will not result in the elimination of planning options.

The minor environmental effects from construction activities should be considered in light of the project's benefit of improved odor control for the wastewater treatment operations.

> *(2) The development is consistent with the objectives and policies set forth in Section 25-3.1 and area guidelines contained in HRS Section 205A-26;*

The project is in compliance with the objectives and policies set forth in Chapter 205A-2, HRS, and SMA guidelines contained in Chapter 205-A26, HRS. This document is prepared to summarize the project effects in relation to the SMA guidelines in Section 205A-26, HRS, and Section 25, ROH. See **Section 5.7.2** for discussion of the project's compliance with the State's objectives and policies for the Coastal Zone.

> *(3) The development is consistent with the county general plan, development plans and zoning. Such a finding of consistency does not preclude concurrent processing where a development plan amendment or zone change may also be required.*

The project is in conformance with the General Plan objectives for Transportation and Utilities, as described in **Section 5.3**. The County zoning designation for the project site is I-3, Waterfront Industrial. According to Table 21-3, Master Use Table, of the LUO, the planned UV/EPS OCS facility is considered a "public use and structure" and is a permitted use in the I-3 zoning district, as described in **Section 5.4**. The project site is designated as "Industrial" in the Development Plan for the Primary Urban Center. The UV/EPS OCS facility is in compliance with this designation, as described in **Section 5.5**.

> *(c) The council shall seek to minimize, where reasonable:*
>
> > *(1) Dredging, filling or otherwise altering any bay, estuary, salt marsh, river mouth, slough or lagoon;*

The project does not involve filling or otherwise altering any water body.

> > *(2) Any development which would reduce the size of any beach or other area usable for public recreation;*

The project site is located within the existing Sand Island WWTP and does not affect any beach or other area usable for public recreation.

> > *(3) Any development which would reduce or impose restrictions upon public access to tidal and submerged lands, beaches, portions of rivers and streams within the special management area and the mean high tide line where there is no beach;*

The project is not located where it would reduce or impose restrictions upon public access to any shoreline areas or surface waters.

> *(4) Any development which would substantially interfere with or detract from the line of sight toward the sea from the state highway nearest the coast; and*

The UV/EPS OCS facility will not interfere with or detract from the line of sight from Sand Island Parkway toward the ocean. Waterfront industrial structures in the area, including facilities at Sand Island WWTP, are visible from the ocean, from Keʻehi Lagoon, from various vantages within urban Honolulu and the immediate surrounding properties, and from areas with elevations exceeding 100 feet above sea level, including Punchbowl, Pacific Heights, Diamond Head, and high-rise buildings along Ala Moana Boulevard and Nimitz Highway. Within view planes from the urban coastline towards the sea, the Sand Island WWTP facilities are subordinate to the much taller cargo facility loading cranes and are consistent in appearance with other industrial facilities on Sand Island.

> *(5) 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.*

The project site is located on an approximately 1,500 square foot area within an existing, developed industrial facility at the Sand Island WWTP. The UV/EPS OCS facility is a closed system which will be integrated into the liquid stream process within the Sand Island WWTP. The project will not 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.

5.7.2 COASTAL ZONE MANAGEMENT, CHAPTER 205A, HRS

The State of Hawaiʻi designates the Coastal Zone Management Program (CZMP) to manage the intent, purpose and provisions of Chapter 205(A)-2 of the HRS, as amended, for the areas from the shoreline to the seaward limit of the State's jurisdiction, and any other area which a lead agency may designate for the purpose of administering the Coastal Zone Management program. The following is an assessment of the project with respect to the CZMP objectives and policies set forth in Section 205(A)-2.

1. Recreational resources

Objective: *Provide coastal recreational opportunities accessible to the public*.

Policies:

A) Improve coordination and funding of coastal recreational planning and management; and

B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:

> *(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;*

(ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;

(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;

(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;

(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;

(vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;

(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and

(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.

Discussion:

The proposed project will not have an adverse effect on the adjacent Sand Island SRA or other recreational resources. The project site within the Sand Island WWTP may be visible from limited areas of the park, however due to distance and the general industrial nature of the area, construction activities will not be generally noticeable nor have an adverse effect on recreational activities at the park. Operation of the UV/EPS OCS facility following construction will not result in noticeable change from existing operations at the WWTP. Public access and use of the park and shoreline areas will remain unaffected by project activities.

Water quality will be protected during construction through the application of construction stormwater BMPs to prevent sediment or other pollutants from discharging in runoff from the site.

A NPDES permit from the DOH-CWB for construction stormwater discharges is required when a project's area of ground disturbance, including on-site and off-site staging and stockpile areas, exceeds one acre. The planned construction site staging area, and disposal area within the Soil Management Area for 170 CY of excavated soils are expected to be smaller than one acre. A NPDES permit for construction stormwater is not anticipated to be required for the project. However, if during the design phase it is determined that the area of construction disturbance exceeds one acre, then a NPDES construction storm water discharge permit will be obtained from the DOH CWB.

Construction of the UV/EPS OCS and new connecting lines will require hydrotesting. However, any water from hydrotesting procedures will be discharged into the Sand Island WWTP process stream for treatment. Thus, a NPDES Hydrotesting permit is not required. The project will not involve construction dewatering.

Planned improvements will not alter existing drainage patterns. Operation of the UV/EPS OCS facility following construction will improve air quality at the Sand Island WWTP and help ensure continued satisfactory and reliable standard of wastewater treatment.

2. Historic resources

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

Policies:

(A) Identify and analyze significant archaeological resources;

(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and

(C) Support state goals for protection, restoration, interpretation, and display of historic resources.

Discussion:

The project site is situated within artificially created Fill Land, mixed (FL) which was entirely submerged by the ocean during pre- and post-contact periods. In addition, the project site was subject to extensive ground disturbance and modification during construction of the existing Sand Island WWTP. As a result, no archaeological sites are known or expected to be encountered at the project site.

The proposed project is not expected to result in potential for adverse effects to archaeological resources. This is due to the artificially created, mixed fill soils found at the project site. A review of records with the DLNR, SHPD, also indicates that there are no known historic sites at the project location. See **Appendix A**. However, in the event of unexpected discovery of historic or archaeological resources, the SHPD will be immediately notified for appropriate response and action.

The project site and surrounding Sand Island WWTP facility is not used for traditional, customary, or cultural practices. The project site is located on artificially created land comprised of mixed fill soils in an area that was submerged by the ocean until modern times. The site was heavily modified during construction of the Sand Island WWTP. Plants found at the site are introduced grass species not associated with cultural gathering or use activities. The artificial creation and developed condition of the site is not conducive to the presence of wahi pana (storied place) or other sites associated with cultural practices.

Based on the above, the potential for adverse effects to traditional and cultural practices is not anticipated. Construction of the UV/EPS OCS facility will not disturb traditional sacred sites or traditional cultural objects; will not result in the degradation of resources used by native Hawaiians for subsistence or traditional cultural practices; will not obstruct landforms or wayfinding features; and will not result in loss of access to the shoreline or other areas customarily used by Hawaiians or others for resource gathering or traditional cultural practices. No mitigation measures are proposed.

3. Scenic and open space resources

Objective: *Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources*.

Policies:

(A) Identify valued scenic resources in the coastal zone management area;

(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;

(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and

(D) Encourage those developments that are not coastal dependent to locate in inland areas.

Discussion:

The Sand Island WWTP is located in an industrial harbor area containing large commercial / industrial buildings, fuel tanks, and tall cranes used for container shipping operations. The existing WWTP facilities include several prominent structures, including clarifier tanks, gas tank (40 feet tall), incinerator building (80 feet tall) and ESD/SSTs (113 feet tall). These facilities are visible from the ocean, from Keʻehi Lagoon, from various vantages within urban Honolulu and the immediate surrounding properties, and from areas with elevations exceeding 100 feet above sea level, including Punchbowl, Diamond Head, and high-rise buildings along Ala Moana Boulevard and Nimitz Highway. Within view planes from the urban coastal areas laterally down the shoreline or towards the sea, the Sand Island WWTP facilities are subordinate to the much taller cargo facility loading cranes (approximately 250 feet in height) and are consistent in appearance with other industrial facilities on Sand Island.

The main visible component of the new facility will be the exhaust stacks (see **Section 3.3.5**). A maximum of four exhaust stacks are proposed. The exhaust stacks will be sized between 30 inches to 48 inches in diameter. The heights of the exhaust stack or stacks is preliminarily estimated at 25 feet, however the exhaust stack(s) could potentially be up to 80 feet in height. The final number, diameter, and height of the exhaust stack(s) will be determined based on system performance modeling conducted during the OCS design phase.

The new exhaust stack(s) will be shorter than the many adjacent, existing WWTP structures. The scale, massing, and appearance of the UV/EPS OCS will be consistent with the industrial character of the existing facilities. Due to the location as part of the existing Sand Island WWTP, and industrial context of the surrounding area, the project is not expected to adversely affect scenic and visual resources in the shoreline area. The UV/EPS OCS facility will not obstruct or degrade lateral coastal views or mauka-makai views from the shoreline, Sand Island Parkway, or the Sand Island SRA.

4. Coastal ecosystems

Objective: *Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.*

Policies:

(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;

(B) Improve the technical basis for natural resource management;

(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;

(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and

(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.

Discussion:

The proposed project is not expected to have any adverse effects on marine resources. Project activities do not involve work in coastal waters or alterations to stream channels or other water bodies or water sources. Following project completion there will be no adverse change in wastewater treatment operations or in discharge effluent quantity or quality over existing conditions.

During construction, construction stormwater BMPs will be employed to prevent pollutant discharge in stormwater runoff. Discharge pollution prevention measures will be installed for each project action as required by project activities. Measures to prevent sediment discharge in stormwater runoff during construction will be in place and functional before project activities begin and will be maintained throughout the construction period. Planned improvements will not alter existing drainage patterns or involve modifications to existing drainage systems.

5. Economic uses

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

Policies:

(A) Concentrate coastal dependent development in appropriate areas;

(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and

(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:

(i) Use of presently designated locations is not feasible;

(ii) Adverse environmental effects are minimized; and

(iii) The development is important to the State's economy.

Discussion:

The proposed project is located within the existing Sand Island WWTP and involves a needed upgrade to ensure continued compliance with air quality standards and increase the reliability of the WWTP by reducing H_2S odor and odor-related corrosion impacts. The project has been assessed for social, visual, and environmental impacts in accordance with Chapter 343, HRS. With the implementation of mitigation measures outlined in this document, no adverse impacts are expected to result from this project.

6. Coastal hazards

Objective: *Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution*.

Policies:

(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;

(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;

(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and

(D) Prevent coastal flooding from inland projects.

Discussion:

The project will be undertaken in a manner that will reduce potential harm to life and property from coastal hazards.

- The FEMA FIRM panel 15003C0361G, dated January 19, 2011, in **Section 4.1.6** above, identifies the project site within flood zone X, which designates areas outside of the 0.2 percent annual chance (500 year) floodplain. The project will not exacerbate conditions that would contribute to coastal flooding. No special provisions for flood risk mitigation are recommended.
- The project will not result in changes to existing drainage patterns. Rainfall and stormwater runoff from the site is directed to the Sand Island WWTP's existing storm drain system consisting of catch basins and underground piping, and discharges into a man-made drainage ditch located at the north side of the facility. The drainage ditch connects to a 6-foot by 8-foot box culvert that passes under the Sand Island Parkway and nearby cargo container yard located north of the WWTP, and discharges to Honolulu Harbor. No modifications to the drainage system are proposed.
- On the Tsunami Evacuation Zone Map prepared by the Department of Emergency Management, the proposed project site is located within the evacuation boundary. See **Figure 4-2, Tsunami Evacuation Zone**. In the event of a tsunami warning, personnel at the Sand Island WWTP will follow Tsunami Emergency Procedures in accordance with the ENV, Division of Wastewater Treatment and Disposal, Directive No. O-22, dated October 28, 2011. The Directive establishes procedures for the continued operation of the WWTP before, during, and after a tsunami event, and for the safe evacuation and temporary relocation of personnel and equipment from facilities located within the tsunami evacuation zone.
- The potential for hurricanes, while relatively rare, is present. To safeguard against hurricane damage, the new facility will be designed in compliance with 2003 IBC standards for wind exposure rating C, and will carry a design wind load of 105 mph (Chapter 16, ROH).
- Earthquakes pose a threat throughout Hawai'i, but disruptive seismic events are relatively uncommon in this region. Design and construction of the proposed facility will be in accordance IBC design category rating D and Seismic Use Group III, per CCH standards.

7. Managing development

Objective: *Improve the development review process, communication, and public participation in the management of coastal resources and hazards.*

Policies:

(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;

(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and

(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.

Discussion: All work activities will be conducted in compliance with federal, state, and county environmental rules and regulations. The EA document was prepared to identify and, where necessary, propose mitigation measures to address effects anticipated from the construction and operation of the UV/EPS OCS. The Draft EA was published for public review and comment in compliance with procedures set forth in Chapter 343, HRS.

8. Public participation

Objective: *Stimulate public awareness, education, and participation in coastal management.*

Policies:

(A) Promote public involvement in coastal zone management processes;

(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and organizations concerned with coastal issues, developments, and government activities; and

(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.

Discussion: Public participation in the project is being accommodated during this Draft Environmental Assessment (EA) publication period and during public hearings that are part of the SMA Use Permit application process. Public notice of the proposed action is also achieved through publication of the Draft EA, Final EA and SMA permit application in the OEQC Bulletin. As part of the environmental review process, the public had an opportunity to review and comment on the project during the 30-day public review period. All comments received during the review period have been addressed in writing and are attached to the Final EA document.

9. Beach protection

Objective: *Protect beaches for public use and recreation.*

Policies:

(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;

(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and

(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.

Discussion: The project site is located approximately ¼ mile inland from the shoreline and will not interfere with coastal open space or natural shoreline processes. The project site is situated on flat topography within a developed, industrial wastewater treatment facility. The site is not susceptible to erosion.

10. Marine resources

Objective: *Promote the protection, use, and development of marine and coastal resources to assure their sustainability.*

Policies:

(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;

(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;

(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;

(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and

(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.

Discussion: The proposed project does not involve construction activities within a sensitive marine environment. The project site is located approximately ¼ mile from the shoreline within the Sand Island WWTP. The UV/EPS OCS facility is required to ensure continued compliance with air quality standards and to increase the reliability of the operation of wastewater treatment processes at the facility for the protection of public health and safety and for the protection of the natural environment and water resources.

No listed or protected plant species are known from the area surrounding the project site. Rare, threatened, or endangered fauna are not known to utilize the site for either habitat or for foraging purposes. Although there is no evidence of migratory seabirds and native waterfowl species using the project site for breeding or habitation, some are known to visit areas within the wider project study area. Mitigation measures to prevent adverse effects to avifauna from night lighting will include the following:

- During construction activities, all nighttime lighting will be shielded and angled downward to reduce glare and disruption of bird flight.
- Following construction, permanent light sources will be shielded and angled downward to eliminate glare that could disturb or disorient animals.

No other mitigation measures are proposed.

SECTION 6
NECESSARY PERMITS AND APPROVALS

6.1 CITY AND COUNTY OF HONOLULU

The following permits and approvals are required from the CCH:

Department of Design and Construction

- Final EA FONSI

Department of Planning and Permitting

- Special Management Area Permit
- Construction plan review and approval
- Building Permit
- Grading and Stockpiling Permit
- Zoning Height Variance (if exhaust stack(s) exceed 60 feet in height)

6.2 STATE OF HAWAI‘I

The following permits are required by the State of Hawai‘i:

Department of Health

- NPDES Permit for Construction Stormwater (if project site exceeds one acre)
- Air Permit modification (Non-Covered Source Permit No 0216-05-N)
- Construction plan review and approval

Department of Land and Natural Resources

- Determination of “no effect” on historic properties from the SHPD. See **Appendix A**.

6.3 UTILITY COMPANIES

Construction documents will be reviewed by the following private utility companies:

- Hawaiian Electric Company, Inc.
- Hawaiian Telcom, Inc.

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SECTION 7
ORGANIZATIONS AND AGENCIES CONSULTED DURING THE 30-DAY DEA REVIEW PERIOD

Copies of the Draft EA will be sent to the following agencies, organizations and individuals.

7.1 CITY AND COUNTY OF HONOLULU

Board of Water Supply
Department of Design and Construction
Department of Emergency Management
Department of Environmental Services
Department of Facility Maintenance
Department of Planning and Permitting
- Civil Engineering Branch
- Traffic Review Branch
- Zoning

Honolulu Fire Department
Honolulu Police Department
Department of Transportation Services

7.2 STATE OF HAWAI‘I

Commission on Water Resources Management
Department of Accounting and General Services
Department of Business, Economic Development and Tourism
Department of Defense
Department of Health
- Clean Air Branch
- Clean Water Branch
- Hazard Evaluation and Emergency Response Office
- Indoor and Radiological Health Branch
- Safe Drinking Water Branch
- Solid and Hazardous Waste Branch
- Wastewater Branch

Department of Land and Natural Resources
- Aquatic Resources Division
- Division of Forestry and Wildlife
- Engineering Division
- Land Division
- Office of Conservation and Coastal Lands
- State Historic Preservation Division

State Parks Division
Department of Transportation
Disability and Communication Access Board
Office of Environmental Quality Control
Office of Hawaiian Affairs
Office of Planning

7.3 FEDERAL AGENCIES

Army Corps of Engineers
U.S. Environmental Protection Agency, Region IX
U.S. Fish and Wildlife Service

7.4 ELECTED REPRESENTATIVES AND BOARDS

City Council
Councilmember Kymberly Marcos Pine, Honolulu City Council District 1
Councilmember Ernest Y. Martin, Honolulu City Council District 2
Councilmember Ikaika Anderson, Honolulu City Council District 3
Councilmember Stanley Chang, Honolulu City Council District 4
Councilmember Ann Kobayashi, Honolulu City Council District 5
Councilmember Carol Fukunaga, Honolulu City Council District 6
Councilmember Joey Manahan, Honolulu City Council District 7
Councilmember Brandon Elefante, Honolulu City Council District 8
Councilmember Ron Menor, Honolulu City Council District 9

Neighborhood Boards
Downtown Neighborhood Board No. 13
Kalihi-Palama Neighborhood Board No. 15
Kalihi Valley Neighborhood Board No. 16
Salt Lake – Aliamanu Neighborhood Board No. 18

State of Hawai‘i
State Senator Suzanne Chun Oakland, 13th Senatorial District
State Senator Donna Mercado Kim, 14th Senatorial District
State Senator Glenn Wakai, 15th Senatorial District
State Representative Scott Saiki, 26th Representative District
State Representative Karl Rhoads, 29th Representative District
State Representative Romy Cachola, 30th Representative District

7.5 PRIVATE ORGANIZATIONS / INDIVIDUALS

Hawaiian Electric Company, Inc.
Sand Island Business Association
Kalihi Business Association
Historic Hawai‘i Foundation
Sierra Club Hawai‘i Chapter
The Trust for Public Land Hawai‘i
Ke‘ehi Boat Club

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SECTION 8
DETERMINATION

In accordance with the content requirements of Chapter 343, HRS, and the significance criteria in Section 11-200-12 of Title 11, Chapter 200, it is anticipated that this project will have no significant adverse impact to water quality, air quality, existing utilities, noise, archaeological sites, or wildlife habitat. All anticipated impacts will be temporary and will not adversely impact the environmental quality of the area. According to the significance criteria:

1. Irrevocable commitment to loss or destruction of natural or cultural resources.

The proposed project is not expected to adversely impact any natural or cultural resources. The proposed activity will involve use of fill land on Sand Island. This area contains the existing wastewater treatment plant which has already been subject to extensive grading and land disturbance.

2. Curtailment of the range of beneficial uses of the environment.

The proposed project will involve use of disturbed areas of land within the existing Sand Island WWTP site. No curtailment of the range of beneficial uses that may be exercised at the site are therefore expected. With or without the project, the Sand Island WWTP will continue to handle a major part of the wastewater processing needs of the City and County of Honolulu.

3. Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 343, 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 expressed in Chapter 343, HRS and will ensure continued compliance with air quality standards. The Sand Island WWTP is located on land owned by the State of Hawai‘i and operated by the CCH, ENV in accordance with Executive Order No. 3939 issued in 2002. Potential sources of adverse impacts have been identified and appropriate measures have been developed to either mitigate or minimize potential impacts to negligible levels.

4. Substantially affects the economic or social welfare of the community or state.

The proposed project is expected to enhance the future long-term stability of the City and State through the provision of basic public works infrastructure necessary to the health and welfare, of the community and region.

5. Substantially affects public health.

The proposed project will be constructed in accordance with Federal, State, and City and County of Honolulu, rules and regulations governing public safety and health. Concerns involving air, water, noise, and waste impacts have been addressed in this EA document by use of appropriate mitigation measures as described. Upon completion, the proposed modifications will benefit public health by improving the reliability of the Sand Island WWTP and reducing its emissions of H_2S.

6. Involves substantial secondary impacts, such as population changes or effects on public facilities.

The proposed project will involve the construction of modifications necessary for improved operations of a wastewater treatment facility which is consistent with the General Plan, Population, Objectives and Policies. The proposed project will create short-term employment opportunities, but will not be an inducement to changes in population size or distribution. Public infrastructure requirements, including power and water services, which will be utilized by the project, have been evaluated and no negative adverse effects to the public utilities are anticipated. The project will not influence use by the public of the Sand Island SRA and related shoreline areas. Following project completion there will be no noticeable change in wastewater treatment operations, or in discharge effluent quantity or quality over existing conditions.

7. Involves substantial degradation of environmental quality.

The proposed project will be developed in accordance with the environmental polices of Chapter 343, HRS. The project will help to ensure the continued reliable operation of wastewater treatment processes and mitigate the emission of H_2S from the continued operations of the Sand Island WWTP. No degradation of environmental quality is, therefore, anticipated or expected.

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

Based on the description of the proposed action and mitigation measures identified in this document, the potential for considerable adverse environmental effects and a commitment for larger actions are neither anticipated nor expected.

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

There are no endangered flora or fauna species within the project site.

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

The purpose of the project is to mitigate and improve air quality by reducing H_2S emissions originating at the existing UV/EPS facility at the Sand Island WWTP. As required, any potential impacts to air or water quality or noise levels will be addressed through the implementation of appropriate mitigation measures described in this document.

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

The proposed activity will be undertaken within an existing industrial area which is home to Sand Island WWTP. The site contains no especially sensitive environmental characteristics which would detract from continued use for this activity.

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 public's enjoyment of scenic vistas or mauka-makai and lateral shoreline view planes from urban Honolulu, Sand Island Parkway,

the Sand Island SRA, or other areas in the vicinity of the Sand Island WWTP. The project site at the southern portion of the Sand Island WWTP and may be visible from limited areas of the SRA. The height and character of the exhaust stack(s) will be comparable to the existing buildings. Due to distance and the general industrial nature of the area, construction activities will not be generally noticeable or have an adverse effect on recreational activities at the park.

The scale and massing of the UV/EPS OCS, including the exhaust stack(s), will be similar to the surrounding WWTP facilities and will be consistent in appearance with the industrial character of the existing facilities.

13. Requires substantial energy consumption.

Construction activities will result in a short-term increase in power demand, but the increase will be of short duration and will cease upon project completion. The facilities identified in this project will not consume a substantial amount of energy.

Based on the above evaluation and the information contained in this Environmental Assessment, the DDC has determined that an Environmental Impact Statement (EIS) will not be required and it is anticipated that a Finding of No Significant Impact (FONSI) will be issued for this project.

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SECTION 9
REFERENCES

(CCH GP) City and County of Honolulu General Plan, Amended October 3, 2002, (Resolution 02-205, CD1), Honolulu, HI.

(CCH LUO) City and County of Honolulu Land Use Ordinance, Chapter 21, Revised Ordinances of Honolulu, Honolulu, HI.

(DDC, 2013) Final Environmental Assessment Sand Island Wastewater Treatment Plant Second Egg-Shaped Digester (ESD) and Sludge Storage Tank (SST). R. M. Towill Corporation, prepared for the City and County of Honolulu Department of Design and Construction, January 2013.

(DOH, 2014) Water Quality Standards Map of the Island of Oʻahu, to be used in Conjunction with Hawaiʻi Department of Health, Chapter 54, Water Quality Standards. State of Hawaiʻi, Department of Health. June 2014.

(DOH, 2013) State of Hawaiʻi, Department of Health, Clean Air Branch. Accessed October 20, 2014. http://health.hawaii.gov/cab/

(DPP, 2004) Primary Urban Center Development Plan (ROH, Ch. 24, Article 2). Department of Planning and Permitting, City and County of Honolulu. Honolulu, HI. June 2004.

(FEMA, 2011) Federal Insurance Rate Map (FIRM), City and County of Honolulu. Map No. 15003C0361G, dated January 19, 2011. Federal Emergency Management Agency.

(HoLIS, 2014) Honolulu Land Information System, Geographic Information System. City and County of Honolulu, Department of Planning and Permitting. 2014.

(SOEST, 2013) http://www.soest.hawaii.edu/coasts/sealevel/ reference: Jevrejeva, S., Moore, J.C., Grinsted, A., Woodworth, P. L., 2008 "Recent global sea level acceleration started over 200 years ago?" Geophysical Research Letters, 35:LO8715.

(RMTC, 2012) *Sand Island Wastewater Sewer Basin, Odor and Corrosion Control Study, Phase 1 Condition Assessment.* R. M. Towill Corporation. Prepared for the City and County of Honolulu. (Final) December, 2012.

(USDA, 1972) *Soil Survey of Islands of Kauaʻi, Oʻahu, Maui, Molokaʻi and Lānaʻi, State of Hawaiʻi.* Published by the United States Department of Agriculture (USDA), Soil Conservation Service, in Cooperation with The University of Hawaiʻi Agricultural Experiment Station. Honolulu, HI. August 1972.

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APPENDICES

Appendix A Letter from State Historic Preservation Division, March 5, 2001

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Appendix A

Letter from State Historic Preservation Division, March 5, 2001

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Letter from State Historic Preservation Division, March 5, 2001 – Sand Island WWTP

JEREMIAH J. CAYETANO
GOVERNOR OF HAWAII

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GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES
JANET E. KAWELO
UNNEL NISHIOKA

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
Kakuhihewa Building, Room 555
601 Kamokila Boulevard
Kapolei, Hawaii 96707

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

March 5, 2001

Rae M. Loui, Acting Director
Department of Design and Construction
City & County of Honolulu
650 South King Street, 11th floor
Honolulu, Hawaii 96813

LOG NO: 27043
DOC NO: 0102EL15

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DIV. OF AID
LAND SURVEY
ACQUISITION

Dear Ms Loui:

SUBJECT: **Chapter 6E-8 Historic Preservation Review – Draft Environmental Assessment for the Sand Island Wastewater Treatment Plant, Modifications and Expansion**
Honolulu, Kona, O'ahu
TMK:1-5-041:005

Thank you for the opportunity to comment on the DEA for the Sand Island Wastewater Treatment Plant Modifications and Expansion. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project areas.

The DEA is correct in stating that the project site is comprised of fill lands and mixed fill lands. A review of our records shows that there are no known historic sites at the project location. This area of Sand Island has been in-filled to enlarge the shoreline. Since modifications are proposed for the existing Sand Island WWTP, and the plant is built upon fill soils, we believe that this project will have "no effect" on historic sites.

If you have any questions please call Elaine Jourdane at 692-8027.

Aloha,

Don Hibbard, Administrator
State Historic Preservation Division

EJ:jk