DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 308, KAPOLEI, HAWAII 96707
TELEPHONE: (808) 768-3486 ● FAX: (808) 768-3487 ● WEBSITE: http://envhonolulu.org

KIRK CALDWELL
MAYOR

LORI M.K. KAHIKINA, P.E.
DIRECTOR

TIMOTHY A. HOUGHTON
DEPUTY DIRECTOR

ROSS S. TANIMOTO, P.E.
DEPUTY DIRECTOR

IN REPLY REFER TO:
RH 16-002

July 29, 2015

Ms. Jessica Wooley, Director
State Department of Health
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Wooley:

Subject: Draft Environmental Assessment (EA)
Building for Supplemental Environmental Project at H-Power
Oahu, Ewa, TMK: (1)9-1-026-033, 34, 35

The Department of Environmental Services has reviewed the Draft EA for the subject project, and anticipates a Finding of No Significant Impact. Please publish notice in the next available OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and one (1) copy of the document in pdf format on a CD; and one (1) hardcopy of the Draft EA.

If you have any questions, please contact Mr. Manuel Lanuevo, P.E., LEED AP, Chief of the Refuse Division at 768-3483.

Sincerely,

Lori M.K. Kahikina, P.E.
Director

Enclosures

AGENCY ACTION
SECTION 343-5(b), HRS
PUBLICATION FORM

Project Name: BUILDING FOR SUPPLEMENTAL ENVIRONMENTAL PROJECT AT H-POWER
HRS §343-5 Trigger(s): Use of County lands and funds
Island: Oahu
District: Ewa
TMK: (1)9-1-026-033, 034, 035

Permits: **Building permit, Clearing and Grading permit, a Recycling and Recovery Solid Waste Management Permit, and a Storm Water Notice of General Permit Coverage (NGPC) for an industrial activity.**

Proposing/Determination Agency:

Department of Environmental Services
1000 Uluohia St. Suite 308
Kapolei, HI 96707

Contact:
Manuel S. Lanuevo, PE AP LEED
Chief, Refuse Division
808-768-3406

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

Consultant: N/A

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)**:**

Pursuant to a Consent Decree between the City and County of Honolulu and the U.S. Environmental Protection Agency, the City agreed to a Supplemental Environmental Project that involves installing a solar PV system at H-POWER. The new building is proposed as part of the PV system, and will be sited on adjacent City-owned parcels. The area within the structure will be made available to support additional activities including but not limited to refrigerant reclamation and recycling, metals processing, storage, and vehicle access. The proposed action will comply with all Federal, State, local laws, regulations, ordinances, rules, permits, licenses, and governmental orders and directives.

Traffic and roadway impacts will be minimal with only slightly increased traffic counts, most of which are already occurring within James Campbell Industrial Park. Minor construction impacts will be temporary and will be mitigated with Best Management Practices. There are no cultural, noise, visual, socioeconomic, solid waste, energy, or human health impacts that were not pre-existing. Existing biological and archaeological sanctuaries on the project site are fenced off and will be protected and maintained during construction and once the facility is operational.

Based on the significance criteria set forth in HAR, Title 11, Chapter 200, Environmental Impact Statement Rules, the proposed action is not anticipated to result in significant environmental impacts. In fact, the proposed action is anticipated to result in significant benefits, including recycling activities and increased renewable energy generation, which supports the State of Hawaii's goals for 100% renewable energy production by 2040.

The recommended preliminary determination for the Project is Anticipated Finding of No Significant Impact (AFNSI).

DRAFT ENVIRONMENTAL ASSESSMENT

BUILDING FOR SUPPLEMENTAL ENVIRONMENTAL PROJECT AT H-POWER

Campbell Industrial Park, Kapolei, Hawaii

Proposing Agency:

City and County of Honolulu
Department of Environmental Services
Refuse Division
1000 Uluohia Street, Suite 201
Kapolei, Hawaii 96707

August 8, 2015

HRS 343-5(b) – AGENCY ACTION ENVIRONMENTAL ASSESSMENT CHECKLIST

Name of Action: Building for SEP Project at H-POWER

Island and Tax Map Key: (1)9-1-026-033, 034, 035

Proposing Agency: C&C Honolulu, ENV-Refuse

FOR OEQC USE ONLY
Date Received:
Date Published:
Staff reviewer:
Comment Deadline:
Public Library:

PART A: Draft Environmental Assessment (accompanied by Anticipated Finding of No Significant Impact (AFONSI) determination by the proposing agency with 30-day public comment period)

Identification of Section 343-5(a), HRS, trigger(s):

Applicable sections *(check all that apply)*:

_X_ Use of state or county lands or funds
___ Use in the conservation district
___ Use within shoreline setback area
___ Use of historic site or district
___ Waste water facility, waste-to-energy facility, landfill, oil refinery, or power-generating facility
___ Use in the Waikiki district
___ Amendment to county general plan
___ Reclassification of conservation lands to urban
___ Construction or modification of helicopter facilities

Content Requirements (see HAR §11-200-10, items1 thru 13)

_X_ Notice of determination[2] letter from the proposing agency requesting publication of its notice of determination of an anticipated finding of no significant impact (AFONSI) based on the attached draft environmental assessment.
_X_ Identification of agencies, citizen groups, and individuals consulted in making the assessment
_X_ General description of the action's technical, economic, social, and environmental characteristics; time frame; funding source
_x_ Summary description of the affected environment, including cultural resources and practices, suitable and adequate regional, location and site maps such as Flood Insurance Rate Maps, Floodway Boundary Maps, or United States Geological Survey topographic maps
_X_ Identification and summary of impacts (direct, indirect and cumulative) to the affected environment described above and proposed mitigation measures
_X_ Alternatives considered
_x_ Discussion of findings and reasons supporting the agency anticipated determination
_x_ List of all required permits and approvals (both discretionary and ministerial at the state, federal, or county levels), if any
_x_ Written comments and responses to comments under the early consultation provisions under HAR 11-200-9(a)(1), and 11-200-9(b)(1)

Table of Contents

Table of Figures and Tables

SUMMARY

1.	APPLICANT:	City and County of Honolulu Department of Environmental Services Refuse Division 1000 Uluohia Street, Suite 201 Kapolei, HI 96707
2.	APPROVING AGENCY	City and County of Honolulu Department of Environmental Services 1000 Uluohia Street, Suite 308 Kapolei, HI 96707
3.	ANTICIPATED DETERMINATION	FONSI (Finding of No Significant Impact)
4.	CONTACTS	

State of Hawaii

Department of Agriculture
Scott Enright, Chairperson
1428 S. King Street
Honolulu, HI 96814

Department of Accounting & General Services
Douglas Murdock
Kalanimoku Building
1151 Punchbowl St.
Honolulu, HI 96813

Department of Business, Economic Development & Tourism
Mary Alice Evans, Director
P.O. Box 2359 Honolulu, HI 96804

DBEDT – Energy Division
Mark Glick, Administrator
235 S. Beretania, 5th Floor
Honolulu, Hawaii 96813

DBEDT – Office of Planning
Leo R. Asuncion, Acting Director
State Office Tower
235 S. Beretania Street, 6th Floor
Honolulu, HI 96813

Department of Defense
The Adjutant General, BG. Arthur J. Logan
3949 Diamond Head Road
Honolulu, HI 96816

Department of Education
Kathryn Matayoshi, Superintendent
1390 Miller Street
Honolulu, Hawai'i 96813

Department of Hawaiian Homelands
Jobie Masagatani, Chair
Hale Kalaniana'ole,
91-5420 Kapolei Parkway
Kapolei, HI 96707

Department of Health
Virginia Pressler, M.D.
State of Hawaii- Department of Health
1250 Punch Bowl St # 423 Honolulu, HI 96813-2416

Department of Human Services
Rachael Wong, PhD, Director
1390 Miller Street, Room 209
Honolulu, HI 96813

Department of Labor and Industrial Relations
Leonard Hoshijo, Deputy Director
830 Punchbowl St., Rm. 321
Honolulu, HI 96813

Department of Land and Natural Resources
Carty Chang, P.E.
Kalanimoku Building
1151 Punchbowl Street
Honolulu, HI 96813

DLNR – Historic Preservation Div
Alan Downer, PhD, Administrator
Kakuhihewa Building,
601 Kamokila Blvd., Suite 555,
Kapolei, HI 96707

Department of Transportation
Ford Fuchigami, Director

Aliiaimoku Building
869 Punchbowl Street
Honolulu, HI 96813

Hawaii Housing Fin. and Dev. Corp.
Craig K. Hirai, Executive Director
677 Queen Street
Honolulu, Hawaii 96813

Office of Hawaiian Affairs
Dr. Kamanaopono M. Crabbe, PhD
560 N. Nimitz Hwy., Suite 200Honolulu, HI 96817

UH Environmental Center
Krauss Annex 19
2500 Dole Street
Honolulu, HI 96822

Federal

U.S. Fish and Wildlife Service
Pacific Islands Fish and Wildlife Office
300 Ala Moana Boulevard
Room 3-122, Box 50088
Honolulu, HI 96850

Federal Aviation Administration
Glen A. Martin, Regional Administrator
FAA Western-Pacific Region (AWP-600), Airport Division
P.O. Box 92007
Los Angeles, CA 90009

City and County of Honolulu

Board of Water Supply
Ernie Lau, P.E. Manager and Chief Engineer
630 South Beretania Street Honolulu, HI 96843

Department of Community Services
Gary K. Nakata, Director
715 South King Street, Suite 311
Honolulu, HI 96813

Department of Design and Construction
Robert J. Kroning, Director
650 South King Street, 11th Floor

Honolulu, Hawaii 96813

Department of Environmental Services
Lori M.K. Kahikina, Director
1000 Uluohia Street, Suite 308
Kapolei, HI 96707

Department of Facility Maintenance
Ross S. Sasamura, P.E., Director
1000 Uluohia St. Ste 215
Kapolei, HI 96707

Department of Planning and Permitting
George I. Atta, FAICP, Director
650 South King Street, 7th Floor, Honolulu, HI 96813

Department of Parks and Recreation
Michelle K. Nekota, Director
1000 Uluohia Street, Suite 309
Kapolei, Hawaii 96707

Department of Transportation Services
Michael D. Formby, Director
650 South King Street, Third Floor
Honolulu, Hawai'i 96813

Other

Kapolei Public Library
1020 Manawai St
Kapolei, HI 96707

Hawaiian Electric Company
Power Purchase Contracts Administrator
Nathan Yuen
P.O. Box 2750
Honolulu, HI 96840-0001

5.	TAX MAP KEY NUMBERS:	(1)9-1-026-033, 034, 035
6.	PROPERTY OWNER:	City and County of Honolulu
7.	LAND USE CLASSIFICATION:	I-2 Intensive Industrial
8.	SPECIAL DESIGNATION:	None

Summary Project Description

Pursuant to a Consent Decree ("CD") between the City and County of Honolulu ("City") and the U.S. Environmental Protection Agency ("EPA"), the City agreed to a Supplemental Environmental Project ("SEP") that involves installing a solar PV system at its waste-to-energy facility, H-POWER ("Facility" or "H-POWER"). A new building ("Solar Building") is proposed as part of the H-POWER solar PV system ("Project" or "proposed action"). The Solar Building will be sited on City-owned parcels adjacent to H-POWER. An alternatives analysis, included in this EA, was conducted and identifies the preferred alternative. The Solar Building will support the balance of the PV system required for integration into H-POWER. The area within the structure will be made available to support ancillary H-POWER operations and City needs including but not limited to refrigerant reclamation and recycling, metals processing, storage, and vehicle access.

The proposed action will comply with all Federal, State, local laws, regulations, ordinances, rules, permits, licenses, and governmental orders and directives. This includes but is not limited to a building permit, a clearing and grading permit, a Recycling and Recovery Solid Waste Management Permit, and a Storm Water Notice of General Permit Coverage (NGPC) for an industrial activity.

Traffic and roadway impacts will be minimal with only slightly increased traffic counts, most of which are already occurring at H-POWER, Kaomi Loop or within James Campbell Industrial Park (JCIP). Minor construction impacts will be temporary and will be mitigated with Best Management Practices (BMPs). There are no cultural, noise, visual, socioeconomic, solid waste, energy, or human health impacts that were not pre-existing.

Existing biological and archaeological sanctuaries on the project site are fenced off and will be protected and maintained during construction and once the facility is operational.

Based on the significance criteria set forth in HAR, Title 11, Chapter 200, Environmental Impact Statement Rules, the proposed action is not anticipated to result in significant environmental impacts. In fact, the proposed action is anticipated to result in significant benefits, including recycling activities and increased renewable energy generation, which supports the State of Hawaii's goals for 100% renewable energy production by 2040.

The recommended preliminary determination for the Project is Anticipated Finding of No Significant Impact (AFONSI).

Figure S1: Conceptual Solar Building Layout Plan

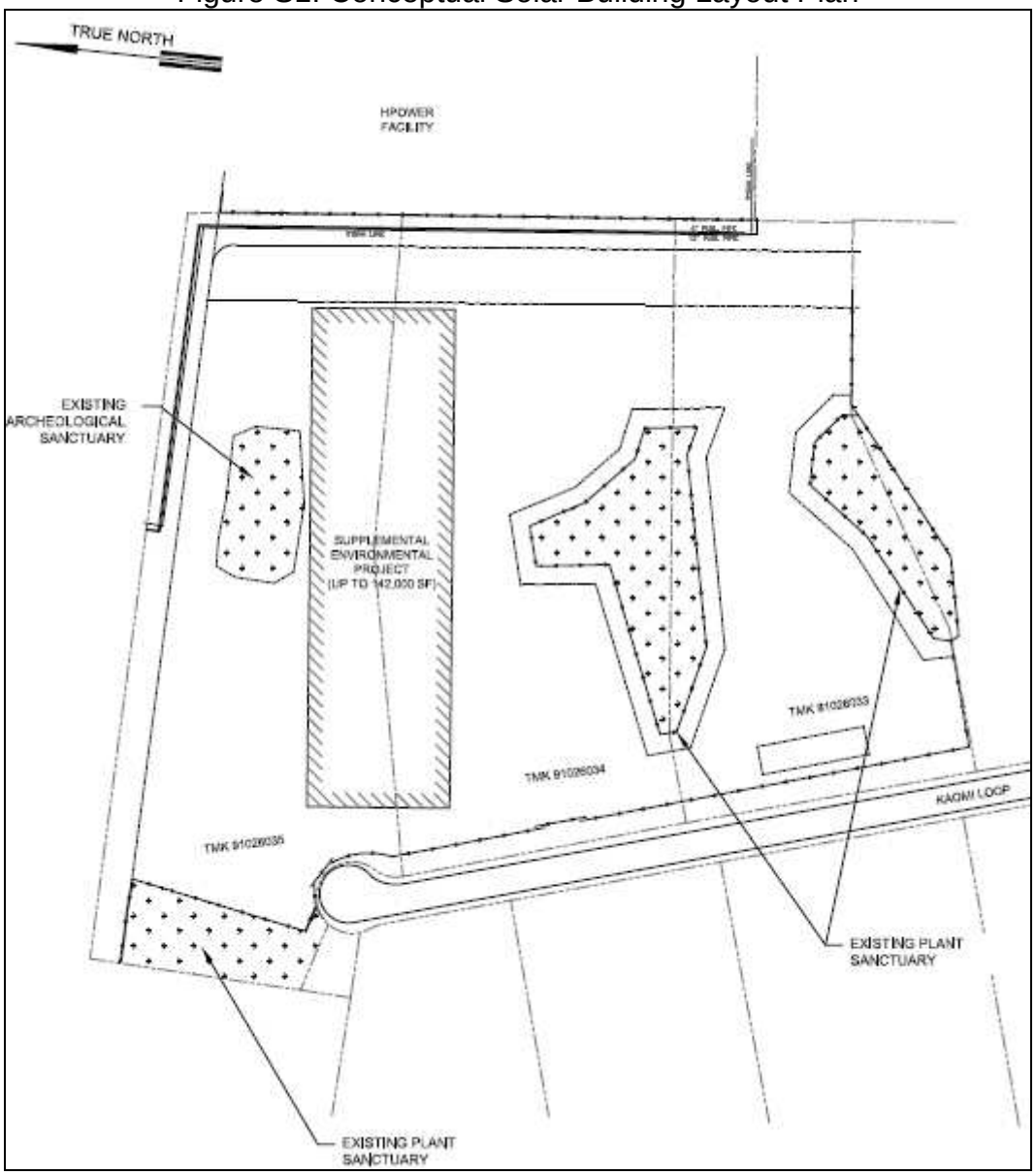
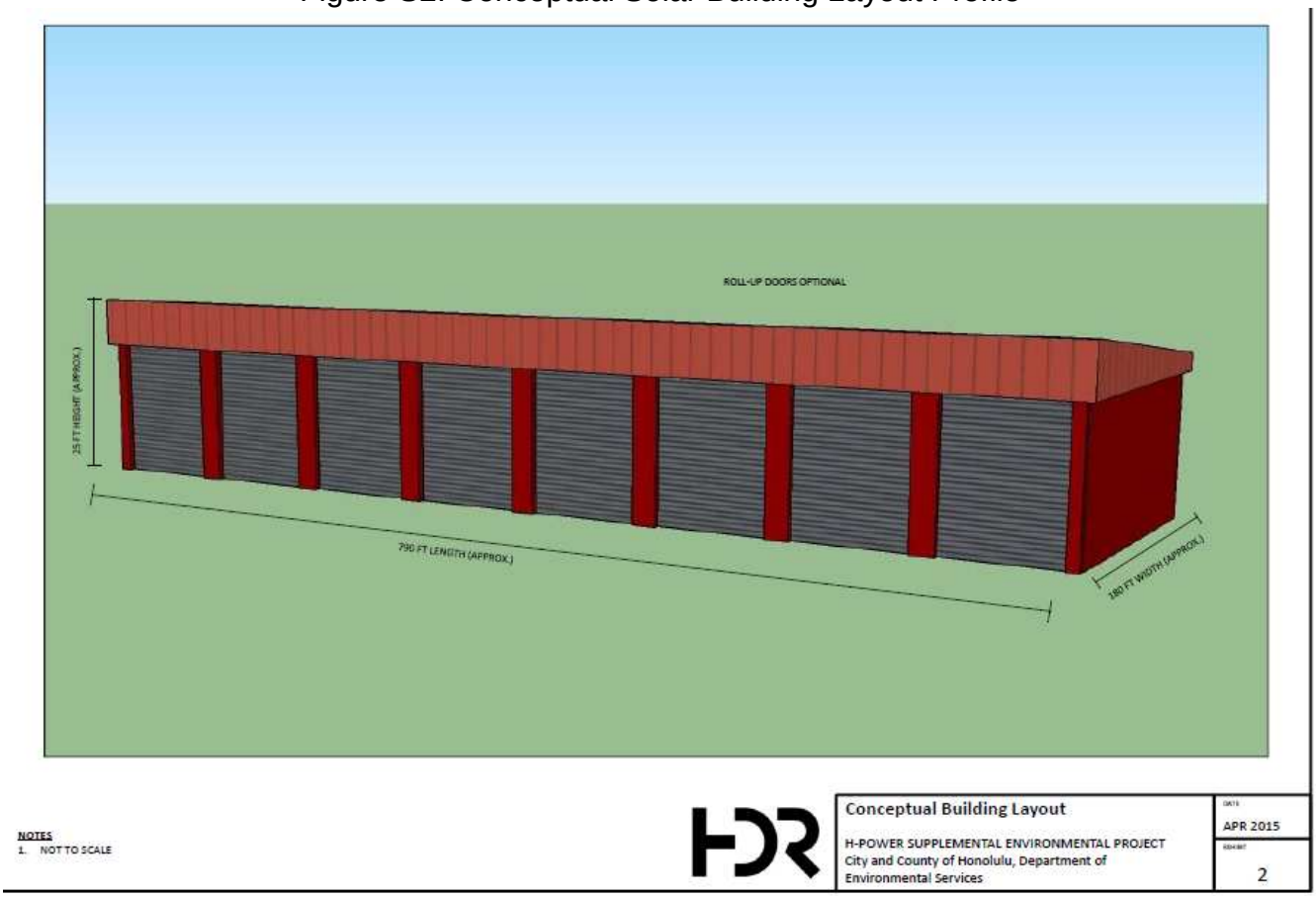


Figure S2: Conceptual Solar Building Layout Profile



Section 1 - General Description

1.1 Technical Characteristics

As referenced above, per the CD, the City shall do a SEP that involves installing a solar PV system at H-POWER. This SEP requires that the total capacity of the PV system will be at least 3.089 Megawatts ("MW") installed direct current (DC) and that at least 15,056 MWh of power will be generated within three years after the completion of the PV system. The City will construct the Solar Building and utilize at least 261,857 square feet of rooftop space for the PV system. Grade level space and building interior space will be used for additional PV equipment and components such as inverters and possibly battery systems. These components are required for a complete system and provide the capability to supply alternating current (AC) power at the required voltage for integration into H-POWER's in-house usage. After the term of the SEP expires, the City plans to continue to utilize the PV system to generate electricity.

H-POWER is a large Municipal Waste Combustor (MWC) designed to manage the municipal solid waste (MSW) for the Island of Oahu. The Facility combusts waste to generate steam, which is then converted into electricity and sold to Hawaiian Electric Company (HECO) for use by Oahu's residents and businesses. A portion of the electricity generated by the waste-to-energy conversion is used internally (in-house) to power the Facility's equipment. This project will offset this in-house power demand.

At full capacity H-POWER consumes about 7 to 8 MW of power for waste processing and associated operations. The City will use the PV-generated power to offset some of H-POWER's in-house power demand, allowing H-POWER to export additional power to HECO. The power produced will also be used to support some of the Solar Building's power needs. Internal metering will be necessary to document the quantity of PV power generated. Power produced by the PV system will be transmitted to the H-POWER Facility via underground power lines.

The City plans to meet the SEP requirements by installing solar panels primarily on the existing H-POWER Facility rooftops. However, there is not sufficient usable space on the existing rooftops for the full generation capacity, and there is not adequate open space on site for installation of remaining panels required. Therefore, the City intends to install additional PV systems and associated equipment atop the Solar Building on City-owned Parcels 33, 34, and 35 (Parcels), which are immediately adjacent to H-POWER. The Solar Building, paved driveway, miscellaneous improvements, and possible future development are shown on the conceptual drawings.

Access to the Solar Building will be provided via a paved driveway constructed from Kaomi Loop. Security fencing and a gate will provide controlled access to the site.

The Solar Building will be designed primarily to support the PV system. The structure will be steel framed with metal roof and siding and supported by a concrete slab on grade foundation. As the lowest cost and best use option, the structure will be

enclosed, with overhead doorways and man doors. This configuration will enable installation of some of PV related equipment in an enclosed and protected space. Significant open space will be available to support ancillary H-POWER operations and City needs, including but not limited to refrigerant reclamation and recycling, metals processing, vehicle access and storage. Basic utility connections including water, sewer, electrical, and telephone will be provided to the building.

Metals processing will include white goods receiving, and refrigerant recovery and recycling. White goods are typically home appliances and include refrigerators, ovens, water heaters, freezers, portable air conditioning units, etc. It is projected that 60,000 units of residential white goods will be received annually (about 3,000 tons per year), half of which contain refrigerants. The white goods will be accepted, sorted, and the refrigerant recovered for recycling by certified technicians. The potential impacts to air quality will be de minimis or negligible because the capture and recovery process will be in accordance with federal EPA regulations related to the Refrigerant Recycling Rule. From a storm water and nuisance perspective, the operations will be enclosed and protected from the elements. Once the white goods are processed, they will be sent to H-POWER for shredding, and the recovered metals shipped for recycling.

The PV panels will be roof mounted for various reasons. Panels that are sufficiently elevated virtually eliminate theft and vandalism or damage from activities conducted in vicinity of a surface PV system. Elevated PV panels also maximize power generation by minimizing the affect of shadows caused by trees, surrounding physical features and future developments. As an example, depending on local wind conditions, water vapor clouds from several water cooling towers (two on the H-POWER site property to the east and one on the AES property to the southeast of the proposed Solar Building) could cause undesirable fluctuations in sun intensity if mounted at ground level. Elevating panels above ground is, therefore, more favorable to achieve reliable and consistent system performance. The slope of the Solar Building roof will improve the angle of the panels to be more closely aligned with the angle of the sun, improving power generation.

The PV system will be installed in two phases. The PV panels will be mounted on metal frames and interconnected to allow transmission of DC current to inverter systems to produce AC power. The AC power will be conditioned and stepped up to the required voltage, and metered and transmitted to the interconnection point(s) in the existing H-POWER electrical system.

Several inverter systems will be required to support all PV systems planned for the H-POWER site and the Parcels. Modifications to the H-POWER electrical system will also be required to accommodate the PV systems. The PV power may be generated as 3-phase 480V or possibly 3-phase 13.8kV power. As needed a step-up transformer will be used. Protection equipment or other provisions required by HECO will be provided. The connections will be completed in a manner to allow for continued operation as much of the time as possible when the H-POWER Facility is operating.

1.2 Traffic and Roadways

For this EA, only traffic impacts from the H1 Freeway Exit to the Parcels on Kaomi Loop in JCIP were considered because of the limited scope of the project. The impact of the solar PV system on traffic and roadways from the freeway exit to the Parcels site is minimal.

When the refrigerant reclamation and recycling facility is operational, additional trucks will be using specifically Kaomi Loop for delivery. Because most of the other recyclers are also located in JCIP, the only additional traffic impacts would be from Hanua Street to Kaomi Loop. The post-recovered white goods ready for further processing at H-POWER will also add to traffic. It is anticipated that about ten vehicle trips per day would result from an active refrigerant reclamation and recycling operation.

When maintaining the PV system, in most instances no traffic would be required on a regular basis for the PV systems to function because the equipment will be automatically operated. Periodic monitoring checks and housekeeping will occur but, on average, should require less than two vehicles per day. Operation and maintenance of the PV system will not significantly increase traffic. No increase in activity would be expected over the life of the operation and would not significantly degrade the level of service (LOS).

It would not be expected this LOS would change significantly over the life of the operation and this quantity of vehicles would not significantly degrade the LOS. Moreover, most of the vehicle trips are already occurring at H-POWER, in JCIP or on Kaomi Loop, and will move to this location once construction is completed.

During construction of the Solar Building project, there will be a slight increase in traffic. Construction is anticipated to last about six months with an expected average vehicle count of about twelve vehicles per day.

A secondary beneficial traffic impact of the refrigerant reclamation and recycling and metals processing may be improvements to residential bulky waste collection, including white goods collection, but these benefits have not been quantified.

1.3 Funding/Source

The estimated capital budget for the whole SEP project is $16M, which is planned to be divided into phases.

Section 2 – Summary Description of Existing Environment

2.1 Description of the Property

The Project is proposed to occur on City-owned parcels adjacent to H-POWER. The site consists of 22.6 acres of industrially zoned and developed property situated within the JCIP in Kapolei and is included in the Long Range Master Plan for the Kapolei area. Figure 2.1-1 depicts both the Master Plan and the JCIP. The Parcels' Tax Map Key numbers are #(1)9-1-026:033, 034, and 035. Figure 2.1-3 depicts the site location on a United States Geological Survey (USGS) topographic map and shows the major roadways in the vicinity. Additional detailed information on the site is presented within this EA.

2.2 Surrounding Land Uses and Zoning

Figure 2.2-1 is an aerial photograph showing the existing industrial nature of the site and the surroundings within 1-mile of the site. As can be seen from the aerial photograph, the surrounding land uses are predominantly industrial in nature. To better illustrate the occupants of neighboring parcels, Table 2.2-1 identifies surrounding land uses and their direction relative to the site.

Table 2.2-1: Neighboring JCIP Lots and their Direction Relative to the Site

Direction Relative to Parcel 30	Neighbor
North	Chevron, HECO
South	Island Recycling, Pacific Allied Products
East	H-POWER, AES
West	BEI

The JCIP, and most of the area within 1 mile of the site, is zoned 1-2 Intensive Industrial, as shown on Figure 2.1-1.

The proposed project is consistent with both the existing and proposed Ewa Development Plan (Ewa DP), which may be viewed at the following web page: http://www.honoluludpp.org/Planning/DevelopmentSustainableCommunitiesPlans/EwaPlan.aspx

The proposed project is also consistent with the Department of Hawaiian Homelands Kapolei Regional Plan (DHHL KRP), which may be viewed at the following web page: http://dhhl.hawaii.gov/po/regional-plans/oahu-regional-plans/. The section "Infrastructure - Energy" on Page 19 of the DHHL KRP describes DHHL's private and public renewable energy partnerships in the Kapolei/Kalaeloa region, including a biomass to biofuels project in JCIP.

The proposed project will provide renewable energy generation and support H-POWER operations. The Ewa DP and DHHL KRP support these efforts.

The proposed project will comply with federal, state, and local permits and approvals. Each of the required permits and approvals is addressed in this EA in Section 7.

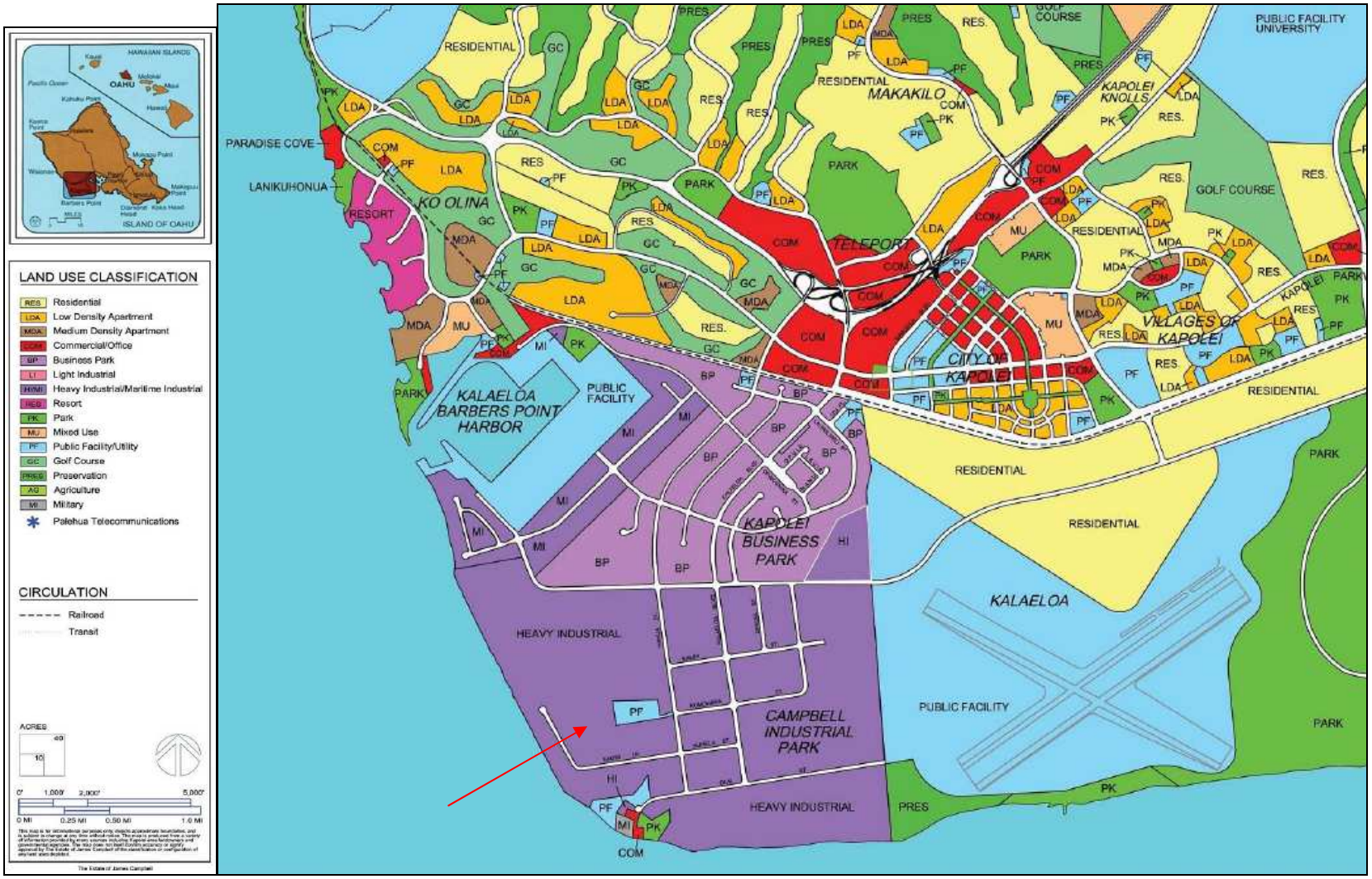


Figure 2.1-1: Long-Range Master Plan for the Kapolei Area (http://www.kapolei.com/master_plan.cfm)

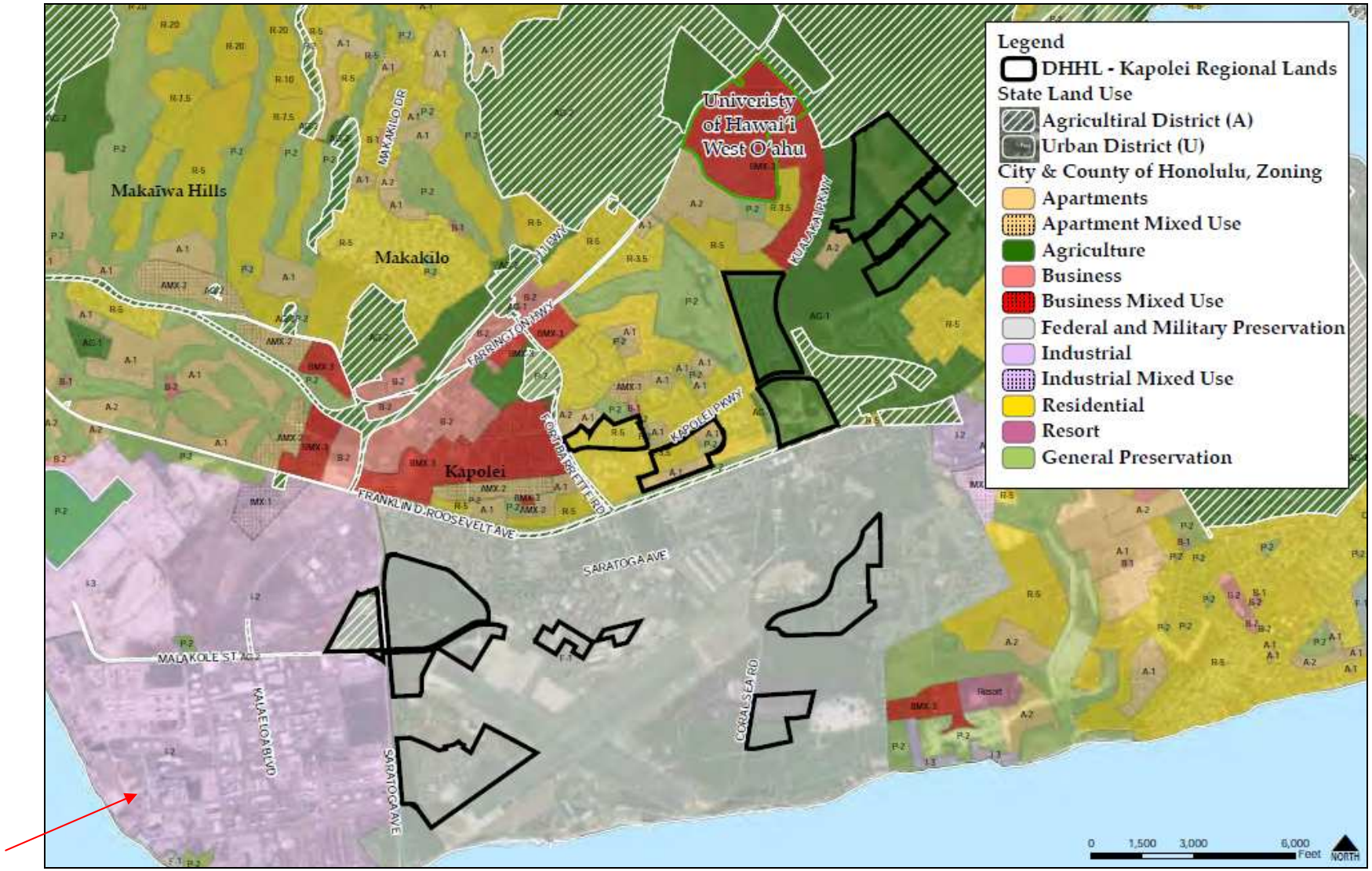


Figure 2.1-2: Department of Hawaiian Homelands Kapolei Regional Lands

Figure 2.1-3: USGS Topographic Map (UTM NAD83, Zone N, 2000)

Figure 2.2-1: Satellite imagery of JCIP area

2.3 Existing Conditions - Geology and Soils

This section discusses the existing geologic environment. Baseline conditions are presented in the context of prior site work that has impacted original conditions on the Parcels.

The Hawaiian Islands are the exposed parts of the Hawaiian Ridge, a large volcanic mountain range extending northwestward across the central Pacific Ocean (USGS 1999). The island of Oahu is the eroded remnant of two volcanoes – the older Waianae Volcano in the west and the larger Koolau Volcano in the east. Clastic sedimentary deposits, which primarily are alluvium derived from erosion of the volcanic rocks, have accumulated on the flanks of the island. In some places, the clastic sediments are interbedded with coralline limestone that formed as reef deposits in shallow marine waters. Oahu has larger areas of sedimentary deposits than any other Hawaiian island and these deposits contain coralline limestone in coastal areas (USGS 1999).

The Parcels are situated within the JCIP in Kapolei, Hawaii. This area is underlain by the Ewa Plain, which is an emerged coral-algae limestone reef formed during the Pleistocene period when the ocean level was at higher elevation (C.E. Maguire 1986). The Ewa Plain extends from sea level at the coastline to approximately 3 to 5 miles inland. Figure 2.3-1, excerpted from a 1986 geotechnical report by C.E. Maguire, presents the extent of the emerged reef deposits on the island of Oahu and specifically in the project area. The following local and site specific information is in large measure excerpted from that 1986 final geotechnical report conducted for H-POWER.

The local geology is typical of mid-Pacific volcanic islands in that the central volcanic core is surrounded and sometimes overlain by a coastal plain of interbedded marine sediments, alluvium, and coral reef formations. In the area of the site, on the basis of a projected dip slope of 5 degrees from the volcanic formation, this overlying coastal plain is estimated to be 600 to 800 feet thick (C.E. Maguire 1986). The coral reef deposits on-site in 1986 (pre-construction of H-POWER) were typical of those found throughout the Barbers Point area. The surficial layer typically consists of corals, calcareous algae, cemented beach sand, and cemented mixtures of coralline sand, gravel and coral fragments often termed “coral rock”. This coral rock often contains cavities of various sizes and at various depths. The ground surface topography is termed “shallow karst” topography marked by small sink holes generally 0.5 to 3.0 feet in diameter and from approximately 3 to 10 feet deep, which have been dissolved out of the limestone by fresh rain water (C.E. Maguire 1986).

Soil throughout the area, and underlying the Parcels, is classified as Coral Outcrop by the United States Department of Agriculture (USDA) Soil

Conservation Service (USDA SCS 1965). This soils data is mapped on Figure 2.3-2.

Prior to construction of the existing H-POWER facility, vegetation was cleared and grubbed in preparation for a proposed refinery project in 1969. Many of the site sinkholes in the area were loosely filled during the site clearing of 1969. In 1985 H-POWER was constructed in accordance with the site preparation and foundation recommendations developed by the geotechnical consultant employed by C.E. Maguire. Site preparation included initial site subgrade preparation, consisting of clearing, grubbing and stripping of soft silty organic topsoil from the site. Site preparation also consisted of repairing surface cavities and leveling the site. A systematic probing, breakdown and grouting of below surface voids proceeded where cavities were identified. General surface cavity repair was conducted. Proof rolling (with 100 ton vehicles) to detect cavities or weak areas was also conducted in roadways, important equipment areas and footing areas. In areas where excavation was required, heavy equipment was used, but blasting was not permitted due to possible damage to structures supporting coral rock. Thus extensive geologic excavation and the addition of structural fill and construction components have changed much of the native conditions once found on the H-POWER site and increased the site's suitability for construction.

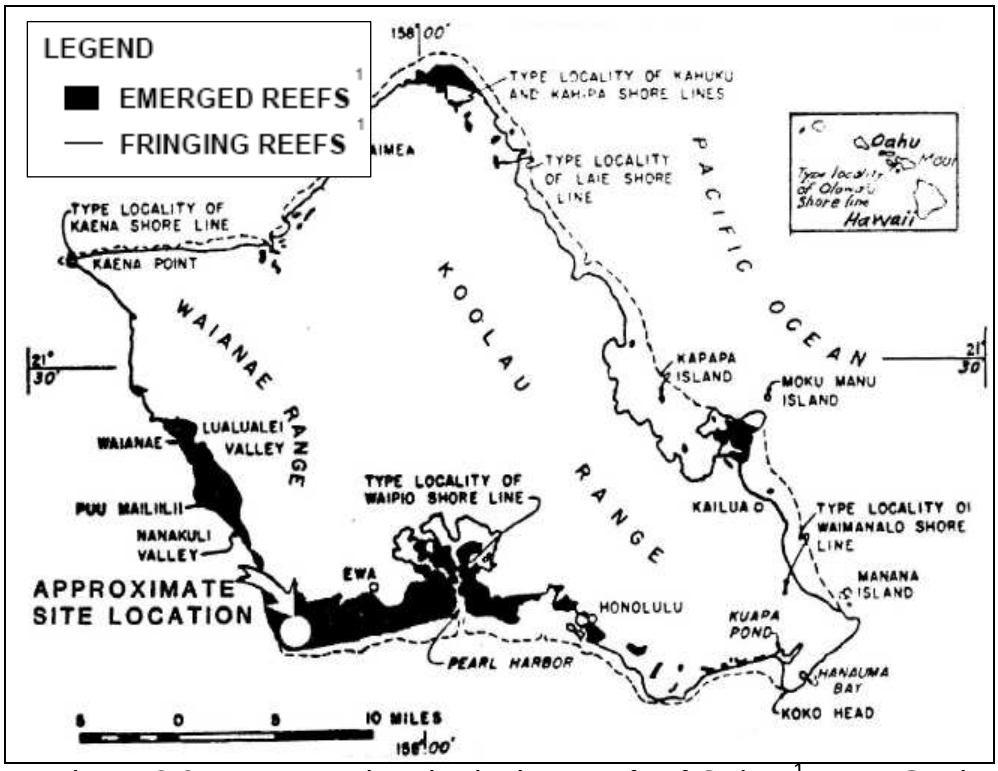


Figure 2.3-1: Emerged and Fringing Reefs of Oahu, [1]From "Geology of the Hawaiian Islands" (Stearns, 1969)

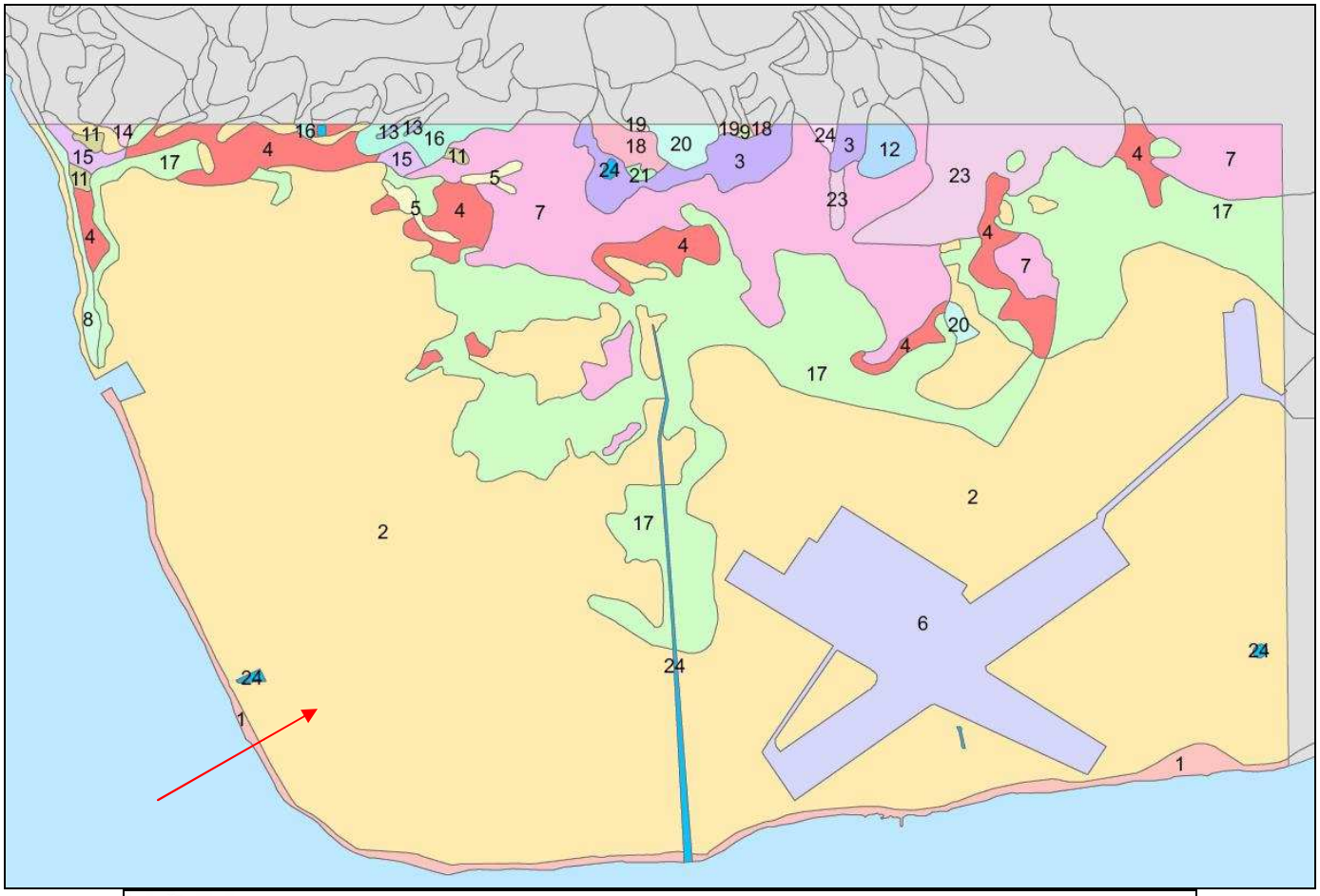


Figure 2.3-2: Generalized Soils (Soils Conservation Service, 1996; downloaded from Hawaii DPP, prepared by AMEC, 2008)

2.4 Geologic Hazards

This Section identifies and analyzes the potential geologic hazards within Oahu and more specifically, the JCIP. There are four potential geologic hazards in this region that are evaluated below:

- Subsidence, Settlement and Karst
- Seismic Ground Shaking (earthquake)
- Volcanic Activity
- Tsunami

Subsidence and Settlement

As noted in Section 2.3, Existing Conditions - Geology and Soils, the principal geologic hazard in the region consists of the "shallow karst" topography of this region. It is marked by small sink holes generally 0.5 to 3.0 feet in diameter and from approximately 3 to 10 feet deep, which have been dissolved out of the limestone by fresh rain water. Though previously cleared and grubbed, this shallow karst topography requires special construction measures to ensure the stability of foundations and to increase the load bearing capacity of the local soils. Engineering will ensure that the design and preparation of the site is appropriate and will prepare a geotechnical analysis if necessary.

Seismic Ground Shaking

The proposed action will be constructed in accordance with the construction standards and seismic provisions of the International Building Code (IBC).

The project area has about a 9% chance of a severe earthquake (magnitude 6.0 or greater) in a 50-year interval. This probability was calculated using the online USGS 2002 Earthquake Probability Mapping Tool for zip code 96707. The 2009 Mapping Tool does not include the State of Hawaii.

Volcanic Activity

The island of Oahu was formed by two volcanoes, the Waianae Range on the west side of the island and the Koolau Range on the east. Both of these volcanoes are now extinct. The Waianae Range is approximately 2.95 to 3.8 million years old and the Koolau Range is approximately 1.8 to 2.7 million years old (Keinle and Wood 1990). However, there has been volcanic activity on the island of Oahu since these two volcanoes have gone extinct. The Honolulu Volcanic Series consisted of over 30 separate eruptions ranging from approximately 850,000 to 32,000 years ago (Abbott et. al. 1983). Although there has not been any volcanic activity on the island of Oahu for over 30,000 years, there is a very slight possibility of future volcanic activity on Oahu.

Tsunami

As quoted from the Honolulu City and County, Department of Emergency Management web site:

> Tsunamis (pronounced tsoo-nah'-mee), or seismic sea waves, potentially the most catastrophic of all ocean waves, are generated by tectonic displacement--for example, volcanism, landslides, or earthquakes--of the seafloor, which in turn cause a sudden displacement of the water above and the formation of a small group of water waves having wavelength equal to the water depth (up to several thousand meters) at the point of origin. These waves can travel radially outward for thousands of kilometers while retaining substantial energy. Their speed--characteristic of gravity waves in shallow water and thus equal to the square root of gD, where g is the gravitational constant and D is the depth--is generally about 500 km/h (300 mph), and their periods range from 5 to 60 minutes. In the open ocean their amplitude is usually less than 1 m (3.3 ft); thus tsunamis often go unnoticed by ships at sea. In very shallow water, however, they undergo the same type of increase in amplitude as swell approaching a beach. The resultant waves can be devastating to low-lying coastal areas; the 37-m (120-ft.) waves from the 1883 Krakatoa eruption, for example, killed 36,000 people.
>
> The characteristics of tsunamis as they approach shore are greatly affected by wave refraction over the local bathymetry. Tsunami-producing earthquakes usually exceed 6.5 on the Richter scale, and most tsunamis occur in the Pacific Ocean because of the seismic activity around its perimeter. A tsunami warning system for the Pacific Ocean has been established; it consists of strategically placed seismic stations and a communications network. (Department of Emergency Management, 2009)

Figure 2.4-1 depicts the Department of Emergency Management's Tsunami Evacuation Zone for Kahe Point to Ewa Beach. The evacuation zone includes the Parcels. In the event of a tsunami, evacuation and response procedures will be followed, as detailed in the emergency response plans maintained by H-POWER and the Refuse Division.

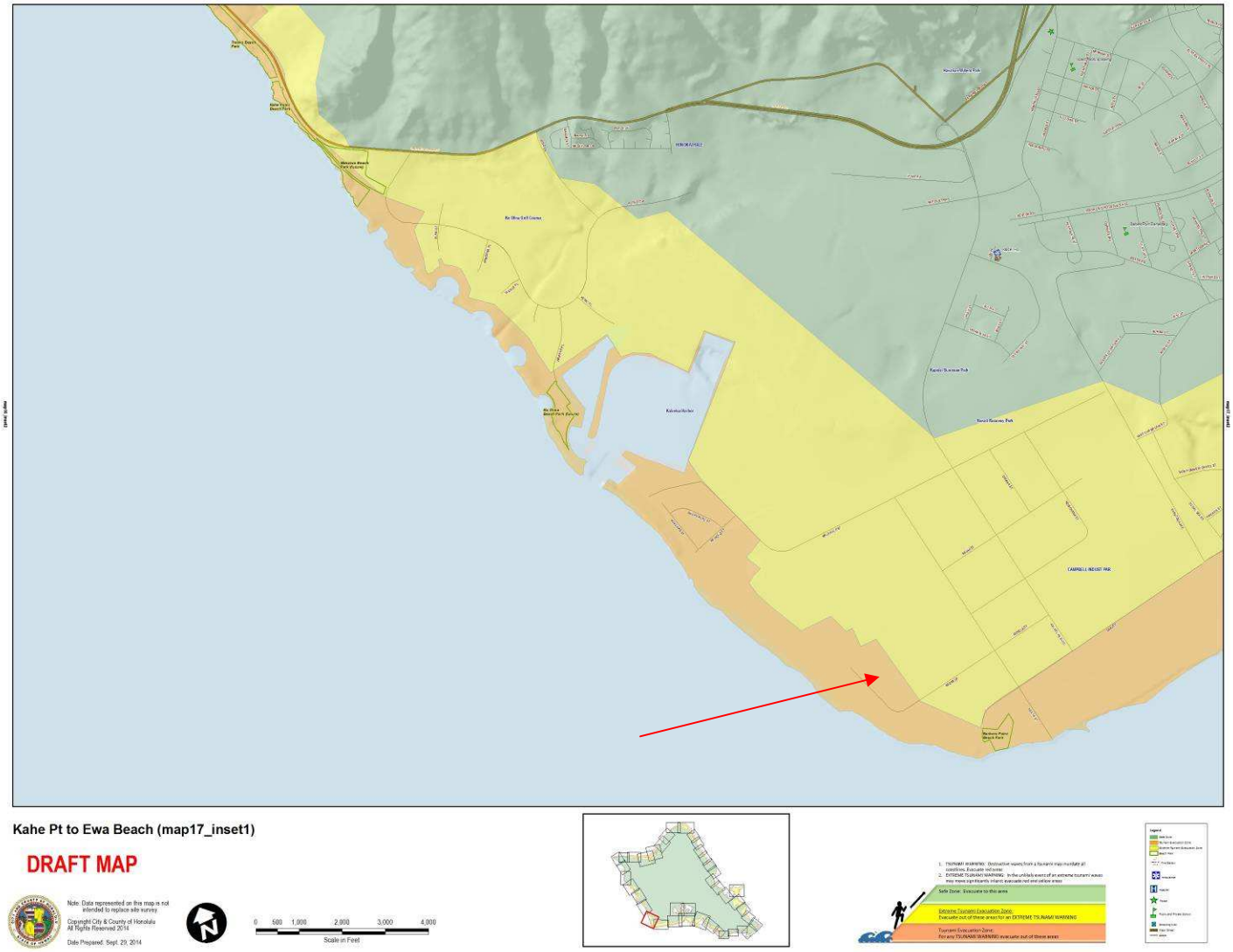


Figure 2.4-1: Tsunami Evacuation Zones.
http://www.honolulu.gov/rep/site/dem/17-1_Kahe_Pt_to_Ewa_Beach_DRAFT.jpg

2.5 Climate and Air Quality

This section discusses the existing climate and air quality of the Parcels and the potential impacts of the proposed action.

According to the National Weather Service (NWS) Forecast Office in Honolulu, the climate of Hawaii is characterized by mild temperatures throughout the year, moderate humidity, persistence of northeasterly trade winds, infrequent severe storms but significant differences in rainfall amounts within short distances. When the northeasterly trade winds are weak, onshore, thermally driven sea breeze flows can develop on the normally leeward shores of Oahu. The resulting southerly winds are referred to as “Kona winds”.

The presence of mountains is important as they can obstruct and deflect the prevailing winds directions, and produce local drainage flows at night and upslope flows during the day. The importance of these local flows diminishes rapidly with distance from significant terrain objects. Due to the distance from the mountains, the wind conditions in the vicinity of the JCIP are dominated by the northeast trade winds and to a lesser extent, the southwest Kona winds.

Wind Direction and Speed

From October 1, 1992 through September 30, 1993 a meteorological tower within JCIP gathered the hourly weather data at several levels. Figure 2.5-1 illustrates the windrose generated from the data collected during this period. Figure 2.5-1 illustrates that the prevailing wind is dominated by the northeasterly trade winds. In addition, these data also show that the average wind speed is approximately 3.78 m/s at 10 meters.

Rainfall

The rainfall recorded at the JCIP meteorological tower from October 1, 1992 through September 30, 1993 was 13.5 inches. The average rainfall recorded at the Honolulu NWS station over the 30-year period from 1971-2000 is 18.29 inches.

Temperature

The mean monthly temperature recorded at the JCIP station between October 1992 and September 1993 ranged from 70.16 degrees Fahrenheit to 78.3 degrees Fahrenheit, with an average of 74.6 degrees Fahrenheit. This compares well with the average monthly temperature recorded at the Honolulu NWS station between the 30-year period from 1961-1990, which is 77.2 degrees Fahrenheit.

Air Quality

The area in the vicinity of JCIP is in attainment with the National Ambient Air Quality Standards (NAAQS) and the State Ambient Air Quality Standards (SAAQS) for the criteria air pollutants. Table 2.5-1 summarizes the maximum measured ambient air concentrations of criteria pollutants on Oahu ambient air monitoring stations in 2006. Table 2.5-1 shows that, in general, the air quality on Oahu is excellent.

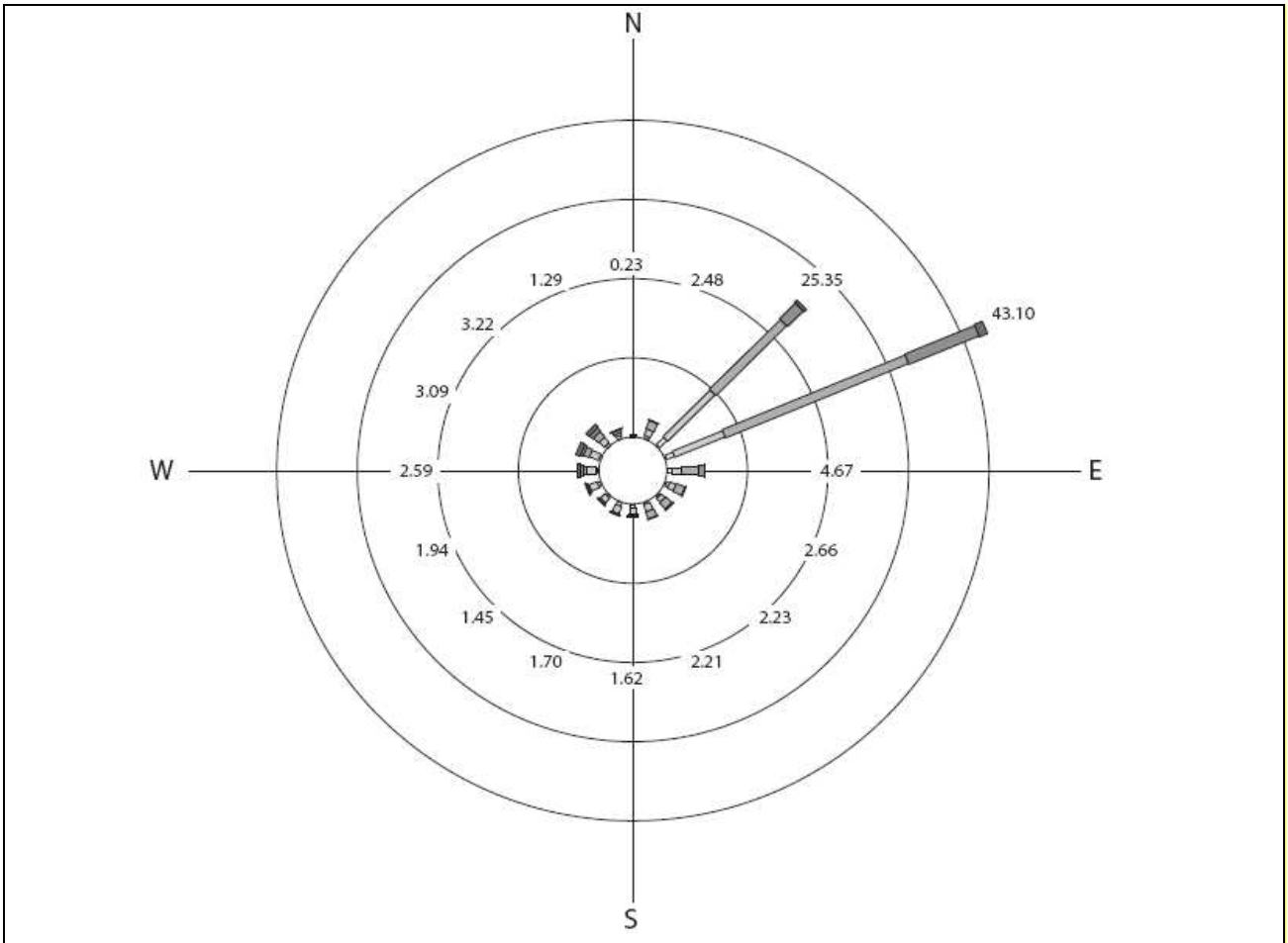
Impacts and Mitigation

Temporary construction impacts, most notably any dust generated from construction equipment, will be mitigated by the use of dust control measures, i.e. water trucks. The building is not anticipated to have any long-term significant impacts to air quality. In fact, the building is anticipated to have long-term benefits to air quality on a life-cycle basis, due to renewable energy generation from the solar panels and the associated emissions savings.

Refrigerant reclamation and recycling and metals processing are not anticipated to be a significant source of air emissions. The conditions set forth in the Refrigerant Recovery Rule, Section 608 of the 1990 Clean Air Act, will be implemented at the facility. Any air quality impacts will be de minimis as the regulation requires the following:

- Maximize recovery and recycling of ozone-depleting substances (both chlorofluorocarbons [CFCs] and hydrochlorofluorocarbons [HCFCs] and their blends) during the servicing and disposal of air-conditioning and refrigeration equipment.
- Certify refrigerant recycling and recovery equipment, technicians, and refrigerant reclaimers. The technician training program emphasizes the requirements set forth in the rule, and prohibitions to prevent deterioration of air quality.
- Require persons servicing or disposing of air-conditioning and refrigeration equipment to certify to EPA that they have acquired refrigerant recovery and/or recycling equipment and are complying with the requirements of the rule.
- Establish safe disposal requirements to ensure removal of refrigerants from goods that enter the waste stream with the charge intact (e.g., motor vehicle air conditioners, home refrigerators, and room air conditioners).

With all of the above measures in place, air quality will not be impacted from the white goods receiving.



PERCENT OCCURRENCE: WIND SPEED (METERS PER SECOND)
LOWER BOUND OF CATEGORY

DIR	0.1	1.54	3.09	5.14	8.23	10.8
N	0.00	0.09	0.14	0.00	0.00	0.00
NNE	0.14	0.31	0.83	1.10	0.10	0.00
NE	0.16	1.26	8.30	12.46	2.80	0.38
ENE	0.17	1.07	6.74	24.60	9.44	1.07
E	0.07	0.49	1.14	2.21	0.70	0.06
ESE	0.19	0.38	0.82	1.15	0.11	0.00
SE	0.15	0.21	0.65	1.06	0.16	0.00
SSE	0.05	0.24	0.91	0.94	0.08	0.00

TOTAL OBS = 8759 MISSING OBS = 15

PERCENT OCCURRENCE: WIND SPEED (METERS PER SECOND)
LOWER BOUND OF CATEGORY

DIR	0.1	1.54	3.09	5.14	8.23	10.8
S	0.15	0.41	0.75	0.21	0.10	0.00
SSW	0.06	0.45	0.96	0.14	0.10	0.00
SW	0.06	0.25	0.82	0.22	0.10	0.00
WSW	0.09	0.37	1.05	0.22	0.11	0.10
W	0.06	0.32	1.08	0.45	0.31	0.38
WNW	0.02	0.24	1.21	0.73	0.34	0.55
NW	0.02	0.40	0.87	0.89	0.51	0.53
NNW	0.14	0.38	0.32	0.37	0.03	0.06

CALM OBS = 0

Figure 2.5-1: Joint Frequency Distribution for Raw Data File 64 M CIP (Prepared by AMEC, 2008)

Table 2.5-1: Air Quality Data – Oahu 2006 (prepared by AMEC)

Pollutant	Averaging Period	Maximum Concentration (ug/m^3)	Lesser of NAAQS/ SAAQS (ug/m^3)	% of Standard	HDOH Monitoring Station
SO_2	3-Hr	62	1,300	5%	Makaiwa
SO_2	24-Hr	17	365	5%	Makaiwa
SO_2	Annual	5	80	6%	Kapolei
PM_{10}	24-Hr	59	150	39%	Kapolei
PM_{10}	Annual(1)	16	50	32%	Kapolei
$PM_{2.5}$	24-Hr	9	35	26%	Kapolei(2)
$PM_{2.5}$	Annual	4	15	27%	Kapolei
NO_2	Annual	9	70	13%	Kapolei
CO	1-Hr	1596	5,000	32%	Kapolei
CO	8-Hr	1183	10,000	12%	Kapolei
O_3	8Hr	83	157	53%	Sand Island
Lead	quarterly	NA (3)	1.5(4)	NA	NA

(1) The annual NAAQS has been revoked by USEPA.
(2) Maximum 24-hr concentration was flagged by HDOH as being elevated due to New Year's fireworks. Second highest value is shown.
(3) Ambient air monitoring for lead in Hawaii was discontinued in October 1997 with USEPA approval.
(4) USEPA signed the final rule to lower the lead NAAQS to 0.15 ug/m3 on a rolling 3-month basis on October 15, 2008. However, the final rule is not effective until 60 days after publication in the Federal Register.

2.6 Surface Water

Baseline Surface Water Conditions

Surface waters for the Island of Oahu are classified by water quality standards established under Hawaii Administrative Rules, Title 11, Chapter 54 (HAR 11-54). The regulations categorize all State waters as either marine or inland. It is also important to note that "State Waters", as defined by section 342D-1, HRS, exclude "…drainage ditches, ponds, and reservoirs required as part of a water pollution control system…" Figure 2.6-1 provides a broad overview map of the Water Quality Standards for the island. As can be seen from Figure 2.6-1, the Parcels are located within the defined hydrographic area IV and have an Inland (Water) Classification of Class 2. Class 1 waters are more heavily restricted, and it is the objective that Class 1 waters remain in their natural state as nearly as possible. The objective of Class 2 waters is defined as follows: "The objective of Class 2 waters is to protect their use for recreational purposes, the support and propagation of aquatic life, agricultural and industrial water supplies, shipping, and navigation. The uses to be protected in this class of waters are all uses compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters" (HAR 11-54-3).

Figure 2.6-1 also depicts the Marine Classifications and shows that the Parcels are located most proximate to Class A marine waters. Class AA marine waters are more heavily restricted, and it is the objective that these waters remain in their natural pristine state as nearly as possible. The objective of Class A waters is defined as follows: "It is the objective of Class A waters that their use for recreational purposes and aesthetic enjoyment be protected. Any other use shall be permitted as long as it is compatible with the protection and propagation of fish, shellfish, and wildlife, and with recreation in and on these waters" (HAR 11-54-3).

As noted earlier (Section 2.3), the Parcels are located on what is commonly referred to as the Ewa Plain, an emerged coral-algae reef formed during the Pleistocene period when the ocean was at a higher level. The Ewa Plain today is one of the driest areas on Oahu, so dry that it has commonly been characterized as "barren" and "desolate" and even referred to as a desert (Pacific Consultant Services Inc (PCSI), 2008). Site specific water resources are addressed below.

Proposed Action Site Surface Waters

Other than the Pacific Ocean, the nearest surface waters are industrial holding ponds and industrial park drainage canals. These consist of: (1) A drainage canal abutting the southeast corner of the H-POWER site that extends south to the Pacific Ocean; (2) drainage canals that exist proximate to the Kaomi Loop bend, that drain to the Pacific Ocean; and (3) nearby holding ponds situated on

the industrial Chevron property. The proposed action will not be adjoining storm water retention areas or other controls with the H-POWER site. Each of these surface waters can be seen on the previously provided Figure 2.1-3.

Refrigerant reclamation and recycling and metals processing will take place indoors as described in Section 1 “General Description” to minimize exposure to the elements and for good housekeeping practice. H-POWER personnel are trained in Spill Prevention Countermeasure and Control (SPCC) annually which increases their awareness on the necessity to be careful in handling liquid materials around the proposed action.

The following section presents the system of pollution prevention measures that will be utilized to (1) minimize pollutants in the project’s stormwater discharges, (2) assure compliance with the terms and conditions of both construction and environmental permits, and (3) attenuate peak stormwater runoff discharge rates.

Both structural and non-structural controls will be outlined. A brief summary of the engineering controls and BMPs that will be implemented during construction, and some left upon completion, is provided below.

A Notice of Intent (NOI) for coverage under the General Permit will be submitted for construction activities. This NOI will also include a construction site best management practices plan, timetables and nature of the activities proposed, and calculated storm water runoff quantities for the affected area(s). The contents of the NOI will satisfy the requirements for the General Permit and will describe the measures that will minimize discharge of pollutants via storm water.

Details with regard to erosion and sediment control measures undertaken during construction will be included in the Construction Storm Water Pollution Control Plan (SWPCP) which will be prepared prior to construction. This document will outline the measures that will be followed to ensure minimal impact on water quality throughout the construction effort. To prevent sedimentation and erosion, BMPs will be implemented specific to storm water management during construction. For example, one of the first steps in the construction process will be the installation of siltation barriers around the limit of work. The barriers will act as a boundary for the limit of work, minimizing intrusion into areas outside the construction zone. In addition, the barriers will collect sediment that may be transported from the construction area and will prevent sediment from leaving the site. The sedimentation barriers and absorbent material will remain in place throughout the construction effort. Routine inspections will be undertaken to ensure that the integrity of all BMP efforts are maintained. These measures will remain in place until the site is stabilized.

Contractors will be trained on storm water requirements, and the BMPs that must be followed. Monitoring and possibly sampling will be conducted by a third party contractor managed by H-POWER.

Post-Development Storm Water Management

A SWPCP and a Storm Water Monitoring Plan (SWMP) will be required for the operations associated with this site and will comply with storm water quality standards, and the terms of the NPDES Storm Water GUP. Once construction is finished and site stabilization is completed, the temporary construction siltation barriers will be removed. Permanent storm water controls will be constructed, to include swales, retention ponds, and oil water separators for the scales. The Solar Building is in close proximity to the ocean, therefore the controls installed will help with a zero discharge classification.

Designated Surface Water Resource Areas

A review of known or designated surface water features and coastal constraints was conducted, to determine proximity to potential resources of concern. These included coastal constraints as well as designated floodplains. Figure 2.6-2 depicts these designated areas with respect to the Parcels.

Coastal Constraint Areas

Surface water constraints on Oahu are shown on Figure 2.6-2 and are regulated by a variety of state and local agencies. The following is a brief summary of these designated coastal resource areas proximate to the Parcels.

Coastal Zone

The entire Island of Oahu is classified as within the Coastal Zone, as footnoted on Figure 2.6-2, with the exception of regulatory exemptions for federally owned lands. Though not mapped, the Parcels are within the Coastal Zone. The Hawaii Coastal Zone Management Program (CZMP) (under the Department of Business, Economic Development & Tourism's Office of Planning) conducts CZMP federal consistency review for certain types of projects.

Special Management Area (SMA)

The SMA is a key aspect of the CZMP. Administered by DPP, no development can occur in the SMA unless the DPP first issues a permit. Development is defined to include most uses, activities and operations on land and in the water. The SMA originally encompassed all lands extending not less than 100 yards inland from the shoreline, though in some areas, the SMAs extend several miles inland to cover areas in which coastal resources are likely to be directly affected by development activities.

As mapped on Figues S1 and 2.6-2, the project footprint is not within the SMA. A portion of Parcel 35 contains an SMA, but it fenced off, will be protected, and will not be encroached.

Shoreline Setback Line

The Parcels are not within the Designated Shoreline Setback line, or the Shoreline Buffer Zone Line (Figure 2.6-2). The Designated Shoreline Setback and Buffer Zone Lines are each situated west of Kaomi Loop. The City and County of Honolulu Department of Planning and Permitting (DPP) regulates activities within the Shoreline Setback Line.

Tsunami Evacuation Zone

As described in Section 2.4, tsunamis pose a risk to many coastal areas on Oahu. Figure 2.4-1, shown previously, depicts the evacuation zone identified for this area of Oahu. The evacuation zones, developed by the National Oceanic and Atmospheric Administration (NOAA) in partnership with the State of Hawai'i Civil Defense, do include the Parcels. In the event of a tsunami, evacuation and response procedures will be followed, as detailed in the emergency response plans maintained by H-POWER and the Refuse Division.

Floodplains

The Parcels are located outside of designated Special Flood Areas. Figure 2.6-2 depicts mapped Flood Area (DPP, 2004). A review of the most recent Federal Emergency Management Area (FEMA) Flood Insurance Rate Map (FIRM) was also conducted (FEMA 2008). The FIRM maps were not available in hard copy or electronic format. However, no change from the DPP electronic map data was observed in the project area. A copy of the 2004 FIRM is provided in Figure 2.6-3. The Parcels are outside of the designated Flood Hazard Zones. As shown on Figure 2.6-2 and confirmed on the FIRM map, the closest designated Flood Hazard Area is situated west of Kaomi Loop along the coast and is designated Zone AE, which is a flood insurance rate zone that correspond to the 1-percent annual chance floodplains that are determined in the Flood Insurance Study; mandatory flood insurance purchase requirements apply. According to the FIRM map, the Parcels are located in Flood Zone D, which is a zone where flood hazards are undetermined, but possible. The Flood Insurance Program does not have any regulations for developments within Flood Zone D.

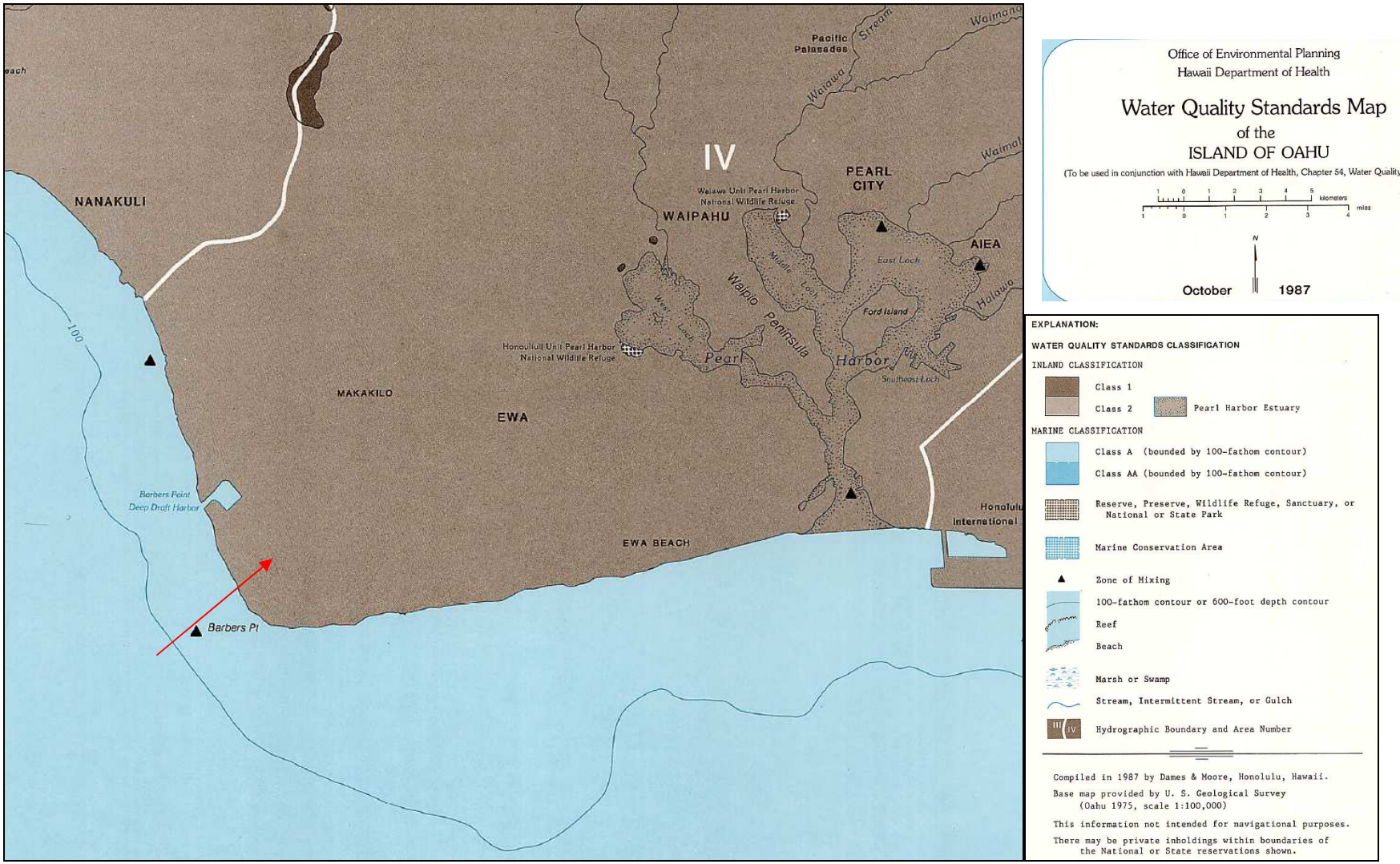


Figure 2.6-1: Water Quality Standards (State Department of Health, Clean Water Branch)

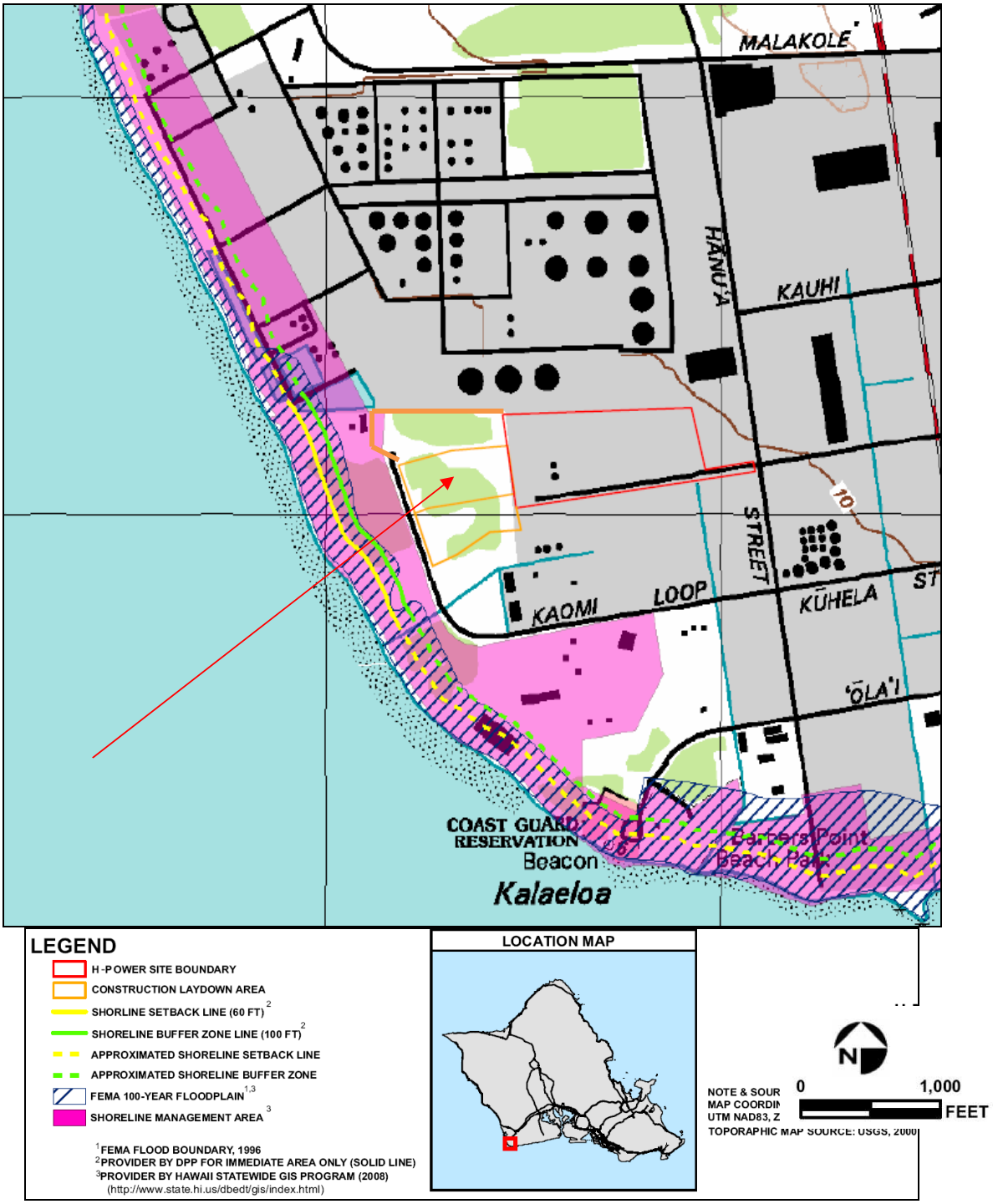


Figure 2.6-2: Surface Water Constraints Map (Prepared by AMEC, 2008)

Figure 2.6-3: Flood Insurance Rate Map (FIRM) Effective 1/19/2011

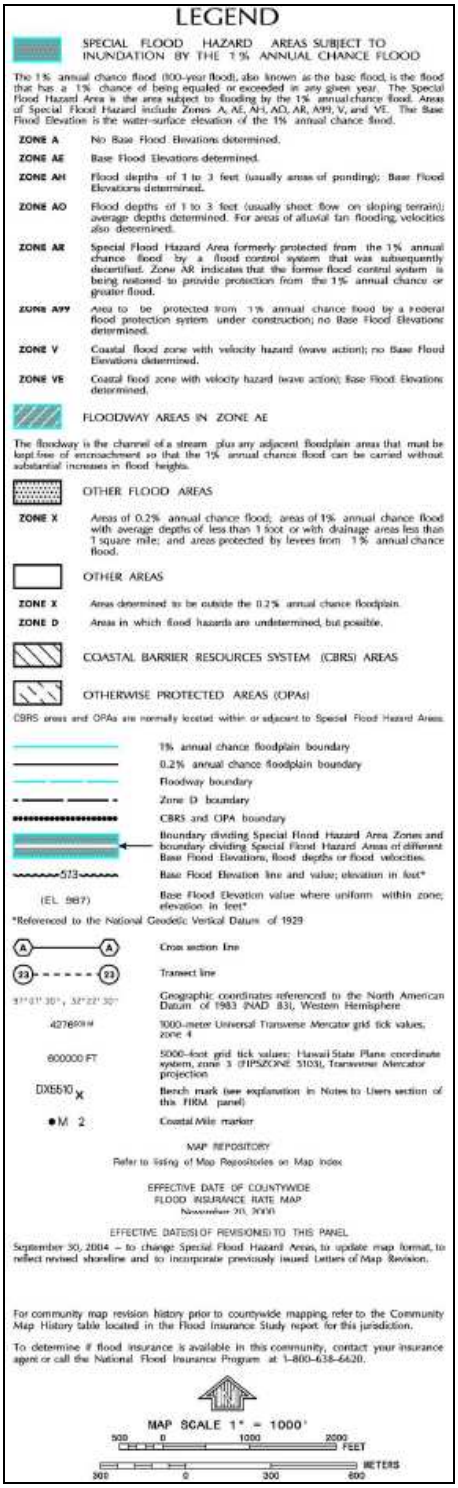


Figure 2.6-3 Legend

2.7 Groundwater

Baseline Conditions

Groundwater is a key resource for the island of Oahu. Of the total freshwater used on Oahu, 326 million gallons per day (Mgal/d) is from ground water and 71 Mgal/d is from surface water. Most of the groundwater on the island of Oahu is derived from extensive volcanic aquifers of thin-bedded basalts in central and southern Oahu. These aquifers are unconfined and though often at great depth (600-1,000 ft) are essentially "surficial" aquifers and therefore vulnerable to contamination (USGS 1998). As a result, water resource protection and management is important on Oahu.

The Parcels are located within the Ewa (Limestone) Caprock Aquifer. The Ewa limestone aquifer is a brackish to saline groundwater body that exists as a thin basal lens in the permeable coralline reef deposits that comprise the Ewa Plain. Figure 2.7-1 depicts aquifers, the Ewa Caprock zone, and the Parcels.

Consistent with the goals of protecting water resources, groundwater governance in Hawaii is split into two distinct aspects: (1) Groundwater withdrawals and (2) injection wells. Groundwater withdrawals, stream diversions and water use are regulated under the State Water Code and its implementing rules. The Commission on Water Resource Management (CWRM), Department of Land and Natural Resources (DLNR) manages the designation and regulation of Water Management Areas, water withdrawals and well construction activities. Groundwater injection wells, or Underground Injection Control Wells, are typically used for disposal of cooling waters, and are governed by rules administered by Hawaii Department of Health (HDOH), Safe Drinking Water Branch.

The permitting of underground injection wells on Oahu is also affected by the location of the wells. Figure 2.7-2 shows that in coastal regions where waters can be saline at depth, the underlying aquifers may not be considered a drinking water source and though permit limitations are imposed, wells may be permitted.

Construction Impacts & Mitigation

Potential effects of the construction of the proposed building upon groundwater resources are very limited. Construction activities will not involve the use of substantial amounts of chemicals or other potential contaminants. The only potential for impact to groundwater would be from accidental release of fuel or lubricants from construction vehicles or equipment. Spill kits with oil absorbent pads and mats will be available at the construction site, and portable secondary containment for oil-filled equipment. It is not anticipated that significant groundwater impacts would result from construction operations. All construction activities will occur in compliance with the project construction SWPCP.

Operational Impacts & Mitigation

Water service for the building will be needed for restroom facilities. Additional water needed for recycling operations occurring within the building is expected to be minimal.

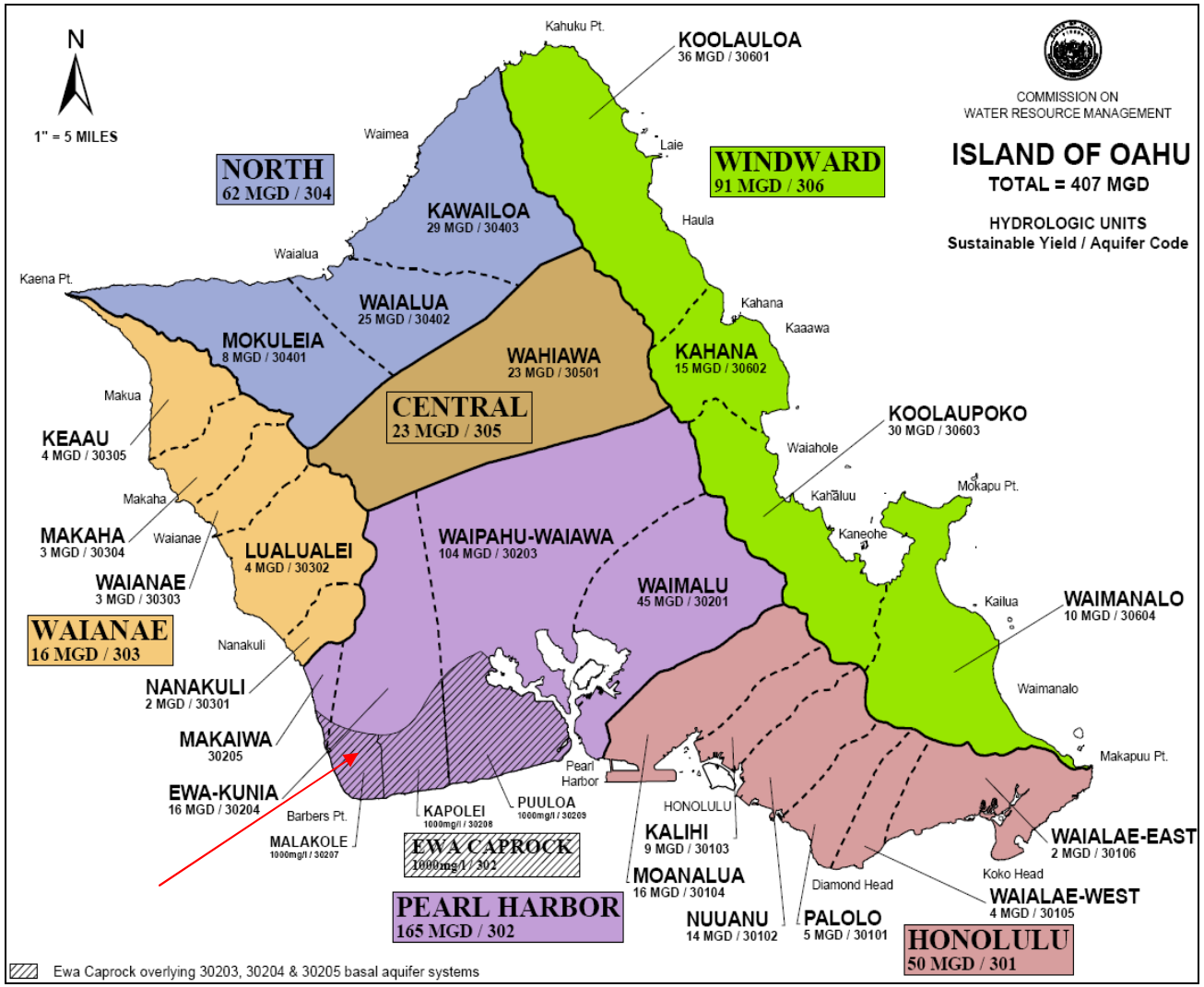


Figure 2.7-1: Aquifers

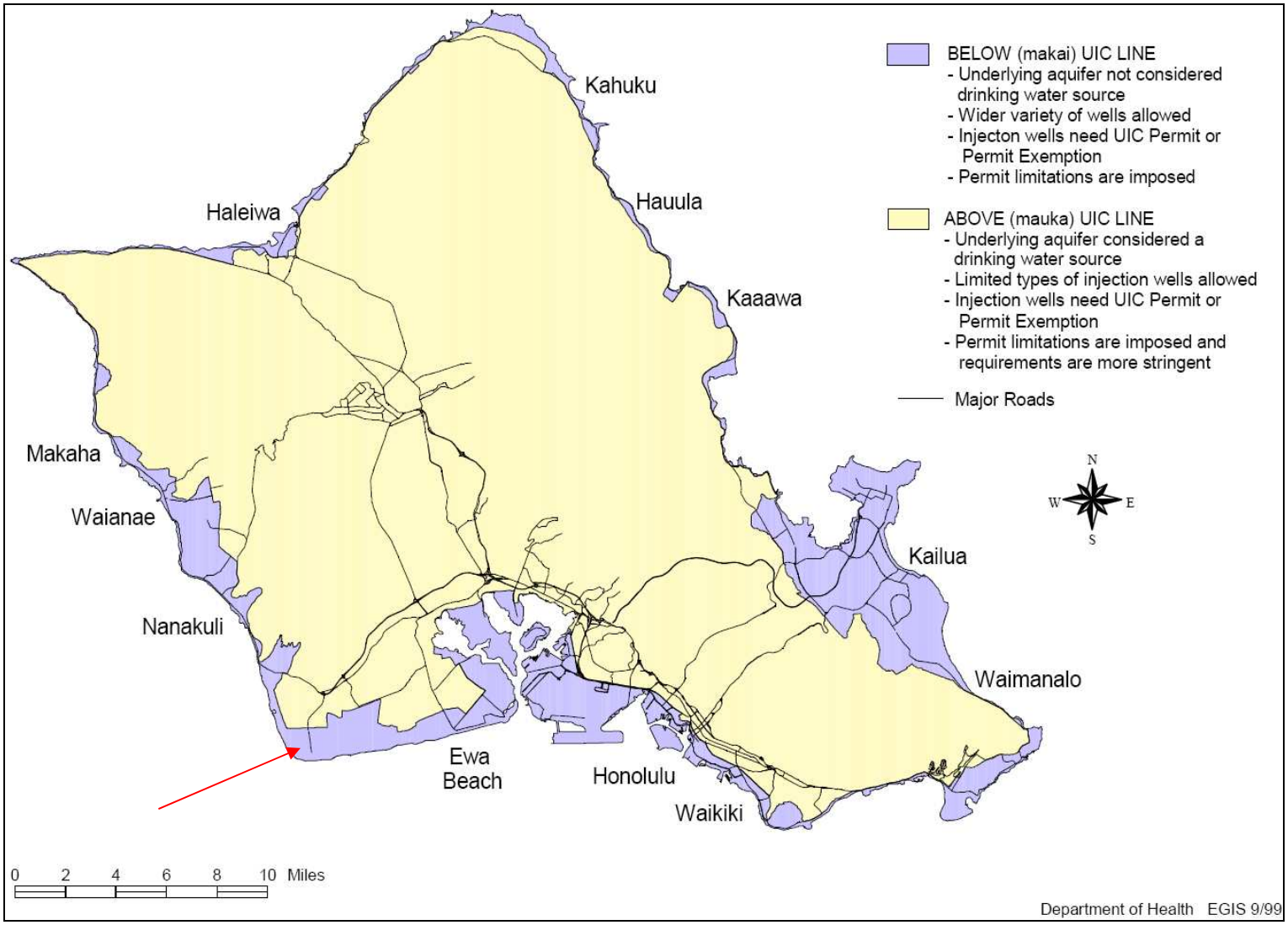


Figure 2.7-2: Underground Injection Control Areas

2.8 Biological Resources

This section discusses the existing biologic environment in and around the Parcels. This section is an excerpt from the H-POWER Expansion EIS, where the two southernmost most parcels (TMK 9-1-026:033, 9-1-026:034) and were evaluated for construction laydown and equipment storage activities associated with the Third Boiler Expansion Project. The proposed action will take place on Parcels 33, 34, and 35. Although the biological analysis did not include Parcel 35, it is with our sound judgment that similar results would be seen with Parcel 35. We will be using excerpts from the EIS and Biological report, to supplement the research completed this year. Baseline conditions, including resource areas of concern and special status species, are identified and the potential impacts of the proposed action are presented. Mitigation measures, such as Storm Water controls and use of buffer areas, are evaluated.

Existing Conditions - Biological Resources

The Parcels are located in what is commonly referred to as the Ewa Plain. The Ewa plain is characterized as:

> A semi-arid region of intense sunshine, warm trade winds, and sparse rainfall. At the western end of the plain these conditions are all the more accentuated. Except for a few coastal marshlands and other favored localities, the vegetation is typically xeric and, where undisturbed by modern developments, is dominated by hardy exotics (Davis 1990a).

Figure 2.8-1 depicts National Wetland Inventory (NWI) data for the region surrounding the Parcels. As shown on that figure, no onsite resources are identified. An initial biological resource site reconnaissance survey of Parcel 30 was conducted by an AMEC biologist during November 9 – 11, 2004. A confirmation biological survey was conducted by an AMEC biologist on August 27, 2008 to update the findings of the initial survey for the H-POWER Expansion EIS. Findings from the August 2008 survey were in agreement with the findings from the November 2004 survey. A list of plant species observed is presented in Table 2.8-1.

Survey Methodology

The methodology for the November 2004 survey included a pedestrian survey of the H-POWER facility perimeter and open lawn areas and transects through Parcels 33-34. Due to limited site access, perimeter-only survey of a fenced enclosure (endangered plant preservation area) within Parcels 33 and 34 was also conducted in the November 2004 survey.

The methodology for the August 2008 survey was modified from the 2004 survey since the vegetation throughout the Parcels had become more dense (over 12 feet tall in the fenced enclosures and typically at least four feet tall outside the enclosures). Bordering access roads and transects were also surveyed in open areas around the perimeter. Dense surrounding vegetation provided only limited access to the fenced enclosures within the Parcels. When openings in the vegetation permitted, the perimeter of the fenced enclosure was surveyed.

Figure 2.8-2 depicts the extent of development in the early 1990's.

Flora

The surrounding area and adjacent properties consist of introduced and ornamental vegetation, including Bermuda grass (*Cynodon dactylon*), monkey pod trees (*Samanea saman*), autograph trees (*Clusia rosea*), *Hibiscus sp*., and milo trees (*Thespesia populnea*). Other plant species included coconut trees (*Cocos nucifera*)*, beach naupaka* (*Scaevola* sericea), and yellow oleander (*Cascabela thevetia*).

Fauna

Animals currently found in the area include feral cats and a variety of other non-native species wildlife such as mongoose, mice, and rats. Bird species observed included: zebra doves (*Geopelia striata*), spotted doves (*Streptopelia chinensis*), sharp-tailed sandpipers (*Calidris acuminata*), mynah birds (*Acridotheres tristis*), feral chickens (*Gallus gallus*), red vented bulbuls (*Pycnonotus cafer*), common waxbills (*Estrilda astrild*), and cattle egrets (*Bubulcus ibis*). These animal species are transient over much of the 24.6 acres of the facility. Additionally, the ornamental trees and bushes may serve as nesting sites for various bird species.

Special Status Species

Flora and Invertebrate Fauna

On October 8, 2004, the U.S. Fish and Wildlife Service (USFWS) replied to a letter requesting a list of rare, threatened, or endangered species, and significant natural communities that may be affected by the proposed H-POWER Expansion. The USFWS list included one endangered plant, *Achyranthes splendens var. rotundata*, as occurring in the Parcels (USFWS 2004a). This species is a low shrub varying in height from 1½ to 6½ feet. Three locations within the Parcels have been fenced and are currently and will continue to be protected as plant preservation areas. Due to limited site access, only the perimeters of the three fenced enclosures were surveyed during the November 2004 biological site reconnaissance. When the dense surrounding vegetation occasionally permitted access, the perimeters of the fenced enclosures were surveyed in August 2008.

The enclosures within the Parcels are maintained annually. Maintenance consists of clearing invasive species and protecting native or endangered species. According to Mr. Shad Kane, the enclosures within the Parcels shelter the last naturally occurring populations of the endangered plant, *Achyranthes splendens var. rotundata*. Mr. Kane is actively involved in community affairs in the Ewa area and has managed the plant sanctuaries on Parcels 32-33 and 33-34 for the City. He was hired by the City to assist in the preparation of a habitat preservation plan and the establishment of "wild sites" for the endangered species contained within the sanctuaries. Mr. Kane also shared his observation that condensation from precipitation and runoff that collects in the sinkholes within the plant preservation enclosures appears to support the *Achyranthes* populations, especially during the drier summer months.

Additionally, prior communication on July 20, 2004 with USFWS (USFWS 2004b) indicated that the endangered plant *Chamaesyce skottsberegi var. skottsbergii* is known from the surrounding area. The July 2004 correspondence also indicated that an invertebrate species of concern, *Lyropupa perlonga*, is thought to be present in an area adjacent to the project site, though a specific location was not identified, and no individuals of this species were observed during the November 2004 and August 2008 site reconnaissance surveys.

Vertebrate Fauna

The shoreline, estuarine, and freshwater areas associated with Pearl Harbor are known habitat for four species of endemic waterfowl which are listed by both Federal Government and by the State of Hawaii as endangered species: the Hawaiian moorhen (*Gallinula chloropus sandvicensis*), the Hawaiian coot (*Fulica americana alai*) the Hawaiian duck (*Anas wyvilliana*) and the Hawaiian stilt (*Himantopus mexicanus knudseni*) [50 CFR Part 17]. Previous sightings of three of these four species (Hawaiian coot, Hawaiian moorhen and Hawaiian stilt) have been documented in the vicinity of the project area (USFWS 2004a). Population levels of these endangered waterfowl have been severely reduced primarily because of the loss of wetland habitat. Other threats to these species include predation by introduced mammals, invasion of wetlands by alien plants and fish, hybridization, disease, and possibly environmental contaminants (USFWS 1994). No endangered waterfowl species were observed during the November 2004 and August 2008 site reconnaissance surveys.

Two additional species of birds, listed as threatened or endangered by the State of Hawaii, but not listed by the Federal Government, are found in the vicinity of Pearl Harbor. These two species include the state-threatened white tern (*Gygis alba rothschildi*), a diminutive, arboreal nesting seabird which can be seen around Pearl Harbor, and the state-endangered Hawaiian owl (*Asio flammeus sandwichensis*) an endemic race of the crepuscular, ground-nesting shorteared

owl). Neither of these species were encountered during the November 2004 and August 2008 site reconnaissance surveys.

Impacts and Mitigation

Though not likely to occur due to the existing dryland habitat and industrial nature of the site location, construction workers are to be trained to suspend construction activities if transient bird species of concern are encountered at or near the site. A biologist will conduct the initial training and provide a short information packet so that workers are familiar with (1) the endangered Hawaiian coot or alae keokeo (Fulica alai), (2) the Hawaiian gallinule or alae ula (*Gallinule chloropus sandvicensis*), and (3) the black-necked stilt or aeo (*Himantopus mexicanus knudsenii*). Workers will be instructed to notify their supervisor who will contact an on-call biologist for confirmation. If confirmed, the biologist will contact the Pacific Islands Fish and Wildlife Office. In the event that the on-call biologist is unavailable the construction supervisor will be provided with the contact information and will be instructed to contact the Pacific Islands Fish and Wildlife Office directly.

The lack of wetland habitat onsite minimizes the potential for impacts to waterfowl species due to lack of proper habitat. Silt fencing and petroleum abatement measures will surround the construction areas.

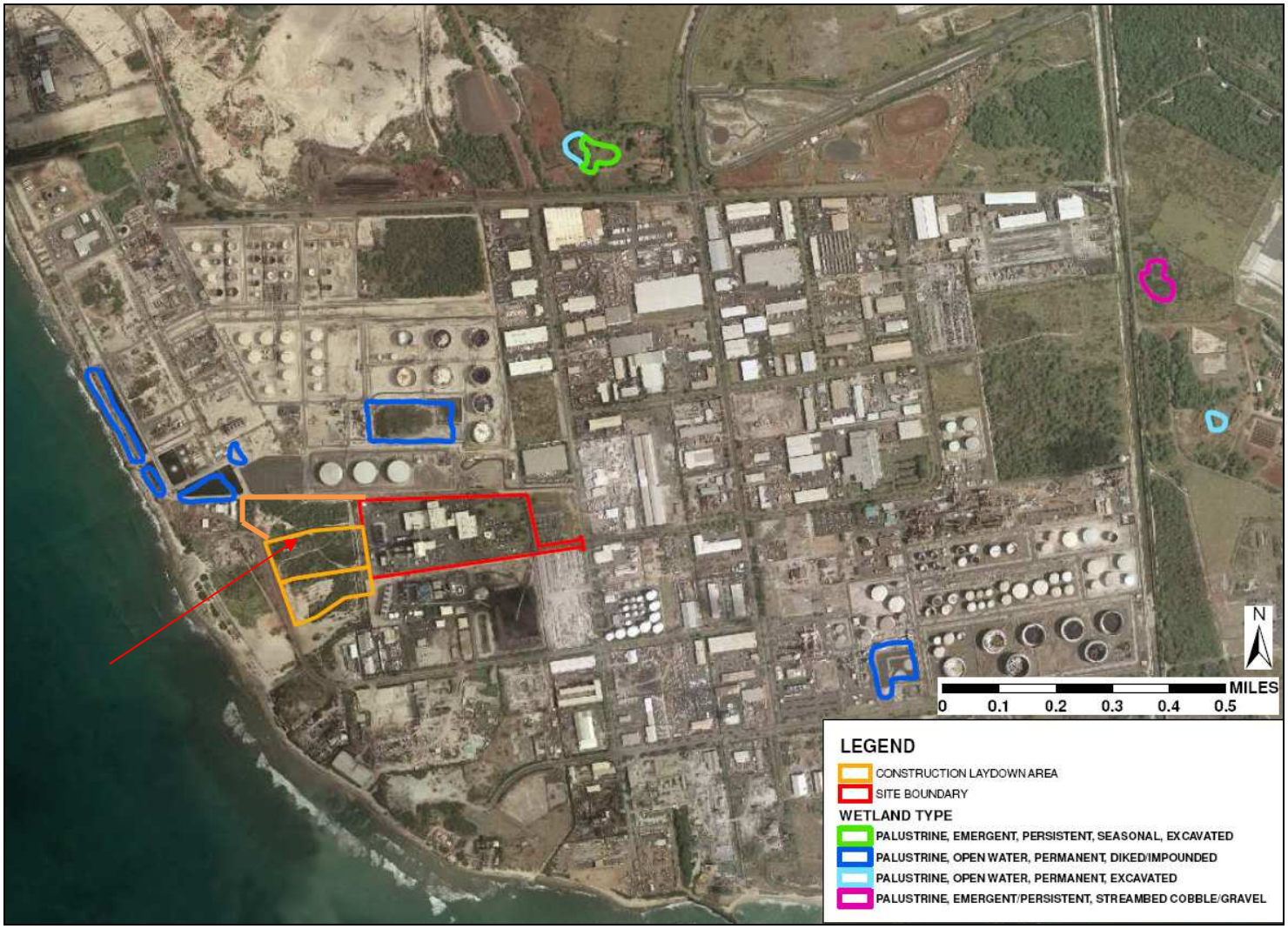


Figure 2.8-1: National Wetlands Inventory (Prepared by AMEC, 2008)

Table 2.8-1 Plant Species Observed or Known to Occur on Parcels 30 and 33-34
(November 2004 Biological Reconnaissance Survey)

Plant Species	Common Names	Family	Status
Asystasia gangetica	Chinese violet	Acanthaceae	non-native
Sesuvium portulacastrum	akulikuli; sea purlane	Aizoaceae	indigenous; common
Achyranthes splendens var. rotundata	--	Amaranthaceae	endemic; endangered
Amaranthus spinosus	spiny amaranth	Amaranthaceae	non-native
Amaranthus viridis	slender amaranth	Amaranthaceae	non-native
Cascabela thevetia	yellow oleander; be-still tree	Apocynaceae	non-native
Schefflera actinophylla	octopus tree	Araliaceae	non-native
Cocos nucifera	coconut tree; niu	Arecaceae	non-native
Bidens alba	beggar's tick	Asteraceae	non-native
Pluchea indica	Indian pluchea; Indian fleabane	Asteraceae	non-native
Pluchea symphytifolia	sourbush	Asteraceae	non-native
Tridax procumbens	coat buttons	Asteraceae	non-native
Verbesina encelioides	golden crown-beard	Asteraceae	non-native
Batis maritima	pickleweed; salt wort	Bataceae	non-native
Heliotropium curassavicum	seaside heliotrope; kipukai; nena	Boraginaceae	indigenous; common
Heliotropium procumbens	--	Boraginaceae	non-native
Opuntia ficus-indica	prickly pear cactus; panini	Cactaceae	non-native
Capparis sandwichiana	maiapilo; pilo; pua pilo	Capparaceae	endemic, vulnerable
Atriplex semibaccata	Australian saltbush	Chenopodiaceae	non-native
Clusia rosea	autograph tree	Clusiaceae	non-native
Ipomea cairica	ivy-leaved morning glory; koali ai	Convolvulaceae	non-native
Momordica charantia	balsam pear; bitter gourd	Cucurbitaceae	non-native
Chamaesyce hirta	garden spurge	Euphorbiaceae	non-native
Acacia fernesiana	klu	Fabaceae	non-native
Alysicarpus vaginalis	alysicarpus	Fabaceae	non-native
Desmanthus virgatus	slender mimosa; virgate mimosa	Fabaceae	non-native
Leucaena leucocephala	haole koa; koa haole; wild tamarind	Fabaceae	non-native
Mimosa pudica	sensitive plant; sleeping grass	Fabaceae	non-native
Prosopis pallida	kiawe; mesquite	Fabaceae	non-native
Samanea saman	monkeypod tree	Fabaceae	non-native

Table 2.8-1 Plant Species Observed or Known to Occur on Parcels 30 and 33-34
(November 2004 Biological Reconnaissance Survey)

Plant Species	Common Names	Family	Status
Scaevola sericea	beach naupaka; naupaka kahakai	Goodeniaceae	non-native
Abutilon grandifolium	hairy abutilon	Malvaceae	non-native
Sida fallax	ilima	Malvaceae	indigenous, common
Myoporum sandwicense	naio; naeo; naieo; bastard sandalwood	Myoporaceae	indigenous; common
Boerhavia coccinea	--	Nyctaginaceae	non-native
Oxalis corniculata	wood sorrel; 'ihi' ai	Oxalidaceae	non-native
Passiflora foetida	love-in-a-mist; wild passionfruit; pohapoha	Passifloraceae	non-native
Brachiaria subquadripara	--	Poaceae	non-native
Cenchrus ciliaris	buffel grass	Poaceae	non-native
Chloris barbata	swollen finger grass; mau'u lei	Poaceae	non-native
Cynodon dactylon	Bermuda grass; manienie	Poaceae	non-native
Dactyloctenium aegyptium	beach wiregrass	Poaceae	non-native
Eleusine indica	goose grass; manienie ali'i	Poaceae	non-native
Sporobolus diander	Indian dropseed	Poaceae	non-native
Lycopersicon pimpinellifolium	cherry tomato	Solanaceae	non-native
Nicotiana glauca	tree tobacco; Indian tobacco; makahala	Solanaceae	non-native
Waltheria indica	uhaloa	Sterculiaceae	indigenous; common

Figure 2.8-2: Aerial Photograph (Early 1990's)

Section 3 - Cultural Impacts

ASSESSMENT OF THE EXISTING HUMAN ENVIRONMENT, POTENTIAL IMPACTS, AND MITIGATIVE MEASURES

This chapter describes the existing human environment in the area of the proposed action that would potentially be affected. Because the human environment can be regional in nature, regional issues are addressed where necessary to establish an appropriate perspective on the human environment.

This section also assesses the environmental consequences to the human environment that may result from the proposed action. Potential temporary and permanent impacts are described and evaluated and mitigation measures that would eliminate and/or reduce potential adverse impacts are identified.

3.1 Archaeological and Cultural Resources

Pacific Consulting Services, Inc. (PCSI) undertook an archaeological and cultural impact assessment study in support of the H-POWER Expansion Project in 2008. PCSI, a Honolulu-based consulting firm offering professional archaeology services, evaluated the H-POWER site, and the adjacent parcels, 9-1-026:033 and 9-1-026:034, consisting of vacant land for construction laydown and equipment storage activities associated with the Third Boiler Expansion Project. The proposed action will take place on Parcels 33, 34, and 35. Although the PCSI analysis did not include Parcel 35, it is with our sound judgment that similar results would be seen with Parcel 35. We will be using excerpts from the PCSI report, to supplement the research completed this year. The PCSI analysis includes an evaluation of baseline (existing) and potentially existing resources, as well as an assessment of the effect that the H-POWER Expansion Project might have upon archaeological or cultural resources. The section below summarizes the results of that study that are applicable to the proposed action. Standards and guidelines for archaeological and cultural resource assessments are presented, baseline conditions described, anticipated impacts are evaluated and the potential for mitigation discussed.

Standards and Guidelines for Archaeological and Cultural Resource Assessments

Various local and Federal Agencies have established guidelines and standards for assessing archaeological and cultural impacts. The applicable guidelines and standards are summarized below:

National Historic Preservation Act

The National Historic Preservation Act (NHPA) was passed in 1966 which, in the words of the Act, the Federal Government's role would be to "provide leadership" for preservation, "contribute to" and "give maximum encouragement" to preservation, and

"foster conditions under which our modern society and our prehistoric and historic resources can exist in productive harmony."

To achieve this, NHPA and related legislation sought a partnership among the Federal Government and the States that would capitalize on the strengths of each. The Federal experience in studying, managing, and using historic resources, would provide funding assistance, basic technical knowledge and tools, and a broad national perspective on America's heritage.

The States, through State Historic Preservation Officers appointed by the Governor of each State, would provide matching funds, a designated State office, and a statewide preservation program tailored to State and local needs and designed to support and promote State and local historic preservation interests and priorities. In Hawaii the State Historic Preservation Office is referred to as the State Historic Preservation Division (SHPD).

State Historic Preservation Division

The Hawaii SHPD issued draft guidelines for the preparation of archaeological studies in December 2002 and the requirements for certain archaeological assessments are described in Chapters 13-275 and 13-276 of the Hawaii Administrative Rules. Section 13-275 (a) 5(A) states that:

> An archaeological assessment shall include the information on the property and the survey methodology as set forth in subsections 13-276-5(a) and (c), as well as a brief background section discussing the former land use and types of sites that might have been previously present.

The archaeological assessment that was undertaken follows the draft guidelines issued by SHPD and the Hawaii Administrative Rules.

State Office of Environmental Quality Control

The State OEQC publishes Guidelines for Assessing Cultural Impact, which are designed to comply with the requirements of Chapter 343 HRS as amended in 2000 and approved by the Governor as Act 50 that same year. The archaeological assessment that was undertaken follows these guidelines.

3.2 Study Methodology and Scope

The study methodology and scope of the work conducted included the following:

- Archival background research on the culture history and previous land uses of the project area;
- Literature review of previous archaeological studies within and surrounding the proposed action site

- Verbal and written consultation with the Office of Hawaiian Affairs (OHA);
- Interviews with community members recommended by the State Historic Preservation Division; and
- Reconnaissance survey of parcels 30 and 33-34 to determine the presence/absence of cultural resources

An archaeological reconnaissance survey and follow-up test excavations of possible historic sites of Parcel 30 were undertaken as part of the environmental review process for H-POWER in 1983-84 (Ahlo and Hommon 1983; Hommon and Ahlo 1984). No historic properties were found at that time. Human remains were found during construction of H-POWER, in 1986.

The results of the site reconnaissance of parcels 30, 33, and 34 and cultural resource investigations form the basis of the summary of existing conditions that follows in Section 3.3 below.

3.3 Existing Conditions - Archeological and Cultural Resources

In discussing existing conditions for archaeological and cultural resources, it is important to understand that much of the evaluation must focus on resource potential and oral history. Though some information about identified resources does exist, often, existing conditions are defined on the basis of resources suspected to have existed or on the basis of those potentially remaining at a given location. The project area is located on what is commonly known today as the Ewa Plain, a vast expanse of land that is part of an emerged Pleistocene age coral reef that was subsequently covered to varying depths with a mantle of marine sediments, alluvium and a shallow calcareous soil mantle, except for a few places on or near the shoreline where the reef surface is still exposed. The surface of the reef is pock-marked with solution cavities or “sinkholes” of widely varying sizes. The soil survey map for Oahu shows the project area as coral outcrop (Foote et al. 1972)

Archaeological Resources

As noted above, Parcel 30 - the H-POWER site – is heavily industrialized and has undergone extensive ground disturbance at depth during construction of the original H-POWER facility. The proposed project site has been cleared and grubbed previously for construction laydown use for the H-POWER Third Boiler Expansion Project. The fact that human remains were found during construction of the original facility in 1986 indicates that however remote, there is a possibility that more burials may exist nearby. The proposed action site will be monitored.

A brief reconnaissance of the proposed location of the H-POWER Expansion Project was conducted on August 13, 2008. This location, immediately east (mauka) of the existing H-POWER plant, includes the plant’s existing parking lot and adjacent landscaped lawn areas. While the karst landscape of the Ewa Plain no longer exists in the H-POWER Expansion Project site, Burial Site 6684 is located nearby.

In late 2010, the H-POWER Expansion Project needed an additional construction laydown area adjacent to parcel 34, and because it was known that Parcel 35 had undergone extensive clearing and grading in the past (McCoy and Clark 2008), an agreement was reached between SHPD, Parsons (the general contractor for the H-POWER Expansion Project), and PCSI to allow for additional clearing and grading of portions of Parcel 35 for additional laydown space concurrent with test excavations in selected sinkholes for an Archaeological Inventory Survey (AIS). A work plan was developed and approved by SHPD for the AIS of Parcel 35.

Paleontological materials, consisting of avifaunal remains, were encountered in all of the test excavations. The sinkholes yielded a small but significant sample of paleontological bird bone. To a limited extent, it resembles previously recovered faunal collections (e.g., those recovered during archaeological investigations for the Barbers Point Deep Draft Harbor) in that Petrels/Shearwaters predominate in the identified bone. It is likely that future studies in these sinkholes may provide much more information and a more accurate picture of what bird species were formerly present and whether or not human settlement of the area coincided with the bird populations that once lived in the area.

Due to the presence of the Medium mammal bone in Layer II in Sinkhole 9 that is probably cultural in origin, this sinkhole has been determined to be a historic site. It was recommended that Sinkhole 9 – SIHP No. 50-80-12-7417 – be deemed significant under Criteria “D” and “E,” and that the concentrations of sinkholes on Parcel 35 be preserved. A preservation plan has been developed that includes limited archaeological data recovery, provisions for protecting the sites, and developing a program of public access and education around these important features of Ewa’s past.

Cultural Resources

The cultural impact assessment for the H-POWER Expansion Project involved: (1) a literature search prior to the archaeological field assessment to determine the presence/absence of Traditional Cultural Properties; (2) verbal and written consultation with the Office of Hawaiian Affairs (OHA), and (3) field interviews with two individuals from the Kapeolei area, Ms. Lynette (“Auntie Nettie”) Tiffany and Mr. Shad Kane, who were recommended by Muffet Jourdane (Assistant Oahu Archaeologist) and Nathan Napoka (History and Culture Branch Chief) of the State Historic Preservation Division (SHPD). Auntie Nettie, who is employed by the Estate of James Campbell, is the supervisor (kahu) for Lanikuhonua. She is also a member of the Oahu Island Burial Council.

The site visit with Auntie Nettie and Shad Kane took place on November 16, 2004. After an initial meeting which included an overview of the proposed project and examination of the aerial photographs showing recent changes to the project area, Mr. Rodney Smith (Covanta) accompanied PCSI to the site of the re-interred burial.

Following a brief discussion about the burial, Mr. Kane took PCSI into the plant sanctuary on Parcels 33-34, which contains Achyranthes splenden var. rotundata, naio (Myoporum sandwicense) and various other plants. Mr. Kane noted the presence of an endemic shrimp (‘ōpae’ula) in the brackish water located in the sinkholes within the enclosure. According to Mr. Kane, the sinkholes fill up with water after heavy rains. There are two species of ‘ōpae’ula (Halocaridina rubra and Metabetaeus lohena). It is unclear which of the two species occur in these particular sinkholes. The ‘ōpae’ula was used in traditional times as bait for ‘ōpelu fishing (Pukui and Elbert 1986:291). Mr. Kane expressed a concern that the ’ōpae’ula population could be adversely affected by contaminants entering the water table, depending on what kinds of equipment and supplies will be temporarily placed in the laydown area. Both Mr. Kane and Auntie Nettie emphasized the importance of preserving more sinkholes in the Kalaeloa area and other areas because of the native plants, human remains, and other evidence of past human uses that are often found in and around them. The sinkholes, which once numbered in the thousands and formed part of a vast natural and cultural landscape in the Kalaeloa area, are now restricted to a small number of undeveloped or undisturbed properties. The sinkholes contained within the two plant enclosures and in the kiawe thicket in Parcel 35 represent some of the last remaining examples of this landscape in the local area. Auntie Nettie and Mr. Kane also expressed a concern that more attention be given to protecting the shoreline area across the road from the Parcels.

No information on beliefs, cultural practices, or culturally important places within the boundaries of the proposed project area or adjacent areas was provided, except for a story Auntie Nettie related about her mother, Leilani Fernandez, exchanging dried fish and salted meat for ‘ōkole hao, a liquor made from ti plants, that was made by a man who lived somewhere nearby. No response was received from OHA to a letter dated October 14, 2004 requesting information on traditional Hawaiian beliefs, cultural practices, and culturally significant sites (now commonly referred to in the Cultural Resource Management (CRM) literature as Traditional Cultural Properties) in or near the proposed project area. A second letter was sent to OHA on August 13, 2008 requesting information concerning traditional cultural practices and places. OHA’s response, dated September 4, 2008, requested that burials and plant sanctuaries be protected during Expansion activities and reiterated the elevated potential of additional undiscovered subsurface burial sites existing in the area (Appendix A of H-POWER Expansion Final EIS).

On current evidence, there are no known Traditional Cultural Properties or on-going cultural practices within or near the Area of Potential Effect (APE) based on a review of the pertinent literature for the area and the consultation with Auntie Nettie and Mr. Kane. While it is likely that culturally significant sites did exist at one time within or in close proximity to the H-POWER plant, the nearest (approximately 2.7 miles) known surviving site with cultural significance is Pu’uokapolei, a small cinder cone that is the most prominent landmark on the Ewa Plain and the former site of Fort Barrette. In their synthesis of cultural resource studies on the Ewa Plain, Tuggle and Tomonari-Tuggle (1997:21) noted that Pu’uokapolei was the sacred center of that part of Oahu:

Probably the most important of all traditional locales on the Ewa Plain is the hill known as Pu'uokapolei. This volcanic cone at the inland edge of the Ewa Plain was the location of a temple, (of unknown affiliation), a residence of the family of the demi-god Kamapua'a, a reference point for solar observation, and a traveler's landmark (McAllister 1933:108; Kamakau 1976:14; Ii 1959:27; Thrum 1907:46).

Additional information on Pu'uokapolei is summarized in Sites of Oahu (Sterling and Summers 1978:33-34).

In 2008, follow-up consultation was conducted in the form of contacting Mr. Shad Kane and Auntie Nettie, as well as the Office of Hawaiian Affairs. When Auntie Nettie was contacted, she indicated that she did not have any further concerns regarding the H-POWER project.

3.4 Impacts and Mitigation - Archaeological and Cultural Resources

The proposed action is not expected to have any impacts to known or potential archaeological or cultural resources. Nonetheless, the site will be monitored. The existing archaeological sanctuary in parcel 35 will be fenced off and protected in accordance with AIS and preservation plan.

Section 4 – Impacts / Mitigations

4.1 Short Term Impacts

Impacts will occur during the construction period including short term positive impacts to the economy resulting from construction period employment and associated spending for construction equipment and supplies. No long term impact will result including impact to schools or other public services or facilities.

During construction there will also be impact to geology and soils through use of the construction laydown, staging, parking and fabrication area. However, this will occur on previously disturbed land appropriately zoned for this purpose, and the increased activity will be minor.

Air Quality and noise impacts will occur from construction activities including operation of mobile construction equipment. However, these impacts will be a minor change to the on-going surrounding activities. The air quality associated with white goods processing will not be impactful to the surrounding communities as the operations will follow appropriate rules and regulations.

During construction of the Solar Building, there will be a slight increase in traffic. Construction is anticipated to last about six months with an expected average vehicle count of about twelve vehicles per day.

Surface water quality could be impacted from construction period run off. However, an erosion and sedimentation control program will be employed. The contractors responsible for the project will also have a Construction SWPCP which includes additional BMPs for controlling site run off.

Biological and archaeological resources will be protected within the established sanctuary areas of the parcels designated Contractors will be trained prior to the start of work regarding recognition of potential discovery of remains, and what reporting is required following work stoppage in the event remains are found.

4.2 Long Term Impacts

There are no long term impacts to air quality and human health. In fact, the building is anticipated to have long-term benefits to air quality on a life-cycle basis, due to renewable energy generation from the solar panels and the associated emissions savings. Refrigerant reclamation and recycling and metals processing will take place indoors. Refrigerant reclamation will be conducted in accordance with federal EPA regulations related to the Refrigerant Recycling Rule (Section 608 of the Clean Air Act).

Permanent disturbance had been made to geology and soils in the area where the building will be constructed.

An additional ten (10) vehicles per day are anticipated for an active storage/operations program but most are vehicles trips that are already occurring at H-POWER, in JCIP, or on Kaomi Loop and would just be moving to this location. Up to two (2) vehicles are anticipated on days where PV housekeeping and maintenance are conducted, but most of the time the system will be operated automatically.

Minimal impact will occur to water resources as minimal additional process water will be required for recycling activities. The facility design will support zero discharge. Storm water will continue to be captured and diverted to onsite swales and settling ponds for onsite management and Best Management Practices are in effect through the facility NPDES GUP.

No archaeological, historic or cultural impacts are anticipated. The existing archaeological sanctuary on Parcel 35 will be protected and not disturbed. Construction phase excavation will be controlled and activities will be interrupted if discoveries are made.

4.3 Construction Period Mitigation

An Erosion and Sedimentation Control program will be established through a NPDES Construction phase permit. Best Management Practices (BMP) will be employed including interception of runoff, silt fences/barriers and protection of existing storm water features and devices including catch basins and culverts. Intercepted runoff will be directed to settling ponds, and contained onsite as much as possible.

Water trucks will be utilized to minimize dust and fugitive emissions. Construction equipment will be equipped with noise mufflers and emissions control devices as required by law.

The construction area has been designed to avoid disturbance of both the established sanctuaries including a buffer zone. Fencing will be maintained to protect these sensitive areas.

4.4 Long Term Mitigation

Traffic and roadway impacts will be minimal with only slightly increased traffic counts. There are no further cultural, noise, visual, socioeconomic, solid waste, energy or human health impacts that were not pre-existing. Existing biological and archaeological sanctuaries will be protected and maintained. An existing SMA (portion of Parcel 35) is fenced off, will be protected, and will not be encroached.

Section 5 - Alternatives

Criteria that were considered for the alternatives analysis included the following items:

- Ability to comply with SEP requirements
- Space availability for the requisite solar panels and associated electrical gear on City property.
- Availability of an in-house power demand that negated the need for a solar PV PPA with HECO
- Technical feasibility
- Completion by 2020
- Potential future use of areas impacted
- Minimize impact on project activity where solar PV systems are installed
- Lowest capital cost
- Lowest operational cost to City
- Locations where zoning allows for a recycling facility
- Centrally-located recycling facility

The primary purpose of the building is the solar PV to comply with the terms of the SEP, with the recycling and white goods processing being secondary to the SEP, it was more important to evaluate the alternatives with the solar PV as the priority.

5.1 No Action

The No Action Alternative would mean the solar PV systems would not be installed and no provisions made to provide for these systems. All H-POWER in-house power would continue to be produced from combusted waste.

The No Action Alternative would mean the City would be liable for penalties to EPA for failing to comply with the CD inasmuch as the solar PV project at H-POWER is the SEP required by the CD. While this alternative would result in no capital costs, the penalty for noncompliance with the SEP would result in penalties of at least $7,000,000.

5.2 H-POWER and Parcels 33 – 35

Completing the solar PV project would result in the generation of 5,000 MWh/yr of additional power from H-POWER due to a comparable reduction in the Facility's in-house power consumption. The City anticipates that the solar PV project would continue operation for the term of the Facility operating at a capacity of 3 MW DC during this time period. No reduction in the capability of H-POWER to process waste would result. By utilizing all suitable roof areas at H-POWER and supplementing with the additional roof space on Parcels 33 – 35, the impact to H-POWER operations and the Parcels is minimized. Roof mounting the solar panels also maximizes potential future uses of the Parcels by providing interior space. Significant capital costs are anticipated.

However, over the thirty-year anticipated PV system life the resulting revenues returned to the City are anticipated to more than offset the capital costs.

5.3 Other City Sites

During the negotiations with EPA, the City and EPA considered other comparable refuse sites for installation of PV panels. Most of the other locations do not have adequate rooftop, parking lot, and free ground space available for a solar PV project of the magnitude required by the CD. For those locations that do have the space, such as Waimanalo Gulch Sanitary Landfill, there is insufficient internal power demand and a power purchase agreement (PPA) and an Interconnection Requirements Study (IRS) would be required with HECO. A PPA would require approval and negotiations with HECO (which HECO represented could take up to 5 years to obtain, and would also ultimately require PUC approval (another time-consuming requirement).

5.4 H-POWER Facility Only

H-POWER was also considered for the solar PV project without incorporating any additional solar PV on the adjacent Parcels. H-POWER has the requisite in-house power demand allowing it to use power without the need for a PPA specifically for the solar PV project. However, there is not adequate roof space nor enough open ground level space for the entire project. Some of the additional open spaces that could be utilized could by easily damaged or hamper operations by impacting traffic flow and reducing maintenance staging areas, in addition to other impacts, Some of these locations may be less desirable because panels may be less efficient due to shadows from neighboring buildings and structures. Thus use of only the H-POWER site would not enable the City to fully comply with the CD SEP requirements.

5.5 Parcels 33 – 35 Only

All of the solar panels could be installed on Parcels 33 – 35. The power generated could be used for certain new uses on the Parcels such as lighting with the excess power transmitted to H-POWER to off-set in-house power. However this plan would result in using up most of the available space on those parcels and negating or limiting future development. In addition the capital cost of the project would likely increase significantly.

Recommended Plan

Alternative 5.2, H-POWER and Parcels 33-35, was chosen as the alternative that best met the criteria established for the SEP.

Section 6 – Findings

6.1 Significance Criteria

Based on the significance criteria set forth in HAR, Title 11, Chapter 200, Environmental Impact Statement Rules, the proposed action is not anticipated to result in significant environmental impacts. The recommended preliminary determination for the proposed project is a Finding of No Significant Impact (FONSI). The findings and reasons supporting this determination are summarized as follows:

1. *Involves an irrevocable commitment to loss or destruction of any natural or cultural resource*

The proposed action will not result in the adverse loss of natural or cultural resources. The existing biological and archaeological sanctuaries will be protected and maintained. In the unlikely event of a discovery of significant cultural, historic or archaeological resources, the SHPD will be immediately notified for appropriate action and treatment. As required, work will be temporarily halted as instructed by SHPD. An existing SMA is fenced off, will be protected, and will not be encroached.

2. *Curtails the range of beneficial uses of the environment*

The subject property is zoned for intensive industrial use. The proposed use is consistent with the industrial designation of the site and will be contained entirely within the property. The proposed action does not curtail beneficial uses of the environment.

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 action is consistent with the environmental policies, goals and guidelines expressed in HRS, Chapter 343. 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 and social welfare of the community or state*

The operation of the proposed action will be regulated in accordance with County, State and Federal regulations. It is expected to improve the social and economic environment of Oahu by generating renewable solar energy and optimizing the processing of residential recyclables.

5. *Substantially affects public health*

The building is expected to improve public health by providing emissions reductions through renewable solar energy generation instead of power generation using fossil fuels.

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

The proposed action is expected to have no substantial secondary or indirect impacts such as population changes or effects on public facilities based on the limited scope and scale of the action.

7. *Involves a substantial degradation of environmental quality*

Impacts to air and water quality, noise levels, natural resources, and land use associated with the planned project are anticipated to be minimal. Mitigation measures will be employed as practicable to minimize potentially negative effects to the environment. The proposed Action does not involve substantial degradation of environmental quality, but in fact improves it through renewable solar energy generation. Refrigerant reclamation will be conducted in accordance with federal EPA regulations related to the Refrigerant Recycling Rule (Section 608 of the Clean Air Act) and is anticipated to be an insignificant source.

8. *Is individually limited but cumulatively has considerable effect upon the environment or involves a commitment for larger actions.*

The proposed action is not expected to cause adverse cumulative impacts to the environment, nor involves a commitment for larger actions in that all work required will be limited to use of the project site. The proposed action is in accordance with the land use plans and policies of the State and City and County of Honolulu.

9. *Substantially affects a rare, threatened or endangered species*

The proposed action is not expected to cause adverse impacts to any rare, threatened, or endangered species. Existing biological sanctuaries will be protected and maintained.

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

On a short-term basis, ambient air and noise conditions may be affected by construction activities related to the proposed action, but these are short-term potential impacts and can be controlled by mitigation measures as described in this EA. Once the action is completed, noise in the project vicinity will be allowed to return to conditions consistent with the surrounding land uses. Erosion control measures and other BMPs will be employed to prevent untreated storm water runoff from construction activities entering State waters. Air quality will be improved through emissions reductions through renewable solar energy generation instead of power generation using fossil fuels. Refrigerant reclamation will be conducted in accordance with federal EPA regulations

related to the Refrigerant Recycling Rule (Section 608 of the Clean Air Act) and is anticipated to be an insignificant source.

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

The proposed action site is not located within an environmentally sensitive area. A portion of Parcel 35 contains an SMA, but it is fenced off, will be protected, and will not be encroached. The building is located within a tsunami evacuation zone. In the event of a tsunami, evacuation and response procedures will be followed, as detailed in the emergency response plans maintained by H-POWER and the Refuse Division.

12. *Substantially affects scenic vistas and viewplanes identified in county or state plans or studies*

The proposed action will not obstruct any significant scenic features and viewplanes due to its elevation and existing similar industrial activities in close proximity to the project site. The proposed action will not substantially affect any existing views from surrounding areas.

13. *Requires substantial energy consumption*

Construction and daily activities associated with the proposed Action will not require substantial amounts of energy. In fact, the action will result in positive renewable solar energy generation.

6.2 Findings

In accordance with the provisions set forth in HRS, Chapter 343, and the significance criteria in HAR, Section 11-200-12 of Title 11, Chapter 200, it is anticipated that the proposed action will have no significant adverse impacts to water quality, air quality, existing utilities, noise levels, social welfare, archaeological sites, or wildlife habitat. All anticipated impacts are expected to be temporary in duration and will not adversely impact the environmental quality of the area. In fact, the proposed action is expected to have significant benefits such as the production of renewable solar energy and recycling activity. It is anticipated that an Environmental Impact Statement (EIS) will not be required, and that a Finding of No Significant Impact (FONSI) will be issued for this Project.

Section 7 – List of Permits / Approvals

The following permits are anticipated for this project:

Approving Agency/Authority	**Approval/Permit**
HDOH, Clean Water Branch	Notice of General Permit Coverage NPDES Construction Storm Water Discharge Permit
HDOH, Solid and Hazardous Waste Branch	Solid Waste Management Permit (modification to existing H-POWER permit)
City and County of Honolulu Department of Planning and Permitting (DPP)	Building Permit
City and County of Honolulu Department of Planning and Permitting (DPP)	Grading Permit and Drainage Plan Approval

Section 8 – Agencies and Organizations Consulted

Copies of the Draft Environmental Assessment were mailed to the agencies and organizations listed below. Publication in the Environmental Notice initiated a 30-day public comment period.

State

Dept of Agriculture
Dept of Accounting and General Services
Department of Business Economic Development & Tourism
DBEDT – Energy Division
DBEDT – Office of Planning
Dept of Defense
Dept of Education
Dept of Hawaiian Homelands
Dept of Health
Dept of Human Services
Dept of Labor and Industrial Relations
Dept of Land and Natural Resources
DLNR – Historic Preservation Div
Dept of Transportation
Hawaii Housing Fin. and Dev. Corp.
Office of Hawaiian Affairs
UH Environmental Center

Federal

US Fish and Wildlife Service
US Federal Aviation Administration

City

Board of Water Supply
Dept of Community Services
Dept of Design and Construction
Dept of Environmental Services
Department of Facility Maintenance
Department of Planning and Permitting
Department of Parks and Recreation
Dept of Transportation Services

Other

Nearest State Library
Hawaiian Electric Company

Appendix A – References

H-POWER Expansion Project FEIS and Truck Receiving Station for Sludge FEA (both available at http://health.hawaii.gov/oegc/)

Pacific Consulting Services, Inc. “Final Archeological Inventory Survey of Parcel 35 in Support of Construction of an Equipment Staging Area for the Proposed H-POWER Expansion Project, Honouluuli Ahupuaa, Ewa District, Island of Oahu. TMK: (1) 9-1-025:035” December, 2011.

Consent Decree
(available at
http://www.justice.gov/sites/default/files/enrd/pages/attachments/2015/05/12/honolulu_consent_decree.pdf)