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Deputy Comptroller

**STATE OF HAWAII  
DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES**

P.O. BOX 119, HONOLULU, HAWAII 96810-0119

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MEMORANDUM

TO: Mr. Scott Glenn, Interim Director  
Office of Environmental Quality Control  
Department of Health

FROM: James K. Kurata *James Kurata*  
Public Works Administrator

SUBJECT: Draft Environmental Assessment for  
Judiciary Multi-Use and HHFDC Joint Development  
DAGS Job No. 12-21-7550

OFFICE OF ENVIRONMENTAL  
QUALITY CONTROL

16 MAR 11 PM 2:00

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The Department of Accounting and General Services, State of Hawaii, hereby transmits the Draft Environmental Assessment and Anticipated Finding of No Significant Impact (DEA-AFONSI) for the Joint Development for Affordable Rental Housing and Juvenile Services Center/Shelter, situated at 902 Alder Street, TMK: (1)2-3-012:019, in the Honolulu District on the island of Oahu, for publication in the next available edition of the Environmental Notice.

We have enclosed a completed OEQC Publication form, two printed copies of the DEA-AFONSI, and a CD containing these documents in electronic form.

If you have any questions, your staff may call Mr. Lance Maja of the Planning Branch at 586-0483.

LM:mo

Attachments

- c: Ms. DeeDee Letts – Judiciary without attachments
- Ms. Janice Takahashi – HHFDC without attachments
- Mr. Donald Clifford – SSFM International without attachments
- Ms. Katia Balassiano – SSFM International without attachments

**SCANNED**



**AGENCY  
PUBLICATION FORM**

MAR 23 2016

Project Name:	Joint Development for Affordable Rental Housing and Juvenile Services Center/Shelter
Project Short Name:	Affordable Rental Housing and Juvenile Services
HRS §343-5 Trigger(s):	Use of State Land and Use of State Funds
Island(s):	Oahu
Judicial District(s):	Honolulu
TMK(s):	(1) 2-3-012:019
Permit(s)/Approval(s):	201H Application, NPDES, Community Noise Permit, Construction (including Building, Electrical, Plumbing; Grading/ Trenching Permit, Grubbing, Stockpiling Permit, Sidewalk/Driveway Permit, Demolition Permit, Street Usage), Sewer Connection, Permit, Water Connection, Water System approval, HFD Plan Review
Proposing/Determining Agency:	Department of Accounting and General Services
<i>Contact Name, Email, Telephone, Address</i>	Mr. Lance Maja Email: lance.y.maja@hawaii.gov 1151 Punchbowl Street, Room 430 Honolulu, Hawaii 96810 Phone: (808) 586-0483
Accepting Authority:	(for EIS submittals only)
<i>Contact Name, Email, Telephone, Address</i>	
Consultant:	SSFM International
<i>Contact Name, Email, Telephone, Address</i>	Ms. Katia Balassiano kbalassiano@ssfm.com 501 Sumner Street, Suite 620 Honolulu, Hawaii 96817 Phone: (808) 356-1273

**Status (select one)** XX DEA-AFNSI**Submittal Requirements**

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEA, and 4) a searchable PDF of the DEA; a 30-day comment period follows from the date of publication in the Notice.

 FEA-FONSI

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; no comment period follows from publication in the Notice.

 FEA-EISPN

Submit 1) the proposing agency notice of determination/transmittal letter on agency letterhead, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEA, and 4) a searchable PDF of the FEA; a 30-day comment period follows from the date of publication in the Notice.

 Act 172-12 EISPN  
("Direct to EIS")

Submit 1) the proposing agency notice of determination letter on agency letterhead and 2) this completed OEQC publication form as a Word file; no EA is required and a 30-day comment period follows from the date of publication in the Notice.

 DEIS

Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the DEIS, 4) a searchable PDF of the DEIS, and 5) a searchable PDF of the distribution list; a 45-day comment period follows from the date of publication in the Notice.

- FEIS                      Submit 1) a transmittal letter to the OEQC and to the accepting authority, 2) this completed OEQC publication form as a Word file, 3) a hard copy of the FEIS, 4) a searchable PDF of the FEIS, and 5) a searchable PDF of the distribution list; no comment period follows from publication in the Notice.
- FEIS Acceptance Determination                      The accepting authority simultaneously transmits to both the OEQC and the proposing agency a letter of its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS; no comment period ensues upon publication in the Notice.
- FEIS Statutory Acceptance                      Timely statutory acceptance of the FEIS under Section 343-5(c), HRS, is not applicable to agency actions.
- Supplemental EIS 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 or is not required; no EA is required and no comment period ensues upon publication in the Notice.
  
- Withdrawal                      Identify the specific document(s) to withdraw and explain in the project summary section.
- Other                              Contact the OEQC if your action is not one of the above items.

**Project Summary**

The Judiciary and the Hawai'i Housing Finance Development Corporation (HHFDC) are proposing to jointly redevelop the 1.45-acre parcel located at 902 Alder Street in Honolulu. There are currently two buildings on the site. The proposed project involves demolishing the buildings and replacing them with two new structures - a new juvenile service center/shelter and rental housing complex, and a parking structure. The project includes a combination of approximately 180 affordable housing units, therapeutic counseling and rehabilitative services for juveniles, short term shelter services for juveniles, parking, and incidental community uses.

The Judiciary and HHFDC and are proactively responding to the needs of the State's working families and most vulnerable youth. This project:

- Introduces innovation and enhances national best practices to reduce the involvement of youth and families in the juvenile justice system, thus enhancing public safety;
- Creates affordable rental housing in a central location within Honolulu's urban core;
- Promotes dense, mixed-use, transit-oriented development in proximity to a future rail station and existing transit hub; and,
- Optimizes State lands on an underutilized parcel in the Primary Urban Center

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 16 MAR 11 12:00  
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**JOINT DEVELOPMENT  
FOR  
AFFORDABLE RENTAL HOUSING AND  
JUVENILE SERVICES CENTER/SHELTER  
Honolulu, Hawai'i  
TMK: (1) 2-3-012: 019**

**DRAFT ENVIRONMENTAL ASSESSMENT**

Prepared Pursuant to:  
Chapter 343, Hawai'i Revised Statutes and  
Title 11, Chapter 200, Hawai'i Department of Health Administrative Rules

Proposing Agency:  
State of Hawai'i, Department of Accounting and General Services

Prepared by:  
SSFM International, Inc.

March 2016



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## PREFACE

The Hawai'i Housing Finance Development Corporation (HHFDC) and the Judiciary of the State of Hawai'i (Judiciary) are proposing to jointly redevelop a 1.45-acre parcel located at 902 Alder Street in Honolulu, Hawai'i.

There are currently two buildings on the site. The small building is occupied by the Home Maluhia shelter facility for youth. The large building consists of a main structure and three wings that previously housed juvenile detention facilities. The boys' dormitory part of the building has been vacant since 2010 when the detention facilities were relocated to Kapolei. The girl's side of the building was remediated by the Judiciary and is used currently used for juvenile programming, education and the accountability unit. The proposed project involves demolishing the buildings and replacing them with two new structures, a juvenile shelter/services center and rental housing complex; and a parking garage. The proposed mixed-use project entails a combination of affordable rental housing; therapeutic counseling and rehabilitative services for juveniles; short term shelter services; parking; and, incidental community uses.

This partnership between the HHFDC and Judiciary is evidence of the State's creative and proactive response to the needs of its most vulnerable youth and working families. This project:

- Introduces innovation and enhances national best practices to reduce the involvement of youth and families in the juvenile justice system thus enhancing public safety;
- Creates affordable rental housing in a central location within Honolulu's urban core;
- Promotes dense, mixed-use, transit-oriented development in proximity to a future rail station and existing transit hub; and,
- Optimizes State lands on an underutilized parcel in the Primary Urban Center.

The proposed action involves the use of State land and funds. Therefore, this Draft Environmental Assessment (EA) was prepared in accordance with Chapter 343 of the Hawai'i Revised Statutes (HRS) and Title 11, Chapter 200 of the State Department of Health's Hawai'i Administrative Rules (HAR). This project will also be processed under Chapter 201H HRS, which offers flexibility in design and permitting requirements to projects created for lower and moderate income households. In addition to presenting known environmental factors pertinent to the site and proposed project, this Draft EA also serves as the Chapter 201H application agency/public comment document.

Approvals associated with Chapters 343 and 201H, HRS are being sought in advance of securing a developer for the project. This approach is being taken to reduce project costs and stimulate developer interest. As a result of not having a developer on board, certain details associated with the project – such as its exterior and interior design, plans and specifications, and operational requirements - are not yet available.

The proposed action is consistent with the community vision, policies and guidelines set forth by the Primary Urban Center Development Plan and is anticipated to result in a Finding of No Significant Impact (FONSI).

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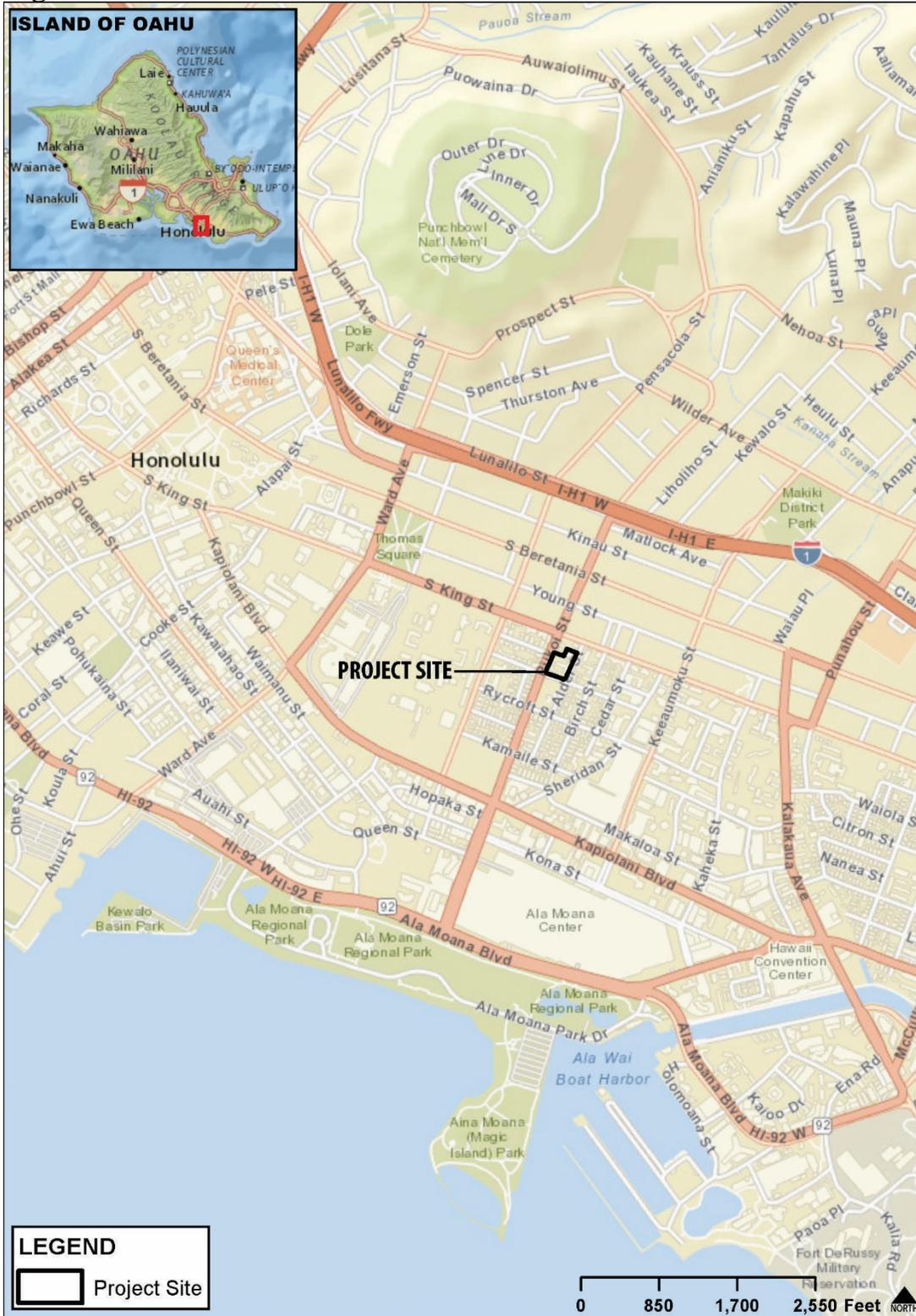
# 1.0 INTRODUCTION

The State of Hawai'i Housing Finance Development Corporation (HHFDC) and the Judiciary of the State of Hawai'i (Judiciary) are proposing to jointly redevelop a 1.45 acre parcel, identified as Tax Map Key (1) 2-3-012: 019, located at 902 Alder Street in Honolulu, Hawai'i. The proposed action as described in this Draft EA must satisfy the requirements of Chapter 343 of the Hawai'i Revised Statutes (HRS).

## 1.1 PROJECT INFORMATION SUMMARY

<b>Name:</b>	Joint Development for Affordable Rental Housing and Juvenile Services Center/Shelter
<b>Project Location:</b>	Honolulu, O'ahu, Hawai'i (See Figure 1)
<b>Tax Map Key:</b>	(1) 2-3-012: 019 (See Figure 2)
<b>Land Area:</b>	1.45 acres (63,180 square feet)
<b>Landowner:</b>	State of Hawai'i, Executive Order to the Judiciary
<b>Proposing Agency:</b>	State of Hawai'i, Department of Accounting and General Services
<b>State Land Use Classification:</b>	Urban
<b>City and County Zoning:</b>	A-2 Medium Density Apartments (See Figure 3)
<b>Development Plan:</b>	Primary Urban Center Development Plan
<b>Development Plan Land Use Map:</b>	Medium and Higher-density Residential/Mixed Use and within the Urban Community Boundary(See Figure 4)
<b>Special District:</b>	None; however, within Special District-Transit proposed by County and County of Honolulu
<b>Special Management Area:</b>	Not within SMA
<b>Existing Use:</b>	Juvenile Services Center and Shelter
<b>Proposed Action:</b>	1) Use of State Lands 2) Use of State Funds

Figure 1: PROJECT LOCATION MAP



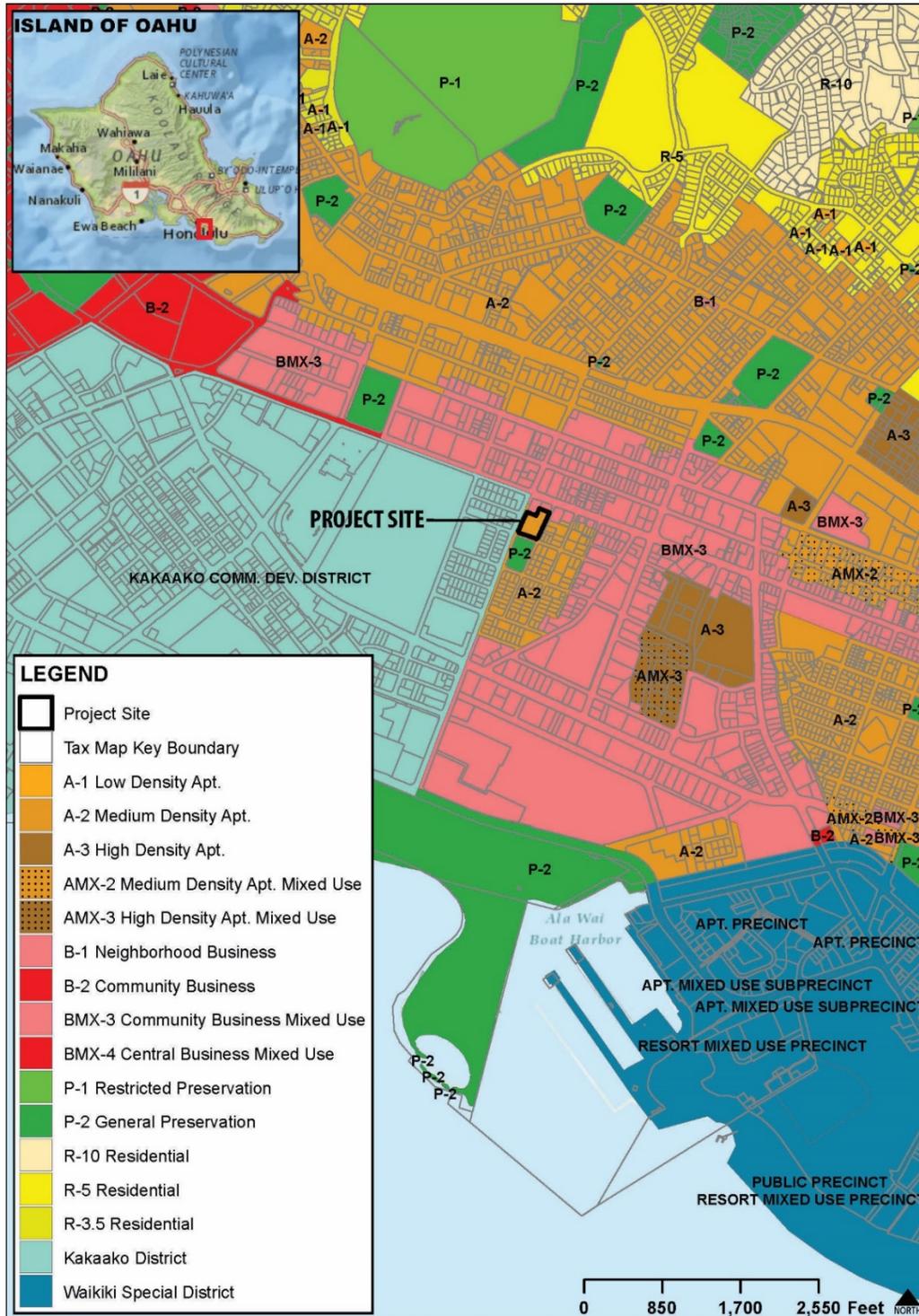
Source: Google Maps (2015)

Figure 2: TAX MAP



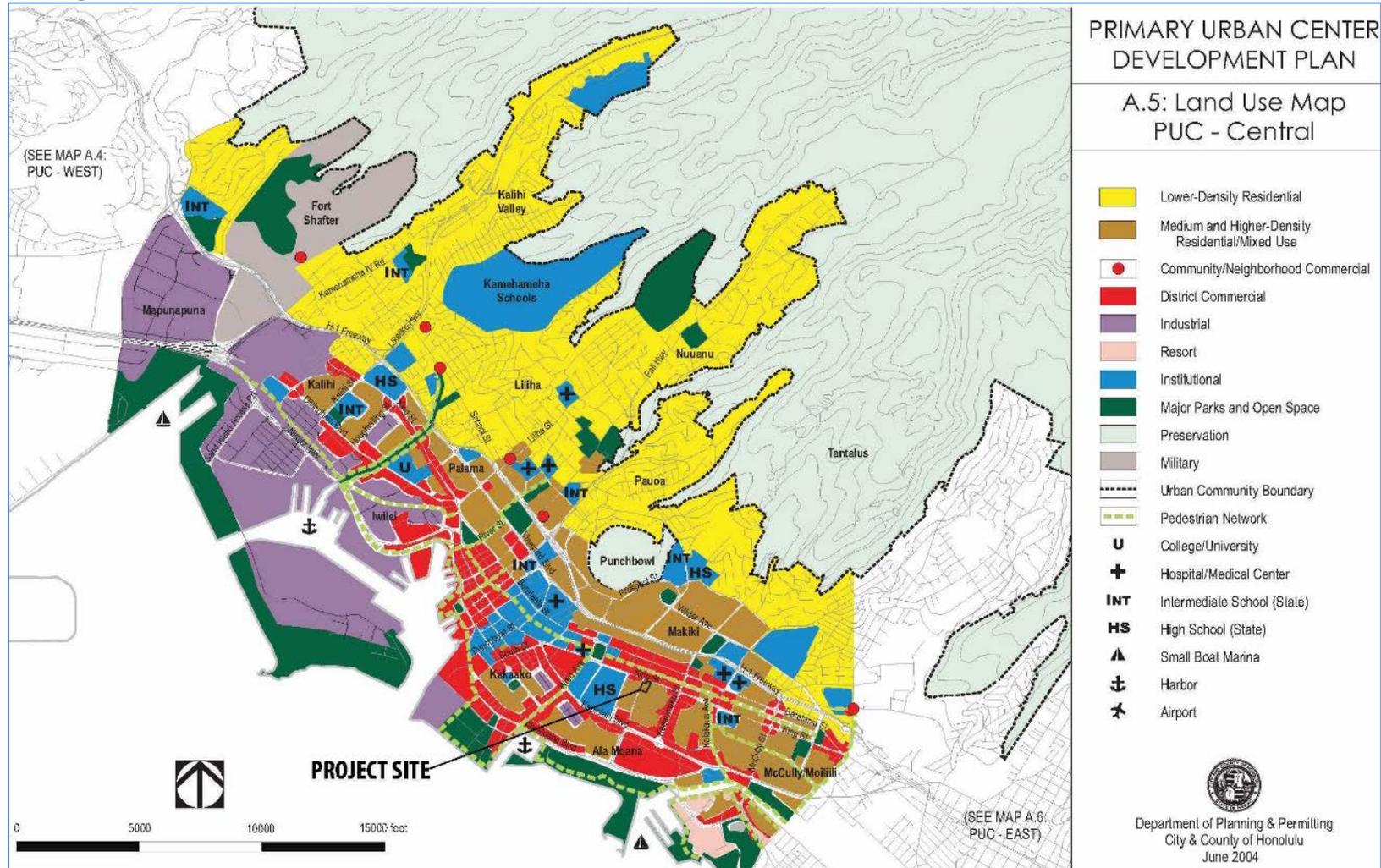
Source: City and County of Honolulu, HoLIS (2015)

Figure 3: CITY AND COUNTY OF HONOLULU ZONING



Source: City and County of Honolulu, HoLIS (2015)

**Figure 4: PUC DP LAND USE MAP**



Source: City and County of Honolulu, Department of Planning and Permitting (2004)

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## 2.0 PROJECT DESCRIPTION

This section provides an overview of the proposed action and development.

### 2.1 PROJECT LOCATION

The State of Hawai‘i owns the 63,180 square feet (1.45 acres) of land at 902 Alder Street in the Ala Moana - Kaka‘ako District of Honolulu, O‘ahu, Hawai‘i. The property is bound by Alder Street to the east, Elm Street to the makai direction, Pi‘ikoi Street to the west, and a service station and restaurant to the mauka direction. The yards on Elm Street and Pi‘ikoi Street are fenced. A gate and driveway on Pi‘ikoi Street allows service access and an entry on Alder Street provides employee parking and access. Along the mauka property line, a chain link fence separates the service station from the property boundary and a wall separates the subject property from the adjacent restaurant. The wall wraps around along the east side of the property on Elm Street to partially enclose the front of the Home Maluhia shelter facility.

### 2.2 EXISTING AND SURROUNDING USES

There are currently two buildings, a paved parking area, paved recreational facilities, and landscaped yards on the property. Figure 5 shows the Existing Site Plan. One of the buildings, the Detention Home (Hale Ho‘omaluku) for boys and girls, was vacated in 2010. Detention services were relocated to the Kapolei Judiciary Complex. Currently, the boy’s side of the Alder Street facility is vacant. The girl’s side is used for juvenile services programming functions. The second building, Home Maluhia juvenile shelter, continues to operate on the site.



*Image 1: Entrance to the Home Maluhia from Alder Street (K. Balassiano, 9/20/15)*

A driveway and opening in the wall on Alder Street allows four vehicles to park near the entrance to the Home Maluhia shelter facility and up to six to park on the grassed area. Beyond the wall, and closer to the facility’s actual entrance, are accommodations for 11 parking stalls. When additional parking is needed, vehicles park on the grass. The service area from Pi‘ikoi Street is gated; however, there is yard space and a paved loading area that is also used for parking, if necessary.



Within the facility there are courtyards. The boy's courtyard is an open, paved rectangular space with a full-size basketball court. The courtyard is old and has numerous cracks in the pavement. The girl's courtyard is a landscaped area between the kitchen and the girl's dormitory which has been planted and refurbished by the juveniles being served at the facility into a meditation garden. This garden includes a mature Ohi'a tree among the other plants.

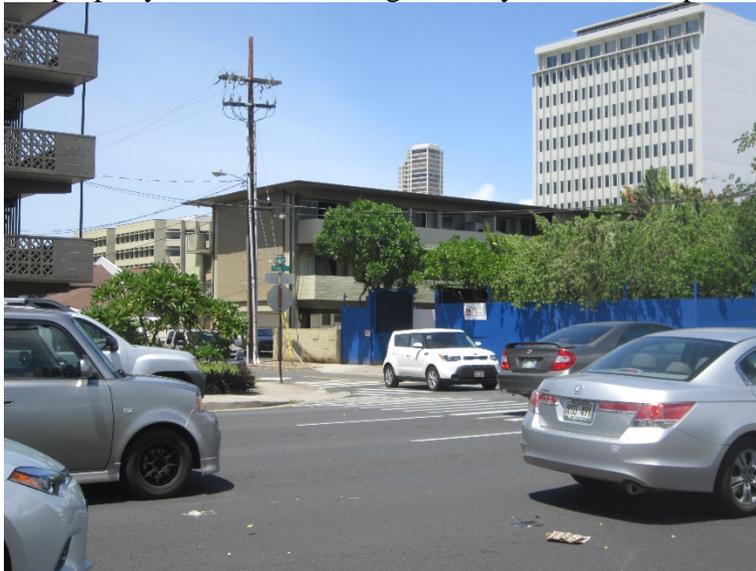
The subject property has several mature trees, particularly on the Elm Street and Pi'ikoi Street sides of the vacant facility. There is minimal landscaping along the front of the vacant facility and around the Home Maluhia.

Across from the property on Alder Street are apartment buildings ranging from three to eight stories tall.



***Image 2: Residential Uses on Alder Street Across from the Facility (K. Balassiano, 9/21/15)***

Across from the property on Pi'ikoi are single family homes and apartment buildings.



***Image 3: Residential Uses on Pi'ikoi Street Across from the Facility (K. Balassiano, 9/21/15)***

Adjacent to the property in the mauka direction is a restaurant and gas station that both have frontage on King Street. See image 4.



***Image 4: Commercial Uses on King Street, Abutting the Mauka Side of the Facility (K. Balassiano, 9/21/15)***

The restaurant allows Home Maluhia to use its parking spaces whenever the restaurant is not open. Otherwise, visitors need to find on-street parking, which is not convenient as the limited on-street parking is heavily used by the surrounding residential uses.

Sheridan District Park is located on the makai side of the facility across Elm Street. It is a public park with a grassed field, basketball court and a small community center. The residents of the Home Maluhia shelter use the park for recreational purposes.



***Image 5: Sheridan District Park from Elm Street (K. Balassiano, 9/21/15)***

## 2.3 PROPOSED ACTION

The proposed action involves the use of State lands and funds. The 902 Alder Street property is set aside by the State of Hawai'i to the Judiciary pursuant to Executive Orders No. 1577 and No. 2484, dated September 5, 1953, and December 3, 1969, respectively. The Hawai'i Housing Finance Development Corporation's (HHFDC's) financing programs and legislative appropriations will likely be used as sources of construction financing. State funds will be used for the Judiciary component of the project. These actions trigger the requirements of Chapter 343, Hawai'i Revised Statutes (HRS). This Draft EA was prepared in accordance with Chapter 343, HRS and Title 11, Chapter 200 of the Hawai'i Administrative Rules (HAR).

The HHFDC intends to process approvals and entitlements for 902 Alder Street under Chapter 201H, HRS, which offers flexibility in design and permitting requirements to projects developed for lower and moderate income households. Therefore, in addition to satisfying the requirements of Chapter 343, this Draft EA also serves as the Chapter 201H, HRS application agency/public comment document.

## 2.4 DESCRIPTION OF THE DEVELOPMENT

The Judiciary and HHFDC recognize the need for affordable housing in the urban core as well as the need for services to youth and families involved in the justice system, and thus are pioneering this first ever partnership between the Judicial and Executive branches of government. The HHFDC and the Hawai'i State Judiciary (Judiciary) are partnering to redevelop the underutilized State-owned property at 902 Alder Street into a mixed-use development that will simultaneously help to address the State's affordable rental housing and juvenile justice needs. The conceptual site plan is shown in Figure 6. The proposed project would result in the construction of approximately 265,000 square feet of floor area for approximately 180 affordable rental housing units targeted for working individuals and families. The housing would be located in a 19-story building, of which the Judiciary would occupy approximately 35,000 square feet on the first three floors. Parking for residents, employees, and visitors would be located in an adjacent structure. The parking structure will be four stories tall. Part of the roof of the parking structure may be used as a recreational deck for residents. The structure will contain approximately 290 vehicular parking stalls. Another recreational area is proposed to be located outdoors, adjacent to Pi'ikoi Street. Construction of the project would be undertaken by a private development entity selected through a Request for Proposals (RFP) process.

### Affordable Rental Units

A variety of rental housing units are proposed to be developed, with unit types ranging from studios to three-bedroom units. The units will be available to households earning 60% and below of the U.S. Department of Housing and Urban Development (HUD) Area Median Income (AMI). The diversity of household sizes will contribute to a lively social environment and off-set pedestrian and vehicular traffic. Families with children will benefit from the proximity of Sheridan Park and schools in walking distance.

Residents will have multi-modal opportunities to get to work and around Honolulu. Parking requirements were determined based on the proposed operation and anticipated needs of the project. A reduction in the number of parking stalls - from that required by the Land Use Ordinance (LUO) is reasonable because the property is within half a mile from the proposed Ala Moana transit station. Each unit will be provided with one parking stall in the adjacent parking structure. There are several bus stops in close proximity to 902 Alder Street. Buses run frequently along South King Street. The site plan is designed with pedestrian paths that connect the property with public sidewalks. The project will have secure, on-site bicycle parking.

The intention is to reduce both housing and transportation costs in one of the more centrally located neighborhoods within Honolulu's urban core. Gentrification of this parcel will be avoided. The affordable rental housing located in close proximity to employment, shopping, and public services/amenities is intended to meet local needs.

#### Judiciary Facility

The conceptual site plan (Figure 6) shows the Judiciary component located on the first three floors of the high-rise building. The total of approximately 35,000 square feet of floor space will allow for administrative functions, offices, client assessment intake, meeting rooms, a recreational and visitation space, and shelter services.

The proposed juvenile services/shelter center will provide approximately the same number of shelter beds as in the current facility and will allow space to implement programs and services to assist youth and families at risk of entering the Juvenile Justice system. It will provide space for expanded programming to implement and enhance current national best practices that places emphasis on services for youth and families at risk, of entering, or progressing further into the juvenile justice system. These services would include but not be limited to education, pro-social activity, counseling, accountability through restitution etc. The center will also provide for improved shelter services for youth at risk who are not able to reside with their families in the short term for safety or other concerns.

#### Community Amenities

The perimeter of the property will be landscaped with trees, shrubs and grass. The shade trees on Elm Street will be preserved to the extent possible. The recreation deck – open to the apartment buildings' residents - will be visually attractive. Trees, shrubs, vegetated trellis, shade structures, seating, and picnic areas are contemplated for the recreation deck. A landscaped outdoor recreation area facing Pi'ikoi will be available to the youths in the shelter and residents of the rental housing complex.

The location of this property is itself an amenity. From the Alder Street location, future residents will have convenient access to employment, shopping, dining, and family services. They will have access to multiple forms of transportation with which to reach other destinations. In accordance with the Ala Moana Neighborhood TOD Plan, many residents and employees will choose to use the rail and bus system, and walk along nearby streets to their destinations.

On-site parking will be sized to reflect the needs of residents, juvenile service providers/users, and Judiciary employees. Parking stalls may be uncoupled from the housing units. That is, parking may be leased separately to those who need it. This will encourage residents to use public transit. The size of the parking structure may be significantly reduced by the reduction of required parking stalls. The parking structure will accommodate approximately 290 parking stalls. In conformance with ADA requirements, approximately eight stalls will be ADA accessible (six stalls for vehicles and two for vans). Approximately three loading stalls will be provided.

Secured, long-term bicycle storage within the parking structure will be available to residents.

The property will include safety measures, such as well-lit common areas, key card access for secure entry, private security service, and a camera surveillance system. Ingress and egress to the residential and Judiciary components will be separated.

#### Accessibility Compliance

This project will comply with Hawai'i Revised Statute-s (HRS) §103-50. All buildings, facilities, and sites will conform to applicable federal, state, and county accessibility guidelines and standards. HRS § 103-50 requires all State of Hawai'i or County government buildings, facilities, and sites to be designed and constructed to conform to the Americans with Disabilities Act Accessibility Guidelines, the Federal Fair Housing Amendments Act, and other applicable design standards as adopted and amended by the Disability and Communication Access Board. The law further requires all plans and specifications prepared for the construction of State of Hawai'i or County government buildings, facilities, and sites to be reviewed by the Disability and Communication Access Board for conformance to those guidelines and standards. In addition, the State will consider use of the U.S. Access Board's proposed *Guidelines for Pedestrian Facilities in the Public Right-of-Way*.

Figure 6: CONCEPTUAL SITE PLAN



14-077  
**JUVENILE SERVICES CENTER AND HOUSING: MASSING STUDY**  
*(Collocated Residential Tower and JUD w/ separate Parking Structure)*  
 902 ALDER ST, HONOLULU, HI 96814  
 DATE: 2/19/2016

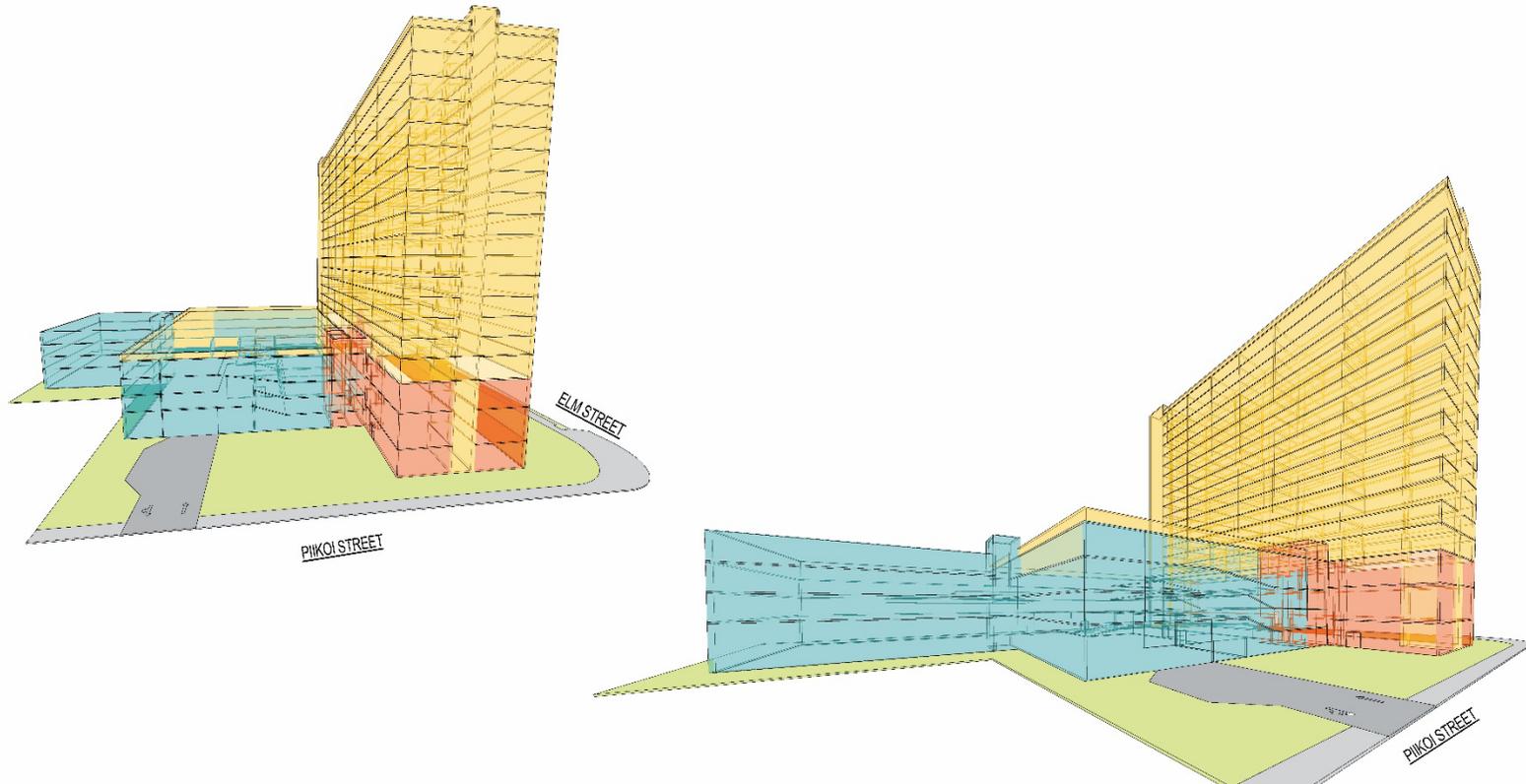
**RMA ARCHITECTS INC.**  
 ARCHITECTURE • INTERIOR DESIGN • PLANNING • COMMUNITY DEVELOPMENT

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 WWW.RMAARCHITECTS.COM  
 P: 808.931.8111 F: 808.931.1112

**A01**

Source: RMA Architects (2016)

**Figure 7: CONCEPTUAL BUILDING MASSING PLAN**



14-077

**JUVENILE SERVICES CENTER AND HOUSING: MASSING STUDY**

*(Collocated Residential Tower and JUD w/ separate Parking Structure)*

902 ALDER ST, HONOLULU, HI 96814

DATE: 2/19/2016

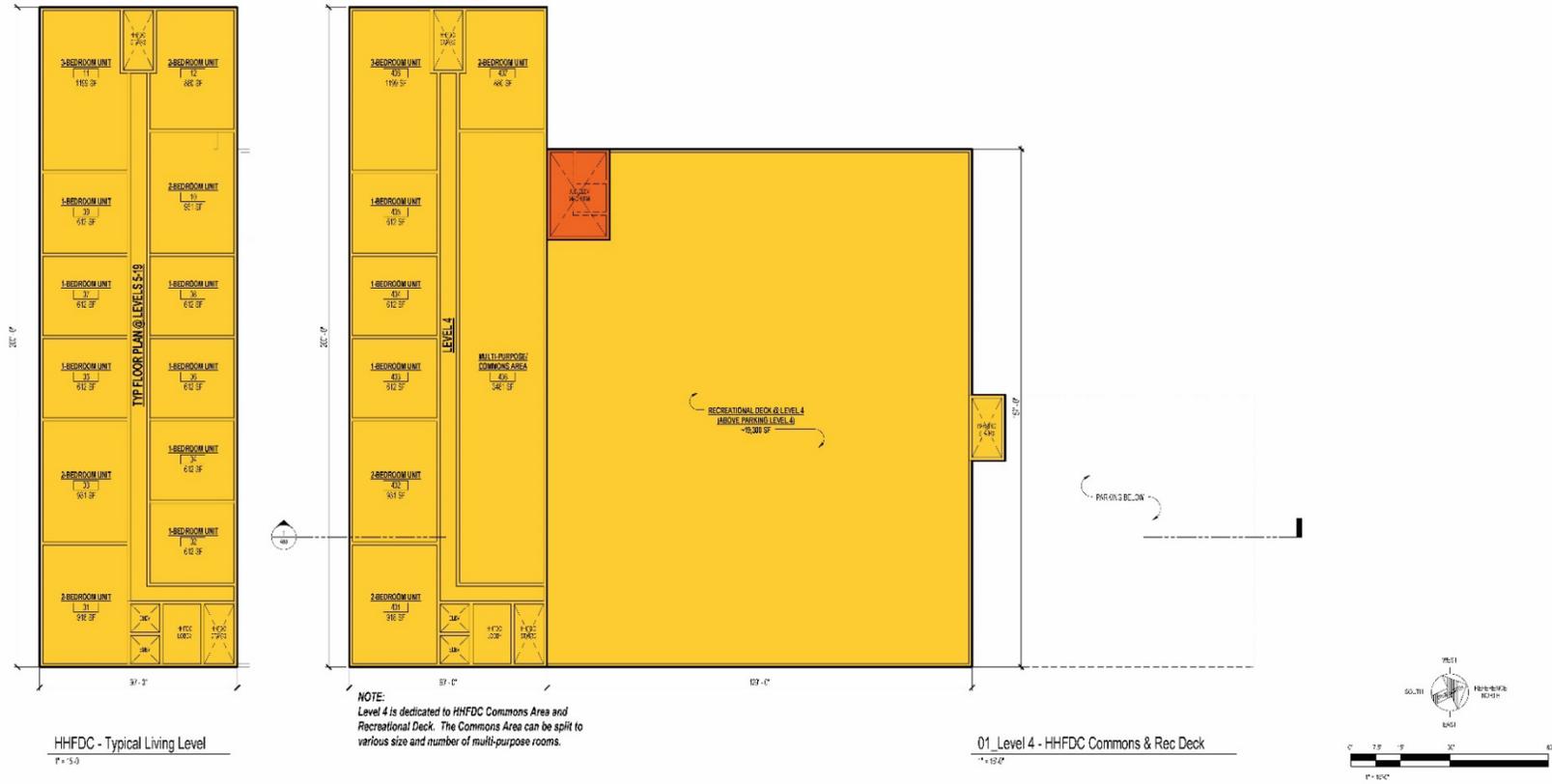


1150 K. KING ST., 8TH FL., HONOLULU, HI 96814  
808-949-0100 ext. 200  
T. 808-949-1144 F. 808-949-1144

**A04**

Source: RMA Architects (2016)

Figure 8: CONCEPTUAL FLOOR PLAN



14-077  
**JUVENILE SERVICES CENTER AND HOUSING: MASSING STUDY**  
*(Collocated Residential Tower and JUD w/ separate Parking Structure)*  
 902 ALDER ST, HONOLULU, HI 96814  
 DATE: 2/19/2016

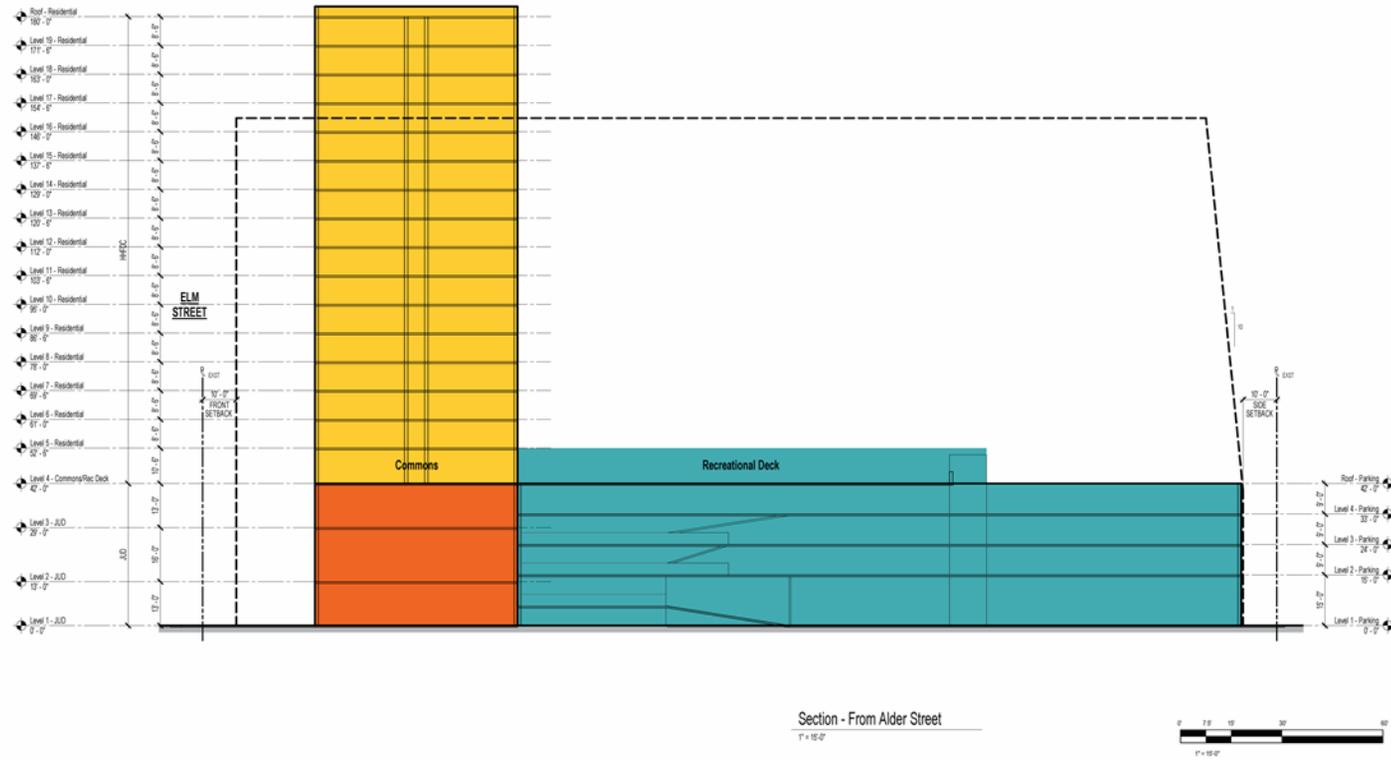
**RMA ARCHITECTS INC.**  
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 TEL: 808-531-1111 FAX: 808-531-1112

**A02**

Source: RMA Architects (2016)

**Figure 9: CONCEPTUAL ELEVATIONS**



Section - From Alder Street  
1" = 15'-0"



14-077

**JUVENILE SERVICES CENTER AND HOUSING: MASSING STUDY**

*(Collocated Residential Tower and JUD w/ separate Parking Structure)*

902 ALDER ST, HONOLULU, HI 96814

DATE: 2/19/2016



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**A03**

Source: RMA Architects (2015)

## 2.5 ALTERNATIVES CONSIDERED

### No Action Alternative

Under the no-action alternative, no site disturbance or construction impacts would occur. However, in this alternative, the property would remain underutilized with aging, partially vacant buildings. The property would remain inconsistent with the PUC DP and draft Neighborhood TOD Plan, which prescribe full development of the Primary Urban Center and compact, affordable housing around transit stations. The approximately 180 affordable housing units for low income working families would not be constructed. Services and shelter for court involved youth aimed at increasing youth and family success without further court involvement would not be available to youth and families in the urban core. The availability of these services will decrease the number of youth in expensive detention alternatives and increase public safety. It is important that these types of services be easily accessible by alternative forms of transportation and minimize travel time in order to be successful. The current buildings would not be able to provide these services in a family friendly manner.

### Upgrade the Existing Facility Alternative

The analysis of alternatives to “no action” began with the upgrading of existing buildings. The Home Maluhia shelter is in relatively good condition and is currently in use. The Home could remain operational. However, the Judiciary has determined that the future functions of the Home Maluhia are limited because of its current size and configuration. Home Maluhia is already utilizing space in the remediated building for its educational functions as there is not sufficient space within the structure as it is currently built and no further programming can be developed due to lack of space.

Due to the age and condition of the former Detention Facility, the hazardous materials, building and zoning code deficiencies, and ADA deficiencies, the facility is not worth renovating. It is becoming a safety hazard and will eventually need to be removed. Additionally, the building’s design as a Detention Facility would be impracticable to renovate for other uses.

Maintaining only half of the property, while allowing the other half to deteriorate or remain vacant is undesirable. Given the property’s location in the urban core of Honolulu near mass transit, the well-documented need for affordable housing, and the property’s development potential (based on existing zoning) - simply upgrading the existing facility was not deemed to be in the best interest of the County especially considering the need for affordable rental units. Thus the partnership between the Judiciary and HHFDC came about.

### Alternative Redevelopment Options

Two redevelopment concepts were considered. They included:

1. Building three separate structures for housing, the judiciary functions, and a shared parking structure.
2. Co-locating the affordable housing and judiciary components in the same building, with parking for both components in a separate structure.

The first redevelopment option was discarded because the stand-alone construction of uses would leave no room for an outdoor recreation area or landscaping. The first option is also more expensive to build and maintain, and would have resulted in fewer affordable housing units and shared amenities.

The second redevelopment option is preferred. The second option allows for optimizing the number of affordable housing units, maximizes proposed amenities, creates a rational flow of pedestrian and vehicle traffic through the property, minimizes the impacts on neighbors, allows for more open space, and is cost efficient.

## **2.6 PROJECT PHASING, FINANCING, ESTIMATED COSTS & DEVELOPMENT SCHEDULE**

The project will be constructed by a private development entity selected through a Request for Proposals (RFP) process in accordance with the terms of a Memorandum of Agreement (MOA), effective on September 11, 2014, and amended on September 2, 2015, between the HHFDC and the Judiciary. Under the MOA, the project will be constructed in two or more phases. As proposed, Phase 1 will involve the construction of two buildings, one of which will include all affordable rental housing units and incidental uses in approximately 265,000 square feet; approximately 24,000 square feet of finished space for the juvenile shelter and drop off/triage center with an ingress and egress that is separate from the residential component; and an incomplete “shell” of approximately 10,000 square feet with utilities “roughed-in”. The second building to be constructed in Phase 1 will be a parking structure for the entire project which will include parking for residents, stalls set aside for the Judiciary, a reserved parking space for the Honolulu Police Department, and possible recreation space for residents on the top level. The Judiciary and HHFDC will work with the selected developer to refine Phase 1, including such items as exterior and interior design, outdoor landscaping and recreation areas, Common Area Maintenance (CAM) charges, and parking costs.

Phase 2, or subsequent phases of the project, will complete the Judiciary component with the build-out of the “shell” that was constructed in Phase 1 and the assignment of approximately twenty-one additional parking stalls to the Judiciary.

The project will be financed with Legislative appropriations for: 1) plans and designs; and 2) construction of the Judiciary component and its associated parking in two or more phases. The developer will separately finance the residential component and associated parking in Phase 1, using typical low income rental housing financing sources, such as multi-family tax-exempt revenue bonds, Low-Income Housing Tax Credits (LIHTC), and Rental Housing Revolving Funds (RHRF). No construction will commence unless a

legislative appropriation for the Phase 1 component of the juvenile services/shelter space is available.

Project costs will be finalized in coordination with the selected developer. The estimated total project cost is approximately \$88.4 million at full buildout. The total project cost includes construction expenditures<sup>1</sup> and other development costs for both the residential and judiciary components (see Appendix K for more details). Approximately 90% of the estimated costs associated with furniture, fixtures and equipment will be allocated to the Judiciary; the remaining 10% will be allocated to the residential component for the recreation deck, and furniture in the lobby and common areas.

The estimated Phase 1 development schedule is as follows:

<b>Milestone</b>	<b>Estimated Date</b>
State Legislature approves CIP funds for Phase 1	May 2016
Issue RFP to Solicit a Developer	July - August 2016
Contract Awarded to Developer	January 2017
Negotiate/Execute Development Agreement	Feb. 2017 – Sept.2017
Developer Prepares Plans; Secures Financing; Obtains Permit Approvals	Sept. 2017 – Nov. 2018
Construction Begins	December 2019
Construction Completed (HHFDC and Phase 1 Judiciary)	August 2021

## 2.7 REQUIRED PERMITS AND APPROVALS

The following is a list of permits and approvals that may be required:

<b>Permit or Approval</b>	<b>Responsible Agency / Organization</b>
Chapter 343, HRS	State of Hawai‘i, Housing Finance and Development Corporation & State of Hawai‘i, Office of Environmental Quality Control
Chapter 201H, HRS Application	State of Hawai‘i, Housing Finance and Development Corporation & City and County of Honolulu City Council

<sup>1</sup> Estimates based on 2016 dollars.

<b>Permit or Approval</b>	<b>Responsible Agency / Organization</b>
Executive Order No. 1577 will need to be cancelled; a new Executive Order will be required	Board of Land and Natural Resources
National Pollutant Discharge Elimination System (NPDES) permit for construction activities and storm water discharge	State of Hawai'i, Department of Health
Community Noise Permit	State of Hawai'i, Department of Health
Park Dedication Requirement (Revised Ordinances of Honolulu, 1990, Chapter 22, Article 7, Parks and Playgrounds)	City and County of Honolulu, Department of Planning and Permitting
Permits for Construction, including Building, Electrical, Plumbing; Grading/ Trenching Permit; Grubbing; Stockpiling Permit; Sidewalk/Driveway Permit; Demolition Permit, Street Usage Permit	City and County of Honolulu, Department of Planning and Permitting
Sewer Connection Permit	City and County of Honolulu, Department of Planning and Permitting
Water Connection	Honolulu Board of Water Supply
Water System approval	State of Hawai'i, Department of Health
Plan Review	Honolulu Fire Department

The City and County of Honolulu's Department of Planning and Permitting (DPP) was consulted regarding this project. The DPP was also included in the standard Chapter 343, HRS pre-assessment consultation. All comments and responses associated with the pre-assessment consultation may be found in Appendix A of this Draft EA.

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## 3.0 EXISTING ENVIRONMENT, PROJECT IMPACTS, & MITIGATION MEASURES

This section describes the surrounding environment in the vicinity of the subject property, the probable environmental impacts associated with its development for affordable housing and judiciary uses, and identifies mitigating measures, as necessary.

### 3.1 CLIMATE

The climate of the Honolulu District is typically warm and dry. Prevailing trade winds arrive from the northeast. According to the National Weather Service Honolulu Office, over a period of 30 years, normal monthly high temperatures range from 80 degrees in January to a high of 89 degrees in August for an annual average of 84 degrees. Normal month low temperatures range from a low of 65 degrees in February and a high of 74 degrees in August for a monthly average of 70 degrees. Precipitation typically ranges from 0.44 inches in August to a high of 3.8 inches in December. The annual average rainfall in Honolulu is 70 inches per year.

#### Project Impacts

The project is not anticipated to have any effect on the region's climate.

### 3.2 FLORA AND FAUNA

A biological survey report and assessment was prepared for the project area in July 2015 by SWCA Environmental Consultants and is provided as Appendix B in this document. Two federally endangered plant species—'ohai and ma'ō hau hele—were observed during the surveys in the landscaped yard areas. However, they are not federally protected because they appear to have been cultivated. No water features or designated critical habitat for threatened or endangered species is in or near the project area.

#### Flora

In all, 82 plant species were recorded in the project area during the survey. Of these, six species are native to the Hawaiian Islands:

1. 'ohai (*Sesbania tomentosa*),
2. ma'ō hau hele (*Hibiscus brackenridgei*),
3. milo (*Thespesia populnea*),
4. 'ōhi'a lehua (*Metrosideros polymorpha*),
5. 'uhaloa (*Waltheria indica*), and
6. kupukupu fern (*Nephrolepis cordifolia*).

Two of these species, 'ohai and ma'ō hau hele, are endangered, but they were observed in a maintained garden courtyard area and appear to be cultivated stock. Federal protection is not extended to endangered species that are cultivated, do not originate directly from wild populations, or are not naturally occurring wild populations. Four species observed are considered to be of Polynesian introduction: 'uala or sweet potato (*Ipomoea batatas*),

yellow wood sorrel (*Oxalis corniculata*), banana (*Musa x paradisiaca*), and kalo (*Colocasia esculenta*). These were also cultivated as part of the on-site vegetable garden.

The vegetation types and species identified during the surveys are not unique. Most of the plant species observed are not native to Hawai'i, and the native species present were only a few individuals (with the exception of 'uhaloa, which is weedy and was found in several locations). No threatened or endangered plants, other than the cultivated species previously discussed, were found. No designated plant critical habitat was found in or near the project area. Therefore, the proposed project is not expected to have a significant, adverse impact on botanical resources. Weedy non-native plant species are common throughout the project area. Most of these weedy species are widespread on the island of O'ahu, and their control is not expected to result in a significant decrease in their number or distribution.

### Fauna

Bird species observed in the project area are species commonly found in Hawai'i's urban areas and gardens. Of the nine bird species documented, eight species are non-native introductions and one species, the white tern (*Gygis alba*), is indigenous, state-threatened, and protected under the Migratory Bird Treaty Act (MBTA). No suitable nesting sites for Hawaiian waterbirds or Hawaiian seabird species are present in the project area; however it is possible that seabirds, such as the Hawaiian petrel and Newell's shearwater, may fly over the project area at night while travelling to and from their upland nesting sites to the ocean.

The project area is bordered by residential areas, where it is common to find people walking pet dogs (*Canis familiaris*). No other mammals were observed during the pedestrian surveys. Mammals that could be expected in the project area include cats (*Felis catus*), mongooses (*Herpestes javanicus*), rats (*Rattus* spp.) and mice (*Mus musculus*).

The federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) is the only native terrestrial mammal that is still extant within the Hawaiian Islands (U.S. Fish and Wildlife Service [USFWS] 1998). Acoustic surveys for the Hawaiian hoary bat were not conducted, but any areas of suitable habitat for roosting and foraging were noted. Hawaiian hoary bats forage in open, wooded, and linear habitats within a wide range of vegetation types. These animals are insectivores and are regularly observed foraging over streams, reservoirs, and wetlands up to 300 feet (100 meters) offshore (U.S. Department of Agriculture [USDA] 2009). Hawaiian hoary bats require open access for launching into flight and typically roost in dense canopy foliage or in the subcanopy when canopy foliage is sparse (USDA 2009). Several of the tree species in the project area—Chinese banyan, mango (*Mangifera* sp.), royal palm, and mahogany—could be used by Hawaiian hoary bats for foraging and roosting.

The brown anole (*Anolis sagrei*) was frequently observed during the pedestrian survey; individuals were foraging or basking in the sun throughout the project area. No other reptiles or amphibians were seen during the survey. None of the terrestrial reptiles and amphibians on the Hawaiian Islands are native to the islands.

No native invertebrate species were recorded during the survey of fauna.

### **Project Impacts and Mitigation**

The white tern (*Gygis alba*) was observed during the survey. This species is indigenous, state-threatened, and protected under the Migratory Bird Treaty Act. It may be temporarily displaced during construction; however, it will likely find suitable habitat nearby, and the displacement is not expected to affect survival of the overall species' populations. To further minimize risks, tree removal and trimming will be conducted in the fall and early winter, when white tern breeding is at its lowest, and trees will be inspected for white tern eggs or chicks before trees are removed.

Potential habitat for the Hawaiian hoary bat (*Lasiurus cinereus semotus*) was present at the project area. This species is federally endangered and is the only native land mammal in Hawai'i. To minimize potential impacts to this species, the following conservation measures are recommended:

- Any fences that are erected as part of the project should have barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire.
- No trees taller than 15 feet (4.6 meters) should be trimmed or removed as a result of this project between June 1 and September 15, when juvenile bats that are not yet capable of flying may be roosting in the trees.

The proposed project is not likely to have any long-term adverse impacts on any state or federally listed threatened or endangered species if the recommended mitigation measures listed above are used.

### **3.3 GEOGRAPHY, TOPOGRAPHY, AND SOILS**

The project area is located on the central/east Honolulu coastal plain, approximately three-quarters of a mile inland from today's coast at Ala Moana Beach Park. The natural coastline in this area would have been approximately 820 feet makai from its current location. The project area lies in an area known as Kulaokahu'a, "The Plains." This seems to have consisted of area in the 'ili (land division, smaller than an ahupua'a) of Kaka'ako, Kewalo, Makiki, Pāwa'a, and Kamō'ili'ili (Fitzpatrick 1989:25). The project area is in the mauka (toward the mountains, inland) section of Kewalo, as can be seen on Bishop's 1884 map and Wall's 1887 map of Honolulu, and thus would have been a part of Kulaokahu'a. This flat land was often identified as the Makiki Plains (Fitzpatrick 1989:26).

Based on its distance from the ocean, it is anticipated that sea level rise will not impact the site in the foreseeable future. Furthermore, between the project site and the ocean are a number of major structures and features that serve as buffers to the effects of sea level rise.

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic database (2001) and soil survey data gathered by Foote et al. (1972), the project area's soils consist of Makiki Clay loam, 0 to 2% slopes (MkA). See Figure 10, Natural Resources Conservation Service Soils Survey Map. Makiki soils are described as follows:

This series consists of well-drained soils on alluvial fans and terraces in the city of Honolulu on the island of Oahu. These soils formed in alluvium mixed with volcanic ash and cinders. They are nearly level. Elevations range from 20 to 200 feet. The annual rainfall amounts to 30 to 60 inches. Most of it falls between November and April. The mean annual soil temperature is 73° F. Makiki soils are geographically associated with Kaena and Tantalus soils. [Foote et al. 1972:91]

Makiki Clay Loam soils are generally described as well-drained soils on alluvial fans and terraces and are nearly level. Permeability is moderately rapid, and runoff is slow with an erosion hazard no more than slight. The hydrologic soil group is B. .

A topographic survey is not yet available for the site, however it is evident from site observations that the parcel and vicinity lie on relatively flat terrain. The City's 5 foot topographic contour layer shows overland slopes of approximately 1% in the vicinity.

Grading operations will be in conformance with the Revised Ordinances of the City and County of Honolulu 1990 (ROH); however, it is not anticipated that site earthwork will be a major component of construction.

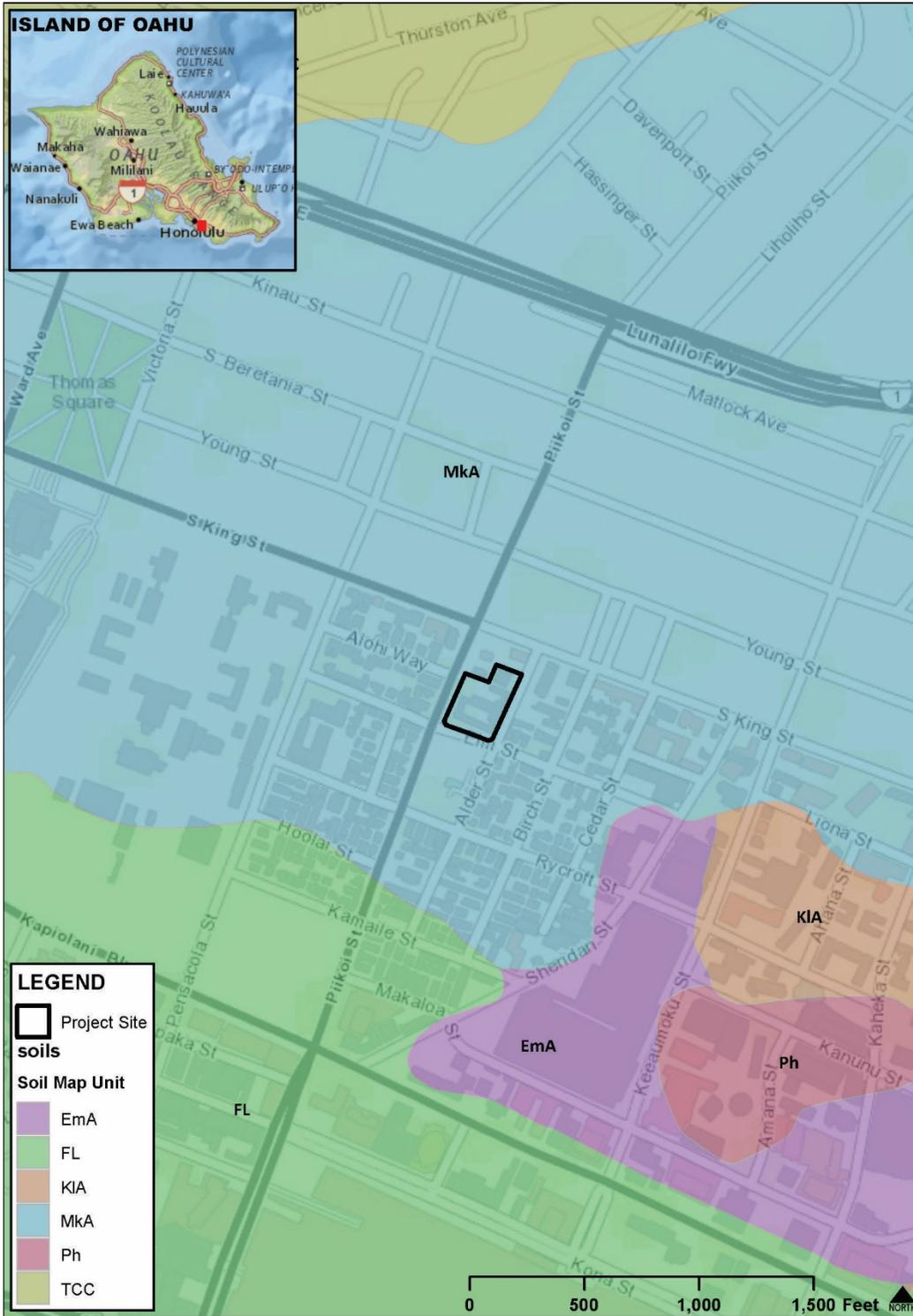
The site shall be graded for accessibility in accordance with the Americans with Disabilities Accessibility Act Guidelines (ADAAG). Requirements include, in part, providing at least one accessible route from public transportation stops, accessible parking spaces, passenger loading zones, if provided, and public streets or sidewalks, to an accessible building entrance. Given the gentle terrain at the site it is anticipated that the site design would be able to comply with ADAAG with little difficulty.

### **Project Impacts and Mitigation**

No significant impact to topographic landforms or soils at the subject property is anticipated. Detailed design of the site will take into consideration the groundwater level and the potential for its rise. It is anticipated that the new underground water, sewer, and drainage systems will not be impacted by sea level rise, due to the design of finished grades and topography and the inland location of the site. All grading operations will be conducted in full compliance with dust, erosion control, and other requirements of the City and County Grading Ordinance and the State of Hawai'i Administrative Rules, Section 11-60, 1-33 applicable to fugitive dust. A construction grading permit will be required. Best management practices will be included in construction plans to mitigate dust and/or silt emissions.

A detailed soil analysis will be performed as planning of the project proceeds. Mitigative measures, if required, will be recommended by the project's soils engineers as building design and final locations are further defined. Mitigative measures may include removal of unsuitable soils under foundations and/or special foundation design.

Figure 10: NATURAL RESOURCES CONSERVATION SERVICE SOILS MAP



Source: U.S. Department of Agriculture Soils Survey Geographic Database (2001)

### 3.4 HYDROLOGY

According to the *Aquifer Identification and Classification for O‘ahu*, the subject property overlies the Nu‘uanu aquifer system of the Honolulu aquifer sector. The system contains groundwater that is basal and unconfined and found in horizontally extensive lava-type (flank-type) geology. Water from this aquifer can be used for drinking purposes, has a low salinity of less than 250 mg/l of chloride, is irreplaceable, and has a high vulnerability to contamination. Makiki Stream is the closest stream to the subject property; it is located approximately one-half mile east of the subject property. Makiki Stream runs mauka-makai along Kalakaua Avenue. There are no wetlands in proximity to the property.

#### *Project Impacts and Mitigation*

No long-term impacts to groundwater aquifers or surface waters are expected to result from the property’s redevelopment and its use for residential and judiciary purposes. Potable water for the on-site judiciary and residential uses will be secured from the Honolulu Board of Water Supply.

Best management practices will be implemented to minimize risk of siltation and pollution through construction related stormwater runoff. The project will comply with HAR, Sections 11-54-1.1, and 4 through 8. A National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55) will be secured. The project does not involve work in, over, or under waters of the United States. All discharges related to the project construction and operation activities will comply with the State’s Water Quality Standards.

### 3.5 FLOOD AND TSUNAMI HAZARD

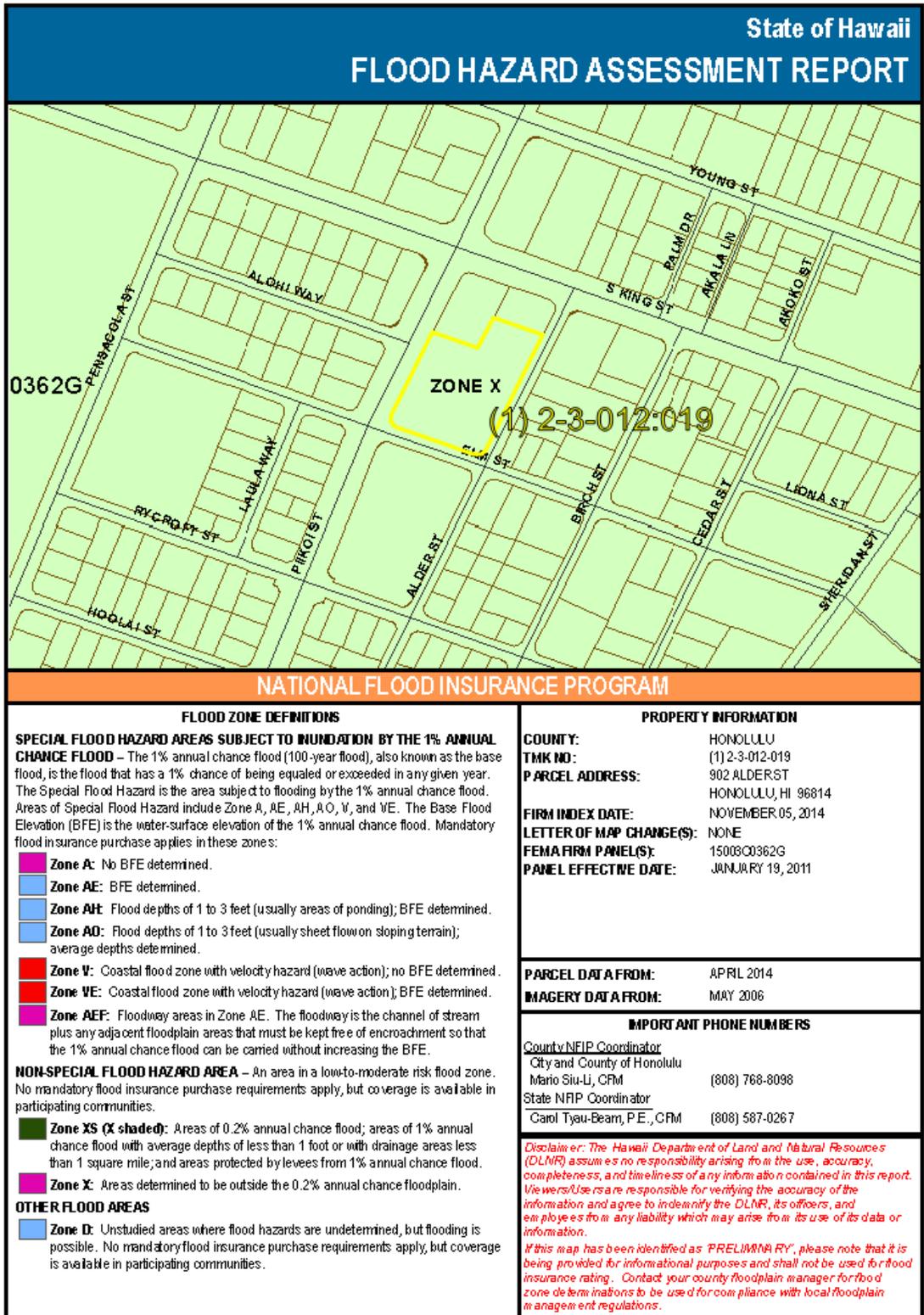
According to the Flood Insurance Rate Map (FIRM) prepared by the Federal Emergency Management Agency, the subject property is located in Zone “X” which is an area that has been determined to be outside the 0.2% annual chance floodplain and outside of the 500 year floodplain (see Figure 11).

According to the State Civil Defense Tsunami Evacuation Zone maps (panel 19, inset 2), the subject property is within an “Extreme Tsunami Evacuation Zone” (XTEZ) (see Figure 12). Existing tsunami evacuation maps were developed in 1991 and updated in 2010. Since the 2011 Tohoku tsunami in Japan, there is a newly recognized risk of tsunami from a very large Aleutian event. The new set of tsunami evacuation zones are called Extreme Tsunami Evacuation Zone (XTEZ). Refuge areas and routes have not yet been developed to complement the current tsunami evacuation maps. The XTEZ does not replace the current tsunami evacuation zone; it adds a second zone for a potential extreme tsunami event. The XTEZ is for events with low probability, but that have high impact “worst-case” inundations.

**Project Impacts and Mitigation**

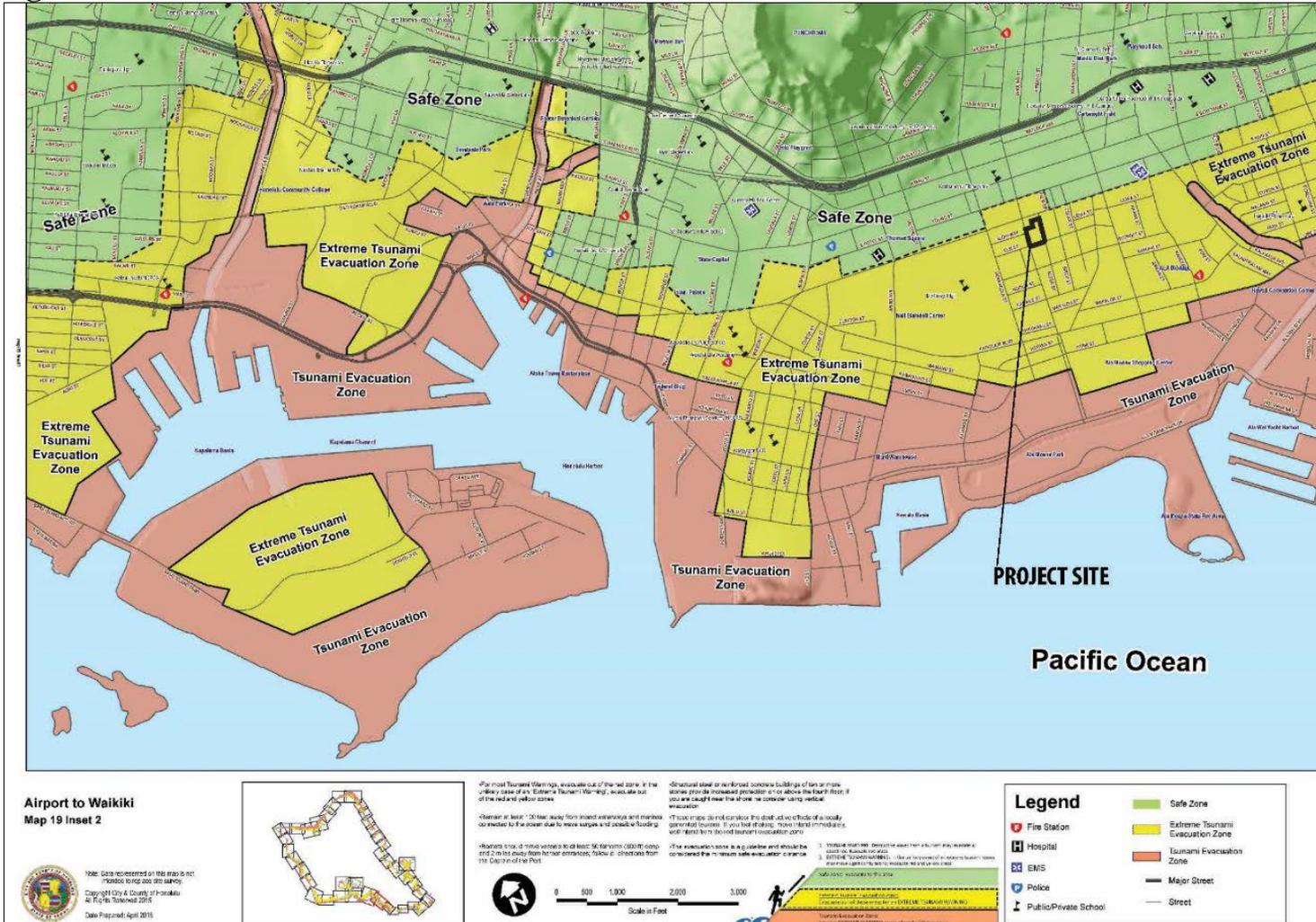
The chance of flooding is minimal. The National Flood Insurance Program (NFIP) does not regulate developments within Zone X of the Flood Insurance Rate Maps. In the event of an extreme tsunami, residents, employees and visitors will be able to take shelter in the upper floors of the proposed structures.

Figure 11: FLOOD INSURANCE RATE MAP (FIRM)



Source: Hawai‘i – National Flood Insurance Program, Flood Hazard Assessment Tool (2015)

Figure 12: TSUNAMI EVACUATION ZONE



Source: City and County of Honolulu, excerpt from "Airport to Waikiki, Map 19 Inset 2" (April 2015)

### 3.6 NOISE

The project area is currently exposed to varying daytime and nighttime ambient noise levels, typical of an urban environment. D.L. Adams Associates assessed current and future noise on the proposed project in December 2015. Their report is included in Appendix C of this Draft EA. The dominant noise source is vehicular traffic noise from Pi'ikoi Street. Daytime noise levels ranges from 61 to 67 dBA. Nighttime noise levels are slightly less and range from 58 to 62 dBA. Noise measurements taken on the project site show a day-night level (Ldn) of 68 dBA. The Ldn is the noise level taken from the logarithmic average of each individual hour's equivalent noise level. Before they are summed for the average, each hourly noise level from night time hours (10:00 PM – 7:00 AM) has a 10 dB penalty added to it to account for increased sensitivity to noise during those hours.

During project construction, the dominant noise sources will likely be earth moving equipment, such as bulldozers and diesel powered trucks. Noise from construction activities should be short term and will comply with State Department of Health noise regulations, and a construction noise permit.

After construction is complete, noise generated from any stationary mechanical equipment on the project site will comply with the Hawai'i Department of Health property line noise regulations. Noise mitigation for stationary mechanical equipment will be considered during the design of the project.

To evaluate existing vehicular traffic noise levels from traffic on the project site, traffic noise was calculated in the occupied areas and compared to both the FHWA/HDOT and HUD noise level criteria. Per the traffic report for the project site (see Appendix H), future traffic with and without the project is expected to be the same as the currently existing traffic level. Traffic noise was projected on the proposed full elevation façade of the building and on the exterior area at ground level. The exterior façade of the apartment units directly overlooking Pi'ikoi Streets are expected to be exposed to noise levels in excess of the HUD site acceptability standards and the FHWA noise abatement criteria. In order to comply with the HUD noise criteria inside the units, exterior façade elements such as glazing and wall construction will be considered during the design of the project. A noise impact is not expected for the Alder Street facing side of the housing section of the building or the housing sections of the Elm Street and South King Street facing sides not in the immediate vicinity of Pi'ikoi Street.

Design of the exterior elements of the building may incorporate features that reduce noise levels to the interior spaces of the apartment unit. These features include concrete exterior walls, minimum STC 35 rated windows, and no window or wall mounted AC or PTAC units installed in the exterior shell of the building.

**Project Impacts and Mitigation****Construction Noise**

Mitigating construction noise at the source is the most effective form of noise control. The source control methods listed in Table 1 below can be applied to most construction equipment.

**Table 1: Construction Noise Source Control Methods**

Scheduling	Limit activities that generate the most noise to less sensitive time periods (e.g. daytime hours).
Substitution	Use quieter methods/equipment when possible (e.g. low noise generators, smaller excavators, etc.).
Exhaust Mufflers	Install quality mufflers on equipment.
Reduced Power Options	Use smallest size and/or lowest power as required.
Quieter Backup Alarms	Install manual adjustable or ambient sensitive alarms. Do not use backup alarms during night work.
Motors	Insulate or enclose motors.
Equipment Selection	Electric equipment is quieter than pneumatic equipment.
Equipment Retrofit	Rubber chucks in jackhammers.
Equipment Maintenance	Sharpen and balance tools, repair silencing equipment, replace worn parts and open airways.
Staging Area	Maximize the distance between the construction staging areas and nearby receptors to the greatest extent possible.

In general, a majority of the construction noise mitigation is in the form of scheduling, specifically, limiting the construction hours to the time frame specified by the HDOH.

When source control measures are not sufficient to avoid a noise impact, path control measures must be considered. Non-permanent noise barriers or curtains and equipment enclosures could be installed at the construction site to reduce construction noise in noise sensitive locations. The general contractor could also conduct noise monitoring of construction during noisy or extensive activities at locations close to residential properties.

It does not appear that a noise variance for construction in the evenings or weekends will be necessary at this time. However, in order to complete the work to coincide with the

opening of the Ala Moana Transit Station and access all the available funds, a noise variance may be needed.

#### Development Noise

The design of the project will give consideration to controlling the noise emanating from all stationary mechanical equipment such as air-cooled chillers, cooling towers, air-handling units, condensing units, emergency generators, etc. so as to comply with the State of Hawai‘i Community Noise Control rules. Noisy equipment will be located away from neighboring properties and residential units as much as possible. Enclosed mechanical rooms may be required for some equipment.

Noise emanating from the parking garage to the neighboring buildings may be audible and cause complaints. Noise reduction measures such as rough, non-painted driving surfaces and acoustical absorption on the ceiling may be considered during the project’s design phase.

#### Traffic Noise

HHFDC housing units overlooking Pi‘ikoi Street will experience relatively high noise levels due to vehicular traffic. The exterior wall will have a minimum rating of STC 50, which is typical of poured concrete in any thickness greater than 4 inches. In addition, a minimum STC 35 rated window assembly, typical of a ½ inch laminated glass or various IGU assemblies, will be considered to comply with the HUD interior noise design criteria for these units.

To reduce the noise impact to the interior of the JUD spaces on the lower floors, acoustical consideration will be given to space planning. For example, noise sensitive spaces should not be located at the Pi‘ikoi end of the building. If this is not possible, improved exterior façade elements (as discussed above) may be provided.

The outdoor recreation area immediately adjacent to Pi‘ikoi Street may be exposed to noise levels that are higher than the established HUD site acceptability standards for exterior noise. A noise barrier wall along the Pi‘ikoi Street side of the project may be considered to reduce noise levels by 5 to 10 dBA.

### **3.7 AIR QUALITY**

Air quality in the vicinity of the project presently is mostly affected by emissions from vehicular sources which emit carbon monoxide, nitrogen oxides, hydrocarbons and other air pollutants. Air quality data from the nearest monitoring stations operated by the Hawai‘i Department of Health suggest that all state and national air quality standards are currently being met in the project area. B.D. Neal and Associates examined the potential air quality impacts related to the proposed project in December 2015. Their report is included in Appendix D of this Draft EA.

Short-term direct and indirect impacts on air quality could potentially occur during project redevelopment activities. There are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project demolition and

construction phases: (1) fugitive dust from building demolition, soil excavation, aggregate processing and vehicle movement; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term air quality impacts from the disruption of traffic on nearby roadways, from slow moving construction equipment traveling to and from the project site, and from a temporary increase in local traffic caused by commuting construction workers.

Fugitive dust emissions from demolition and construction activities are difficult to estimate accurately because of their elusive nature of emission and because the potential for dust generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The U.S. EPA has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions from project demolition and construction work would likely be somewhere near this level. In any case, State of Hawai'i Air Pollution Control Regulations prohibit visible emissions of fugitive dust from construction activities at the project property line.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline powered equipment, but the standards for nitrogen dioxide are set on an annual basis and are not likely to be violated by short term construction equipment emissions. Also, the short-term (1- hour) standard for nitrogen dioxide is based on a three-year average; thus it is unlikely that relatively short-term construction emissions would exceed the standard. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways. Indirectly, slow-moving construction vehicles on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions increase.

After the period of construction, long-term impacts on air quality from motor vehicle exhausts can potentially occur at or near any location that attracts large volumes of motor vehicle traffic. Carbon monoxide emissions are usually the primary issue, and public areas near traffic-congested intersections are the main concern. The proposed project will be accessed from two driveways: one off Alder Street and one off Pi'ikoi Street. The project traffic impact analysis report (TIAR) examined four existing nearby roadway intersections. These included Pi'ikoi Street and King Street, King Street and Alder Street, Alder Street and Elm Street, and Elm Street and Pi'ikoi Street. The project TIAR indicates that the existing traffic level-of-service at these intersections is reasonably good, and in the year 2022, it was found that with the project this would continue to be the case. The TIAR estimates that project traffic in the year 2022 would account for less than about a two percent increase in traffic at the nearby intersections studied.

Traffic volume increases of less than about 5 percent or less than about 100 vehicles per hour or traffic approach volumes of less than about 1,000 vehicles per hour do not cause any significant impacts on air quality if adequate traffic level-of-service is provided.

Considering the small project-related traffic volumes that are expected and the reasonably good traffic level-of-service that is forecast, traffic from the proposed project should have no measurable long term impacts on air pollution levels in the project area.

### **Project Impacts and Mitigation**

In summary, short-term impacts from fugitive dust during project demolition and construction phases may potentially occur. Because of this, an effective dust control plan for the period of construction should be prepared and implemented. After construction, any long-term impacts on air quality from motor vehicle traffic related to this project will likely be negligible.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in active construction areas from becoming significant sources of dust. On days without rainfall, construction areas will be watered at least twice during the workday to help keep dust to a minimum. Control regulations will further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials likely to give rise to airborne dust. Haul trucks tracking dirt onto paved streets from unpaved areas are oftentimes a significant source of dust in construction areas. Some means to alleviate this problem, such as tire washing or road cleaning, may be appropriate. Dust monitoring will be considered as a means to quantitatively evaluate the effectiveness of dust control measures.

On-site mobile and stationary construction equipment air pollutants impact will be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers may be adjusted as needed to avoid peak hours in the project vicinity.

## **3.8 HISTORIC, ARCHAEOLOGICAL, AND CULTURAL RESOURCES**

### **Historic Resources**

The Honolulu Juvenile Detention Center is eligible for listing on the Hawai‘i and National Registers of Historic Places for its association with the development of Hawai‘i’s treatment of juvenile delinquents and as an intact example of Mid-Century Modern architecture. The Historic Resource Inventory Form – Reconnaissance Level prepared by Fung Associates, Inc. on July 10, 2015 is included in Appendix E. The State Historic Preservation Division concurred with Fung’s findings.

Cultural Surveys Hawai‘i, Inc. completed its site-specific fieldwork in accordance with archaeological permit number 15-03, issued by the SHPD pursuant to HAR §13-13-282, between June 17, 2015 and July 17, 2015. A copy of their assessment is located on Appendix E of this Draft EA. Fieldwork included a pedestrian inspection of the project area and subsurface testing. No significant archaeological finds were made during the pedestrian survey of the unbuilt portions of the project area. A Sanborn Fire Insurance Map (see Figure 13) indicates a building existed on-site by 1914. Staff working within the project area indicated their belief that some buildings of the current facility pre-date World War II. Fung Associates, Inc. reports that “sometime between 1917 and 1923 a

detention home was constructed at the corner of King and Alder streets, as the law prohibited the confinement of juveniles in a prison or police station.”

By the late 1930s the original single story wood detention home was deemed inadequate and in 1944 a concrete, two story building was constructed to replace the earlier structure. In 1949 a U-shaped, single story addition was added to the 1944 building and included a kitchen, laundry facilities, dining rooms, recreational lounges, and additional dormitory space. The 1944 building became the girl’s dormitory and the new dormitory wing was used to house the boys. Figures 14 and 15 show the buildings’ footprint in 1950 and 1953. In 1952, the boy’s dormitory wing was extended, and in 1958 further expanded to form a courtyard space. In addition, in 1958, administrative offices were added to the Alder Street elevation of the 1949 addition. In 1961 a concrete masonry unit (cmu) wall replaced a wood fence between the girl’s dormitory and the kitchen wing to provide a play space for the girls. Also at this time the basketball court was built in the boy’s courtyard.

In 1989, the Home Maluhia shelter facility was constructed on the mauka end of the property. The Home Maluhia is not over fifty years of age and does not appear to meet the criteria for listing in the Hawai‘i or National Registers of Historic Places.

#### Archeological Resources

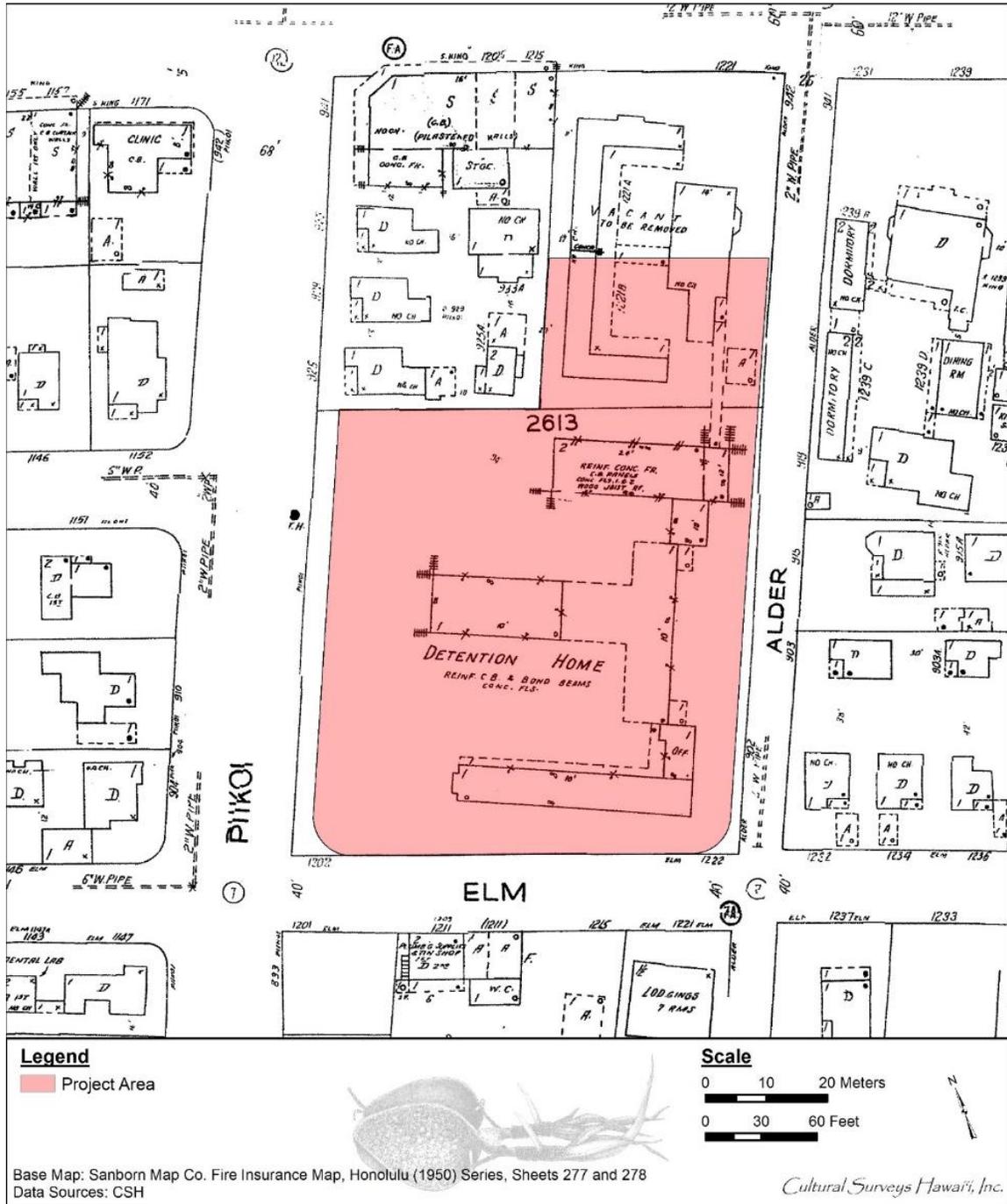
Cultural Surveys Hawai‘i, Inc. conducted an Archeological Inventory Survey in August 2015. Their report is included in Appendix F of this Draft EA. Two significant finds were made during the subsurface testing, identified as SIHP # 50-80-14-7817 and SIHP # 50-80-14-7818. The artifacts recovered from SIHP # 50-80-14-7817 likely relate to the domestic use of the project area by Catherine and Henry Martin Whitney (1824-1904), before the property was used as a detention home. Specifically, fragments of eight glass bottles, a ceramic plate, a ceramic bowl, and a ceramic pitcher were recovered with dates of manufacture from 1800 to 1920. Henry Martyn Whitney, Sr., was born in Hawai‘i in 1824, moved to the Alder Street house sometime between 1880 and 1884, and lived there until his death in 1904. His only surviving son, Henry Martyn Whitney, Jr., lived in the house until at least 1924; he died in 1936. The Juvenile Detention Center was built in 1944. It is therefore possible that the only household structure on this property in the nineteenth to early twentieth century was the Whitney house, inhabited by at least two generations of the family.

Whitney, Sr. was a prominent member of the Honolulu community, served as first postmaster general in Hawai‘i in 1870, was elected to the house of representatives of the legislature of the Hawai‘ian Kingdom in 1875 and may have entertained the young Samuel Clements at this house. In 1876, Whitney produced the first issue of the Pacific Commercial Advertiser and in 1861 he established Ka Nupepa Kū‘oko‘a, a Hawaiian language newspaper. Whitney began publishing the Marine Bulletin in 1882 which was eventually purchased by James Robison and became the Honolulu Star-Bulletin. The Star-Bulletin, merged with the Honolulu Advertiser in 2010 to become the Honolulu Star-Advertiser.

The artifacts recovered from SIHP # 50-80-14-7818 represent possible early post-Contact traditional Hawaiian settlement within the project area. Specifically, a fire-cracked rock fragment and faunal material representing fragments of *Bos taurus* (cow) tibia, *Sus scrofa* (pig) rib, and *Gallus* (chicken) tibiotarsus were recovered from a highly organic sediment matrix partially submerged in the fresh water table at approximately 150 to 165 cmbs. Analysis of a bulk matrix sample from this location also revealed fresh water snails and marine snails.

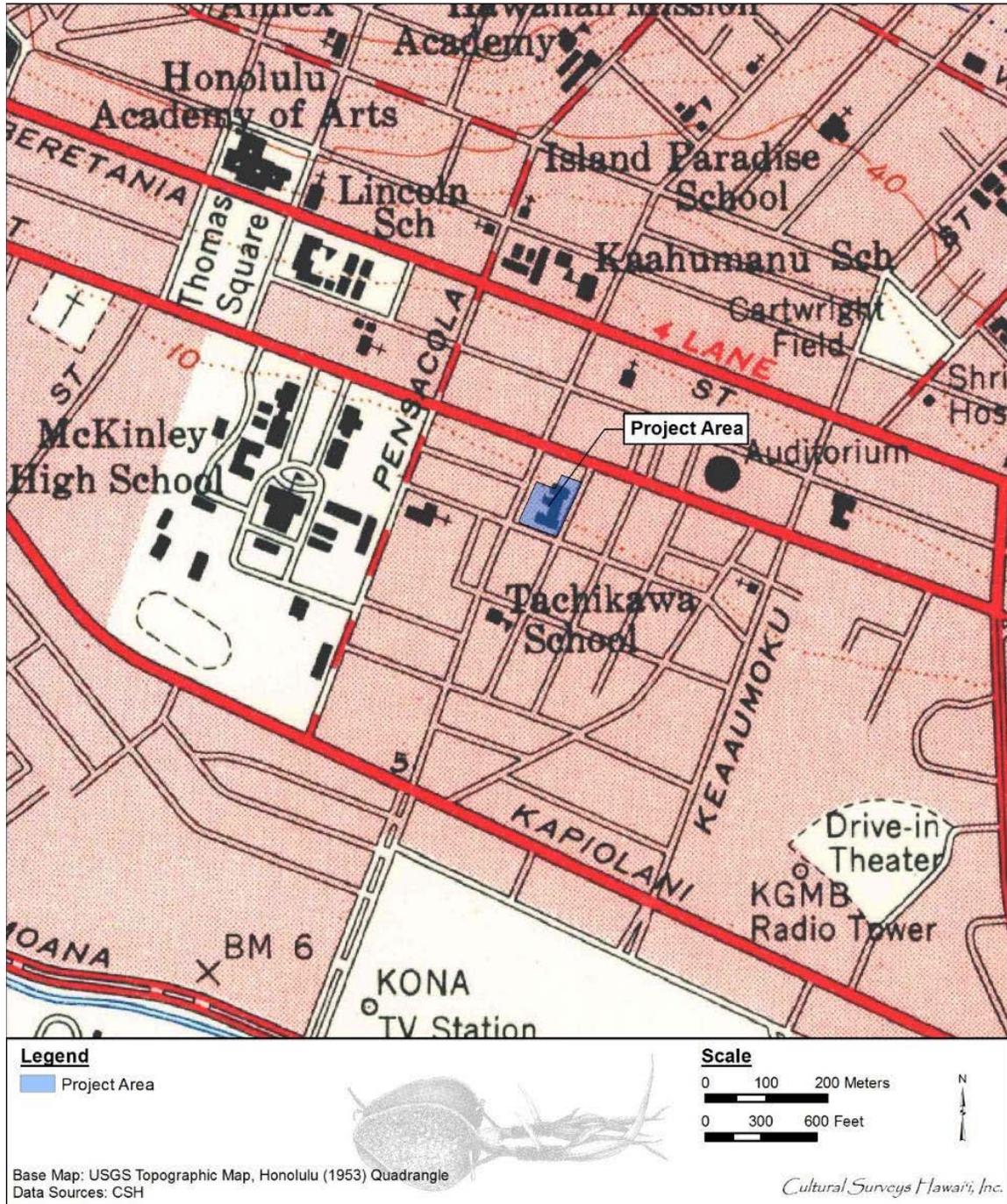


Figure 14: SANBORN FIRE INSURANCE MAP (1950)



Source: Sanborn Map Company Fire Insurance map, Honolulu Series Sheets 277 and 278 (1950)

Figure 15: USGS TOPOGRAPHIC MAP (1953)



Source: Honolulu USGS topographic quadrangle, portion (1953).

### Cultural Resources

Cultural Surveys Hawai‘i, Inc. (CSH) conducted a Cultural Impact Assessment in October 2015. Their report is included in Appendix G of this Draft EA. It provides information compiled to date pertinent to the assessment of the proposed project’s potential impacts on cultural beliefs, practices, and resources.

CSH contacted Hawai‘ian organizations, agencies, and community members as well as cultural and lineal descendants of Kaka‘ako in order to identify individuals with cultural expertise and/or knowledge of the project area and vicinity.

Mr. Jan Becket, a retired Kamehameha Schools teacher who is well recognized for his photographic documentation of *wahi pana* (storied places), escorted CSH to 28 cultural sites from October 2014 to September 2015 within Honolulu Ahupua‘a. None of the sites visited were in the vicinity of the project area.

Paulette Ka‘anohi Kaleikini, State of Hawai‘i recognized lineal descendant, indicated that her *kūpuna* (elders) once lived in this area. She adds the project area is within the urban corridor and is in the vicinity of Walmart on Ke‘eaumoku Street “where a cemetery was found.” Ms. Kaleikini states that “chances of impacting a cultural layer or historic property at this project site is high.” Ms. Kaleikini points out that this area was favored by *ali‘i* (chiefs) but also by the *lāhui* (nation, race, people).

### **Project Impacts and Mitigation**

#### Historic Impacts and Mitigation

The Honolulu Juvenile Detention Center is eligible for listing on the Hawai‘i and National Registers of Historic Places for its association with the development of Hawai‘i’s treatment of juvenile delinquents and as an intact example of Mid-Century Modern architecture. The building maintains its historic integrity as the additions have the same association to the judicial system with the original building. However, the building is physically deteriorated. Structural surveys conducted by Pacific Architects, Inc. in 2014 suggest that the Detention Facility has numerous deficiencies. The presence of hazardous materials, extensive termite damage, and antiquated plumbing, electrical, and fire protections systems were noted. The facility lacked sufficient mechanical ventilation, air conditioning systems, and parking. The facility was significantly deteriorated due to its age. Numerous building and zoning code violations and ADA accessibility non-compliance issues were cited.

Historic property significance is evaluated and assessed based on the five State of Hawai‘i historic property significance criteria. To be considered significant, a historic property must possess integrity of location, design, setting, materials, workmanship, feeling, and/or association and meet one or more of the following broad cultural/historic significance criteria (in accordance with HAR §13-13-275-6):

- a. Be associated with events that have made an important contribution to the broad patterns of our history;

- b. Be associated with the lives of persons important in our past;
- c. Embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value;
- d. Have yielded, or is likely to yield, information important for research on prehistory or history; or
- e. Have an important value to the native Hawai‘ian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group’s history and cultural identity.

The Historic Resource Inventory Form – Reconnaissance Level prepared by Fung Associates, Inc. on July 10, 2015 is included in Appendix E. The Historic Resource Form and proposed mitigation were sent to State Historic Preservation Division (SHPD) on August 24, 2015. The State Historic Preservation Division concurred with Fung’s findings in a letter dated November 6, 2015. Both letters are included in Appendix E.

Since the proposed project involves demolishing the building, Fung Associates, Inc., has recommended that the project would be determined “effect with agreed upon mitigation measures.” Mitigation measures will include:

1. Historic American Buildings Survey (HABS) Level III, with archival photography and copies of all available original drawings.
2. Two interpretive panels utilizing the HABS photographs and historic information to be placed in the future Juvenile Counseling office located at Alder Street.

#### Archeological Impacts and Mitigation

The Archeological Inventory Survey commissioned for the Draft EA indicates the project area contains SIHP # 50-80-14-7817 and SIHP # 50-80- 14-7818. Through this report, information now has been documented regarding the location, extent, function, and age of SIHP # 50-80-14-7817 and SIHP # 50-80-14-7818. SIHP # 50- 80-14-7817 is considered significant under historic significance criterion “b” only, as it is associated with the lives of persons important in our past. SIHP # 50-80-14-7818 is considered significant under significance criterion “d” only. In accordance with Hawai‘i State historic preservation review legislation, HAR §13-13-275-7, the project’s effect recommendation is “effect, with proposed mitigation commitments.”

The information included in the report is the primary effort to mitigate the effect of the planned developments within the project area. Secondarily, future archaeological monitoring is recommended for these cultural resources, SIHP # 50-80-14-7817 and SIHP # 50-80-14-7818, during the planned development of the project area. These significance recommendations are included in Appendix F of the Draft EA for the review and concurrence of the SHPD.

This Archeological Inventory Survey plus archaeological monitoring with detailed documentation of the historic properties is recommended as sufficient to satisfy the requirements to mitigate any adverse effect caused by the proposed development activities within the project area. The indicated archaeological monitoring program would begin with the preparation of an archaeological monitoring plan for the review and acceptance of the SHPD.

### Cultural Impacts and Mitigation

Based on the information gathered from the cultural and historic background and community consultation detailed in this CIA report, the proposed project may have potential impacts. To avoid these:

1. Personnel involved in the construction activities should exercise caution due to the culturally sensitive nature of the proposed project area as indicated by a community participant.
2. Personnel involved in the construction activities of the project will be informed of the possibility of inadvertent cultural finds, including human remains. Should burials or other cultural finds be encountered during ground disturbance, the construction contractor will immediately cease work and the appropriate agencies will be notified pursuant to applicable law.
3. If any iwi kūpuna or other inadvertent cultural finds are found during ground disturbance, the project developer in conjunction with the State Historic Preservation Division (SHPD) and the O‘ahu Island Burial Council (OIBC) should consult with lineal and cultural descendants of Honolulu (including Kaka‘ako) to develop a reinternment plan, as well as a cultural preservation plan.

## **3.9 VISUAL RESOURCES**

The project site is clearly visible from Pi‘ikoi, Elm and Alder Streets. The existing buildings on Alder Street are close to the already narrow sidewalk. The eight foot tall concrete wall that encloses portions of the property on Alder Street is nonconforming in regards to its height and location.



*Image 6: Wall enclosing the Home Maluhia on Alder Street (K. Balassiano, 9/19/15)*

The existing buildings are set further back from Pi‘ikoi and Elm Streets. A chain link fence demarcates the property boundary along the Pi‘ikoi and Elm Streets.



***Image 7: Views makai (left image) and mauka (right image) along Pi‘ikoi Streets (K. Balassiano, 9/19/15)***

On a large scale, the parcel - in its current or future condition - does not interfere with the Significant Panoramic Views, including East-West Views, mauka-makai Views or Continuous Views, shown on Map A.1 of the PUC DP. The proposed development will not visually impact important vistas and focused views of significant natural and urban features and skyline profiles that make up or frame the PUC from publicly accessible places. Current zoning allows building heights of up to 150 feet. Several buildings in close proximity achieve or exceed these heights. In order to maximize the number of affordable units constructed, the project will exceed permitted building heights by approximately 35 to 40 feet. However, the higher height is in keeping with transit-oriented development policy.

### **Project Impacts and Mitigations**

The project is not anticipated to have a significant adverse impact on scenic viewplanes or scenic resources in the Ala Moana area. The property will be more visible than it is now because the buildings will be taller. The buildings will not, however, interfere with scenic views specified in the PUC DP. The more densely developed parcel will be better integrated with the urban fabric. No further mitigation is necessary.

## **3.10 ROADWAYS AND TRAFFIC**

The property is fronted by three streets owned by the City, Alder Street on the east, Elm Street in the makai direction, and Pi‘ikoi Street on the west. The property is also fronted by a T-intersection on the west side, where Alohi Way, a City-owned street, meets Pi‘ikoi Street. Table 2 summarizes the cross sectional elements of the surrounding streets.

**Table 2: Surrounding Street Cross Section Summary**

	Pi‘ikoi Street	Elm Street	Alder Street
Width	64 ft.	28 ft.	20 ft.
# lanes	4	2	1
Direction	one-way (northbound)	two-way	one-way (southbound)
Street Parking (parallel)	115 ft. unmetered (except no parking 3:30 pm - 5:30 pm)	130 ft. unmetered	40 ft. unmetered, 50 ft. restricted for police use only
Curb & Gutter	Lava rock curb, Concrete gutter	Concrete curb & gutter	Concrete curb & gutter
Sidewalk	4 ft. concrete sidewalk 1 ½ ft. landscape strip	5 ½ ft. concrete	5 ½ ft. concrete
Ownership	City and County of Honolulu	City and County of Honolulu	City and County of Honolulu

The property has four driveway aprons, three on Alder Street and one on Pi‘ikoi Street. A gate and driveway on Pi‘ikoi Street allows service access. One of the driveways on Alder provides access to a small parking lot. Another driveway apron provides access to a pad of illegal parking stalls that encroach onto the sidewalk. The third Alder driveway apron presently provides no vehicle access to the property.

A traffic study was conducted for the proposed project by SSFM International, Inc. in December 2015 and is included in Appendix H. The traffic study analyzed existing conditions and impacts in the surrounding area as a result of the full build-out of the proposed development. Two driveway accesses are being proposed to this joint mixed-use facility. One will be from a driveway off of Alder Street at the location of an existing curb-cut. The other will be from a driveway off of Pi‘ikoi Street, directly across from Alohi Street. Future conditions were evaluated for the year 2022 for determination of project impact as well as the completion of the Honolulu Rail Transit project.

### **Vehicular and Transit Access**

The surrounding transportation network consists of a grid network of streets. The block in which the project is located in is approximately 450 feet by 250 feet in size. There are some “superblocks” (large blocks that interrupt the street grid) in the area which include the Neal S. Blaisdell Center/Blaisdell Concert Hall/McKinley High School to the west and Walmart/Sams Club to the east. These superblocks concentrate vehicular volumes at major intersections resulting in multiple travel lanes, long signal timing cycle lengths, and strained capacity.

There are no bus stops directly adjacent to the project site. However, Stop 138 is at the corner of King Street and Pi‘ikoi Street and there are several other stops within a ¼-mile of 902 Alder Street. Buses that service this area include Routes: 17, 18, 1, 1L, 2 and 2L. Bus routes that fall within ½-mile from the project site include Routes: 3, 5, 6, 9, 13, 40, 52, 53, and 62.

### Pedestrian Facilities

Sidewalks line both sides of Alder Street, Elm Street, Pi'ikoi Street, and King Street. Sidewalk widths in the surrounding project area range from six-feet on Alder Street to four to eight-feet on Pi'ikoi Street and King Street. The City and County of Honolulu's *Traffic Standards Manual* (C&C, 1979) states that in most cases, concrete sidewalks shall be at least four feet wide in residential districts. However, wider sidewalks are recommended in commercial areas. Along Alder Street, Pi'ikoi Street and King Street adjacent to the project area, there are frequent driveway locations that interrupt the sidewalks along both sides of the street.

Marked crosswalks exist at the intersection of King Street and Pi'ikoi Street with pedestrian signal heads and push-buttons. Marked crosswalks also exist at the two-way stop sign controlled (TWSC) intersection of Pi'ikoi Street and Elm Street on the south leg (unprotected), east leg and west leg. An additional unprotected marked crosswalk exists across Pi'ikoi Street at the TWSC intersection with Alohi Way, approximately 230 feet from the intersection with King Street.

### Bicycle Facilities

There is a two-way protected bike lane (i.e., bike lanes that are physically separated from traffic) along King Street between Alapai Street and Isenberg Street. An additional bike route exists along Young Street which is comprised of signage and sharrows. Ease of biking in the surrounding project area is not optimal because of the lack of designated bikeway connectivity and the presence of heavy vehicle traffic. There are no existing designated mauka-makai bicycle facilities in the surrounding area. Proposed mauka-makai bikeways on Pi'ikoi Street and Ke'eumoku Street are recommended in the *Oahu Bike Plan, A Bicycle Master Plan* (HHF, August 2012).

### Existing Roadway Volumes

Average daily traffic (ADT) along Pi'ikoi Street and King Street are shown in Table 3. The 2011 ADT along Pi'ikoi Street, adjacent to the project site, is approximately 27,700 vehicles per day (vpd). The 2013 ADT along Pi'ikoi Street between King Street and Young Street is approximately 31,500 vpd. The 2011 ADT along King Street, east of Pi'ikoi Street is approximately 33,000 vpd.

**Table 3: Existing Roadway ADT**

Roadway	Station	Location	Year	ADT
Pi'ikoi Street	B727 513 00027	Between Alohi Way and King Street	2011	27,700
	B727 503 00153	Between King Street and Young Street	2013	31,500
King Street	B727 402 00310	Between Akala Lane and Cedar Street	2011	33,000

Source: *Historical Traffic Station Maps* (HDOT)

The 24-hour traffic volume distribution along Pi'ikoi Street and King Street at the traffic count stations shows the variation in travel patterns in the project area. AM and PM peak hours for Pi'ikoi Street between Alohi Way and King Street are 7:00-8:00 AM and 2:00-3:00 PM. The AM and PM peak hour volumes are about 1,500 vehicles per hour (vph) and 2,200 vph respectively.

There is no discernible morning peak hour along Pi'ikoi Street between King Street and Young Street. The peak hour occurs in the afternoon from 3:30-4:30 PM with around 2,500 vph.

The AM and PM peak hour along King Street between Akala Lane and Cedar Street is 7:00-8:00 AM and 4:45-5:45 PM. The AM and PM peak hour volume has about 2,100 vph and about 3,200 vph, respectively.

### Intersection Peak Hour Volumes

Intersection peak period turning movement traffic counts were taken on Wednesday, September 16, 2015. These counts also included the tabulation of heavy vehicles, bicycles, and pedestrian movements at all intersections. Counts were taken during the AM and PM peak periods from 6:30–8:30 AM and 3:45–5:45 PM. Peak hours varied per intersection (see Table 4).

**Table 4: Intersection Peak Hours**

Intersection	AM Peak Hour	PM Peak Hour
King Street and Pi'ikoi Street	7:15 – 8:15 AM	4:45 – 5:45 PM
King Street and Alder Street	7:00 – 8:00 AM	4:45 – 5:45 PM
Alder Street and Elm Street	7:00 – 8:00 AM	3:45 – 4:45 PM
Elm Street and Pi'ikoi Street	7:15 – 8:15 AM	4:45 – 5:45 PM

### Pedestrians and Bicycle Volumes

Large pedestrian volumes were counted crossing at the study intersections during the AM and PM peak hours (see Table 5). This is a result of the neighborhood being an urban district with high employment, commercial, and residential accessibility.

**Table 5: Intersection Peak Hour Pedestrian Volumes**

Intersection	AM Peak Hour	PM Peak Hour
King Street and Pi'ikoi Street	236	217
King Street and Alder Street	78	112
Alder Street and Elm Street	25	38
Elm Street and Pi'ikoi Street	104	59

High bicycle volumes were counted on King Street during the AM and PM peak hours (see Table 6) near the project area. Most of these were in the two-way protected bike

lane; however these volumes were not differentiated. Some bicyclists rode outside of the bike lane; some rode on the sidewalks. Table 6 identifies all bicycles counted during the peak hours, regardless of where they were riding.

**Table 6: Intersection Peak Hour Bicycle Volumes**

Intersection	AM Peak Hour	PM Peak Hour
King Street and Pi'ikoi Street*	105	156
King Street and Alder Street *	104	78
Alder Street and Elm Street	3	15
Elm Street and Pi'ikoi Street	10	25
*- Bicycles using protected bike lane included in this count.		

### Bus and Heavy Vehicle Volumes

Tabulated heavy vehicles include TheBus transit service, tourist bus/trolleys, and delivery trucks. Table 7 provides the peak hour volumes and percentage of heavy vehicles as compared to the total vehicles counted. These heavy vehicle percent are relatively small.

**Table 7: Intersection Peak Hour Heavy Vehicle Volumes and Percentage**

Intersection	AM Peak Hour		PM Peak Hour	
	Volumes	Percent	Volumes	Percent
King Street and Pi'ikoi Street	94	2.6	29	0.6
King Street and Alder Street	62	2.8	7	0.3
Alder Street and Elm Street	2	1.3	2	1.2
Elm Street and Pi'ikoi Street	42	2.8	11	0.6

Daily total TheBus ridership at Stop 338 for boarding and alighting passengers was 250 and 396 riders respectively. Stops in the area include transit centers which range up to 1,000 boarding and alighting passengers (see Table 8). Data was provided by the City and County of Honolulu, O'ahu Transit Services.

**Table 8: TheBus Daily Ridership**

Stop #	TheBus Stop	Daily Totals	
		On	Off
138	King Street, at Pi'ikoi Street	250	396
139	King Street, at Cedar Street	82	199
140	King Street at Ke'eumoku Street	561	679
2098	Pensacola Street, at Young Street	132	48
2099	Pensacola Street, at King Street	42	38
1375	Pensacola Street, Opposite Elm Street	2	4
1376	Pensacola Street, Opposite Hoolai Street	20	34
4404	Kapi'olani Boulevard at Pi'ikoi Street	343	246
603	Kapi'olani Boulevard at Kona Iki Street	955	983
2084	Rycroft Street, at Ke'eumoku Street	64	50
819	Ke'eumoku Street, at Rycroft Street	46	62
2085	Ke'eumoku Street at King Street	62	42
Daily Totals		2,559	2,781

Source: *The Bus, City and County of Honolulu*

### Existing Intersection Level of Service (LOS) Conditions

Existing (2015) unsignalized and signalized intersection Level of service (LOS), volume to capacity (v/c) ratio, and delay were determined for the AM and PM peak hours (see Table 9 and Table 10). Three of the four study intersections were able to be analyzed for delay in their current configuration. The intersection of King Street and Alder Street has no conflict between vehicles and therefore no vehicular delay can be calculated using traffic signal software.

The unsignalized intersection of Alder Street and Elm Street resulted in LOS A for all movements. At the intersection of Pi'ikoi Street and Elm Street, Pi'ikoi has four lanes in one direction. HCM 2010 states that analysis can only be done for a maximum of three lanes in one direction. Since there are four one-way lanes along Pi'ikoi Street, the analysis cannot be completed for the existing configuration. So as to evaluate worst case conditions, the intersection was reconfigured in the traffic model to show three lanes, thereby reducing the intersection capacity. Even with this reduction in capacity, the intersection resulted in LOS D or better.

The signalized intersection of King Street and Pi'ikoi Street resulted in LOS C or better.

**Table 9: Existing (2015) Unsignalized Intersection Level of Service**

Unsignalized Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			Delay (s/veh)	v/c	LOS	Delay (s/veh)	v/c	LOS
Alder Street and Elm Street	Eastbound	L	-	-	A	-	-	A
	Westbound	LT	7.2	0.01	A	7.2	0.01	A
	Southbound	LTR	9.0	0.06	A	9.0	0.05	A
Pi'ikoi Street and Elm Street*	Westbound	TR	20.6	0.27	C	27.1	0.37	D

\* - Model limitations required that three lanes be analyzed instead of four lanes.

**Table 10: Existing (2015) Signalized Intersection Level of Service**

Signalized Intersection		AM Peak Hour			PM Peak Hour		
Approach	Movement	Delay (s/veh)	v/c	LOS	Delay (s/veh)	v/c	LOS
Pi'ikoi Street and King Street		20.1	-	C	22.2	-	C
Eastbound	TL	24.6	0.70	C	27.0	0.81	C
	T	22.7	0.72	C	22.4	0.83	C
Northbound	T	15.2	0.37	B	19.6	0.49	B
	R	15.4	0.31	B	20.9	0.46	C

### Future (2022) Conditions

Full build-out and occupancy of this project is planned for 2022. Plans for final construction of the Honolulu Rail Transit guideway and rail station estimate full-build out and operation by 2019 or 2020 and, therefore, were included in the analysis of Future (2022) conditions. Changes are expected for bus routes in advance of the Honolulu Rail Transit system opening. Such changes may include alterations of available routes, the location of the bus stops, and queuing. It is not expected that this will have a significant effect on this project. The Ala Moana Neighborhood TOD Plan (C&C DPP, 2014) calls for improving pedestrian facilities. These improvements provide additional width and buffer from traffic with the redevelopment of parcels in the area to improve walkability. Priority 1 bikeway projects in the project area anticipated to be built in the next five to ten years include a bike route along Pi'ikoi Street. It is expected that this could be in the form of standard or protected bike lanes. The lack of mauka-makai bike facilities, and forthcoming installation of bike stations with Bikeshare Hawai'i, increases the desirability and likely use of a bikeway facility.

### Project Related Traffic Volumes

Changes in traffic volume along roadways in the surrounding area over the past ten years have been mixed. Despite large scale development and increased density from high-rise condominiums, vehicular traffic volumes have not grown. A decrease in ADT is noted

for some roadway segments while there are slight increases for others. Increases in redevelopment and added density will be offset by a transition towards multi-modal mobility due to the existing urban nature and future TOD zone. Therefore, it is likely that more people moving into this area will look towards walking, biking, and taking transit as opposed to making personal vehicle trips. Pi‘ikoi Street provides this access to/from the Ala Moana Rail Station while the rail guideway parallels King Street and therefore should absorb trips. Therefore, it was assumed there will be no surrounding area vehicular growth in Future (2022) conditions and Future (2022) Without Project Volumes will be similar to Existing (2015) conditions.

The addition of trips resulting from the project was calculated using the four step trip generation methodology: trip generation, trip distribution, modal choice, route assignment. Resulting trip generation for the proposed development was calculated using *Trip Generation, 8<sup>th</sup> Edition* (ITE, 2008) and related trip generation rates are shown in Table 11. The juvenile services center was assumed to be similar to the “single tenant office building” land use while the affordable apartment units was similar to the “high rise apartment”. Resulting trip generation volumes for the AM and PM peak hours are shown in Table 12.

**Table 11: Development Trip Generation Rates**

Land Use [ITE Code]	Quantity	Units	Trip Generation Average Rate		
			AM Peak Hour	PM Peak Hour	Daily
High Rise Apartment [222]	187	Dwelling Units	0.30	0.35	4.20
Single Tenant Office Building [715]	35,452	1,000 Square Feet	1.80	1.73	11.57

**Table 12: Development Trip Generation Volumes**

Land Use [ITE Code]	Project Related Trips						Daily
	AM Peak Hour			PM Peak Hour			
	In	Out	Total	In	Out	Total	
High Rise Apartment [222]	14	42	56	40	25	65	785
Single Tenant Office Building [715]	57	7	64	9	52	61	410

The project site is in proximity to existing transit and rail options; therefore, a high degree of alternative travel modes exist. The Kaka’ako Mauka Area Plan Transportation Analysis (AECOM, April 2009) states that because of the difficulty in estimating

ongoing redevelopment and TOD elements on travel behavior, existing modal split is still deemed appropriate for use in the near term. The proposed housing development involves affordable housing. It can be assumed that there will be a lower use of personal vehicles and higher use of other transportation modes as compared to a similarly sized market-priced development. However, as a “worst case” scenario (highest volume of vehicle trips) the existing modal split percentage was used to calculate project related trips (see Table 13).

**Table 13: Project Related Transportation Mode**

Transportation Mode	Percentage*	Project Related Trips	
		AM Peak Hour	PM Peak Hour
Private Vehicle	76.9%	92	99
Transit (Bus and Rail)	12.8%	15	15
Bike	2.3%	3	3
Walk	8.0%	10	9

\* Source: *Kaka’ako Mauka Area Plan Transportation Analysis* (AECOM, April 2009)

Future (2022) With Project LOS, v/c ratios and delay for the study intersections are shown in Table 14 and Table 15. As with Existing conditions, at the intersection of Pi’ikoi Street and Elm Street, a lane configuration was used that has three lanes along Pi’ikoi Street. For Future (2022) With Project conditions, the intersections operated at acceptable LOS D or better.

**Table 14: Future (2022) With Project Unsignalized Intersection Level of Service**

Unsignalized Intersection	Approach	Movement	AM Peak Hour			PM Peak Hour		
			Delay (s/veh)	v/c	LOS	Delay (s/veh)	v/c	LOS
Alder Street and Elm Street	Eastbound	L	-	-	A	-	-	A
	Westbound	LT	7.2	0.01	A	7.2	0.01	A
	Southbound	LTR	9.1	0.07	A	9.1	0.08	A
Pi’ikoi Street and Elm Street*	Westbound	TR	21.2	0.27	C	27.8	0.37	D

\* - Model limitations required that three lanes be analyzed instead of four lanes.

**Table 15: Future (2022) With Project Signalized Intersection Level of Service**

Signalized Intersection		AM Peak Hour			PM Peak Hour		
Approach	Movement	Delay (s/veh)	v/c	LOS	Delay (s/veh)	v/c	LOS
Pi'ikoi Street and King Street		20.2	-	C	22.4	-	C
Eastbound	TL	24.7	0.70	C	27.3	0.81	C
	T	22.7	0.73	C	22.6	0.83	C
Northbound	T	15.4	0.38	B	19.8	0.50	B
	R	15.7	0.32	B	21.4	0.48	C

Existing (2015) conditions resulted in appropriate LOS conditions for King Street and Pi'ikoi Street intersection and at Alder Street and Elm Street. With the development of the Honolulu Rail Transit and the resulting redevelopment in the TOD areas, including associated multi-modal infrastructure, more travelers will utilize alternative modes of transportation. This includes walking, bicycling, bus, and rail transit. With the addition of project related traffic volumes, Future (2022) With Project conditions resulted in appropriate intersection operations.

### **Project Impacts and Mitigations**

The proposed Joint Development for Affordable Rental Housing and Juvenile Services Center/Shelter will have minimal impact on the transportation network. With the proposed redevelopment of the project site, the following best practices for multi-modal access are recommended to improve access and reduce the demand for passenger vehicle use:

- Pedestrians should have wide sidewalks separated from vehicular travel ways with landscaped buffers and street trees to provide shade. At corners, curb extensions are proposed to be added where possible to shorten the distance for pedestrian crossings. The marked crosswalk across Pi'ikoi Street at the intersection with Alohi Way should be considered for removal due to it being located less than 300 feet from the intersection (and crosswalk) at King Street. Due to the 60-foot crossing distance, the marked crosswalk across Pi'ikoi Street at Elm Street should be studied for potential improved protection by adding beacons or other pedestrian safety measures.
- With the possibility of future bike lanes on Pi'ikoi Street, the curb line should remain along the east side of Pi'ikoi Street, for the possible removal or relocation of on-street parking and installation of bike lanes. To improve accessibility and access, the development will ensure ease of access to the building as well as provide on-site bike storage.
- The proposed vehicular access locations are over 150 feet from adjacent intersections on Alder Street and across from the intersection with Alohi Way on Pi'ikoi Street so as to reduce conflicts. This also results in a reduction in the number of access points to the project site. As shown with the acceptable LOS at all intersections, a reduction of one travel lane along Pi'ikoi Street would likely not result in unacceptable operations. Therefore, the ability to remove one travel

lane in favor of a dedicated bikeway appears feasible. The vehicle volume able to travel through the intersections is actually constrained by the lack of capacity at intersections further mauka. Therefore, vehicle demand is likely greater than actual volume counted. The limiting factor is in the ability to process vehicles at the H-1 entrance mauka on Pi'ikoi Street.

The project will modify the layout of roadways, sidewalks and driveways. Modifications are subject to approval by the City Department of Planning and Permitting (DPP), and shall be in accordance with the ROH and Hawai'i Administrative Rules. Generally, designs will conform to the City standard details and specifications, and AASHTO design guides. Through an informal preliminary review, the DPP Traffic Review Branch did not see any immediate concerns regarding the proposed layout of the driveways. The Pi'ikoi Street driveway apron may conflict or not meet clearance requirements with existing utilities, specifically a fire hydrant, a utility pole and a water meter. This may require a variance from the City and/or utility relocations. Geometric design of the driveways should be straightforward with minimal challenges, given the gentle site grades and long frontage of the property.

The proposed site plan shows bulb outs on the mauka side of Elm Street at both ends of the block between Pi'ikoi Street and Alder Street. Bulb outs generally provide increased safety to pedestrians, creating a reduced crosswalk length. Construction of the bulb outs will also have impacts to various existing infrastructure features, such as curb ramps, utility structures, and traffic striping and signage. These features will need to be relocated and constructed in accordance with City standards.

Segments of sidewalk, curb and gutter will be restored where existing driveway aprons are abandoned. The Pi'ikoi Street driveway improvements may disturb existing lava rock curb. Disruption of these curbs will require special handling. In some cases they are embedded deeper than standard curbs. Below grade the finish may be found to be roughhewn rather than squared off. Mitigations will need to be coordinated with the City and may include reusing the lava rock curbs, or salvaging the curb and replacing with a new curb of similar finish.

### **3.11 WATER SYSTEM**

A preliminary engineering report – including an assessment of water, wastewater, and drainage - was conducted for the proposed project by SSFM International, Inc. in January 2015. The report is located in Appendix I. The Honolulu Board of Water Supply (BWS) provides water service to the existing project site. Based on BWS system as-built plans, domestic water service is currently provided by a 4-inch lateral (3-inch compound meter no. 04094081) connected to an existing 6-inch water main along Alohi Way.

The total existing plumbing fixture units (FU) are estimated to be 251.5 FU. The fixture count is based on an existing floor plan from the 2012 Assessment Survey Report by Pacific Architects, Inc. The fixture counts will need to be confirmed during the construction document phase. Per the 2012 Assessment Report, all the existing plumbing fixtures are non-low flow.

Three existing fire hydrants are located within the parcel frontage. FH M02662 is located on the near side of Pi‘ikoi; FH M06177 is located on the near side of Elm; and FH M06176 is located across Alder. Additionally, FH M03919 is located within the next block makai on Pi‘ikoi and is closer to portions of the parcel than the other fire hydrants.

Calculated flow data obtained from BWS for the three hydrants within the parcel frontage indicates static pressures ranging 74-75 psi, residual pressures ranging 55-56 psi and flows of 2000 gpm. The data are based on BWS models of the existing water system and assumptions of a full reservoir and no demands on the water system. The static pressure represents the theoretical pressure based on the assumptions. To determine flow available at the site, on-site pressure readings will need to be taken and correlated to the provided data. See Appendix I for the December 28, 2015 letter from BWS which provided the pressure and flow data.

Domestic water, irrigation and fire sprinkler line connections will be supplied by the BWS system. The proposed project development will create significant additional water demands on the BWS system. An inquiry has been made to BWS as to whether the system has capacity to accommodate the redevelopment.

Domestic water demand planning estimates for this project, based upon BWS Water System Standards 2002, are summarized in Table 16.

**Table 16: Projected Water Demand**

<b>Zoning Designation</b>	<b>Demand Rate</b>	<b>Quantity</b>	<b>Domestic Consumption gal/day</b>
Multi-Family High Rise (HHFDC Housing)	300 gal/unit	187 units	56,100
Commercial/Residential Mix (Juvenile Services Center and Shelter)	120 gals/1000 sf	35,452 sf	4,254
<b>Total Average Daily Demand</b>			<b>60,354</b>
<b>Maximum Daily Demand (1.5x factor)</b>			<b>90,531</b>
<b>Peak Hour Demand (3x factor)</b>			<b>181,063</b>

The preliminary estimated total proposed fixture units is 2,036.3 FU, broken down into 1,814.7 FU for the rental housing, and 221.6 FU for the juvenile services center and shelter. See the Appendix I for a breakdown of proposed fixture unit estimates.

All existing fixtures will be demolished. These existing fixture units to be removed will be taken into account by BWS when determining water charges and capacity of the system to accommodate the redevelopment.

### **Project Impacts and Mitigation**

The existing 3-inch meter may be sufficient to service the estimated total flow of 315 gpm. However, due to the close values for flow requirement and capacity, it is possible the meter will need to be upsized to a 4-inch meter when fixture unit counts are finalized.

Fire protection will be in accordance with BWS standards and the National Fire Protection Association Fire Code. For high rise apartments, BWS standards require a fire hydrant flow capacity of 2000 gpm for 2 hours, and a maximum hydrant spacing of 250 feet. The existing fire hydrant spacing does not appear to meet the maximum spacing requirements. Additional hydrants may need to be added for the project.

The location of the existing fire hydrants in relation to the proposed building meets the 400 ft. maximum distance to the closest point on a structure requirement of the NFPA 1 Fire Code. The hydrant on Pi'ikoi Street may be in conflict with the location of the proposed driveway, and therefore may need to be relocated. A new fire sprinkler water service connection and DC meter will be required.

### **3.12 WASTEWATER DISPOSAL**

The existing facility is serviced by at least one 6 inch sewer lateral. Limited as-built information shows one 6 inch lateral flowing south on the property adjacent to Alder Street. The City GIS sewer map shows multiple 6 inch laterals connecting to the property. One lateral connects on Elm near Alder to a manhole at the Elm/Alder intersection. Another lateral connects to an 8 inch main on Alder near Elm, with an assumed wye connection. The 8 inch main on Alder changes direction at Elm, continuing to the east on Elm, however at an apparently smaller diameter of 6 inches. The pipe diameters will need to be verified in the field. Two laterals connect to a 12 inch main on Pi'ikoi, with an assumed wye connection.

The quantity of wastewater and design of the sewer system will be in accordance with the Design Standards of the Department of Wastewater Management, City and County of Honolulu, dated July 1993. The estimated quantity of wastewater from the proposed project is shown in Table 17.

**Table 17: Projected Wastewater Flow**

<b>Category</b>	<b>Quantity of Wastewater (GPD)</b>
HHFDC Housing (187 units)	43,424
Juvenile Shelter and Services Center (35,452 sf)	8,981
Average Wastewater Flow	52,405
<b>Design Average Wastewater Flow</b>	<b>75,332</b>
<b>Design Maximum Flow</b>	<b>284,951</b>
<b>Design Peak Flow</b>	<b>288,940</b>

### **Project Impacts and Mitigation**

Reuse of the existing sewer laterals will be assessed during the design phase of the project. Where reuse of existing laterals is not feasible or insufficient, new sewer lateral(s) will be installed. Size and slope of the laterals will be based on meeting capacity and maximum velocity requirements for the Design Peak Flow, and minimum scouring velocity requirements for the Design Average Flow.

Preliminary approval to connect to the City wastewater system has been given by DPP Wastewater Branch in response to a Sewer Connection Application (SCA). The approval directs the project to connect to the 8-inch main on Alder Street. Wastewater system facility charges will be assessed during the design phase. The SCA will need to be updated and resubmitted if project parameters change, such as number of residential units, number of anticipated employees in the office space, number of shelter rooms, and water meter size. The approval is valid for two years. If construction plans are not completed and approved within this timeframe, the SCA will need to be resubmitted. See the Appendix I for the approval document.

### **3.13 DRAINAGE SYSTEM**

City and County of Honolulu (City) drainage infrastructure is in place adjacent to the property. Catch basins are located at the intersections makai of the property. The catch basin at the southeast corner of the lot, at the intersection of Elm Street and Alder Street, connects to a 42 inch reinforced concrete pipe drain line that runs south on Alder from Elm. The catch basin near the southwest corner of the property discharges into the 36 inch x 96 inch box culvert flowing south under Pi'ikoi Street. Overland flow is to the southwest on generally flat terrain. The existing site has approximately 60% impervious cover.

The drainage system shall be designed for both storm water quantity and quality in accordance with the Department of Planning and Permitting, City and County of Honolulu, Rules Relating to Storm Drainage Standards, amended June 1, 2013, hereinafter referred to as City Drainage Standards.

The proposed site will be approximately 65% impervious, an increase from the existing condition, which will likely cause a slight increase in runoff rates and volumes. The project may therefore be required to retain and/or detain the increase in peak storm water flows.

### **Project Impacts and Mitigations**

The project will likely disturb more than one acre of area, therefore for water quality design, the project will be classified as Type A2, projects that disturb between one and five acres. Type A2 projects must implement the following practices to meet water quality criteria:

1. Incorporate appropriate Low Impact Development site design strategies. An example is incorporating landscaped areas into the site design.

2. Incorporate appropriate Source Control BMPs. An example is including drain inlet stencils that discourage illegal dumping into drain inlets.
3. Retain or biofilter the water quality volume with appropriate post construction treatment control BMPs. Examples include subsurface perforated chambers and vegetated swales. The water quality volume is calculated based on surface area, ground cover, a standard design storm (1 inch depth for retention facilities and 0.4 inches per hour for biofiltration facilities). Unlike storm water quantity, water quality design does not take into account the existing condition, therefore the design is not based on an increase in flow, but rather total flow from the developed condition.

Item 3, Treatment Control BMPs, will have the most impact in terms of design effort and construction and facility maintenance cost. Water quality facilities that are constructed on site, if any, will be maintained in compliance with City regulations.

### 3.14 ELECTRIC AND COMMUNICATIONS FACILITIES

Electrical service is available in the area. Table 18 summarizes the electrical services available to the property. Redevelopment of the site would require the existing incoming electrical service and distribution be upgraded or replaced to meet new electrical load requirements.

**Table 18: Existing HECO Service**

HECO Meter No.	Electrical Service
385291	120/240 volts, single phase, three wires for general lighting and receptacle loads for the vacant detention facility.
473366	240 volts, three phase, three wires for air conditioning and refrigeration loads for the vacant detention facility.
412101	100 ampere service. 120/208 volts, three phase, four wires for lighting and receptacle loads for the shelter facility.
487541	100 ampere service. Electrical service is 120/208 volts, three phase, four wires for air conditioning and heating/cooling type loads for the shelter facility.

Electric load calculations were determined per the 2008 National Electrical Code (NEC) and buildout assumptions associated with the residential and judiciary uses by Douglas Engineering in January 2016. A copy of that report may be found in Appendix J. Assuming all equipment will be electrical, which represents the high end of the estimate, the calculation yields an expected demand of 3910 kVA.

Gas service is available to a few properties on Alder Street. If that gas service can be extended to the proposed building, tenants could have the ranges, dryers, and water heating on gas. This reduces the expected electrical demand on the building by approximately 30%, which will also reduce the size of the service equipment and the HECO transformer.

Both options will require the installation of a large transformer by HECO, in a dedicated HECO vault. Inside, a transformer pad and underground ductbank, encased in concrete, from the transformer pad to the point of nearest utility power (likely the base of a power pole with overhead power lines) will be required by HECO, and provided by the Contractor during construction. Two medium-voltage lines will then be pulled directly into this vault. The size of the HECO transformer can be expected to be 2000 kVA. However, HECO will make the final determination as to transformer size. With gas service, the HECO transformer drops to 1500 kVA.

Communications service will be provided by either Hawaiian Telcom (HTEL) or Oceanic / Time Warner Cable (OTWC). Both HTEL and OTWC have handholes in the area. OTWC has a sizeable handhole on Pi'ikoi Street. HTEL has at least two telephone lines, one at the corner of Alder Street and Elm Street, and one along Pi'ikoi Street. These are the most likely points of connection, and underground infrastructure for the building will be laid in once the site prep work begins.

### **3.15 COMMUNITY FACILITIES**

Major community facilities in the vicinity of 902 Alder Street are noted below.

#### **Medical Facilities**

There are three major medical facilities in close proximity to the subject property. The Queens Medical Center and Straub Clinic and Hospital offer emergency services and all levels of general acute patient care. The Straub Hospital is the closest facility, approximately .5 miles west of the subject property on South King Street. The Queens Center is approximately one mile west of the subject property. The Kaiser Honolulu Clinic is approximately .25 miles west of the subject property on South King Street.

#### **Educational Facilities**

The Hawai'i Department of Education oversees public schools in the Honolulu District of the McKinley Complex. There are eight public schools in the Complex, and three Charter Schools. The closest public schools include the Ka'ahumanu Elementary school (Kindergarten – 5<sup>th</sup> grade), Central Middle School (grades 6 - 8), and the McKinley High School (grades 9 - 12) school. The proposed residential units will house an estimated 390 residents, including about 23 students who will attend nearby public schools. It may be assumed that the project will result in 11 elementary school students, 6 middle school students and 6 high school students. These numbers could be higher or lower, depending on (1) the mix of unit sizes (e.g., how many 1-bedroom, 2-bedroom, 3-bedroom units); and (2) the mix of tenants (e.g., how many young families versus individuals).

### **Emergency Responders**

The Honolulu Police Department (HPD) District 1, Sector 4 covers Makiki, Kaka'ako, McCully and Mō'ili'ili. The Department's headquarters is located at 801 South Beretania Street, approximately one mile west of the subject property. District 1 has a community policing/weed and seed team comprised of volunteers who collaborate with law enforcement staff to reduce crime, create safer neighborhoods, and improve the quality of life for residents.

The closest Honolulu Fire Department station is the Pāwa'a Station at 1610 Makaloa Street approximately .75 miles southeast of the project site.

### **Emergency Shelters**

The closest outdoor emergency shelter is the Sheridan Community Park located directly across from the subject property on Elm Street. The closest indoor Emergency Shelter is located one block west of the subject property, at McKinley High School. Just beyond the School is a larger facility that serves as a shelter for emergencies purposes, i.e., the Neal S. Blaisdell Center.

### **Community Parks and Recreational Resources**

The City and County of Honolulu, Department of Parks and Recreation (DPR) manages and maintains a system of parks on the island of O'ahu. 902 Alder Street is located within DPR's District 2. The closest public park is Sheridan Community Park located directly across from the subject property on Elm Street. Other public parks in the vicinity include Cartwright Neighborhood Park, Pāwa'a Park, and Thomas Square. All three are less than .5 miles from the subject property. The closest regional park and beach is the Ala Moana Regional Park, which is approximately .65 miles from the subject property. The nearest public swimming pool is located at 1527 Ke'eumoku Street.

The City and County of Honolulu's Park Dedication Ordinance requires new residential projects to either dedicate land in perpetuity for park and playground purposes or to pay a fee in-lieu of dedication.

### **Project Impacts and Mitigation**

The proposed project is not expected to have significant adverse impacts on community facilities. The Department of Parks and Recreation, in response to the pre-assessment consultation, indicated that the project would have no impact on any of their programs or facilities.

The project is requesting an exemption from Park Dedication requirements pursuant to Section 201H-38, Hawai'i Revised Statutes (HRS), as further discussed in Chapter 5 of this Draft EA. The project may instead include a recreation deck on the roof of the parking structure. Juveniles, their visitors, and judiciary employees will have access to the on-site landscaped recreation area on Pi'ikoi Street.

The proposed residential development will result in an additional 11 elementary school students, 6 middle school students and 6 high school students, depending on the mix of unit types. The DOE regularly updates enrollment projections for facilities and program planning based on current migration patterns, new housing developments, birth statistics, changes in service boundaries, changes in school organization, and attendance of students from outside the school service area by district exception.

### 3.16 SOCIOECONOMIC ENVIRONMENT

Plasch Econ Pacific LLC examined the population, economic, and fiscal benefits and impacts of the proposed joint development in March 2016. The population impacts address the number of people who will be living in the affordable units, as well as the changes in number of people supported by the increased economic activity associated with the project. The economic impacts cover expenditures and sales, profits, employment, and payroll related to (1) construction and related activities, and (2) operations and related activities. Fiscal impacts address the impact of the project on State and County revenues and expenditures. A full copy of the report can be found in Appendix K.

#### Demographics

The US Census compiles demographic information on population, housing and employment every 10 years, with the most recent data available from the year 2010. The proposed development is located within Census Tract 36.01 - Honolulu. An overview of 2010 demographic characteristics for the census tract and for Honolulu County, as a whole, is provided in Table 19.

**Table 19: Selected Population and Housing Characteristics**

Characteristic	Honolulu County	Census Tract 36.01 – Honolulu
Population	953,207	4,109
Median age	37.8	39.8
Population in households	917,907	4,096
Number of households	311,047	1,951
Average household size	2.95	2.10
Housing units	315,988	2,153
Occupied housing units	336,899	1,951
Percent of total housing units occupied	92.3%	90.6%
Renter occupied units	136,660	1,462
Population in renter-occupied units	376,015	3,028

Assuming an average household size similar to that of the census tract of approximately 2.10 persons, the proposed development (creation of +180 units) may be expected to increase the population in the area by approximately 380 people.

As described by the public review draft Ala Moana Neighborhood Transit-Oriented Development (TOD) Plan (2014), the Ala Moana neighborhood and environs is known for its commercial and civic uses of regional and statewide significance. In addition to being a high employment zone, it is also a major residential area which has seen several new high-rise condominiums constructed over the past ten years. Residents of the Ala Moana neighborhood are attracted to the area's convenient access to numerous public amenities, shopping, and services.

Beyond the demographics provided in Table 19, the 2010 Census data suggests that nearly half (47%) of the area's employed residents use a mode of travel other than driving alone for commuting to and from work (compared to the 36% for Oahu). Of this number, a relatively high percentage walks or uses transit. Additionally, most households are renters rather than owners, the reverse of the island-wide pattern.

### Economic Impacts

Development of the project will provide an average of about 140 construction jobs over the two-year construction period, plus about 275 indirect jobs, for a total of about 410 direct-plus-indirect jobs. Construction activity is expected to generate a total payroll of about \$22 million per year, of which about \$8.7 million will be for construction workers, about \$13.3 million for indirect employment. Annual wages will range from about \$30,000 to over \$100,000 per year, and are expected to average about \$63,000 for construction jobs, and about \$48,300 for indirect jobs.

In addition to construction expenditures, construction activity will generate indirect sales associated with supplying goods and services to construction companies and to the families of construction workers. In turn, the companies supplying goods and services, and the families of their employees, will purchase goods and services from other companies, and so on. These indirect sales will include sales by companies that supply building materials (cement, steel, lumber, roofing materials, plumbing equipment, electrical equipment, hard-ware supplies, lighting, flooring, etc.); rent out construction equipment; repair equipment; provide warehousing services; provide shipping and trucking services; etc. Indirect sales also include sales by grocery stores, drugstores, restaurants, service stations, beauty salons, medical providers, accountants, attorneys, insurance agents, etc. Based on State economic multipliers, these indirect sales are expected to average about \$48.8 million per year.

Once built out and occupied, operations will result in a negligible increase in regional employment because most workers are already at the existing site, or will relocate from nearby State offices.

Most of the tax revenues generated by development will be paid to the State, not the County. In total, the State will receive an estimated \$5 million from excise taxes, corporate income taxes, and personal income taxes. The County will receive about \$180,000 from the excise tax surcharge. Due to the exemption for qualifying low-income rental projects, this amount does not include any excise tax or surcharge on the construction costs of the residential portion of the project.

### **Project Impacts**

As documented in the 2014 draft *Housing O‘ahu: Islandwide Housing Strategy*, the production of rental housing is a top priority for the County. The Sheridan District within the Ala Moana area already has a large number of rental units. As such, neighbors are familiar with renter occupied units and another rental project will fit in to the existing neighborhood. Renters typically earn less than homeowners, in which case a rental project in proximity to a future transit station, will help households keep more of their incomes for uses other than commuting costs.

Housing unit sizes may range from studios to 3-bedroom units, benefiting diverse households.

For both the State and the County, expenditures for support services are expected to be negligible inasmuch as no expensive government infrastructure for the Project will be required, and State and County services are already provided to workers directly or indirectly involved with project development, and to the families of these workers.

Both the State and the County will receive negligible tax revenues from operations. This is because (1) the property will be exempt from paying property taxes; (2) rental income will be exempt from the excise tax and surcharge; (3) the rental units may likely be managed by a non-profit organization (such organizations do not pay income taxes); and (4) the regional increase in employment, payroll, and personal income taxes will be negligible.

The change in State and County support expenditures are expected to be negligible, given that both already provide services to the employees who will be working in the buildings, as well as to residents living in the rental units.

### **3.17 POTENTIAL CUMULATIVE AND SECONDARY IMPACTS**

Cumulative impacts are impacts which result from the incremental effects of an activity when added to other past present, and reasonably foreseeable future actions, regardless of what agency or person undertake such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time. The 902 Alder Street joint development is not anticipated to generate substantial cumulative impacts. Short-term impacts to adjacent buildings and rights of way may occur during construction. These will be mitigated to the extent possible, as previously described. In the long-term, there will be no adverse cumulative impacts on traffic, noise, air quality, and the flora and fauna. Wastewater capacity has been confirmed by the County. The Preliminary Engineering Report suggests that the required water capacity is available. Post-development drainage flow quantity will not exceed the predevelopment quantity.

Secondary effects are impacts that are associated with, but do not result directly from, an activity. The environmental analysis of the proposed project addresses full development of the project in the context of known planned or approved land uses in the vicinity. Based on the approximately 180 units and diversity of unit types, it may be expected that

380 new residents will move into the neighborhood as a result of this proposed redevelopment. The Juvenile Center will provide an estimated 65.5 full-time equivalent jobs. Although this is a significant increase over the number of jobs at the existing facility, nearly all of the new jobs will relocate from other facilities in the area. Thus, the net change in regional employment is anticipated to be zero. As described in Section 3.16 of this draft EA, the State and County tax revenues and support expenditures are expected to be negligible.

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## 4.0 CONFORMANCE WITH PLANS AND POLICIES

This section describes the degree to which the proposed project conforms to existing State and County plans and regulations.

### 4.1 HAWAI‘I STATE PLAN

The Hawai‘i State Plan, codified as Chapter 226, Hawai‘i Revised Statutes, serves as a guide for the future long-range development of the State; identifies goals, objectives, policies and priorities for the State; provides a basis for determining priorities and allocating resources; improves coordination of federal, state and county activities, and establishes a system to integrate major state and county activities.

The use of the subject property for residential and judiciary purposes would be consistent with Chapter 226, Hawai‘i Revised Statutes.

*§226 -4 State goals.*

- 1. A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawai‘i's present and future generations.*
- 2. A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.*
- 3. Physical, social, and economic well-being, for individuals and families in Hawai‘i, that nourishes a sense of community responsibility, of caring, and of participation in community life.*

*§226 -5 Objective and policies for population.*

- 1. Manage population growth statewide in a manner that provides increased opportunities for Hawai‘i's people to pursue their physical, social, and economic aspirations while recognizing the unique needs of each county.*
- 3. Promote increased opportunities for Hawai‘i's people to pursue their socio-economic aspirations throughout the islands.*
- 7. Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.*

§226-10 *Objective and policies for the economy--potential growth and innovative activities.*

14. *Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawai‘i's social, economic, physical, and environmental objectives.*

§226-13 *Objectives and policies for the physical environment--land, air, and water quality.*

- b.7. *Encourage urban developments in close proximity to existing services and facilities.*

§226-17 *Objectives and policies for facility systems—transportation.*

13. *Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.*

§226-19 *Objectives and policies for socio-cultural advancement--housing.*

1. *Greater opportunities for Hawai‘i's people to secure reasonably priced, safe, sanitary, and livable homes, located in suitable environments that satisfactorily accommodate the needs and desires of families and individuals, through collaboration and cooperation between government and nonprofit and for-profit developers to ensure that more affordable housing is made available to very low, low- and moderate-income segments of Hawai‘i's population.*
2. *The orderly development of residential areas sensitive to community needs and other land uses.*
3. *The development and provision of affordable rental housing by the State to meet the housing needs of Hawai‘i's people.*

§226-22 *Objectives and policies for socio-cultural advancement--social services.*

2. *Promote coordination and integrative approaches among public and private agencies and programs to jointly address social problems that will enable individuals, families, and groups to deal effectively with social problems and to enhance their participation in society.*

§226-105 *Crime and criminal justice.*

5. *Provide a range of appropriate sanctions for juvenile offenders, including community-based programs and other alternative sanctions.*

## **4.2 HAWAI‘I REVISED STATUTES CHAPTER 343**

The proposed action involves the use of State lands and funds to create the mixed-use development at 902 Alder Street. Therefore, this Draft EA was prepared in accordance with Chapter 343, HRS, and Title 11, Chapter 200 of the State Department of Health’s Hawai‘i Administrative Rules (HAR).

## **4.3 HAWAI‘I REVISED STATUTES CHAPTER 201H**

Chapter 201H, HRS, authorizes HHFDC to develop or assist in the development of housing projects which are exempt from certain statutes, ordinances, charter provisions, and rules of any governmental agency relating to planning, zoning, construction standards for subdivisions, development and improvement of land, and the construction of units thereon provided that:

- The project primarily or exclusively includes affordable housing units;
- The Corporation finds that the project meets minimum requirements of health and safety; and,
- The development of the project does not contravene any safety standards, tariffs, or rates and fees approved by the public utilities commission for public utilities or various Boards of Water Supply.

The 201H expedited processing tool provides for greater design flexibility and cost savings for affordable housing projects. The HHFDC establishes its affordability threshold for projects as those projects that primarily are affordable to households with incomes at or below 140% of area median income. The project satisfies the standards of Chapter 201H, HRS, and will request certain exemptions that will contribute to project economic feasibility and thereby result in the production of affordable rental housing units.

## **4.4 HAWAI‘I REVISED STATUTES CHAPTER 205A**

The Coastal Zone Management Act (CZMA) of 1972 (16 USC 1451 et seq.) encourages coastal states to protect coastal resources consistent with the state’s coastal zone management program. The objectives of the Coastal Zone Management (CZM) Program are to provide the public with recreational opportunities, protect historic resources, protect scenic and open space resources, protect coastal ecosystems, provide facilities for economic development, reduce hazards and manage development.

Within Hawai‘i, the CZM program is authorized by HRS Chapter 205A, and is administered by the Office of Planning within the State of Hawai‘i Department of Business, Economic Development, and Tourism (DBEDT). Actions anywhere within the State of Hawai‘i must comply with the CZM program. As discussed throughout this document, the proposed project is not anticipated to have adverse impacts on the area’s

recreational opportunities, historic resources, scenic and open space resources, or coastal ecosystems.

#### **4.5 STATE LAND USE LAW**

The State of Hawai'i Land Use Law, Chapter 205, Hawai'i Revised Statutes, classifies all lands in the State into four land use districts: Urban, Rural, Agricultural, and Conservation. The proposed project is located in the Urban district. A State Land Use District Boundary Amendment is not needed to redevelop the property as proposed. The proposed use of the subject property for residential and judiciary development would be consistent with the Urban designation.

#### **4.6 CITY AND COUNTY OF HONOLULU GENERAL PLAN**

The *General Plan* of the City and County of Honolulu is a comprehensive statement of objectives and policies which sets forth the long-range aspirations of island residents and shapes the strategies and actions needed to achieve them. The General Plan was adopted in 1992 and most recently amended in 2002 (Resolution 02-205, CD1). It is the first level of a comprehensive planning process that addresses physical, social, economic, and environmental concerns. The rezoning of the subject property and its use residential and commercial facilities is consistent with the following objectives and policies of the Honolulu General Plan:

- *PART I: POPULATION.*
  - *Objective C: To establish a pattern of population distribution that will allow the people of Oahu to live and work in harmony.*
    - *Policy 1: Facilitate the full development of the primary urban center.*
- *PART IV: HOUSING.*
  - *Objective A: To provide decent housing for all the people of O'ahu at prices they can afford.*
    - *Policy 5: Make full use of State and Federal programs that provide financial assistance for low- and moderate-income homebuyers.*
    - *Policy 12: Encourage the production and maintenance of affordable rental housing.*
    - *Policy 13: Encourage the provision of affordable housing designed for the elderly and the handicapped.*
  - *Objective C: To provide the people of Oahu with a choice of living environments which are reasonably close to employment, recreation, and commercial centers and which are adequately served by public utilities.*

- *Policy 1: Encourage residential developments that offer a variety of homes to people of different income levels and to families of various sizes.*
- *Policy 3: Encourage residential development near employment centers.*
- *Policy 4: Encourage residential development in areas where existing roads, utilities, and other community facilities are not being used to capacity.*
- **PART V. TRANSPORTATION & UTILITIES.**
  - *Objective A: To create a transportation system which will enable people and goods to move safely, efficiently, and at a reasonable cost; serve all people, including the poor, the elderly, and the physically handicapped; and offer a variety of attractive and convenient modes of travel.*
    - *Policy 7: Promote the use of public transportation as a means of moving people quickly and efficiently, of conserving energy, and of guiding urban development.*
- **PART VII: PHYSICAL DEVELOPMENT AND URBAN DESIGN.**
  - *Objective A: To coordinate changes in the physical environment of Oahu to ensure that all new developments are timely, well-designed, and appropriate for the areas in which they will be located.*
    - *Policy 5: Provide for more compact development and intensive use of urban lands where compatible with the physical and social character of existing communities.*
    - *Policy 7: Locate new industries and new commercial areas so that they will be well related to their markets and suppliers, and to residential areas and transportation facilities.*
  - *Objective B: To develop Honolulu (Waialae-Kahala to Halawa), Aiea, and Pearl City as the Island's primary urban center.*
    - *Policy 5: Encourage the development of attractive residential communities in downtown and other business centers.*
- **PART VIII: PUBLIC SAFETY.**
  - *Objective A: To prevent and control crime and maintain public order.*
    - *Policy 9: Encourage the improvement of rehabilitation programs and facilities for criminals and juvenile offenders.*

- *PART XI: GOVERNMENT OPERATIONS AND FISCAL MANAGEMENT.*
  - *Objective A: To promote increased efficiency, effectiveness, and responsiveness in the provision of government services by the City and County of Honolulu.*
    - *Policy 2: Promote consolidation of State and City and County functions whenever more efficient and effective delivery of government programs and services can be achieved.*

An update to the General Plan is underway. Its working title is “O‘ahu 2035: General Plan Focused Update”. The update considers critical issues of growth, development, and quality of life that island residents are most concerned about, including regional population, economic health, affordable housing, and sustainability. The version examined for the purposes of this Draft EA is titled “November 2012 Public Review Draft of Proposed General Plan Revisions”. The proposed project remains consistent with the proposed changes to the text. The County proposes to add a new policy to the General Plan that is particularly relevant to the proposed project. It is as follows:

- *PART IV: HOUSING (proposed update).*
  - *Objective A, Policy 12 - Promote higher-density, mixed use development, including transit oriented development, to increase the supply of affordable and market homes convenient to jobs, shops and public transit.*
  - *Objective C, Policy 5 - Support mixed-use, higher-density redevelopment in areas surrounding future transit stations.*

#### **4.7 CITY AND COUNTY OF HONOLULU LAND USE ORDINANCE**

The subject property is designated as A-2 Medium-density Apartment District by Chapter 21 of the City and County of Honolulu Revised Land Use Ordinance (LUO). The LUO regulates land use in a manner that encourages the orderly development in accordance with the General Plan and Development Plans. The intent of the A-2 District is to:

“allow for a range of apartment densities and a variety of living environments. The predominant uses include multifamily dwellings, such as common wall housing, walkup apartments and high-rise apartments. Uses and activities that complement apartment use are permitted, including limited social services ... The intent of the A-2 medium density apartment district is to provide areas for medium density, multifamily dwellings. It is intended primarily for concentrated urban areas where public services are centrally located and infrastructure capacities are adequate.”

The multifamily housing component of this project is permitted in the A-2 District.

Development Standard	Maximum Permitted	Proposed
Minimum Lot Area (sf)	10,000 sf	63,180 sf
Minimum Lot Width and Depth (ft)	70 ft	over 70 ft wide and deep
Setbacks	10 feet for front, side and rear	10 feet for front, side and rear
Maximum Building Area	40% x 63,180 = 25,272 sf	39,009 sf
Maximum Height (ft)	150 ft	185 ft
Height Setbacks	“for any portion of a structure over 40 feet in height, additional side and rear setbacks shall be provided; for each 10 feet of additional height or portion thereof, an additional one-foot setback shall be provided.”	conforms
Maximum Allowable Floor Area	FAR 1.9 x 63,180 sf = max allowable FA 120,042 sf	FAR 4.5

"Public uses and structures" are permitted in an A-2 District. According to the Definitions section in the LUO, "public uses and structures" are “those uses conducted by or structures owned or managed by the federal government, the State of Hawai‘i or the city to fulfill a governmental function, activity or service for public benefit and in accordance with public policy. Excluded are uses which are not purely a function, activity or service of government and structures leased by government to private entrepreneurs or to nonprofit organizations. Typical public uses and structures include: libraries, base yards, satellite city halls, public schools and post offices”. A juvenile services center/shelter for the State of Hawai‘i Judiciary is a public use.

**4.8 PRIMARY URBAN CENTER DEVELOPMENT PLAN**

The City’s Development or Sustainable Communities Plans, consist of conceptual schemes for implementing the development or sustainable community objectives and policies of the City’s *General Plan*. The purpose of the plans are to set forth the desired sequence, patterns, and characteristics of future development or sustainability of a region or community. Therefore, these plans are detailed guidelines for the physical sustainability or development of the island. The plans consist of maps depicting the land use pattern, public facilities, open spaces, general principles and common provisions, and specific urban design principles and controls. The Primary Urban Center Development Plan (PUC DP), adopted by the City Council via Ordinance 04-14 in June 2004, was prepared as a community-developed guidance document for orderly and coordinated public and private sector development in the Primary Urban Center Development Plan area in a manner that is consistent with applicable general plan provisions, including the designation of the Primary Urban Center as the principal region for future growth in residential population and jobs.

The Property is entirely located within the Primary Urban Center Development Plan’s “Urban Community Boundary”. The DP recognizes the Ala Moana district (where the

subject property is located) as an area “with substantial capacity for future urban development”.

The proposed redevelopment of 902 Alder Street is consistent with the following “Key Elements” of the vision for the Primary Urban Center:

- *Livable neighborhoods have business districts, parks and plazas, and walkable streets.*
- *The PUC offers in-town housing choices for people of all ages and incomes.*
- *A balanced transportation system provides excellent mobility for residents and visitors.*

The proposed affordable housing will be integrated with other uses on the parcel, and is in walking distance from shopping districts, community services, and mass transit. A landscaped recreation area, urban courtyard, and pedestrian paths will help integrate the project with neighboring uses. The State will contribute to the supply of affordable rental units and by supporting housing for low income households. The use of mass transit, bicycling and walking will be encouraged by reducing the number of vehicular parking spaces on-site. Bicycle parking will be provided on site. The project will contribute toward the implementation of complete streets with improvements to the walkability of Elm Street in particular.

In Figure 4 of the PUC DP Land Use Map, the proposed development is shown within the Medium and Higher Density Residential Mixed Use designation and within the Urban Community Boundary. The following discussion describe areas where the proposed project is consistent with policies and guidelines in the PUC DP.

*Policies: In-Town Residential Neighborhoods*

- *Density*
- *Building Heights*
- *Building Design and Streetscape Environment*

The project is significantly underutilized with one and two-story buildings in an area that allows heights of up to 150 feet. In conformance with the policies of the PUC DP and Ala Moana Neighborhood TOD Plan, higher densities with mixed uses are proposed. The location of the property – within close proximity to neighborhood stores, dining establishments, professional and/or business services along King Street – will support resident lifestyle and livelihood choices. The proposed height of the project will better reflect the currently allowed height. The primary entrance to the parking and judiciary structure will be on Alder Street, in order to support efficient patterns of circulation on Pi‘ikoi Street. An urban courtyard may be placed near the main entrance to the other housing and judiciary activities, providing strategic open space relief and opportunities for social activity.

*Policies: In-Town Housing Choices*

- *Reduce costs for apartment homes.*
- *Provide incentives and cost savings for affordable housing.*
- *Provide for high-density housing options in mixed-use developments around transit stations.*

Land costs will be reduced by maximizing density in accordance with the existing zoning regulations. Federal standards for affordability will be satisfied, and 100% of the units are planned to be available for individuals and families earning 60% and below of the area median income. The property will be developed for the mix of residential and judiciary uses, at a density appropriate for its location with ½ mile of the proposed Ala Moana transit station.

*Policies: Develop a Balanced Transportation System*

- *Implement land use strategies to achieve a balanced transportation system.*
- *Implement Transportation Demand Management strategies.*
- *Implement the Honolulu Bicycle Master Plan.*
- *Enhance and improve pedestrian mobility.*
- *Encourage the full use of existing private and public parking garages.*

The project will take advantage of the existing zoning density and heights to maximize the use of the parcel. While on-site parking is proposed, the spaces will be limited in order to encourage the use of bus, rail, bicycling and walking as alternative transportation modes. On-site parking for bicycles will encourage the use of transit and other alternative modes, and reflect the recommendations within the *Honolulu Bicycle Master Plan* and later bicycle planning documents. The sidewalks along Elm, Alder, and Pi‘ikoi will be improved with landscaping and trees that enhance the pedestrian environment. The reduction of on-site parking will encourage alternative modes of commuting, and therefore, the proposed parking structure is expected to be fully utilized, and not under-utilized.

The proposed project is consistent with these policies and guidelines.

#### **4.9 ALA MOANA NEIGHBORHOOD TRANSIT-ORIENTED DEVELOPMENT PLAN**

The property is located within 1/2 mile from the proposed Ala Moana Center transit station (see Figure 16). Future residents can be expected to walk to the transit center to use buses and the train for commuting purposes. Although the Ala Moana Neighborhood Transit-Oriented Development (TOD) Plan is still in its Public Review Draft stage, we anticipate it being approved by the City Council, as the Waipahu and ‘Aiea/Pearl City Plans were. Several components of the proposed design comply with the Draft TOD Plan’s proposed development objectives.

The project can be assessed based on the design controls contained in the Interim Planned Development-Transit (IPD-T) permit process, set forth in ROH Chapter 21 (City Council Ordinance 14-10). Although the project does not require an IPD-T, it satisfies the permit's various standards, including:

- a. *Contributes positively to the economic enhancement of the affected area, particularly with regard to providing a broad mix of uses and diverse employment opportunities.***

After the juvenile detention facility moved to Kapolei, the main structure and its three wings has remained vacant. The redevelopment of the property entails three distinct uses: residential, office and social service associated with the judiciary function, and open space. This broad mix of uses will maximize the zoning potential and thereby create both on-site employment potential, as well as insert more people into the neighborhood who will likely shop at the existing nearby stores and shopping malls/plazas.

- b. *Provides measures or facilities, or both, to promote a highly functioning, safe, interconnected, multi-modal circulation system, supporting easy access to, and effective use of the transit system on a pedestrian scale.***

Wide sidewalks surround three sides of the property. Multi-modal needs will be accounted for with the installation of bicycle parking, pedestrian paths, and minimal parking for automobiles. The property will be landscaped to contribute to an attractive and functional streetscape.

- c. *Provides usable, safe, and highly accessible public accommodations, gathering spaces, pedestrian ways, bicycle facilities, or parks.***

A landscaped community recreation area may be constructed on Pi'ikoi Street. The area could be used by the juveniles, visitors, and employees of the Juvenile Services Center. An urban courtyard may be located on Alder Street. The courtyard could serve as the primary entrance to the residential and/or judiciary components of the site. The existing sidewalk on the mauka side of Elm is not wide enough to accommodate street trees, so the frontage on Elm will be landscaped. Pedestrian paths will connect the sidewalks to the proposed new buildings. A recreation deck, possibly on the top of the parking structure, may be provided for the residents of the affordable housing units.

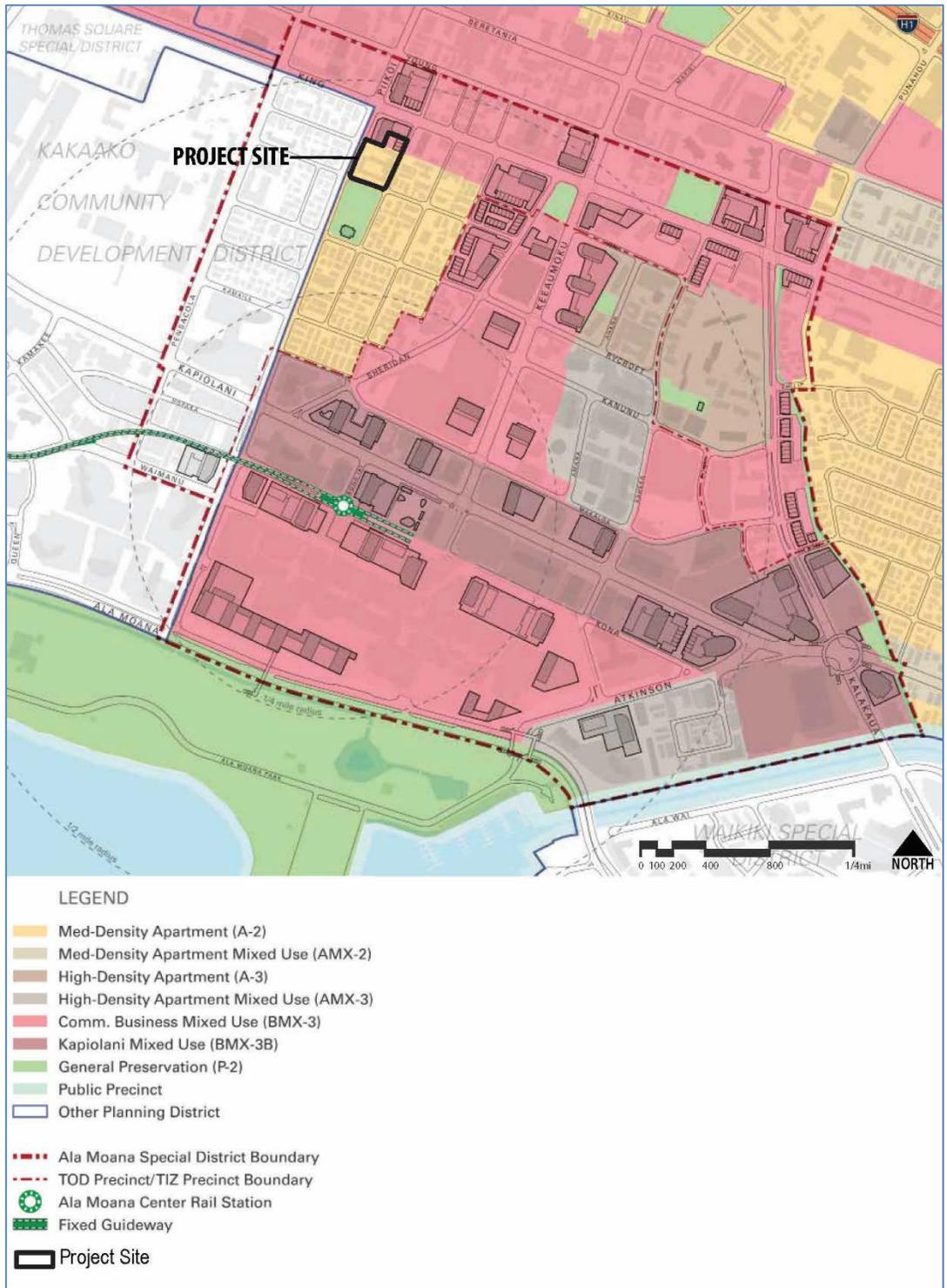
- d. *Provides an appropriate mix of housing and unit types, particularly affordable or rental housing, or both; with qualifying affordable or rental housing being located on the project site or within one-half mile of the same identified transit station as the project site.***

The project involves the on-site construction of housing affordable to households at 60% and below the U.S. Department of Housing and Urban Development Area Medium Income within one-half mile of the future Ala Moana rail station. All residential units, with the exception of the manager's unit, will be affordable. A variety of rental housing units are proposed, including one-bedroom units, two-bedroom units, and three-bedroom units. Incidental uses include a manager's unit, laundry facility, management office, and recreation room.

The project is also consistent with many of the principles and objectives within the draft Ala Moana Neighborhood TOD Plan (2014 Public Review Draft). For example, the principle of ***Residential Diversity*** is satisfied with the project's variety of unit sizes. The various unit sizes will help accommodate diverse lifestyles and varying income levels. The proposed affordable rental housing will help attract a wider demographic. The project also satisfies the ***Usable Open Space*** principle. The recreation area, urban courtyard and pedestrian paths linking sidewalks to structures on site will help integrate the project into the fabric of the neighborhood. The proposed landscaping will provide "respite from the hardscape and pace of the city, and provide cool, contemplative spaces, social gathering places, active recreation areas, and a home for community-oriented public events" (p. 28). The on-site bicycle parking and pedestrian paths support ***Intermodal Connectivity***. The large public investment in the site, and ultimate mix of housing and judiciary services "can 'prime the market' for more long-term investment in the area", as proposed in the Ala Moana Neighborhood TOD Plan (p. 33).

The Neighborhood TOD Plan suggests that the Sheridan area has low redevelopment potential. The fear is that redevelopment will displace existing households with the construction of expensive housing units, i.e., on page 22 are the following statements: "The Sheridan residential area comprises older, mid-century residences and is a stable neighborhood. While there may be some redevelopment potential, it is recommended that redevelopment should not occur here, in light of the City's stated policy of not promoting gentrification." However, this is not the case for the subject property because there is no one living there currently, and the proposed project will result in 100% affordable units. In fact, the TOD Development Framework, on page \_\_ encourages the "redevelopment of underutilized parcels within Ala Moana will improve the character of the neighborhood's arterial and collector roadways while keeping the existing character of the neighborhood."

**Figure 16: ALA MOANA NEIGHBORHOOD TOD PLAN SPECIAL DISTRICT BOUNDARY**



Source: Ala Moana Neighborhood TOD Plan Public Review Draft (July 2014)

#### **4.10 OAHU BIKE PLAN, A BICYCLE MASTER PLAN**

The *Oahu Bike Plan: A Bicycle Master Plan* (HHF, August 2012) recommends a future mauka-makai 1.2 mile bike route on Pi'ikoi Street from Ala Moana Boulevard to Wilder Avenue. Bicycle facilities that connect to TheBus transit centers and planned rail stations are important. The Pi'ikoi bike route is designated as a short-range implementation plan project – to be built in the next five to ten years. It could be in the form of standard or protected bike lanes. The lack of mauka-makai bike facilities, and forthcoming installation of bike stations with Bikeshare Hawai'i, increases the desirability and likely use of a bikeway facility.

In support of the future bike lanes on Pi'ikoi Street, the curb line along the east side of Pi'ikoi Street will remain. The City may wish to remove or relocate on-street parking and install bike lanes. To improve accessibility and access, the development will ensure ease of access to the building from Pi'ikoi Street, as well as provide on-site bike storage. The on-site parking structure will ensure that residents, clients, visitors and employees will not require on-street parking. The proposed development will support multi-modal transportation, including increased bicycle usage.

#### **4.11 CITY AND COUNTY OF HONOLULU SPECIAL MANAGEMENT AREA**

The Hawai'i Coastal Zone Management (CZM) Program, Chapter 205A, Hawai'i Revised Statutes (HRS), outlines control, policies and guidelines for development within an area along the shoreline referred to as the Special Management Area (SMA). CZM policies are administered by each County. In the City and County of Honolulu, management of lands located within the SMA is regulated through Chapter 25, Special Management Area, Revised Ordinances of Honolulu (ROH). Chapter 205A, HRS also establishes the shoreline setback area to further manage uses along the shoreline. The City and County of Honolulu is delegated authority to regulate uses located within the established Shoreline Setback Area (SSA) for the island of O'ahu. The proposed development is not located within the SMA or SSA established by the City and County of Honolulu.

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## 5.0 CHAPTER 201H APPLICATION AND REQUESTED EXEMPTIONS & DEFERRALS

### 5.1 INTRODUCTION

Hawai‘i Revised Statutes (HRS) Section 201H-38, “Housing development; exemption from statutes, ordinances, charter provision, and rules” allows eligible 201H projects to seek exemptions from all statutes, ordinances, and rules of any governmental agency relating to planning, zoning, and construction standards that do not negatively affect the health and safety of the general public in exchange for providing affordable housing.

902 Alder Street will be an affordable rental housing project that is planned to offer 100% of its units to households earning 60% and below of the Area Median Income (AMI). It is centrally located in the Ala Moana district of Central Honolulu, where already high property values are expected to rise further in anticipation of the multi-modal transit options and improved connectivity.

The exemption requests which follow are necessary to achieve and maintain the financial feasibility of the project. The primary objective is to reduce the per-square foot cost of development to achieve this financial feasibility. If this is achieved, the State of Hawai‘i will be able to maximize the number of quality affordable units. The requested exemptions and deferrals are not contrary to the policies contained in existing State and County plans and policies.

### 5.2 REQUESTED EXEMPTIONS AND DEFERRALS

The following is a description of the exemptions being requested for 902 Alder Street. A summary of these exemptions is presented in Table 20.

#### Exemption from Revised Ordinances of Honolulu, Land Use Ordinance Section 21-3.80-1 (Table 21-3.3), Apartment District Uses and Development Standards

1. An exemption from LUO Sec. 21-3.80-1(b) (Table 21-3.3) is sought to allow the Project to exceed the maximum allowable density of 1.9. The Project proposes a building floor area ratio (FAR) of up to 4.5.
2. An exemption from LUO Sec. 21-3.80-1(b) (Table 21-3.3) is sought to exempt the Project from maximum building area requirements. The Project proposes no maximum building area requirements.
3. An exemption from LUO Sec. 21-3.80-1(b) (Table 21-3.3) is sought to allow the Project to exceed the current allowable maximum height of 150 feet (which is exclusive of the additional 18 feet maximum height limit allowed for mechanical

rooftop equipment, roof access stairwells, structures housing rooftop machinery, etc. per LUO Sec. 21-4.60(c)). The proposed Project height is 185 feet (which is exclusive of the additional 18 feet maximum height limit allowed for mechanical rooftop equipment, roof access stairwells, structures housing rooftop machinery, etc. per LUO Sec. 21-4.60(c)).

Exemption from Revised Ordinances of Honolulu, Land Use Ordinance (LUO) Section 21-6.20 (Table 21-6.1), Off-street Parking Requirements

1. An exemption from LUO Sec. 21-6.20 (Table 21-6.1) is sought to allow for less than the minimum required off-street parking spaces. The proposed exemption is to allow a minimum of one required off-street parking per residential dwelling unit, regardless of the dwelling's floor area.

The LUO would require that the proposed project provide a total of 365 parking stalls: 26 stalls for the 10,232 square feet of office space associated with the judiciary functions and 339 stalls for the residents and guests associated with the affordable housing. 902 Alder Street proposes to provide instead a total of 290 parking stalls. The judiciary will need more than the minimum. Based on their experience operating similar facilities, the judiciary may require 50 stalls, of which 2 will be ADA accessible. The affordable housing component of this project will require fewer parking stalls than the LUO requires. Residents are expected to require fewer cars as a result of their ability to access nearby City bus lines and the future rail station. Their places of employment may be within walking distance. Therefore, the residential component will require 240 stalls, of which 6 will be ADA accessible.

Use	LUO Standards	LUO Required	Total Proposed
<b>Judiciary</b>			
Admin / Offices (10,232sf)	1 stall per 400 sf	26	50
Mtg Room & Rec (10,232sf)	None Required	0	
Shelter (10,232sf)	None Required	0	(includes 2 ADA)
<b>Housing</b>			
600sf<x<800sf	1.5 stalls per unit	162	240
800≤x	2 stalls per unit	158	
Guest Stalls	1 stall per 10 units	19	(includes 6 ADA)
<b>TOTAL</b>		365	290

The reduced parking count also supports PUC DP recommendations for promotion of alternative forms of transportation and the draft Ala Moana TOD Plan’s even lower parking requirements for similar reasons. In reducing its parking count in the way proposed, 902 Alder Street supports prevailing City urban transportation policies while maintaining a sufficiently attractive number of resident-oriented stalls to facilitate the marketability of project units, while

individual transportation preferences for private automobile uses transition to coincide with emerging public policy.

No exemption from LUO requirements for the number of loading zones for each component of the project is being requested. A total of three loading spaces will be provided.

#### Building Permit and Plan Review Fees

1. Exemption from Sections 18-6.1 and 18-6.2, Revised Ordinances of Honolulu (ROH) is requested to allow exemption from building permit and plan review fees (including demolition, building, foundation, plumbing, electrical, fire sprinkler, etc.) to help achieve the economic feasibility of 902 Alder Street as a 201H affordable housing project.

#### Public Works/Infrastructure Fees

1. Exemption from Revised Ordinances of Honolulu (ROH), Sec. 14-14.4 is requested to exempt payment of fees and charges including, grading stockpiling, trenching, grubbing and de-watering to facilitate the achievement of project economic feasibility.
2. Exemption from Revised Ordinances of Honolulu (ROH), Sec. 14-12.12 is requested to exempt payment of storm drain connection license fee to facilitate the achievement of project economic feasibility.
3. Exemption from Revised Ordinances of Honolulu (ROH), Section 14-17.1 is requested to exempt payment from trenching, repair and service permit fees.
4. Deferral of Sections 1-102, 2-202(2), and 2-202(3) of the Board of Water Supply Rules and Regulations, to defer water system connection and facility charges until a Certificate of Occupancy is issued for each phase.
5. Exemption from Section 14-3.2 payment of sewer lateral connection and installation charges.
6. Exemption from Revised Ordinances of Honolulu (ROH), 14-10.1 and Sec. 14-10.3 is requested to exempt payment of wastewater connection and facility charges.

#### Exemption from Revised Ordinances of Honolulu, Chapter 22, Article 7, Park Dedication Ordinance

1. Exemption from Park Dedication requirements as set forth in Chapter 22, Article 7, Revised Ordinances of Honolulu is sought. The Park Dedication Ordinance would require the provision of land equal to 110 square feet for each residential unit or an in lieu fee payment for the required amount of land based on the market value of the project site. The amounts are figured by the architect/engineer in consultation with the affected agency since they are specific to the project. The proposed project includes a recreation deck for residents of the affordable housing units. A landscaped outdoor recreation space abutting Pi'ikoi Street will be

available to the juveniles, their visitors, and employees associated with the project's judiciary component.

**Table 20: Summary of Requested Exemptions and Deferrals**

<b>Development Standard or Requirement</b>	<b>Relevant Section</b>	<b>Requested Exemption/ Est. Value</b>	<b>Applicable Agency</b>
Floor Area Ratio (FAR)	Revised Ordinances of Honolulu (ROH) Section 21-3.80-1 (Table 21-3.3), Apartment District Uses and Development Standards	Maximum allowable density is 1.9; proposed FAR is 4.5	Department of Planning and Permitting (DPP)
Building Area	ROH Section 21-3.80-1 (Table 21-3.3), Apartment District Uses and Development Standards	Maximum allowable building area is 25,272 sf; proposed building area is approx. 39,000 sf	DPP
Building Height	ROH Section 21-3.80-1(b) (Table 21-3.3), Apartment District Uses and Development Standards	Maximum allowable height of 150 feet; proposed height is 185 feet (which is exclusive of the additional 18 feet maximum height limit allowed for mechanical rooftop equipment, roof access stairwells, structures housing rooftop machinery, etc. per LUO Sec. 21-4.60(c))	DPP
Off-street Parking Requirements	ROH Section 21-6.20 (Table 21-6.1), Off-street Parking Requirements	Based on proposed residential units, the LUO requires 339 stalls for the residential component; proposed off-street parking is 240 stalls	DPP

<b>Development Standard or Requirement</b>	<b>Relevant Section</b>	<b>Requested Exemption/ Est. Value</b>	<b>Applicable Agency</b>
Tandem Parking	ROH Section 21-6.40 (c) Arrangement of parking spaces	The proposed parking structure shows the use of tandem stalls. Based on how stalls are assigned, a waiver from the tandem parking regulations may not be required; however, a waiver is requested in case the number of tandem stalls exceeds 25 percent of the total number of required spaces for employee parking	DPP
Building Permit	ROH Sections 18-6.2	Exemption from building permit fees (including demolition, building, foundation, plumbing, electrical, fire sprinkler, etc.)	DPP
Plan Review Fees	ROH Sections 18-6.1	Exemption from plan review fees	DPP
Grading and Grubbing	ROH Section 14-14.4	Exemption grading stockpiling, trenching, grubbing and de-watering fees	DPP
Storm Drain Connection	ROH Section 14-12.12	Exemption from storm drain connection license fee to facilitate the achievement of project economic feasibility	DPP / Department of Environmental Services (DES)
Trenching	ROH Section 14-17.1	Exemption from trenching, repair and service permit fees	DPP
Water System Connection	Sections 1-102, 2-202(2), and 2-202(3) of the Board of Water Supply Rules and Regulations	Deferral of water system connection and facility charges until Certificate of Occupancy is issued for each phase	Honolulu Board of Water Supply

<b>Development Standard or Requirement</b>	<b>Relevant Section</b>	<b>Requested Exemption/ Est. Value</b>	<b>Applicable Agency</b>
Sewer Lateral Connection And Facility	ROH Section 14-3.2	Exemption of payment of sewer lateral connection and installation charges	DPP / Wastewater Branch
Wastewater System Facility Charge	ROH Section 14-10.3	Exemption from payment of wastewater connection	DPP / Wastewater Branch
Park Dedication	ROH Section 22-7	Exemption from Park Dedication requirements	DPP and Department of Parks and Recreation

## 6.0 FINDINGS AND ANTICIPATED DETERMINATION

The proposed redevelopment of 902 Alder Street for affordable housing and judiciary purposes is not anticipated to have a significant impact based on the criteria set forth in the Hawai‘i Administrative Rules (HAR), Chapter 200, Title 11, Section 12. The objective of this Draft EA is to identify and consider the “significance” of potential environmental effects which includes the sum of effects on the quality of the environment along with cumulative long-term effects.

As set forth in HAR, Chapter 200, Title 11, a prescribed set of 13 Significance Criteria is used to determine the project’s impact on the environment. The project’s relationship to each criterion is discussed in this chapter and followed by the ensuing anticipated project determination.

### 6.1 FINDINGS

To determine whether a proposed action may have a significant effect on the environment under Hawai‘i Administrative Rules Title 11, Chapter 200, the Proposing Agency needs to consider every phase of the action, the expected primary and secondary consequences, cumulative effect, and the short- and long-term effects. The Proposing Agency’s review and evaluation of the proposed action’s effect on the environment would result in a determination whether: 1) the action would have a significant effect on the environment, and an Environmental Impact Statement Preparation Notice should be issued, or 2) the action would not have a significant effect warranting a Finding of No Significant Impact (FONSI).

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

The proposed action will entail redeveloping an underutilized parcel located in the Primary Urban Center. The property is surrounded by residential and commercial uses, and a small urban park.

Two archeological sites are known to be present on the property based on excavations and previous archaeological surveys. Mitigation measures will be developed in consultation with SHPD.

The Honolulu Juvenile Detention Center is eligible for listing on the Hawai‘i and National Registers of Historic Places; however, the building is physically deteriorated. Since the redevelopment project would involve the demolition of the building, mitigation measures – based on consultations with SHPD - include:

1. Historic American Buildings Survey (HABS) Level III, with archival photography and copies of all available original drawings.

2. Two interpretive panels utilizing the HABS photographs and historic information to be placed in the future Juvenile Counseling office located at Alder Street.

As a result of the proposed mitigation measures, the proposed project does not represent an irrevocable commitment to loss or destruction of any cultural or archeological resource.

2. *Curtails the range of beneficial use of the environment;*

Access to the property has been limited since it began operating as a juvenile detention facility in 1944. The construction of affordable housing will provide a community benefit and better integrate the property with the existing neighborhood. Pedestrian activities will increase in an urban environment that is close to commercial uses and mass transit. Landscaping will result in street trees that shade sidewalks on Elm and Pi'ikoi. The replacement of the closed, vacant detention facility with housing units that overlook Sheridan Park will improve park safety with more "Eyes on the Park". The proposed development will not curtail the range of potential beneficial uses of the subject parcel or surrounding environment.

3. *Conflicts with the State's long-term environmental policies or goals and guidelines as expressed in Chapter 344, HRS, and any revisions thereof and amendments thereto, court decisions, or executive orders;*

The proposed project is consistent with the State's policies, goals and guidelines established in Chapter 344, HRS. The project is consistent with the goals of HRS Chapter 344-3 (2) (B): "Creating opportunities for the residents of Hawai'i to improve their quality of life through diverse economic activities which are stable and in balance with the physical and social environments" and (2) (C) "Establishing communities which provide a sense of identity, wise use of land, efficient transportation, and aesthetic and social satisfaction in harmony with the natural environment which is uniquely Hawai'ian." The proposed project is consistent with the guidelines of HRS Chapter 344-4. The proposed project is located in proximity to existing bus lines, will provide secure, on-site bicycle parking, have reduced on-site vehicular parking, and will be located within ½ mile of the Ala Moana Transit Center. As such, it may help achieve improvements in transportation. The project should alleviate some environmental degradation caused by motor vehicles, and encourage the conservation of energy, reduced pollution emissions, including noise, and provide safe and convenient accommodations for residents, employees and visitors.

In coordination with the Office of the Governor, Judiciary, and Department of Land and Natural Resources, HHFDC would seek approval from the Board of Land and Natural Resources to cancel the existing Executive Order No. 1577, that in 1953 set aside this property for the public purpose of a Detention Home under the control and management of the Juvenile Court of the First Judicial Circuit, and issue a new one to both the Judiciary and HHFDC.

4. *Substantially affects the economic welfare, social welfare, and cultural practices of the community or State;*

The subject property is currently underutilized. One and two-story buildings are located in a zoning district that allows heights up to 150 feet. The proposed development is anticipated to have an overall positive effect on socio-economic conditions by providing approximately 180 rental housing units for low-income households. The new size and configuration of the judiciary component will allow for the implementation of best practices associated with juvenile justice. The proposed project will provide multi-modal opportunities, particularly for those in the area who would choose to walk, bike, take the bus, and eventually the rail transit, over driving, while maintaining the character of the area.

In the short-term, the proposed action will have a beneficial economic impact through the creation of temporary construction, real estate, legal, engineering, insurance, and other short-term employment opportunities associated with construction activities. New employment opportunities will be created by the addition of approximately 35,000 gross square feet of judiciary assistance and property maintenance requirements.

The proposed project will have a net positive effect on the economic and social welfare of the Sheridan District of Honolulu. No impact to current cultural practices are anticipated as the subject property is not associated with ongoing cultural activities.

5. *Substantially affects public health;*

The proposed action is not anticipated to have any environmental impacts that would adversely affect public health. No hazardous materials will be used during construction, and construction impacts to water and air quality will be minimized through the implementation of best management practices. Increases in redevelopment and added density will be offset by a transition towards multi-modal mobility due to the existing urban nature and future TOD zone. Therefore, it is likely that more people moving into this area will look towards walking, biking, and taking transit as opposed to making personal vehicle trips. The proposed Joint Development for Affordable Rental Housing and Juvenile Services Center/Shelter will have minimal impact on the transportation network. As a result, there are no anticipated long-term noise or air quality impacts. Short-term impacts associated with construction will be mitigated to the extent possible.

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

This project helps implement the draft 2014 *Housing O'ahu: Islandwide Housing Strategy*. In accordance with the *Strategy's* vision, this project is transit-oriented (within ½ a mile from the Ala Moana transit station that revitalizes an existing urban neighborhood), involves compact, mixed-use community design, and contributes to a healthy, age-friendly community (allowing people who grew up in the Ala Moana and Kaka'ako neighborhoods to remain and not get displaced by unwanted gentrification). One major proposed initiative would be positively impacted. The first initiative, "Increase Workforce Housing Inventory" is positively impacted because approximately

180 affordable housing units will be constructed. Although the project will be developed entirely by a public partnership of the HHFDC and Judiciary, this State-owned property was identified as having the potential for asset optimization during the Strategy's development.

The population will become denser in an area targeted by the *General Plan* for growth. The population will have an impact on government supported services such as utilities, schools, public safety, and mass transportation systems. The potential impact of more users of the rail system is increased transit ridership, thereby decreasing the impact of automobiles on the environment and traffic. The slight increase in population resulting from this project is not anticipated to have a significant adverse impact on public facilities.

The proposed development is anticipated to have an overall positive effect on at risk youth. Historically, the majority of services for youth at risk were provided at the back-end, i.e., at post-adjudication or post-incarceration in detention. This proposed juvenile services center/shelter instead follows the national, best practices initiative which is designed to place equal emphasis on front-end services for youth and their families at risk or entering or progressing further into the juvenile justices system. The juvenile services/shelter center would also provide for increased shelter services for youth at risk who are not able to reside with their families in the short term for safety or other concerns.

*7. Involves a substantial degradation of environmental quality;*

The proposed action is not expected to cause a substantial degradation of environmental quality. No hazardous materials will be used during construction, and construction impacts to water and air quality will be minimized through the implementation of best management practices. No significant long-term adverse impacts are anticipated from development of the subject property for residential and judiciary purposes.

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

The project is not a commitment to a larger action. The proposal is site-specific. The property is governed by an Executive Order that requires that it be used to serve juveniles. That commitment will remain. However, the entire parcel is larger than what is needed to serve at risk youth. The parcel has the capacity to be optimized to address other State needs. The property can fulfill the requirements of the Executive Order and contribute toward the production of affordable housing – another public good.

The parcel is well-located to serve the needs of at-risk youth and to provide affordable housing in a central location in convenient proximity to employment, shopping, dining, transportation options, and other services. The parcel's location in a TOD district can help keep the cost of living down. While the City and the State are interested in producing more affordable housing, this site is not physically linked to other nearby sites. Once completed, as described in this Draft EA, the parcel will be built out and will not be

able to accommodate additional development. The project is limited to this particular site, but is anticipated to contribute positively to the urban environment.

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

The biological survey conducted for the project determined that two federally endangered plant species—‘ohai and ma‘o hau hele—were observed during the surveys in a landscaped area; but they were observed in a maintained garden courtyard area and appear to be cultivated stock. Federal protection is not extended to endangered species that are cultivated, do not originate directly from wild populations, or are not naturally occurring wild populations. No water features or designated critical habitat for threatened or endangered species is in or near the project area. Therefore, use of the subject property for residential and judiciary purposes does not represent an impact to rare, threatened, or endangered species, or their habitats.

*10. Detrimentially affects air or water quality or ambient noise levels;*

No significant impact to air or water quality or ambient noise levels are anticipated to result from the proposed action. Short-term impacts during construction of facilities will be minimized through the implementation of best management practices to control construction dust and emissions in compliance with provisions of HAR Section 11.60.1-33. All work will be in conformance with the air pollution standards and regulations of the State Department of Health (DOH).

Long term impacts to air quality from the proposed project are expected to be minimal. The proposed reduction of parking stalls from those required by the Land Use Ordinance will minimize impacts to air quality. The project TIAR indicates that the existing traffic level-of-service at these intersections is reasonably good, and in the year 2022, it was found that with the project this would continue to be the case. The TIAR estimates that project traffic in the year 2022 would account for less than about a two percent increase in traffic at the nearby intersections studied. The use of nearby mass transit, biking and walking will be encouraged by limiting on-site parking, which in turn will limit pollution emissions. The project is not expected to adversely impact air or water quality or ambient noise levels.

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

The subject property is not located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically-hazardous land, estuary, fresh water, or coastal waters. The subject property is within an “Extreme Tsunami Evacuation Zone” but this zone is for events with low probability.

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

The proposed structures will be visible when traveling along Pi'ikoi, Elm and Alder Streets. However, these structures will help complete the existing urban fabric. Currently, the older judiciary structures are unlike those in the neighborhood. The low buildings as seen from Pi'ikoi are set back from the street, and the property is surrounded by a chain link fence. The property does not have much landscaping. Development of the subject property will not significantly affect scenic vistas or view planes identified in county or state plans or studies.

*13. Requires substantial energy consumption.*

Construction of the project will not require substantial energy consumption relative to other similar projects. After the project is completed, energy will be conserved by the use of modern energy efficient appliances and fixtures, and application of green design concepts.

## **6.2 ANTICIPATED DETERMINATION**

Based upon the information and results of the assessments conducted for the project site, a Finding of No Significant Impact (FONSI) determination is anticipated for the proposed Joint Development for Affordable Rental Housing and Juvenile Services Center/Shelter.

## 7.0 AGENCY AND PUBLIC CONSULTATION

### 7.1 ALA MOANA / KAKA'AKO NEIGHBORHOOD BOARD MEETING

The proposed project was first presented at a “Town Meeting” hosted by Senator Brickwood Galuteria, Representative Scott Saiki, and Councilmember Ann Kobayashi on November 18, 2014. The project was also presented to the Ala Moana / Kaka’ako Neighborhood Board No. 11 at their February 23, 2016 meeting. The project was described during the meeting. In general, the project was favorably received and there were no objections voiced at the meeting. Attendees were made aware that the Draft EA would be published soon and were invited to submit comments.

### 7.2 PRE-ASSESSMENT CONSULTATION

Pre-assessment consultation comments were solicited from the following government agencies and organizations. Comments received are included in Appendix A of this Environmental Assessment.

Distribution	Pre-Assessment Consultation Recipient	Comments Received	Received a Copy of the Draft EA
STATE OF HAWAI'I AGENCY			
State of Hawai'i Office of Planning	X	X	
State of Hawai'i Department of Education	X	X	
State of Hawai'i Department of Health, Environmental Planning Office	X	X	
State of Hawai'i Department of Health, Clean Air Branch	X		
State of Hawai'i Department of Health, Clean Water Branch	X	X	
State of Hawai'i Department of Health, Indoor and Radiological Health Branch	X	X	
State of Hawai'i Department of Health, Office of Hazard Evaluation and Emergence Response	X		
State of Hawai'i Department of Transportation	X	X	
Hawai'i Community Development Authority	X	X	

<b>Distribution</b>	<b>Pre-Assessment Consultation Recipient</b>	<b>Comments Received</b>	<b>Received a Copy of the Draft EA</b>
Office of Hawai‘ian Affairs	X		
State of Hawai‘i Disability and Communication Access Board	X	X	
State of Hawai‘i Department of Defense	X	X	
State of Hawai‘i Office of Environmental Quality Control	X	X	
State of Hawai‘i Department of Accounting and General Services	X	X	
State of Hawai‘i Department of Hawai‘ian Home Lands	X	X	
State of Hawai‘i Department of Land and Natural Resources Engineering Division	X	X	
State of Hawai‘i Department of Land and Natural Resources Commission on Water Resource Management	X	X	
State of Hawai‘i Department of Land and Natural Resources Land Division	X	X	
State of Hawai‘i Department of Land and Natural Resources, State Historic Preservation Division	X	X	
Hawai‘i State Judiciary	X		
Family Court of the 1st Circuit	X		
State of Hawai‘i First Judicial Circuit	X		
<b>CITY AND COUNTY OF HONOLULU AGENCIES</b>			
Department of Community Services	X	X	
Department of Design and Construction	X	X	
Honolulu Board of Water Supply	X	X	
Department of Environmental Services	X		
Department of Facility Maintenance	X	X	

<b>Distribution</b>	<b>Pre-Assessment Consultation Recipient</b>	<b>Comments Received</b>	<b>Received a Copy of the Draft EA</b>
Department of Planning and Permitting	X	X	
Department of Parks and Recreation	X	X	
Department of Transportation Services	X	X	
Honolulu Fire Department	X	X	
Honolulu Police Department	X	X	
Office of Housing	X		
Honolulu Authority for Rapid Transportation	X	X	
Traffic Review Branch	X		
Department of Emergency Management	X		
<b>NEIGHBORHOOD BOARD</b>			
Ala Moana/Kaka'ako Neighborhood Board 11	X	X	
<b>ELECTED OFFICIALS</b>			
City Council Chair and Presiding Officer	X		
City Councilmember, Council District 2	X		
City Councilmember, Council District 4	X		
City Councilmember, Council District 5	X		
City Councilmember, Council District 6	X		
State Senator, Senate District 12	X		
State Senator, Senate District 16	X		
State Senator, Senate District 5	X		
State Representative, House District 26	X		
State Representative, House District 18	X		
State Representative, House District 29	X		
<b>PRIVATE ENTITIES</b>			
Hawai'ian Electric Company, Inc.	X	X	

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## 8.0 LIST OF REFERENCES

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**Appendix A:**  
**Pre-Assessment Consultation Letters**



DAVID Y. IBE  
GOVERNOR OF HAWAII



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

November 3, 2015

Ms. Kaia Balassiano  
Senior Planner  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817  
Email: kbalassiano@ssfm.com

Dear Ms. Balassiano:

**SUBJECT: Pre-Assessment Consultation for Draft Environmental Assessment (PAC DEA) for Mixed-Use Redevelopment at Alder Street, Honolulu, Hawaii  
TMK: (1) 2-3-012-019**

The Department of Health (DOH), Environmental Planning Office (EPO), acknowledges receipt of your PAC DEA to our office on November 3, 2015.

EPO strongly recommends that you review the standard comments and available strategies to support sustainable and healthy design provided at: <http://health.hawaii.gov/epo/landuse>. Projects are required to adhere to all applicable standard comments.

We suggest you review the requirements for the National Pollutant Discharge Elimination System (NPDES) permit. We recommend contacting the Clean Water Branch at (808) 586-4309 or [cleanwaterbranch@doh.hawaii.gov](mailto:cleanwaterbranch@doh.hawaii.gov) after relevant information is reviewed at:

1. <http://health.hawaii.gov/cwb>
2. <http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/standard-npdes-permit-conditions>
3. <http://health.hawaii.gov/cwb/site-map/clean-water-branch-home-page/forms>

Please note that all wastewater plans must conform to applicable provisions of the Department of Health's Administrative Rules, Chapter 11-62, "Wastewater Systems". We do reserve the right to review the detailed wastewater plans for conformance to applicable rules. Should you have any questions, please review online guidance at: <http://health.hawaii.gov/wastewater> and contact the Planning and Design Section of the Wastewater Branch at 586-4294.

COMMUNICATIONS, INC.  
RECEIVED

NOV 10 2015

FILE

VIRGINIA PRESSLER, M.D.  
DIRECTOR OF HEALTH

In reply, please refer to:  
File:

EPO 15-271

Ms. Kaia Balassiano

Page 2

November 3, 2015

EPO also suggests that the Hazard Evaluation and Emergency Response (HEER) Office's Site Discovery and Response (SDAR) Section be contacted. The SDAR section protects human health and the environment by identifying, investigating, and remediating sites contaminated with hazardous substances (non-emergency site investigations and cleanup). The HEER Office's SDAR Section can be contacted at: (808) 586-4249 and relevant information can be reviewed at: <http://eha-web.doh.hawaii.gov/eha-email/leaders/HEER/site-assessment-and-cleanup-programs>

EPO encourages you to examine and utilize the Hawaii Environmental Health Portal. The portal provides links to our e-Permitting Portal, Environmental Health Warehouse, Groundwater Contamination Viewer, Hawaii Emergency Response Exchange, Hawaii State and Local Emission Inventory System, Water Pollution Control Viewer, Water Quality Data, Warnings, Advisories and Postings. The Portal is continually updated. Please visit it regularly at: <https://eha-cloud.doh.hawaii.gov>. You may also wish to review the draft OEQC viewer at: <http://eha-web.doh.hawaii.gov/oeqc-viewer>. This viewer geographically shows where previous Chapter 343 documents have been prepared.

In order to better protect public health and the environment, the U.S. Environmental Protection Agency (EPA) has developed a new environmental justice (Ej) mapping and screening tool called EJSCREEN. It is based on nationally consistent data and combines environmental and demographic indicators in maps and reports. EPO encourages you to explore, launch and utilize this powerful tool in planning your project. The EPA EJSCREEN tool is available at: <http://www2.epa.gov/ejscreen>

We request that you utilize all of this information on your proposed project to increase sustainable, innovative, inspirational, transparent and healthy design.

Mahealani nui loa,

Laura Leialoha Phillips McInyre, AICP  
Program Manager, Environmental Planning Office

LM:nn

Attachment 1: OEQC Viewer Map  
Attachment 2: U.S. EPA EJSCREEN 3 page report

c: DOH: HRA, HEER (via email only)

FILE COPY



honolulu

0 sites found

Results Filter

Show sites with no location

Map data ©2015 Google, Imagery ©2015 CyberCity 3D, Inc. / 3D Travel, Inc., DigitalGlobe, Map data ©2015 Google, Imagery ©2015 CyberCity 3D, Inc. / 3D Travel, Inc., DigitalGlobe, U.S. Geol.

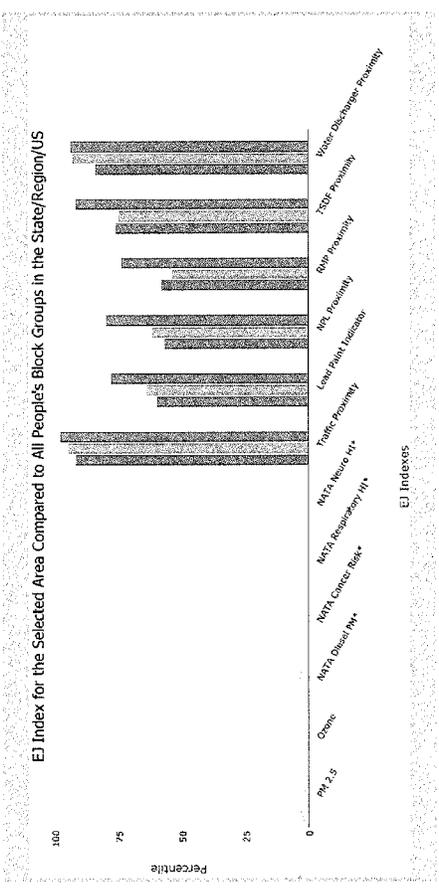


**EISCREEN Report**

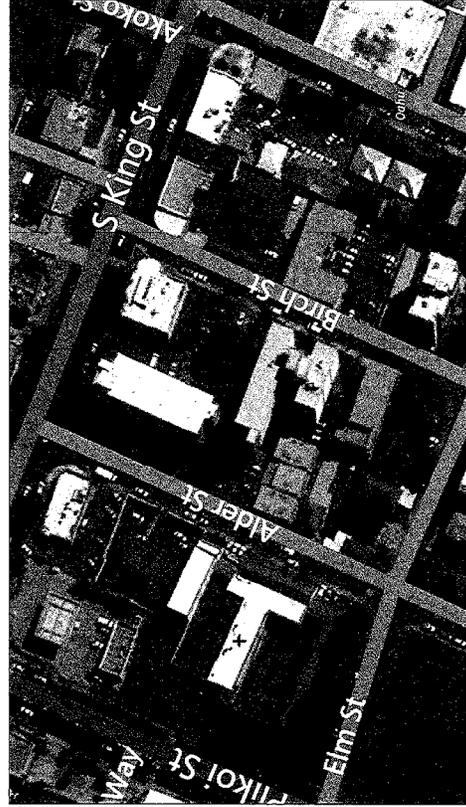
for 1 mile Ring Centered at 21.298897,-157.844061, HAWAII, EPA Region 9

Approximate Population: 64462

Selected Variables	State Percentile	EPA Region Percentile	USA Percentile
<b>EJ Indexes</b>			
EJ Index for PM2.5	N/A	N/A	N/A
EJ Index for Ozone	N/A	N/A	N/A
EJ Index for NATA Diesel PM*	N/A	N/A	N/A
EJ Index for NATA All Toxics Cancer Risk*	N/A	N/A	N/A
EJ Index for NATA Respiratory Hazard Index*	N/A	N/A	N/A
EJ Index for NATA Neurological Hazard Index*	N/A	N/A	N/A
EJ Index for Traffic Proximity and Volume	92	95	98
EJ Index for Proximity to NPL sites	60	64	78
EJ Index for Proximity to RMP sites	57	62	80
EJ Index for Proximity to TSDFs	58	54	74
EJ Index for Proximity to Major Direct Dischargers	76	75	92
	84	93	94



This report shows environmental, demographic, and EJ indicator values. It shows environmental and demographic raw data (e.g., the estimated concentration of ozone in the air), and also shows what percentile each raw data value represents. These percentiles provide perspective on how the selected block group or buffer area compares to the entire state, EPA region, or nation. For example, if a given location is at the 95th percentile nationwide, this means that only 5 percent of the US population has a higher block-group value than the average person in the location being analyzed. The years for which the data are available, and the methods used, vary across these indicators. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EISCREEN documentation for discussion of these issues before using reports.



November 3, 2015  
Digitized Point



Selected Variables	Raw Data	State Avg.	%ile in State	EPA Region Avg.	%ile in EPA Region	USA Avg.	%ile in USA
<b>Environmental Indicators</b>							
Particulate Matter (PM 2.5 in $\mu\text{g}/\text{m}^3$ )	N/A	N/A	N/A	9.95	N/A	9.78	N/A
Ozone (ppb)	N/A	N/A	N/A	49.7	N/A	46.1	N/A
NATA Diesel PM (ppb)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Diesel PM (ppb) [NATA-Center-City (ppb) (see note)]	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Diesel PM (ppb) (see note)	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Respiratory Hazard Index	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NATA Neurological Hazard Index	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Traffic Proximity and Volume (daily traffic count/distance to road)	1200	280	93	190	97	110	99
Lead Paint Indicator (% Pre-1960 housing)	0.13	0.17	53	0.25	48	0.3	40
NPL Proximity (site count/km distance)	0.053	0.092	52	0.11	46	0.096	53
RMP Proximity (facility count/km distance)	0.11	0.18	58	0.41	27	0.31	40
TSD Proximity (facility count/km distance)	0.14	0.092	81	0.12	77	0.054	92
Water Discharger Proximity (facility count/km distance)	0.71	0.33	89	0.19	96	0.25	92
<b>Demographic Indicators</b>							
Demographic Index	56%	51%	63	46%	65	36%	79
Minority Population	83%	77%	50	57%	73	36%	86
Low Income Population	29%	25%	66	35%	46	34%	47
Linguistically Isolated Population	17%	6%	91	9%	79	5%	91
Population With Less Than High School Education	9%	10%	56	18%	37	14%	42
Population Under 5 years of age	4%	6%	33	7%	30	7%	32
Population over 64 years of age	18%	14%	73	12%	83	13%	79

The National-scale Air Toxics Assessment (NATA) environmental indicators and EI indexes, which include cancer risk, respiratory hazard, neurodevelopment hazard, and diesel particulate matter will be added into EISCREEN during the first full public update after the soon-to-be-released 2011 dataset is made available. The National-Scale Air Toxics Assessment (NATA) is EPA's ongoing, comprehensive evaluation of air toxics in the United States. EPA developed the NATA to prioritize air toxics, emission sources, and locations of interest for further study. It is important to remember that NATA provides broad estimates of health risks over geographic areas of the country, not definitive risks to specific individuals or locations. More information on the NATA analysis can be found at: <http://www.epa.gov/cityair/nata/nataindex/index.html>.

For additional information, see: [www.epa.gov/environmentaljustice](http://www.epa.gov/environmentaljustice)

EISCREEN is a screening tool for pre-decisional use only. It can help identify areas that may warrant additional consideration, analysis, or outreach. It does not provide a basis for decision-making, but it may help identify potential areas of EI concern. Users should keep in mind that screening tools are subject to substantial uncertainty in their demographic and environmental data, particularly when looking at small geographic areas. Important caveats and uncertainties apply to this screening-level information, so it is essential to understand the limitations on appropriate interpretations and applications of these indicators. Please see EISCREEN documentation for discussion of these issues before using reports. This screening tool does not provide data on every environmental impact and demographic factor that may be relevant to a particular location. EISCREEN outputs should be supplemented with additional information and local knowledge before taking any action to address potential EI concerns.



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Laura Leialoha Phillips McIntyre  
Program Manager, Environmental Planning Office  
State of Hawai'i  
Department of Health  
P. O. Box 3378  
Honolulu, Hawai'i 96801-3378

Dear Ms. McIntyre:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012; 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 3, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

The standard comments and available strategies have been reviewed. A NPDES permit will be secured prior to the start of construction activities. All wastewater plans will conform to the applicable provisions of the Department of Health's Administrative Rules. The Office of Hazard Evaluation and Emergency Response has been included as a consulted party. The Health Portal was examined and utilized. EISCREEN was examined and utilized.

Sincerely,

SSFM INTERNATIONAL, INC.

  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

SSFM International, Inc.  
RECEIVED



**DISABILITY AND COMMUNICATION ACCESS BOARD**

NOV 0 9 2015

919 Ala Moana Boulevard, Room 101 • Honolulu, Hawaii 96814  
Ph. (808) 586-8121 (V/TDD) • Fax (808) 586-8129

Kb

November 6, 2015

FILE COPY

Ms. Katia Balassiano  
Senior Planner  
SSFM International, Inc.  
501 Summer Street  
Suite 620  
Honolulu, HI 96817

Regarding: Mixed-Use Redevelopment at Alder Street – Draft Environmental Assessment

Dear Ms. Balassiano,

The Disability and Communication Access Board (DCAB) would like to thank you for the opportunity to comment on the Mixed-Use Redevelopment at Alder Street. We hope our comments help to ensure that this project will take into account accessibility design requirements for persons with disabilities.

This project will have to comply with Hawaii Revised Statutes (HRS) §103-50. The following general statement should be included in the Draft Environmental Assessment (EA) document being prepared by your office:

*"All buildings, facilities, and sites shall conform to applicable federal, state, and county accessibility guidelines and standards. Hawaii Revised Statutes §103-50 requires all State of Hawaii or County government buildings, facilities, and sites to be designed and constructed to conform to the Americans with Disabilities Act Accessibility Guidelines, the Federal Fair Housing Amendments Act, and other applicable design standards as adopted and amended by the Disability and Communication Access Board. The law further requires all plans and specifications prepared for the construction of State of Hawaii or County government buildings, facilities, and sites to be reviewed by the Disability and Communication Access Board for conformance to those guidelines and standards."*

Any new construction and alterations will be required to comply with the Department of Justice's (DOJ) 2010 ADA Standards for Accessible Design (2010 Standards) [http://www.ada.gov/2010ADASTandards\\_index.htm](http://www.ada.gov/2010ADASTandards_index.htm). To be consistent with the DOJ's standard, DCAB adopted the 2004 Americans with Disabilities Act Accessibility Guidelines (ADAAAG) as of January 1, 2011 and passed interpretive opinions consistent with the 2010 ADA Standards. All new Interpretive Opinions can be viewed or downloaded at <http://health.hawaii.gov/dcab/facility-access/interpretive-opinions/>.

Ms. Katia Balassiano  
SSFM International, Inc.  
Regarding: Mixed-Use Redevelopment at Alder Street  
November 6, 2015

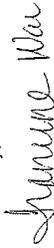
New construction of multi-family residential housing containing four (4) or more dwelling units are required to comply with the Department of Housing and Urban Development's (HUD) Federal Fair Housing Act. Per DCAB's Administrative Rules Title 11, Chapter 216, DCAB reviews projects covered by HRS §103-50 to HUD's Fair Housing Accessibility Guidelines and HUD's Supplemental Notice to Fair Housing Accessibility Guidelines: Questions and Answers about the Guidelines.

We strongly encourage the use of the Proposed Public Rights-of-Way Accessibility Guidelines, published by the U.S. Access Board. This accessibility guideline is not yet enforceable by the DOJ under the ADA, nor have they been adopted by state rules under HRS §103-50. However, this accessibility guideline provides guidance for a minimal level of accessibility for those elements in the public right-of-way not addressed by the enforceable 2010 Standards.

The above reflects DCAB's advice and recommendations at this time for the Mixed-Use Redevelopment at Alder Street's Draft EA. We request the opportunity to provide additional comments once the Final EA or Master Plan is developed.

Should you have any further questions, please feel free to contact Mona Higa, Facility Access Coordinator at (808) 586-8121.

Sincerely,



FRANCINE WAI  
Executive Director



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Francine Wai, Executive Director  
State of Hawai'i  
Disability and Communication Access Board  
919 Ala Moana Boulevard, Room 101  
Honolulu, Hawai'i 96814

Dear Ms. Wai:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 6, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Compliance with HRS §103-50 will be noted in the Draft EA and your proposed statement will be included verbatim in Section 2.4 Description of the Development. The project will consist of new construction that will comply with the Department of Justice's (DOJ) 2010 ADA Standards for Accessible Design, and therefore as well as the Department of Housing and Urban Development's (HUD) Federal Fair Housing Act accessibility guidelines, where applicable.

Sincerely,

SSFM INTERNATIONAL, INC.



Katia Balassiano  
Senior Planner  
Email: [Kbalassiano@ssfm.com](mailto:Kbalassiano@ssfm.com)



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 Suite 620  
 Honolulu, Hawaii 96817  
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December 23, 2015

Jeffrey M. Eckerd, Program Manager  
 State of Hawai'i Department of Health,  
 Indoor and Radiological Health Branch  
 P. O. Box 3378  
 Honolulu, Hawai'i 96801-3378

Dear Mr. Eckerd:

**Subject:** Mixed-Use Redevelopment at Alder Street  
 902 Alder Street  
 Honolulu, Hawai'i  
 Tax Map Key: (1) 2-3-012: 019  
 Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 4, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

The project will comply with the DOH Administrative Rules Chapter 11-39, 41, 46, 501, 503, and 504. Compliance will be addressed in the design and construction phases of the project.

Sincerely,  
 SSFM INTERNATIONAL, INC.

*Katia Balassiano*  
 Katia Balassiano  
 Senior Planner  
 Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

SSFM INTERNATIONAL, INC.  
 RECEIVED  
 NOV 9 2015



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

November 4, 2015

Ms. Katia Balassiano  
 SSFM International, Inc.  
 501 Summer Street, Suite 620  
 Honolulu, HI 96817

Dear Ms. Balassiano:

This correspondence is in response to your request for comments to the Pre-Assessment Consultation for Draft Environmental Assessment for the Mixed-Use Redevelopment at 902 Alder Street, Honolulu, Hawai'i; Tax Map Key: (1) 2-3-012:019.

Project activities shall comply with the following Administrative Rules of the Department of Health:

- Chapter 11-39 Air Conditioning & Ventilating
- Chapter 11-41 Lead-Based Paint Activities
- Chapter 11-46 Community Noise Control
- Chapter 11-501 Asbestos Requirements
- Chapter 11-503 Fees for Asbestos Removal & Certification
- Chapter 11-504 Asbestos Abatement Certification Program

Should you have any questions, please contact me at (808) 586-4701.

Sincerely,  
  
 Jeffrey M. Eckerd  
 Program Manager  
 Indoor and Radiological Health Branch

VIRGINIA PRESSLER, M.D.  
 DIRECTOR OF HEALTH

In reply, please refer to  
 File #

**FILE COPY**

RECEIVED  
 NOV 9 2015  
 FILE

DAVID Y. JOE  
 GOVERNOR OF HAWAII

DEPARTMENT OF PARKS & RECREATION  
**CITY AND COUNTY OF HONOLULU**  
1000 Uluohia Street, Suite 309, Kapolei, Hawaii 96707  
Phone: (808) 768-3003 • Fax: (808) 768-3053  
Website: www.honolulu.gov



MICHELE K. NEKOTA  
DIRECTOR  
JEANNE C. ISHIKAWA  
DEPUTY DIRECTOR

**FILE COPY**

November 6, 2015

Ms. Katia Balassiano, Senior Planner  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

**SUBJECT:** Pre-Assessment Consultation for Draft Environmental Assessment  
Mixed-Use Redevelopment at 902 Alder Street  
Tax Map Key (1) 2-3-012:019

Thank you for the opportunity to review and comment at the Pre-Consultation stage of the Draft Environmental Assessment for the Hawaii State Judiciary and Hawaii Housing Finance and Development Corporation.

The Department of Parks and Recreation has no comment. As the proposed project will have no impact on any of our programs or facilities, you may remove us as a consulted party to the balance of the EIS process.

Should you have any questions, please contact Mr. John Reid, Planner, at 768-3017.

Sincerely,  
  
Michele K. Nekota  
Director

MKN:jr  
(630772)



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Michele K. Nekota, Director  
City and County of Honolulu  
Department of Parks and Recreation  
1000 Uluohia Street, Suite 309  
Kapolei, Hawaii 96707

Dear Ms. Nekota:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 6, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street.

We confirm that your Department has no comments and that your Department has determined that the proposed project will have no impact on any of your programs or facilities. A hardcopy of the Draft EA will not be provided to your Department because you have requested that we remove the Department from the consulted party list.

Sincerely,  
SSFM INTERNATIONAL, INC.  
  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



DAVID Y. IGE  
GOVERNOR

**STATE OF HAWAII**  
**DEPARTMENT OF ACCOUNTING AND GENERAL SERVICES**  
P.O. BOX 119, HONOLULU, HAWAII 96810-0119

**FILE COPY**

NOV 9 - 2015

Ms. Katia Balassiano  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

**Subject:** Pre-Consultation for Draft Environmental Assessment  
902 Alder Street  
Honolulu, Hawaii  
TMK: (1) 2-3-012:019

This is in response to your letter dated October 30, 2015 regarding the subject project. The proposed project does not impact any of the Department of Accounting and General Services' projects or existing facilities, and we have no comments to offer at this time.

If you have any questions, your staff may call Mr. David DePonte of the Public Works Division at 586-0492.

Sincerely,

*David DePonte*  
DOUGLAS MURDOCK  
Comptroller



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Douglas Murdock, Comptroller  
State of Hawaii  
Department of Accounting and General Services  
P.O. Box 119  
Honolulu, Hawaii 96810-0119

Dear Mr. Murdock:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 9, 2015 regarding the Mixed-Use Redevelopment at Alder Street. We confirm that your department has no comments to offer at this time. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

*Katia Balassiano*  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



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 Honolulu, Hawaii 96817  
 Phone: (808) 531-1308  
 Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Ford N. Fuchigami, Director  
 State of Hawai'i  
 Department of Transportation  
 869 Punchbowl Street  
 Honolulu, Hawaii 96813-5097

Dear Mr. Fuchigami:

**Subject:** Mixed-Use Redevelopment at Alder Street  
 902 Alder Street  
 Honolulu, Hawai'i  
 Tax Map Key: (1) 2-3-012: 019  
 Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 13, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). The draft TIAR will be included in the Draft EA. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,  
 SSFM INTERNATIONAL, INC.  
  
 Katia Balassiano  
 Senior Planner  
 Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

FORD N. FUCHIGAMI  
 DIRECTOR  
 Deputy Directors  
 JADE T. BUTAY  
 ROSS M. HIKASHI  
 EDWIN H. SNIFFEN  
 DARRELL T. YOUNG

IN REPLY REFER TO:  
 STP 8.1891

**FILE COPY**



DAVID Y. IGE  
 GOVERNOR



STATE OF HAWAII  
 DEPARTMENT OF TRANSPORTATION  
 869 PUNCHBOWL STREET  
 HONOLULU, HAWAII 96813-5097

November 13, 2015

Ms. Katia Balassiano  
 Senior Associate  
 SSFM International, Inc.  
 501 Summer Street, Suite 620  
 Honolulu, Hawaii 96817

Dear Ms. Balassiano:

Subject: Mixed-Use Redevelopment at Alder Street  
 Pre-Assessment Consultation for Draft Environmental Assessment  
 Honolulu, Hawaii  
 TMK: (1) 2-3-012:019

The Draft Environmental Assessment (DEA) should discuss and evaluate the project's contribution to the cumulative traffic impacts on State highways facilities in the area.

If there are any questions, please contact Mr. Norren Kato of the DOT Statewide Transportation Planning Office at telephone number (808) 831-7976.

Sincerely,  
  
 FOR FORD N. FUCHIGAMI  
 Director of Transportation



HONOLULU AUTHORITY for RAPID TRANSPORTATION

November 10, 2015

Ms. Katia Balassiano, Senior Planner  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

Subject: Pre-Assessment Consultation  
Draft Environmental Assessment  
Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: 2-3-012: 019

Thank you for providing the Honolulu Authority for Rapid Transportation (HART) with the opportunity to comment on the pre-assessment consultation letter for the proposed mixed-use redevelopment project.

HART has no comment on the proposed mixed-use redevelopment at this time. Please note that the above stated project is within a half mile of HART's Ala Moana station located on Kona Street.

If you have any questions regarding this matter, please do not hesitate to contact Mr. Tomo Murata, Land Use Planner, at (808) 768-6120.

Sincerely,

Daniel A. Grabauskas  
Executive Director and CEO

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NOV 10 2015

IN REPLY REFER TO:  
CMS-AP00ENV-00618

Daniel A. Grabauskas  
EXECUTIVE DIRECTOR AND CEO

BOARD OF DIRECTORS

Donald G. Hornor  
CHAIR

Damien TK. Kim  
VICE CHAIR

George I. Atta  
Michael D. Formby  
Ford N. Fuchigami  
Colleen Harshbarger  
William "Buz" Hong  
Terrence M. Lee  
Ivan M. Lui-Kwan

FILE COPY



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Daniel A. Grabauskas, Executive Director and CEO  
City and County of Honolulu,  
Honolulu Authority for Rapid Transportation  
Ali'i Place, Suite 1700  
1099 Alakea Street  
Honolulu, Hawaii 96813

Dear Mr. Grabauskas:

Subject: Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 10, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. We confirm that the Honolulu Authority for Rapid Transportation has no comment to offer at this time. We acknowledge that the project is within .5 miles of a future rail station. Section 4.8 of the Draft EA will discuss the degree to which this project conforms to the Ala Moana Neighborhood TOD Plan. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's Environmental Notice.

Sincerely,

SSFM INTERNATIONAL, INC.

Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

DAVID Y. IGE  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF DEFENSE  
OFFICE OF THE ADJUTANT GENERAL  
3949 DIAMOND HEAD ROAD  
HONOLULU, HAWAII 96816-4495

November 16, 2015

FILE COPY

SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Attn: Ms. Katia Balassiano, Senior Planner

Subject: Mixed-Use Redevelopment at Alder Street, Pre-Assessment Consultation for Draft Environmental Assessment, TMK (1) 2-3-012: 019

Dear Ms. Balassiano:

Thank you for the opportunity to comment on the above project. The State of Hawaii Department of Defense has no comments to offer relative to the project.

If you have any questions or concerns, please have your staff contact Mr. Lloyd Maki, Assistant Chief Engineering Officer at (808) 733-4250.

Sincerely,

ARTHUR J. LOGAN  
Major General  
Hawaii National Guard  
Adjutant General

c: Ms. Havinne Okamura, Hawaii Emergency Management Agency



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
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December 23, 2015

SSFM 2014\_068.000

Arthur J. Logan, Major General, Hawai'i National Guard  
Adjutant General  
State of Hawai'i  
Department of Transportation  
869 Punchbowl Street  
Honolulu, Hawaii 96813-5097

Dear Mr. Logan:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 16, 2015 regarding the Mixed-Use Redevelopment at Alder Street. We confirm that your department has no comment to offer at this time. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

DAVID Y. IGE  
GOVERNOR OF HAWAII



SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

November 25, 2015

SSFM International, Inc.

Attn: Katia Balassiano, Senior Planner  
501 Summer Street, Suite 620  
Honolulu, HI 96817

via email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

Dear Ms. Balassiano,

**SUBJECT:** Mixed-Use Redevelopment at Alder Street, Pre-Assessment Consultation for  
Draft Environmental Assessment

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from (1) Land Division - Oahu District; (2) Commission on Water Resource Management; and (3) Engineering Division. No other comments were received as of our suspense date. Should you have any questions, please feel free to call Supervising Land Agent Steve Molmen at 587-0439. Thank you.

Sincerely,

  
Russell Y. Tsuji  
Land Administrator

Enclosure(s)

DAVID Y. IGE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

November 3, 2015

MEMORANDUM

**DLNR Agencies:**

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division - Oahu District
- Historic Preservation

**TO:** Russell Y. Tsuji, Land Administrator

**SUBJECT:** Mixed-Use Redevelopment at Alder Street, Pre-Assessment Consultation for  
Draft Environmental Assessment

**LOCATION:** 920 Alder Street, Honolulu, Hawaii; Tax Map Key: (1) 2-3-012: 019

**APPLICANT:** Hawaii State Judiciary and the Hawaii Housing Finance and Development Corporation by their consultant SSFM International, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **November 24, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments  
( ) We have no objections.  
( ) We have no comments.  
(X) Comments are attached.

*The State Loan has been set aside per FD 15774  
The Judicial Court of the First Judiciary Circuit, Inc  
A DETENTION HOME. As such, the existing purpose  
of the FD requires changes necessary to  
Comply with the proposed mixed-use development.*

Signed: Tsui  
Print Name: Russell Y. Tsuji  
Date: 11/3/15

DAVID Y. IGE  
GOVERNOR OF HAWAII



SUZANNE D. CASE  
CHAIRPERSON  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE  
MANAGEMENT



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

November 3, 2015

MEMORANDUM

**DLNR Agencies:**

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management**
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

**TO:** [Redacted]

**FROM:** Russell Y. Tsuji, Land Administrator

**SUBJECT:** Mixed-Use Redevelopment at Alder Street, Pre-Assessment Consultation for Draft Environmental Assessment

**LOCATION:** 920 Alder Street, Honolulu, Hawai'i; Tax Map Key: (1) 2-3-012: 019

**APPLICANT:** Hawaii State Judiciary and the Hawaii Housing Finance and Development Corporation by their consultant SSFM International, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **November 24, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

- ( ) We have no objections.
- ( ) We have no comments.
- ( x ) Comments are attached.

Signed: \_\_\_\_\_ /s/ Jeffrey T. Pearson, P.E.  
 Print Name: Deputy Director  
 Date: November 17, 2015

FILE ID: RFD-42783  
 DOC ID: 134887

DAVID Y. IGE  
GOVERNOR OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCE MANAGEMENT  
HONOLULU, HAWAII 96809

November 17, 2015

REF: RFD-4278.3

**TO:** Mr. Russell Tsuji, Administrator  
Land Division Oahu, DLNR-LD

**FROM:** Jeffrey T. Pearson, P.E., Deputy Director  
Commission on Water Resource Management

**SUBJECT:** Mixed-Use Redevelopment at Alder Street, Pre-Assessment Consultation for DEA

**FILE NO.:** RFD-4278.3  
**TMK NO.:** (1) 2-3-012: 019

Thank you for the opportunity to review the subject document. The Commission on Water Resource Management (CWRM) is the agency responsible for administering the State Water Code (Code). Under the Code, all waters of the State are held in trust for the benefit of the citizens of the State, therefore all water use is subject to legally protected water rights. CWRM strongly promotes the efficient use of Hawaii's water resources through conservation measures and appropriate resource management. For more information, please refer to the State Water Code, Chapter 174C, Hawaii Revised Statutes, and Hawaii Administrative Rules, Chapters 13-167 to 13-171. These documents are available via the Internet at <http://dlnr.hawaii.gov/cwrm>.

Our comments related to water resources are checked off below.

1. We recommend coordination with the county to incorporate this project into the county's Water Use and Development Plan. Please contact the respective Planning Department and/or Department of Water Supply for further information.
2. We recommend coordination with the Engineering Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.
3. We recommend coordination with the Hawaii Department of Agriculture (HDOA) to incorporate the reclassification of agricultural zoned land and the redistribution of agricultural resources into the State's Agricultural Water Use and Development Plan (AWUDP). Please contact the HDOA for more information.
4. We recommend that water efficient fixtures be installed and water efficient practices implemented throughout the development to reduce the increased demand on the area's freshwater resources. Reducing the water usage of a home or building may earn credit towards Leadership in Energy and Environmental Design (LEED) certification. More information on LEED certification is available at <http://www.usgbc.org/leed>. A listing of fixtures certified by the EAP as having high water efficiency can be found at <http://www.epa.gov/watersense>.
5. We recommend the use of best management practices (BMP) for stormwater management to minimize the impact of the project to the existing area's hydrology while maintaining on-site infiltration and preventing polluted runoff from storm events. Stormwater management BMPs may earn credit toward LEED certification. More information on stormwater BMPs can be found at <http://hawaii.gov/abed/czm/initiative/lid.php>.
6. We recommend the use of alternative water sources, wherever practicable.
7. We recommend participating in the Hawaii Green Business Program, that assists and recognizes businesses that strive to operate in an environmentally and socially responsible manner. The program description can be found online at <http://energy.hawaii.gov/green-business-program>.
8. We recommend adopting landscape irrigation conservation best management practices endorsed by the Landscape Industry Council of Hawaii. These practices can be found online at [http://www.hawaiilandscape.com/wp-content/uploads/2013/04/LICH\\_Irrigation\\_Conservation\\_BMPs.pdf](http://www.hawaiilandscape.com/wp-content/uploads/2013/04/LICH_Irrigation_Conservation_BMPs.pdf).

Mr. Russell Tsuji  
Page 2  
November 17, 2015

- 9. There may be the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.
- 10. The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit is required prior to use of water. The Water Use Permit may be conditioned on the requirement to use dual line water supply systems for new industrial and commercial developments.
- 11. A Well Construction Permit(s) is (are) required before the commencement of any well construction work.
- 12. A Pump Installation Permit(s) is (are) required before ground water is developed as a source of supply for the project.
- 13. There is (are) well(s) located on or adjacent to this project. If wells are not planned to be used and will be abandoned by any new construction, they must be properly abandoned and sealed. A permit for well abandonment must be obtained.
- 14. Ground-water withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.
- 15. A Stream Channel Alteration Permit(s) is (are) required before any alteration can be made to the bed and/or banks of a stream channel.
- 16. A Stream Diversion Works Permit(s) is (are) required before any stream diversion works is constructed or altered.
- 17. A Petition to Amend the Interim Instream Flow Standard is required for any new or expanded diversion(s) of surface water.
- 18. The planned source of water for this project has not been identified in this report. Therefore, we cannot determine what permits or petitions are required from our office, or whether there are potential impacts to water resources.

- OTHER: The DEA should include a discussion of the projected water requirements for the project, both potable and non-potable, and the calculations used to derive the projected water needs; water conservation and efficiency measures that will be implemented; the proposed water sources, including any alternative sources of water that may be available to meet nonpotable needs; and BMP's for stormwater management.
- The Commission has published a Water Conservation Manual for State of Hawaii Facilities (2007) that lists conservation measures for restrooms and shower facilities; kitchens, cafeterias, and staff rooms; and landscaping. The Commission has also published a Handbook for Stormwater Reclamation and Reuse Best Management Practices in Hawaii (2008). Please visit the Commission's website at <http://hawaii.gov/dlnr/cwrm> to view or download a copy of these documents.

If you have any questions, please contact Lenore Chye of the Commission staff at 587-0216.

DAVID Y. IORIO  
COMMISSIONER OF HAWAII



STATE OF HAWAII  
DEPARTMENT OF LAND AND NATURAL RESOURCES  
LAND DIVISION

POST OFFICE BOX 621  
HONOLULU, HAWAII 96809

November 3, 2015

MEMORANDUM

DLNR Agencies:

- Div. of Aquatic Resources
- Div. of Boating & Ocean Recreation
- Engineering Division**
- Div. of Forestry & Wildlife
- Div. of State Parks
- Commission on Water Resource Management
- Office of Conservation & Coastal Lands
- Land Division – Oahu District
- Historic Preservation

TO:

FROM:

TO:

Russell Y. Tsuji, Land Administrator

SUBJECT:

Mixed-Use Redevelopment at Alder Street, Pre-Assessment Consultation for Draft Environmental Assessment

LOCATION: ~~507-020~~ Alder Street, Honolulu, Hawaii; Tax Map Key: (1) 2-3-012: 019

APPLICANT: Hawaii State Judiciary and the Hawaii Housing Finance and Development Corporation by their consultant SSFM International, Inc.

Transmitted for your review and comment on the above-referenced document. We would appreciate your comments on this document.

Please submit any comments by **November 24, 2015**. If no response is received by this date, we will assume your agency has no comments. If you have any questions about this request, please contact Supervising Land Agent Steve Molmen at (808) 587-0439. Thank you.

Attachments

- We have no objections.
- We have no comments.
- Comments are attached.

Signed:   
Print Name: Cary S. Chang, Chief Engineer  
Date: 11/17/15

DEPARTMENT OF LAND AND NATURAL RESOURCES  
ENGINEERING DIVISION

LD/Russell Y. Tsuji  
REF: Pre-Assessment Consultation for DEA for Mixed-Use Redevelopment at 902 Alder Street  
Oahu-075

COMMENTS

- We confirm that the project site, according to the Flood Insurance Rate Map (FIRM), is located in Flood Zone \_\_\_\_\_.
- Please take note that the project site according to the Flood Insurance Rate Map (FIRM), is located in Zone X. The National Flood Insurance Program (NFIP) does not regulate developments within Zone X.
- Please note that the correct Flood Zone Designation for the project site according to the Flood Insurance Rate Map (FIRM) is \_\_\_\_\_.
- Please note that the project must comply with the rules and regulations of the National Flood Insurance Program (NFIP) presented in Title 44 of the Code of Federal Regulations (44CFR), whenever development within a Special Flood Hazard Area is undertaken. If there are any questions, please contact the State NFIP Coordinator, Ms. Carol Tyan-Beam, of the Department of Land and Natural Resources, Engineering Division at (808) 587-0267.
- Please be advised that 44CFR indicates the minimum standards set forth by the NFIP. Your Community's local flood ordinance may prove to be more restrictive and thus take precedence over the minimum NFIP standards. If there are questions regarding the local flood ordinances, please contact the applicable County NFIP Coordinators below:
  - Mr. Mario Siu Li at (808) 768-8098 of the City and County of Honolulu, Department of Planning and Permitting.
  - Mr. Carter Romero (Acting) at (808) 961-8943 of the County of Hawaii, Department of Public Works.
  - Mr. Carolyn Cortez at (808) 270-7253 of the County of Maui, Department of Planning.
  - Mr. Stanford Iwamoto at (808) 241-4896 of the County of Kauai, Department of Public Works.
- Please note that the implementation of any State-sponsored project requiring water service from the Honolulu Board of Water Supply (HBWS) system should first obtain water allocation credits from the Engineering Division before contacting HBWS for water service and/or water meter.
- The applicant should provide the water demands and calculations to the Engineering Division so it can be included in the State Water Projects Plan Update. Also, provide the infrastructure required to meet water demands.
- Additional Comments: \_\_\_\_\_
- Other: \_\_\_\_\_

Should you have any questions, please call Mr. Dennis Imada of the Planning Branch at 587-0257.

Signed:   
CARTY S. CHANG, CHIEF ENGINEER

Date: 1/19/15





## Flood Hazard Assessment Report

www.hawaiiinfo.org

**Notes:**

PROPERTY INFORMATION:  
 COUNTY: HONOLULU  
 TRM NO: (I) 2-3-012-09  
 WATERSHED: ALA WAI  
 PARCEL ADDRESS: 902 ALDER ST  
 HONOLULU, HI 96814

**Flood Hazard Information**  
 FIRM INDEX DATE: JANUARY 19, 2011  
 LETTER OF MAP CHANGES: NONE  
 FEMA FIRM PANEL: 5083C082G  
 PANEL EFFECTIVE DATE: JANUARY 19, 2011

THIS PROPERTY IS WITHIN A TSUNAMI EVACUATION ZONE: NO  
 FOR MORE INFO, VISIT: <http://www.sohawaii.gov/>

THIS PROPERTY IS WITHIN A DAMEVACUATION ZONE: NO  
 FOR MORE INFO, VISIT: <http://dlneng.hawaii.gov/dam/>

0 200 400 ft

**Disclaimer:** The Hawaii Department of Land and Natural Resources (DLNR) assumes no responsibility arising from the use, accuracy, completeness, and timeliness of any information contained in this report. Viewers/Users are advised to verify the information shown on this map with the County of Hawaii, its officers, and employees from any liability which may arise from its use of its data or information.

**If this map has been identified as "PRELIMINARY," please note that it is being provided for informational purposes and is not to be used for flood insurance rating. Contact your county floodplain manager for flood zone determination to be used for compliance with local floodplain management regulations.**

FLOOD HAZARD ASSESSMENT TOOL LAYER LEGEND <small>(Note: Legend does not correspond with MPH)</small>	
[Pink Box]	Zone A: No BFE determined.
[Light Blue Box]	Zone AE: BFE determined.
[Purple Box]	Zone AH: Flood depths of 1 to 3 feet (usually areas of ponding); BFE determined.
[Orange Box]	Zone AO: Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined.
[Red Box]	Zone V: Coastal flood zone with velocity hazard (wave action); no BFE determined.
[Dark Red Box]	Zone VE: Coastal flood zone with velocity hazard (wave action); BFE determined.
[Dark Blue Box]	Zone AEF: Floodway areas in Zone AE. The floodway is the channel of stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without increasing the BFE.
[Green Box]	<b>NON-SPECIAL FLOOD HAZARD AREA</b> - An area in a low-to-moderate risk flood zone. No mandatory flood insurance purchase requirements apply, but coverage is available in participating communities.
[Light Green Box]	Zone X5 (X shaded): Areas of 0.2% annual chance flood areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.
[Lightest Green Box]	Zone X: Areas determined to be outside the 0.2% annual chance floodplain.
[Yellow Box]	<b>OTHER FLOOD AREAS</b>
[Lightest Yellow Box]	Zone D: Unstudied areas where flood hazards are undetermined, but flooding is possible. No mandatory flood insurance purchase apply, but coverage is available in participating communities.

**BASEMAP: FIRM BASEMAP**



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Timmy Chee, Land Agent  
State of Hawaii  
Department of Land and Natural Resources  
Engineering Division  
Post Office Box 621  
Honolulu, Hawaii 96809

Dear Mr. Chee:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 17, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA).

We understand that the site has been set aside per Executive Order 1577 for a detention home. The Judiciary will request that the existing Executive Order No. 1577 be cancelled. HHFDC and the Judiciary will seek approval from the Board of Land and Natural Resources to have a new EO issued to both entities for the mixed-use project. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Timmy Chee, Land Agent  
State of Hawaii  
Department of Land and Natural Resources  
Engineering Division  
Post Office Box 621  
Honolulu, Hawaii 96809

Dear Mr. Chee:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 17, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA).

We understand that the site has been set aside per Executive Order 1577 for a detention home. The Judiciary will request that the existing Executive Order No. 1577 be cancelled. HHFDC and the Judiciary will seek approval from the Board of Land and Natural Resources to have a new EO issued to both entities for the mixed-use project. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



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Honolulu, Hawaii 96817  
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Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Jeffrey T. Pearson, Deputy Director  
State of Hawai'i  
Department of Land and Natural Resources  
Commission on Water Resource Management  
Post Office Box 621  
Honolulu, Hawaii 96809

Dear Mr. Pearson:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street, Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019

Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 17, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA).

DLNR's Engineering Division is a consulted party; they, too, recommended that this project be incorporated into the State Water Projects Plan. The use of water efficient fixtures exceeding the limits already prescribed by existing codes will be explored. Best management practices for stormwater management will be utilized. There are no alternative water sources on or near the site that can be utilized. The Draft EA will discuss the Department's recommendation to participate in the Hawaii Green Business Program and see how it may apply to the project. Best management practices for landscape irrigation will be utilized. Water demands and calculations, and required infrastructure, will be included in Section 3.11 of the Draft EA. Thank you for referring us to the Commission's website. We will consider the recommendations as the project progresses through further stages of design. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,  
SSFM INTERNATIONAL, INC.

  
Katia Balassiano, Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
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[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Cary S. Chang, Chief Engineer  
State of Hawai'i  
Department of Land and Natural Resources  
Engineering Division  
Post Office Box 621  
Honolulu, Hawai'i 96809

Dear Mr. Chang:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019

Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 19, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA).

We understand that the site is located in Zone X of the Flood Insurance Rate Map (FIRM). We will contact the Honolulu Board of Water Supply regarding water allocation credits. Water demands and calculations, and required infrastructure, will be included in the Draft EA. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,  
SSFM INTERNATIONAL, INC.

  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

SSFM INTERNATIONAL, INC.  
RECEIVED

NOV 9 2015

HONOLULU FIRE DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**

636 South Street  
Honolulu, Hawaii 96813-5007  
Phone: 808-723-7139 Fax: 808-723-7111 Internet: www.honolulu.gov/hfd



KIRK CALDWELL  
MAYOR

FILE  
**FILE COPY**

November 18, 2015

Ms. Katia Balassiano  
Senior Planner  
SSFM International  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

Subject: Preassessment Consultation for Draft Environmental Assessment  
Mixed-Use Redevelopment at 902 Alder Street  
Tax Map Key: 2-3-012: 019

In response to your letter dated October 30, 2015, regarding the above-mentioned subject, the Honolulu Fire Department currently applies the 2006 edition of the National Fire Protection Association (NFPA) 1, with amendments, for compliance of the Fire Code of the City and County of Honolulu (Fire Code). Be advised that the 2012 edition of NFPA 1, with amendments, is expected to soon be adopted as the Fire Code.

Should you have questions, please contact Battalion Chief Terry Seelig of our Fire Prevention Bureau at 723-7151 or tseelig@honolulu.gov.

Sincerely,

SOCRATES D. BRATAKOS  
Assistant Chief

SDB/SY:bh



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Socrates D. Bratakos, Assistant Chief  
City and County of Honolulu  
Honolulu Fire Department  
636 South Street  
Honolulu, Hawaii 96813-5007

Dear Mr. Bratakos:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 18, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

The project will comply with the 2012 Fire Code of the City and County of Honolulu.

Sincerely,

SSFM INTERNATIONAL, INC.

Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

514 INTERNATIONAL, INC.  
RECEIVED

NOV 23 2015

VIRGINIA PRESSLER, M.D.  
DIRECTOR OF HEALTH

In reply, please refer to:  
EM00008

11023P-JF.15

**FILE COPY**



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

November 18, 2015

Ms. Katia Balassiano  
SSFMI International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

**SUBJECT: Draft Environmental Assessment (DEA) for  
Mixed-Use Redevelopment at Alder Street 902 Alder Street  
TMK: (1) 2-3-012-019  
Honolulu, Island of Oahu, Hawaii**

The Department of Health (DOH), Clean Water Branch (CWB), acknowledges receipt of your letter, dated October 30, 2015, requesting comments on your project. The DOH-CWB has reviewed the subject document and offers these comments. Please note that our review is based solely on the information provided in the subject document and its compliance with the Hawaii Administrative Rules (HAR), Chapters 11-54 and 11-55. You may be responsible for fulfilling additional requirements related to our program. We recommend that you also read our standard comments on our website at: <http://health.hawaii.gov/epo/files/2013/05/Clean-Water-Branch-Std-Comments.pdf>.

1. Any project and its potential impacts to State waters must meet the following criteria:
  - a. Antidegradation policy (HAR, Section 11-54-1.1), which requires that the existing uses and the level of water quality necessary to protect the existing uses of the receiving State water be maintained and protected.
  - b. Designated uses (HAR, Section 11-54-3), as determined by the classification of the receiving State waters.
  - c. Water quality criteria (HAR, Sections 11-54-4 through 11-54-8).
2. You may be required to obtain National Pollutant Discharge Elimination System (NPDES) permit coverage for discharges of wastewater, including storm water runoff, into State surface waters (HAR, Chapter 11-55).

Ms. Katia Balassiano  
November 18, 2015  
Page 2

11023P-JF.15

For NPDES general permit coverage, a Notice of Intent (NOI) form must be submitted at least 30 calendar days before the commencement of the discharge. An application for an NPDES individual permit must be submitted at least 180 calendar days before the commencement of the discharge. To request NPDES permit coverage, you must submit the applicable form ("CWB Individual NPDES Form" or "CWB NOI Form") through the e-Permitting Portal and the hard copy certification statement with the respective filing fee (\$1,000 for an individual NPDES permit or \$500 for a Notice of General Permit Coverage). Please open the e-Permitting Portal website located at: <https://eha-cloud.doh.hawaii.gov/epemitt/>. You will be asked to do a one-time registration to obtain your login and password. After you register, click on the Application Finder tool and locate the appropriate form. Follow the instructions to complete and submit the form.

3. If your project involves work in, over, or under waters of the United States, it is highly recommended that you contact the Army Corp of Engineers, Regulatory Branch (Tel: 835-4303) regarding their permitting requirements.

Pursuant to Federal Water Pollution Control Act [commonly known as the "Clean Water Act" (CWA)], Paragraph 401(a)(1), a Section 401 Water Quality Certification (WQC) is required for "[a]ny applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters..." (emphasis added). The term "discharge" is defined in CWA, Subsections 502(16), 502(12), and 502(6); Title 40 of the Code of Federal Regulations, Section 122.2; and HAR, Chapter 11-54.

4. Please note that all discharges related to the project construction or operation activities, whether or not NPDES permit coverage and/or Section 401 WQC are required, must comply with the State's Water Quality Standards. Noncompliance with water quality requirements contained in HAR, Chapter 11-54, and/or permitting requirements, specified in HAR, Chapter 11-55, may be subject to penalties of \$25,000 per day per violation.

5. It is the State's position that all projects must reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters. Project planning should:

- a. Treat storm water as a resource to be protected by integrating it into project planning and permitting. Storm water has long been recognized as a source of irrigation that will not deplete potable water resources. What is often overlooked is that storm water recharges ground water supplies and feeds streams and estuaries; to ensure that these water cycles are not disrupted, storm water cannot be relegated as a waste product of impervious surfaces. Any project planning must recognize storm water as an asset that sustains and protects

natural ecosystems and traditional beneficial uses of State waters, like community beautification, beach going, swimming, and fishing. The approaches necessary to do so, including low impact development methods or ecological bio-engineering of drainage ways must be identified in the planning stages to allow designers opportunity to include those approaches up front, prior to seeking zoning, construction, or building permits.

- b. Clearly articulate the State's position on water quality and the beneficial uses of State waters. The plan should include statements regarding the implementation of methods to conserve natural resources (e.g., minimizing potable water for irrigation, gray water re-use options, energy conservation through smart design) and improve water quality.
- c. Consider storm water Best Management Practice (BMP) approaches that minimize the use of potable water for irrigation through storm water storage and reuse, percolate storm water to recharge groundwater to revitalize natural hydrology, and treat storm water which is to be discharged.
- d. Consider the use of green building practices, such as pervious pavement and landscaping with native vegetation, to improve water quality by reducing excessive runoff and the need for excessive fertilization, respectively.
- e. Identify opportunities for retrofitting or bio-engineering existing storm water infrastructure to restore ecological function while maintaining, or even enhancing, hydraulic capacity. Particular consideration should be given to areas prone to flooding, or where the infrastructure is aged and will need to be rehabilitated.

If you have any questions, please visit our website at: <http://health.hawaii.gov/cwb/>, or contact the Engineering Section, CWB, at (808) 586-4309.

Sincerely,

  
ALEC WONG, P.E., CHIEF  
Clean Water Branch

JF:ay

- c. EPO [via e-mail [noella.narimatsu@doh.hawaii.gov](mailto:noella.narimatsu@doh.hawaii.gov)] ]



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSEFM 2014\_068.000

Alec Wong, P.E., Chief  
State of Hawai'i  
Department of Health, Clean Water Branch  
P.O. Box 3378  
Honolulu, Hawai'i 96801-3378

Dear Mr. Wong:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 18, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

As recommended, the standard comments and available strategies have been reviewed. The potential impact of the project on State waters has been examined. The project will comply with all applicable requirements, including HAR, Sections 11-54-1.1, and 4 through 8. A NPDES permit will be secured prior to the start of construction activities. The project does not involve work in, over, or under waters of the United States. All discharges related to the project construction and operation activities will comply with the State's Water Quality Standards. The project's efforts to reduce, reuse, and recycle to protect, restore, and sustain water quality and beneficial uses of State waters will be discussed in Section 3.13 of the Draft EA.

Sincerely,

SSFM INTERNATIONAL, INC.

  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

DEPARTMENT OF TRANSPORTATION SERVICES  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, THIRD FLOOR  
HONOLULU, HAWAII 96813  
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov



MIRK CALDWELL  
MAYOR

SSFM INTERNATIONAL, INC.  
RECEIVED

NOV 23 2015

MICHAEL D. FORMBY  
DIRECTOR  
MARK N. GARRITY, AICP  
DEPUTY DIRECTOR

TP11/15-630808R

November 19, 2015

**FILE COPY**

Ms. Katia Balassiano  
Senior Planner  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

**SUBJECT:** Pre-Assessment Consultation for Draft Environmental Assessment (DEA), Mixed-Use Redevelopment on Alder Street, Honolulu, Oahu, Hawaii

In response to your letter dated October 30, 2015, we have the following comments:

1. The DEA should include a Traffic Impact Assessment Report to evaluate existing traffic conditions of the surrounding roadways, possible increase in traffic and pedestrian volumes as a result of the project, including short-term impacts during construction and long term impacts after construction, and measures to mitigate these impacts applying complete streets principles.
2. The DEA should include a Traffic Management Plan, which should note that during construction, any deliveries of materials and equipment should be transferred to and from the project site during off-peak traffic hours (8:30 a.m. to 3:30 p.m.) to minimize any possible disruption to traffic on the local streets and pedestrians near the project site.
3. All loading and unloading needs, including service delivery vehicles should be handled on-site, rather than on City roadways. In addition, the project should be designed to accommodate TheHandi-Van paratransit vehicles on-site, which require a minimum 31-foot turning radius and a 10-foot, 6-inch height clearance.

Ms. Katia Balassiano  
November 19, 2015  
Page 2

4. On-site bike racks and secure bike storage for the residents, employees and visitors should be included.
5. All access driveways to the project site should be designed for pedestrian and bicycle safety.
6. The area Neighborhood Board, as well as the area residents, businesses, emergency personnel (fire, ambulance and police), Oahu Transit Services, Inc. (TheBus), etc., should be kept apprised of the details of the proposed project and the impacts, particularly during construction, the project may have on the adjoining local street area network.
7. A street usage permit from the City's Department of Transportation Services should be obtained for any construction-related work that may require the temporary closure of any traffic lane on a City street.

Thank you for the opportunity to review this matter. Should you have any questions, please contact Renee Yamasaki of my staff at 768-8383.

Very truly yours,

Michael D. Formby  
Director



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Michael D. Formby, Director  
City and County of Honolulu  
Department of Transportation Services  
650 South King Street, Third Floor  
Honolulu, Hawaii 96813

Dear Mr. Formby:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street, Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 19, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

A Traffic Impact Assessment Report will be included in the Draft EA. A Traffic Management Plan will be prepared closer to actual construction, after a contractor has been hired, and prior to the start of construction. All loading and unloading will take place on site. On-site bike storage for the residents and employees will be available in the parking structure. Access driveways to the project site will be designed for pedestrian and bicycle safety. Stakeholders will be kept informed; Section 7.0 of the Draft EA identifies the consulted parties. The project will be presented to the Ala Moana/Kaka'ako Neighborhood Board and area representatives. A street usage permit will be secured by the contractor. Traffic control services will be obtained for any construction-related work that may require the temporary closure of any traffic lane on a City street.

Sincerely,

SSFM INTERNATIONAL, INC.

  
Katia Balassiano, Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

**From:** Aaron Landry  
**To:** Katia Balassiano  
**Cc:** Jared Chang  
**Subject:** Re: Ala Moana-Kaka'ako Neighborhood Board  
**Date:** Monday, December 07, 2015 8:45:36 AM  
**Attachments:** [image001.jpg](#)  
[image004.jpg](#)

Yes, there should be room for a 10 minute presentation. The January meeting is the 26th and the February meeting is the 23rd, and I can fit you in either. I prefer the January one if that isn't too early. I usually list who is presenting and a one or two line description of the topic. If you have that, that'd be helpful. Otherwise it is no problem to follow up in mid-January before I make the agenda solid.

On Fri, Dec 4, 2015 at 15:06 Katia Balassiano <[kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)> wrote:

Hello Aaron,

Thank you, again, for responding to the Pre-Assessment Consultation letter associated with the Alder Street mixed use project. We would like to take you up on your offer to present the project to the Board. Might there be about 10 or 15 minutes for the HIFFDC and the Judiciary on your February agenda?

Thank you,

Katia

**Katia Balassiano, AICP**

Senior Planner

Direct Line: 808-356-1273

[cid:image001.jpg@01CF7B54.45699390](#)



501 Summer Street, Suite 620

Honolulu, HI 96817

Office Line: 808-531-1308

Fax Line: 808-521-7348

[www.ssfm.com](http://www.ssfm.com)

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**From:** Katia Balassiano  
**Sent:** Monday, November 23, 2015 8:18 AM  
**To:** 'Aaron Landry' <[aaron@sfxtton.com](mailto:aaron@sfxtton.com)>  
**Subject:** RE: Ala Moana-Kaka'ako Neighborhood Board

Hello Aaron,

I received your email. Thanks for taking the time to consider the proposal.

Best wishes,

Katia

**Katia Balassiano, AICP**  
Senior Planner  
Direct Line: 808-356-1273

cid:image001.jpg@01CF7B54.45699390

501 Summer Street, Suite 620  
Honolulu, HI 96817  
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**From:** Aaron Landry [<mailto:aaron@sfxtton.com>]  
**Sent:** Friday, November 20, 2015 10:41 AM  
**To:** Katia Balassiano <[kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)>  
**Subject:** Re: Ala Moana-Kaka'ako Neighborhood Board

I do not have any comments at this time. Thank you for the opportunity to do so and for keeping us up-to-date.

-Aaron



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Suite 620  
Honolulu, Hawaii 96817  
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Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSEFM 2014\_068.000

Aaron Landry, Chair  
Ala Moana / Kaka'ako Neighborhood Board No. 11  
530 South King Street, Room 406  
Honolulu, Hawai'i 96813

Dear Mr. Landry:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your email dated November 20, 2015 regarding the Mixed-Use Redevelopment at Alder Street. We understand the Board has no comments at this time. We look forward to presenting the project to the Neighborhood Board on February 23, 2016. A hardcopy of the Draft Environmental Assessment will be provided to your Board when it is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

On Tue, Nov 17, 2015 at 7:55 AM, Katia Balassiano <[kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)> wrote:

Hello Aaron,

Thank you for the update and offer! We will make the changes to our files. Do you think you'll still have sufficient time to send a letter in response to my request?

Thanks,

Katia

**From:** Aaron Landry [mailto:[aaron@sxton.com](mailto:aaron@sxton.com)]

**Sent:** Monday, November 16, 2015 4:29 PM

**To:** Katia Balassiano <[kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)>

**Subject:** Ala Moana-Kaka'ako Neighborhood Board

I just received a letter from you forwarded to me from October 30 regarding 902 Alder Street.

Just wanted to let you know that I am the current chair of the Ala Moana-Kaka'ako NB. You can continue to use the same physical address, but use my name (Aaron Landry) instead of Larry Hurst. I will usually get postal mail within a week or two, but if you wish, this email reaches me immediately: [aaron+nb11@sxton.com](mailto:aaron+nb11@sxton.com).

Thank you, and if you ever wish to present or give the Board an update directly, please let me know.

Aloha,

-Aaron

POLICE DEPARTMENT  
**CITY AND COUNTY OF HONOLULU**  
801 SOUTH BERETANIA STREET • HONOLULU, HAWAII 96813  
TELEPHONE: (808) 529-3111 • INTERNET: www.honolulu.gov



KIRK CALDWELL  
MAYOR

OUR REFERENCE MT-DK

November 20, 2015

Ms. Katia Balassiano, Senior Planner  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

This is in response to your letter dated October 30, 2015, requesting comments on a Pre-assessment Consultation, Draft Environmental Assessment, for the Mixed-Use Redevelopment at 902 Alder Street project.

The Honolulu Police Department has reviewed this project and has concerns regarding the safe flow of vehicular traffic, parking in the project area, a space for alternate means of transportation, and the security of the subject property.

The project area will require a sufficient amount of traffic control devices (e.g., flag persons, clear signage and cones, special duty officers, etc.) to accommodate the construction vehicles being driven to and from the work site. Additionally, construction vehicles parked on the streets will be required to have proper permits, and the drivers of vehicles must abide by the parking zone restrictions on Piikoi and King Streets. Construction workers and visitors should be reminded not to use the city parks for their use while conducting business at the project site. Vehicles found in violation of park usage rules will be cited and towed.

Street parking around the project site is very limited. Therefore, the developer should consider providing adequate parking for the occupants, employees, and visitors residing in the building. Additionally, the developer should provide an assigned, secured storage area on the property for alternate means of transportation (e.g., bicycles, mopeds, etc.). A parking area access to the building should also be provided for emergency responders to park their vehicles without impeding street traffic.

Further, the property should include safety measures, such as well-lit common areas, key card access for secure entry, private security service, and a camera surveillance

*Serving and Protecting With Aloha*

COMMUNICATIONS DIVISION  
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K-6

LOUIS M. KEALOHA  
CHIEF OF POLICE

MARK TSUYEMURA  
DEPUTY CHIEF

FILE

**FILE COPY**

Ms. Katia Balassiano  
Page 2  
November 20, 2015

system that can produce a readable image of the vehicle's license plate and identifiable facial images to aid in the investigation of criminal activities occurring on the site.

If there are any questions, please call Major Roy Sugimoto of District 1 (Central Honolulu) at 723-3327.

Thank you for the opportunity to review this project.

Sincerely,

LOUIS M. KEALOHA  
Chief of Police

By: 

MARK TSUYEMURA  
Management Analyst VI  
Office of the Chief



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
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Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Mark Tsuyemura, Management Analyst VI  
Office of the Chief  
City and County of Honolulu  
Police Department  
801 South Beretania Street  
Honolulu, Hawai'i 96813

Dear Mr. Tsuyemura:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 20, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

A Traffic Management Plan will be prepared to specify the traffic control devices and how construction vehicles will be managed. An on-site parking structure will accommodate residents, employee, visitor, and emergency responder parking. An on-site bicycle storage area will be available. A drop off area assigned to the Police Department will be provided within the parking structure. Safety measures, such as well-lit common areas, key card access for secure entry, private security service, and a camera surveillance system will be specified in Section 2.4 of the Draft EA.

Sincerely,

SSFM INTERNATIONAL, INC.

  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



DAVID Y. IGE  
GOVERNOR OF HAWAII

SSFM INTERNATIONAL, INC.  
RECEIVED  
SCOTT GLENN  
INTERIM DIRECTOR  
NOV 30 2015

STATE OF HAWAII  
OFFICE OF ENVIRONMENTAL QUALITY CONTROL

Department of Health  
235 South Beretania Street, Suite 702  
Honolulu, Hawai'i 96813  
Telephone: (808) 586-4185  
Facsimile: (808) 586-4185  
Email: [oeq@hawaii.gov](mailto:oeq@hawaii.gov)

November 24, 2015

SSFM International, Inc.  
Attn: Katia Balassiano, Senior Planner  
501 Summer Street, Suite 620  
Honolulu, HI 96817

Dear Ms. Balassiano,

**SUBJECT:** Pre-Consultation Request for Mixed-Use Redevelopment at Alder Street,  
Honolulu, Hawaii.

The Office of Environmental Quality Control has reviewed the information contained in your October 30, 2015 letter about the subject project, and offers the following comments for your consideration.

Based on the information provided, The OEQC recommend the consideration of low impact development. The project would reduce the area of pervious surfaces, and mitigation measures such as pavers or pervious pavements would help groundwater recharge in the area. The Office of Planning, Land Use Development website: <http://planning.hawaii.gov/lud/> has resources for low impact development and green buildings. The OEQC also recommends using native vegetation for landscaping, as per Act 233 (2015). OEQC looks forward to reviewing a Draft EA that includes sufficient information to enable recipients and the public to understand the project and to provide substantive feedback.

Thank you for your role in Hawaii's environmental review process and for the opportunity to comment at this early stage of this project. As you prepare to submit documents for publication and public review in The Environmental Notice, we appreciate your diligence in using current and correct publication forms available online. If you have any questions as you navigate this process, please consult our website at <http://health.hawaii.gov/oeqc> (see in particular the link to the Environmental Assessment Preparation Toolkit on the right panel) or contact our office at (808) 586-4185.

Sincerely,

  
Scott Glenn, Interim Director

FILE COPY



501 Summer Street  
 Suite 620  
 Honolulu, Hawaii 96817  
 Phone: (808) 531-1308  
 Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Scott Glenn, Director  
 State of Hawai'i  
 Office of Environmental Quality Control  
 Department of Health  
 235 South Beretania Street, Suite 702  
 Honolulu, Hawai'i 96813

Dear Mr. Glenn:

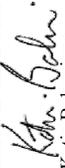
**Subject:** Mixed-Use Redevelopment at Alder Street  
 902 Alder Street  
 Honolulu, Hawai'i  
 Tax Map Key: (1) 2-3-012: 019

Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 24, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). The project will consider the use of measures that facilitate groundwater recharge in the area. We will use the current and correct publication forms as we prepare to submit documents for publication and public review in *The Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

  
 Katia Balassiano  
 Senior Planner  
 Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

DAVID Y. IGE  
 GOVERNOR OF HAWAII



STATE OF HAWAII  
 DEPARTMENT OF LAND AND NATURAL RESOURCES  
 LAND DIVISION

POST OFFICE BOX 621  
 HONOLULU, HAWAII 96809

November 25, 2015

SSFM International, Inc.  
 Attn: Katia Balassiano, Senior Planner  
 501 Summer Street, Suite 620  
 Honolulu, HI 96817  
 via email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

Dear Ms. Balassiano,

**SUBJECT:** Mixed-Use Redevelopment at Alder Street, Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for the opportunity to review and comment on the subject matter. The Department of Land and Natural Resources' (DLNR) Land Division distributed or made available a copy of your report pertaining to the subject matter to DLNR Divisions for their review and comments.

At this time, enclosed are comments from (1) Land Division – Oahu District; (2) Commission on Water Resource Management; and (3) Engineering Division. No other comments were received as of our suspense date. Should you have any questions, please feel free to call Supervising Land Agent Steve Molmen at 587-0439. Thank you.

Sincerely,

  
 Russell Y. Tsuji  
 Land Administrator

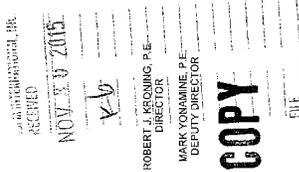
Enclosure(s)

DEPARTMENT OF DESIGN AND CONSTRUCTION  
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 11<sup>TH</sup> FLOOR  
HONOLULU, HAWAII 96813  
Phone: (808) 768-8480 • Fax: (808) 768-4587  
Web site: [www.honolulu.gov](http://www.honolulu.gov)



KIRK CALDWELL  
MAYOR



ROBERT J. KRONING, P.E.  
DIRECTOR  
MARK YONAMINE, P.E.  
DEPUTY DIRECTOR

FILE COPY

November 25, 2015

SSFM International  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Katia Balassiano:

Subject: Mixed-Use Redevelopment at Alder Street  
902 Alder Street, Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

The Department of Design and Construction has the following comment to offer on the pre-assessment consultation:

This project may qualify for the Governor's Emergency Proclamation which would waive the HRS Chapter 343 requirements.

Thank you for the opportunity to review and comment. Should there be any questions, please contact Clifford Lau, Chief Facilities Division at 768-8483.

Sincerely,

Robert J. Kroning, P.E.  
Director

RJK: ps (630795)



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Robert Kroning, Director  
City and County of Honolulu  
Department of Design and Construction  
650 South King Street, 11th Floor  
Honolulu, Hawai'i 96813

Dear Mr. Kroning:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 25, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street.

We thank you for pointing out the opportunities contained in the Governor's Emergency Proclamation. The proclamation appears to be applicable for the purpose of "establishing a temporary transitional shelter and facilitating contracting with private providers of homeless services." The current mixed-use project will provide juvenile shelter/services and permanent (vs. transitional) rental housing for working families. A hardcopy of the Draft Environmental Assessment will be provided to your Department when it is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



HAWAII COMMUNITY  
DEVELOPMENT AUTHORITY



David Y. Ige  
Governor

John Whalen  
Chairperson

Anthony J. H. Ching  
Executive Director

547 Queen Street  
Honolulu, Hawaii  
96813

Telephone  
(808) 594-0300

Facsimile  
(808) 587-0299

E-Mail  
contact@hcdweb.org

Web site  
www.hcdweb.org

COMMUNICATIONS  
SECTION

NOV 30 2015

4-6

Ref. No.: PL GEN 1193

November 25, 2015

**FILE COPY**

Ms. Katia Balassiano  
SSFEM International, Inc.  
501 Sumner Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

Re: Pre-Dratt Environmental Assessment for the Proposed  
Mixed-Use Redevelopment, 902 Alder Street  
Tax Map Key ("TMK"): (1)2-3-012: 019

The Hawaii Community Development Authority ("HCDA") has received a letter from SSFEM International, Inc., dated October 30, 2015, requesting a pre-assessment comment for a Draft Environment Assessment ("EA"), which is in the process of being prepared, for a proposed mixed-use redevelopment located at 902 Alder Street (TMK: (1)2-3-012: 019).

As explained, the above mentioned 1.45-acre lot (63,180 square feet) is owned by the State of Hawaii and, in accordance with Executive Order No. 1577, it has been set aside since 1953 for a Detention Home under the control and management of the Juvenile Court of the First Judicial Circuit. Currently, the Hawaii State Judiciary and the Hawaii Housing Finance and Development Corporation are proposing to jointly redevelop the said lot with a mixed-use development consisting of an affordable rental housing, therapeutic counseling, rehabilitative services and shelter for juveniles, incidental community uses, and parking.

The proposed development will utilize the Hawaii Revised Statutes Chapter 201H provision granted to affordable housing projects to request certain exemptions from zoning requirements. The EA should weigh the requested exemptions and indicate how they would contribute specifically to resulting impacts.

The site, which is bound by Elm Street, South King Street, Piikoi Street and Alder Street, is in the A-2 Apartment Medium-Density zoning district with a height limit of 150 feet. It is outside the jurisdiction of the HCDA; nonetheless, on its western side it is closely bordered by parcels that are within HCDA's Mauka Area

Ms. Katia Balassiano  
Page Two  
November 25, 2015

Sheridan Zone. As such, the proposed redevelopment should take into consideration the development and urban design standards of the Sheridan Neighborhood. Section 15-217-23(4) of the Mauka Area Rules describes the Sheridan Zone as consisting of predominantly residential neighborhood with markedly lower scale buildings when compared to the remainder of the Mauka Area and as having commercial uses along South King, Pensacola, and Piikoi Streets; preferably within mixed-use buildings with upper floors of residential or office uses. To echo the small-scale feature of the neighborhood, the design of the development should be pedestrian friendly by having human-scaled features and frontages that embrace the sidewalks.

In addition, the EA shall discuss potential impacts and mitigation relating to traffic and circulation. The site will be within 15 minutes walking distance from the future Ala Moana Station and is bound by Piikoi Street, which is proposed as a primary bike network. Therefore, the traffic section of the EA should include a discussion relating to bicyclist and pedestrians as well as a discussion on access and potential safety impacts with particular regard to areas where there are potential conflict points.

The EA should also include a discussion regarding existing infrastructure and potential impacts to all the infrastructure systems (i.e., storm water drainage, sanitary sewers, and potable water). For instance, the design of the proposed project will have a direct impact on the amount of storm water being displaced which would directly affect the neighborhood properties. As mitigation, the proposed project should consider sustainable design and in lieu of using a manufacture treatment device consider implementing low impact development (LID) method for treating storm water runoff, such as vegetated streetscape. It will also have potential impact on sewer capacity in the Kakaako Community Development District, therefore impact on sewer capacity and mitigation measures shall be disclosed in the EA.

The EA should also address the implications of the proposed development to area schools and disclose proposed mitigations.

In general, even though the project site is governed by the laws and regulations of the City and County of Honolulu, due to the close proximity of the site to HCDA's Sheridan Zone, the design of the proposed development should be



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Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Anthony J.H. Ching, Executive Director  
Hawai'i Community Development Authority  
547 Queen Street  
Honolulu, Hawai'i 96813

Dear Mr. Ching:

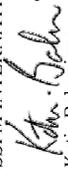
**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 25, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy of the Draft Environmental Assessment will be provided to your Department when it is published in the State Office of Environmental Quality Control's *Environmental Notice*.

The proposed development is primarily guided by concepts and policies associated with promoting compact, mixed-use, transit-oriented development near the future rail station; maximizing the production of affordable housing; and creating a safe environment for juveniles. Section 3.10 of the Draft EA will address traffic and circulation issues, including the needs of bicyclists and pedestrians. Sections 3.11 to 13 of the Draft EA will address the project's impact on infrastructure systems; mitigation measures will also be discussed. Section 3.15 of the Draft EA will address the socioeconomic environment and impact on area schools. The proposed redevelopment will take into consideration the development and urban design standards of the Sheridan neighborhood.

Sincerely,

SSFM INTERNATIONAL, INC.

  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

Ms. Katia Balassiano  
Page Three  
November 25, 2015

sympathetic to the small-scale urban fabric of the Sheridan Neighborhood and all infrastructure issues relating to the project should be reviewed comprehensively.

Should have any additional questions regarding this matter, please contact Ms. Sery Berhanu at 594-0314 or via email at [Sergut.Berhanu@hcdaweb.org](mailto:Sergut.Berhanu@hcdaweb.org).

Sincerely,

  
Anthony J. H. Ching  
Executive Director

AJHC/DN/SB:ak

**BOARD OF WATER SUPPLY**

CITY AND COUNTY OF HONOLULU  
630 SOUTH BERETANIA STREET  
HONOLULU, HI 96843



November 27, 2015

RECEIVED  
NOV 27 2015

KIRK CALDWELL, MAYOR  
DUANE R. MIYASHIRO, Chair  
ADAM C. WONG, Vice Chair  
DAVID C. HOLMEE  
BRYAN P. ANDAYA

ROSS S. SASAMURA, Ex-Officio  
FORD N. FUCHIGAMI, Ex-Officio  
ERNEST Y. W. LAU, P.E.  
Manager and Chief Engineer  
ELLEN E. KITAMURA, P.E.  
Deputy Manager and Chief Engineer

**FILE COPY**

Ms. Katia Balassiano  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

**Subject:** Your Letter Dated October 30, 2015 Requesting Comments on the Draft Environmental Assessment for the Proposed Mixed Used Development at 902 Alder Street – Tax Map Key: 2-3-012: 019

Thank you for your letter regarding the proposed mixed use development.

The existing water system is adequate to accommodate the proposed development. However, please be advised that this information is based upon current data, and therefore, the Board of Water Supply reserves the right to change any position or information stated herein up until the final approval of the building permit application. The final decision on the availability of water will be confirmed when the building permit application is submitted for approval.

When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

Water conservation measures are recommended for all proposed developments. These measures include low flow plumbing fixtures, utilization of nonpotable water for irrigation using rain catchment and chiller/air handler condensate, cooling tower conductivity meters and water softening recycling systems, drought tolerant plants, xeriscape landscaping, efficient irrigation systems and the use of Water Sense labeled ultra-low-flow water fixtures and toilets.

High-rise buildings with booster pumps will be required to install water hammer arrestors or expansion tanks to reduce pressure spikes and potential main breaks in our water system.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources Division at 748-5443.

Very truly yours,

ERNEST Y. W. LAU, P.E.  
Manager and Chief Engineer



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Ernest Y. W. Lau, Manager and Chief Engineer  
City and County of Honolulu  
Board of Water Supply  
630 South Beretania Street  
Honolulu, Hawaii 96843

Dear Mr. Lau:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 27, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy of the Draft Environmental Assessment will be provided to your Department when it is published in the State Office of Environmental Quality Control's *Environmental Notice*.

We understand that while the existing water system is adequate to accommodate the proposed development, the final decision on the availability of water will be confirmed when the building permit application is submitted for approval. The applicant will be seeking a deferral of the Water System Facilities Charges as part of the 201H application process. Your recommendations on water conservation measures will be considered. Water hammer arrestors or expansion tanks will be installed, as required. Finally, on-site fire protection requirements will be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

Sincerely,

SSFM INTERNATIONAL, INC.

Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



501 Summer Street  
 Suite 620  
 Honolulu, Hawaii 96817  
 Phone: (808) 531-1308  
 Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

M. Kaleo Manuel, Acting Planning Program Manager  
 State of Hawai'i  
 Department of Hawaiian Home Lands, Land Division  
 Post Office Box 1879  
 Honolulu, Hawai'i 96805

Dear Mr. Manuel:

**Subject:** Mixed-Use Redevelopment at Alder Street  
 902 Alder Street  
 Honolulu, Hawai'i  
 Tax Map Key: (1) 2-3-012: 019  
 Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated November 30, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy of the Draft Environmental Assessment will be provided to your Department when it is published in the State Office of Environmental Quality Control's *Environmental Notice*.

We understand that due to its lack of proximity to Hawaiian Home Lands, DHHL does not anticipate any impacts to DHHL lands or beneficiaries from the project. In accordance with your recommendation, Cultural Surveys Hawai'i, Inc. has prepared a Cultural Impact Assessment for this project, which includes consultations and will be included in its entirety in the Draft EA.

Sincerely,

SSFM INTERNATIONAL, INC.

*Katia Balassiano*  
 Katia Balassiano

Senior Planner  
 Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

RECEIVED  
 JOHIE M. K. MASAGAYAM  
 HAWAIIAN HOMES COMMISSION  
 DECEMBER 7 2015  
 WILLIAM L. ALA, JR.  
 DIRECTOR OF THE COMMISSION



STATE OF HAWAII  
 DEPARTMENT OF HAWAIIAN HOME LANDS  
 P. O. BOX 1879  
 HONOLULU, HAWAII 96805

**FILE COPY**

November 30, 2015

Katia Balassiano, Senior Planner  
 SSFM International, Inc.  
 501 Summer Street, Suite 620  
 Honolulu, Hawaii 96817

Dear Ms. Balassiano:

**Subject:** Pre-Assessment Consultation for Draft Environmental Assessment, Mixed-Use Redevelopment at 902 Alder Street, Honolulu, O'ahu, Hawaii  
 TWF: (1) 2-3-012:019

The Department of Hawaiian Home Lands acknowledges receiving the request for comments on the above-cited project. After reviewing the materials submitted, due to its lack of proximity to Hawaiian Home Lands, we do not anticipate any impacts to our lands or beneficiaries from the project.

However, we highly encourage all agencies to consult with Hawaiian Homestead community associations and other (N)ative Hawaiian organizations when preparing environmental assessments in order to better assess potential impacts to cultural and natural resources, access and other rights of Native Hawaiians.

Mahalo for the opportunity to provide comments. If you have any questions, please contact Nancy McPherson, Planner at 620-9519 or via email at [nancy.n.mcpherson@hawaii.gov](mailto:nancy.n.mcpherson@hawaii.gov).

Sincerely,

*Nancy McPherson*

M. Kaleo Manuel  
 Acting Planning Program Manager

DEPARTMENT OF COMMUNITY SERVICES  
CITY AND COUNTY OF HONOLULU

715 SOUTH KING STREET SUITE 311 • HONOLULU, HAWAII 96813 • AREA CODE 808 • PHONE: 788-7762 • FAX: 788-7792



KIRK CALDWELL  
MAYOR

December 1, 2015

Ms. Katia Balassiano  
Senior Planner  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

**SUBJECT:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street, Honolulu, Hawaii 96814  
Tax Map Key: (1) 2-3-012-019  
Pre-Assessment Consultation Draft Environmental Assessment

We have reviewed your letter dated October 30, 2015, and the enclosed map of the project site.

Our review of the documents provided indicates the proposed project will have no adverse impacts on any Department of Community Services' activities or projects at this time.

Thank you for providing us with the opportunity to comment on this matter.

Sincerely,

  
Gary K. Nakata  
Director

GKN:jc

SSFM INTERNATIONAL, INC.  
RECEIVED  
DEC 07 2015

GARY K. NAKATA,  
DIRECTOR  
BARBARA YAMASHITA  
DEPUTY DIRECTOR

FILE COPY



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSEFM 2014\_068.000

Gary K. Nakata, Director  
City and County of Honolulu  
Department of Community Services  
715 South King Street Suite 311  
Honolulu, Hawaii 96813

Dear Mr. Nakata:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012-019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated December 1, 2015 regarding the Mixed-Use Redevelopment at Alder Street. We confirm that your department has no comment to offer at this time. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

  
Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

DAVID Y. IGE  
GOVERNOR



STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
P.O. BOX 2360  
HONOLULU, HAWAII 96804

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

December 3, 2015

Ms. Katia Balassiano, Senior Planner  
SSFm International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Re: Pre-Assessment Consultation for Draft Environmental Assessment  
Mixed-Use Redevelopment at Alder Street, Tax Map Key No: (1) 2-3-012-019

Dear Ms. Balassiano:

The Department of Education (DOE) has reviewed your pre-assessment consultation letter regarding the proposed redevelopment at Alder Street. Due to the significant redevelopment within Kakaako involving residential units and the predictable impacts on public schools that are likely to occur, DOE has concerns over this and any similarly dense residential development within close proximity. DOE would appreciate further consultation on this project well in advance of entitlements being secured.

Thank you for the opportunity to comment on the proposed project. Should you have any questions, please feel free to contact Roy Ikeda of the Planning Section, Facilities Development Branch at 377-8301.

Respectfully,

Kenneth G. Masden II  
Public Works Manager  
Planning Section

KGm:jmb

c: Ruth Silberstein, Complex Area Superintendent, Kaimuki/McKinley/Roosevelt Complex Area

RECEIVED  
DEC 4 7 2015  
KATHRYN S. MATAYOSHI  
SUPERINTENDENT

FILE COPY



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFm 2014\_068.000

Kenneth G. Masden II, Public Works Manager, Planning Section  
State of Hawaii  
Department of Education  
Post Office Box 2360  
Honolulu, Hawaii 96804

Dear Mr. Masden:

Subject: Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated December 3, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). Plaseh Econ Pacific is analyzing the potential population, economic and fiscal impacts associated with this project, including the project's impacts on existing public schools. The report will be included in its entirety in the Draft EA. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFm INTERNATIONAL, INC.

Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



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 Suite 620  
 Honolulu, Hawaii 96817  
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SSFM 2014\_068.000

December 23, 2015

Ross S. Sasamura, Director and Chief Engineer  
 City and County of Honolulu  
 Department of Facility Maintenance  
 1000 Ulu'ohia Street, Suite 215  
 Kapolei, Hawai'i 96707

Dear Mr. Sasamura:

**Subject:** Mixed-Use Redevelopment at Alder Street  
 902 Alder Street  
 Honolulu, Hawaii'i  
 Tax Map Key: (1) 2-3-012: 019  
 Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated December 2, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). The property owner will have approved Best Management Practices (BMPs) installed where appropriate when construction commences. Any damages to Pi'ikoi Street, Elm Street, and Alder Street right-of-ways will be corrected to City Standards. BMPs will be removed upon the project's completion and storm drains will be cleared, as needed. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,  
 SSFM INTERNATIONAL, INC.  
  
 Katia Balassiano  
 Senior Planner  
 Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

RECEIVED  
 DECEMBER 23 2015  
 ROSS S. SASAMURA, P.E.  
 DIRECTOR AND CHIEF ENGINEER  
 EDUARDO P. MANGIALLAN  
 DEPUTY DIRECTOR  
 IN REPLY REFER TO:  
 DR# 16-891  
 FILE

DEPARTMENT OF FACILITY MAINTENANCE  
**CITY AND COUNTY OF HONOLULU**  
 1000 Ulu'ohia Street, Suite 215, Kapolei, Hawaii, 96707  
 Phone: (808) 768-3243 • Fax: (808) 768-3381  
 Website: [www.honolulu.gov](http://www.honolulu.gov)



December 2, 2015

**FILE COPY**

Ms. Katia Balassiano, Senior Planner  
 SSFM International, Inc.  
 501 Summer Street, Suite 620  
 Honolulu, Hawaii 96817

Dear Ms. Balassiano:

**SUBJECT:** Mixed-Use Redevelopment at Alder Street  
 902 Alder Street, Honolulu, Hawaii  
 Tax Map Key: (1) 2-3-012: 019  
 Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for the opportunity to review and provide our input regarding your letter dated October 30, 2015, on the above-subject project.

Our comments are as follows:

- Once construction phase commences, install approved Best Management Practices (BMPs) fronting all drainage facilities, such as catch basin and drainage inlets along Pi'ikoi Street and Elm Street.
- During construction and upon completion of the project, any damages/deficiencies to Pi'ikoi Street, Elm Street, and Alder Street right-of-ways shall be corrected to City Standards, and at the owner's cost.
- The contractor shall be responsible for clearing storm drain facilities to mitigate flooding during construction and removing BMPs upon completion of the project.

If you have any questions, please contact Mr. Kyle Oyasato of the Division of Road Maintenance at 768-3697.

Sincerely,  
  
 Ross S. Sasamura, P.E.  
 Director and Chief Engineer



**STATE OF HAWAII**  
**DEPARTMENT OF LAND AND NATURAL RESOURCES**  
STATE HISTORIC PRESERVATION DIVISION  
KAKULIHIWA BUILDING  
601 KAMOKILA BLVD, STE 555  
KAPOLEI, HAWAII 96707

SUZANNE B. CASE  
BOARD OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCES MANAGEMENT  
KEKOA KALUHIWA  
DISTRICT OFFICE  
JEFFREY J. PEARSON  
DEPUTY DIRECTOR, WATER  
AND WASTE RESOURCES  
BUREAU OF LAND AND NATURAL RESOURCES  
COMMISSION ON WATER RESOURCES  
CONSERVATION AND COASTAL LANDS  
MANAGEMENT  
CONSERVATION AND COASTAL LANDS  
DIVISION  
1000 W. KAPOLEI BLVD, STE 555  
KAPOLEI, HAWAII 96707  
KAPOLEI WATER AND WASTE RESOURCES COMMISSION  
STATE PARKS

December 3, 2015

Ms. Katia Balassiano  
SSEM International, Inc.  
501 Summer Street, suite 620  
Honolulu, HI 96817

Log No. 2015.03923  
Doc. No. 1512GC04  
Archaeology

Dear Ms. Balassiano:

**SUBJECT: Chapter 66-8 Historic Preservation Review –  
Mixed-Use Redevelopment at 902 Alder Street  
Pre-Assessment for Draft Environmental Assessment  
Honolulu Ahupua'a, Kona District, Island of O'ahu  
TMK: (1) 2-3-012:019**

Thank you for the opportunity to review this submittal for the 902 Alder Street Mixed Use Redevelopment Project, which was received by our office on November 2, 2015. According to the submittal, this is a joint redevelopment project among the Hawai'i State Judiciary and the Hawai'i Housing, Finance and Development Corporation (HHFDC). The project will consist of developing affordable housing, therapeutic counseling, rehabilitative services and shelter for juveniles, parking and incidental community uses. In addition, the submittal indicates that the property will be used for the production of a affordable rental housing.

Our records indicate that no archaeological inventory survey has been conducted within the subject parcel and that no historic properties have been identified. SHPD's review is based on available information in our records. At this time, SHPD has insufficient information to make a determination for the proposed project and its effect to potential historic properties. The SHPD requests the following information:

- (1) Narrative description of the proposed project, including total area in acres and nature of any land alteration, new construction, demolition or modification of existing structures;
- (2) TMK map showing the full extent of the project area within the affected parcel;
- (3) Description and photographs of current vegetation cover and condition of the project area, including structures, roads, walls, or other features within the project area (photographs preferred);
- (4) Summary of land use history, such as previous intensive cultivation, grubbing or grading;
- (5) Copies or dates of previously approved permits, survey reports and/or prior SHPD review letters that pertain to the property; and
- (6) Contact information for the responsible State and/or City and County of Honolulu agency for this project.

Ms. Katia Balassiano  
December 3, 2015  
Page 2

Please contact me at (808) 692-8019 or at [Susan.A.Lebo@hawaii.gov](mailto:Susan.A.Lebo@hawaii.gov) if you have any questions regarding this letter.

Aloha,

Susan A. Lebo, PhD  
Archaeology Branch Chief



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Susan A. Lebo, Archaeology Branch Chief  
State of Hawaii  
Department of Land and Natural Resources  
State Historic Preservation Division  
Kakuihewa Building  
601 Kamokila Blvd, Suite 555  
Kapolei, Hawaii 96707

Dear Ms. Lebo:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated December 3, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Cultural Surveys Hawai'i, Inc. (CSH) has prepared an Archeological Inventory Survey for this project. It will be included in its entirety in the Draft EA for review and comments. CSH will also be submitting the draft report to SHPD for review and comments directly. SHPD has already reviewed and accepted the Hale Hoomalu Reconnaissance Level Survey for this project (SHPD LOG: 2015.03959, DOC: 1511JLP05). A hardcopy of the Draft Environmental Assessment will be provided to your Department when it is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

Submitted to: State of Hawaii, DEPT. OF EDUCATION  
RECEIVED  
DEC 07 2015  
KATHRYN S. MATAYOSHI  
SUPERINTENDENT



STATE OF HAWAII  
DEPARTMENT OF EDUCATION  
P.O. BOX 2380  
HONOLULU, HAWAII 96804

OFFICE OF SCHOOL FACILITIES AND SUPPORT SERVICES

December 3, 2015

Ms. Katia Balassiano, Senior Planner  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Re: Pre-Assessment Consultation for Draft Environmental Assessment  
Mixed-Use Redevelopment at Alder Street, Tax Map Key No: (1) 2-3-012:019

Dear Ms. Balassiano:

The Department of Education (DOE) has reviewed your pre-assessment consultation letter regarding the proposed redevelopment at Alder Street. Due to the significant redevelopment within Kakaako involving residential units and the predictable impacts on public schools that are likely to occur, DOE has concerns over this and any similarly dense residential development within close proximity. DOE would appreciate further consultation on this project well in advance of entitlements being secured.

Thank you for the opportunity to comment on the proposed project. Should you have any questions, please feel free to contact Roy Ikeda of the Planning Section, Facilities Development Branch at 377-8301.

Respectfully,

Kenneth G. Masden II  
Public Works Manager  
Planning Section

KGM:jmb

c: Ruth Silberstein, Complex Area Superintendent, Kaimuki/McKinley/Roosevelt Complex Area

SCANNED

FILE COPY



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Kenneth G. Masden II, Public Works Manager, Planning Section  
State of Hawai'i  
Department of Education  
Post Office Box 2360  
Honolulu, Hawai'i 96804

Dear Mr. Masden:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019

Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated December 3, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). Plaseh Econ Pacific is analyzing the potential population, economic and fiscal impacts associated with this project, including the project's impacts on existing public schools. The report will be included in its entirety in the Draft EA. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

*Katia Balassiano*  
Katia Balassiano

Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)



**OFFICE OF PLANNING  
STATE OF HAWAII**

235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813  
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

DAVID Y. IGE  
GOVERNOR  
LEO R. ASUNCION  
ACTING DIRECTOR  
OFFICE OF PLANNING

Telephone: (808) 587-2846  
Fax: (808) 587-2824  
Web: <http://planning.hawaii.gov/>

Ref. No. P-14970

December 4, 2015

Ms. Katia Balassiano, Senior Planner  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

**Subject:** Pre-Assessment Consultation for Draft Environmental Assessment  
Mixed-Use Redevelopment at Alder Street  
Tax Map Key: (1) 2-3-012: 019  
Honolulu, Oahu, Hawaii

Thank you for soliciting comments on the Environmental Assessment (EA) being prepared for the above referenced project.

The Hawaii State Judiciary (Judiciary) and the Hawaii Housing Finance and Development Corporation (HIIFDC) propose to jointly redevelop the 1.45-acre property located at 902 Alder Street in Honolulu. The mixed-use development will consist of affordable housing, therapeutic counseling, rehabilitative services and shelter for juveniles, parking, and incidental community uses. An architectural concept plan will be developed for the proposed project. The current concept involves co-locating the affordable rental housing and judiciary components on the property, along with a parking structure for the new residents and judiciary employees and clients. The property is zoned A-2 Medium Density Apartment.

The Office of Planning (OP) provides the following comments for preparation of the Draft EA:

- Affordable Housing.** Increasing the supply of affordable housing is a critical State need. The Draft EA should discuss how the project will address affordable housing needs and requirements, including a description of proposed residential product types allocated among market and affordable housing target populations, and the expected price ranges for the different product types.
- Coastal Zone Management (CZM).** The coastal zone management area is defined as "all lands of the State and the area extending seaward from the shoreline to the limit of the State's police power and management authority, including the U.S. territorial sea" see Hawaii Revised Statutes (HRS) § 205A-1 (definition of "coastal

**FILE COPY**

zone management area”).

The Draft EA should include an assessment as to how the proposed project conforms to the CZM objectives and its supporting policies set forth in HRS § 205A-2. The assessment on compliance with HRS Chapter 205A is an important component for satisfying the requirements of HRS Chapter 343. These objectives and policies include recreational resources, historic resources, scenic and open space resources, coastal ecosystems, economic uses, coastal hazards, managing development, public participation, beach protection, and marine resources.

3. **Coastal Zone Resources.** OP has a number of resources available to assist in the development of projects which ensure sediment and stormwater control on land, thus protecting the nearshore environment. OP recommends consulting these guidance documents and stormwater evaluative tools when developing strategies to address polluted runoff. They offer useful techniques to keep land-based pollutants and sediment in place and prevent contaminating nearshore waters, while considering the practices best suited for this project. These three evaluative tools that should be used during the design process include:

- Hawaii Watershed Guidance provides direction on mitigation strategies in urban areas that will safeguard Hawaii’s watersheds and implement watershed plans [http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI\\_Watershed\\_Guidance\\_Final.pdf](http://files.hawaii.gov/dbedt/op/czm/initiative/nonpoint/HI_Watershed_Guidance_Final.pdf)
- Stormwater Impact Assessments can be used to identify and evaluate information on hydrology, stressors, sensitivity of aquatic and riparian resources, and management measures to control runoff, as well as consider secondary and cumulative impacts to the area [http://files.hawaii.gov/dbedt/op/czm/initiative/stormwater\\_impact/final\\_storm\\_water\\_impact\\_assessments\\_guidance.pdf](http://files.hawaii.gov/dbedt/op/czm/initiative/stormwater_impact/final_storm_water_impact_assessments_guidance.pdf)
- Low Impact Development (LID). A Practitioners Guide covers a range of structural best management practices (BMP’s) for stormwater control management, roadway development, and urban layout that minimizes negative environmental impacts [http://files.hawaii.gov/dbedt/op/czm/initiative/lid/lid\\_guide\\_2006.pdf](http://files.hawaii.gov/dbedt/op/czm/initiative/lid/lid_guide_2006.pdf)

4. **Conformance with Hawaii State Plan.** Pursuant HAR § 11-200-10(4), this project must demonstrate that it is consistent with a number of State environmental, social, and economic goals and policies for land-use and housing development. OP provides technical assistance to State and County agencies in administering the statewide

planning system in HRS Chapter 226, the Hawaii State Plan. The Hawaii State Plan provides goals, objectives, policies, and priority guidelines for growth, development, and the allocation of resources throughout the State. The Hawaii State Plan includes diverse objectives and policies of State interest including but not limited to the economy, agriculture, the visitor industry, federal expenditure, the physical environment, facility systems, socio-cultural advancement, climate change adaptation, and sustainability. The Draft EA should include an analysis that addresses whether the proposed project conforms or is in conflict with the goals, objectives, policies, and priority guidelines listed in the Hawaii State Plan.

Relative to the sustainability priority guidelines, we request that the Draft EA describe the smart growth and livability principles, resource conservation, and green building measures that are expected to be employed in the development. Please see OP’s Technical Assistance Memorandum at [http://files.hawaii.gov/dbedt/op/does/OP\\_TAM\\_2013-12-03.pdf](http://files.hawaii.gov/dbedt/op/does/OP_TAM_2013-12-03.pdf).

If you have any questions, please contact Josh Hekekie, CZM Program, at (808) 587-2845 or Katie Minco, Land Use Division, at (808) 587-2883.

Sincerely,



Leo R. Asuncion  
Acting Director



501 Summer Street  
Suite 620  
Honolulu, Hawaii 96817  
Phone: (808) 531-1308  
Fax: (808) 521-7348  
[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

Leo R. Asuncion, Acting Director  
State of Hawai'i  
Office of Planning  
Post Office Box 2359  
Honolulu, Hawai'i 96804

Dear Mr. Asuncion:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated December 4, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA).

The Draft EA will discuss how the project will address affordable housing needs and requirements. The Draft EA will include an assessment as to how the proposed project conforms to the CZM objectives and its supporting policies set forth in HRS §205A-2. The Hawaii Watershed Guidance, Stormwater Impact Assessment tool, and Low Impact Development (LID). A Practitioners Guide will be consulted. The Draft EA will discuss how the project conforms to the State Plan. We will describe how the project contributes to the State's sustainability priority guidelines. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.

Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

**From:** Liu, Rouen  
**To:** Katia Balassiano  
**Cc:** Kuwae, Kristen  
**Subject:** Mixed Use redevelopment at Alder Street - pre assessment consultation Draft EA  
**Date:** Tuesday, December 08, 2015 5:35:28 PM

Dear Ms. Katia Balassiano,

Thank you for the opportunity to comment on the subject project. Hawaiian Electric Company has no objection to the project. Should HECCO have existing easements and facilities on the subject property, we will need continued access for maintenance of our facilities.

We appreciate your efforts to keep us apprised of the subject project in the planning process. As the proposed Redevelopment at Alder Street Project comes to fruition, please continue to keep us informed. Further along in the design, we will be better able to evaluate the effects on our system facilities. If you have any questions, please call me at 543-7245.

Sincerely,  
Rouen Q. W. Liu  
Permits Engineer  
Tel: (808) 543-7245  
Email: [Rouen.liu@hawaiianelectric.com](mailto:Rouen.liu@hawaiianelectric.com)

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December 23, 2015

SSFM 2014\_068.000

Rouen Q. W. Liu, Permits Engineer  
Hawaiian Electric Company, Inc.  
Post Office Box 2750  
Honolulu, Hawaii 96840-0001

Dear Mr. Liu:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawaii

Tax Map Key: (1) 2-3-012: 019

Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your email dated December 8, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). We confirm that your Department has no objection to this project. We understand that should HECO have existing easements and facilities on the subject property, HECO will need continued access for maintenance of the facilities. A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

Sincerely,

SSFM INTERNATIONAL, INC.



Katia Balassiano  
Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

DEPARTMENT OF PLANNING AND PERMITTING  
**CITY AND COUNTY OF HONOLULU**  
650 SOUTH KING STREET, 7<sup>th</sup> FLOOR • HONOLULU, HAWAII 96813  
PHONE: (808) 768-9000 • FAX: (808) 768-8041  
DEPT. WEB SITE: [www.honolulu.gov](http://www.honolulu.gov)



KIRK CALDWELL  
MAYOR

GEORGE L. ATTA, FAICP  
DIRECTOR  
ARTHUR D. CHALLACOMBE  
DEPUTY DIRECTOR

December 14, 2015

2015/ELOG-2358 (at)

**FILE COPY**

Ms. Katia Balassiano  
Senior Planner  
SSFM International, Inc.  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Dear Ms. Balassiano:

Thank you for your letter dated October 30, 2015, requesting a pre-assessment consultation for a Draft Environmental Assessment (DEA) for a mixed-use development project at 902 Alder Street in Honolulu (Tax Map Key: 2-3-012: 019), proposed jointly by the Hawaii State Judiciary (Judiciary) and the Hawaii Housing Finance and Development Corporation (HHFDC). We offer the following comments:

1. The DEA should include basic zoning information for the project, including proposed height, building area, floor area, yards, height setbacks, parking, and loading requirements, even if the plan is still conceptual in nature. Special emphasis should be given to the development standards for which modifications will be requested through Chapter 201H of the Hawaii Revised Statutes approval process.
2. Provide information relating to the proposed use of the site as a juvenile shelter, therapeutic counseling, and rehabilitative services. The DEA should discuss whether the Judiciary will operate the shelter, if the services will be accessory to the shelter, and whether the shelter will be available to only occupants of the shelter and/or the general public.
3. The DEA should discuss how the project is consistent with and implements the objectives and policies of the Oahu General Plan.
4. The DEA should discuss how the project is consistent with and implements the vision, policies, and guidelines of the Primary Urban Center Development Plan, in particular the following sections:
  - 3.2.2.1 Neighborhood Planning
  - 3.2.2.3 In-Town Residential Neighborhoods
  - 3.1.3.6 Parks and Recreational Open Spaces, specifically how the project and the State can embrace and support the adjacent Sheridan Community Park

Ms. Katia Balassiano  
December 14, 2015  
Page 2

5. The DEA should discuss how the project is consistent with the draft Ala Moana Neighborhood Transit-Oriented Development Plan, since the project site is within this boundary.
6. The DEA should discuss how the project design and operations will be adapted to respond to the projected impacts of climate change during the expected life of the structures, including an increase in the number of high intensity storms with associated high wind speed and intense rainfall, drought conditions, and higher temperatures.
7. A traffic impact analysis report (TIAR) should be prepared as part of the development of this project. The TIAR should include a multi-modal component which considers the promotion of bicycle, pedestrian, and transit-related person trips.
8. We note a sewer application (2015/SCA-0935) was approved for the site on December 7, 2015 and will expire on December 6, 2017.

Should you have any questions, please contact Andrew Tang of my staff at 768-8123 or [andrew.tang@honolulu.gov](mailto:andrew.tang@honolulu.gov).

Very truly yours,



George I. Atta, FAICP  
Director

GIA:kh



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[www.ssfm.com](http://www.ssfm.com)

December 23, 2015

SSFM 2014\_068.000

George I. Atta, Director  
City and County of Honolulu  
Department of Planning and Permitting  
650 South King Street, 7th Floor  
Honolulu, Hawai'i 96813

Dear Mr. Atta:

**Subject:** Mixed-Use Redevelopment at Alder Street  
902 Alder Street  
Honolulu, Hawai'i  
Tax Map Key: (1) 2-3-012: 019  
Pre-Assessment Consultation for Draft Environmental Assessment

Thank you for your letter dated December 14, 2015 providing pre-assessment comments on the Mixed-Use Redevelopment at Alder Street. Your comments will be incorporated into the project's Draft Environmental Assessment (Draft EA). A hardcopy will be provided to your Department when the Draft EA is published in the State Office of Environmental Quality Control's *Environmental Notice*.

The Draft EA will include basic zoning information and identify the modifications requested through the 201H process. The Draft EA will provide as much information about the Judiciary's proposed services as is currently available. The DEA will discuss how the project is consistent with and implements the objectives and policies of the Oahu General Plan. The DEA will discuss how the project is consistent with and implements the vision, policies, and guidelines of the Primary Urban Center Development Plan. The DEA will discuss how the project is consistent with the draft Ala Moana Neighborhood Transit-Oriented Development Plan. The specific components of design and operations in response to projected impacts of climate change will be negotiated with the developer, once the developer is selected. The draft TIAR will be included in the DEA. The Draft EA will make note of the approved sewer application.

Sincerely,

SSFM INTERNATIONAL, INC.



Katia Balassiano, Senior Planner  
Email: [kbalassiano@ssfm.com](mailto:kbalassiano@ssfm.com)

**Appendix B:**  
**Biological Resource Survey Report**





ENVIRONMENTAL CONSULTANTS  
Sound Science. Creative Solutions.®

# Biological Resource Survey Report for 902 Alder Street, O'ahu, Hawaii'i

Prepared for  
**SSFM International Inc.**

Prepared by  
**SWCA Environmental Consultants**

August 2015



**BIOLOGICAL RESOURCE SURVEY REPORT FOR  
902 ALDER STREET, O'AHU, HAWAII**

Prepared for

**SSFM International, Inc.**  
501 Summer Street, Suite 620  
Honolulu, Hawaii 96817

Prepared by

**SWCA Environmental Consultants**  
Bishop Square ASB Tower  
1001 Bishop Street, Suite 2800  
Honolulu, Hawaii  
(808) 548-7899  
[www.swca.com](http://www.swca.com)

SWCA Project No. 30515

August 20, 2015

## EXECUTIVE SUMMARY

SSFEM International (SSFEM) retained SWCA Environmental Consultants (SWCA) to conduct biological resource surveys at the Alder Street Detention Facility. The State of Hawai'i is proposing to construct the New Status Offender Shelter and Juvenile Services Center, located at the former Alder Street Detention facility at 902 Alder Street. SSFEM will use the results of the biological resource surveys as part of an environmental assessment (EA) to identify potential impacts of the proposed action.

SWCA conducted biological resource surveys on July 22, 2015. The results are summarized below.

Two federally endangered plant species—'ohai (*Sesbania tomentosa*) and ma'ohau hele (*Hibiscus brackenridgei*)—were observed during the surveys in a landscaped area; however, they are not federally protected because they are cultivated.

The white tern (*Gygis alba*) was observed during the surveys. This species is indigenous, state-threatened, and protected under the Migratory Bird Treaty Act. It may be temporarily displaced during construction; however, it will likely find suitable habitat nearby, and the displacement is not expected to affect survival of the overall species' populations. To further minimize risks, tree removal and trimming should be conducted in the fall and early winter, when white tern breeding is at its lowest, and trees should be inspected for white tern eggs or chicks before trees are removed.

Potential habitat for the Hawaiian hoary bat (*Lasiurus cinereus semotus*) was present at the project area. This species is federally endangered and is the only native land mammal in Hawai'i. To minimize potential impacts to this species, the following conservation measures are recommended:

- Any fences that are erected as part of the project should have barbed top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire. No fences in the project area were observed with barbed wire during the survey; however, if fences are present, the top strand of barbed wire should be removed or replaced with barbed wire.
- No trees taller than 15 feet (4.6 meters) should be trimmed or removed as a result of this project between June 1 and September 15, when juvenile bats that are not yet capable of flying may be roosting in the trees.

The proposed project is not likely to have any long-term adverse impacts on any state or federally listed threatened or endangered species if the recommended mitigation measures listed above are used.

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## 1. INTRODUCTION

SSFMI International (SSFMI) retained SWCA Environmental Consultants (SWCA) to conduct biological resource surveys at the Alder Street Detention Facility. The Hawai'i Housing Finance and Development Corporation and the Hawai'i State Judiciary are partnering to redevelop 902 Alder Street into a mixed-use development that will simultaneously help to address the State's affordable rental housing and juvenile justice needs. SSFMI will use the results of the biological resource surveys as part of an environmental assessment (EA) to identify potential impacts of the proposed action. SWCA conducted the biological resource surveys on July 22, 2015, to document site conditions and to identify species present in the project area (defined below). This report summarizes these findings.

### 1.1. Location and Vicinity

The project area is located at 902 Alder Street in the Kaka'ako District of Honolulu, O'ahu, Hawai'i (Figure 1). It is approximately 63,180 square feet (1.45 acres) and consists of two buildings, a paved parking area, paved recreational facilities, and vegetated land (EnviroQuest 2011). The project area is currently used as a juvenile detention facility, and surrounding land uses include residential dwellings, retail stores, gas stations, restaurants, offices, and a district park.

No water features or designated critical habitat for threatened or endangered species is in or near the project area. The topography of the project area is generally flat.

## 2. METHODS

SWCA reviewed available scientific and technical literature regarding natural resources in and near the project area. The USFWS online list of threatened, endangered, and candidate species was also reviewed. SWCA also reviewed available geospatial data, aerial photographs, and topographic maps of the project area.

SWCA Botanist Dr. Jason Cantley and Wildlife Biologist James Breedan conducted pedestrian biological resource surveys on July 22, 2015, to document site conditions, the presence of flora and fauna species, and any state or federally listed candidate, threatened, or endangered species and/or rare species in the project area.

### 2.1. Flora

SWCA conducted the pedestrian flora survey in the vegetated areas of the project area to document all vascular plant species and vegetation communities.

Plants recorded during the survey are indicative of the season ("rainy" vs. "dry") and the environmental conditions at the time of the survey. It is likely that additional surveys conducted at a different time of the year would result in minor variations in the species and abundances of plants observed.

### 2.2. Fauna

SWCA conducted the pedestrian fauna surveys during morning hours, when wildlife was most likely to be active. Birds were observed using 10 × 42-millimeter binoculars. Visual and auditory observations

were included in the survey. All observed birds, mammals, reptiles, amphibians, and invertebrate species were noted during the survey.



Figure 1. 902 Alder Street project area.

SWCA also noted the presence of potential habitat for state or federally listed threatened or endangered species.

### 3. RESULTS

#### 3.1. Flora

In all, 82 plant species were recorded in the project area during the survey. Of these, six species are native to the Hawaiian Islands: 'ohai (*Sesbania tomentosa*), ma'o hau hele (*Hibiscus brackenridgei*), miiro (*Misopatia populinea*), 'ohi'a lehua (*Metrosideros polymorpha*), 'uhaloa (*Waltheria indica*), and kupukupu fern (*Nephrolepis cordifolia*). Two of these species, 'ohai and ma'o hau hele, are endangered, but they were observed in a maintained garden courtyard area and appear to be cultivated stock. Federal protection is not extended to endangered species that are cultivated, do not originate directly from wild populations, or are not naturally occurring wild populations. Four species observed are considered to be of Polynesian introduction: 'uala or sweet potato (*Ipomoea batatas*), yellow wood sorrel (*Oxalis corniculata*), banana (*Musa x paradisiaca*), and kalo (*Colocasia esculenta*). Appendix A provides a list of all plant species observed by SWCA biologists in the project area during the survey.

SWCA identified two vegetation types identified in project area during the survey: a Demonstration Garden and Urban Landscaping.

**Demonstration Garden:** The demonstration garden is in a central courtyard of the existing detention center building and is apparently used as a teaching resource for the staff. A number of commonly cultivated agricultural plants are in the garden, including some of Polynesian introduction and some endemic species. Polynesian species include 'uala, kalo, and banana, and native species include two individual 'ohi'a lehua trees and kupukupu ferns.

**Urban Landscaping:** Species commonly used for urban landscaping projects are abundant around the perimeter of the facility. The largest trees are mahogany (*Swietenia mahagoni*), miiro, lomon scented gum (*Corymbia citriodora*), royal palm (*Roystonea regia*), and Chinese banyan (*Ficus microcarpa*). The ground is mostly devoid of vegetation, but commonly includes weedy ruderal species such as plumed beardgrass (*Bothriochloa pertusa*), fingergrasses (*Chloris* spp.), and straggler daisy (*Calyptocarpus vialis*).

#### 3.2. Fauna

##### 3.2.1. Avifauna

Bird species observed in the project area are species commonly found in Hawai'i's urban areas and gardens. Of the nine bird species documented (Table 1), eight species are non-native introductions and one species, the white tern (*Cygnis alba*), is indigenous, state-threatened, and protected under the Migratory Bird Treaty Act (MBTA). No suitable nesting sites for Hawaiian waterbirds or Hawaiian seabird species are present in the project area; however it is possible that seabirds, such as the Hawaiian petrel and Newell's shearwater, may fly over the project area at night while travelling to and from their upland nesting sites to the ocean.

**Table 1.** Birds Observed by SWCA in and Near the Project Area

Common Name	Scientific Name	Status*	Protected by the MBTA
Common myna	<i>Acridotheres tristis</i>	NN	
House finch	<i>Haemorrhous mexicanus</i>	NN	
Japanese white-eye	<i>Zosterops japonicus</i>	NN	
Red-vented bulbul	<i>Pycnonotus cafer</i>	NN	
Red-whiskered bulbul	<i>Pycnonotus jocosus</i>	NN	
Rose-ringed parakeet	<i>Psittacula krameri</i>	NN	
Spotted dove	<i>Streptopelia chinensis</i>	NN	
White tern	<i>Gygis alba</i>	I	X
Zebra dove	<i>Geopelia striata</i>	NN	
<b>Total</b>		<b>9</b>	<b>1</b>

\*I = Indigenous, NN = Non-native permanent resident

### 3.2.2. Mammals

The project area is bordered by residential areas, where it is common to find people walking pet dogs (*Canis familiaris*). No other mammals were observed during the pedestrian surveys. Mammals that could be expected in the project area include cat (*Felis catus*), mongoose (*Herpestes javanicus*), rat (*Rattus* spp.) and mouse (*Mus musculus*).

### 3.2.2.1. HAWAIIAN HOARY BAT

The federally endangered Hawaiian hoary bat (*Lasiurus cinereus semotus*) is the only native terrestrial mammal that is still extant within the Hawaiian Islands (U.S. Fish and Wildlife Service [USFWS] 1998). Acoustic surveys for the Hawaiian hoary bat were not conducted, but any areas of suitable habitat for roosting and foraging were noted during the surveys. Hawaiian hoary bats forage in open, wooded, and linear habitats within a wide range of vegetation types. These animals are insectivores and are regularly observed foraging over streams, reservoirs, and wetlands up to 300 feet (100 meters) offshore (U.S. Department of Agriculture [USDA] 2009). Hawaiian hoary bats require open access for launching into flight and typically roost in dense canopy foliage or in the subcanopy when canopy foliage is sparse (USDA 2009). Several of the tree species in the project area—Chinese banyan, mango (*Mangifera* sp.), royal palm, and mahogany—could be used by Hawaiian hoary bats for foraging and roosting.

### 3.2.3. Reptiles and Amphibians

The brown anole (*Anolis sagrei*) was frequently observed during the pedestrian survey; individuals were foraging or basking in the sun throughout the project area. No other reptiles or amphibians were seen during the survey. None of the terrestrial reptiles and amphibians on the Hawaiian Islands are native to the islands.

### 3.2.4. Insects and Other Invertebrates

No native invertebrate species were recorded during the survey.

## 4. IMPACTS

### 4.1. Flora

The vegetation types and species identified during the surveys are not unique. Most of the plant species observed are not native to Hawaii, and the native species present were only a few individuals (with the exception of 'uhaloa, which is weedy and was found in several locations). No threatened or endangered plants, other than the cultivated species previously discussed, were found and no designated plant critical habitat was found in or near the project area. Therefore, the proposed project is not expected to have a significant, adverse impact on botanical resources. Weedy non-native plant species are common throughout the project area. Most of these weedy species are widespread on O'ahu, and their control is not expected to result in a significant decrease in their number or distribution.

### 4.2. Fauna

#### 4.2.1. White Tern

The white tern is the only state-listed (threatened) species observed in the project area. It is also the only observed species that is protected under the MBTA. On O'ahu, white terns most commonly nest in trees, such as banyan (*Ficus* spp.), monkeypod (*Samanea saman*), mahogany, and kukui (*Leurites moluccana*), although other species have also been used for nesting and roosting (Vanderwerf 2003). White terns were not specifically observed nesting in the project area, but suitable nest trees are present.

The white tern lays eggs directly on branches; therefore, eggs and flightless chicks may be vulnerable to displacement and fatality due to tree trimming and removal activities (Vanderwerf 2003). It nests year round, but decreases egg production in the fall and early winter. The mitigation measures identified for this species would decrease the probability of chick fatality.

Construction at the site may temporarily displace white terns from nesting and roosting habitat, but long-term impacts are not expected. These birds (likely limited to a few individuals) are expected to find suitable habitat nearby. The temporary displacement of these individuals at the project area is not expected to affect individual's survival or the overall species' populations. Avoidance and mitigation measures to avoid white tern impacts are provided in section 4.3.

#### 4.2.2. Seabirds

Seabirds, particularly the endangered Hawaiian petrel (*Pterodroma sandwichensis*) and threatened Newell's shearwater (*Puffinus auricularis newelli*), may fly over the project area at night while travelling between upland nesting sites and the ocean. The Hawaiian petrel is no longer thought to breed on O'ahu (Harrison 1990). Recent radar studies suggest the Newell's shearwater may nest on O'ahu (Day and Cooper 2008). No suitable nesting sites are present for these species in the project area.

One of the threats to the Hawaiian petrel and Newell's shearwater populations is the attraction of adults and newly fledged juveniles to bright lights while transiting between nest sites and the ocean. Juvenile birds are particularly vulnerable to light attraction and are sometimes grounded when they become disoriented by lights (Mitchell et al. 2005). Many of these grounded birds are vulnerable to mammalian predators or to being struck by vehicles. The following mitigation measures are provided to avoid and minimize light

attraction of these seabirds to the project area: Avoidance and mitigation measures to avoid seabird direct impacts have are provided in section 4.3.

#### 4.2.3. Hawaiian Hoary Bat

Hawaiian hoary bats are known to occur on O'ahu in native, non-native, agricultural, and developed landscapes (USDA 2009; USFWS 1998). Hawaiian hoary bats have been documented roosting in coconut trees (*Cocos nucifera*), and may roost in other palms at the site (Appendix A Table A1). Direct impacts to bats would occur if a juvenile bat that is too small to fly but too large to be carried by a parent were present in a tree that was cut down. Avoidance and mitigation measures to avoid Hawaiian hoary bat direct impacts have been promulgated by the USFWS (1998) and are provided in section 4.3.

### 5. AVOIDANCE AND MITIGATION MEASURES

#### 5.1. Flora

##### 5.1.1. Decontamination

To avoid the unintentional introduction or transport of new terrestrial invasive flora and fauna species to O'ahu, all construction equipment and vehicles arriving from outside O'ahu should be washed and inspected before they enter the project area. In addition, construction materials arriving from outside of O'ahu should also be washed and/or visually inspected (as appropriate) for excessive debris, plant materials, and invasive or harmful non-native species (plants, amphibians, reptiles, and insects). When possible, raw materials (gravel, rock, soil) should be purchased from a local supplier on O'ahu to avoid introducing non-native species not present on the island. Inspection and cleaning activities should be conducted at a designated location.

The inspector should be a qualified biologist that is able to identify invasive species that are of concern relevant to the point of origin of the equipment, vehicle, or material (e.g., brown tree snakes [*Bufo irregularis*] are of concern if materials are originating from Guam). Invasive species that should be checked for during inspections can be found at the following sources:

- Hawaii State-listed Noxious Weeds: <http://plants.usda.gov/java/noxious?mpfType=State&statefips=15>
- Oahu Invasive Species Committee Priority Target Species: <http://www.oahuisc.org/target-pests/>

##### 5.1.2. Revegetation and Landscaping

If portions of the project area are landscaped as a result of the project, SWCA recommends that native Hawaiian plants be employed for landscaping around the project area to the maximum extent possible. Potential native species that may be appropriate for urban landscaping at the project area include *koa* (*Acacia koa*), mimrodendron (*Polyscias racemosa*), 'a'ali'i (*Dodonaea viscosa*), alaha'e (*Psychotria odorata*), and O'ahu sedge (*Carex waltuensis*). If native plants do not meet landscaping objectives, plants with a low risk of becoming invasive may be substituted. Additional information on selecting appropriate plants for landscaping can be obtained from the following sources:

- <http://www.planitpono.org/>
- <http://nativeplants.hawaii.edu/>

#### 5.2. Fauna

Implementation of the proposed action would include a variety of avoidance, mitigation measures, and best management practices (BMPs). Avoidance and mitigation measures are expected to reduce or eliminate project-related impacts and avoid adverse effects to listed species. Where appropriate, conservation measures would be implemented to minimize impacts. BMPs would be used to minimize impacts to listed species during construction.

Avoidance, mitigation measures, and BMPs for the proposed action include the following:

##### White Tern

- Tree removal and trimming should be conducted in the fall and early winter, when white tern breeding is at its lowest (Vanderwert 2003).
- Trees should be inspected for white tern eggs or chicks before trees are removed.
- If a white tern nest or chick is found, the tree should not be trimmed or removed until the chick has fledged.

##### Seabirds

- Construction activity should be restricted to daylight hours as much as practicable during the seabird peak fallout period (September 15–December 15) to avoid the use of nighttime lighting that could attract seabirds.
- All outdoor lights should be shielded to prevent upward radiation. This has been shown to reduce the potential for seabird attraction (Reed et al. 1985; Telfer et al. 1987). A selection of acceptable seabird-friendly lights can be found online at the Kauai Seabird Habitat Conservation website (2013).
- Outside lights that are not needed for security and safety should be turned off from dusk through dawn during the seabird fallout period (September 15–December 15).

##### Hawaiian Hoary Bat

- Any fences that are erected as part of the project should have barbless top-strand wire to prevent entanglements of the Hawaiian hoary bat on barbed wire. No fences in the project area were observed with barbed wire during the survey; however, if fences are present, the top strand of barbed wire should be removed or replaced with barbless wire.
- No trees taller than 15 feet (4.6 meters) should be trimmed or removed as a result of this project between June 1 and September 15, when juvenile bats that are not yet capable of flying may be roosting in the trees.

### 6. CONCLUSION

Two federally endangered plant species—ohai and ma'o hau hele—were observed during the surveys in a landscaped area; however, they are not federally protected because they are cultivated.

The proposed action is not likely to have any long-term adverse impacts to any state- or federally listed threatened or endangered species if the recommended avoidance and mitigation measures listed above are used.

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## Appendix A. Checklist of Plant Species Observed at the Alder Street Project Area on July 22, 2015

Appendix A. Checklist of Plant Species Observed at the Alder Street Project Area on July 22, 2015

Table A1 provides an inventory checklist of plant species observed by SWCA on July 22, 2015, at the Alder Street project area. The plant names are arranged alphabetically by family and then by species into three groups: ferns and lycophytes, gymnosperms, monocots, and dicots. The taxonomy and nomenclature of the ferns and lycophytes are in accordance with Palmer (2003) and Everhous and Elrodge (2011). The taxonomy and nomenclature of the flowering plants are in accordance with Wagner et al. (1999), Wagner and Herbst (2003), and Staples and Herbst (2005). Recent name changes are those recorded in Wagner et al. (2012).

Table A1. Checklist of Plants Observed at the Alder Street Project Area on July 22, 2015

Scientific Name and Authority	Common/Hawaiian Name	Status*
<b>FERNS AND LYCOPHYTES</b>		
<b>Nephrolepidaceae</b>		
<i>Nephrolepis cordifolia</i> (L.) C. Presl	kupukupu fern	I
<b>Polypodiaceae</b>		
<i>Polypodium grossum</i> (Lamour.) F. Sch. & F. Brownie	lau'au, male-scented fern	X
<b>GYMNOSPERMS</b>		
<b>Pinaceae</b>		
<i>Pinus</i> sp.	pine tree	X
<b>MONOCOTS</b>		
<b>Agrostaceae</b>		
<i>Syntherisma trifasciata</i> Prain	mother-in-law's tongue, snakecliff	X
<b>Alaceae</b>		
<i>Alca vera</i> (L.) Burm.f.	aloe	X
<b>Araceae</b>		
<i>Colocasia esculenta</i> (L.) Schott	taro, kalo	P
<b>Araceae</b>		
<i>Alocasia macrandra</i> (Blanc.) Becc.	Manila palm	X
<i>Roystonia rigida</i> (Kuhn) C. C. Cook	royal palm	X
<b>Bromeliaceae</b>		
<i>Ananas comosus</i> (L.) Merr.	pineapple	X
<b>Costaceae</b>		
<i>Costus scaber</i> Ruiz & Pav.	spiral ginger	X
<i>Costus woodsonii</i> Meisn.	red button ginger	X
<b>Cyperaceae</b>		
<i>Kyllinga brevifolia</i> Roott.	kill 'o'opi, kahalā, manunāhā, mauiā moke	X

Table A1. Checklist of Plants Observed at the Alder Street Project Area on July 22, 2015

Scientific Name and Authority	Common/Hawaiian Name	Status*
<i>Kyllinga nemoralis</i> (L.) Forst. & G. Forst.; Dancy ex Hutch. & Dalziel	killi'opua, mau'u mokole	X
<b>Rubiaceae</b>		
<i>Helleborus thalictrifolius</i> (L.) L.	red jallulu, masawipower	X
<b>Juncaceae</b>		
<i>Juncus tenuis</i> Willd.	rush, bog rush	X
<b>Musaceae</b>		
<i>Musa X paradisiaca</i> L.	mai'a, banana	P
<b>Orchidaceae</b>		
<i>Spathoglottis pilicata</i> Blume	Malayan ground orchid, Philippine ground orchid	X
<i>Spathoglottis pubescens</i> Lindl.	buttercup orchid	X
<b>Poaceae</b>		
<i>Bulbocytis perfoliata</i> (L.) A. Camus	plated beardgrass	X
<i>Cenchrus ciliaris</i> L.	common sandbur, 'ume'umu, mau'u hui'ui	X
<i>Cenchrus barbatus</i> Sw.	swollen fingergrass, mau'u lei	X
<i>Chloris radiata</i> (L.) Sw.	radiate fingergrass, plusgrass	X
<i>Cynodon dactylon</i> (L.) Pers.	Bermuda grass, manientie, manientie hiale	X
<i>Digitaria inulnaris</i> (L.) Mez ex Ekman	sourgrass	X
<i>Eragrostis amabilis</i> (L.) Wright & Arn.	lovegrass	X
<i>Melinis repens</i> (Willd.) Zizka	natal rootbe, natal grass	X
<i>Paspalum conjugatum</i> P. J. Bergius	Hilo grass, mau'u Hilo, sour paspalum	X
<i>Sporobolus indicus</i> (L.) R. Br.	West Indian dropseed, smudgrass	X
<i>Uncinia maxima</i> (L.) R. D. Webster	Gurua grass	X
<b>Zingiberaceae</b>		
<i>Alpinia purpurata</i> (Vahl) K. Schum.	red ginger, 'awapuhi 'ula'ula	X
<i>Alpinia zambesi</i> (Pers.) B.L. Burtt & R.W. Sm.	sheal ginger	X
<i>Ellingeria elaeor</i> (Jack) R.M. Sm.	torch ginger, red ginger lily	X
<i>Heodychium coronarium</i> J.König	white ginger, common ginger lily, butterfly lily, garland flower, 'awapuhi ke'oke'o	X
<b>DICOTS</b>		
<b>Acanthaceae</b>		
<i>Asystasia gangetica</i> (L.) T. Anderson	Chinese violet, coromandel	X

Table A1. Checklist of Plants Observed at the Alder Street Project Area on July 22, 2015

Scientific Name and Authority	Common/Hawaiian Name	Status*
<i>Passiflora ligularis</i> (Swartz) G. Don	Caribbean's passion	X
<b>Amaranthaceae</b>		
<i>Amaranthus viridis</i> L.	slender amaranth, pakai, 'ahiahea, pākai, pākai, pākai (Nīhau)	X
<b>Anacardiaceae</b>		
<i>Mangifera indica</i> L.	mango, manakō, manakō manake, manake	X
<b>Apocynaceae</b>		
<i>Plumeria rubra</i> L.	plumeria, frangipani	X
<i>Tabernaemontana pandicarpa</i> Poir.	wicoma' bush	X
<b>Asparagaceae</b>		
<i>Dreccaria nargata</i> Lam.	money tree	X
<b>Asteraceae</b>		
<i>Calyptranthes hilleb.</i>	straggler daisy	X
<i>Coryza bonariensis</i> (L.) Cronquist	hairy horseweed, 'ichis, 'awraw, pua mana, lani wala (Nīhau)	X
<i>Syntherisma trichotoma</i> (L.) Pruski	wekela	X
<i>Tridax procumbens</i> L.	coat buttons	X
<b>Birotiaceae</b>		
<i>Spathodea campanulata</i> P. Beauv.	African tulip tree, fountain tree	X
<b>Boraginaceae</b>		
<i>Cassia tora</i> (L.) Link & DC.	Fujian tea, Philippine tea	X
<b>Caricaceae</b>		
<i>Carica papaya</i> L.	papaya, mīkana, mī, mīkana, papaka, papaw	X
<b>Clusiaceae</b>		
<i>Elaeagnus orientalis</i> J. R. Gray	false olive	X
<b>Convolvulaceae</b>		
<i>Ipomoea batatas</i> (L.) Lam.	uala, 'uwala, sweet potato	P
<b>Cucurbitaceae</b>		
<i>Coccoloba grandis</i> (L.) Voigt	ivy gourd, scarlet-fruited gourd	X
<b>Euphorbiaceae</b>		
<i>Euphorbia hirta</i> L.	hairy spurge, garden spurge, koko kuaiki	X
<i>Euphorbia hypericifolia</i> L.	graceful spurge	X

Table A1. Checklist of Plants Observed at the Alder Street Project Area on July 22, 2015

Scientific Name and Authority	Common/Hawaiian Name	Status*
<i>Euphorbia hysopifolia</i> L.	spurge	X
<i>Euphorbia prostrata</i> Alton	prostrate spurge	X
<b>Fabaceae</b>		
<i>Alysicarpus vaginalis</i> (L.) DC.	alyce clover	X
<i>Caesalpinia pulcherrima</i> (L.) Sw.	pride of Barbados, peacock flower	X
<i>Desmanthus permambucensis</i> (L.) Thell.	slender mimosa, virgate mimosa	X
<i>Leucaena leucoccephala</i> (Lam.) de Wit	koa hiale, akoa, lilicoa	X
<i>Mimosa pudica</i> var. <i>uniloba</i> (Duchass. & Walp.) Chasb.	sensitive plant, sleeping grass, puu hihihia	X
<i>Sesbania tomentosa</i> Hook. & Arn.	'ohai	E
<b>Lamiaceae</b>		
<i>Ocimum basilicum</i> L.	common basil, sweet basil, ki'araka, ki'papa	X
<i>Plectranthus prostratus</i>	succulent Swedish ivy, pillow plant	X
<b>Leguminosae</b>		
<i>Fagaria berteriana</i> Benham	puakenikeni	X
<b>Malvaceae</b>		
<i>Hibiscus brackenridgei</i> A. Gray	mao hau hele	E
<i>Thespesia populnea</i> (L.) Sol. ex Correa	milo, porita tree	P?
<b>Meliaceae</b>		
<i>Alphitonia odorata</i> Lour.	Chinese perfume plant	X
<i>Sidastris malagascari</i> (L.) Jacq.	malagasy, West Indies malagasy	X
<b>Moraceae</b>		
<i>Ficus microcarpa</i> L.	Chinese banyan, Malaysian banyan	X
<b>Myricaceae</b>		
<i>Corymba citrodora</i> (Hook.) K.D.Hill & L.A.S. Johnson	lemon-scented gum	X
<i>Metrosideros polymorpha</i> Galetich.	'ohi'a, 'ohi'e lehua, lehua	E
<i>Psidium guajava</i> L.	common guava, kuawa, kuawa ke oke o, kuawa lemi, kuawa momona, puawa	X
<b>Nyctaginaceae</b>		
<i>Boerhaavia carolinensis</i> Mill.	scarlet spigelfling	X

Table A1. Checklist of Plants Observed at the Alder Street Project Area on July 22, 2015

Scientific Name and Authority	Common/Hawaiian Name	Status*
<b>Orabiaceae</b>		
<i>Oxalis corniculata</i> L.	yellow wood sorrel, 'ih'i 'ai, 'ih'i 'awa, 'ih'i maku, 'uh'i maku	P?
<b>Passifloraceae</b>		
<i>Passiflora edulis</i> Sims	passion fruit, purple granadilla, purple water lemon, 'iliko'i	X
<i>Passiflora suberosa</i> L.	huahua haele	X
<b>Rosaceae</b>		
<i>Rhyphidophyllum umbellata</i>	Indian Hawthorne, Yecido Hawthorn	X
<b>Rubiaceae</b>		
<i>Gardenia jasminoides</i> J.Ellis	gardenia, cupo jessamine	X
<i>Oxidentaria corymbosa</i> L.		X
<b>Sapotaceae</b>		
<i>Chrysophyllum albidum</i> L.	salililif	X
<b>Solanaceae</b>		
<i>Solanum lycopersicum</i> var. <i>eseriforme</i> (Dunal) D.M.Spooner, G.J.Johnson & R.K.Jarvis	tomato, 'ohi'a lomi, kamaiko, 'ohi'a, 'ohi'a hiale	X
<b>Sterculiaceae</b>		
<i>Waltheria indica</i> L.	'uhaka, 'aliala pū'aka, hala 'uhaka, hā'aka, kama'aka	P?
<b>Zygophyllaceae</b>		
<i>Gurkeum officinale</i> L.	Lignum vitae	X

\* Status:

E = endemic (native only to the Hawaiian Islands).

I = indigenous (native to the Hawaiian Islands and elsewhere).

P = Polynesian (introduced by Polynesians).

X = introduced alien (plants brought to the Hawaiian Islands by humans, intentional or accidentally after Western contact [Cook's arrival in the islands in 1778]).

**Appendix C:**  
**Environmental Noise Assessment Report**





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**Environmental Noise Assessment Report  
Juvenile Detention Home Planning For Judiciary Multi-Use and  
HHFDC Housing Joint Development  
Honolulu, Hawaii**

December 2015

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**1.0 EXECUTIVE SUMMARY**

- 1.1** The Juvenile Services Center and Housing project is located in the Ala Moana district in Honolulu, Hawaii. The proposed 17 story project includes approximately 187 housing units and 290 parking stalls. The project site is on a block bordered by King Street on the mauka (mountain) side, Elm Street on the Makai (ocean) side, Piikoi Street on the west (Ewa) side and Alder Street on the east (Diamond Head) side. The area is currently zoned as Medium Density Apartment (zoning code A-2).
- 1.2** The project area is currently exposed to varying daytime and nighttime ambient noise levels, typical of an urban environment. The dominant noise source was vehicular traffic noise from Piikoi Street. Daytime noise levels ranged from 61 to 67 dBA. Nighttime noise levels were slightly less and ranged from 58 to 62 dBA. Noise measurements taken on the project site show a day-night level ( $L_{dn}$ ) of 68 dBA. The  $L_{dn}$  is the noise level taken from the logarithmic average of each individual hour's equivalent noise level. Before they are summed for the average, each hourly noise level from night time hours (10:00 PM – 7:00 AM) has a 10 dB penalty added to it to account for increased sensitivity to noise during those hours.
- 1.3** During project construction, the dominant noise sources will likely be earth moving equipment, such as bulldozers and diesel powered trucks. Noise from construction activities should be short term and must comply with State Department of Health noise regulations, and a construction noise permit.
- 1.4** After construction is complete, noise generated from any stationary mechanical equipment on the project site must comply with the Hawaii Department of Health property line noise regulations. Noise mitigation for stationary mechanical equipment should be considered during the design of the project.
- 1.5** To evaluate existing vehicular traffic noise levels from traffic on the project site, traffic noise was calculated in the occupied areas and compared to both the FHWA/HDOT and HUD noise level criteria. Per the traffic report for the project site, future traffic with and without the project is expected to be the same as the currently existing traffic level. Traffic noise was projected on the full elevation façade of the building and on the exterior area at ground level on the Juvenile Services Center and Housing project site. The exterior façade of the apartment units directly overlooking Piikoi Streets are expected to be exposed to noise levels in excess of the HUD site acceptability standards and the FHWA noise abatement criteria. In order to comply with the HUD noise criteria inside the units, exterior façade elements such as glazing and wall construction should be considered during the design of the project. A noise impact is not expected for the Alder Street facing side of the housing section of the building or the housing sections of the Elm Street and South King Street facing sides not in the immediate vicinity of Piikoi Street.
- 1.6** Design of the exterior elements of the building should incorporate features that reduce noise levels to the interior spaces of the apartment unit. These features include concrete exterior walls, minimum STC 35 rated windows, and no window or wall mounted AC or PTAC units installed in the exterior shell of the building.
- 1.7** The FHWA/HDOT criteria are not regulatory requirements for this project as it has no authority to enforce land use. The criteria are recommended by the FHWA to be used as a guideline for consideration of land use and the impact of traffic noise. It is also important to note that the HUD noise guidelines are also design goals and not enforceable regulations. However, these guidelines and design goals are useful tools for assessing the noise environment. It is important to note that the HUD site acceptability standards must be satisfied for projects involving HUD or federal financing.

## 2.0 PROJECT DESCRIPTION

### 2.1 Project Design

The Juvenile Services Center and Housing project is located in Honolulu, Hawaii. The proposed 17 story project includes approximately 187 housing units and 290 parking stalls. The project site is on a block bordered by King Street on the mauka (mountain) side, Elm Street on the Makai (ocean) side, Pili'koi Street on the west (Ewa) side and Alder Street on the east (Diamond Head) side. The area is currently zoned for medium density apartments (zoning code A-2).

### 3.0 NOISE STANDARDS

Various local and federal agencies have established guidelines and standards for assessing environmental noise impacts and set noise limits as a function of land use. A brief description of common acoustic terminology used in these guidelines and standards is presented in Appendix A.

#### 3.1 State of Hawaii, Community Noise Control (HDOH)

The State of Hawaii Community Noise Control Rule [Reference 1] defines three classes of zoning districts and specifies corresponding maximum permissible sound levels due to stationary noise sources such as air-conditioning units, exhaust systems, generators, compressors, pumps, etc. The Community Noise Control Rule does not address most moving sources, such as vehicular traffic noise, aircraft noise, or rail transit noise. However, the Community Noise Control Rule does regulate noise related to agricultural, construction, and industrial activities, which may not be stationary.

The maximum permissible noise levels for stationary mechanical equipment are enforced by the Hawaii Department of Health (HDOH) for any location at or beyond the property line and shall not be exceeded for more than 10% of the time during any 20-minute period. The specified noise limits which apply are a function of the zoning and time of day as shown in Figure 1. With respect to mixed zoning districts, the rule specifies that the primary land use designation shall be used to determine the applicable zoning district class and the maximum permissible sound level. In determining the maximum permissible sound level, the background noise level is taken into account by HDOH.

The criteria for *impulse* or impact noise is separate from stationary noise due to the nature of the sound. HDOH defines impulse noise as "any sound with a rapid rise and decay of sound pressure level, lasting less than one second, caused by sudden contact between two or more surfaces. . . . Noise from pile driving is considered impulse noise and the maximum permissible noise level is 10 dB above the specified noise limits for stationary sources, as shown in Figure 1.

#### 3.2 U.S. Federal Highway Administration (FHWA)

The FHWA regulation 23 CFR 772 contains highway traffic noise abatement criteria (NAC) for seven land use activity categories and assigns corresponding maximum hourly equivalent sound levels ( $L_{eq}(h)$ ) for traffic noise exposure [Reference 2, 3]. The Noise Abatement Criteria (NAC) for all seven categories are listed in Figure 2. This project is classified under "Category B" for residential activities, which has a maximum  $L_{eq}(h)$  of 67 dBA. These limits are viewed as design goals, and all projects meeting these limits are deemed in conformance with FHWA noise standards.

#### 3.3 State of Hawaii Department of Transportation (HDOT)

The HDOT has implemented the requirements of the FHWA's design goals for traffic noise exposure in its noise analysis and abatement policy [Reference 4]. According to the policy, a traffic noise impact occurs when the predicted traffic noise levels "substantially exceed the FHWA's NAC or when the predicted traffic noise levels "substantially exceed the existing

noise levels." The policy also states that "approach" is defined as 1 dB less than FHWA's NAC and "substantially exceed" is defined as an increase of at least 15 dB.

### 3.4 U.S. Department of Housing and Urban Development (HUD)

HUD's environmental noise criteria and standards in 24 CFR 51 [Reference 5] were established for determining housing project site acceptability. These standards are based on day-night equivalent sound levels,  $L_{dn}$ , and are not limited to traffic noise exposure.  $L_{dn}$  takes into account noise levels from both daytime (15-hour average) and nighttime (9-hour average). The  $L_{dn}$  metric is used in areas that are typically occupied during both daytime and nighttime hours, and where people are intended to sleep.

#### 3.4.1 Exterior Noise Design Criteria

The HUD standards applies to locations where quiet outdoor space is required. The HUD Site Acceptability Standards for exterior sound levels are summarized in Table 1. HUD also recommends  $L_{dn}$  55 dBA as a future goal for outdoors in residential areas, however this is rarely achievable in urban environments.

Table 1. HUD Site Acceptability Standards

Category	Site $L_{dn}$	Comments
Acceptable	$\leq 65$ dBA	No special acoustical design consideration necessary
Normally Unacceptable	$> 65$ dBA, $\leq 70$ dBA	5 dB additional attenuation required through use of barriers or in design to ensure interior noise levels are acceptable
Unacceptable	$> 70$ dBA, $\leq 75$ dBA	10 dB additional attenuation required through the use of barriers or in design to ensure interior noise levels are acceptable
Unacceptable	$> 75$ dBA	Attenuation measures must be submitted on a case-by-case basis

#### 3.4.2 Interior Noise Design Criteria

The intent of the above exterior noise criteria is to achieve an interior  $L_{dn}$  of 45 dBA. HUD will sometimes allow upgrades to the building shell to meet an interior  $L_{dn}$  of 45 dBA in Normally Unacceptable or Unacceptable areas. This can be accomplished by specifying building facades, windows, and doors with a higher STC rating than normal construction.

### 3.5 Community Response to Change in Noise Level

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, the average ability of an individual to perceive changes in noise levels is well documented and has been summarized in Table 2 [Reference 6]. These guidelines permit direct estimation of an individual's probable perception of changes in noise levels.

Table 2. Average Ability to Perceive Changes in Noise Level

Sound Level Change (dB)	Human Perception of Sound
0	Imperceptible
3	Just barely perceptible
6	Clearly noticeable
10	Two times (or 1/2) as loud
20	Four times (or 1/4) as loud

**4.0 EXISTING ACOUSTICAL ENVIRONMENT**

Noise measurements consisted of continuous long-term and short term ambient noise level measurements, as described in the sections below. The noise measurements were conducted between October 1, 2015 and October 3, 2015.

The methodology, location, and results for the measurement are described below and the measurement location is illustrated in Figure 3. Photographs of the measurements locations are provided in Appendix B.

**4.1 Long Term Noise Measurements**

Continuous long-term ambient noise level measurements were conducted to assess the existing acoustical environment at the project site. Long-term measurements taken continuously over the course of multiple days offer a baseline for establishing existing ambient noise levels in the area and are used for estimating future noise levels by adding the ambient levels to other noise levels generated from the proposed project.

**4.1.1 Long-Term Noise Measurement Procedure**

Hourly equivalent sound levels ( $L_{eq}(h)$ ) were recorded for approximately 2 days. The measurements were taken using a Larson-Davis, Model 831, Type 1 Sound Level Meter together with a Larson Davis, PRM831 Type 1 Microphone. Calibration was checked before and after the measurements with a Larson-Davis Model CAL200 calibrator. Both the sound level meter and the calibrator have been certified by the manufacturer within the recommended 2-year calibration period. The microphone was mounted to a tripod at approximately 15 feet above the ground. A windscreens covered the microphone during the entire measurement period. The sound level meter was secured in a weather-resistant case.

**4.1.2 Long-Term Noise Measurement Locations**

*Location L1:* The sound level meter was located immediately adjacent to the existing building on the roof of a small structure adjoined to the main building. The meter location was approximately 70 feet from the Piikoi Street edge-of-pavement. The dominant noise source was vehicular traffic from Piikoi Street. Secondary noise sources included birds and wind. Occasionally, personnel from the existing facility created noise in the vicinity of the meter from activities such as waste disposal in the nearby dumpster and from daily traffic arrival and departure.

**4.1.3 Long-Term Noise Measurement Results**

The measured  $L_{eq}(h)$  and the 90 percent exceedance level ( $L_{90}$ ) in dBA are graphically presented in Figure 4. The ambient sound levels were dynamic and depended significantly on the vehicular traffic patterns along Piikoi Street. The range of  $L_{eq}(h)$  during the day (7:00 AM to 10:00 PM) and during the night (10:00 PM to 7:00 AM) and calculated day-night level ( $L_{dn}$ ) are summarized in Table 3 below.

Table 3. Summary of Long-Term Noise Measurement Results (dBA)

Measurement Location	7 AM-10 PM $L_{eq}(h)$ Range	10 PM-7 AM $L_{eq}(h)$ Range	$L_{dn}$
Location L1	61-67	58-62	68

**5.0 POTENTIAL NOISE IMPACTS**

**5.1 Project Construction Noise and Compliance with HDOH Community Noise Control Rule**

The various construction phases of the project will generate significant amounts of noise and will need to comply with the HDOH requirements. Development of the project areas will involve excavation, grading, material handling, concrete mixing, and other typical construction activities during construction. The actual noise levels produced during construction will be a function of the methods employed during each stage of the construction process. Construction stages include site preparation, building construction, etc. Typical ranges of construction equipment noise are shown in Figure 5. Earthmoving equipment, e.g., bulldozers and diesel-powered trucks, will probably be the loudest equipment used during construction, assuming that no impact noise from pile driving occurs. Presently, no geotechnical study has been conducted for the site and therefore no determination has been made whether pile driving is required. Assuming pile driving is required, an estimate has been provided that pile driving activities may last up to 60 days. In cases where construction noise is expected to exceed the HDOH maximum permissible property line noise levels, a permit must be obtained to allow the operation of construction equipment. If pile driving activities are required for the project construction, a HDOH noise permit as referenced in Section 6.1 will be required during the time period of pile driving and general construction activities.

**5.2 Project Generated Stationary Mechanical Noise and Compliance with HDOH Community Noise Control Rule**

The proposed Juvenile Services Center and Housing development at 902 Alder Street will likely incorporate stationary mechanical equipment. Expected mechanical equipment may include HVAC equipment, emergency generators, etc. Noise from this mechanical equipment and other equipment must meet the HDOH noise regulations, which stipulate maximum permissible noise limits at the property line. For residential apartment areas, the noise limits are 60 dBA during the day and 50 dBA during the night, as shown in Figure 1. Mitigation of mechanical noise to meet the HDOH noise rules should be incorporated into the project design.

**5.3 Vehicular Traffic Noise and Compliance with FHWA/HDOH Guidelines**

A vehicular traffic noise analysis was completed using the DataKuslik CadnaA (version 4.5) software program [Reference 7] for the existing conditions which, per the traffic report, are expected to accurately represent the future with and without project scenarios as well. The traffic noise analysis was based on the peak hour PM traffic volumes provided by the Traffic Consultant [Reference 8]. The PM peak hour traffic volumes represented the worst case traffic volumes at the site. Intersection geometric configurations, % heavy truck traffic, and speed limits were also provided by the traffic consultant.

Vehicular traffic noise level contours were calculated throughout the project site and surrounding community. The long term noise measurements were used to validate the software at noise measurement location L1. The results of the traffic noise analysis for the existing and future year projections are shown graphically in Figures 6 for the peak PM traffic hour. Additional projections of future traffic noise on the full elevation of the Piikoi Street Facing façades of the proposed development can be seen in Figure 7 and Figure 8 respectively.

### 5.3.1 Vehicular Traffic Noise Impacts on the Surrounding Community

Future traffic volume increases on Piikoi Street, King Street and the surrounding roadways (Alder and Elm Street) due to the development of the proposed project are not significant. Therefore, the existing single and multi-family residences and commercial business located within in the vicinity of the proposed project will not experience a significant vehicular traffic noise increase due to the development.

### 5.3.2 Vehicular Traffic Noise Impacts on the Project

Traffic projections show that the FHWA maximum noise limit of 67 dBA will be satisfied along all faces of the Juvenile Services Center and HHFDC residential tower except for the façade closest to Piikoi Street. The projected traffic volumes and speed limits on Alder and Elm Streets are not significant enough to generate noise levels greater than 60 dB on the building façade.

Although the FHWA criteria is not a regulatory requirement for this project, as it has no authority to enforce land use, its noise limit criteria is recommended by the FHWA to be used as a guideline for consideration of land use and the impact of traffic noise.

## 5.4 Compliance with EPA and HUD Noise Guidelines

The results from the long-term noise measurements conducted at the 902 Alder Street site indicate that the existing day-night level is 68 dBA at approximately 70 feet from the Piikoi Street edge-of-pavement. Therefore, the noise levels for a portion of the project site exceed HUD site acceptability standards, which state a design goal of  $L_{dn} \leq 65$  dBA for the exterior noise level. The EPA has an existing design goal of  $L_{dn} \leq 65$  dBA and a future design goal  $L_{dn} \leq 55$  dBA for exterior noise levels. Therefore the noise levels at the project site exceed both existing and future EPA design goals.

### 5.4.1 Future Traffic Noise Impacts on the Project

Due to the lack of off-peak hour traffic data, a 24-hour traffic noise model could not be created to project the future  $L_{dn}$  levels at the proposed JUD Juvenile Services Center and the HHFDC housing development. Because of this, a correction factor based on the difference between the  $L_{dn}$  and corresponding peak traffic hour  $L_{eq}(h)$  from the long term noise measurements was created and applied to the calculated  $L_{eq}(h)$  levels from the model to determine the future  $L_{dn}$  levels. Based on the long term measurements taken at the site, the 24-hour  $L_{dn}$  levels at the project site were approximately 4 dB higher than the  $L_{eq}(h)$  levels at the peak PM traffic hours. To predict the  $L_{dn}$  at the building façade, this 4 dB difference was used as a correction factor added to the calculated peak PM  $L_{eq}(h)$  values from the noise model.

The HHFDC housing units closest to Piikoi Street will be exposed to the highest levels of traffic noise. The results from the model indicate that these units will experience  $L_{dn}$  levels ranging from 65-70 dBA. Therefore, all units facing Piikoi Street are expected to fall under the "normally unacceptable" category of HUD's site acceptability standards. Per HUD guidelines, attention should be given to the exterior façade elements (such as glazing and exterior wall construction) to ensure the  $L_{dn}$  45 dBA noise criteria is satisfied inside these units. The remaining housing units facing Alder, Elm, and King Streets will be exposed to  $L_{dn}$  levels that range from 45-66 dBA which falls into the "acceptable" category. Mitigation measures will also be required to reduce exterior noise levels such that the outdoor recreation area complies with HUD's site acceptability criteria.

It is important to note that the HUD and EPA noise guidelines are design goals and not enforceable regulations, although the HUD site acceptability standards must be satisfied for

projects involving HUD or federal financing. However, these guidelines and design goals are useful tools for assessing the noise environment.

## 6.0 NOISE IMPACT MITIGATION

### 6.1 HDOH Noise Permit for Construction Noise

In cases where construction noise exceeds, or is expected to exceed the State's "maximum permissible" property line noise levels [Reference 1], a permit must be obtained from HDOH to allow the operation of vehicles, cranes, construction equipment, power tools, etc., which emit noise levels in excess of the "maximum permissible" levels.

In order for HDOH to issue a construction noise permit, the contractor must submit a noise permit application to HDOH, which describes the construction activities for the project. Prior to issuing the noise permit, HDOH may require action by the contractor to incorporate noise mitigation into the construction plan. HDOH may also require the contractor to conduct noise monitoring or community meetings inviting the neighboring residents and business owners to discuss construction noise. The contractor should use reasonable and standard practices to mitigate noise, such as using mufflers on diesel and gasoline engines, using properly tuned and balanced machines, etc. However, HDOH may require additional noise mitigation, such as temporary noise barriers, or time of day usage limits for certain kinds of construction activities.

Specific permit restrictions for construction activities [Reference 1] are:

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels ... before 7:00 AM and after 6:00 PM of the same day, Monday through Friday."

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels... before 9:00 AM and after 6:00 PM on Saturday."

"No permit shall allow any construction activities which emit noise in excess of the maximum permissible sound levels on Sundays and on holidays."

The use of pile drivers, hoe rams and jack hammers 25 pounds (lbs.) or larger, high pressure sprayers, and chain saws are restricted to 9:00 AM to 5:30 PM, Monday through Friday. In addition, construction equipment and on-site vehicles or devices whose operations involve the exhausting of gas or air, excluding pile hammers and pneumatic hand tools weighing less than 15 pounds (lbs.), must be equipped with mufflers [Reference 1].

The HDOH noise permit does not limit the noise level generated at the construction site, but rather the times at which noisy construction can take place. However, when considering a noise permit application, consideration is also given to any proposed noise mitigation for the project. Therefore, noise mitigation for construction activities should be addressed using project management and the source and path noise control measures discussed in Section 6.3 below.

### 6.2 HDOH Noise Variance for Construction Noise

In cases where nighttime construction is expected, a variance must be obtained from the HDOH to allow the operation of a noise source which emits noise levels in excess of the maximum permissible levels and which operation does not conform to the requirements of the noise permit (i.e., nighttime construction activities which occur between 6:00 p.m. and 7:00 a.m., Monday through Friday). However, nighttime construction is not anticipated for this project so a variance will not be required.

**6.3 Mitigation of Project Construction Noise**

**6.3.1 Mitigation of Noise Source**

Mitigating construction noise at the source is the most effective form of noise control. The source control methods listed in Table 4 below can be applied to most construction equipment.

**Table 4. Construction Noise Source Control Methods**

Scheduling	Limit activities that generate the most noise to less sensitive time periods (e.g. daytime hours).
Substitution	Use quieter methods/equipment when possible (e.g. low noise generators, smaller excavators, etc.).
Exhaust Mufflers	Install quality mufflers on equipment.
Reduced Power Options	Use smallest size and/or lowest power as required.
Quieter Backup Alarms	Install manual adjustable or ambient sensitive alarms. Do not use backup alarms during night work.
Motors	Insulate or enclose motors.
Equipment Selection	Electric equipment is quieter than pneumatic equipment.
Equipment Retrofit	Rubber chucks in jackhammers.
Equipment Maintenance	Sharpen and balance tools, repair silencing equipment, replace worn parts and open airways.
Staging Area	Maximize the distance between the construction staging areas and nearby receptors to the greatest extent possible.

In general, a majority of the construction noise mitigation is in the form of scheduling, specifically, limiting the construction hours to the time frame specified by the HDOH.

**6.3.2 Mitigation of Noise Path**

When source control measures are not sufficient to avoid a noise impact, path control measures must be considered. Non-permanent noise barriers or curtains and equipment enclosures could be installed at the construction site to reduce construction noise in noise sensitive locations. The general contractor could also conduct noise monitoring of construction during noisy or extensive activities at locations close to residential properties.

**6.4 Mitigation of Development Noise**

**6.4.1 Stationary Mechanical Equipment Noise**

The design of the project should give consideration to controlling the noise emanating from all stationary mechanical equipment such as air-cooled chillers, cooling towers, air-handling units, condensing units, emergency generators, etc. so as to comply with the State of Hawaii Community Noise Control rules [Reference 1]. Noisy equipment should be located away from neighboring properties and residential units as much as possible. Enclosed mechanical rooms may be required for some equipment.

**6.4.2 Parking Garage Noise**

Noise emanating from the parking garage to the neighboring buildings may be audible and cause complaints. Noise reduction measures such as rough, non-painted driving surfaces and acoustical absorption on the ceiling should be considered during the project's design phase.

**6.5 Mitigation of Traffic Noise**

**6.5.1 Interior Spaces of the Development**

HHFC housing units overlooking Piikoi Street will experience relatively high noise levels due to vehicular traffic. The exterior wall should have a minimum rating of STC 50, which is typical of poured concrete in any thickness greater than 4 inches. In addition, a minimum STC 35 rated window assembly, typical of a ½ inch laminated glass or various IGU assemblies, should be considered to comply with the HUD interior noise design criteria for these units. The window assembly typically degrades the STC rating of the glazing by approximately 3 points, therefore STC requirements for the glass itself should be a minimum of STC 38. Smaller window sizes may reduce these STC requirements. Window AC or PTAC ductless HVAC units are not acceptable for these housing units as they would degrade the acoustical isolation of the wall and window assembly.

To reduce the noise impact to the interior of the JUD spaces on the lower floors, acoustical consideration should be given to space planning. For example, noise sensitive spaces should not be located at the Piikoi end of the building. Where this is not possible, improved exterior façade elements (as discussed above) should be provided.

**6.5.2 Exterior Spaces of the Development**

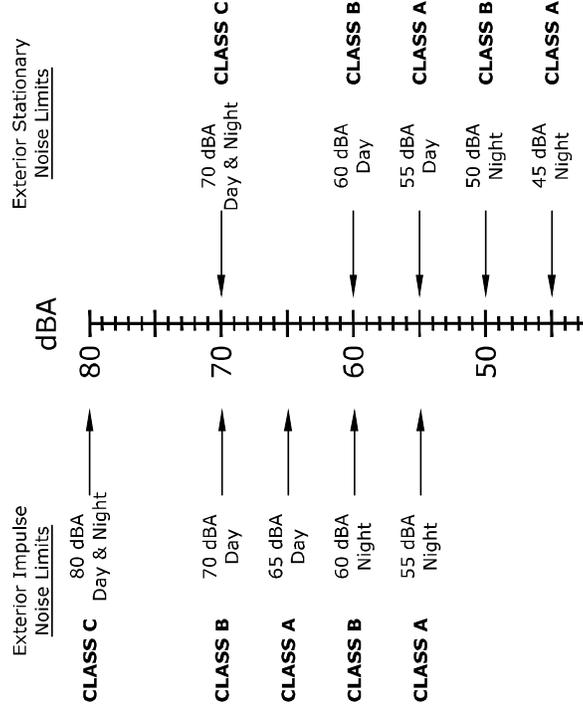
The outdoor recreation area immediately adjacent to Piikoi Street is expected to be exposed to noise levels that are higher than the established HUD site acceptability standards for exterior noise. A noise barrier wall along the Piikoi Street side of the project should be considered to reduce noise levels by 5 to 10 dB.

**HAWAII DEPARTMENT OF HEALTH MAXIMUM PERMISSIBLE SOUND LEVELS FOR VARIOUS ZONING DISTRICTS**

Zoning District	Day Hours (7 AM to 10 PM)	Night Hours (10 PM to 7 AM)
<b>CLASS A</b> Residential, Conservation, Preservation, Public Space, Open Space	55 dBA (Exterior)	45 dBA (Exterior)
<b>CLASS B</b> Multi-Family Dwellings, Apartments, Business, Commercial, Hotel, Resort	60 dBA (Exterior)	50 dBA (Exterior)
<b>CLASS C</b> Agriculture, Country, Industrial	70 dBA (Exterior)	70 dBA (Exterior)

**IMPULSE NOISE:**

The maximum permissible noise limit for impulse noise is 10 dBA above the stationary noise limits.



**REFERENCES**

- Chapter 46, *Community Noise Control*, Department of Health, State of Hawaii, Administrative Rules, Title 11, September 23, 1996.
- Department of Transportation, Federal Highway Administration Procedures for Abatement of Highway Traffic Noise*, Title 23, CFR, Chapter 1, Subchapter J, Part 772, 38 FR 15953, June 19, 1973; Revised at 75 FR 32820, July 13, 2010.
- Highway Traffic Noise: Analysis and Abatement Guidance*, U.S. Department of Transportation, Federal Highways Administration, December 2011.
- Highway Noise Policy and Abatement Guidelines*, Department of Transportation, Highways Division, State of Hawaii, November 29, 2011.
- Department of Housing and Urban Development Environmental Criteria and Standards*, Title 24, CFR, Part 51, 44 FR 40860, July 12, 1979; Amended by 49 FR 880, January 6, 1984.
- M. David Egan, *Architectural Acoustics*, McGraw-Hill Book Company, 1998
- DataKustik CadnaA software program, Version 4.5.151; DataKustik GmbH, 2015.
- Juvenile Detention Home Planning For Judiciary Multi-Use and HHFDC Housing Joint Development Traffic Impact Analysis Report*, SSFM International, December 2015



Juvenile Detention Home Planning For Judiciary Multi-Use and HHFDC Housing Joint Development

PROJECT NO: 15-21

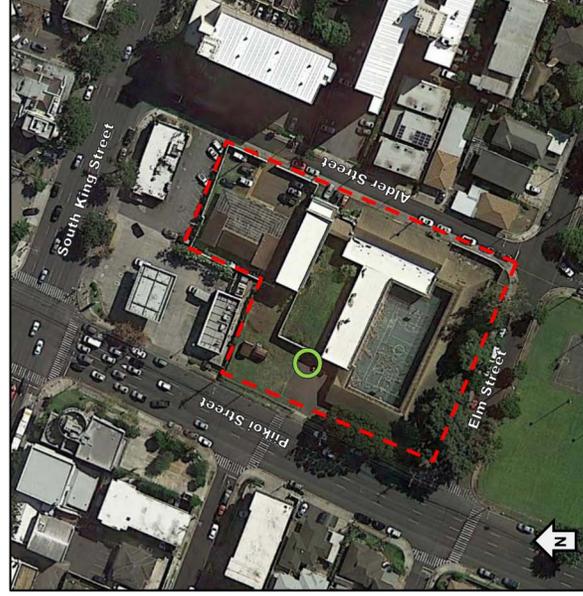
DATE: December 2015

FIGURE: 1

**FEDERAL HIGHWAY ADMINISTRATION NOISE ABATEMENT CRITERIA FOR HIGHWAY NOISE**

ACTIVITY CATEGORY	ACTIVITY CATEGORY DESCRIPTION	HOURLY EQUIVALENT SOUND LEVEL L <sub>eq</sub>
<b>A</b>	LANDS ON WHICH SERENITY AND QUIET ARE OF EXTRAORDINARY SIGNIFICANCE AND SERVE AN IMPORTANT PUBLIC NEED AND WHERE THE PRESERVATION OF THOSE QUALITIES IS ESSENTIAL IF THE AREA IS TO CONTINUE TO SERVE ITS INTENDED PURPOSE.	57 dBA (EXTERIOR)
<b>B</b>	RESIDENTIAL	67 dBA (EXTERIOR)
<b>C</b>	ACTIVE SPORT AREAS, AMPHITHEATERS, AUDITORIUMS, CAMPGROUNDS, CEMETERIES, DAY CARE CENTERS, HOSPITALS, LIBRARIES, MEDICAL FACILITIES, PARKS, PICNIC AREAS, PLACES OF WORSHIP, PLAYGROUNDS, PUBLIC MEETING ROOMS, PUBLIC OR NONPROFIT INSTITUTIONAL STRUCTURES, RECORDING STUDIOS, RECREATION AREAS, SECTION 4(F) SITES, SCHOOLS, TELEVISION STUDIOS, TRAILS, AND TRAIL CROSSINGS	67 dBA (EXTERIOR)
<b>D</b>	AUDITORIUMS, DAY CARE CENTERS, HOSPITALS, LIBRARIES, MEDICAL FACILITIES, PLACES OF WORSHIP, PUBLIC MEETING ROOMS, PUBLIC OR NONPROFIT INSTITUTIONAL STRUCTURES, RADIO STUDIOS, RECORDING STUDIOS, SCHOOLS, AND TELEVISION STUDIOS.	52 dBA (INTERIOR)
<b>E</b>	HOTELS, MOTELS, OFFICES, RESTAURANTS/BARS, AND OTHER DEVELOPED LANDS, PROPERTIES OR ACTIVITIES NOT INCLUDED IN A-D OR F.	72 dBA (EXTERIOR)
<b>F</b>	AGRICULTURE, AIRPORTS, BUS YARDS, EMERGENCY SERVICES, INDUSTRIAL, LOGGING, MAINTENANCE FACILITIES, MANUFACTURING, MINING, RAIL YARDS, RETAIL FACILITIES, SHIPYARDS, UTILITIES (WATER RESOURCES, WATER TREATMENT, ELECTRICAL), AND WAREHOUSING	N/A
<b>G</b>	UNDEVELOPED LANDS THAT ARE NOT PERMITTED	N/A

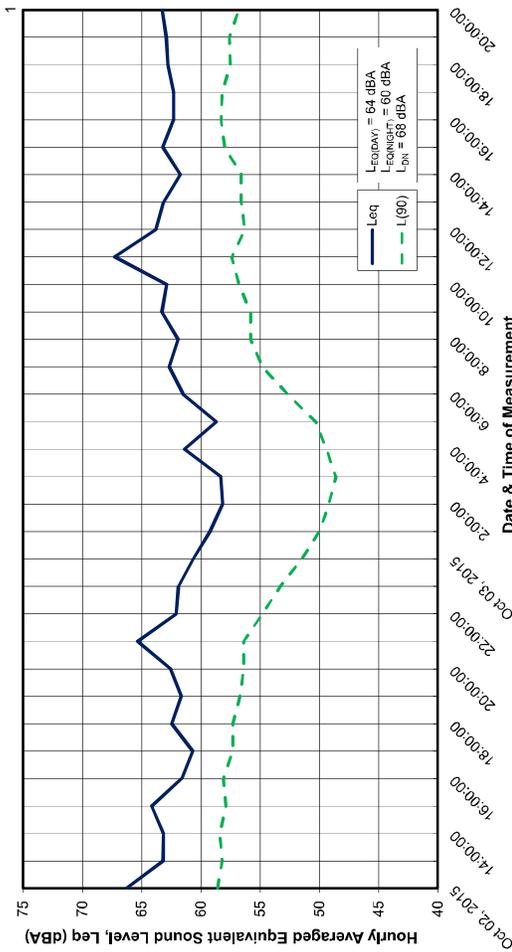
**Project Site Overview and Noise Measurement Location**



**Legend**

- Noise Measurement Location - Long Term (L1)
- Property Boundary

Long Term Noise Measurement Data



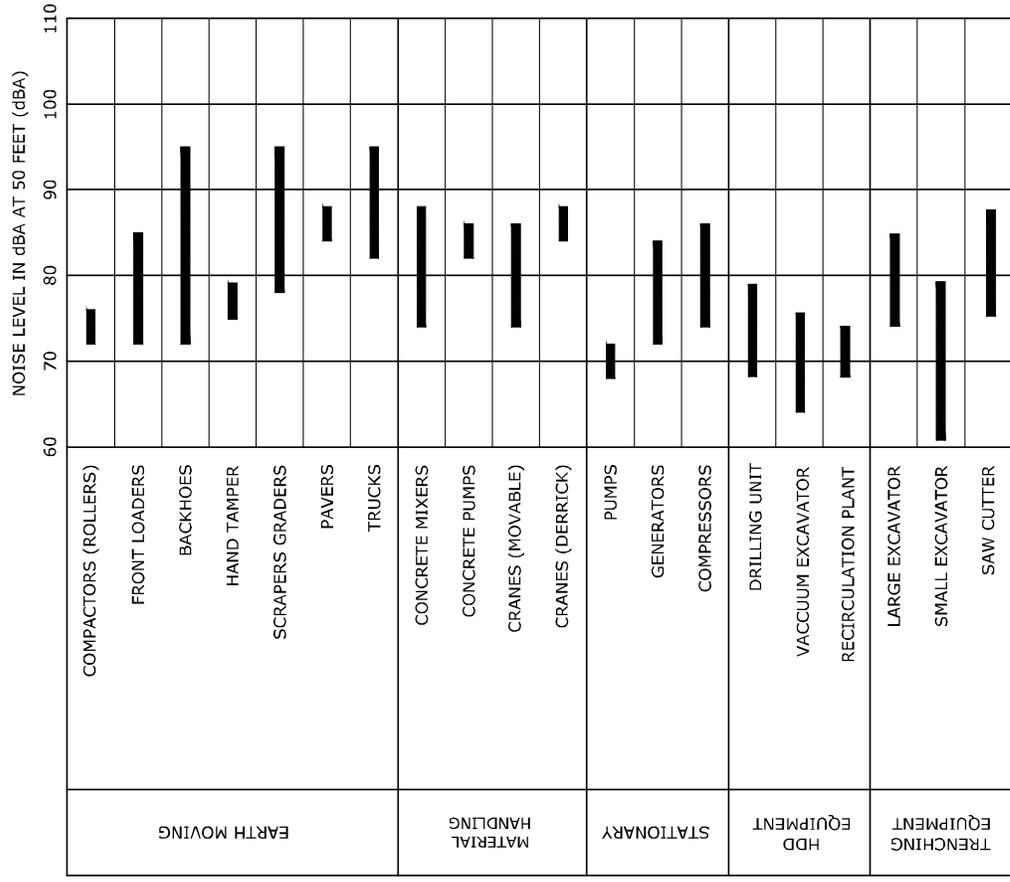
Leq: Equivalent Sound Level - Logarithmic average of sound levels of time.  
 L(90): Ambient Noise Level: Highest noise level exceeded 90% of each hourly recording.

**D. L. ADAMS ASSOCIATES**  
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PROJECT: 902 Alder Street - Juvenile Services Center and Housing Project

PROJECT NO: 15-21      DATE: October 2015      FIGURE: 4

TYPICAL NOISE LEVELS FROM CONSTRUCTION EQUIPMENT



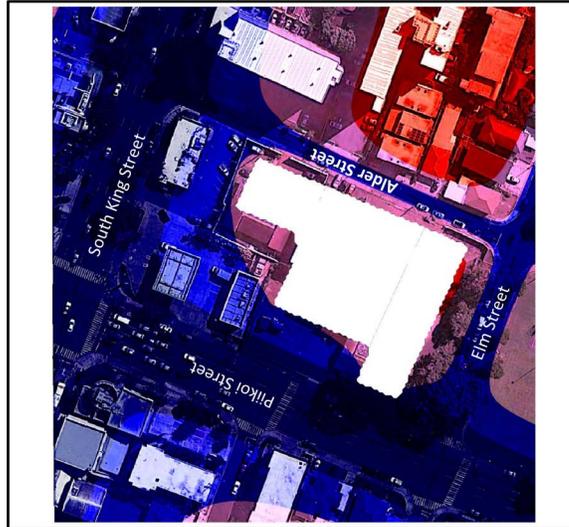
NOTE: BASED ON LIMITED AVAILABLE DATA SAMPLES

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Juvenile Detention Home Planning For Judiciary  
 Multi-Use and HHFC Housing Joint Development

PROJECT NO: 15-21      DATE: December 2015      FIGURE: 5

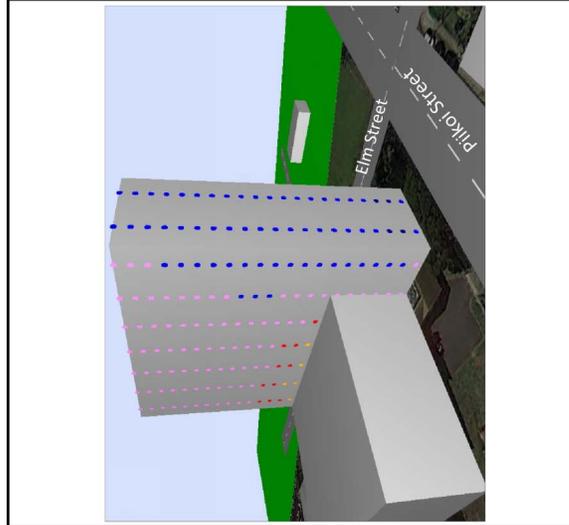
**NOISE MAP OF EXISTING EXTERIOR NOISE LEVELS (DAY-NIGHT LEVEL)**



**Noise Level Contour  
Key (dBA)**

- 55.0 < ... <= 60.0
- 60.0 < ... <= 65.0
- 65.0 < ... <= 70.0
- 70.0 < ... <= 75.0
- 75.0 < ...

**EXISTING EXTERIOR NOISE LEVELS (DAY-NIGHT LEVEL) – PIIKOI STREET FAÇADE 1**



**Noise Level Contour  
Key (dBA)**

- 45.0 < ... <= 50.0
- 50.0 < ... <= 55.0
- 55.0 < ... <= 60.0
- 60.0 < ... <= 65.0
- 65.0 < ... <= 70.0
- 70.0 < ... <= 75.0
- 75.0 < ...

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Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development

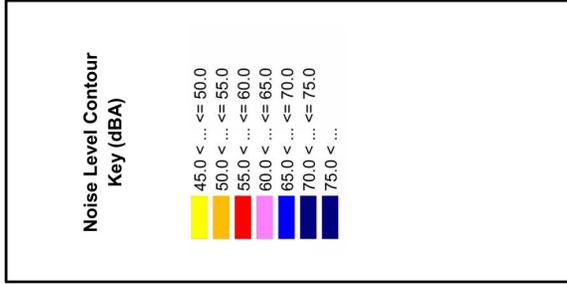
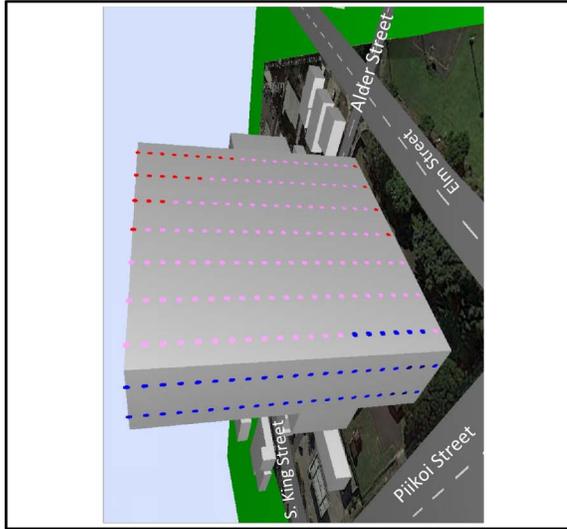
PROJECT NO: 15-21      DATE: December 2015      FIGURE: 6

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Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development

PROJECT NO: 15-21      DATE: December 2015      FIGURE: 7

**EXISTING EXTERIOR NOISE LEVELS (DAY-NIGHT LEVEL) – PIIKOI STREET FAÇADE 2**



**APPENDIX A**

**Acoustic Terminology**

 <p><b>D. L. ADAMS ASSOCIATES</b> acoustics | performing arts | technology</p>	Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development	
	PROJECT NO: 15-21	DATE: December 2015
		FIGURE: 8

## Acoustic Terminology

### Sound Pressure Level

Sound, or noise, is the term given to variations in air pressure that are capable of being detected by the human ear. Small fluctuations in atmospheric pressure (sound pressure) constitute the physical property measured with a sound pressure level meter. Because the human ear can detect variations in atmospheric pressure over such a large range of magnitudes, sound pressure is expressed on a logarithmic scale in units called decibels (dB). Noise is defined as unwanted sound.

Technically, sound pressure level (SPL) is defined as:

$$SPL = 20 \log (P/P_{ref}) \text{ dB}$$

where P is the sound pressure fluctuation (above or below atmospheric pressure) and  $P_{ref}$  is the reference pressure, 20  $\mu\text{Pa}$ , which is approximately the lowest sound pressure that can be detected by the human ear. For example:

- If  $P = 20 \mu\text{Pa}$ , then  $SPL = 0 \text{ dB}$
- If  $P = 200 \mu\text{Pa}$ , then  $SPL = 20 \text{ dB}$
- If  $P = 2000 \mu\text{Pa}$ , then  $SPL = 40 \text{ dB}$

The sound pressure level that results from a combination of noise sources is not the arithmetic sum of the individual sound sources, but rather the logarithmic sum. For example, two sound levels of 50 dB produce a combined sound level of 53 dB, not 100 dB. Two sound levels of 40 and 50 dB produce a combined level of 50.4 dB.

Human sensitivity to changes in sound pressure level is highly individualized. Sensitivity to sound depends on frequency content, time of occurrence, duration, and psychological factors such as emotions and expectations. However, in general, a change of 1 or 2 dB in the level of sound is difficult for most people to detect. A 3 dB change is commonly taken as the smallest perceptible change and a 6 dB change corresponds to a noticeable change in loudness. A 10 dB increase or decrease in sound level corresponds to an approximate doubling or halving of loudness, respectively.

### A-Weighted Sound Level

Studies have shown conclusively that at equal sound pressure levels, people are generally more sensitive to certain higher frequency sounds (such as made by speech, horns, and whistles) than most lower frequency sounds (such as made by motors and engines)<sup>1</sup> at the same level. To address this preferential response to frequency, the A-weighted scale was developed. The A-weighted scale adjusts the sound level in each frequency band in much the same manner that the human auditory system does. Thus the A-weighted sound level (read as "dBA") becomes a single number that defines the level of a sound and has some correlation with the sensitivity of the human ear to that sound. Different sounds with the same A-weighted sound level are perceived as being equally loud. The A-weighted noise level is commonly used today in environmental noise analysis and in noise regulations. Typical values of the A-weighted sound level of various noise sources are shown in Figure A-1.

<sup>1</sup> D.W. Robinson and R.S. Dadson, AA Re-Determination of the Equal-Loudness Relations for Pure Tones, @ *British Journal of Applied Physics*, vol. 7, pp. 166 - 181, 1956. (Adopted by the International Standards Organization as Recommendation R-226.

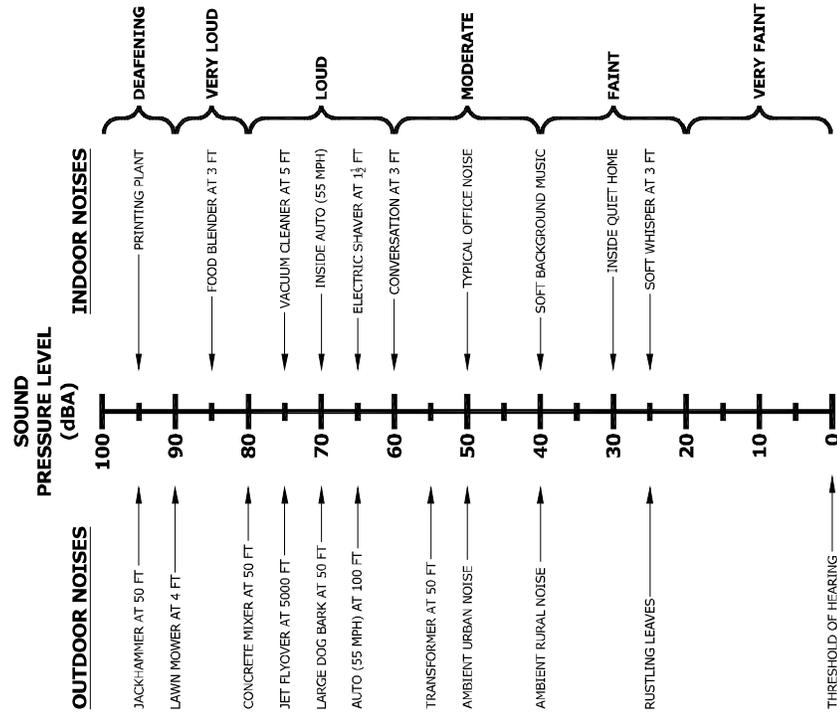
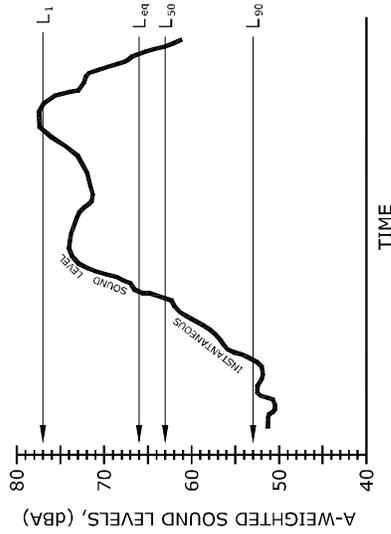


Figure A-1. Common Outdoor/Indoor Sound Levels

**Equivalent Sound Level**  
 The Equivalent Sound Level ( $L_{eq}$ ) is a type of average which represents the steady level that, integrated over a time period, would produce the same energy as the actual signal. The actual *instantaneous* noise levels typically fluctuate above and below the measured  $L_{eq}$  during the measurement period. The A-weighted  $L_{eq}$  is a common index for measuring environmental noise. A graphical description of the equivalent sound level is shown in Figure A-2.



**Figure A-2. Example Graph of Equivalent and Statistical Sound Levels**

**Statistical Sound Level**

The sound levels of long-term noise producing activities such as traffic movement, aircraft operations, etc., can vary considerably with time. In order to obtain a single number rating of such a noise source, a statistically-based method of expressing sound or noise levels has been developed. It is known as the Exceedence Level,  $L_n$ . The  $L_n$  represents the sound level that is exceeded for n% of the measurement time period. For example,  $L_{10} = 60$  dBA indicates that for the duration of the measurement period, the sound level exceeded 60 dBA 10% of the time. Typically, in noise regulations and standards, the specified time period is one hour. Commonly used Exceedence Levels include  $L_{01}$ ,  $L_{10}$ ,  $L_{50}$ , and  $L_{90}$ , which are widely used to assess community and environmental noise. A graphical description of the equivalent sound level is shown in Figure A-2.

**Day-Night Equivalent Sound Level**

The Day-Night Equivalent Sound Level,  $L_{dn}$ , is the Equivalent Sound Level,  $L_{eq}$ , measured over a 24-hour period. However, a 10 dB penalty is added to the noise levels recorded between 10 p.m. and 7 a.m. to account for people's higher sensitivity to noise at night when the background noise level is typically lower. The  $L_{dn}$  is a commonly used noise descriptor in assessing land use compatibility, and is widely used by federal and local agencies and standards organizations.

**Appendix B  
 Photographs at Project Site**

**Noise Measurement Location L1:** Microphone mounted on tripod, approximately 5 feet from the face of the building and 15 feet above grade.



**Appendix D:**  
**Air Quality Impact Assessment**

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## **B.D. NEAL & ASSOCIATES**

*Applied Meteorology • Air Quality • Computer Science*

P.O. BOX 1808 • KAILUA-KONA, HAWAII 96745 • TELEPHONE (808) 329-1627 • FAX (808) 325-6739  
EMAIL: [bdneal@bdneal.com](mailto:bdneal@bdneal.com)

December 18, 2015

Ms. Katia Balassiano  
SSFm International  
501 Sumner Street, Suite 620  
Honolulu, Hawaii 96817

Subject: Judiciary Multi-Use and HHFDC Housing Joint Development  
Air Quality Impact Assessment

Dear Ms. Balassiano:

In response to your request, we have examined the potential air quality impacts related to the proposed Judiciary Multi-Use and Hawaii Housing Finance Development Corporation Joint Development located in the Ala Moana District, Honolulu, Oahu. The results of this examination along with background information related to this issue and recommended mitigation measures are summarized below.

### **Project Description**

The Hawaii Housing Finance Development Corporation (HHFDC) and the Judiciary Courts of the State of Hawaii, Juvenile Detention Facility Redevelopment Planning (Judiciary) are proposing a joint development at 902 Alder Street in Honolulu on the island of Oahu. The project site is on a block bordered by King Street on the mauka (mountain) side, Elm Street on the Makai (ocean) side, Piikoi Street on the west (Ewa) side and Alder Street on the east (Diamond Head) side. The project site is within ½ mile of the future Ala Moana Rail Transit Station and therefore falls within a transit oriented development (TOD) transit influence zone (TIZ). The project has an anticipated full build-out and occupancy year of 2022. The project site is approximately 1.45 acres and currently contains two partially utilized buildings which will be removed as part of the redevelopment plan. The Judiciary component of the proposed redevelopment includes a 35,452 square-foot facility which will include space for administration services, a recreational center, supervised visitation area, shelter classrooms, laundry area, restrooms and storage space. The HHFDC is proposing to construct an affordable housing complex on the same project site which will include 187 residential rental units. A total of 290 parking stalls will be

Ms. Katia Balassiano  
Judiciary and HHFDC Joint Development

December 18, 2015  
Page 2

provided onsite, and two driveway accesses are being proposed. One will be from Adler Street and the other from Piikoi Street.

### **Ambient Air Quality Standards**

Both federal and state standards have been established to maintain ambient air quality. At the present time, seven parameters are regulated including: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. The federal and state standards pertain to most of the same parameters, although at present, for several of the parameters regulated, the federal standards are more stringent than the Hawaii standards.

### **Regional and Local Climatology**

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. Winds are predominantly trade winds which are deviated somewhat from the northeast toward the east or southeast by the local terrain. During winter, occasional storms may generate strong winds from the south (kona winds) for brief periods. When the trade winds or kona winds are weak or absent, landbreeze-seabreeze circulations may develop. Wind speeds are often lower compared to more exposed coastal locations, but the trade winds still provide relatively good ventilation much of the time. Temperatures in the Oahu area leeward of the Koolaus are generally very moderate with average daily temperatures ranging from about 70°F to 84°F. Extreme temperatures range from about 53°F to about 95°F. Rainfall is relatively low with an average of about 30 inches per year in the Ala Moana area.

### **Existing Air Quality Conditions**

Air quality in the vicinity of the project presently is mostly affected by emissions from vehicular sources which emit carbon monoxide, nitrogen oxides, hydrocarbons and other air pollutants. Air quality data from the nearest monitoring stations operated by the Hawaii Department of Health suggest that all state and national air quality standards are currently being met in the project area.

**Air Quality Impacts of Project**

Short-term direct and indirect impacts on air quality could potentially occur during project redevelopment activities. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project demolition and construction phases: (1) fugitive dust from building demolition, soil excavation, aggregate processing and vehicle movement; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term air quality impacts from the disruption of traffic on nearby roadways, from slow-moving construction equipment traveling to and from the project site, and from a temporary increase in local traffic caused by commuting construction workers.

Fugitive dust emissions from demolition and construction activities are difficult to estimate accurately because of their elusive nature of emission and because the potential for dust generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The U.S. EPA has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions from project demolition and construction work would likely be somewhere near this level. In any case, State of Hawaii Air Pollution Control Regulations prohibit visible emissions of fugitive dust from construction activities at the project property line. Thus, an effective dust control plan for the project construction phase should be prepared.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in active construction areas from becoming significant sources of dust. On days without rainfall, construction areas should be watered at least twice during the workday to help keep dust to a minimum. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials likely to give rise to airborne dust. Haul trucks tracking dirt onto paved streets from unpaved areas are oftentimes a significant source of dust in construction

areas. Some means to alleviate this problem, such as tire washing or road cleaning, may be appropriate. Dust monitoring could be considered as a means to quantitatively evaluate the effectiveness of dust control measures.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standards for nitrogen dioxide are set on an annual basis and are not likely to be violated by short-term construction equipment emissions. Also, the short-term (1-hour) standard for nitrogen dioxide is based on a three-year average; thus it is unlikely that relatively short-term construction emissions would exceed the standard. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways. Indirectly, slow-moving construction vehicles on roadways leading to and from the project site could obstruct the normal flow of traffic to such an extent that overall vehicular emissions increase. This impact can be mitigated by moving heavy construction equipment during periods of low traffic volume. Likewise, the schedules of commuting construction workers can be adjusted to avoid peak hours in the project vicinity.

After the period of construction, long-term impacts on air quality from motor vehicle exhausts can potentially occur at or near any project that attracts large volumes of motor vehicle traffic. Carbon monoxide emissions are usually the primary issue, and public areas near traffic-congested intersections are the main concern. The proposed project will be accessed from two driveways: one off Adler Street and one off Piikoi Street. The project traffic impact analysis report (TIAR) examined four existing nearby roadway intersections. These included Piikoi Street and King Street, King Street and Adler Street, Adler Street and Elm Street, and Elm Street and Piikoi Street. The project TIAR indicates that the existing traffic level-of-service at these intersections is reasonably good, and in the year 2022, it was found that with the project this would continue to be the case. The TIAR estimates that project traffic in the year 2022 would account for less than about a two percent increase in traffic at the nearby intersections studied.

Based on extensive experience in assessing traffic-related air quality impacts, traffic volume increases of less than about 5 percent or less than about 100 vehicles per hour or traffic approach volumes of less than about 1,000 vehicles per hour do not cause any significant impacts on air quality if adequate traffic level-of-service is provided. Considering the small project-related traffic volumes that are expected and the reasonably good traffic level-of-service that is forecast, traffic from the proposed project should have no measurable long-term impacts on air pollution levels in the project area. Although a detailed air quality modeling study could be performed to quantitatively predict project impacts, such an analysis is probably unwarranted.

In summary, short-term impacts from fugitive dust during project demolition and construction phases may potentially occur. Because of this, an effective dust control plan for the period of construction should be prepared and implemented. After construction, any long-term impacts on air quality from motor vehicle traffic related to this project will likely be negligible.

Please call me if you have any questions concerning the information presented herein or if you wish to discuss this matter further.

Very truly yours,

Barry D. Neal  
Certified Consulting  
Meteorologist



**Appendix E:  
Historic Resource Inventory Form  
& SHPD Correspondence**

---





**FOR SHPD USE ONLY:** Site # Click here to enter text. **TMK #** Click here to enter text.

**I. GENERAL INFORMATION**

Common / Present Name: Hale Ho'omalu  
 Historic Name: Honolulu Juvenile Detention Center  
 Property Owner: State of Hawaii  
 Address: 902 Alder Street  
 City/ Town/ Location: Honolulu  
 County: Honolulu  
 TMK: (1)-2-3-012: 019  
 Subdivision/Neighborhood: NA  
 Latitude: 21.298888  
 Longitude: 157.843954  
 Parcel Number: NA  
 Historic District: NA  
 Original Use: GOVERNMENT/correctional facility  
 Current Use: GOVERNMENT  
 Architect/ Builder (if known): Lyman Bigelow (1944), Ives & Hogan (1949)  
 Date of Construction (if known): 1944, 1949, Additions: 1952, 1958

**II. Photograph of Resource**

Alder Street façade from the northeast



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**III. CONDITION ASSESSMENT**

Category (select all that apply):

- Building(s)
- Residential
- Commercial
- Educational
- Public/Civic
- Religious

Structure(s)

Object(s)

Site(s)/Landscape(s)

Archaeology or potential for archaeology (Please provide a description of the potential for archaeology within VI. Description of Resource Features below.)

Condition:

Excellent

Good

Fair

Eligibility (select all that apply):

- National Register of Historic Places
- State Register of Historic Places
- Not Eligible
- Eligible
- Listed
- Contributing to Historic District:
- Unknown

Name of District: Click here to enter text.

Criteria of Significance (select all that apply)

- A: Associated with Events
- B: Associated with Significant Person(s)
- C: Distinctive characteristics of a type, period or method of construction; work of a master; possess high artistic values (Architecture, Engineering, Design)
- D: Have yielded or may be likely to yield information important to history or prehistory.

Prepared By: Don Hibbard/Tonia Moy Consulting Firm: Fung Associates, Inc.  
 Address: 1833 Kalakaua Blvd., Suite 1008, Honolulu, HI 96815  
 Telephone Number: (808)941-3000 Email:tonia@lungnawaii.com Date: July 10, 2015



FOR SHPD USE ONLY: Site # [Click here to enter text.](#) TMK # [Click here to enter text.](#)

IV. MAP



FOR SHPD USE ONLY: Site # [Click here to enter text.](#) TMK # [Click here to enter text.](#)

V. DESCRIPTION

Materials (please check those materials that are visible):

Height

- Stories: one and two stories
- Below Ground
- N/A

Other: [Click here to enter text.](#)

Exterior Walls (siding):

- Aluminum Siding
- Metal
- Asbestos
- Shingles-Asphalt
- Brick
- Shingles-Wood
- Ceramic
- Stone
- Concrete
- Stucco
- Horizontal Wood Siding
- Vertical Wood Siding
- Log
- Engineered Siding
- Plywood
- OSB
- Fiberboard
- Fiber Cement
- Vinyl Siding
- Other: CMU block

Roof:

- Asphalt, shingle
- Asphalt, roll
- Metal
- Slate
- Built Up
- Ceramic Tile
- Other: [Click here to enter text.](#)
- Wood Shingle
- None

Foundation:

- Brick
- Concrete Block
- Other: [Click here to enter text.](#)
- Concrete Slab
- Poured Concrete
- Stone
- Raised/Pile

Structural Support:

- Baled Hay
- Concrete Block
- Concrete Framed
- Concrete Poured
- Other: [Click here to enter text.](#)
- Frame-wood
- Frame-metal/steel
- Brick-load bearing
- Stone-load bearing
- Puddled Clay
- Rammed Earth
- Sod

Windows:

- Double Hung Sash
- Single Hung Sash
- Casement
- Fixed
- Other: Awning, Hopper, screened
- Jalousie
- Glass Block
- None/Unknown
- Ribbon
- Stained Glass
- Replacement
- Aluminum
- Vinyl

Lanai(s)

- Arcade
- Balcony
- Porte-Cochere
- Other: [Click here to enter text.](#)
- Recessed
- Stoop
- Portico
- Wrap-around
- Verandah
- None

Chimney

- Brick
- Concrete
- None
- Stuccoed Masonry
- Stone
- Other: [Click here to enter text.](#)
- Stove Pipe
- Siding



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TMK # [Click here to enter text.](#)

**X. Continuation Sheet**

Please use this sheet those that follow to attach additional information about the site, including, but not limited to additional floor plans, drawings, photographs, maps, etc.

**Brief History:**

In 1909 Hawaii joined twenty states and the District of Columbia by passing legislation to provide for a separate juvenile law and court system. Sometime between 1917 and 1923 a detention home was constructed at the corner of King and Alder streets, as the law prohibited the confinement of juveniles in a prison or police station. This home was built as a holding facility to house juveniles for a short term (usually several days) until the Juvenile Court could determine how best to address their future needs.

Starting in 1944, the building that is the subject of this survey commenced operations as the Honolulu Juvenile Detention Home. Over the years it was enlarged to meet the needs of the expanding population that it housed. The present building is the result of five different construction projects (See attached color coded site plan).

By the late 1930s the original single story wood detention home was deemed inadequate and in 1944 a concrete, two story building was constructed to replace the earlier structure. This building is now the two story section of the present building. In 1949 a U-shaped, single story addition was added to the 1944 building and included a kitchen, laundry facilities, dining rooms, recreational lounges, and additional dormitory space. The 1944 building became the girl's dormitory and the new dormitory wing was used to house the boys. In 1952, the boy's dormitory wing was extended, and in 1958 further expanded to form a courtyard space. In addition, in 1958, administrative offices were added to the Alder Street elevation of the 1949 addition. In 1961 a cmu wall replaced a wood fence between the girl's dormitory and the kitchen wing to provide a play space for the girls. Also at this time the basketball court was built in the boy's courtyard. In 1989 a new building was constructed on the *mauka* end of the property, but it is not included in this survey as it is not fifty years of age and does not appear to meet the criteria for listing in the Hawaii or National Registers of Historic Places.

In 2010 the detention home was relocated to Kapolei, where the Family Court is also located. The former detention home is now used to house various social service organizations working with at risk youths.



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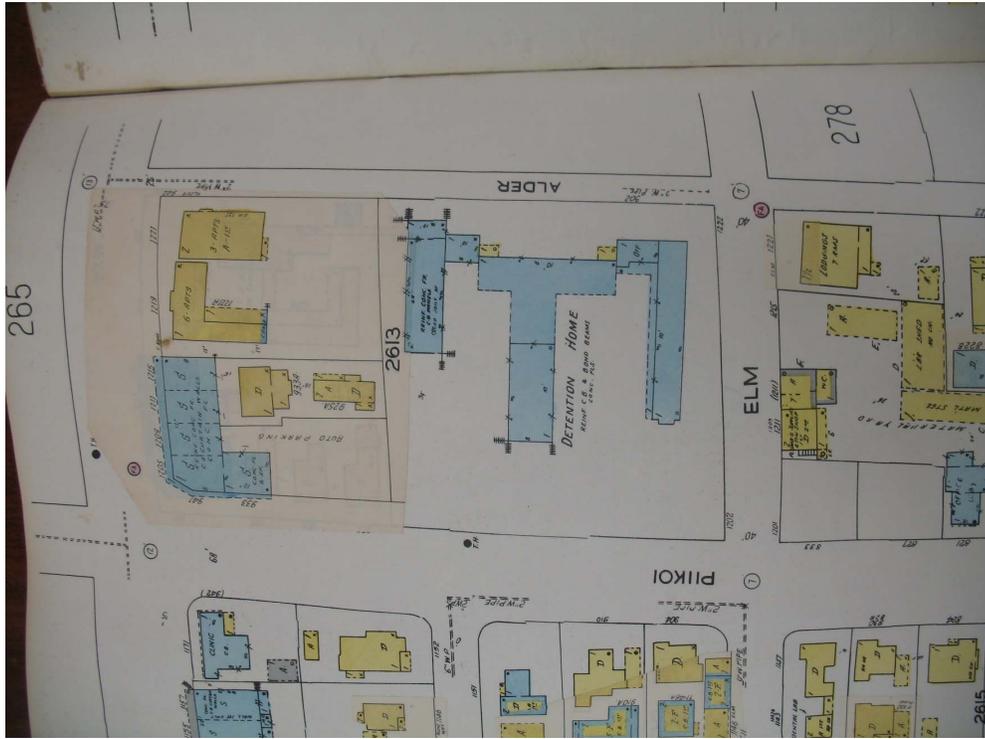


HAWAII STATE HISTORIC PRESERVATION DIVISION  
HISTORIC RESOURCE INVENTORY FORM – **Reconnaissance Level**

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1950 Sanborn Fire Insurance Map

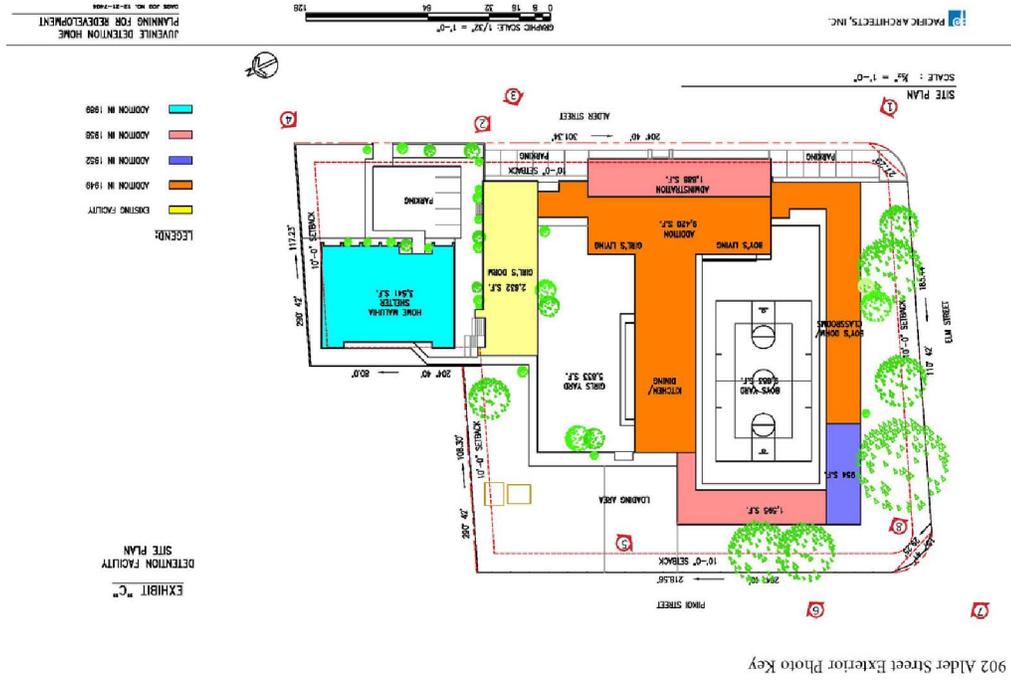


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902 Alder Street Exterior Photo Key



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1: Elm and Alder Street Corner View (Photo taken from Googlemaps Streetview)



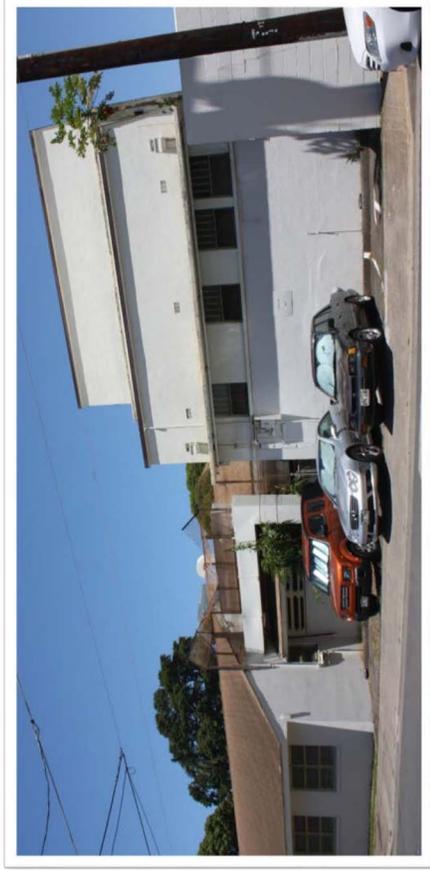
2: Alder Street Facade (1958 Addition)



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3: Alder Street View of 1944 Building



4: Alder Street Wall



HAWAII STATE HISTORIC PRESERVATION DIVISION  
HISTORIC RESOURCE INVENTORY FORM – **Renaissance Level**

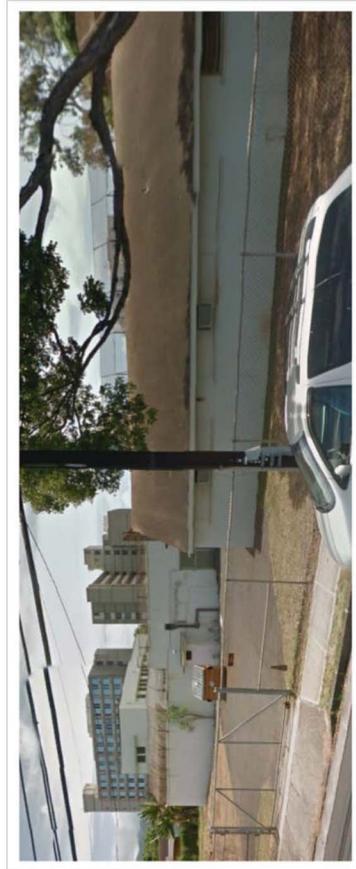
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5: Piikoi Street view of 1958 addition



6: Piikoi Street View (Photo taken from Googlemaps Streetview)



HAWAII STATE HISTORIC PRESERVATION DIVISION  
HISTORIC RESOURCE INVENTORY FORM – **Renaissance Level**

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7: Piikoi Street & Elm Street corner view (Photo taken from Googlemaps Streetview)



8: Elm Street view of 1952 Extension to 1949 Building



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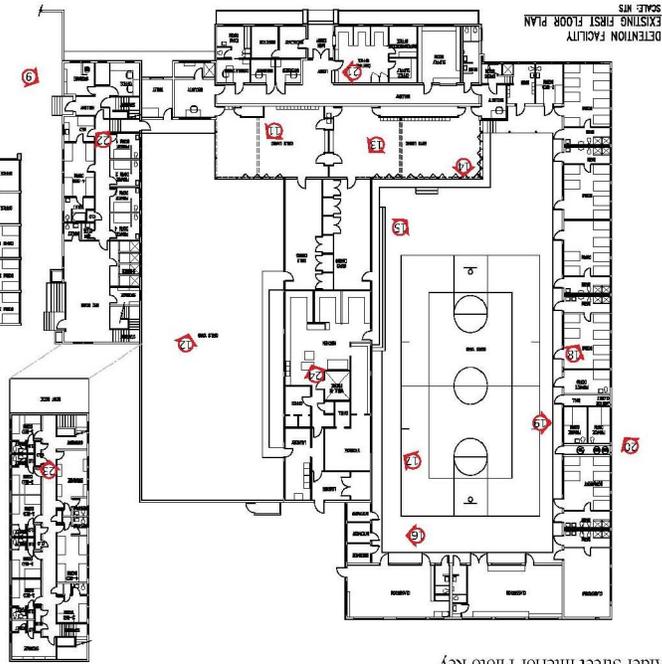
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EXHIBIT "D"  
DETENTION FACILITY  
EXISTING FIRST FLOOR PLAN  
DETENTION FACILITY  
EXISTING SECOND FLOOR PLAN  
HOME MALUHIA  
FIRST FLOOR PLAN

DETENTION FACILITY  
EXISTING SECOND FLOOR PLAN  
SCALE: NTS

EXISTING HOME MALUHIA  
FIRST FLOOR PLAN  
SCALE: NTS



JUVENILE DETENTION HOME  
PLANNING FOR REDEVELOPMENT  
DATE: JOB NO. 12-21-704

PHOTO MAP KEY

PACIFIC ARCHITECTS, INC.

902 Alder Street Interior Photo Key



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9: 1944 Building

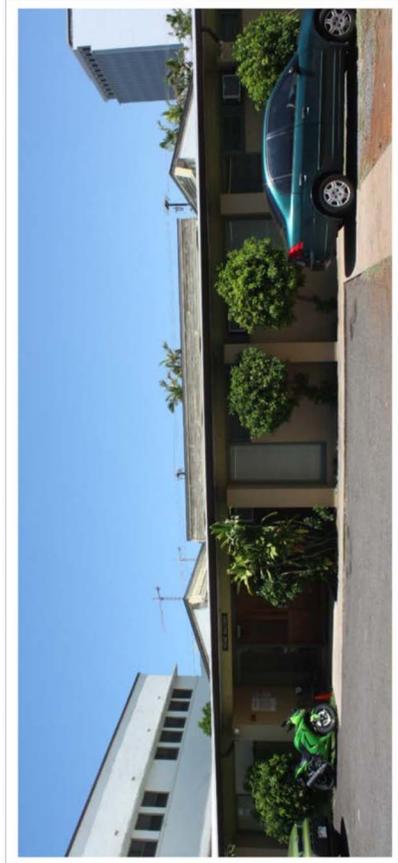


HAWAII STATE HISTORIC PRESERVATION DIVISION  
HISTORIC RESOURCE INVENTORY FORM - **Reconnaissance Level**

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10: Maluhia Hall - Built 1989, Not eligible

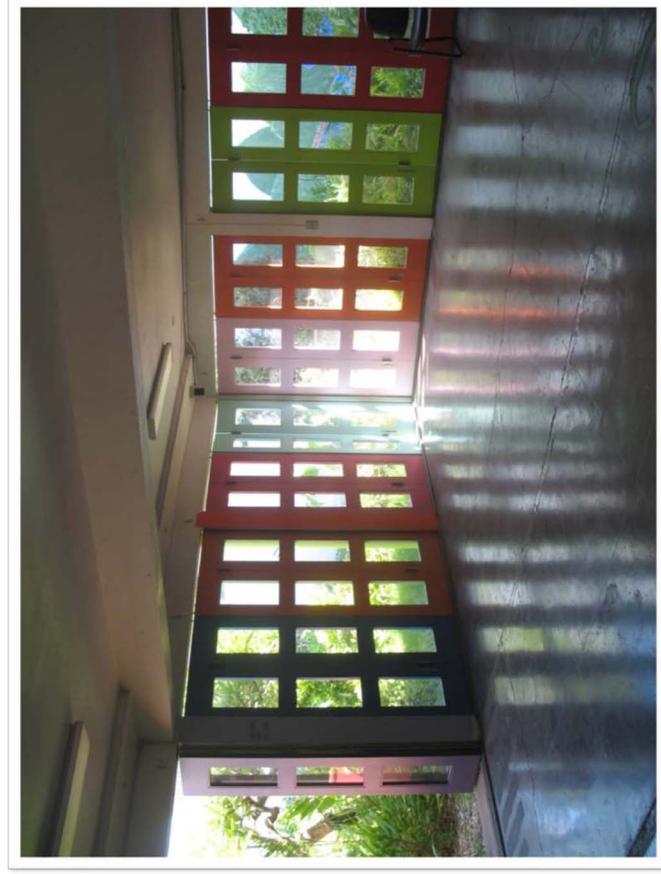


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11: Girls' living



HAWAII STATE HISTORIC PRESERVATION DIVISION  
HISTORIC RESOURCE INVENTORY FORM - **Reconnaissance Level**

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12: Girls' living from yard



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13: Boys' dining



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14: Boys' Court



**FOR SHPD USE ONLY:**

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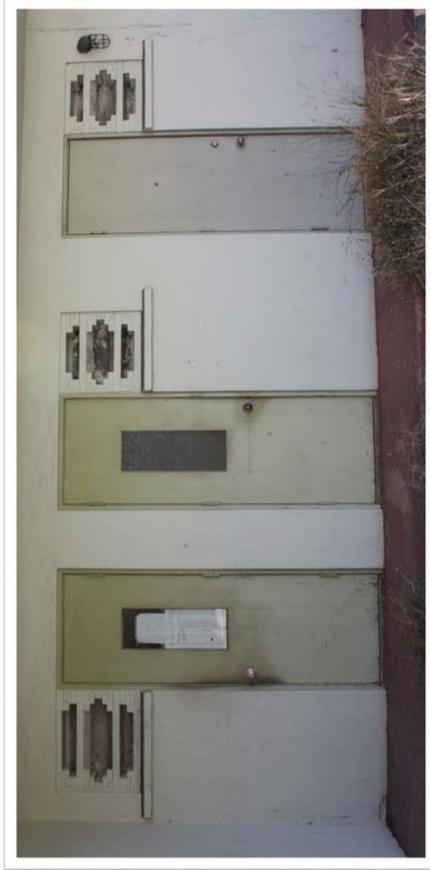
15: Boys' living from court



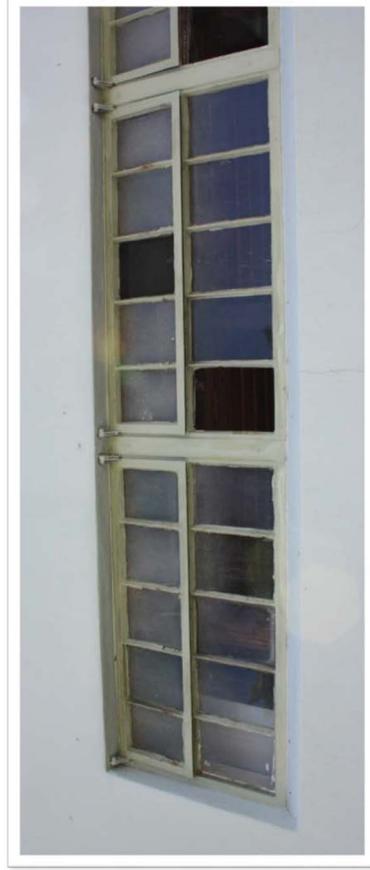
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16: Typical Doors and Vents in 1949-52 Addition



17: Kitchen Windows (1949 Addition)



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18: Boys' Dorm



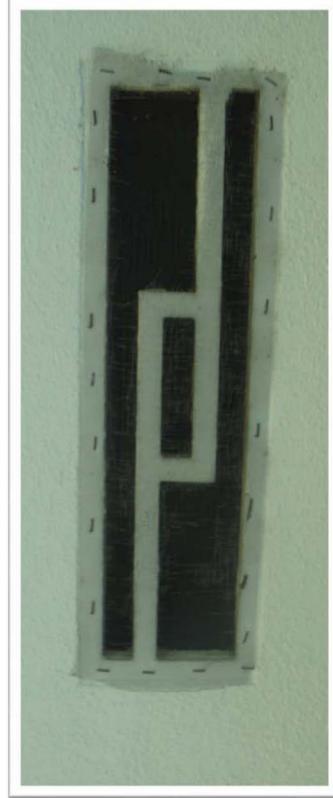
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19: Typical vent for 1949-52 Addition



20: Eave vent of 1949-52 Addition



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21: Office Entrance of 1958 Addition



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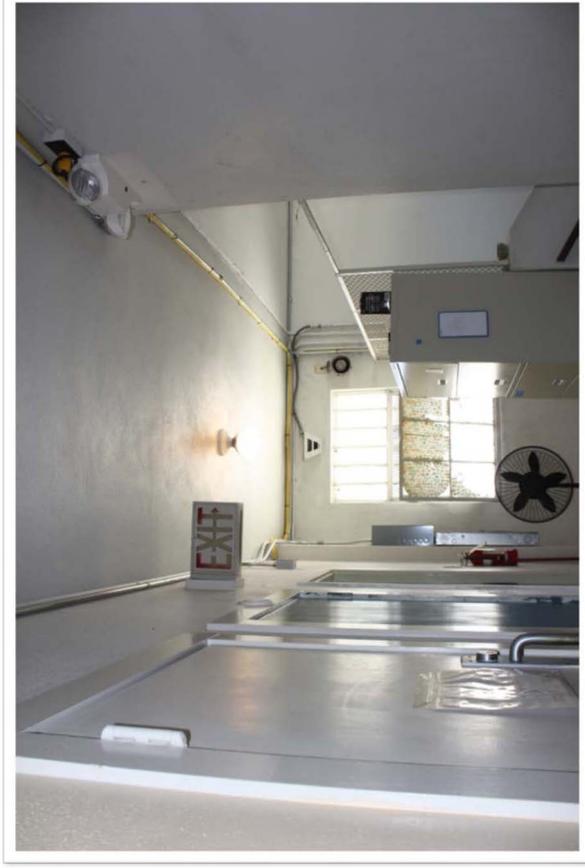
22: Kitchen of 1944 Building



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23: Upstairs Hall of 1944 Building



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HISTORIC RESOURCE INVENTORY FORM - **Reconnaissance Level**

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24: Kitchen of 1949 Addition



**FUNG ASSOCIATES INC**

1833 Kalakaua Avenue, Suite 1008, Honolulu, Hawaii 96815  
808.541.3000 (Office) • 808.541.0900 (Fax)  
E-mail: [projects@funghawaii.com](mailto:projects@funghawaii.com)

August 24, 2015

Mr. Alan Downer, Administrator  
State Historic Preservation Division  
601 Kamohila Blvd., #555  
Kapolei, Hawaii 96707

Dear Mr. Downer:

**SUBJECT:** Hawaii Revised Statutes, Chapter 6E-8, Review of Proposed Projects  
Planning for Redevelopment of Honolulu Juvenile Detention Center  
902 Alder Street,  
TMK: (1) 2-3-012:019  
Honolulu, Oahu

On behalf of the State of Hawaii Department of Accounting and General Services (DAGS), we are submitting the draft redevelopment plans and Reconnaissance Level Architectural Inventory Survey for your review.

**I. GENERAL INFORMATION**

- A. Organization: State of Hawaii Department of Accounting and General Services
- B. Address: 1151 Punchbowl Street, Honolulu, Hawaii 96813
- C. Contact: Mr. Lance Maja, Planning Branch  
Phone (808) 586-0483  
Email: [lance.maja@hawaii.gov](mailto:lance.maja@hawaii.gov)
- D. Additional contacts: Tonia Moy, Fung Associates, Inc.  
Phone: (808) 941-3000  
Email: [tonia@funghawaii.com](mailto:tonia@funghawaii.com)
- E. Project Name: Redevelopment of Honolulu Juvenile Detention Center
- F. Project Street Address: 902 Alder Street
- G. Location: Honolulu
- H. TMK: (1) 2-3-012:019
- I. Area of Potential Effect: Included in the area of potential effect are the existing land parcels.  
(See Page 2 of RLs)





**Appendix F:**  
**Archaeological Inventory Survey Report**

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**Draft**

**Archaeological Inventory Survey Report for the  
Mixed Use Project at 902 Alder Street,  
Department of Accounting and General Services (DAGS)  
JOB NO. 12-21-7550,  
Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu  
TMK: [1] 2-3-012:019**

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**Management Summary**

<b>Reference</b>	Archaeological Inventory Survey Report for the Mixed Use Project at 902 Alder Street, Department of Accounting and General Services (DAGS) JOB NO. 12-21-7550, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu, TMK: [1] 2-3-012:019 (Stark et al. 2015)
<b>Date</b>	August 2015
<b>Project Number(s)</b>	Department of Accounting and General Services (DAGS) JOB NO. 12-21-7550, SSFM Project Number 2014_068.000, Cultural Surveys Hawaii, Inc. (CSH) Job Code: HONOLULU 58
<b>Investigation Permit Number</b>	CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological permit number 15-03, issued by the Hawaii State Historic Preservation Division (SHPD) per Hawaii Administrative Rules (HAR) §13-13-282.
<b>Agencies</b>	State Historic Preservation Division (SHPD), DAGS
<b>Land Jurisdiction</b>	State of Hawaii
<b>Project Proponent</b>	DAGS, Department of Justice (DOJ)
<b>Project Funding</b>	DAGS
<b>Project Location</b>	902 Alder Street, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu, TMK: [1] 2-3-012:019
<b>Project Description</b>	This project will replace the old Judiciary facility with a new one. The Hawaii Housing Finance Development Corporation (HHFDC) will jointly develop the subject property by adding an affordable housing component to the project. Ground disturbance is expected to impact the entirety of the project area, relating to demolition, utilities trenching, and new building footings.
<b>Project Acreage</b>	1.4 acres (0.6 hectares)
<b>AIS Scope<sup>i</sup></b>	This AIS focused on archaeological historic properties pursuant to the guidelines of HAR §13-276. The identification, documentation, and evaluation of in-use potential architectural historic properties such as historic buildings and structures was outside the scope of this AIS. Throughout this report the term "historic properties" is used and should be generally understood to refer to archaeological historic properties, unless otherwise stated.
<b>Area of Potential Effect (APE)<sup>ii</sup></b>	The Area of Potential Effect (APE) is considered to be the entirety of the project area.
<b>Historic Preservation Regulatory Context<sup>iii</sup></b>	This is a state/municipal "governmental" project needing review under Hawaii Revised Statutes (HRS) §6E-8 and HAR §13-13-275. This AIS investigation fulfills the requirements of HAR §13-13-276 and was conducted to identify, document, and assess significance of any historic properties. This document is intended to support the proposed project's

	<p>historic preservation review under HRS §6E-8 and HAR §13-13-275, as well as the project's environmental review under HRS §343. It is also intended to support any project-related historic preservation consultation with stakeholders such as state and county agencies and interested Native Hawaiian Organizations (NHOs) and community groups.</p>
<b>Fieldwork Effort</b>	<p>Fieldwork was accomplished between 17 June 2015 and 17 July 2015 by David W. Shideler, M.A., Nathaniel S. Garcia, B.A., Mary L. Tardona, M.S., Abigail H. Langham, B.A., and Richard T. Stark, Ph.D. under the general supervision of Hallett H. Hammatt, Ph.D. This work required approximately 10 person-days to complete.</p>
<b>Historic Properties Identified and Historic Property Significance<sup>6</sup></b>	<p>SIHP # 50-80-14-7817 is represented by historic artifacts recovered from buried fill and trash pit features in test excavations in the southern and southeastern portions of the project area (T2, T3, and T4). Specifically, fragments of eight glass bottles, a ceramic plate, a ceramic bowl, and a ceramic pitcher were recovered from 40 to 100 cmbs, with dates of manufacture from 1800 to 1920. SIHP # 50-80-14-7817 is represented by stratigraphic layers including historic artifacts, most likely related to the family of Henry Martyn Whitney, Sr. Whitney, a prominent member of the Honolulu community, served as first postmaster general in Hawai'i in 1850, was elected to the house of representatives of the legislature of the Hawaiian Kingdom in 1855 and may have entertained the young Samuel Clements at this house. In 1856, he produced the first issue of the <i>Pacific Commercial Advertiser</i> and in 1861 he established <i>Ka Nipēpa Kū'oko'u</i>, a Hawaiian language newspaper. Whitney began publishing the <i>Marine Bulletin</i> in 1882 which was eventually purchased by James Robison and became the <i>Honolulu Star-Bulletin</i>. The <i>Star-Bulletin</i>, merged with the <i>Honolulu Advertiser</i> in 2010 to become the <i>Honolulu Star-Advertiser</i>, currently the largest daily newspaper in Hawai'i (Krauss 2009:7-11). SIHP # 50-80-14-7817 is considered significant under significance criterion "b" only, as it is associated with the lives of persons important in our past.</p> <p>SIHP # 50-80-14-7818 is represented by historic artifacts recovered from test excavation T3 in the southeastern corner of the project area. Specifically, a fire-cracked rock fragment and faunal material representing fragments of <i>Bos taurus</i> (cow) tibia, <i>Sus scrofa</i> (pig) rib, and <i>Gallus gallus</i> (chicken) tibiotarsus were recovered from a highly organic sediment matrix partially submerged in the fresh water table at approximately 150 to 165 cmbs. Analysis of a bulk matrix sample from this location also revealed fresh water snails and marine snails. SIHP # 50-80-14-7818 is considered significant under significance criterion "d" only (Have yielded, or may be likely to yield, information important for research on prehistory or history). These significance recommendations are included in this AISR for the review and concurrence of the SHPD.</p>

<b>Summary of Findings</b>	<p>No significant archaeological finds were made during the pedestrian survey of the unbuilt portions of the project area, however, Figure 24 and Figure 25 indicate portions of the extant facility were built by 1950. Staff working within the project area indicate their belief that some buildings of the current facility pre-date World War II and Figure 18 indicates that the original detention home buildings had been completed within the project area by 1914. These buildings would be considered by the State Historic Preservation Division as "historic properties," under HAR §13-275-2 and CSH recommends consultation with the State Historic Preservation Division (SHPD) regarding mitigation of any historic architecture within the project area. Two significant finds were made during subsurface testing, related to the 29 artifact fragments representing 16 historic artifacts recovered from the project area (see Table 10). All collected artifacts are from the post-Contact period. The artifacts recovered from SIHP # 50-80-14-7817 likely relate to domestic use of the project area by the family of Catherine and Henry Martin Whitney (1824-1904). The artifacts recovered from SIHP # 50-80-14-7818 may also represent early post-Contact Hawaiian settlement within the project area.</p>
<b>Effect Recommendation<sup>7</sup></b>	<p>In accordance with Hawai'i State historic preservation review legislation, HAR §13-13-275-7, the project's effect recommendation is "effect, with proposed mitigation commitments."</p>
<b>Mitigation Recommendations</b>	<p>This AISR indicates the project area contains SIHP # 50-80-14-7817 and SIHP # 50-80-14-7818. Through this report, information has been documented regarding the location, extent, function, and age of SIHP # 50-80-14-7817 and SIHP # 50-80-14-7818. While this AISR was undertaken to mitigate any adverse effect caused by proposed development activities, additional archaeological data collection, in the form of archaeological monitoring with detailed documentation of the historic properties, is recommended to be sufficient to satisfy the requirements to mitigate any adverse effect caused by the proposed development activities within the project area. Consultation with the SHPD is recommended for their determination on the project's effect and mitigation recommendations.</p>

<sup>7</sup> An "archaeological inventory survey" is defined as "the process of identifying and documenting the archaeological historic properties and burial sites in a delineated area, gathering sufficient information to evaluate significance of the historic properties and burials, and compiling the information into a written report for review and acceptance by the department (SHPD)" (HAR §13-276-2). An archaeological inventory survey report must contain documentation, arguments and reasoning, and mitigation commitments to support the completion of historic preservation review steps one through four for archaeological historic properties.

<sup>ii</sup> "Project Area" is defined (HAR §13-284-2) as "the area the proposed project may potentially affect, either directly or indirectly. It includes not only the area where the proposed project will take place, but also the proposed project's area of potential effect." "Effects include, but are not limited to, partial or total destruction or alteration of the historic property, detrimental alteration of the properties' surrounding environment, detrimental visual, spatial, noise or atmospheric impingement, increasing access with the chances of resulting damage, and neglect resulting in deterioration" (HAR §13-284-7(b)). Based on these definitions of "project area" and "effects," there is potential for project effects to historic properties to extend outside the footprint of project construction. Accordingly a definition and justification of the "project area" and "area of potential effect" employed in the AIS study is required.

<sup>iii</sup> The State of Hawaii's historic preservation review process is designed to identify and mitigate a project's impacts to significant historic properties. Historic properties are defined as "any building, structure, object, district, area, or site, including *heiau* [temple] and underwater site, which is over fifty years old" (HAR §13-284-2). The six potential historic preservation review steps include the following: 1) identification and inventory, to determine if historic properties are present in the project's area and, if so, to identify and document (inventory) them; 2) evaluation of historic property significance; 3) determination of project effect (impact) on significant historic properties; 4) mitigation commitments that commit to acceptable forms of mitigation in order to properly handle or minimize impacts to significant historic properties; 5) detailed mitigation plan, scope of work to properly carry out the general mitigation commitments; and 6) verification of completion of detailed mitigation plan (HAR §13-284-5). A project's effect and potential mitigation measures are evaluated based on the project's potential impact to "significant" historic properties (those historic properties determined significant following their evaluation of significance [HAR §13-284-6]).

<sup>iv</sup> Once a historic property is identified, then an assessment of significance shall occur pursuant to HAR § 13-284-6. To be significant, a historic property shall possess integrity of location, design, setting, materials, workmanship, feeling, and association, and meet one or more of the following significance criteria: "a" be associated with events that have made an important contribution to the broad patterns of our history; "b" be associated with the lives of persons significant in our past; "c" embody the distinctive characteristics of a type, period, or method of construction; represent the work of a master, or possess high artistic value; "d" have yielded, or is likely to yield, information important for research on prehistory or history; or "e" have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations being important to the group's history and cultural identity. By convention criterion "e" usually includes human skeletal remains and/or burials and religious sites.

<sup>v</sup> One of two effect determinations must be established: 1) "No historic properties affected," the project will have no effect on significant historic properties; or 2) "Effect, with agreed upon mitigation commitments," the project will affect one or more significant historic properties, and the effects will potentially be harmful. However, the agreed upon mitigation commitments involving one or more forms of mitigation will reasonably and acceptably mitigate the harmful effects (HAR § 13-284-7).

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## Section 1 Introduction

### 1.1 Project Background

At the request of SSFM International, Inc., Cultural Surveys Hawaii'i, Inc. (CSH) has prepared this archaeological inventory survey (AIS) report for the mixed use project at 902 Alder Street, Department of Accounting and General Services (DAGS) JOB NO. 12-21-7550, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu, TMK: [1] 2-3-012:019. The companion cultural impact assessment (CIA) for this project was prepared by Ishihara and Hammett (2015). Faunal analysis for the current report was conducted by Malina L. Reveal, M.Sc. The project area is 1.4 acres (0.6 hectares), depicted on a portion of the 1998 U.S. Geological Survey (USGS) 7.5-minute topographic quadrangle (Figure 1), a tax map plat (Figure 2), and a 2013 aerial photograph (Figure 3). This project will replace the old Judiciary facility with a new one. The Hawaii Housing Finance Development Corporation (HHFDC) will jointly develop the subject property by adding an affordable housing component to the project. Ground disturbance is expected to impact the entirety of the project area, relating to demolition, utilities trenching, and new building footings.

### 1.2 Historic Preservation Regulatory Context and Document Purpose

This is a state/municipal "governmental" project needing review under Hawaii'i Revised Statutes (HRS) §6E-8 and Hawaii'i Administrative Rules (HAR) §13-13-275. This AIS investigation fulfills the requirements of HAR §13-13-276 and was conducted to identify, document, and assess significance of any historic properties. This document is intended to support the proposed project's historic preservation review under HRS §6E-8 and HAR §13-13-275, as well as the project's environmental review under HRS §343. It is also intended to support any project-related historic preservation consultation with stakeholders such as state and county agencies and interested Native Hawaiian Organizations (NHOs) and community groups.

### 1.3 Environmental Setting

#### 1.3.1 Natural Environment

The project area is located on the central/east Honolulu coastal plain, approximately 1,200 meters (m) inland from today's coast at Ala Moana Beach Park. The natural coastline in this area would have been approximately 250 m *maka'i* from its current location.

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area's soils consist of Makiki Clay loam, 0 to 2% slopes (MkA) (Figure 4). Makiki soils are described as follows:

This series consists of well-drained soils on alluvial fans and terraces in the city of Honolulu on the island of Oahu. These soils formed in alluvium mixed with volcanic ash and cinders. They are nearly level. Elevations range from 20 to 200 feet. The annual rainfall amounts to 30 to 60 inches. Most of it falls between November and April. The mean annual soil temperature is 73° F. Makiki soils are geographically associated with Kaena and Tantalus soils. [Foote et al. 1972:91]

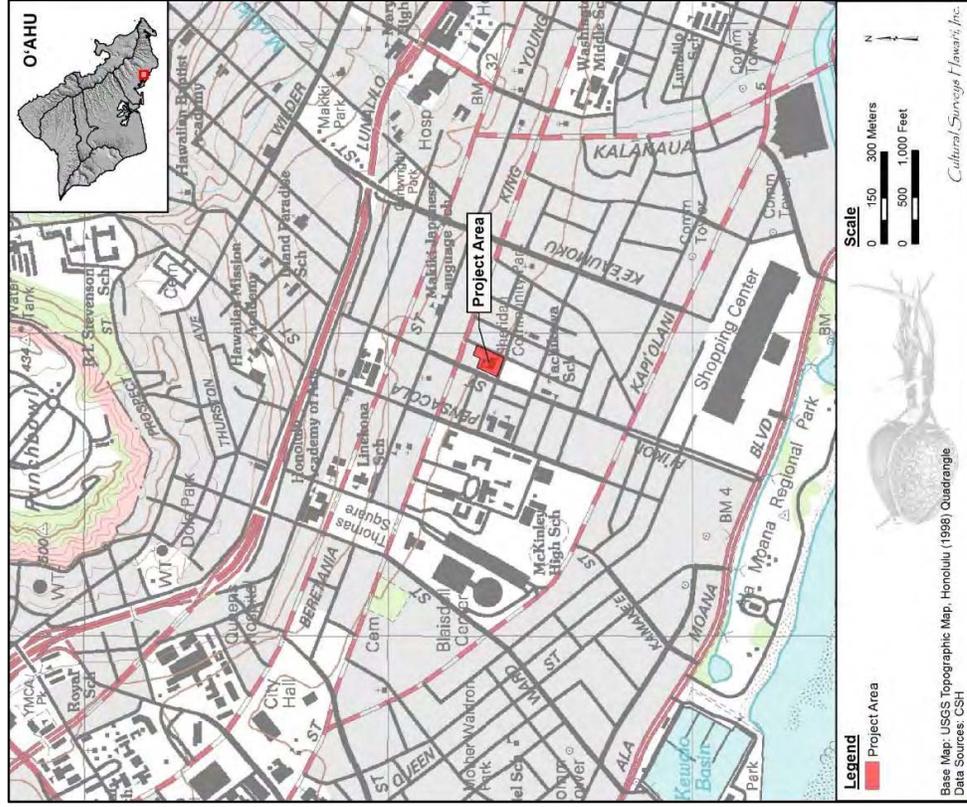


Figure 1. Portion of the 1998 USGS 7.5-minute topographic quadrangle indicating the location of the project area

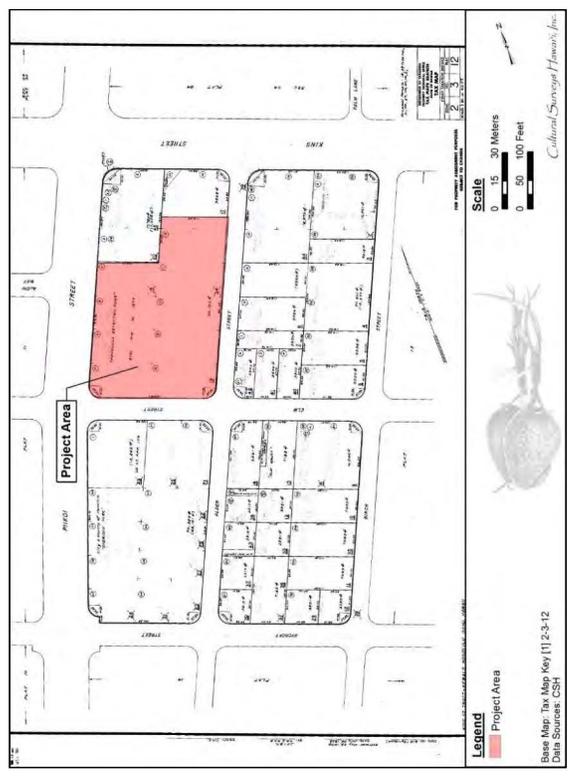


Figure 2. Tax Map Key (TMK) [1]2-3-012 indicating the project area (Hawaii; TMK Service 2014)

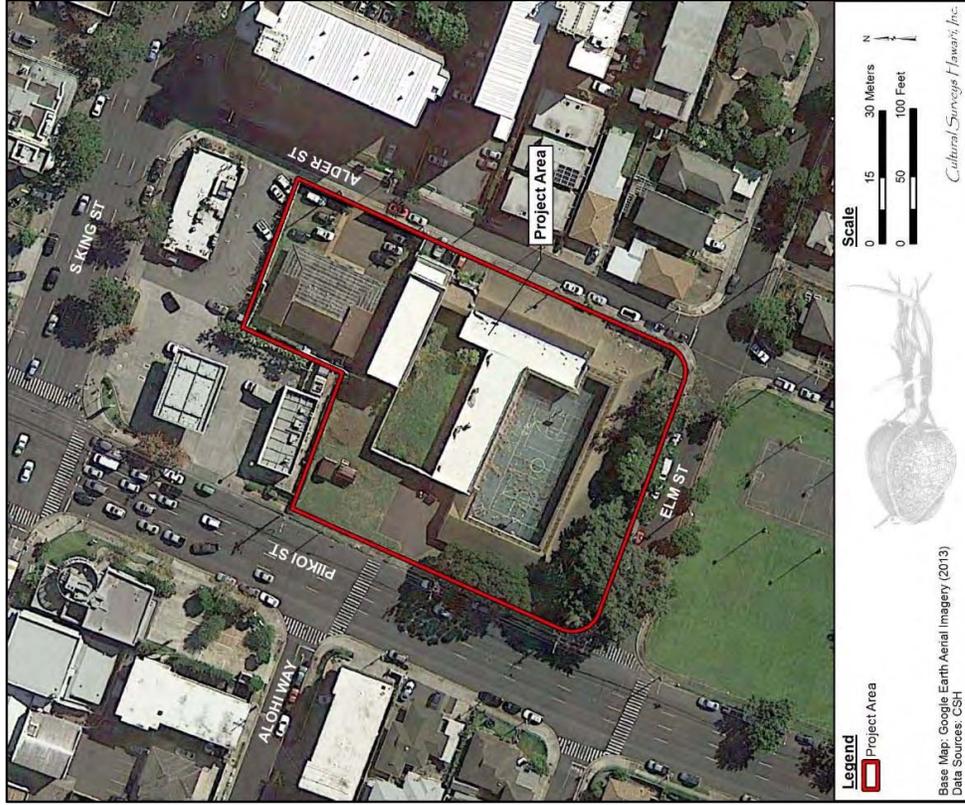


Figure 3. Aerial photograph indicating the project area (Google Earth 2013)

Makiki Clay loam, 0 to 2% slopes soils are described as follows:

This soil is on smooth fans and terraces. Included in mapping were small, stony areas and small areas of Kaena soils.

In a representative profile the surface layer is dark brown clay loam about 20 inches thick. The subsoil, about 10 inches thick is dark-brown clay loam that has subangular blocky structure. It contains cinders and rock fragments. The subsoil is underlain by similar material, about 24 inches thick, that is massive. Below this are volcanic cinders. The soil is strongly acid to medium acid.

Permeability is moderately rapid. Runoff is slow, and the erosion hazard is no more than slight. The available water capacity is about 1.7 inches per foot of soil. In places roots penetrate to a depth of 5 feet or more. [Foote et al. 1972:91-92]

The project area receives approximately 600 millimeters (mm) (at the south end) to 800 mm (at the north end) of rainfall per year (Giambelluca et al. 2013).

### 1.3.2 Built Environment

The project area vicinity is within urban Honolulu, between Pi'ikoi, Adler, South King, and Elm streets, largely lined with office and apartment buildings, shops, and residences. McKinley High School is one block to the west and Sheridan Community Park, with open grassy fields and playground equipment, is across Elm Street immediately south of the project area. The project area includes an open garden plaza, a large open basketball court paved with asphalt, and three buildings.

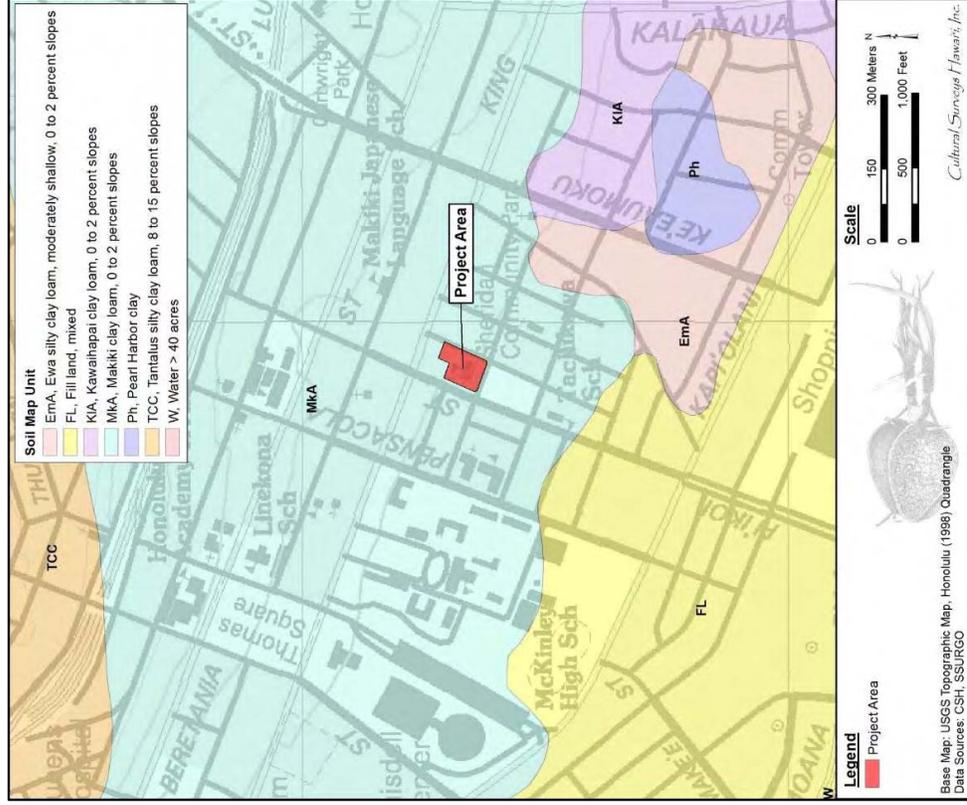


Figure 4. Overlay of Soil Survey of the State of Hawaii (Footo et al. 1972), indicating soil types within and surrounding the project area (U.S. Department of Agriculture Soils Survey Geographic Database [SSURGO] 2001)

## Section 2 Methods

### 2.1 Field Methods

CSH completed the archaeological inventory survey (AIS) fieldwork under archaeological permit number 15-03, issued by the Hawai'i State Historic Preservation Division (SHPD) per HAR §13-13-282. Fieldwork was accomplished between 16 July 2015 and 17 July 2015 by David W. Shideler, M.A., Nathaniel S. Garcia, B.A., Mary L. Tardona, M.S., Abigail H. Langham, B.A., and Richard T. Stark, Ph.D. under the general supervision of Hallett H. Hammatt, Ph.D. This work required approximately 10 person-days to complete. In general, fieldwork included 100% pedestrian inspection of the unbuilt portions of the project area and systematic subsurface testing at locations distributed throughout the project area.

Informal, preliminary conversation with the SHPD archaeology branch chief confirmed the need for an archaeological inventory survey with subsurface testing prior to redevelopment of the project area, with special reference to the Ke'eaumoku Walmart case with approximately 64 burials roughly 300 m to the southeast of the project area. A field inspection of the 902 Alder Street project area was undertaken by David W. Shideler, M.A. of Cultural Surveys Hawai'i on 17 June 2015 to confirm the test excavation locations. The subsurface testing program was backhoe assisted in six test excavations. At one central location within the project area the use of a backhoe was not feasible and the trench was hand-dug using trowels and shovels. The test excavation trenches were all linear, measuring approximately 6 m (20 feet [ft]) long and 0.8 m (2 ft) wide (Figure 5). A stratigraphic profile of each test excavation was drawn and photographed. The observed sediments were described using standard USDA soil description observations/terminology. Sediment descriptions included Munsell color; texture; consistency; structure; plasticity; cementation; origin of sediments; descriptions of any inclusions, such as cultural material and/or roots; lower boundary distinctiveness and topography; and other general observations. Where stratigraphic anomalies or potential cultural deposits were exposed, these were carefully represented on test excavation profile maps. Sediment samples, faunal remains, floral remains, and diagnostic artifacts were collected from these test excavations, analyzed, and described.

### 2.2 Laboratory Methods

Materials collected during AIS fieldwork were identified and catalogued at CSH's laboratory facilities on O'ahu. Analysis of collected materials was undertaken using standard archaeological laboratory techniques. Materials were washed, sorted, measured, weighed, described, and/or photographed.

#### 2.2.1 Bulk Sediment Sample Analysis

Sediment samples collected from potential cultural strata and/or features were examined within the CSH laboratory to aid in characterizing the cultural content and chronology of these deposits. Samples were collected and screened in the field and/or collected as bulk samples. All samples were labeled with provenience information, and the volume of each sample was recorded so that comparisons could be made among samples. Samples screened in the field utilized 1/8-inch wire mesh to remove the sedimentary matrix from the cultural content (faunal, floral, and artifactual

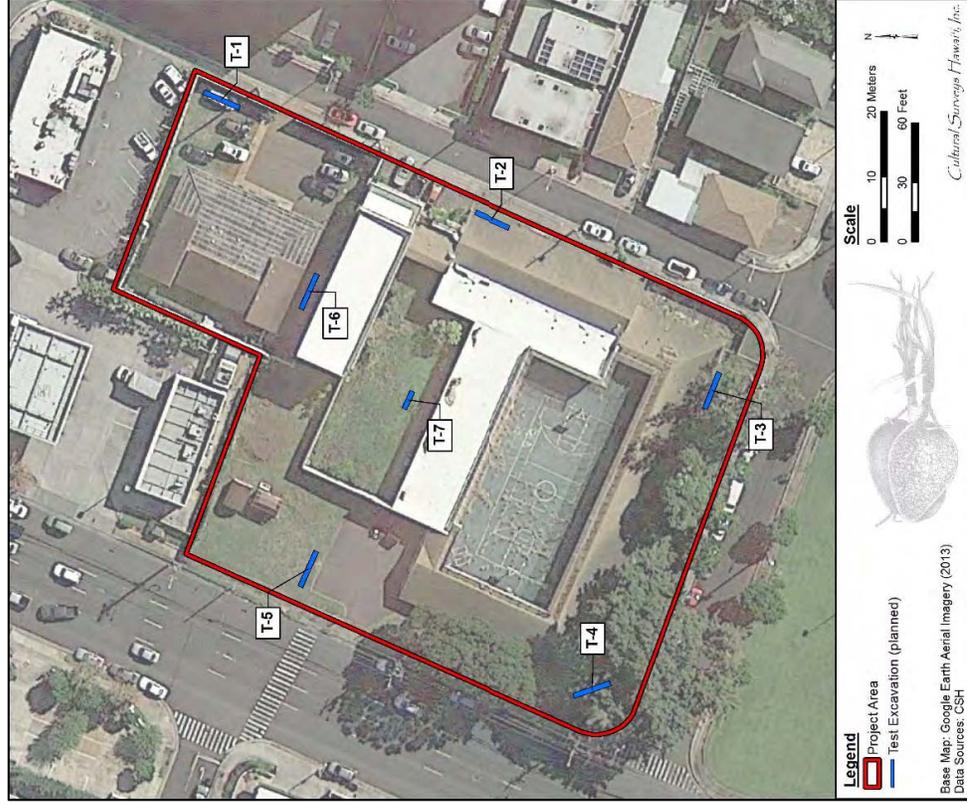


Figure 5. 2013 aerial photograph indicating the locations of test excavations within the project area

remains). In the lab, bulk sediment samples were screened through 1/16-inch wire mesh. Wet screening of samples was performed as necessary. As applicable, the cultural material was washed, sorted, measured, weighed, described, photographed, identified, and catalogued. Results of analysis are described in Section 6: Results of Laboratory Analysis.

**2.2.2 Artifact Analysis**

In general, artifact analysis focused on establishing, to the greatest extent possible, material type, function, cultural affiliation, and age of manufacture. As applicable, artifacts were washed, sorted, measured, weighed, described, photographed, and catalogued. Diagnostic (dateable or identifiable) attributes of artifacts were researched. Analyzed materials were tabulated and are presented in Section 6: Results of Laboratory Analysis.

**2.2.3 Faunal Analysis**

Faunal analysis focused on species identification as evidence of food consumption and socio-economics. Collected non-human vertebrate skeletal material was identified to the lowest possible taxa and analyzed using an in-house comparative collection and reference texts. A catalogue of all collected material was prepared and is presented in Section 6: Results of Laboratory Analysis.

**2.2.4 Disposition of Materials**

Materials collected during the current AIS (excluding human remains and grave goods) will remain temporarily curated at the CSH office in Waimānalo, O'ahu. Should the landowner request different archiving of material, an archive location will be determined in consultation with the SHPD. All data generated during the course of the AIS are stored at the CSH offices.

**2.2.5 Research Methods**

Background research included a review of previous archaeological studies on file at the SHPD; review of documents at Hamilton Library of the University of Hawai'i, the Hawai'i State Archives, the Mission Houses Museum Library, the Hawai'i Public Library, and the Bishop Museum Archives; study of historic photographs at the Hawai'i State Archives and the Bishop Museum Archives; and study of historic maps at the Survey Office of the Department of Land and Natural Resources. Historic maps and photographs from the CSH library were also consulted. In addition, Māhale records were examined from the Waihoona 'Aina database (Waihoona 'Aina 2000). This research provided the environmental, cultural, historic, and archaeological background for the project area. The sources studied were used to formulate a predictive model regarding the expected types and locations of historic properties in the project area.

### Section 3 Background Research

The project area lies in an area known as Kulaokahu'a, "The Plains." This seems to have consisted of area in the *ʻiʻi* (land division, smaller than an *ahupuaʻa*) of Kaka'ako, Kewalo, Makiki, Pāwa'a, and Kamō'i'i'i'i (Fitzpatrick 1989:25). The project area is in the *mauka* (toward the mountains, inland) section of Kewalo, as can be seen on Bishop's 1884 map (Figure 6) and Wall's 1887 map of Honolulu (Figure 7), and thus would have been a part of Kulaokahu'a. Kulaokahu'a translates as "the plain of the boundary" (Pukui et al. 1974:123). This flat land was often identified as the Makiki Plains (Fitzpatrick 1989:26).

This area was known for its barrenness and aridity, as seen in an 1853 description by the American missionaries who lived on the eastern edge of Honolulu. Sereno Bishop, son of one of these Protestant missionaries, said

... that by May or June there was much heat and dust, and no verdure in sight. The small mission herd had thoroughly depastured the plain which extended unbroken by house or tree to Punahou, while brown Punchbowl with its dry slopes frowned darkly above. [Bishop 1916:34]

Gorman Gilman remembered how this area appeared in the 1840s:

Beyond the mission premises there was but one other building, the residence of Mr. and Mrs. A. Johnstone, who were the teachers in the Oahu Charity School, of which I wrote, I think, in my former communication. Beyond this was Kulaokahuā, or the Plains, a dry, dusty waste without a shrub to relieve its barrenness. There were a couple of *hau* trees on the *mauka* side of the road covering the little cottage. On the seaward side, further out, was what was called 'Little Britain,'—the residence in later years of Capt. Luce and Mr. J.N. Wright. Between these two places, nothing but a most exceedingly dreary parcel of land with here and there a horse trail as path-way. [Gilman 1909:90–91]

#### 3.1 Mythological and Traditional Accounts

In 1865, John Papa ʻĪʻĪ identified Kulaokahu'a as a "play ground, where the *'maika'* etc. was played" (Hawai'i Commission on Boundaries, Kewalo in King 1989:26). *Maika* is a Hawaiian sport that uses a disc-shaped stone called an *'ulu maika* for a bowling type of game. Kulaokahu'a would have been a favorable place to play this sport. Pukui et al. (1974) state that the name "*makiki*" comes from the type of stone used to make octopus lures. This is the same type of stone used to make *'ulu maika*, and Fitzpatrick (1989:29) has speculated that the name of the *ahupuaʻa* may have originated from its association with the *maika* sport rather than, or in addition to, the making of octopus lures.

Several other legends are associated with this arid plain. Hi'iaika, sister of the goddess Pele, passed through this area before her departure from O'ahu:

she wasted no time in leave-taking . . . Their route lay eastward across the dusty, wind-swept plain of Kula-o-kahu'a—destined in the coming years to be the field of many a daring feat of arms;—then through the wild regions of Ka-imu-ki, thickset with

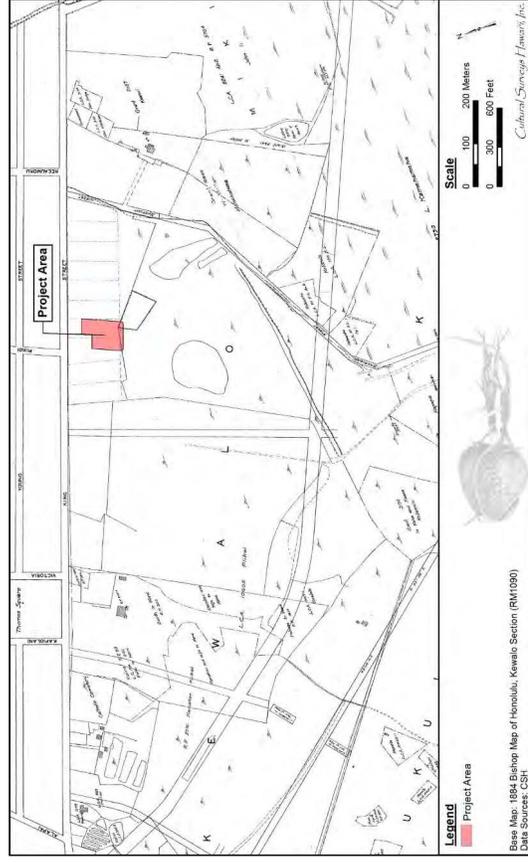


Figure 6. 1884 map of Honolulu, Kewalo Section (portion) by S.E. Bishop, indicating the project area within LCA 10605 to A. Pi'ikoi within the *'iʻi* of Kewalo



canoe shed by promising food and wives. When Hanaumoe left, the people left the wooden carvings in the shed and went back to their canoes to wait. The spirits with their king entered the shed and began to gnaw on the wooden idols. When all of the spirits were within, the Kana'i people crept up on them and burned the house down (Formander 1917:4(3):476-482; 1919:5(2):428-434).

This legend led to a Hawaiian saying, used to describe any broken promise of food, fish, etc.

*He Lō'ihii o 'Ewa; he pali o*  
*Nu uanu; he kula o Kūlaokahu ā;*  
*He hiki mai koe.*  
 [Pukui 1983:84-85]

'Ewa is a long way off;  
 Nu uanu is a cliff; Kūlaokahu'ā is a dry plain;  
 but all will be here before long.

As mentioned previously, portions of Kūlaokahu'ā were within the *ii'i* of Kewalo (see Figure 6 and Figure 7). Kewalo literally means "the calling," as in an echo (Pukui et al. 1974:109). Kewalo once had a freshwater spring in the central portion (current location unknown), as seen in the proverb "*Ka wai huahua i o Kewalo*," which translates as "The bubbling water of Kewalo." Two springs are mentioned in a traditional story of the Waters of Ha'ō. This legend tells of two children of the chief Ha'ō who ran away from their cruel stepmother. They stayed a time with the caretakers of Kewalo Spring, which may have been located close to the trail that connected Waikīki and Honolulu. The children then left when they heard the chiefess had sent men to look for them. The two children followed the moonlit trail across the plain toward Kou (Honolulu), but finally collapsed from weariness and thirst. In a dream, the boy's mother told him to pull up a plant close to his feet. When he did, he found a spring under the plant, which was called the Water of Ha'ō, or Kawaiaha'ō. This spring is located at the western end of the trail, near Kawaiaha'ō Church in Kaka'ako (Pukui 1988:87-89). The Kewalo area also once had a famous fishpond, which was used to drown members of a parish case (*kainiwā*) or *kapu* (tabu) breakers as the first step in a sacrificial ritual known as *Kānāwai Kūi'ehi'e* (Kamakau 1991:6) or *Ke-kai-he'ehi'e*, which translates as "sea sliding along," suggesting the victims were slid under the sea (Westervelt 1963:16). Sterling and Summers describe Kewalo as follows:

A fishpond and surrounding land on the plains below King Street, and beyond Koula. It contains a spring rather famous in the times previous to the conversion to Christianity, as the place where victims designed for the Heiau of Kanelaa on Punchbowl slopes, was first drowned. The priest holding the victim's head under water would say to her or him on any signs of struggling, 'Moe maie i ke kai o ko haku.' 'Lie still in the waters of your superiors.' From this it was called Kawailumama, 'Drowning waters.' [Sterling and Summers 1978:292]

Kewalo is mentioned in a legend as a marsh near the beach, where tall *pili* grass was growing. Kapoi went to this area to get thatching for his house. While there, Kapoi found seven owls eggs and took them home to cook for his supper. An owl perched on the fence surrounding his house and cried out, "O Kapoi, give me my eggs!" Kapoi eventually returned the eggs, and the owl became his family god and instructed him to build a *heiau* (place of worship) in Mānoa. Kapoi built the *heiau* and placed some bananas on the altar as a sacrifice. He also set the *kapu* (taboo) days for its dedication. The king of O'ahu, Kākūhihewa, who was building his own *heiau* in Waikīki, had ruled that if any man among his people erected a *heiau* and set the *kapu* before him, that man should die. Kapoi was seized and taken to the *heiau* of Kūpalaha, at Waikīki. The owl that Kapoi had first met secured the aid of the king of the owls at Owl's Hill (Pu'u Pu'eo) in

Mānoa, who gathered all of the owls of the islands; they flew to Kūpalaha and battled the king's men, who finally surrendered. From this time the owl was considered a powerful *akua* (god). The battle area was known as Kūkāunahio-ka-pueo, which means "the confused noise of owls rising in masses" (Poepoe 1998:200-202; Westervelt 1963:132-135). Kewalo was also the birthplace of the great chief Hua-nui-ka-la-ia'ila'i (Hua), as mentioned in this *mele* (story) chanted by Kamakau (1991:24):

*'O Hua-a-Kamapau ke 'ii'i*  
*O Honolulu o Waikīki*  
*I hānuu no la i kahua la i Kewalo,*  
*'O Kāliia la kahua*  
*O Makiki la ke 'ēve,*  
*I Kānelā'au i Kāhehuna ke piko,*  
*I Kalo i Pauoa ka 'ā'a;*  
*I uka i Kaho'iwai i*  
*Kanaloaho'okau. . . .*

Hua-a-Kamapau the chief  
 O Honolulu, of Waikīki  
 Was born at Kewalo,  
 Kāliia was the place [the site]  
 At Makiki the placenta,  
 At Kānelā'au at Kāhehuna the navel cord,  
 At Kalo at Pauoa the caul;  
 Upland at Kaho'iwai, at  
 Kanaloaho'okau. . . .

The chief Hua was famous for his love of cultivation and his care for the people. His *heiau* was in Kukulūe'o in Honolulu, called Pu'ukea; it is mentioned in a traditional *wānana* (prophecy) recorded by Kamakau (1991:24-25).

*[Ka makaua ua kahi o 'Ewa]*  
*Ua puni ka i'a o Mokumoa,*  
*Ua kuu i'a ka nene;*  
*Ua ha'a kalo ha'a nui;*  
*Hā ta ka i'a o Kewalo,*  
*Hā u na uaiu o Pahua,*  
*Hā ta ka mahiki i Pu'ukea,*  
*Hā u ka unuuu i Pele'ula,*  
*Hā a Mākāho i ke ala.*  
*E Kū e, ma ke kaha ka ua, e Kū,*

[The increasing 'first rain' of 'Ewa]  
 Overcomes the fish of Mokumoa,  
 Washes up fish to the nene plants;  
 Lays low the taro as it patters down;  
 Lays low the fish of Kewalo,  
 Lays low the sweet potatoes of Pahua,  
 Lays low the mahiki grass at Pu'ukea,  
 Lays low the growing things at Pele'ula  
 Lays low Mākāho [Makāho] in its path  
 O Kū, the rain goes along the edge [of the  
 island]. O Kū

[ 'ai 'na ka i'a o Maunaula] . . . .

['Eating' the fish of Maunaula] . . . .

From these legendary accounts it can be seen that Kewalo was traditionally noted for its fishponds, its marsh lands where *pili* grass could be collected, for ceremonial sites such as the Kewalo spring and the fishpond at which sacrifices were made, and for its trails that allowed transport between the more populated areas of Waikīki and Honolulu (see discussion in following section). Important chiefs were born in the area and conducted religious rites, and commoners traveled to the area to procure food and other resources; some commoners probably also lived in the area, possibly adjacent to the fishponds and the trails.

### 3.2 Pre-Contact to Early 1800s

Kewalo and the plains area called Kūlaokahu'ā were between two centers of population and activity in pre-Contact O'ahu, Kou and Waikīki. In Waikīki a system of irrigated taro *lo'i* (irrigated fields) fed by streams descending from Makiki, Mānoa, and Pālolo valleys blanketed the Waikīki plain, and networks of fishponds dotted the shoreline. Similarly, Kou—the area of the present

downtown Honolulu surrounding Honolulu Harbor—possessed shoreward fishponds and irrigated fields watered by streams from Nu'uano and Pauoa valleys. Kewalo's "identity"—its pre-Contact population and activity patterns—may have derived from its relationship to these two densely populated areas; it may have participated in some of the activities associated with Kou and Waikīki. A basic description of Honolulu and Kou up to Western Contact is given by E.S. Craighill Handy and Elizabeth Handy:

What is now Honolulu was originally that flatland area between the lower ends of Nu'uano and Pauoa Valleys and the harbor. [W.D.] Westervelt . . . wrote that "Honolulu" was probably a name given to a very rich district of farm land near what is now . . . the junction of Liliha and School Streets, because its chief was Honolulu, one of the high chiefs of the time of Kākūhihewa. . . . It is probable that the chief referred to by Westervelt took his name from the harbor and adjoining land. The original name of the land where the town grew when the harbor became a haven for foreign ships was Kou. . . . The number of *heiau* in this area indicates that it was a place of first importance before the era of foreign contact. [Handy and Handy 1972:479]

Rev. Hiram Bingham, arriving in Honolulu in 1820, described a still predominantly Hawaiian environment—still a "village"—on the brink of western-induced transformations:

We can anchor in the roadstead abreast of Honolulu village, on the south side of the island, about 17 miles from the eastern extremity. . . . Passing through the irregular village of some thousands of inhabitants, whose grass thatched habitations were mostly small and mean, while some were more spacious, we walked about a mile northwardly to the opening of the valley of Pauoa, then turning southeasterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the northeast part of the village or town. . . . Below us, on the south and west, spread the plain of Honolulu, having its fishponds and salt making pools along the seashore, the village and fort between us and the harbor, and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of *kalo* (*arum esculentum*) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes. [Bingham 1981:92–93]

The Kewalo region would have been in Bingham's view as he stood at "Punchbowl Hill" looking south toward Waikīki: it would have comprised part of the area he describes as the "plain of Honolulu" with its "fishponds and salt making pools along the seashore." Another visitor to Honolulu in the 1820s, Jacobus Boelen, hints at the possible pre-Contact character of Honolulu and its environs, including the Kewalo area:

It would be difficult to say much about Honoruru. On its southern side is the harbor or the basin of that name (which as a result of variations in pronunciations [*sic*] is also written as Honolulu, and on some maps, Honoonoono). The landlocked side on the northwest consists mostly of *tarro* fields. More to the north there are some sugar plantations and a sugar mill, worked by a team of mules. From the north toward the east, where the beach forms the bight of Whytete, the soil around the village is less fertile, or at least not greatly cultivated. [Boelen 1988:62]

Boelen's description suggests preliminarily that the Kewalo region and the present project area are within a "not greatly cultivated" region of Honolulu perhaps extending from Ploowaina (Punchbowl Crater) at the north through Kaka'ako to the Kālia portion of Waikīki in the east. The traditional Hawaiian focus on Waikīki as a center of chiefly and agricultural activities on southeastern O'ahu was soon to change, disrupted by the same Euro-American contact that produced the first written documentation of that traditional life. Honolulu, with the only sheltered harbor on O'ahu, became the center for trade with visiting foreign vessels, drawing increasing numbers of Hawaiians away from their traditional environments. This shift in preeminence is illustrated by the fact that Kamehameha moved his residence from Waikīki to Honolulu. By the 1830s and 1840s, disease, the demands on labor for the sandalwood trade, and other factors had led to a general depopulation of the Kewalo area by Native Hawaiians. The irrigated taro *lo'i* and the fishponds were neglected and began to be filled in with sediments. In 1828, the missionary Levi Chamberlain observed the following:

[W]e took a path on our right leading through a grove of tall coconut trees toward Waikīki—our path led us along the borders of extensive plats of marshy ground, having raised banks on one or more sides, and which were once filled with water, and replenished abundantly with esculent fish; but now overgrown with tall rushes waving in the wind. The land all around for several miles has the appearance of having once been under cultivation. I entered into conversation with the native respecting this present neglected state. They ascribed it to the decrease of population . . . [Chamberlain 1957:26]

An early, somewhat generalized depiction of the pre-Contact Native Hawaiian shaping of Waikīki, Honolulu, and the Kewalo region is given on an 1817 map by Otto von Kotzebue, commander of the Russian ship *Rurick*, who had visited O'ahu during the previous year. The map (Figure 8) shows taro *lo'i* (the rectangles) massed around the streams descending from Nu'uano and Mānoa valleys and a wall terminating near the southwestern boundary of the project area defining an area that Kotzebue labeled "cemetery." Kotzebue's map suggests the land between Puowaina (Punchbowl Crater) and the shoreline—which would include the Kewalo area—formed a "break" between the heavily populated and cultivated centers of Honolulu and Waikīki. The area is characterized by fishponds, trails connecting Honolulu and Waikīki, and occasional taro *lo'i* and habitation sites. The Malden map of 1825 (Figure 9) also supports this concept of a break between more heavily populated areas to the west (Kou) and east (Waikīki).

John Papa ʻĪʻĪ (1959:92) described many of the major trails in the Honolulu and Waikīki area during the early nineteenth century (Figure 10). The main cross-*ahupua'a* trail extended from Honolulu (Honoakaha) to Wai'alaie (King Street and Wai'alaie Avenue). In the mid-nineteenth century, Gilman described Kulaokahu'a, the arid Honolulu plains, as "a most exceedingly dreary parcel of land with here and there a horse trail as path-way" (Gilman 1909:90–91). From 1840 to 1875, only a few unpaved roads were in the area, probably along the present course of King, Young, Beretania, and Punahou streets. These roads or horse paths "ran a straggling course which changed as often as the dust piled up deep" (Clark 1939:12). It is possible some minor foot trails or horse paths once approximated the project area, but there is no definite evidence for this from the historic archival material prior to 1887. Two of these trails are illustrated in an 1840 sketch by a member of the Wilkes expedition (Figure 11). This drawing shows a cluster of houses near the Honolulu Harbor and a second cluster in the far background at Waikīki, in front of Diamond



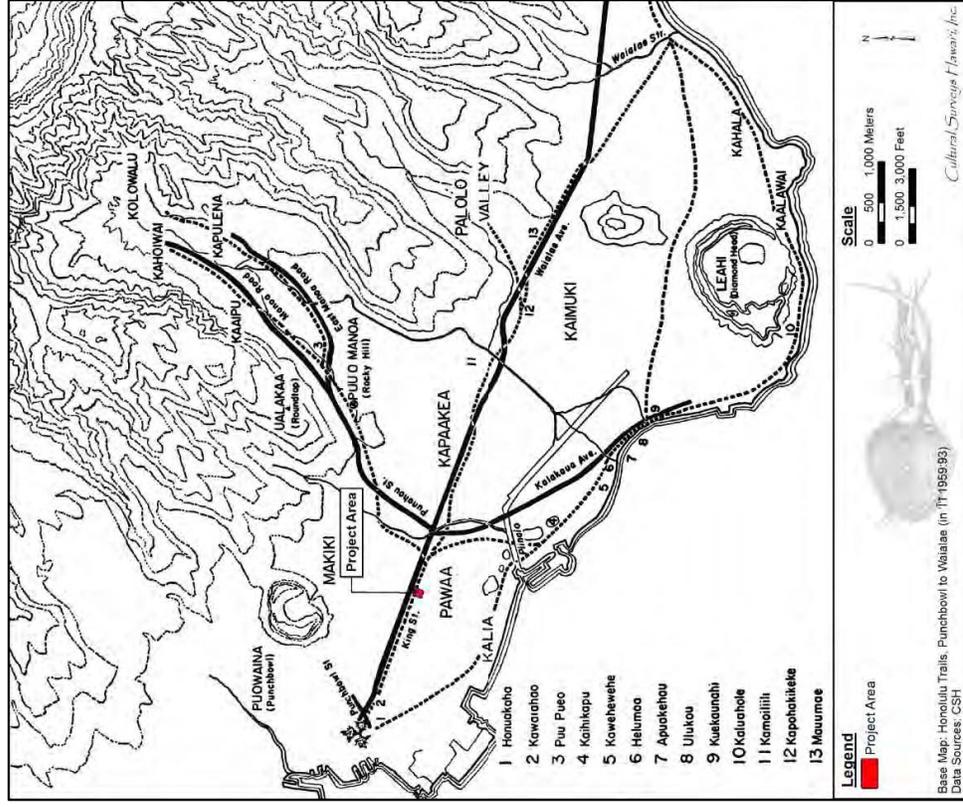


Figure 10. Map of O'ahu trails ca. 1810, drawn by Paul Rockwood based on information from 'Ū'Ū (figure in 'Ū'Ū 1959:93), map not to scale, indicating the approximate location of the project area

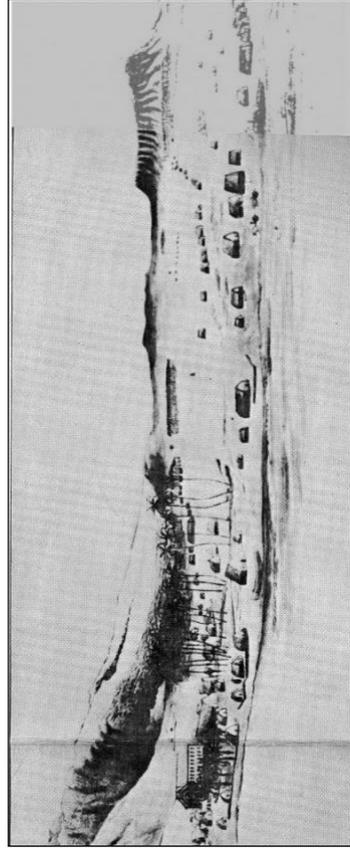


Figure 11. 1840 Wilkes Expedition sketch of Honolulu and Waikiki by James Dwight Dana (portion), showing two cross-ahupua'a trail alignments and scattered habitations; note the *mauka* trail (now approximated by King Street), between Kawaiaha'o Church (two-story building at left), the *makai* trail to Diamond Head Crater (now covered by the Queen Street/Kaliakana Avenue alignment) and limited habitation in the vicinity of the project area in the far right to central portion of the illustration (reprinted in Scott 1968:58-59)

Head Crater. The *makai* (seaward) trail from Honolulu Harbor to Waikīki is now generally covered by Queen Street and Kalākaua Avenue. This would have been seaward of the present project area. The *mauka* trail generally aligns with King Street and Wai'alea Avenue (Kuykendall 1965:112). In the 1840 sketch, this *mauka* trail extends from Kawaiāha'o Church to the coconut grove at "Little Britain," east of Pensacola Street.

### 3.1 Early Historic Period

A clearer picture of Kewalo and the present project area develops with accounts of other visitors to—and settlers of—Honolulu during the first half of the nineteenth century. Gorman D. Gilman, who arrived in Honolulu in 1841, recalled in a memoir the limits of Honolulu during the early 1840s:

The boundaries of the old town may be said to have been, on the *makai* side, the waters of the harbor; on the *mauka* side, Beretania street; on the Waikīki side, the barren and dusty plain, and on the Ewa side, the Nuuanu Stream. [Gilman 1904:97]

The plain was called "Kulaokahua," a dry, dusty area without a shrub to relieve its barrenness. From 1840 to 1875, only a few unpaved roads were in the area, probably along the present course of King, Young, Beretania, and Punahou streets. These roads "ran a straggling course which changed as often as the dust piled up deep" (Clark 1939:12). There were several horse paths crisscrossing the Kulaokahu'a Plains. The flat plains were also perfect for horse racing, and the area between present-day Pi'ikoi and Makiki streets were a well-known racing track (Peterson 1984:371). Gilman further describes the "barren and dusty plain" beyond (east of) Punchbowl Street:

The next and last street running parallel [*mauka/makai*] was that known as Punchbowl Street. There was on the entire length of this street, from the *makai* side to the slopes of Punchbowl, but one residence, the two-story house of Mr. Henry Diamond, *mauka* of King Street. Beyond the street was the old Kawaiāha'o church and burying ground. A more forsaken, desolate-looking place than the latter can scarcely be imagined. One to see it in its present attractiveness of fences, trees and shrubbery, can hardly believe its former desolation, when without enclosure, horse and cattle had free access to the whole place. [Gilman 1904:89]

That the Kaka'ako environs of the missionary enclave and Kawaiāha'o Church were indeed "forsaken" and "desolate-looking" in the 1820s when the missionaries were first settled there is confirmed in the memoirs of the American missionary C.S. Stewart. Arriving on Maui after living at Kaka'ako, Stewart declared Lahaina to be "like the delights of an Eden" after "four weeks' residence on the dreary plain of Honoruru" (Stewart 1970:177). It is likely these descriptions of the Honolulu plain also include—at least for western sensibilities—the Kewalo region beyond Kaka'ako.

The mid-nineteenth century was a period of rapid change for Honolulu. An excellent overview of Honolulu from the harbor to Beretania Street ca. 1850, constructed by Albert Peary, is located at the Judiciary History Center across from the 'Iolani Palace. Reverend Sereno Bishop offered a unique perspective on the changes in the layout of Honolulu and the structures that lined the streets:

When I returned to Honolulu in 1853, after an absence of thirteen years, I was struck by the many changes. . . . [in 1840] the major portion of the residents of Honolulu still lived in thatched houses. In fact the town was almost entirely composed of this kind of dwellings. . . .

When I went away there were only Punchbowl Road, Beretania Street, King Street and Merchant Street. This was the condition of the city in 1840. . . .

The settled portion of the city was then substantially limited by the present Alapai and River streets and mauka at School Street. There was hardly anything outside of those limits and the remainder was practically an open plain.

Above Beretania Street, on the slopes and beyond Alapai Street, there was hardly a building of any nature whatever. . . .

The plains remained open until within twenty-five years [ca. 1878], before there was any building there of any description. [Bishop 1916:58]

The 1855 La Passe map of Honolulu (Figure 12) appears to show significantly more enterprise in the area between Honolulu and Waikīki than previous maps show. Particularly notable are the depiction of a second east/west artery *mauka* of King Street approximating today's Beretania Street and also the new indications of enterprise close to the coast.

### 3.2 The Māhele and the Kuleana Act

The Organic Acts of 1845 and 1846 initiated the process of the Māhele—the division of Hawaiian lands—which introduced private property into Hawaiian society. In 1848, the crown, the Hawaiian government, and the *ali'i* (royalty) received their land titles. Subsequently in the Māhele, Land Commission Awards (LCAs) for *kuleana* (tenant) parcels were given to commoners and others who could prove residency on and use of the parcels they claimed. Land Commission Award records document awardees continuing to maintain fishponds and irrigated and dryland agricultural plots, though on a greatly reduced scale than had been previously possible with adequate manpower.

An 1884 Hawaiian Government survey map by S.E. Bishop of the area from Honolulu to Waikīki (see Figure 6) provides a detailed record of the physical landscape of the coast between Honolulu and Waikīki before the transformations of the twentieth century. The map reveals an extensive marsh extending from near Alapai and King Streets at the northwest toward Waikīki with small LCAs and land grants scattered near the coast. Development is predominantly on the higher, drier, *mauka* side where Beretania and King streets are now separated by the parallel Young Street and *mauka/makai* streets such as Pi'ikoi now appear (although notably ending at King Street on the south side). It appears Kapi'olani Boulevard is in a planned stage but is not yet a reality. A portion of LCA 10605, awarded to Kamake'e Pi'ikoi (the award is shown on the 1884 Bishop map in the general vicinity of the project area), a member of the *ali'i*, comprised the entire *'ili āina* of Kewalo (270.84 acres). Kamake'e Pi'ikoi was a member of the *ali'i* and the younger sister of the wet nurse to Kaniūkeāouli, who later became Kamehameha III. She was also the wife of Iona Pi'ikoi who served both Kaniūkeāouli, and before him Liholiho (Kamehameha II) (Kame'eiehiwa 1992:276). The two actually shared the award and it was managed by Iona Pi'ikoi after his wife's death. Documents related to this large award—LCA 10605—reveal little of the actual character of

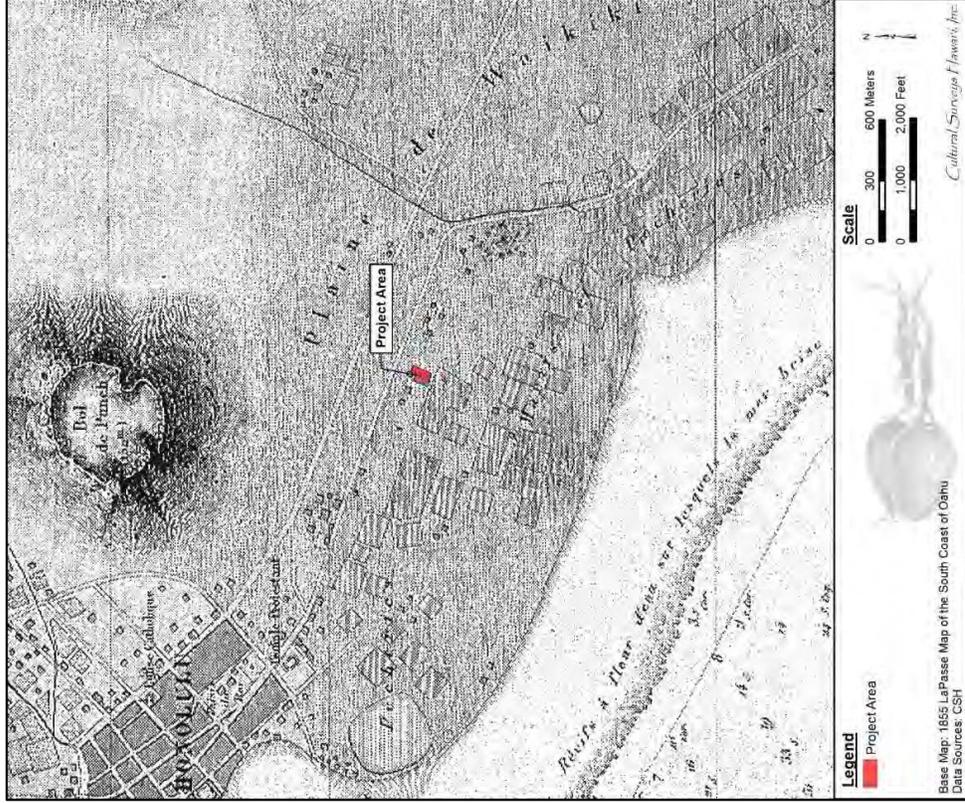


Figure 12. 1855 La Passe map of Honolulu indicating the location of project area

the land. However, records for other awards—including testimonies entered for smaller *kulaaua* awards to individuals living in the area—give a more detailed picture of Kewalo. A large portion of the Kulaokahu'a Plains was awarded to the Crown in March 1848 (Fitzpatrick 1989:54) during the Māhele. These Crown lands, set aside for the Hawaiian monarchy, were often sold to private individuals. The remaining land in the lower portion of Makiki and in the Kulaokahu'a Plains became government land, which could be sold to private individuals as “Land Grants.” The present project area is within this Government Land.

**3.2.1 Mid- to Late 1800s**

The *mauka* section of the Kulaokahu'a was designated government lands and was divided into lots and sold to private individuals between 1877 and 1882. Kulaokahu'a was one of the earliest planned blocks in Honolulu. People at first apparently bought the numbered lots as an investment, since the owner names on the lots changed frequently. Only a few people in the mid-nineteenth century O'ahu tax books are listed as actually living in Kulaokahu'a or on “the plains” (Fitzpatrick 1989:28). T. Blake Clark has noted that “the settling of the Plains did not come until the 1880s, after water was brought from Makiki Valley” (Clark 1939:12).

Two developments in the Kewalo area during the second half of the nineteenth century—Thomas Square and the “Old Plantation”—are paradigmatic of western-conceived and induced change imposed on the landscape. Thomas Square (see Figure 6), named for Admiral Richard Thomas who in July 1843 had restored the Hawaiian flag to Kamehameha III at that site, was designed by Archibald S. Cleghorn in 1875. In 1870, Cyrus P. Ward bought the property across King Street from Thomas Square at auction for \$2,450 from the estate of the late J. Booth. The property originally consisted of 17 acres with a fishpond but by 1875, Ward's property comprised 30 acres. Five years later he built a home on the property called “The Old Plantation” (Figure 13). An article in the *Pacific Commercial Advertiser* (4 September 1875) reported the following:

In taking a drive out on the Kulaokahu continuation of King Street, attention is attracted to the premises just beyond the Catholic cemetery, the property of Mr. C.P. Ward. The lot consists of some thirty acres, and is thickly planted with algaroba and, in rows, there are some seven thousand thrifty young coconut trees. . . . The algarobas will certainly be valuable as firewood, and the coconuts alone will in a few years produce a handsome income. The property is well watered by means of pumps driven by windmills, there being an inexhaustible supply of water a few feet below the surface of the plains. [*Pacific Commercial Advertiser* 4 September 1875]

Figure 14 also indicates that in 1893 the area to the south of the project area was swampy, with a pond approximately 150 m to the southwest. Further, the rectilinear corral in the southeast corner of the project area is still intact after first appearing on the 1884 and 1887 maps (see Figure 6 and Figure 7). The pond southwest of the project area is still in existence in 1897 (Figure 13) and a house has been built on the west-central boundary of the project area, labeled as the property of H.M. Whitney.

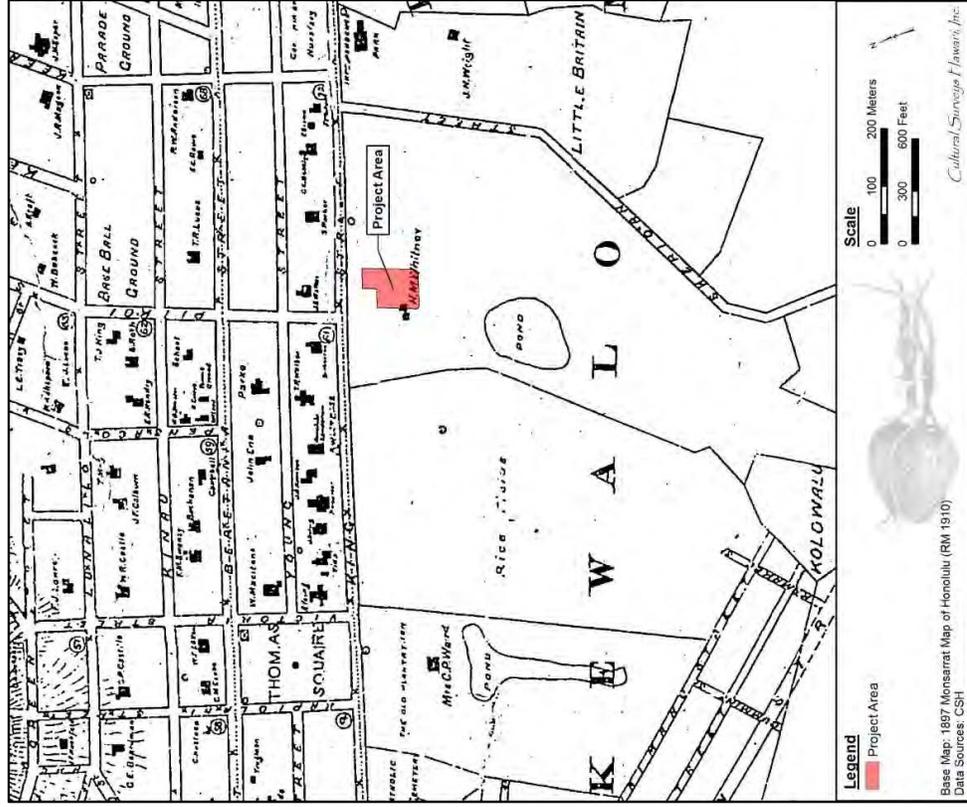


Figure 13. 1897 Monsarrat map of Honolulu indicating the Old Plantation (right center) and the house of H.M. Whitney on the boundary of the project area

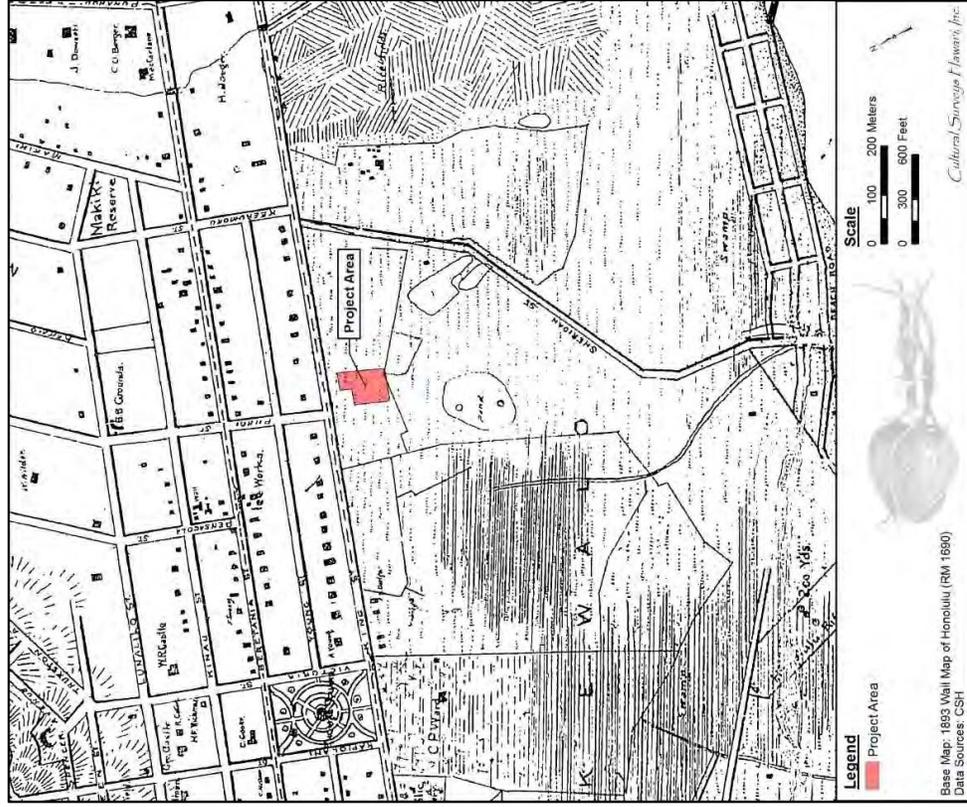


Figure 14. 1893 Wall map of Honolulu, indicating the location of the project area

Henry Martin Whitney (1824-1904) (Figure 15), the son of missionaries Mrs. Mercy Partridge Whitney and Samuel Whitney, moved to O'ahu in 1850 with his wife Catherine Olivia March (Hawaiian Mission Children's Society 1969:198-199). H.M. Whitney served as first postmaster general in Hawai'i in 1850 and was elected to the house of representatives of the legislature of the Hawaiian Kingdom in 1855. In 1856, he produced the first issue of the *Pacific Commercial Advertiser* and in 1861 he established *Ka Nuipepa Kā'oko'a*, a Hawaiian language newspaper designed to monopolize the Hawaiian language press by out-producing its competitor, *Ka Hoku o Ka Pākīpika*. The *Pacific Commercial Advertiser* would eventually become the *Honolulu Advertiser* (Krauss 2009:7-11). In 1875, Whitney published the first guide to Hawai'i for tourists, *The Hawaiian Guide Book for Travelers* (Whitney 1875), began publishing the *Marine Bulletin* in 1882, and in 1883 he was reappointed as Honolulu's postmaster general. The *Marine Bulletin* was eventually purchased by James Robison and became the *Honolulu Star-Bulletin*, which ceased publication in 2010 when it merged with the *Honolulu Advertiser* to become the *Honolulu Star-Advertiser*, currently the largest daily newspaper in Hawai'i (Krauss 2009:7-11). An unapologetic Puritan, Whitney was outspoken in his critique of traditional Native Hawaiian cosmological beliefs and the Hawaiian monarchy. In 1866, he rejected Samuel Clemens' (Mark Twain) application for employment and although the two shared cigars, Clemens' letters indicate satirical animosity toward Whitney:

I am going chiefly, however, to eat the editor of the Commercial Advertiser for saying I do not write the truth about the Hawaiian Islands, and for exposing my highway robbery in carrying off Father Damen's book—History of the Islands. I shall go there might hungry. Mr. Whitney is jealous of me because I speak the truth so naturally, and he can't do it without taking the lock-jaw. But he ought not to be jealous: he ought not to try to ruin me because I am more virtuous than his is; I cannot help it—it is my nature to be reliable, just as it is his to be shaky on matters of fact—we cannot alter these natures—us leopards cannot change our spots. Therefore, why growl?—why go and try to make trouble? If he cannot tell when I am writing seriously and when I am burlesquing—if he sits down solemnly and take one of my palpable burlesques and reads it with a funereal aspect, and swallows it as petrified truth,—how am I going to help it? I cannot give him the keen perception that nature denied him—now can I? Whitney knows that. Whitney knows he has done me many a kindness, and that I do not forget it, and am still grateful—and he knows that if I could scour him up so that he could tell a broad burlesque from a plain statement of fact, I would get up in the night and walk any distance to do it. You know that, Whitney. But I am coming down there mighty hungry—most uncommonly hungry, Whitney. [Samuel Clemens in Zmijewski 2006:55-95]

An 1887 map by the surveyor W.A. Wall (see Figure 7) shows the new Pensacola Street but only that portion extending *mauka* from Beretania Street. Virtually no houses are shown in the vicinity of the project area at that time; a few fences are shown in the vicinity of the project area *makai* of King Street. In 1897 (see Figure 13) the street system is much the same but there has been considerable home building *mauka* of King Street. Rice cultivation is indicated in the low-lying lands that would soon become McKinley High School.

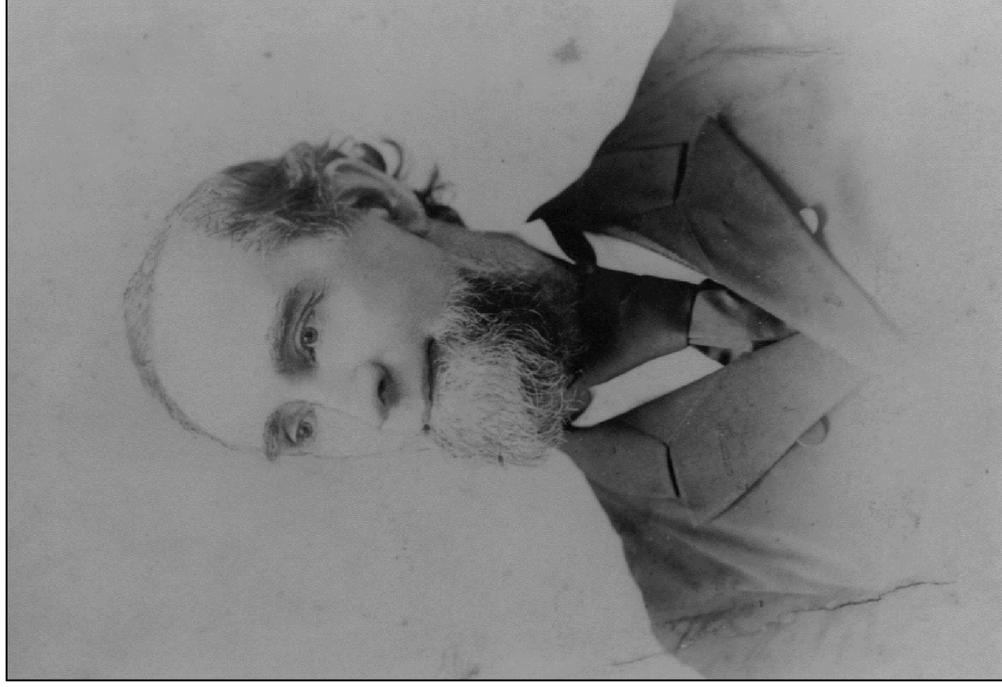


Figure 15. Henry Martin Whitney, Sr. (1824-1904) (photo from the *Hawaiian Gazette*, 14 April 1903)

**3.2.2 1900s**

In the early twentieth century the process of urbanization extended seaward east of Pi'ikoi Street as far as Sheridan Street including the creation of the "ABC tree" streets: Alder, Birch, and Cedar. The east/west streets stubbed out just west of Pi'ikoi Street as they encountered the low-lying marsh lands (Figure 16 and Figure 17). Before 1914, the project area held a shed next to a dwelling (Figure 18).

During the 1920s the Honolulu and Waikiki landscape was transformed when construction of the Ala Wai Drainage Canal—began in 1921 and completed in 1928—resulted in the draining and filling in of the remaining ponds and irrigated fields of Waikiki. The canal was one element of a plan to urbanize Waikiki and the surrounding districts. During the course of the Ala Wai Canal's construction, the banana patches and ponds as far *maka* as the location of McKinley High School were filled. The land surface of much of Honolulu is the result of this decade-long dredging and fill project which included the creation of the Ala Wai Canal. In Nakamura's (1979:113) *The Story of Waikiki and the "Reclamation" Project*, he writes that this land "'reclamation' program changed the ecology of the area from a once viable and important agriculture and aquaculture center . . . destroyed by profit-seeking capitalist entrepreneurs. . . under the subterfuge of 'drainage' and 'sanitation.'" Many of the original property owners lost their land or had serious damage to their property as a result of the reclamation activities and/or the costly expense of the mandatory filling in of their properties. Information is minimal about the actual dredging and fill process as well as the dredged materials used for fill.

It is known that in 1922 fill was pumped from the Ala Wai to the McKinley High School site (Griffin et al. 1987:58). The 1920 Monsarratt map of Honolulu (Figure 19) indicates the "Proposed McKinley High School" west of the project area, Kapi'olani Boulevard south of the project area is incomplete with a portion "Proposed," as well as a "Proposed Boulevard," a never built extension of Makaloa Street that would have passed through the southern portion of the current footprint of McKinley High School. A 1927 Kaka'ako coast aerial photograph (Figure 20) shows the newly infilled land west of the project area with the new McKinley High School. Neither Kapi'olani Boulevard nor the southern extension of Pensacola Street *maka* of King Street have been constructed. However, a 1933 U.S. Army War Department Fire Control map (Figure 22) shows the former fishponds and rice fields have been filled and leveled for development and a new portion of Pensacola Street extends down to the new Kapi'olani Boulevard. In 1928, work began on Kapi'olani Boulevard, commencing at the intersection of South and King streets. By 1931, the boulevard had reached Sheridan Street. Pensacola Street, named for the USS *Pensacola*, had been laid out in the nineteenth century but did not extend *maka* past King Street until the mid-1930s. By 1943 (Figure 23), only the smaller side streets remained unimproved (unpaved). There were still surprisingly few buildings adjacent to the east side of Pensacola Street seaward of King Street. By 1951 (Figure 24), the east side of Pensacola Street seaward of King Street had largely been filled in with new homes. Figure 24 and Figure 25 indicate portions of the extant facility were built by 1950. By 1953, the built portion of the project area appears much as it does today (Figure 26) and by 1969 (Figure 27), a USGS topographic map shows the built appearance of the vicinity surrounding the project area much as it appears today.

Hawaiian directories of 1871-1924 (Bennett 1871; Bowser 1880; Husted 1892-1910; Lane 1890; McKenney 1884; McKenney Directory Co. 1888, 1889; Polk-Husted Directory Co. 1912,

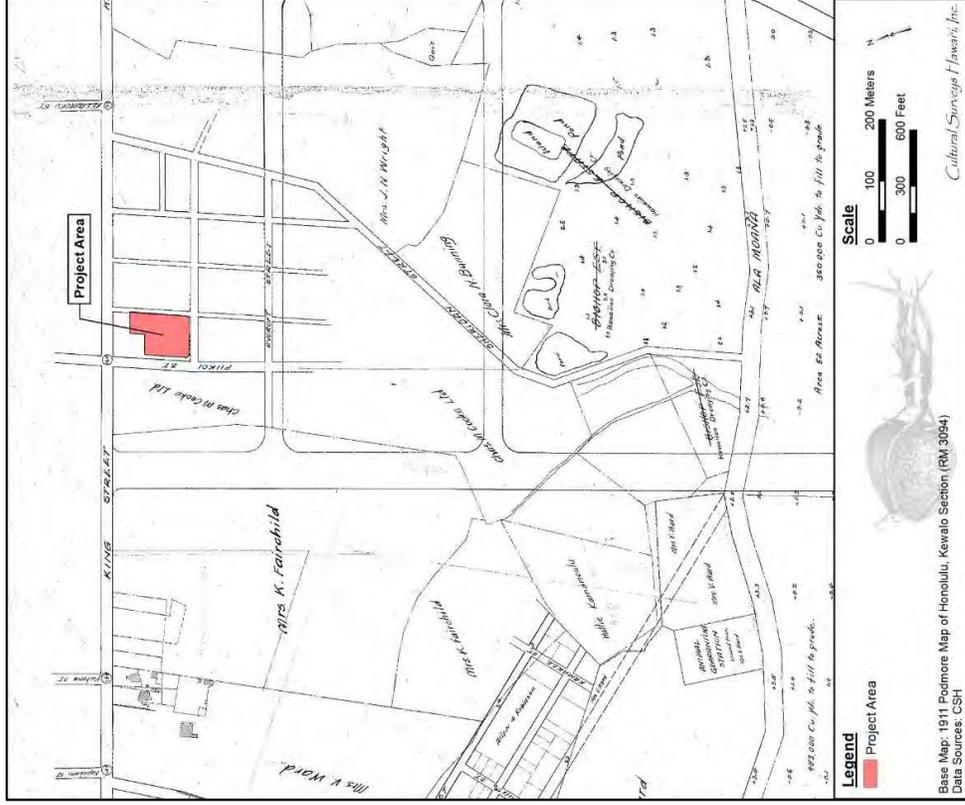


Figure 16. 1911 Podmore map of Honolulu, indicating the location of the project area

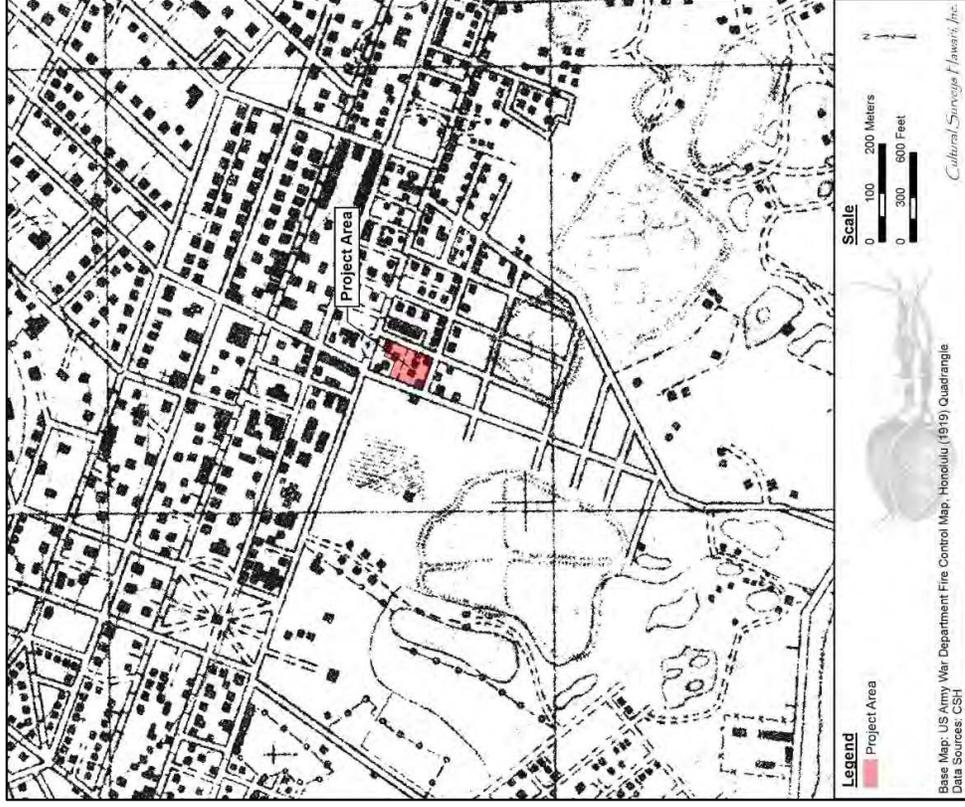


Figure 17. 1919 U.S. Army War Department Fire Control map of O'ahu, Honolulu Quadrangle, indicating the location of the project area

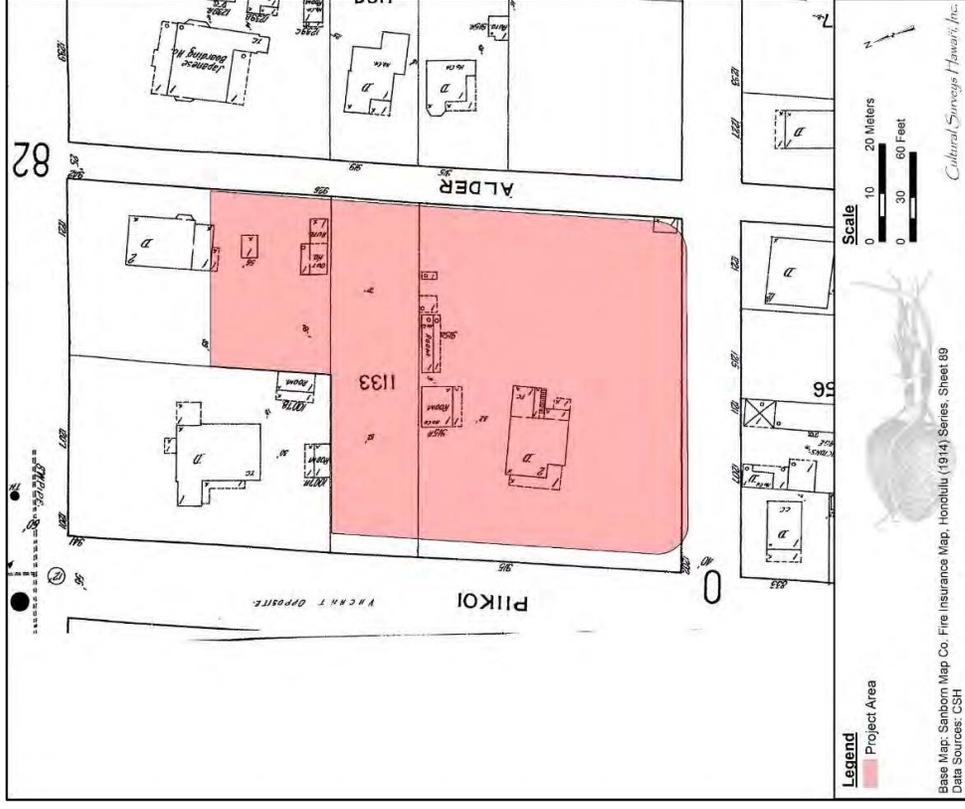


Figure 18. 1914 Sanborn Map Company Fire Insurance map, Honolulu Series Sheet 89, indicating the location of the project area

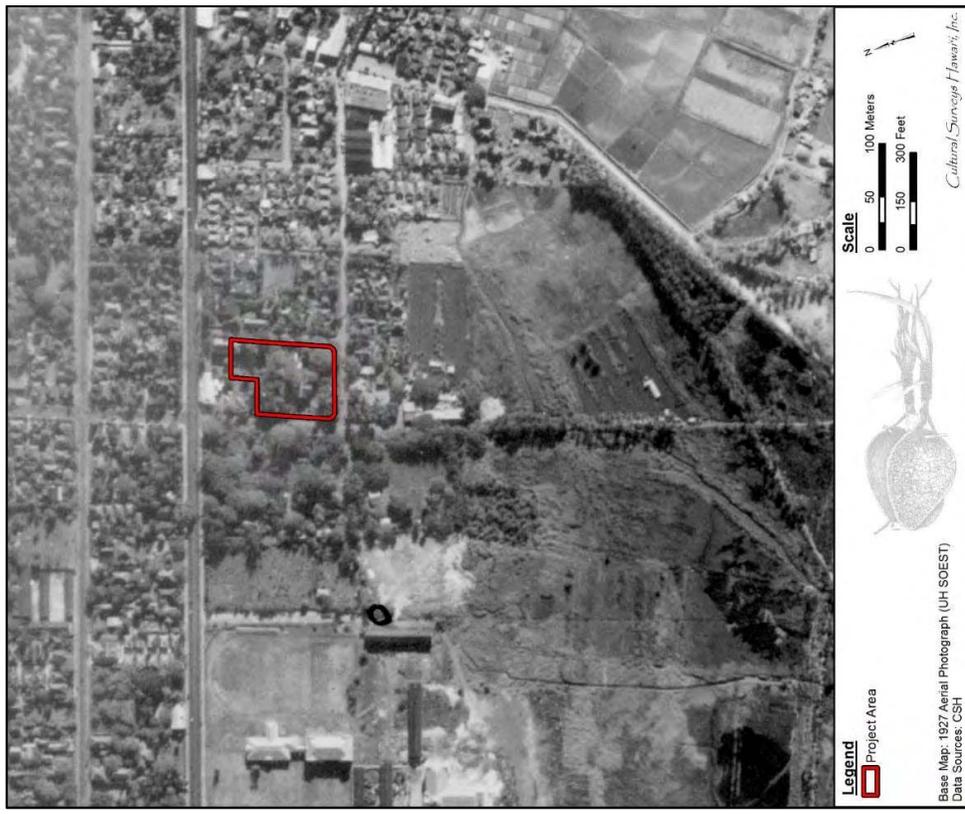


Figure 20. 1927 Kaka'ako coast aerial photograph (UH SOEST), indicating the location of the project area

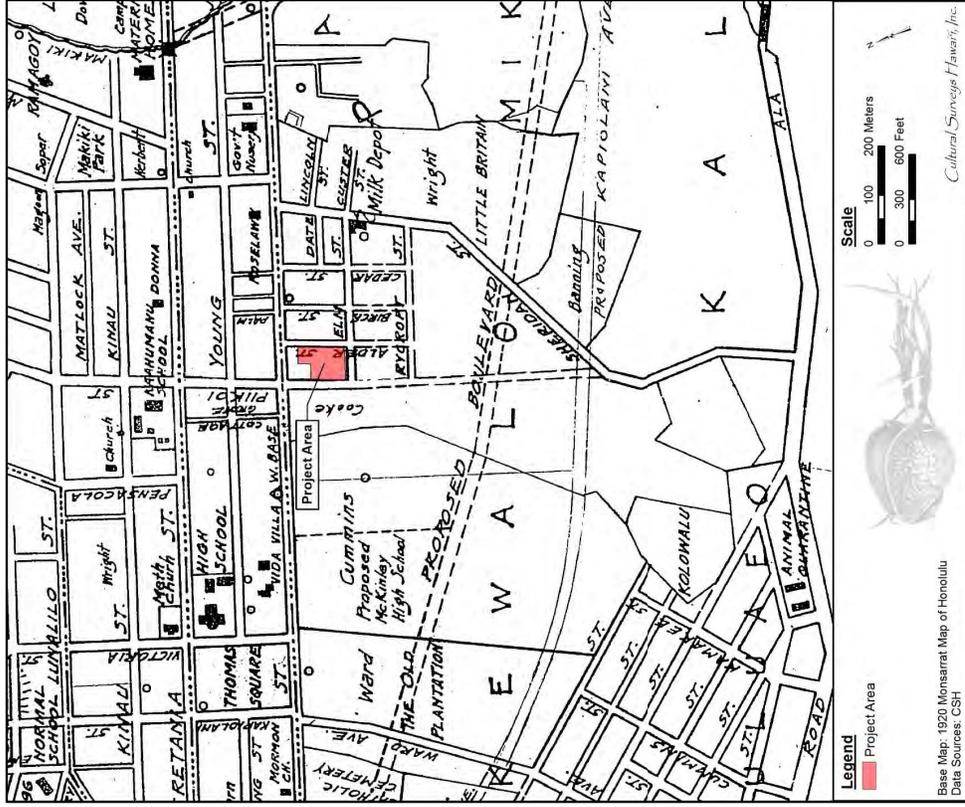


Figure 19. 1920 Monsarrat map of Honolulu



Figure 21. 1927 Sanborn Map Company Fire Insurance map, Honolulu Series Sheets 277 and 278, indicating the location of the project area

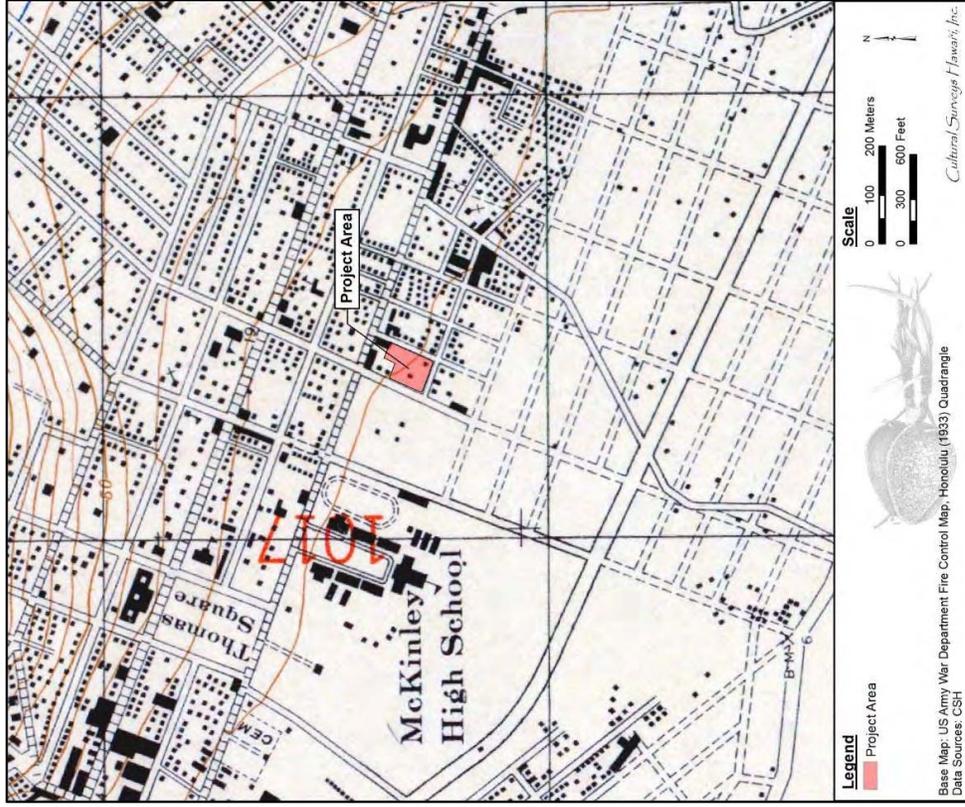


Figure 22. 1933 U.S. Army War Department Fire Control map, Honolulu Quadrangle (portion), indicating the project area east of the new McKinley High School

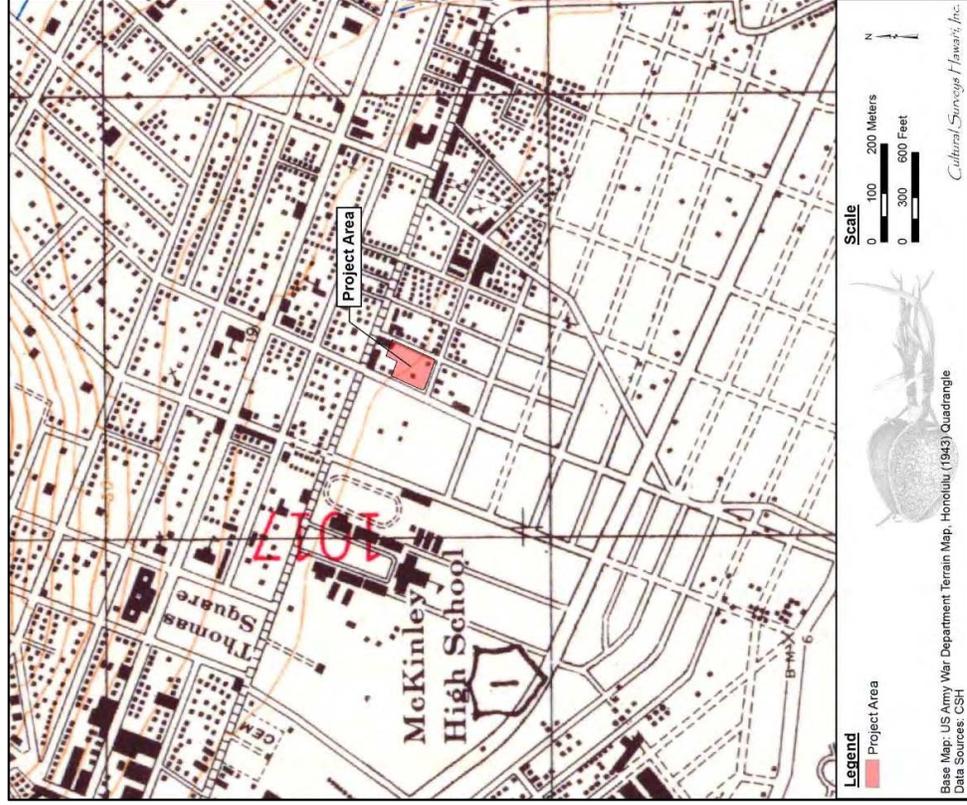


Figure 23. 1943 U.S. War Department map, Honolulu Quadrangle (portion), indicating the location of the project area



Figure 24. 1950 Sanborn Map Company Fire Insurance map, Honolulu Series Sheets 277 and 278, indicating the location of the project area

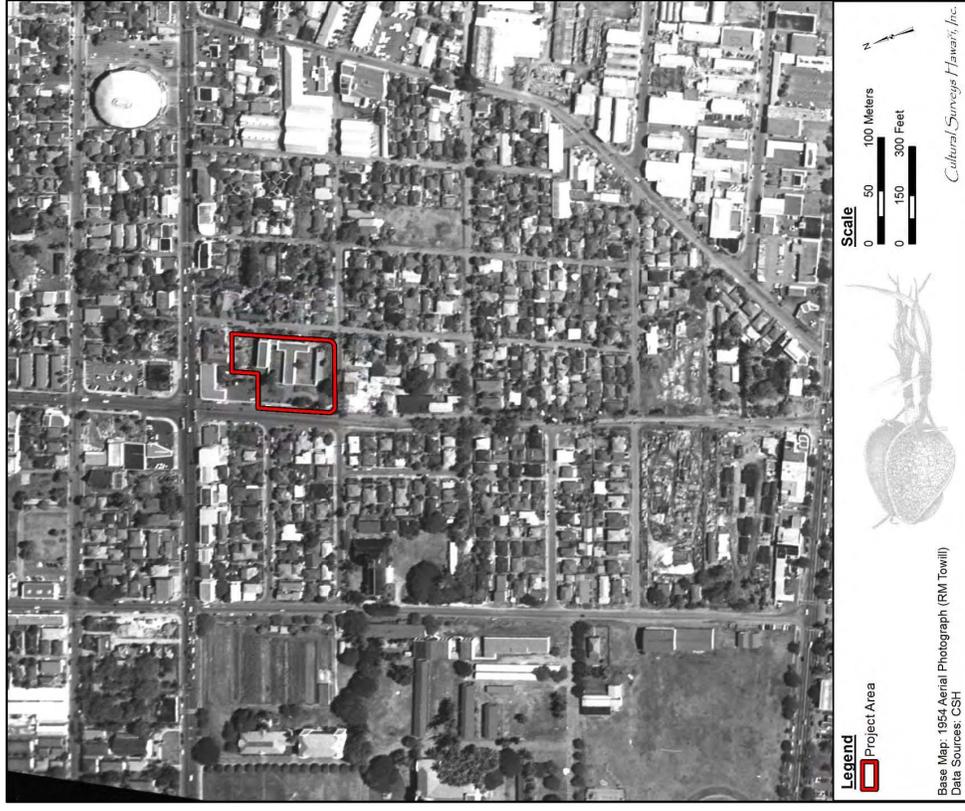


Figure 26. 1954 aerial photograph, indicating the project area (RM Towill)

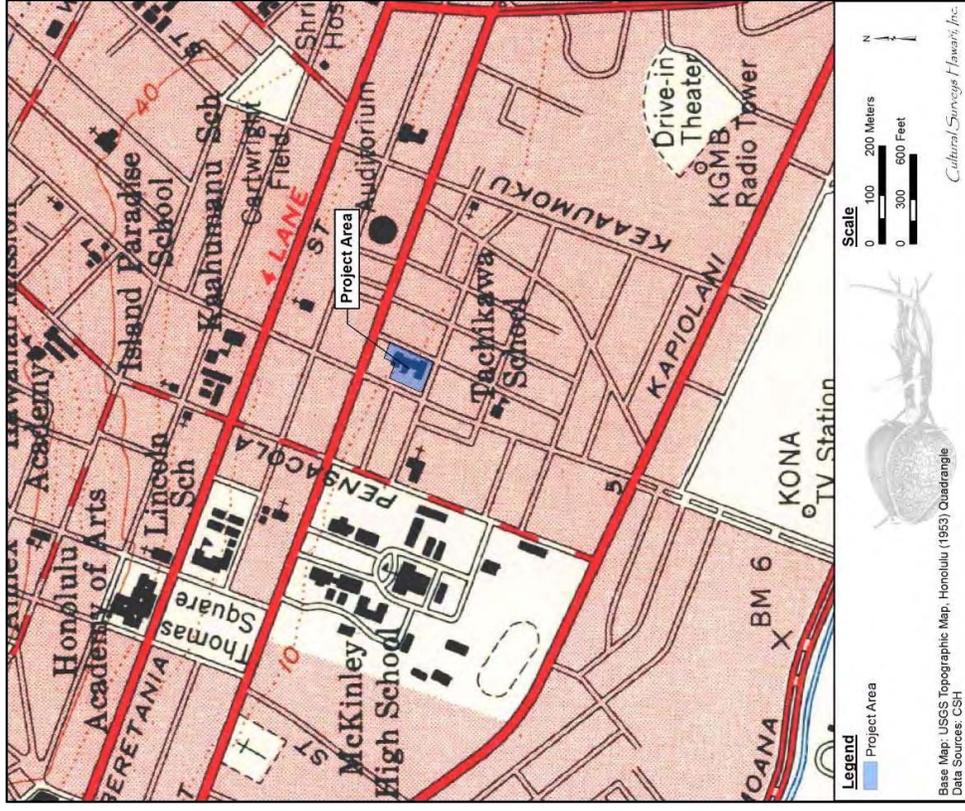


Figure 25. 1953 Honolulu USGS topographic quadrangle (portion), indicating the location of the project area

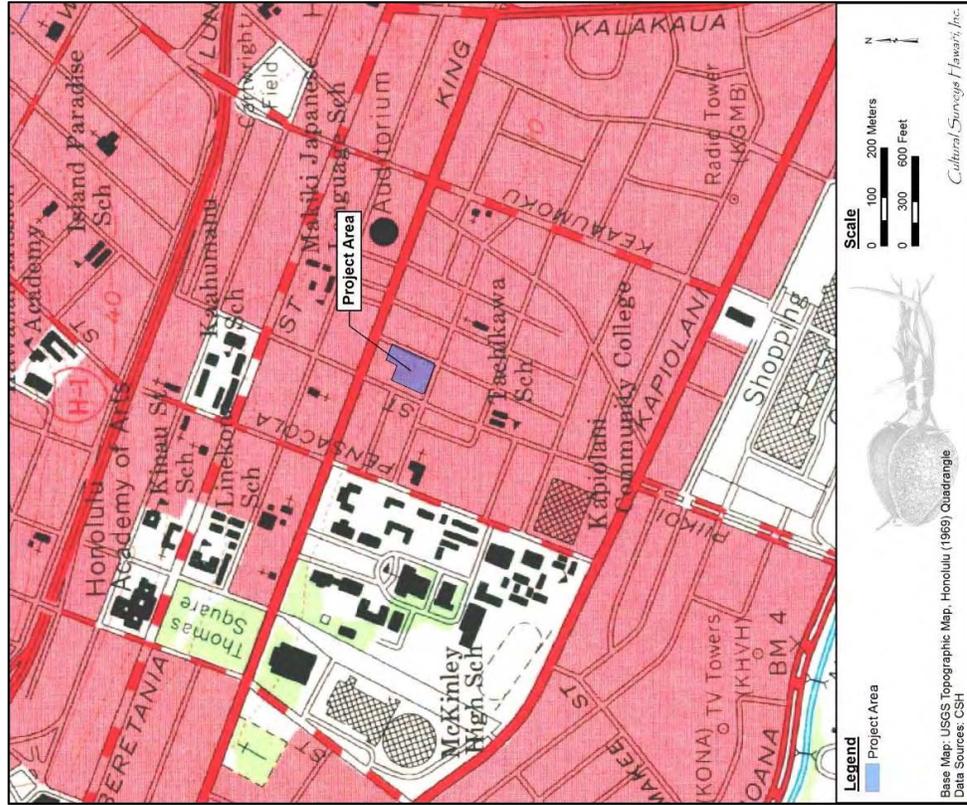


Figure 27. 1969 Honolulu USGS topographic quadrangle (portion), indicating the location of the project area, much as it appears today

1924) and historic maps provide some additional information on the buildings in the property in the late nineteenth to early twentieth century. The home address for Henry Martyn Whitney, Sr. is listed as School Street and Punahou in 1871 and 1880, respectively. From 1884, his address is listed as "Kewalo, 251 King Street," or "Piikoi nr King," which matches the location of the large house in the southern portion of the project area. Thus, Whitney must have moved to his house between 1880 and 1884. In 1904, the address is listed for both Henry Martyn Whitney, Sr., who died in this same year, and his only surviving son, Henry Martyn Jr., an employee at C. Brewer & Company. Directories up to 1924 continue to list Henry Martyn Whitney, Jr. as the resident of the Pi'i'koi house, and he probably lived there until his death in 1936. Before 1914, the upper portion of the project area had a shed next to a dwelling (see Figure 18). It was also in 1914 that a new detention home was built in the upper portion of the project area. The initial building date for the detention home is corroborated by a report of the Governor of Hawaii to the U.S. Department of the Interior for 1914:

A detention home, within easy access of the juvenile court in Honolulu, has been established during the past year and supported by the city and county of Honolulu, to care for children awaiting trial, dependents not yet permanently provided for, and sometimes paroled juveniles. [Governor of Hawaii: 1914:573]

By 1927, three additional buildings related to the detention home exist in the project area (Figure 21). The original detention home was replaced by a larger building in 1944. *Honolulu Magazine* (2006) reports that, "The state built the facility in 1944, and its 60 years—with little renovation or modernization—shows." This 1944 building reference points to renovations and additional buildings added to the facility visible on a 1950 Sanborn map (see Figure 24). The article goes on to report

In 2005, the state Legislature approved \$95 million for the judiciary to build a 70,000-square-foot juvenile detention center in Kapolei and a new Family Court complex. The new center should replace the ramshackle existing Ala Moana facility by 2010. [*Honolulu Magazine* 2006]

## Section 4 Previous Archaeological Research

### 4.1 Previous Archaeological Studies in the Vicinity

Archaeological studies within the vicinity of the project area are depicted in Figure 28 and summarized in Table 1. Previously identified historic properties in the vicinity of the project area are depicted in Figure 29 and listed in Table 2. A more detailed text summary follows (in chronological order) for prior archaeological studies in the vicinity of the project area.

#### 4.1.1 Smith (1989)

In 1989, four bone fragments were found by construction workers in a property (TMK: [1] 2-3-039:019) on the southeast corner of Kapi'olani Boulevard and Pi'ikoi Street. The find was reported to Marc Smith (1989) of the SHPD. Smith examined the bones and determined only one was human; the remaining bones were pig bones. The human bone was a right tibia shaft fragment. The bone was temporarily taken to the Honolulu SHPD office and the site was given the designation of State Inventory of Historic Places (SIHP) # 50-80-14-4243.

#### 4.1.2 Athens et al. (1994)

In 1994, during excavation of a trench for an underground telephone line near the northeast corner of Pi'ikoi Street and Kapi'olani Boulevard, the remains of a single individual were inadvertently discovered and later disinterred (Athens et al. 1994). Osteological analysis revealed the remains (SIHP # -4847) were the fairly complete skeleton of a 12- to 15-year old female. Radiocarbon analysis of a sample of bone collagen yielded a date of death between AD 1295 and 1473, supporting the osteological determination of Hawaiian/Polynesian ancestry. The remains were interred within a wetlands environment at a shallow depth of 50-80 cmbs (centimeters [cm] below surface). A lack of burial goods and the presence of the remains within an unusual wetlands context strongly suggested the location of the remains did not reflect an intentional burial. Osteological analysis revealed severe bone infection of the right pubis as the probable cause of death. The individual probably passed away, undiscovered, at the very spot of interment. Athens et al. (1994:8) placed the location of this burial near an earth embankment that was probably used as a trail between a fishpond and other marshy areas in the Kewalo region.

#### 4.1.3 Sinoto (2000) and McElroy (2010)

In an area bounded by Sheridan and Ke'eaumoku streets is the "Wal-Mart Site." Aki Sinoto Consulting conducted an archaeological assessment (Sinoto 2000) and prepared an archaeological monitoring plan for the Makaloa-Sheridan Sam's Club/Wal-Mart project. Archaeological monitoring of the project was conducted from 2002 to 2004 and ended up being summarized by McElroy (2010) who was not directly involved in the fieldwork. Human remains recovered were from a minimum number of 64 individuals (MNI = 64) and were observed in six areas within the project parcel (designated SIHP #s -6516, -6661, and -6662). The burials appear to represent both pre-Contact and post-Contact burials.

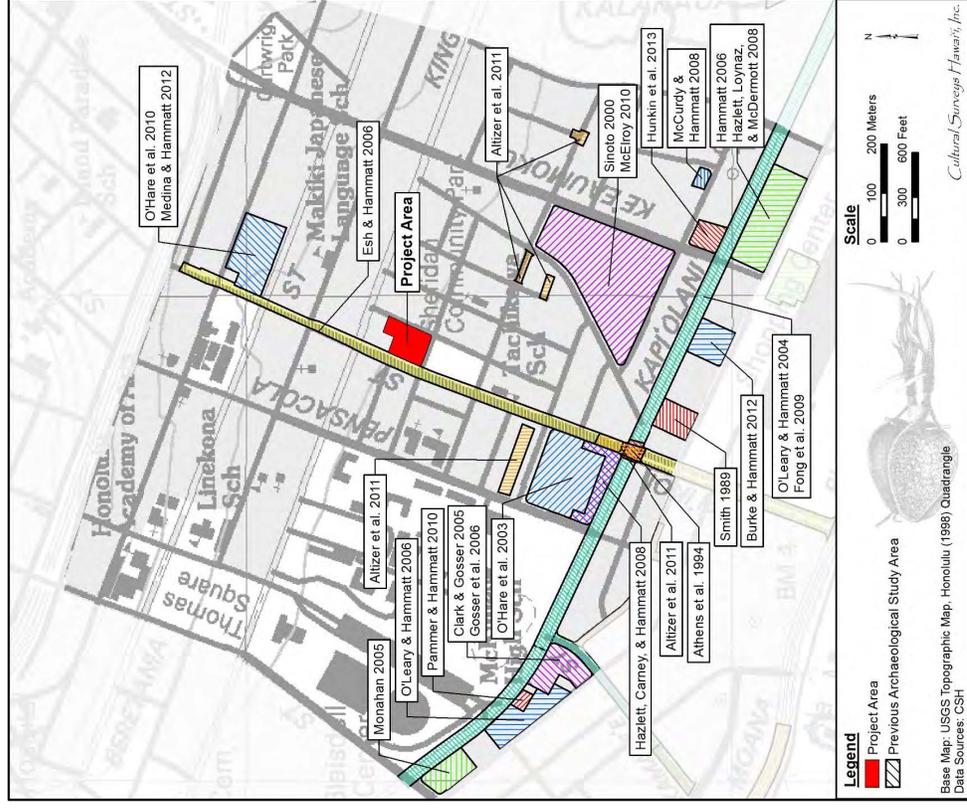


Figure 28. Previous archaeological studies in the vicinity of the project area

Table 1. Previous Archaeological Studies in the Vicinity of the Project Area

Reference	Type of Study	Location	Results (SIHP #s 50-80-14)
Smith 1989	SHPD burial call report	Kapi'olani and Pi'ikoi	Inadvertent disturbed burial find in back dirt pile; (SIHP # -4243)
Athens et al. 1994	Archaeological investigation of inadvertently discovered human remains	Kapi'olani and Pi'ikoi	Inadvertent in situ burial find—one individual; (SIHP # -4847)
Sinoto 2000	Archaeological assessment (literature review and field inspection)	Proposed Wal-Mart	Assessment of project area before construction; during monitoring between Jan. 2003 and April 2003 64 burials found, but final report on these findings not completed
O'Hare et al. 2003	Archaeological inventory survey	Block on corner of Kapi'olani Blvd and Pi'ikoi St. TMKS: [1] 2-3-010:028, 048, 050, 052-056	Total of 24 trenches excavated in a lot on east side of Pi'ikoi St; two sites identified, several historical trash pits (SIHP # -6637), a wetland stratum with a defined sand berm (SIHP # -6636), which can be seen on late nineteenth century maps
O'Leary and Hammatt 2004	Archaeological monitoring	Unit 9 Streets	No cultural remains found
Clark and Gosser 2005	Subsurface archaeological inventory survey	TMKS: [1] 2-3-003:075, 085, and 086	SIHP # -6636 designates a subsurface remnant of a small pond present in northern portions of project area
Monahan 2005	Archaeological assessment	909 Kapi'olani Blvd, TMKS: [1] 2-3-003:073 and 096	Nine backhoe test excavations conducted; no historic properties identified
Esh and Hammatt 2006	Archaeological monitoring	Pi'ikoi St, Ala Moana Blvd to Matlock St	Monitoring of Unit 5 B Streets; no cultural materials found

Reference	Type of Study	Location	Results (SIHP #s 50-80-14)
Gosser et al. 2006	Archaeological monitoring	TMKS: [1] 2-3-003:075, 085, and 086	SIHP # -6636 subsurface remnant of small pond present in northern portions of project area; during archaeological monitoring in southern portion of project area, observed a buried A horizon, Layer II, previously identified during subsurface testing
Hammatt 2006	Archaeological literature review and field inspection	1391 Kapi'olani Blvd parcel, TMK [1] 2-3-039:011	Noted project area within LCA 100 FL and near burials found at junction of Kapi'olani Blvd and Pi'ikoi St
O'Leary and Hammatt 2006	Archaeological inventory survey	Moana Visia project on Kapi'olani Blvd, TMKS: [1] 2-3-003:072, 088, 102	No historic properties identified
Hazlett, Carney, and Hammatt 2008	Archaeological monitoring	Honolulu Design Center Phase III, TMKS: [1] 2-3-010:048, 050, 052, 053, 054, 055, 056	No historic properties identified
Hazlett, Loynaz, and McDermott 2008	Archaeological monitoring	Approx. 6-acre Ala Moana Center Expansion, TMKS: [1] 2-3-038: 001 and 2-3-040:005, 007, 009, 011, 014, 016, and 018	No historic properties identified
McCurdy and Hammatt 2008	Results of subsurface testing	Hawaiian Electric Company East O'ahu Transmission Project (Makaloa Substation), TMK: [1] 2-3-021:027	No cultural materials (midden, charcoal, or artifacts) observed; results of analysis determined sedges and grasses by far most abundant plants represented in this record; Cyperaceae (sedge) pollen almost 30% of total pollen; Saccharum-type pollen (sugar cane), most common of grass pollen at roughly 25% of total, consistent with a pond or wetland in the area; identification of <i>Ipomoea batatas</i> -type pollen indicates cultivation of sweet potato at edges of existing pond

Reference	Type of Study	Location	Results (SIHP #s 50-80-14)
Fong et al. 2009	Archaeological monitoring	Kapi'olani Blvd from Kalaikaua Ave to Ward Ave, Kamake'e St from Kapi'olani Blvd to Auahi St, and Atkinson Dr from Kapi'olani Blvd to Ala Moana Blvd	No human remains or historic properties identified; several historic items encountered, all post-dating 1890, indicative of conversion of area from agriculture land to residential suburbs; fill material also found at various locations in project area, deposited during reclamation activities in the 1920s and 1930s
McElroy 2010	Archaeological monitoring	Makaloa-Sheridan Sam's Club/Wal-Mart, TMKS: [1] 2-3-016:009 and 043	Human remains found in six areas of work site, designated as Burial Findspots (BFS-1-BFS-6); three site numbers assigned: SIHP # -6516 includes BFS-1, -3, -4, and -5; SIHP # -6661 composed of BFS-2; and SIHP # -6662 encompasses BFS-6; these three sites evaluated as significant under Criterion d of §13-275-6(b) for information on history and pre-history they might yield; examination of stratigraphy indicates multiple, extensive disturbance episodes throughout much of project site
O'Hare et al. 2010	Archaeological literature review and field inspection	Safeway/Schuman Carriage property	Historic documents and previous archaeological studies indicate low potential for intact cultural deposits, including pre-Contact deposits, historic deposits, and possibly pre-Contact and post-Contact burials
Pammer and Hammatt 2010	Archaeological assessment	Approx 0.26-acre Moana Vista project area on Kapi'olani Blvd, TMK: [1] 2-3-003:084	No historic properties discovered
Altizer et al. 2011	Archaeological monitoring	Kapi'olani Area Revised Sewer System, TMKS: [1] 2-3-004, 005, 007, 009, 010, 013, 014, 017, 018, 022, 035, 036, 038, and 041	Excavation activities included replacement of ten sewer line segments; three segments rehabilitated with cured-in-place pipe method and no open trenching conducted at these segments; previously documented SIHP # -6636, a wetland deposit, documented in Sewer Line G off Pensacola St between Ho'ola'i and Kamaile streets

Reference	Type of Study	Location	Results (SIHP #s 50-80-14)
Burke and Hammatt 2012	Archaeological inventory survey	1391 Kapi'olani Blvd parcel, TMK: [1] 2-3-039:011	Single historic property identified within project area, SIHP # -7193, consists of layer of historic trash; layer seen in nine trenches within northern and eastern portions of project area
Medina and Hammatt 2012	Archaeological monitoring	Safeway, Inc. development project, TMKS: [1] 2-4-011:008, 009, 010, and 011	Observed and recorded stratigraphy includes various modern fill layers related to modern development (post-1960) overtop naturally deposited alluvial sediment, over top of natural volcanic cinder layer; one historic property observed (SIHP # -7212), a post-Contact trash pit containing historic era refuse
Hunkin et al. 2013	Archaeological inventory survey	Walgreens Kapi'olani Redevelopment project, TMKS: [1] 2-3-021:008, 009, and 010	Two archaeological historic properties identified: • SIHP # -6636, former wetland surface for region with potential to yield information related to past land use • SIHP # -7431, historic structural remnants associated with past industrial and commercial land use in 1950s

Table 2. Previously Identified Historic Properties near the Present Study Area

SIHP # (50-80-14-)	Description of Site	General Location	Source
01339	Linckona School	300 m west of north end of project area	HRHP and NRHP
04243	Human bone at 1341 Kapi'olani Ave	500 m south of south end of project area	Smith 1989
04847	Archaeological investigation of inadvertently discovered human remains at Pi'ikoi and Kapi'olani intersections	300 m southeast of south end of project area	Athens 1994
06516	Burials (BFS-1, -3, -4, and -5, 62 burials)	300 m southeast of south portion of project area	McElroy 2010
06636	Subsurface wetland sediments (estimated extent)	Extensive area 250 m south of project area extending <i>nakai</i>	Altizer et al. 2011, and further south: O'Hare et al. 2003, O'Hare et al. 2004, Clark and Gosser 2005, Tulehin and Hammatt 2005, Runyon et al. 2011, Runyon et al. 2012, Hammatt 2013, Morriss et al. 2013
06637	Historic trash pit	300 m south of project area	O'Hare et al. 2003
06661	Burial (BFS-2, one burial)	350 m southeast of project area	McElroy 2010
06662	Burial (BFS-6, one burial)	350 m southeast of project area	McElroy 2010
06847	Wood lined subsurface feature	700 m southeast of project area	Hammatt 2006
07193	Historic trash pit	500 m SSE of project area	Burke and Hammatt 2012
07212	Subsurface refuse deposit	300 m NNE of project area	Medina and Hammatt 2012
07431	Subsurface historic structure remnants	600 m southeast of project area	Hunkin et al. 20213
09719	Makiki Christian Church	100 m southwest of project area	HRHP

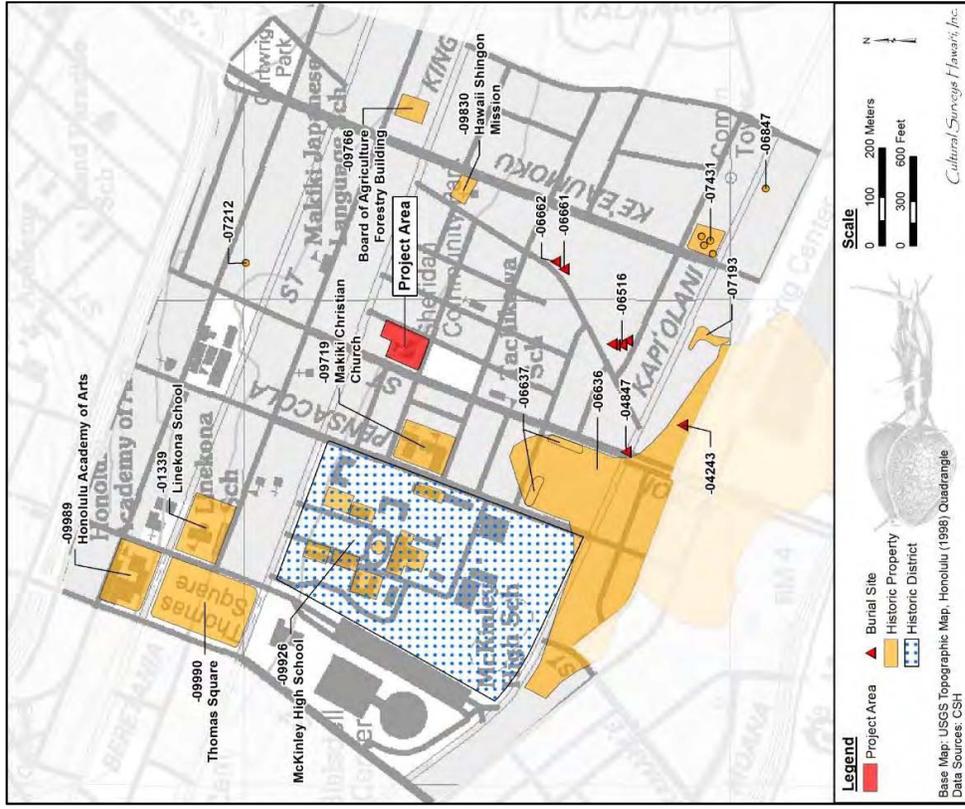


Figure 29. Portion of 1998 Honolulu USGS map showing locations of previously designated historic properties in the vicinity of the project area

SIHP # (50-80-14-)	Description of Site	General Location	Source
09766	Board of Agriculture Forestry Building	400 m east of project area	HRHP
09830	Hawaii Shingon Mission	300 m east of project area	HRHP and NRHP
09926	Commercial Building (McKinley HS)	300 m west of project area	HRHP and NRHP
	Home Economics Building (McKinley HS)	300 m west of project area	HRHP and NRHP
	Art Building (McKinley HS)	300 m west of project area	HRHP and NRHP
	Mathematics Building (McKinley HS)	300 m west of project area	HRHP and NRHP
	Auditorium (McKinley HS)	300 m west of project area	HRHP and NRHP
	Senior Core Building (McKinley HS)	300 m west of project area	HRHP and NRHP
09989	Honolulu Academy of Arts	600 m northwest of project area	NRHP
09990	Thomas Square	500 m northwest of project area	NRHP

**4.1.4 O'Hare et al. (2003)**

In 2003, CSH (O'Hare et al. 2003) completed an archaeological inventory survey of an approximately 6-acre parcel in the vicinity of the project area. No burials were found in the 24 trenches excavated during the inventory survey, as predicted. No pre-Contact or pre-twentieth century habitation deposits were recorded, but historical trash pits (SIHP # -6637) and a new defined berm (SIHP # -6636) related to agricultural activities were documented. SIHP # -6637 consists of a trash dump found in six trenches, all located in the northeast corner of the project area near Pi'ikoi Street. This trash pit contained wood, brick, tires, ceramic dinnerware, insulators, rusted metal, and glass bottles. Many of the glass bottles were dated to the 1920s to 1940s, some specifically to the 1930s. The type of material present does not seem to be individual household garbage, but may be related to the businesses in the surrounding area.

**4.1.5 LeSeur and Cleghorn (2004)**

Pacific Legacy, Inc. (LeSeur and Cleghorn 2004) completed an archaeological assessment for proposed routes of the HECCO East O'ahu Transmission project in 2004. The King Street portion of the electric line route is near the current study area. The report authors note the route is near six historic sites: Thomas Square (SIHP # -9990), which has ties to the return of sovereignty from the British in 1843; Linekona School, established in 1925 (SIHP # -1339); McKinley High School (SIHP # -9926), built at its current location in 1923; a Catholic cemetery (*makai* of King Street) first used in 1851, and two former fishponds.

**4.1.1 O'Leary and Hammatt (2004), Fong et al. (2009)**

From August to October 2004, CSH conducted archaeological monitoring for emergency sewer line repairs that occurred along Kapi'olani Blvd. (O'Leary and Hammatt 2004). A total of five 0.6-m deep trenches were excavated. Excavations took place in fill materials associated with the original placement of the sewer pipes; no cultural material was encountered.

In 2009, CSH completed archaeological monitoring of construction associated with the upgrading of existing drainage, water, and sewer systems within Kapi'olani Boulevard from Kalākaua Avenue to Ward Avenue, within Kamake'e Street from Kapi'olani Boulevard to Auahi Street and within Atkinson Drive from Kapi'olani Boulevard to Ala Moana Boulevard (Fong et al. 2009). No historic properties were observed. Observed stratigraphy consisted primarily of imported fill material associated utility and road construction. In some instances pockets of naturally deposited sediment (Jaucas sand and wetland clays) were observed beneath fill deposits.

**4.1.2 Monahan (2005)**

In 2005, Scientific Consultant Services conducted an archaeological assessment for three parcels bounded by Ward Avenue, Kapi'olani Boulevard, and Waimanu Street. Nine backhoe assisted trenches were excavated within the project area. The trenches were excavated to an average depth of 103 cm below ground surface. No historic artifacts, features, and/or artifacts were recorded as a result of the survey. Although no artifacts were recorded, archaeological monitoring was recommended for all areas to ensure there are no cultural remains under compacted fill layers, which were still encountered at the base of excavation in some trenches.

#### 4.1.3 Clark and Gosser (2005) and Gosser et al. (2006)

Pacific Consulting Services carried out two studies for a storage facility on the southwest corner of Kapi'olani Boulevard and Kamake'e Street, documenting SIHP # -6636, a subsurface remnant of a small pond present in northern portions of the project area.

#### 4.1.4 Esh and Hammatt (2006)

In August 2004, CSH conducted archaeological monitoring for the Rehabilitation of Streets, Unit 5B on Pi'ikoi Street between Ala Moana Boulevard and Matlock Street (Esh and Hammatt 2006). Monitoring was only required at the intersection of Pi'ikoi and Young streets, as excavations in other areas did not extend deeper than 30 cm below base course fill. No cultural materials were observed.

#### 4.1.5 Hammatt (2006)

CSH (Hammatt 2006) concluded a literature review and field check on a 1.43-acre parcel on Kapi'olani Boulevard near the junction with Pi'ikoi Street. Documentary evidence suggests the project area, before being filled and graded during the first half of the twentieth century to create the present land surface, comprised a portion of Kewalo 'iki that included habitation sites, taro *lo'i*, and ponds situated amid the encompassing marshlands of the Honolulu plain. The documentation of the project area suggested a more dryland environment in traditional Hawaiian times than a ponded one.

#### 4.1.6 O'Leary and Hammatt (2006)

CSH conducted an archaeological inventory survey at the Moana Vista project. The project area is bounded Kapi'olani Boulevard, Kamake'e Street, Waimanu Street, and Ward Avenue. Twenty-four backhoe assisted trenches were excavated within the project area. No historic properties were encountered during the course of the survey.

#### 4.1.7 Hazlett, Carney, and Hammatt (2008)

CSH (Hazlett, Carney, and Hammatt 2008) concluded an archaeological monitoring report for the Honolulu Design Center Phase III project (TMK: (1) 2-3-010:048, 050, and 052-056) which is bounded by Kapi'olani Boulevard, Pensacola, Kamailie, and Pi'ikoi Streets. No cultural resources were identified during the monitoring of this project.

#### 4.1.8 Hazlett, Loynaz, and McDermott (2008)

CSH (Hazlett, Loynaz, and McDermott 2008) concluded an archaeological monitoring report for an approximately 6-acre Ala Moana Center Expansion project (TMK [1] 2-3-38: 001 and 2-3-40: 005, 007, 009, 011, 014, 016, & 018) comprising the construction of a Nordstrom store, other retail space, and a parking garage. No historic properties were identified. The observed stratigraphy generally consisted of imported construction fill, overlying a buried A horizon (former land surface) consisting of naturally deposited sandy loam. Underlying the buried A horizon were varying layers of naturally deposited sediments, consisting of loams and clays, indicative of the marsh environment that preceded the land reclamation and subsequent development of the area.

#### 4.1.9 McCurdy and Hammatt (2008)

CSH (McCurdy and Hammatt 2008) completed archaeological monitoring of construction activities at the Makaloa Substation. No historic properties were identified; however, pond/wetland

deposits were encountered and tested. Pollen analysis was conducted and documented abundant Cyperaceae (sedge) pollen and *Saccharum*-type (sugar cane) pollen. *Prosoapis* sp. (*Kiawe*) pollen found within the wetland samples suggest the wetlands did see intrusion of invasive species in the historic era. *Ipomoea haitata*s (sweet potato) was found in an isolated sample, suggesting some small scale agriculture may have been conducted in this area (McCurdy and Hammatt 2008).

#### 4.1.10 O'Hare et al. (2010) and Medina and Hammatt (2012)

CSH (O'Hare et al. 2010) completed an archaeological literature review and field inspection with limited subsurface testing for the Safeway/Schuman Carriage property project, (TMK: [1] 2-4-011-008, 009, 010, 011) located between Beretania Street and Kīna'u Street on the east side of Pi'ikoi Street. Five backhoe test trenches were excavated, documented, and sampled. The stratigraphy generally consisted of asphalt, base course, and modern construction fill overlying alluvial clay loam and undisturbed volcanic cinder. Only one feature, a fire pit, was encountered during subsurface excavation. The fire pit was interpreted as a modern feature associated with the demolition of previously existing structures present during the 1960s.

CSH (Medina and Hammatt 2012) produced an archaeological monitoring report for the development of the same former Schuman Carriage property. In general, the observed and recorded stratigraphy for this project area includes various modern fill layers related to modern development (post 1960) above naturally deposited alluvial sediment, above a natural volcanic cinder layer. One historic property was observed (SIHP# 50-80-14-7212), a post-contact trash pit containing historic era refuse.

#### 4.1.11 Pammer and Hammatt (2010)

CSH (Pammer and Hammatt 2010) produced an archaeological assessment (archaeological inventory survey scope of work with no findings) for an approximately 0.26-acre Moana Vista Project Area on Kapi'olani Boulevard (TMK [1] 2-3-003:084). The subsurface testing program included excavation of 4 test trenches in order to document stratigraphy, as well as potential subsurface cultural deposits. No historic properties were identified.

#### 4.1.12 Altizer et al. (2011)

CSH (Altizer et al. 2011) reported on archaeological monitoring on ten sewer line segments in the greater Kapi'olani area. Of note was further documentation of previously documented SIHP # -6636, a wetland deposit in Sewer Line G off Pensacola Street between Ho'ola'i and Kamailie streets. This was a pre-Contact to early twentieth century land surface that underlays dredged fill materials from the Kewalo and Ala Wai Canal land reclamation projects.

#### 4.1.13 Burke and Hammatt (2012)

CSH (Burke and Hammatt 2012) carried out an archaeological inventory survey report for a 1.391 Kapi'olani Boulevard parcel. A single historic property was identified within the project area, SIHP # -7193, which consists of a layer of historic trash. This layer was seen in nine trenches and yielded vast quantities of mid-twentieth century beer and milk bottles.

#### 4.1.14 Hunkin et al. (2013)

CSH completed an archaeological inventory survey (AIS) report for the project area (Hunkin et al. 2013). Two historic properties were identified during AIS test excavations for the proposed Walgreens Kapi'olani redevelopment project. One is an addition to an existing historic property

(SIHP # -6636), a remnant wetland deposit, and the other is newly identified (SIHP # -7431), remnant historic concrete structures. Subsurface investigations indicated relatively consistent stratigraphy throughout the project area. Silty clay sediments indicative of a wetland deposit (SIHP # -6636) were documented in all the trenches excavated. In general, the wetland sediment contained bluish to greenish gray sandy clay variations. Evidence of A horizon soil formation processes was observed in some test excavations, characterized by darker, organically enriched clays that contained decomposing rootlets and reed vegetation remnants. Two diagnostic historic glass bottle artifacts were recovered in this wetland sediment during excavation from one of the test excavations.

## 4.2 Historic Cemeteries

### 4.2.1 Makiki Cemetery

There are several historic cemeteries in the lower Makiki and Kewalo area. Makiki Cemetery, located at Pensacola and Prospect streets, contains graves dating from the mid-nineteenth century and is shown on several early historic maps, such as the 1887 Wall map (see Figure 7). The graves at this cemetery are clustered by ethnicity into Hawaiian, Japanese, and Portuguese sections, with distinctive grave markers for each. This graveyard is still in use today.

### 4.2.2 Cemetery of the Foreigners

Another cemetery associated with the Kewalo area may have been fairly close to the project area, possibly near Pi'ikoi Street. The literature associated with this cemetery has been extensively researched by Robert Schmitt (2000), which he reviewed in an article called "The Cemetery for Foreigners" in *The Hawaiian Journal of History*. Most of the following discussion is based on his comprehensive research. The first interment at this cemetery may have been as early as 1794. In this year, Mr. Kendrick, captain of the American ship *Lady Washington*, was accidentally killed by a shot fired in salute by the British ship *Jackal*, as both ships were anchored in Honolulu Harbor (Cartwright 1922:23).

In 1802, Captain Charles Derby, commander of the ship *Caroline*, died at Honolulu and was buried "somewhere on the plains east of Kawaiaha'o where the prostrate stone was found, but not the grave" (Mellen 1940:5). The "prostrate stone" is now in the Kawaiaha'o Church Cemetery at the corner of King and Punchbowl streets. The church was on a major cross-*ahupua'a* trail that extended from Honolulu Harbor to Wai'alaie past Diamond Head. This trail is now covered by the present alignment of King Street and Wai'alaie Avenue. This means that the true burial spot for Captain Derby must have been further east of Kawaiaha'o Church, in Kewalo or the dusty plains of Honolulu.

Richard Cleveland visited the burial spot in 1803, describing it as verdant, which is more suggestive of the wet Kewalo region than the dry Kulaokahu'a area.

I made a long excursion on shore, among the beautiful rural scenery in the neighbourhood of the [Whyteete] bay. In a retired spot, clothed with verdure and surrounded by cocoanut trees, my guide pointed to the grave of my old friend and former shipmate, Charles Derby, who died here last year, on board a Boston ship, which he commanded, from the Northwest Coast. [Cleveland 1842:1:232]

An anonymous note in the *Papers of the Hawaiian Historical Society* (1929) asserts that this cemetery was at the corner of King and Pi'ikoi streets.

In 1802, Captain Charles Derby, of the well-known Derby family of Salem, Mass., died in Honolulu and was buried in a lot set apart for the interment of foreigners, situated at what is now near the corner of Piikoi and King Streets. When this burying ground was abandoned the tombstone at the head of the Derby grave was removed to the Kawaiaha'o churchyard. It was lately discovered to be face downward in the rear of the Mission cemetery. [Hawaiian Historical Society 1929:6]

John Papa ʻŪʻŪ gave an account of the death in 1810 of Isaac Davis, an American sailor who had settled in the Hawaiian Islands, becoming a confidant of Kamehameha I:

Many chiefs and notables mourned Davis, including Kamehameha and the company of warriors who watched over him. The funeral procession went from Davis' dwelling at Aienut to Kewalo, where his body was deposited on the land of Alexander, a *haole* who had died earlier. At the time of his death, Davis was an old man with white hair and other signs of age. [ʻŪʻŪ 1959:85]

An article about Davis in *The Friend* of February 1862 mentions only that his grave was "in the burying place of the Europeans, near Hana-nua," suggesting the Kewalo region and the "burying place" were outside the limits of Honolulu both at the time of Davis' death and 42 years later when the article was written.

Captain Otto von Kotzebue of the Russian ship *Rurick*, who stopped at the Islands in 1816 and 1817, traveled to a cemetery to see the grave of Isaac Davis. It is probably the same cemetery labeled (in Russian) on his 1817 map of the Honolulu area, southeast of Punchbowl, with a wall terminating near the southwest corner of the project area (see Figure 8). Kotzebue describes it: "In the burial-place of the Europeans, near Hana-nua, we read this simple monument of Mr. Davis: 'The remains of M. Isaac Davis, who died at this Island, April 1810, aged 52 years'" (Kotzebue 1821:3:258). In 1824, Andrew Bloxam, a scientist aboard the British ship the *Bonide*, commanded by Lord Byron, also gave a description of the gravesite of Isaac Davis.

The road to it [Diamond Head] leads to the picturesque village of Waititi, near which, a little to the right of the road, there is a small enclosed spot, where the remains of Isaac Davis, one of the first Europeans who assisted Kamehameha in the practical civilization of the Island, are interred . . . . [Bloxam 1826:145]

This excerpt suggests the burial plot was somewhere along a trail that extended from Honolulu to Waikiki, probably the main trail that was later covered by King Street, confirming the 1929 Hawaiian Historical Society note that placed the graveyard on the corner of King and Pi'ikoi streets. An 1838 article concerning the establishment of the new O'ahu Cemetery in Nu'uuanu, also confirms that the grave plot was near a major road or trail. John Diehl wrote the following:

Thus the disgrace, which has so long attached to the revolting, not to say indecent, burial of foreigners at this port, in a common immediately contiguous to a public high-way, and entirely exposed to the intrusion of beasts, will as we trust, be speedily wiped off. [Diehl 1838:86]

The mention of roaming cattle suggests the burial was *maka'i* of the wall on Wilder Street built by the order of Queen Ka'ahumanu in 1830, and also reemphasizes that the burial ground was near a major trail or road. In 1923, Bishop Henry B. Restarick asserted that "Kendrick was buried at the place where Captain Derby was interred in 1802 and Isaac Davis in 1810" (Restarick 1923:58-59), concluding they were probably all buried close to each other or in the same place, a lot set aside by the Hawaiian chiefs for the interment of foreigners.

Restarick had been the first to publish that the graveyard was on the *maka'i* corner of Pi'ikoi and King streets, and that the graveyard was abandoned in 1900. In 1923, he stated, "Many now living remember seeing the grave stones of Derby and Davis at the place named until they were removed in 1900. They state that there were a number of sunken unmarked graves nearby" (Restarick 1923:58-29). As Restarick mentions, other foreigners besides the three noted were also buried at this site.

Maria Loomis recorded that an orphan was buried at the site in 1821, and in the following year a young native man was buried in the same plot. "the first instance of natives burying their dead after the manner of civilized nations" (Loomis 1819, 1921 in Schmitt 2000:65). When the graveyard was abandoned the gravestones were removed, however, Davis' original headstone of Chinese granite was later lost (Restarick 1924:20).

Purnell, writing about a headstone found for Davis now at O'ahu Cemetery wrote the following:

Although Davis' name appears on a family tombstone in O'ahu Cemetery, it is not certain that he is buried here. Documentation indicates that he was originally buried in an unnamed cemetery in Makiki, and that his ashes [*sic*] may have later been disinterred and scattered at sea. [Purnell 1998:121]

Although Restarick stated the graveyard was at the corner of King and Pi'ikoi, other authors have suggested other locations. Lynn Barratt (1988:235) placed the graveyard at Pensacola and Pi'ikoi streets (the *maka'i* end of Pi'ikoi Street abuts an east-west street called Pi'ikoi Place that ends at Pensacola Street), although Schmitt thinks he was confusing this cemetery with the mid-nineteenth Makiki Cemetery on Pensacola and Prospect streets. Edwin McClellan (1928a, b) placed the cemetery at the junction of King and Kewalo streets, however, the present *maka'i* end of Kewalo Street ends at Lunali'ilo Street, not at King Street. These three suggestions all place the cemetery in the vicinity (Pensacola Street, Kewalo Street, Pi'ikoi and King streets) of the project area.

Although the cemetery is marked on Kotzebue's 1817 map, it is difficult to reconcile this historic map with modern maps as there are few points of comparison (Punchbowl Crater is the only common feature in the vicinity) and the coastline has changed so much in the intervening years. The background does indicate there was once an early historic cemetery in the general area and historic documents indicate that all, or most, of the bodies were later disinterred. The size of the cemetery and the number of burials is unknown, and it is possible there is still some remnant of the cemetery under modern fill layers in Kewalo.

### 4.3 Background Summary and Predictive Model

The project area lies in an area traditionally known as Kulaokahu'a, in the 'ili of Kewalo, (Fitzpatrick 1989:25). John Papa I'i identified Kulaokahu'a as a "playground, where the 'maika'i

etc. was played" (Hawaii Commission on Boundaries, Kewalo in King 1989:26). *Maika'i* is a Hawaiian sport that uses a disc-shaped stone called an 'ulu *maika'i* for a bowling type of game.

Kewalo literally means "the calling," as in an echo (Pukui et al. 1974:109). Kewalo once had a freshwater spring in the central portion (current location unknown), as seen in the proverb "Ka wai *huhua'i o Kewalo*," which translates as "The bubbling water of Kewalo." Two springs are mentioned in a traditional story of the Waters of Ha'o, one located near Kawaiaha'o Church in Kaka'ako (Pukui 1988:87-89). Kewalo was also the birthplace of the great chief Hua-nui-ka-la-la'ia'i (Hua), as mentioned in a *mele* (story) chanted by Kamakau (1991:24). In legendary accounts, Kewalo was noted for its fishponds, its marsh lands where *pili* grass could be collected, for ceremonial sites such as the Kewalo spring and the fishpond at which sacrifices were made, and for its trails that allowed transport between the more populated areas of Waikiki and Honolulu. Important chiefs were born in the area and conducted religious rites, and commoners traveled to the area to procure food and other resources, while others probably lived in the area.

The 1817 map by Otto von Kotzebue, (see Figure 8) depicts a wall terminating near the southwestern to south-central boundary of the project area, defining an area that Kotzebue labeled "cemetery." This is likely the "Cemetery for Foreigners" discussed in detail by Robert Schmitt (2000). Developments in the Kewalo area during the second half of the nineteenth century include increased western-conceived urbanization exemplified by Thomas Square and the "Old Plantation." Historic maps indicate that in the late 1800s the area surrounding the project area was swampy, with a pond approximately 150 m to the southwest, a rectilinear corral in the southeast corner of the project area (see Figure 6, Figure 7 and Figure 13), and the house of H.M. Whitney built on the west-central boundary of the project area. Whitney, a prominent member of the Honolulu community, may have entertained the young Samuel Clemens at this house. Previous archaeology in the vicinity of the project area documents the presence of isolated burials, cemeteries, wetlands and resource ponds, and historic trash pits and lenses.

Based upon the background ethno-historical and previous archaeological research, archaeological investigations within the project area may encounter traditional Hawaiian materials including houses, middens, burials, resource ponds, and gaming artifacts such as 'ulu *maika'i*. The wall of the "Cemetery for Foreigners" may be near the southwestern boundary of the project area and a corral wall may be near the southeast corner of the project area. Material culture related to the H.M. Whitney house may also be present and with that, there is the probability that some of these materials were related to the entertainment of the young Samuel Clemens, whom Whitney entertained.

## Section 5 Results of Fieldwork

CSH completed the AIS fieldwork under archaeological permit number 15-03, issued by the SHPD per HAR §13-13-282. Fieldwork was accomplished between 17 June 2015 and 17 July 2015 by David W. Shideler, M.A., Nathaniel S. Garcia, B.A., Mary L. Tardona, M.S., Abigail H. Langham, B.A., and Richard T. Stank, Ph.D. under the general supervision of Hallett H. Hammatt, Ph.D. This work required approximately 10 person-days to complete.

In general, fieldwork included 100% pedestrian inspection of the unbuilt portions of the project area and systematic subsurface testing at locations distributed throughout the project area. Excluding the buildings, the archaeological pedestrian inspection did not identify cultural material greater than 50 years, however, the subsurface testing portion of fieldwork did identify two buried historic properties, assigned as SHP # 50-80-14-7817 and SIHP # 50-80-14-7818. The following discussion details the stratigraphy and material culture recovery for each subsurface test excavation (T1 through T7).

### 5.1 Test Excavation 1 (T1)

T1 is located in the northeast portion of the project area, in a staff parking lot adjacent to the project area boundary with Alder Street (see Figure 5). T1 measures 5.6 m long by 0.8 m wide with a maximum depth of 2.4 m below the surface and a general north/south (200 degrees true north) orientation. For the purposes of trench access and stability, a 45 cm bench was left unexcavated in the southern half of T1. The stratigraphic profile of T1 (Figure 30 through Figure 34 and Table 3) consists of dark brown sandy clay loam fill (Stratum Ia), dark brown sandy clay loam fill (Stratum Ib), natural terrigenous dark reddish brown silty clay loam (Stratum II), and natural terrigenous very dark greyish brown cinder (Stratum III). The water table was not observed in T1. Two artifacts were recovered from T1, Stratum Ia, 0-50 cmbs. Section 6, Results of Laboratory Analysis, documents these finds, Acc. # 1 and Acc. # 2, glass vessel fragments.



Figure 30. T1, general plan view to the west, red/white arrow indicates north



Figure 31. T1, surface to base of excavation, profile view to south, white/black arrow indicates north



Figure 32. T1, surface to base of excavation, portion of the east wall profile, view to east, white/black arrow indicates north



Figure 33. T1, profile close up at the base of excavation, view to east, white/black arrow indicates north

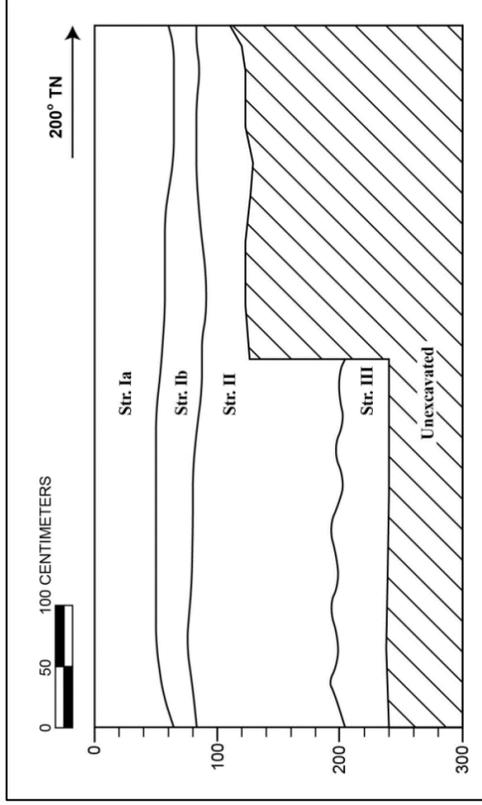


Figure 34. T1, east wall stratigraphic profile illustration

Table 3. T1 Stratigraphic Description

Stratum	Depth (cmbs)	Description of Sediment
Ia	0-60	Fill; 7.5YR 3/2, dark brown; sandy clay loam; massive (structureless) structure; moist, loose consistency; weak cementation; non-plastic; terrigenous origin; abrupt smooth lower boundary; few, fine roots
Ib	50-90	Fill; 10YR 3/3, dark brown; sandy clay loam; massive (structureless) structure; moist, loose consistency; non-plastic; terrigenous origin; abrupt, smooth lower boundary
II	80-200	Natural; 5YR 3/2, dark reddish brown; silty clay loam; moderate, very fine, platy structure; weak cementation; non-plastic; terrigenous origin; clear, wavy lower boundary
III	190-BOE	Natural; 10YR 3/2, very dark greyish brown; cinder, weak, medium, granular structure; moist, loose consistency; non-plastic; terrigenous origin; lower boundary not visible

### 5.2 Test Excavation 2 (T2)

T2 is located in the east/central portion of the project area, in a staff parking lot adjacent to the project area boundary with Alder Street. T2 measures 5.8 m long by 0.8 m wide with a maximum depth of 1.5 m and a general north/south (20 degrees true north) orientation. The stratigraphic profile of T2 (Figure 35 through Figure 38 and Table 4) consists of asphalt (Stratum Ia), crushed coral fill (Stratum Ib), dark brown sandy clay loam fill (Stratum Ic), crushed basalt fill (Stratum Id) and natural terrigenous dark reddish brown silty clay loam (Stratum II). The water table was not observed in T2. Two artifacts were recovered from T2, Stratum Ic, 40-65 cmbs. Section 6, Results of Laboratory Analysis, further documents these finds, Acc. # 3 and Acc. # 4, amber/light green glass vessel fragments, which represent a portion of the collection for SHHP # 50-80-14-7817.



Figure 35. T2, general plan view to south, red/white arrow indicates north



Figure 36. T2 west wall profile, surface to base of excavation, oblique view to the northwest, red/white arrow indicates north

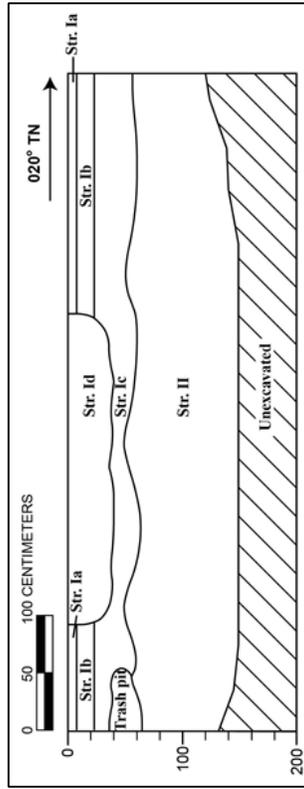


Figure 38. T2, west wall stratigraphic profile illustration

Table 4. T2 Stratigraphic Description

Stratum	Depth (cmbs)	Description of Sediment
Ia	0-10	Asphalt
Ib	10-26	Fill; GLEY 1 8/N, white; crushed coral base course; gravelly; massive (structureless); moist, loose consistence; no cementation; non-plastic; marine origin; clear, smooth lower boundary
Ic	25-62	Fill; 10YR 3/3, dark brown; sandy clay loam; massive (structureless) structure; moist, loose consistence; weak cementation; non-plastic; ferruginous origin; abrupt, smooth lower boundary
Id	0-40	Fill; GLEY 1 4/N, dark grey; crushed basalt base course; gravelly; massive (structureless); moist, loose consistence; no cementation; non-plastic; ferruginous origin; clear, smooth lower boundary
II	50-BOE	Natural; 5YR 3/2, dark reddish brown; silty clay loam; moderate, very fine, platy structure; moist, loose consistence; weak cementation; non-plastic; ferruginous origin; lower boundary not visible



Figure 37. T2, portion of the west wall profile, surface to base of excavation, view to west, white/black arrow indicates north, and red/blue arrow indicates trash pit representing a portion of SIHP # 50-80-14-7817

### 5.3 Test Excavation 3 (T3)

T3 is located in the southeastern portion of the project area, adjacent to the project area boundary and the intersection of Alder and Elm streets. T3 measures 7.1 m long by 0.8 m wide with a maximum depth of 1.65 m and a general east/west (110 degrees true north) orientation. The stratigraphic profile of T3 (Figure 39 through Figure 45 and Table 3) consists of dark reddish brown silt loam fill (Stratum Ia), brown silt loam fill (Stratum Ib), natural terrigenous very dark brown loam (Stratum II), and natural terrigenous greenish black silty clay (Stratum III). The water table was observed at 1.6 m in T3. Six artifacts were recovered from T3, Stratum II, 60-80 cmbs. Figure 65 through Figure 68 document these finds as Acc. # 5 through Acc. # 10, glass vessel fragments. These artifacts represent a portion of the collection for SIHP # 50-80-14-7817. One artifact, an fire-cracked rock (FCR) fragment (Acc. # 16) was recovered from T3, Stratum III (155-165 cmbs), with faunal material representing *Bos taurus* (cow), *Sus scrofa* (pig) rib and *Gallus gallus* (chicken) fibiotarsus. T3, Stratum III represents SIHP # 50-80-14-7818. A bulk sediment sample, taken from 155-165 cmbs, was fine-screened, revealing both freshwater and marine snail species. More discussions of the recovery from T3 may be found in Section 6, Results of Laboratory Analysis. The recovery of artifacts, faunal material, and snails recovered in the bulk sediment analysis represent the entirety of the current collection for SIHP # 50-80-14-7818.



Figure 39. T3, general plan view to east, red/white arrow indicates north



Figure 40. T3, surface to base of excavation, oblique view to northwest, north wall profile, red/white arrow indicates north



Figure 41. T3, portion of the north wall profile, oblique view to northwest, red/white arrow indicates north



Figure 42. T3, portion of the north wall profile to the base of excavation, red/white arrow indicates north



Figure 43. T3, surface to 1.0 m below surface, portions of the south, east, and north walls, profile view to east, blue/red arrow denotes a portion of SIHP # 50-80-14-7817 historic artifacts (Acc. # 5) in situ, red/white arrow indicates north



Figure 44. T3, portion of the north wall profile, close-up oblique view to northwest of the BOE, noting blue/red arrows indicating SIHP # 50-80-14-7818, red/white arrow indicates north

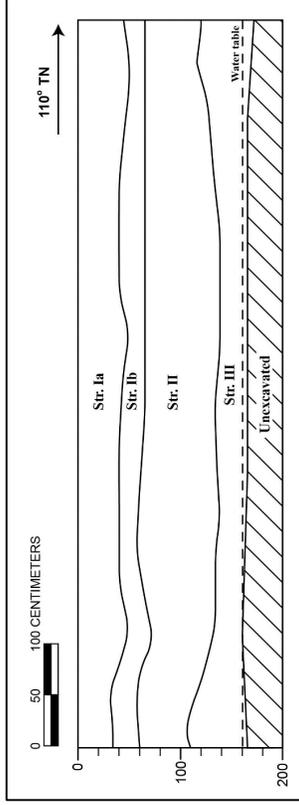


Figure 45. T3, north wall stratigraphic profile illustration

Table 5. T3 Stratigraphic Description

Stratum	Depth (cnbs)	Description of Sediment
Ia	0-50	Fill; 5YR 2.5/2, dark reddish brown; silt loam; massive (structureless); moist, loose consistence; no cementation; non-plastic; terrigenous origin, abrupt, smooth lower boundary
Ib	35-70	Fill; 10YR 5/3, brown; silt loam; massive (structureless); moist, loose consistence; no cementation; non-plastic; terrigenous origin, abrupt, smooth lower boundary
II	60-138	Natural; 10YR 2/2, very dark brown; loam; moderate, fine, granular structure; moist, friable consistence; weak cementation; slightly plastic; clear, terrigenous origin, smooth lower boundary
III	110-BOE	Natural; 5Y 2.5/1, black; silty clay; moderate, very fine, blocky structure; wet, sticky consistence; weak cementation; plastic; terrigenous origin; lower boundary not visible; fresh water table observed at 1.6 m

### 5.4 Test Excavation 4 (T4)

T4 is located in the southwest portion of the project area, adjacent to the project area boundary and the intersection of Elm Street and Pi'ikoi streets. T4 measures 6.0 m long by 0.8 m wide with a maximum depth of 1.5 m and a general northwest by southeast (330 degrees true north) orientation. The stratigraphic profile of T4 (Figure 46 through Figure 51 and Table 7) consists of dark reddish brown silt loam fill (Stratum Ia), brown silt loam fill (Stratum Ib), very dusky red silt loam fill (Stratum II), natural terrigenous very dark brown loam (Stratum III), and natural terrigenous very dark grayish brown cinder. The water table was not observed in T4. Four artifacts were recovered from T4, Stratum II 60-108 cnbs. Section 6, Results of Laboratory Analysis, documents these finds as Acc. # 11 through Acc. # 15, which represent a portion of the collection for SIHP # 50-80-14-7817.



Figure 46. T4 groundbreaking, general view to southeast noting the Elm Street/Pi'ikoi Street intersection, red/white arrow indicates north



Figure 47. T4, general west wall profile, oblique view to northwest of surface to the base of excavation, red/white arrow indicates north



Figure 48. T4, west wall profile, view to west of a mid- to northern portion of the trench, red/white arrow indicates north, blue/red arrow indicates a portion of SIHP # 50-80-14-7817, brick not collected



Figure 50. T4, general west wall profile, oblique view to south of a southern portion of the trench, red/white arrow indicates north

AIISK for the Mixed Use Project, 902 Alder Street, Honolulu, O'ahu  
TMK: [1]2-3-012-019



Figure 49. T4, west wall profile, view to southwest of a mid- to northern portion of the trench, red/white arrow indicates north

AIISK for the Mixed Use Project, 902 Alder Street, Honolulu, O'ahu  
TMK: [1]2-3-012-019

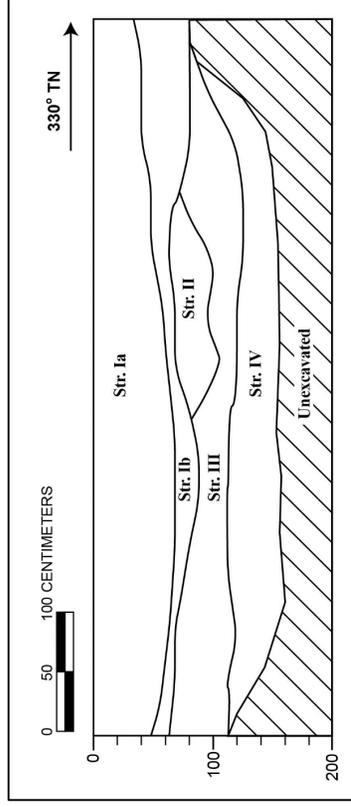


Figure 51. T4, west wall stratigraphic profile illustration

Table 6. T4 Stratigraphic Description

Stratum	Depth (cmbs)	Description of Sediment
Ia	0-70	Fill; 10YR 5/3, brown; silt loam; massive (structureless); moist, loose consistency; weak cementation; non-plastic; terrigenous origin; abrupt, wavy lower boundary
Ib	35-80	Fill; 10YR 5/3, brown; silt loam; massive (structureless); moist, loose consistency; weak cementation; non-plastic; terrigenous origin; abrupt, wavy lower boundary
II	90-105	Fill; 2.5YR 2.5/2, very dusky red; silt loam; massive (structureless); moist, loose consistency; weak cementation; non-plastic; terrigenous origin; abrupt, irregular lower boundary
III	70-130	Natural; 10YR 2/2, very dark brown loam; moderate, fine, granular structure; moist, friable consistency, weak cementation; slightly plastic; smooth, abrupt lower boundary
IV	115-160	Natural, 10YR 3/2; cinder; weak, medium, granular structure; moist, loose consistency; non-plastic; terrigenous origin; lower boundary not visible

### 5.5 Test Excavation 5 (T5)

T5 is located in the west-central portion of the project area, adjacent to the project area boundary along Pi'ikoi Street and within a staff parking lot. T5 measures 6.4 m long by 0.8 m wide with a maximum depth of 1.2 m and a general east/west (110 degrees true north) orientation. The stratigraphic profile of T5 (Figure 52 through Figure 55 and Table 7) consists of dark reddish brown silt clay fill (Stratum Ia), brown silt loam fill (Stratum Ib), and natural terrigenous very dark brown loam (Stratum II). The water table was not observed in T5, nor were artifacts or cultural resources in any form observed within T-5.



Figure 52. T5, general plan view to east, black/white arrow indicates north



Figure 53. T5, north wall profile, oblique view to east, black/white arrow indicates north



Figure 54. T5, north wall profile, view to north, red/white arrow indicates north

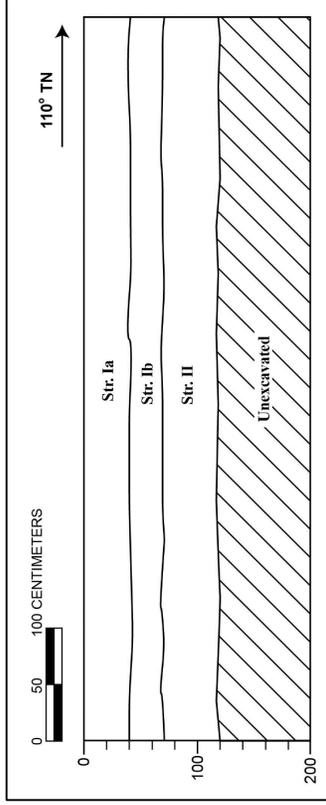


Figure 55. T5, north wall stratigraphic profile illustration

Table 7. T5 Stratigraphic Description

Stratum	Depth (cmts)	Description of Sediment
Ia	0-40	Fill; 5YR 2.5/2, dark reddish brown; silty clay; massive (structureless); moist, loose consistence; weak cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary
Ib	40-70	Fill; 10YR 5/3, brown; silt loam; massive (structureless); moist, loose consistence; weak cementation; non-plastic; terrigenous origin; abrupt, smooth lower boundary
II	70-120	Natural; 10YR 2/2, very dark brown; loam; moderate, fine, granular structure; moist, friable consistence; weak cementation; slightly plastic; lower boundary not visible

### 5.6 Test Excavation 6 (T6)

T6 is located in the north-central portion of the project area. T6 measures 4.6 m long by 0.8 m wide, with a maximum depth of 1.8 m and a general east/west (290 degrees true north) orientation. To avoid disturbance of a buried active water utility within the western portion of the trench, a buried utility immediately west of the trench, and a concrete stair in the far eastern portion of the initial trench, the excavation of T6 was abbreviated in length and shifted 0.8 m south. The stratigraphic profile of T6 (Figure 56 through Figure 59 and Table 8) consists of dark brown sandy clay loam fill (Stratum Ia), dark brown sandy clay loam fill (Stratum Ib), and natural terrigenous dark reddish brown silty clay loam (Stratum II). The water table was not observed in T6. No artifacts or cultural resources in any form were observed within T-6.



Figure 56. T6, ongoing excavation, general plan view to east, black/white arrow indicates north



Figure 57. T6, upper fill sequence in the western portion of the south wall profile, oblique view to southwest, red/white arrow indicates north



Figure 58. T6, surface to base of excavation, eastern portion of the south wall profile, view to south, red/white arrow indicates north

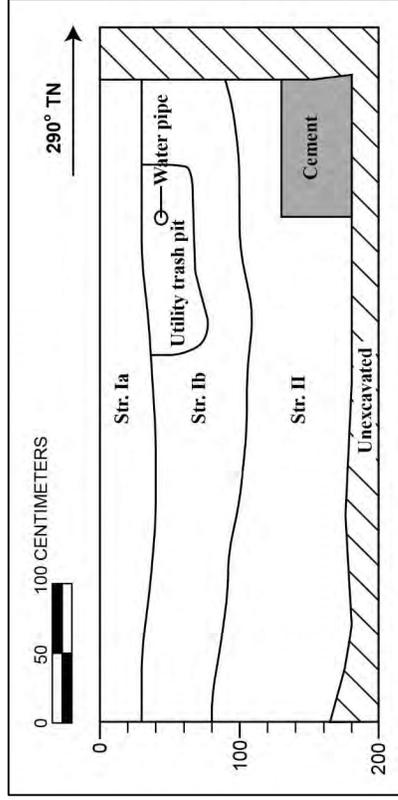


Figure 59. T6, south wall stratigraphic profile illustration

Table 8. T6 Stratigraphic Description

Stratum	Depth (cmbs)	Description of Sediment
Ia	0-40	Fill; 7.5YR 3/2, dark brown; sandy clay loam; massive (structureless); moist, loose consistence; weak cementation; non-plastic; ferruginous origin; clear, wavy lower boundary
Ib	30-110	Fill; 10YR 3/3, dark brown; sandy clay loam; massive (structureless); moist, loose consistence; weak cementation; non-plastic; ferruginous origin; abrupt, wavy lower boundary; few, fine roots
II	80-180	Natural; 5YR 3/2; dark reddish brown; silty clay loam; moderate, very fine, platy structure; moist, loose consistence; weak cementation; non-plastic; ferruginous origin; lower boundary not visible; few, fine roots

### 5.7 Test Excavation 7 (T7)

T7 is located in the central portion of the project area. T7 measures 3.1 m long by 0.6 m wide, with a maximum depth of 1.4 m and a general east/west (115 degrees true north) orientation. T7 was located in a walled garden courtyard, prohibiting backhoe access and thus requiring hand excavation with trowels and shovels. The stratigraphic profile of T7 (Figure 60 through Figure 64 and Table 9) consists of dark brown silt loam fill (Stratum Ia), dark yellowish brown loam fill (Stratum Ib), and natural terrigenous dark brown loam (Stratum II). The water table was not observed in T7. No artifacts or cultural resources in any form were observed within T-6.



Figure 60. T7 general plan view to west, red/white arrow indicates north



Figure 61. T7 north wall profile, oblique view to northwest, red/white arrow indicates north



Figure 62. T7 north wall profile, western portion, view to northwest, red/white arrow indicates north



Figure 63. T7, north wall profile, oblique view to northeast, white arrow indicates north

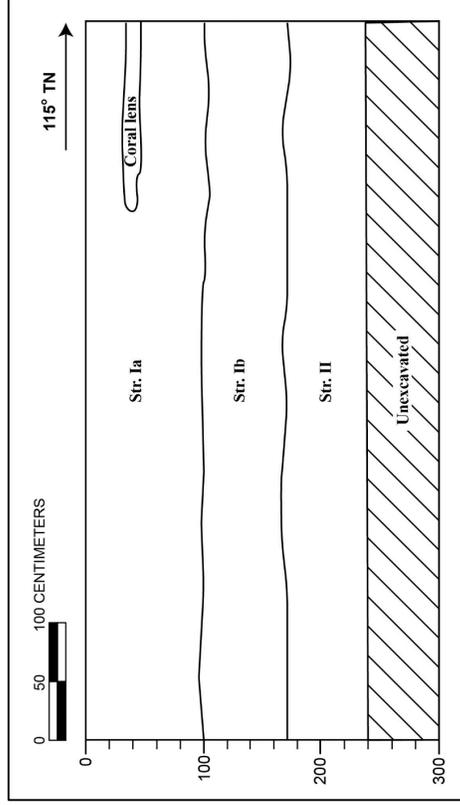


Figure 64. T7, north wall stratigraphic profile illustration

Table 9. T7 Stratigraphic Description

Stratum	Depth (cnbs)	Description of Sediment
Ia	0-50	Fill; 7.5YR 3/2, dark brown; silt loam; massive (structureless); moist; loose consistency; weak cementation; non-plastic; terrigenous origin; clear, wavy lower boundary; coral inclusion lens in eastern portion of trench; common, fine roots
Ib	50-88	Fill; 10YR 3/4, dark yellowish brown; loam; massive (structureless); moist, loose consistency; weak cementation; non-plastic; terrigenous origin; abrupt, wavy lower boundary; few, fine roots
II	85-120	Natural; 7.5YR 3/2, dark brown; loam; weak, fine, blocky structure; moist, friable consistency; weak cementation; non-plastic; few, fine roots; lower boundary not visible

## Section 6 Results of Laboratory Analysis

Twenty-seven artifact fragments, representing at most 17 historic artifacts were recovered from the project area (Table 10). The collection represents nine glass bottles, two glass vases, one ceramic plate, one ceramic bowl, two ceramic pitchers, and one FCR. Sediment sample analysis consisted of fine screening 2 liters (l) (0.5 gallons) of bulk matrix from T3, Stratum III (110 to 165 cnbs). Analysis of these 2 l of bulk sediment from T3, summarized in Table 12, revealed both marine and fresh water snail species including *Nerita picea*, *Tryonia porrecta*, and *Melamoides tuberculata*. All recovered faunal material, including *Bos taurus* (cow), *Sus scrofa* (pig) and *Gallus gallus* (chicken) is included in Table 11.

### 6.1 Artifact Analysis

The Alder Street historic artifact collection is comprised of 27 fragments of glass and ceramics, plus one FCR (fire-cracked rock) fragment. The entirety of the collection represents artifacts collected from four excavated trenches. The artifacts are described in Table 10 and illustrated in photographs (Figure 65 through Figure 79). The material fragments consist of a body fragment of a vase or other glass vessel (Acc. # 1), a glass vessel base fragment (Acc. # 2), two light green fragments of a beverage bottle made in a three-piece mold (Acc. # 3), a non-embossed amber glass bottle fragment (Acc. # 4), three fragments of a dark olive glass free-blown bottle (Acc. # 5), three light green glass bottle fragments (Acc. # 6), a complete colorless glass medicine bottle (Acc. # 7), an amber glass bottle with an embossed pattern on the entire surface (Acc. # 8), a dark olive (black) glass beverage bottle base (Acc. # 9), a dark olive glass beverage lip (Acc. # 10), a light green bottle lip, (Acc. # 11), three fragments of a Chinese porcelain plate (Acc. # 12), a Euro-American ironstone shallow bowl fragment (Acc. # 13), a Euro-American whiteware pitcher base fragment with a transfer-print decoration (Acc. # 14), seven fragments of a Euro-American ironstone pitcher with no decoration (Acc. # 15), and one FCR fragment (Acc. # 16). Some of the artifact fragments may be parts of the same artifact. The glass body (Acc. # 1) and base fragment (Acc. # 2) of a vessel from Trench I may be from the same vase, although the broken edges of the fragments do not fit together. One lip fragment of a light green bottle from T3 (Acc. # 6) does connect with the broken edge of a light green bottle found in T2 (Acc. # 3), but they were given separate accession numbers since they were collected from two different trenches. The lip of a dark olive glass bottle from T4 (Acc. # 10) could be a portion of the dark olive bottle from T3, trash layer (Acc. # 5) or the dark olive bottle from T3, Stratum II (Acc. # 9).

#### 6.1.1 Glass Bottles

The bottles from this collection were analyzed, described, and dated from information at the Bureau of Land Management/Society for Historical Archaeology "Historic Glass Bottle Identification & Information Website (BLM/SHA 2015). The website provides information mainly on bottles made in North America. American glassmakers were quick to embrace and switch over to new technologies. In Europe and England, which had powerful guilds and unions to guard against the loss of jobs for skilled glass-blowers, the switch to new technologies was usually slower. It should be kept in mind that many of the early bottles found in Hawai'i were made in England and Europe, rather than America. Thus for non-American bottles found in Hawai'i, the beginning and ending dates for a new technology may be later than that given at the BLM/SHA website. This BLM/SHA resource divides bottles into three groups based on the

Table 10. Summary of Artifacts Recovered

Acc. No.	Trench	Stratum / Depth (cmbs)	Material	Type	Description	#	Wt. (g)
001	T1	Ia / 0-50 ?	glass	vase	Fragment of colorless glass vessel body, pressed glass with flutes and pattern	1	13.7
002	T1	Ia / 0-50 ?	glass	vase	Fragment of colorless glass half circle, broken, flat bottom surface and convex upper surface	1	12.0
003	T2	Ic /40-65	glass	bottle	Fragments of aqua green glass beverage bottle, base to body (1) and shoulder to neck (1), mold-blown with three-piece mold	2	246.0
004	T2	Ic /40-65 ?	glass	bottle	Fragment of amber glass bottle, cylindrical body, no seam	1	11.8
005	T3	II / 70	glass	bottle	Fragment (base) of very dark olive (black), free-blown, beverage bottle	1	477.7
006	T3	Str II / 60-80	glass	bottle	Fragments of light green glass beverage bottle, body (2) and lip (1), applied patent lip, no seams on lip, may be a portion of Acc. # 1, three-piece mold bottle	3	33.2
007	T3	II / 60-80	glass	bottle	Complete, colorless, mold-blown glass medicine bottle, square base with beveled corners, mold-blown, two-piece cup bottom mold	1	108.1
008	T3	II / 60-80	glass	bottle	Fragment of amber, mold-blown glass bottle, oval base and bi-convex body, mold-blown, two-piece cup-bottom mold, pattern with flutes and vines, possibly a flask	1	163.8

Acc. No.	Trench	Stratum / Depth (cmbs)	Material	Type	Description	#	Wt. (g)
009	T3	II / 60-80	glass	bottle	Fragment of very dark olive (black) beverage bottle, base, applied grooved ring finish, beveled lip, could be free-blown or mold-blown	1	85.5
010	T3	II / 60-80	glass	bottle	Fragment of dark olive (black) glass beverage bottle, base to body, round base with push-up, sand pontil scar, probably dip mold based upon orange peel texture	1	271.9
011	T4	Str II / 60-108	glass	bottle	Fragment of light green bottle, neck to lip portion, reinforced extract finish	1	15.4
012	T4	Str II / 60-108	ceramic	plate	Fragments of Chinese Qing dynasty plate, base to rim (1), body to rim (1) and body (1) repeated Sanskrit Om symbol on cavetto, central pattern is Chinese character for <i>shou</i>	3	97.0
013	T4	Str II / 60-108	ceramic	bowl	Fragment of ironstone shallow bowl, base to rim fragment, transparent glaze, black stonped makers mark on base: British Coat of Arms with lion and unicorn / IMPERIAL IRONSTONE CHINA / HOPE & Carter, a Burslem, England pottery	1	42.1
014	T4	Str II / 60-108	ceramic	pitcher	Fragment of whiteware pitcher base to body, octagonal base, bulbous body, blue geometric and floral transfer print pattern on upper side of base, printed blue "C" with serif on base bottom	1	325.8

Acc. No.	Trench	Stratum / Depth (cmbs)	Material	Type	Description	#	Wt. (g)
015	T4	Str II / 60-108	ceramic	pitcher	Fragments of ironstone pitcher, base (1), body (3) base to body (1), body to rim with broken handle (1) and body to rim (1), transparent glaze, black stamped makers mark on base is the British Coat of Arms with lion and unicorn, NE China, "[PINDE]R BOURNE & C[O] / BURSLEM", bulbous body	7	268
016	T3	III / 150-165	basalt	FCR	FCR fragment (6.0 by 6.0 cm), vesicular basalt with angular fractures and fire-reddened surfaces	1	117.4

technology of bottle manufacture. Free-blown bottles, made up to ca. 1865 in North America, were usually made by a glassblower without any formal metal molds. These types of bottles are sometimes asymmetrical, have no mold seam lines, have a thickening of the glass at the heel (the area above the base), and have a pontil scar on the base, where a pontil rod was used to hold the bottle while the glassblower made a lip for the bottle. From ca. 1800 in the United States, glassblowers began to blow a portion of the bottle in a metal mold; only the earliest mold-blown bottles also have a pontil scar. The lip of the bottle still had to be finished by hand. During the mold-blown period, this was at first accomplished by adding new glass to the neck of the bottle, and forming the "finish" with a lipping tool. These "applied lips" are found on bottles made from 1800 to 1885. An improved method for bottle finishes was introduced in 1870 when the neck of the bottle was simply reheated, and improved lipping tools were used. These finishes are called "tooled lips," and are found on bottles dating from 1870 to 1920. In 1903, Michael Owen invented a machine that completely did away with the human glassblower, as a machine blew the glass from base to lip. Glass manufacturers continued to make mold-blown glass up to ca. 1920 in the United States. Thus, the three types of glass bottles made in the United States, based on manufacturing techniques, are free-blown (pre-1865), mold-blown (1800-1920), and machine-made (1903-present).

There is one possible free-blown black glass bottle fragment in the Alder Street collection (Acc. # 5). This bottle base fragment has glass thickening at the heel and a sand-pontil scar on the base. This bottle would have been made between 1800 and 1870. One light green beverage bottle (Acc. # 3 and Acc. # 6) was made in a three-piece mold, used from 1830 to 1910. This bottle has an "A / 80" embossed on the base, but this does not seem to be a glass makers' mark. It is probably some type of mold number. The two light green (Acc. # 6 and Acc. # 1) and one black glass fragment (Acc. # 9) has a sand-pontil scar and an "orange-peel texture." Although the bottle has a pontil, it is not free-blown. It was probably made in a dip mold, used from 1800 to 1870. The surfaces of some of the early molded bottles have an "orange-peel texture," which occurred when the metal mold was not heated to the proper temperature. The colorless medicine bottle (Acc. # 7) and the amber embossed bottle (Acc. # 8) were both made in a two-piece cup-bottom mold, used for mold-blown bottles from 1850 to 1910. The other glass fragments did not have any diagnostic manufacturing attributes. There were no machine-made bottles in the collection. In summary, the bottles were all manufactured in the nineteenth century, and probably before ca. 1885, when applied lips were no longer made.

**6.1.2 Ceramics**

There are four ceramic vessels in the collection, two Euro-American (made in Great Britain, Europe, or America) ironstones, one Euro-American whiteware, and one Chinese porcelain plate. Whiteware is a type of refined earthenware first made around 1820 and ironstone is a type of refined earthenware first made around 1840. The whiteware pitcher has a blue monochrome floral transfer print on the upper side of the pitcher base. This type of transfer print was made from the late 1780s to the late nineteenth century (Lebo 1997:G-7). Although there is a stamped "G" on the base, this does not seem to be a maker's mark. It might be the initial of the distributor or an inventory code. Both ironstones are undecorated and both have a stamped maker's mark on the base, one for Pinder, Bourne & Company, and one for Hope & Carter. Thomas Pinder, Joseph Harvey Bourne, and John Hope formed the partnership of Pinder, Bourne & Hope in 1851 at the

Fountain Place factory, Burslem, one of the towns that form the modern city of Stoke-on-Trent, Staffordshire, West Midlands, England. The company moved to a Burslem factory on Nile Street in 1860. In 1862, the partnership broke up and John Hope took over the old Fountain Place factory with a new partner, John Carter. Pinder and Bourne, with several new partners, stayed at the Nile Street factory as Pinder, Bourne and Company. The partnership of Hope & Carter was taken over by G.L. Ashworth & Bros. in 1880, and the partnership of Pinder, Bourne & Company was taken over by the Doulton & Company in 1882. Thus the pitcher and the plate, both ironstone, come from two closely related Burslem (Stoke-on-Trent) English potteries operating at the same time and making similar products, as Pinder, Bourne & Company (1862-1882) and Hope & Carter (1862-1880). The specific mark on the Hope & Carter bowl is a style known to have been used by at least 1867 (Stoke-on-Trent 2015\_Potteries\_A-Z).

The Chinese porcelain plate, with a hand-painted blue decoration, was made during the Qing dynasty (1644-1912). The Chinese produced ceramics for export and for domestic use. Export wares were traded to Asian markets (including Malaysia), to Europe, and to America. In Hawaii'i, these export ceramics could date soon after Western Contact (1778), as many of the westerners who first touched at the Islands were involved in the China trade, taking seal furs, sandalwood, and other trade items from the West Coast and the Pacific Islands to exchange for luxury goods, such as porcelain wares, from China (Kuykendall 1938:84-85). As early as 1830, there were three Chinese shop-keepers in Honolulu, and at least one sold "crockerly" (Char 1974:20). In 1852, Chinese contract workers were first officially brought to Hawaii'i to work in the sugar fields (Nordyke and Lee 1989:199). After this date, the main item of export to Hawaii'i and the West Coast, is not the export wares, but the domestic wares made in China (Jones 1992:87). A large number of Chinese hand-painted wares, especially rice bowls, with patterns such as "Bamboo," "Double Happiness" and "Four Seasons," were sent to Hawaii'i and the West Coast of America in the last half of the nineteenth century and sold to the Chinese immigrants who came to work in the sugar cane fields in Hawaii'i or the gold fields and railroad camps of California and the western states (Costello and Manieri 1988:16; Lebo 1997:G-14-15).

The specific Chinese plate in the Alder Street collection is decorated with a repeating stick-like pattern on the rim portion. This "stick" is actually a stylized "Om" symbol, a Sanskrit symbol that can have several meanings, such as soul, truth, and the universe (Wikipedia 2015\_Om). The central fragment of the plate has a scroll pattern around another symbol. The plate was compared to other Chinese Qing ceramics in the literature, and it most closely matches a plate found during the underwater salvage of the "Desaru," a Chinese junk that sank off the coast of Malaysia in 1845 (Maritime Asia 2015). This plate, shown in Figure 77, has the stylized repeating "Om" symbol on the rim and scroll patterns around the central painted symbol. The central figure on the "Desaru" plate is the Chinese symbol *shou*, which means life. Two Chinese Qing patterns, the "Om" and "Allah" made for the Malaysian market, have been dated to ca. 1820-1850 by Willets and Poh (1981:5). Both patterns on Chinese export wares have also been found on Hawaii'i sites, especially Honolulu and Kaka'ako sites dating to the early to mid-nineteenth century (Hammatt 2013:47). The presence of the pre-1850 Chinese export "Om" plate and the lack of the post-1850 Chinese domestic wares may be another indication that the Alder Street collection was deposited in the mid to late nineteenth century.



Figure 65. Black glass bottles, Acc. #5 (left), #9 (lower right) and #10 (upper right), 1800-1885



Figure 66. Light green glass bottles, Acc. # 3 (upper), # 6 (lower left) and # 11 (lower right), 1830-1910



Figure 67. Colorless glass, glass vessel fragments, Acc. #s 1-2 (left) and medicine bottle (Acc. # 7), 1850-1920



Figure 68. Amber glass bottles, Acc. # 4 (left) and Acc. # 8 (right), 1850-1920



Figure 69. Euro-American whiteware pitcher with transfer print pattern, top of base, Acc. # 14, 1840-1860

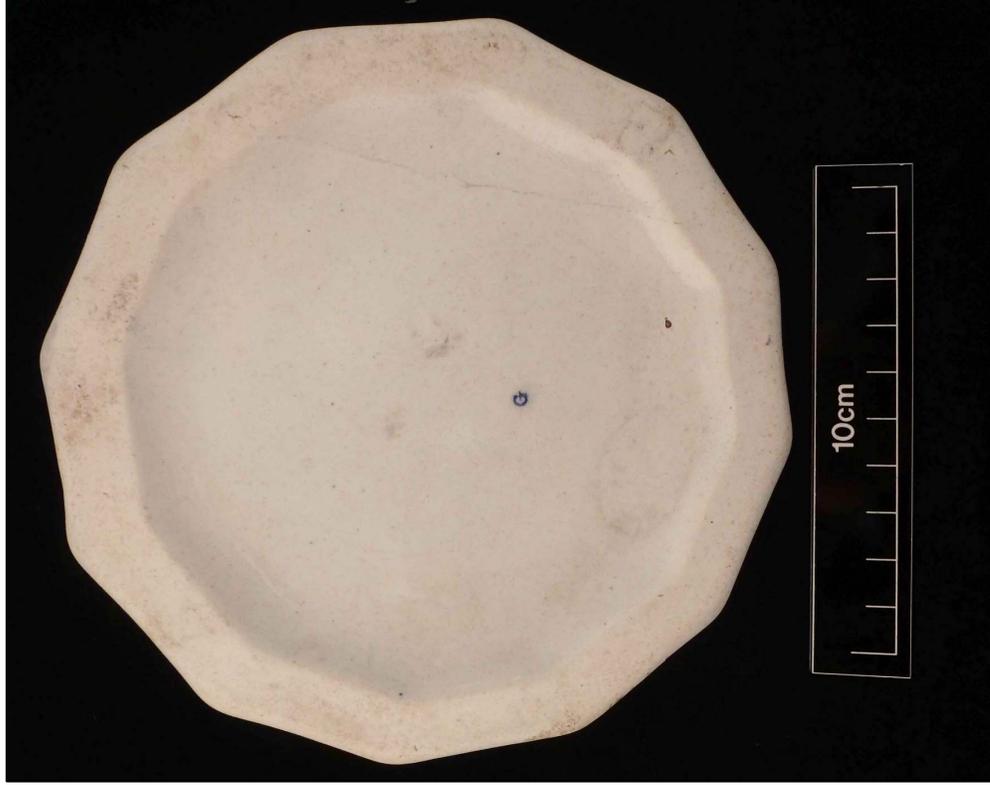


Figure 70. Euro-American whiteware pitcher, stamped G on bottom of base. Acc. # 14, 1840-1860



Figure 71. Euro-American ironstone pitcher, Acc. # 15, 1862-1882



Figure 72. Euro-American ironstone pitcher, Acc. # 15, maker's mark of Pinder, Bourne & Company, Burslem, 1862-1882

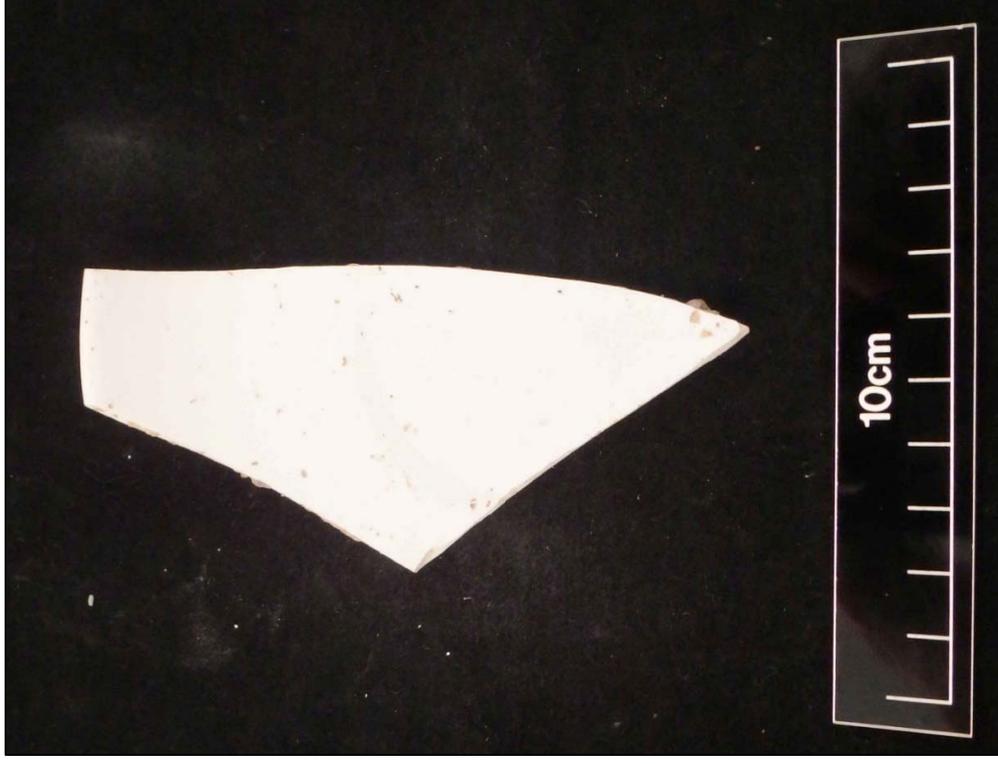


Figure 73. Ironstone bowl, upper surface, 1862-1880, Acc. # 13



Figure 75. Chinese Qing dynasty "Om" plate, interior side, Acc. # 12, 1820-1850

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Figure 74. Euro-American ironstone bowl, base with maker's mark, Hope and Carter, 1862-1880, Acc. # 13

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TMK: [1]2-3-012-019

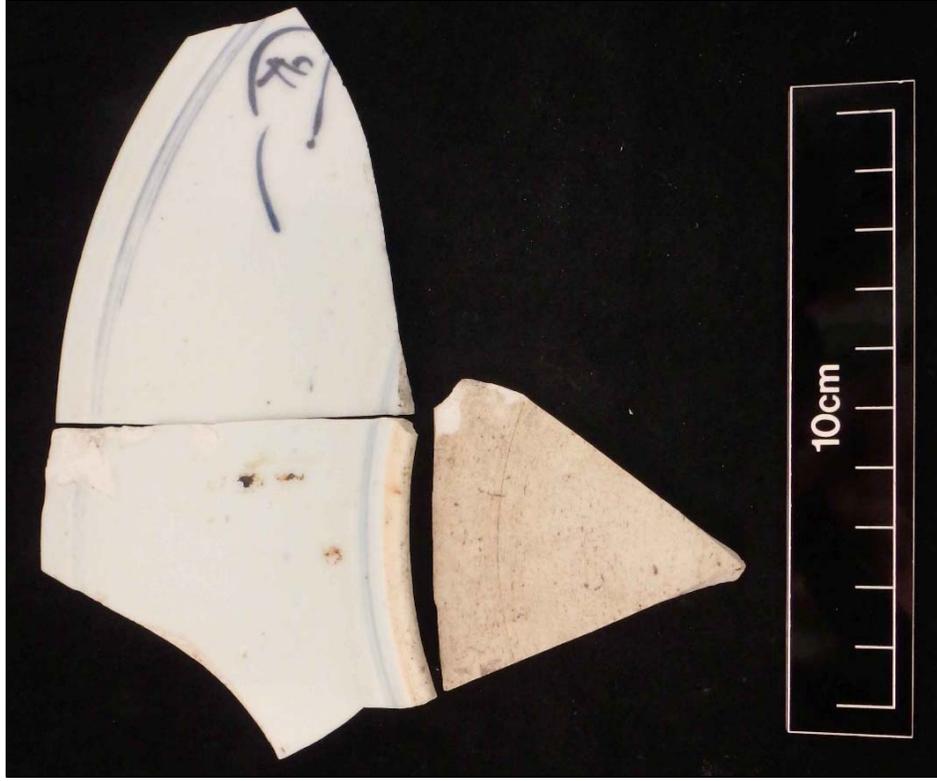


Figure 76. Chinese Qing dynasty plate, exterior side (including unglazed base), Acc. # 12, 1820-1850

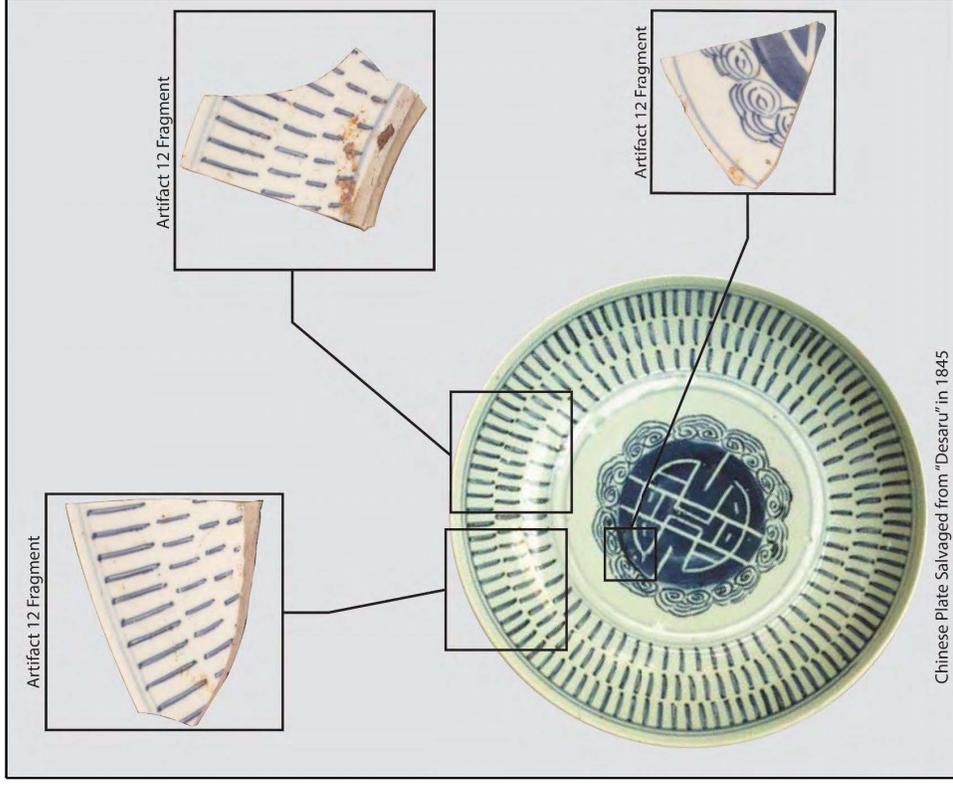


Figure 77. Acc. # 12, compared with a plate found during the underwater salvage of the "Desaru," a Chinese junk that sank off the coast of Malaysia in 1845 (Maritime Asia 2015)



Figure 78. Fire-cracked rock, Acc. # 16, dorsal surface



Figure 79. Fire-cracked rock, Acc. # 16, profile view

### 6.1.3 Summary and Conclusions

Although no pre-Contact traditional Hawaiian materials were recovered from the archaeological testing of the project area, Stratum III in T3 did include exotic faunal material and one FCR fragment (Acc. # 16). This lens likely represents occupation within the project area prior to 1850 and is documented as SIHP # 50-80-14-7818.

SIHP # 50-80-14-7817 is interpreted as portions of the material discarded from the family of Henry Martyn Whitney, Sr., who was born in Hawai'i in 1824, moved to the Alder Street house sometime between 1880 and 1884, and lived there until his death in 1904. His only surviving son, Henry Martyn Whitney, Jr., lived in the house until at least 1924; he died in 1936. The Juvenile Detention Center was built in 1944. It is therefore possible that the only household structure on this property in the nineteenth to early twentieth century was the Whitney house, inhabited by at least two generations of the family. The artifacts (Acc. # 1 through Acc. # 15) therefore, might all have once been owned and used by the Whitney family and discarded sometime in the nineteenth century as household trash. Most of the bottles and ceramics can be dated to the pre-1885 period, and one ceramic, the Chinese Qing dynasty plate, may have been purchased or collected by the family before ca. 1850.

### 6.2 Faunal Analysis

Faunal analysis revealed the presence of *Bos taurus* (cow), *Sus scrofa* (pig), and *Gallus gallus* (chicken) within the subterranean tests in the project area. Sediments related to SIHP # 50-80-14-7817 from T2 and T4 (Strata Ic and II respectively) contained fragments of *Bos taurus* (cow) saw-cut rib and tibiotarsus. Sediments related to SIHP # 50-80-14-7818 from T3 (Stratum III) contained fragments of *Bos taurus* (cow) tibia, *Sus scrofa* (pig) rib and *Gallus gallus* (chicken) tibiotarsus.

Table 11. Summary of Recovered Faunal Material

Trench	Stratum & Depth (cmbs)	Species	Description	Count	Weight (g)
T2	Ic (25-62)	<i>Bos taurus</i> (cow)	Rib fragment, saw cut, striation consistent with metal blade used in commercial butcher shop	1	30.0
T3	III (150-165)	<i>Bos taurus</i> (cow)	Tibia, fragment		898.6
T3	III (150-165)	<i>Sus scrofa</i> (pig)	Juvenile, rib fragment		242.4
T3	III (150-165)	<i>Gallus gallus</i> (chicken)	Tibiotarsus fragment	1	1.9
T4	II (90-105)	<i>Bos taurus</i> (cow)	Tibiotarsus fragment	1	429.4

Trench	Stratum & Depth (cmbs)	Species	Description	Count	Weight (g)
T7	1b / 60	<i>Sus scrofa</i> (pig)	Rib fragment, saw cut, striation consistent with metal blade used in commercial butcher shop	1	2.5

### 6.3 Bulk sediment Analysis

Bulk sediment sample analysis consisted of fine screening 2 l (0.5 gallons) of matrix collected from T3, Stratum III (110 to 165 cmbs). Analysis of this bulk sediment revealed both marine and fresh water snail species including *Nerita picea*, *Tryonia porrecta*, and *Melanooides tuberculata*.

*Tryonia porrecta* is a freshwater snail that is apparently native to the Hawaiian Islands but is also found in North America in California and the Great Basin region. It has been found throughout the Hawaiian Islands and is often abundant in sediments from fishponds and taro fields of pre- and post-Contact age, but has virtually disappeared from such sites since the early twentieth century (Christensen 2011 and 2013).



Figure 80. *Tryonia porrecta* recovered from T3, Str. III (110-165 cmbs) bulk matrix sample

*Melanooides tuberculata* is a common inhabitant of fresh and brackish water habitats in the Hawaiian Islands. The species is known to be native to Africa and Indonesia but has spread throughout the tropics within the last several hundred years. It is probably a pre-Contact introduction in Hawai'i, but the possibility cannot yet be excluded that it is native here (Christensen 2012 and references cited therein).



Figure 81. *Melanooides tuberculata* recovered from T3, Str. III (110-165 cmbs) bulk matrix sample

*Nerita picea* (*pipipi*) is a small to medium-sized marine gastropod endemic to Hawai'i, traditionally harvested and boiled for a snack and threaded as *kāpe'e* (bracelets) or shell *lei*. *Pipipi* means small and close together, which is how they are often found on rocky marine shores. These snails graze algae on rocks in the high intertidal zone. They have versatile gills allowing them to use oxygen from salt or brackish water and open air



Figure 82. *Nerita picea*, dorsal surfaces, recovered from T3, Str. III (110-165 cmbs) bulk matrix sample

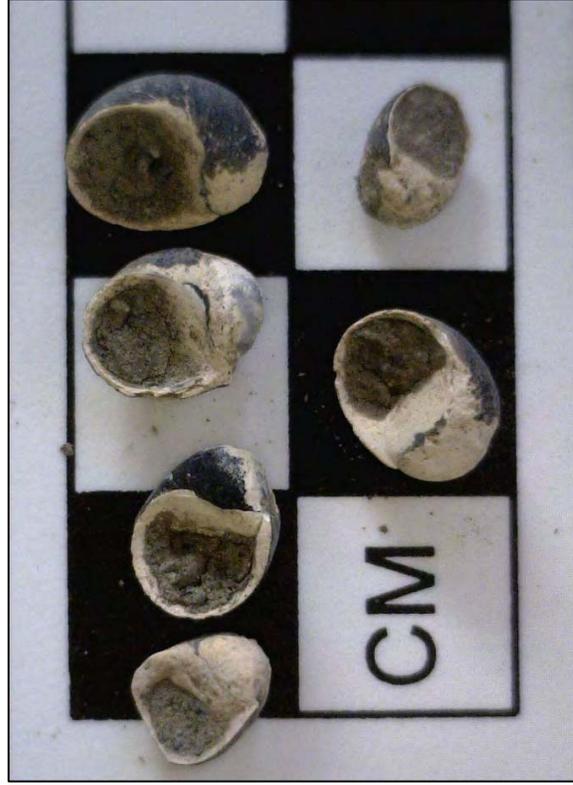


Figure 83. *Nerita picea*, ventral surfaces, recovered from T3, Str. III (110-165 cmbs) bulk matrix sample

Table 12. Snails Recovered from 2 L Bulk Matrix Sample in T3, Str. III (111-165 cmbs)

Trench	Stratum / Depth (cmbs)	Species	Description	Count
T3	III / 110-165	<i>Tryonita porrecta</i>	Endemic freshwater snail	20
T3	III / 110-165	<i>Melanooides tuberculata</i>	Freshwater snail, probably a pre-contact introduction in Hawai'i	1
T3	III / 110-165	<i>Nerita picea</i>	Endemic marine snail	6

## Section 7 Site Descriptions

Two archaeological sites were identified within or immediately adjacent to the current project area during this AIS. They are summarized in Table 13 and their distributions are depicted on Figure 84 and Figure 85.

Table 13. Sites Identified within the Current Project Area

SIHP #	Formal Type	Function
SIHP # 50-80-14-7817	Historic midden (1800-1900)	Domestic discard
SIHP # 50-80-14-7818	Historic midden (pre-1850)	Domestic discard

### 7.1 SIHP # 50-80-14-7817

<b>FORMAL TYPE:</b>	Historic midden
<b>FUNCTION:</b>	Domestic discard
<b>NUMBER OF FEATURES:</b>	3
<b>AGE:</b>	Approximately 1800-1900
<b>TEST EXCAVATIONS:</b>	T2 (Str. Ic), T3 (Str. II) and T4 (Str. II)
<b>TAX MAP KEY:</b>	TMK: [1] 2-3-012:019
<b>LAND JURISDICTION:</b>	State of Hawai'i
<b>PREVIOUS DOCUMENTATION:</b>	none

SIHP # 50-80-14-7817 is represented by historic artifacts recovered from buried fill and trash pit features in test excavations in the southern and southeastern portions of the project area (T2, T3, and T4). Specifically, fragments of eight glass bottles, a ceramic plate, a ceramic bowl, and a ceramic pitcher were recovered from 40 to 100 cmbs, with dates of manufacture from 1800 to 1920. Sediments related to SIHP # 50-80-14-7817 from T2 and T4 (Strata Ic and II respectively) contained fragments of *Bos taurus* (cow) saw-cut rib and tibiotarsus.

**7.1 SIHP # 50-80-14-7818**

<b>FORMAL TYPE:</b>	Historic midden
<b>FUNCTION:</b>	Domestic discard
<b>NUMBER OF FEATURES:</b>	1
<b>AGE:</b>	Unknown, pre 1850
<b>CONTEXT:</b>	T3; Stratum III (110-165cmbs)
<b>TAX MAP KEY:</b>	TMK: [1] 2-3-012:019
<b>LAND JURISDICTION:</b>	State of Hawaii'i
<b>PREVIOUS DOCUMENTATION:</b>	none

SIHP # 50-80-14-7818 is represented by an FCR fragment, faunal material and organic sediments recovered from test excavation in the southeastern corner of the project area (T3) in Stratum III at 110 to 165 cm below surface. Specifically, an FCR fragment, and faunal material representing fragments of *Bos taurus* (cow) tibia, *Sus scrofa* (pig) rib and *Gallus gallus* (chicken) tibiotarsus, were recovered from a highly organic sediment matrix partially submerged in the fresh water table at approximate 160 to 165 cmbs. Analysis of a bulk matrix sample from this location revealed fresh water and marine snails.

Although no pre-Contact traditional Hawaiian materials were recovered from the archaeological testing of the project area, SIHP # 50-80-14-7818 likely represents discard from occupation within the project area prior to 1850 and may represent an early contact situation. This stratum was only identified in the southeastern portion of the project area in T3, Stratum III (110-165 cmbs).

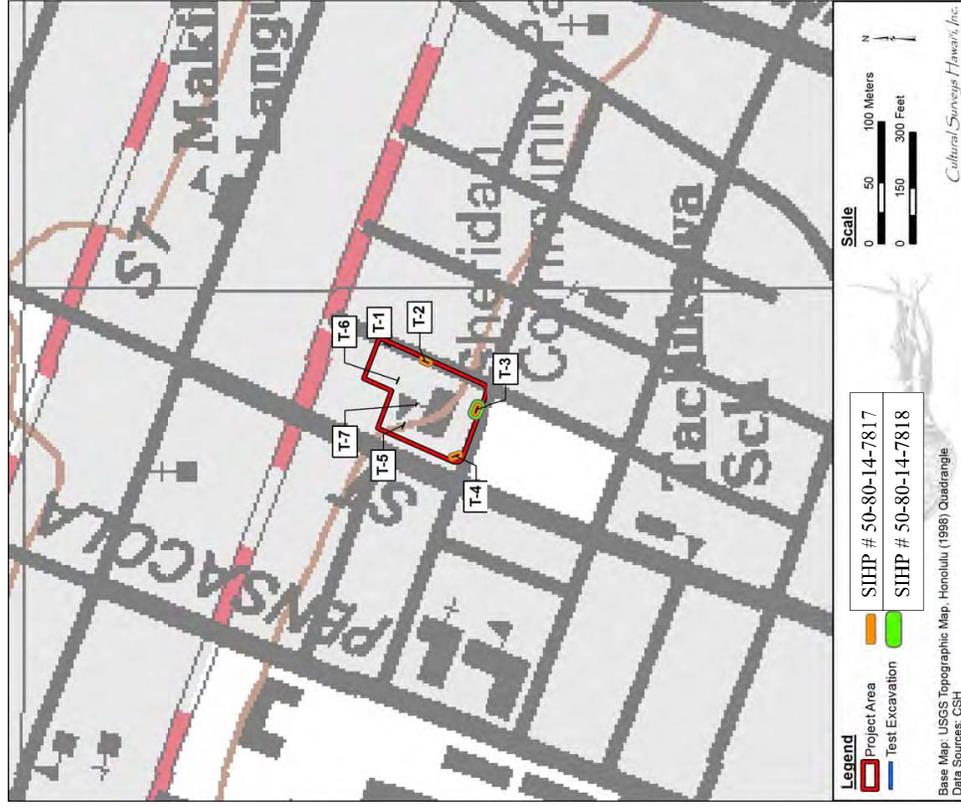


Figure 84. Portion of the 1998 USGS 7.5-minute topographic quadrangle indicating the locations SIHP # 50-80-14-7817 and SIHP # 50-80-14-7818 within the project area

### Section 8 Summary and Interpretation

CSH completed the fieldwork component of this AIS under archaeological permit number 15-03, issued by the SHPD pursuant to HAR §13-13-282, between 17 June 2015 and 17 July 2015 by David W. Shideler, M.A., Nathaniel S. Garcia, B.A., Mary L. Tardona, M.S., Abigail H. Langham, B.A., and Richard T. Stark, Ph.D. under the general supervision of Hallett H. Hammatt, Ph.D. Fieldwork included a pedestrian inspection of the project area and subsurface testing.

No significant archaeological finds were made during the pedestrian survey of the unbuilt portions of the project area, however, Figure 24 and Figure 25 indicate that portions of the extant facility were built by 1950. Staff working within the project area indicated their belief that some buildings of the current facility pre-date World War II and Figure 18 indicates the original detention home buildings had been completed within the project area by 1914. These buildings would be considered by the State Historic Preservation Division as "historic properties" under HAR §13-275-2 and CSH recommends consultation with the State Historic Preservation Division (SHPD).

Two significant finds were made during the subsurface testing, related to the 29 artifact fragments, representing 16 artifacts recovered from the project area (see Table 10). All collected artifacts are historic. The artifacts recovered from SHHP # 50-80-14-7817 likely relate to the domestic use of the project area by Catherine and Henry Martin Whitney (1824-1904). The artifacts recovered from SHHP # 50-80-14-7818 represent possible early post-Contact traditional Hawaiian settlement within the project area.

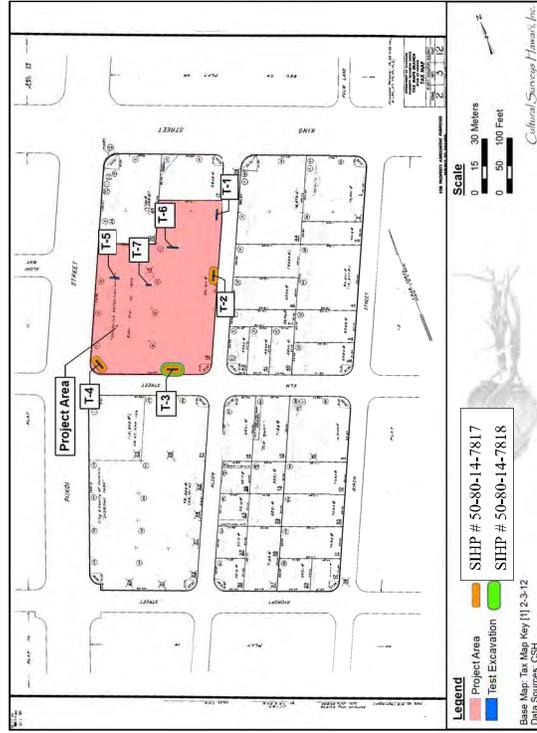


Figure 85. Portion of Tax Map Key (TMK) [1] 2-3-012 indicating the locations SHHP # 50-80-14-7817 and SHHP # 50-80-14-7818 within the project area

## Section 9 Significance Assessments

Historic property significance is evaluated and assessed based on the five State of Hawaii's historic property significance criteria. Two new historic properties were identified within the current project area. Table 13 lists the historic properties along with their significance assessments and mitigation recommendations. To be considered significant, a historic property must possess integrity of location, design, setting, materials, workmanship, feeling, and/or association and meet one or more of the following broad cultural/historic significance criteria (in accordance with HAR §13-13-275-6):

- a. Be associated with events that have made an important contribution to the broad patterns of our history;
- b. Be associated with the lives of persons important in our past;
- c. Embody the distinctive characteristics of a type, period, or method of construction, represent the work of a master, or possess high artistic value;
- d. Have yielded, or is likely to yield, information important for research on prehistory or history; or
- e. Have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity.

SIHP # 50-80-14-7817 is represented by stratigraphic layers including historic artifacts, most likely related to the family of Henry Martyn Whitney, Sr. Whitney, a prominent member of the Honolulu community, may have entertained the young Samuel Clemens at this house. Whitney served as first postmaster general in Hawai'i in 1850 and was elected to the house of representatives of the legislature of the Hawaiian Kingdom in 1855. In 1856, he produced the first issue of the *Pacific Commercial Advertiser* and in 1861 he established *Ka Niuepa Kū 'oko 'a*, a Hawaiian language newspaper. Whitney began publishing the *Marine Bulletin* in 1882, which was eventually purchased by James Robison and became the *Honolulu Star-Bulletin*. In 2010, the *Star-Bulletin* merged with the *Honolulu Advertiser* to become the *Honolulu Star-Advertiser*, currently the largest daily newspaper in Hawai'i (Krauss 2009:7-11). SIHP # 50-80-14-7817 is considered significant under criteria "b" only, as it is "associated with the lives of persons important in our past." SIHP # 50-80-14-7818 is represented by historic artifacts recovered from test excavation in the southeastern corner of the project area (T3) in Stratum III at 110 to 165 cm below surface. Specifically, an FCR fragment, and faunal material representing *Bos taurus* (cow) tibia, *Sus scrofa* (pig) rib, and *Gallus gallus* (chicken) tibiotarsus were recovered from a highly organic sediment matrix partially submerged in the fresh water table at approximately 165 cmbs. Analysis of a bulk sample from this location revealed both fresh water and marine snails. SIHP # 50-80-14-7818 is considered significant under criteria "d" only ("Have yielded, or may be likely to yield, information important for research on prehistory or history") for the information it may afford regarding the Islands' natural history.

Table 14. Archaeological Historic Property Integrity, Significance, and Mitigation Recommendations

SIHP #	Test Excavation	Formal Type/Description	Integrity							Significance	Mitigation Recommendation
			Location	Design	Setting	Materials	Workmanship	Feeling	Association		
SIHP # 50-80-14-7817	T2 (Str. Ic)	Historic midden	Y	N	N	Y	N	N	Y	b	Archaeological data recovery as archaeological monitoring
	T3 (Str. II)		N	N	N	N	N	N	N		
	T4 (Str. II)		N	N	N	N	N	N	N		
SIHP # 50-80-14-7818	T3 (Str. III)	Historic midden	Y	N	Y	N	N	N	Y	d	Archaeological data recovery as archaeological monitoring
			N	N	N	N	N	N	N		

## Section 10 Project Effect and Mitigation Recommendations

### 10.1 Project Effect

In accordance with Hawai'i State historic preservation review legislation, HAR §13-13-275-7, the project's effect recommendation is "effect, with proposed mitigation commitments." CSH observed no evidence of pre-Contact Hawaiian culture and documented two historic sites. SIHP # 50-80-14-7817 is a historic midden lens observed in three test excavation trenches in the project area: T2, Stratum 1c (40-65 cmb), T3, Stratum 11 (60-60cmb) and T4, Stratum II (60-100 cmb). SIHP # 50-80-14-7817 likely represents discarded historic artifacts in fill within the project area relating to the family of Catherine and Henry Martyn Whitney, Sr., who moved to the Alder Street house sometime between 1880 and 1884, and lived there until his death in 1904. His only surviving son, Henry Martyn Whitney, Jr., lived in the house until at least 1924. SIHP # 50-80-14-7818 is represented by material recovered from a test excavation in the southeastern corner of the project area (T3) in Stratum III at 110 to 165 cm below surface. Specifically, an FCR fragment, along with faunal material representing *Bos taurus* (cow) tibia, *Sus scrofa* (pig) rib, and *Gallus gallus* (chicken) tibiotarsus was recovered from a highly organic sediment matrix partially submerged in the fresh water table at approximately 165 cmb. Analysis of a bulk matrix sample from this location revealed fresh water and marine snails.

The information included in the report is the primary effort to mitigate the effect of the planned developments within the project area. Secondly, future archaeological monitoring is recommended for these cultural resources, SIHP # 50-80-14-7817 and SIHP # 50-80-14-7818, during the planned development of the project area. These significance recommendations are included in this AISR for the review and concurrence of the SHPD.

### 10.2 Mitigation Recommendations

This AIS report indicates the project area contains SIHP # 50-80-14-7817 and SIHP # 50-80-14-7818. Through this report, information now has been documented regarding the location, extent, function, and age of SIHP # 50-80-14-7817 and SIHP # 50-80-14-7818. This AIS was undertaken to mitigate any adverse effect caused by proposed development activities.

This AIS plus archaeological monitoring with detailed documentation of the historic properties is recommended as sufficient to satisfy the requirements to mitigate any adverse effect caused by the proposed development activities within the project area. The indicated archaeological monitoring program would begin with the preparation of an archaeological monitoring plan for the review and acceptance of the SHPD. Early consultation with the SHPD is recommended through submittal of the present study is recommended for their determination on the project's effect and mitigation recommendations.

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# **Appendix G: Cultural Impact Assessment**



**Draft**

**Cultural Impact Assessment for the  
Mixed Use Project at 902 Alder Street,  
Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu Island  
TMK: [1] 2-3-012:019**

Prepared for  
SSFMI International

Prepared by  
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**Management Summary**

<b>Reference</b>	Cultural Impact Assessment for the Mixed Use Project at 902 Alder Street, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu. TMK: [1] 2-3-012:019 (Ishihara and Hammatt 2015)
<b>Date</b>	October 2015
<b>Project Number(s)</b>	Cultural Surveys Hawai'i, Inc. (CSH) Job Code: HONOLULU 59
<b>Agencies</b>	Department of Health, Office of Environmental Quality Control (DOH/OEQC)
<b>Land Jurisdiction</b>	State of Hawai'i Department of Accounting and General Services (DAGS)
<b>Project Location</b>	The project area is immediately bound by Pi'ikoi Street to the west, Elm Street to the south, and Alder Street to the east. Other businesses can be found to the north of the project area, which front South King Street.
<b>Project Description</b>	The project will replace the old Judiciary facility with a new one. The Hawaii Housing Finance Development Corporation (HHFDC) will jointly develop the subject property by adding an affordable housing component to the project. Ground disturbance is expected to impact the entirety of the project area, relating to demolition, utilities trenching, and new building footings.
<b>Project Acreage</b>	The project area is 1.4 acres.
<b>Document Purpose</b>	This CIA was prepared to comply with the State of Hawai'i's environmental review process under Hawai'i Revised Statutes (HRS) §343, which requires consideration of the proposed project's potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information pertinent to the assessment of the proposed project's potential impacts to cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control's <i>Guidelines for Assessing Cultural Impacts</i> ) which may include traditional cultural properties (TCPs). These TCPs may be significant historic properties under State of Hawai'i significance criterion "e," pursuant to Hawai'i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance criterion "e" refers to historic properties that "have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity" (HAR §13-275-6 and §13-284-6). The document will likely also support the project's historic preservation review under HRS §6E and HAR §13-275 and §13-284. The document is also intended to support the project's environmental review.

**Results of Background Research**

Background research for this study yielded the following results which are presented in approximate chronological order:

1. The traditional name for Honolulu. Ahupua'a was Kou. This *ahupua'a* was subdivided into smaller land divisions called *'i'i*. The area between Maunakea Street and Nu'uauu Stream and *makai* (towards the ocean) of King Street was known as Kapu'ukolo. The area *mauka* (towards of the mountain) between Maunakea Street and Nu'uauu Stream was known as Kikihale. Pukui et al. (1974:110) states that Kikihale was named for the daughter of the chief Kou for whom the area was named.
2. Honolulu literally translates to "protected bay," which refers to Honolulu Harbor (Pukui et al. 1974:49-50). Other translations include "sheltered hollow" and "abundance of peace" (Hawaiian Historical Society 1904:24). Westervelt adds that Honolulu was most likely a name of a very rich farm land near the junction of Liliha and School Streets.
3. Pākākā was the name of a coastal point, canoe landing, wharf built off the point in 1827, and *heiau* (pre-Christian place of worship, shrine). The name literally means "to skim, as stones over the water" (Pukui et al. 1974:175). Thrum (1906) mentions Pākākā Heiau being the main royal temple in Honolulu. This *heiau* would be located near the foot of Fort Street today.
4. Pukui et al. (1974) does not give a meaning for the place name Kaka'ako. However, Pukui and Elbert (1986:110) translates the word *kākā'āko* as "dull, slow," and Thrum (1922:639) translated the word as "prepare the thatching." If Thrum's translation is correct, this name could be related to the many salt marshes in Kaka'ako which were excellent places to gather *pili* (a type of grass; *Heteropogon contortus*), which Hawaiians used to thatch their houses.
5. Kewalo 'Ili means "the calling (as an echo)" and was once the place where *kaunā*, members of a pariah caste intended for sacrifice, were drowned (Pukui et al. 1974:109).
6. Pūowaina, also known as Punchbowl in modern times, translates to "hill of placing [human sacrifices]" (Pukui et al. 1974:195). There were six *heiau* (pre-Christian place of worship) and one home for priests located on Pūowaina. These sites were first noted by Emma Nakuina in 1909 (Sterling and Summers 1978:317).
7. Several battles ensued in Pauoa Valley including the invasion led by Maui chief Kahekili, battling the chief of O'ahu, Kahahana, in 1783. Almost a decade (1795) later, Kamehameha I landed his army in Waikiki to feud with Kalanikūpule, king of Maui and O'ahu.

	<p>8. In 1846, Honolulu was the capitol of the Hawaiian Kingdom and was on its way to becoming the commercial and political hub of the Islands. During this time there was an obvious increase in population, land use, and urbanization. The waterfront area changed dramatically to accommodate trading and whaling vessels.</p> <p>9. In 1895, a cholera epidemic struck the Islands and spread rapidly due to unsanitary conditions of the harbors and Nu'uauu Stream. The epidemic broke out in August and ended in October. A total of 64 people died. Shortly after the end of the epidemic, the government began to plan and institute public improvements to roads, bridges, sewage systems, and streams.</p> <p>10. The Kaka'ako area has been heavily modified for the last 150 years due to historic filling of the area for land reclamation.</p> <p>11. By the 1880s, the Kaka'ako area was being filled in for the construction of new roads and improvements of older roads. The justification for filling former mud flats, marshes, and fishponds was that low-lying areas were frequently being cited for unsanitary conditions and contributing to cholera outbreaks and breeding areas for rats and mosquitoes. By February 1914, the land from South Street to Ward Avenue and from Ala Moana Boulevard to Queen Street had been filled in.</p>
<p><b>Results of Community Consultation</b></p>	<p>CSH attempted to contact Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants of Kaka'ako in order to identify individuals with cultural expertise and/or knowledge of the project area and vicinity. Results are below:</p> <ol style="list-style-type: none"> <li>1. Mr. Jan Becket, a retired Kamehameha Schools teacher who is well recognized for his photographic documentation of <i>wahi pana</i> (storied places), escorted CSH to multiple cultural sites from October 2014 to September 2015 within Honolulu Ahupua'a. A total of 28 sites within Honolulu Ahupua'a have been mentioned for the current study. None of the sites visited were in the vicinity of the project area.</li> <li>2. Pākākā Heiau was once located near the foot of the <i>makai</i> end of Fort Street Mall. Mr. Becket assumes that some of the rubble from Pākākā Heiau was most likely used for the construction of roads in downtown Honolulu. Pākākā was the most important <i>heiau</i> in Honolulu Ahupua'a. It was also near Kamehameha's compound and was possibly the headquarters for Kahuna Kū.</li> <li>3. Mr. Becket states the original location of Kaunakapili Church was near the current alignment of Maunakea Street and North Beretania Street. Prior to the construction of Kaunakapili Church was where Kahuoi's shrine once stood. It is said that Kahuoi would fish with his pet bird named <i>Kau-maka-pili</i>.</li> </ol>

	<p>(“perched with eyes closed”). The translation of Kau-maka-pili tells how the bird would catch its prey, swooping down from above and closing one eye before grabbing a fish.</p> <p>4. Mr. Becket escorted CSH to Pūowaina, commonly known as Pūnchbowl. The name translates to “hill of placing [human sacrifices].” Mr. Becket’s late uncle, Siebrand Schaffma, grew up in Honolulu during the 1920s and referred to Pūnchbowl as “The Devil’s Pūnchbowl.” Mr. Becket added that it was a common practice for early white settlers to re-name Native American sacred places with names beginning with “The Devil’s...” He commented that the name “The Devil’s Pūnchbowl” clearly follows the same practice in the re-naming of Pūowaina.</p> <p>5. Important sites that have been destroyed below Pūowaina include O Kāne Lā’au Heiau, Manua Heiau, Po’ouahi Heiau, Ka’akopua Heiau, Kahehuna Heiau, Kahahaimaui Heiau, and Kahe Iki Heiau. Pūowaina Heiau and Imu Ahi, a sacrificial stone, were located at Pūowaina. In addition, a <i>hōlua</i> slide was located on the eastern slope above Stevenson Intermediate School.</p> <p>6. Paulette Ka’anohi Kaleikini, State of Hawaii’i recognized lineal descendant, indicated that her <i>kāpuna</i> (elders) once lived in this area. She adds the project area is within the urban corridor and is in the vicinity of Walmart on Ke’eaumoku Street “where a cemetery was found.” Ms. Kaleikini states that “chances of impacting a cultural layer or historic property at this project site is high.”</p> <p>7. Ms. Kaleikini points out that this area was favored by <i>ali’i</i> (chiefs) but also by the <i>lāhui</i> (nation, race, people). The area once consisted of agricultural lands including water and ponds. Ms. Kaleikini adds because of the land was fertile, people lived and died in these areas.</p> <p>8. Ms. Kaleikini recommends an archaeological inventory survey and cultural monitoring.</p>
<p><b>Impacts and Recommendations</b></p>	<p>Based on the information gathered from the cultural and historic background and community consultation detailed in this CIA report, the proposed project may have potential impacts. To avoid these, we suggest the following:</p> <ol style="list-style-type: none"> <li>1. Personnel involved in the construction activities should exercise caution due to the culturally sensitive nature of the proposed project area as indicated by a community participant.</li> <li>2. Personnel involved in the construction activities of the project should be informed of the possibility of inadvertent cultural finds, including human remains. Should burials or other cultural</li> </ol>

	<p>finds be encountered during ground disturbance, the construction contractor should immediately cease all work and the appropriate agencies should be notified pursuant to applicable law.</p> <p>3. If any <i>imi kāpuna</i> or other inadvertent cultural finds are found during ground disturbance, the State of Hawaii’i Department of Accounting and General Services in conjunction with the State Historic Preservation Division (SHPD) and the O’ahu Island Burial Council (OIBC) should consult with lineal and cultural descendants of Honolulu (including Kaka’ako) to develop a reinterment plan, as well as a cultural preservation plan in the event that any human remains or cultural sites or artifacts are uncovered during construction of long-term maintenance for the project.</p>
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**Section 1 Introduction**

**1.1 Project Background**

At the request of SSFM International, Inc. on behalf of the State of Hawaii'i Department of Accounting and General Services (DAGS), Cultural Surveys Hawaii'i, Inc. (CSH) has prepared a cultural impact assessment (CIA) for the Mixed Use Project at 902 Alder Street, DAGS JOB NO. 12-21-7550, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu, Tax Map Key (TMK): [1] 2-3-012-019.

The project will replace the old Judiciary facility with a new one. The Hawaii Housing Finance Development Corporation (HHFDC) will jointly develop the subject property by adding an affordable housing component to the project. Ground disturbance is expected to impact the entirety of the project area, relating to demolition, utilities trenching, and new building footings. The project area is approximately 1.4 acres. Figure 1 through Figure 3 depict the project area.

**1.2 Document Purpose**

This CIA was prepared to comply with the State of Hawaii'i's environmental review process under Hawaii'i Revised Statutes (HRS) §343, which requires consideration of the project's potential effect on cultural beliefs, practices, and resources. Through document research and cultural consultation efforts, this report provides information compiled to date pertinent to the assessment of the proposed project's potential impacts on cultural beliefs, practices, and resources (pursuant to the Office of Environmental Quality Control's *Guidelines for Assessing Cultural Impacts*), which may include Traditional Cultural Properties (TCPs). These TCPs may be significant historic properties under State of Hawaii'i significance criterion "e," pursuant to Hawaii'i Administrative Rules (HAR) §13-275-6 and §13-284-6. Significance criterion "e" refers to historic properties that "have an important value to the native Hawaiian people or to another ethnic group of the state due to associations with cultural practices once carried out, or still carried out, at the property or due to associations with traditional beliefs, events or oral accounts—these associations being important to the group's history and cultural identity" (HAR §13-275-6 and §13-284-6). The document will likely also support the project's historic preservation review under HRS §6E and HAR §13-275 and §13-284. The document is also intended to support the project's environmental review.

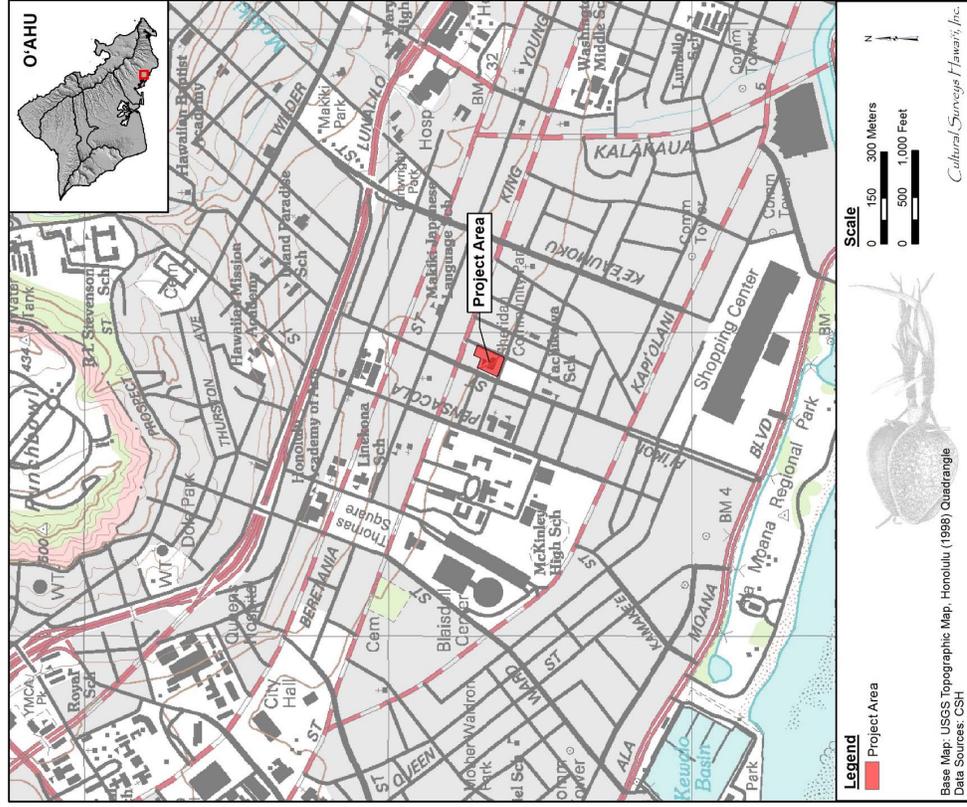


Figure 1. Portion of the 1998 USGS 7.5-minute topographic Honolulu quadrangle showing the location of the study area

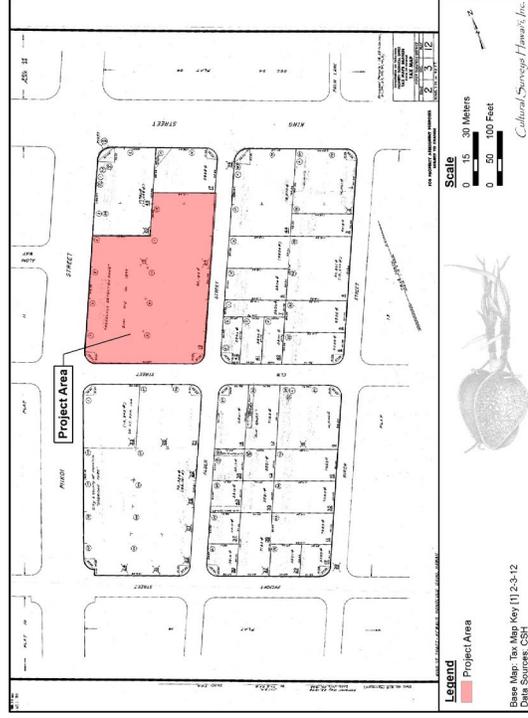


Figure 2. Tax Map Key (TMK) [1]2-3-12 depicting the project area (Hawaii TMK Service)

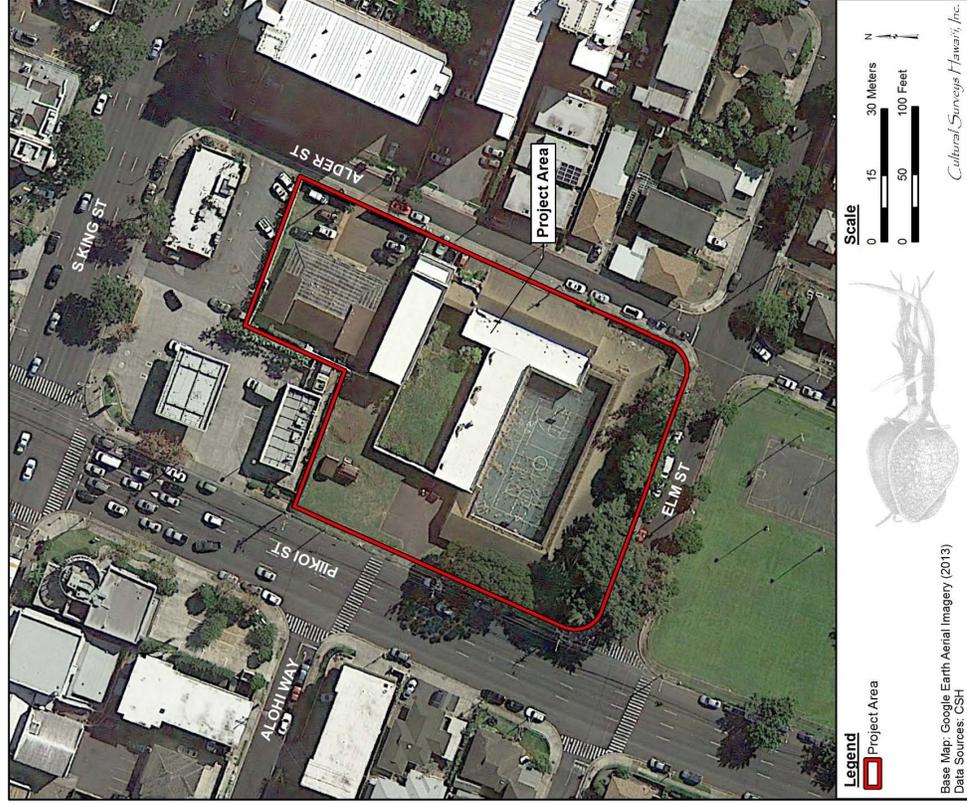


Figure 3. Aerial photograph (Google Earth 2013), showing study area bordered by Piikoi Street, Alder Street, and Elm Street

### 1.3 Scope of Work

The scope of work for this CIA includes the following:

1. Examination of cultural and historical resources, including Land Commission documents, historic maps, and previous research reports for the specific purpose of identifying traditional Hawaiian activities including gathering of plant, animal, and other resources or agricultural pursuits as may be indicated in the historic record.
2. Review of previous archaeological work within and near the subject parcel that may be relevant to reconstructing traditional land use activities; and to the identification and description of cultural resources, practices, and beliefs associated with the parcel.
3. Consultation and interviews with knowledgeable parties regarding cultural and natural resources and practices in or near the parcel; present and past uses of the parcel; and/or other practices, uses, or traditions associated with the parcel and environs.
4. Preparation of a report that summarizes the results of these research activities and provides recommendations based on findings.

### 1.4 Environmental Setting

#### 1.4.1 Natural Environment

The project area is situated on Makiki clay loam, 0 to 2 percent slopes (MkA). The Makiki series is described below:

This series consists of well-drained soils on alluvial fans and terraces in the city of Honolulu on the island of Oahu. These soils formed in alluvium mixed with volcanic ash and cinders. They are nearly level. Elevations range from 20 to 200 feet. The annual rainfall amounts to 30 to 60 inches. Most of it falls between November and April. The mean annual soil temperature is 78° F. Makiki soils are geographically associated with Kaena and Tantalus soils. [Foote et al. 1972:91]

The MkA soil can be found on smooth fans and terraces. The surface layer consists of a dark-brown clay loam approximately 20 inches thick. The subsoil tends to be 10 inches thick and is a dark-brown clay loam with a subangular blocky structure. The subsoil consists of a similar material and is about 24 inches thick. Below the subsoil are volcanic cinders. The soil tends to be strong to medium acidic. This particular soil can be found in mostly urban areas (Foote et al. 1972:92). Figure 4 depicts the various soils found in the vicinity of the project area.

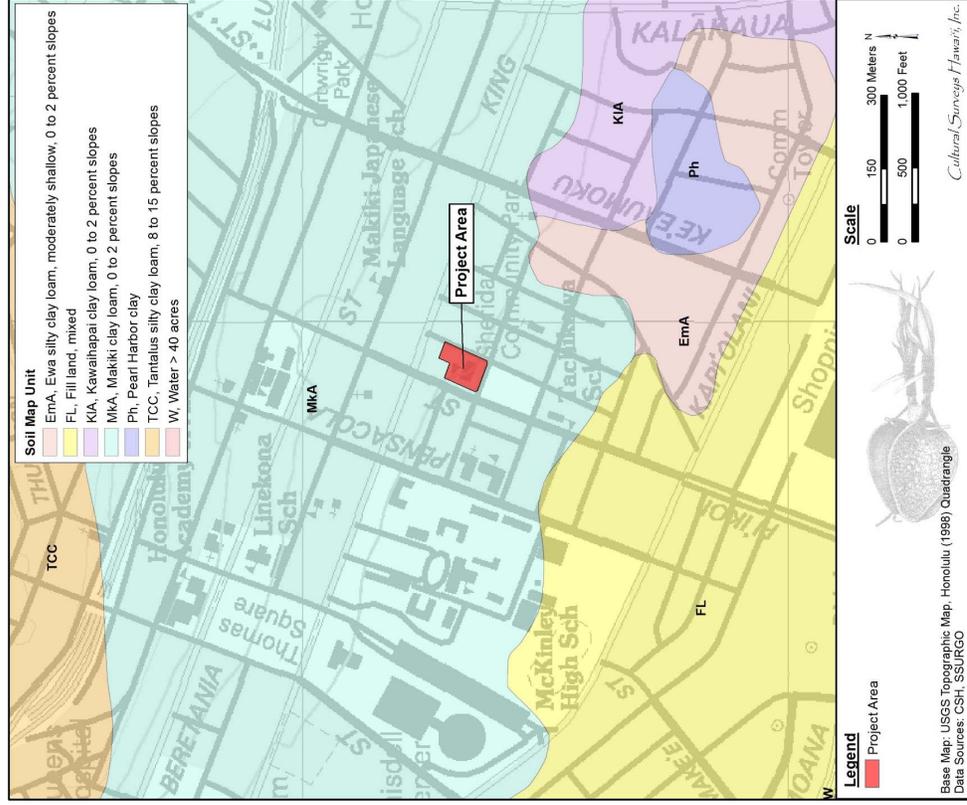


Figure 4. 2013 aerial photograph (Google Earth 2013) with an overlay of the USDA SSURGO database (2001) and soil survey data gathered by Foote et al. (1972)

#### 1.4.2 Winds, Rains, and Seas of Honolulu

Each small geographic area on O'ahu had a Hawaiian name for its own wind, rain, and seas. The name of the winds of O'ahu are listed in a chant concerning a powerful gourd called *The Wind Gourd of La'amaomao*. When the gourd was opened, a specific wind could be called to fill the sails of a canoe and take the person in the desired direction. The chant lists the winds of the Honolulu area from east to west.

Kukalahale is of Honolulu,

'Ao'oa is of Māmala,

'Ōluniu is of Kapālama,

Haupē'epe'e is of Kalihī,

Ko-momona is of Kahauiki.

[Nakuina 1992:43]

The names of the seas of southeastern O'ahu are listed in a chant for the high chief, Kūali'i, paramount chief of the Hawaiian Islands from 1720 to 1740 (Cordy 2002:19). From the east end of Waikīkī to the west boundary of the Kona district at Moanalua Ahupua'a, the seas were:

A sea for surf-swimming is Kahaloa [sic] [in Waikīkī]

A sea for net fishing is Kalia [in Waikīkī]

A sea for going naked is Māmala [mouth of Honolulu Harbor]

A sea for swimming is Kapuone [in Kapālama/Kalihi]

A sea for surf-swimming sideways is Makaiwa [in Kapālama/Kalihi]

A sea for catching 'anae [mullet] is Keeia [in Moanalua]

A sea for crabs is Lelewi [in Moanalua]. [Fornander 1880:390]

#### 1.4.3 Built Environment

The study area is located within urban Honolulu. The study area's built environment encompasses the entire Family Court Detention Facility, which takes up more than half the block upon which the establishment is situated. On the same block northwest of the project area is a gas station/convenient store and to the northwest is a restaurant. The block is bordered by South King Street to the north; Alder Street to the east; Elm Street to the south; and Pi'ikoi Street to the west.

## Section 2 Methods

Research centers on Hawaiian activities including *ka ao* (legends), *wahi pana* (storied places), *‘ōlelo no‘eau* (proverbs), *oli* (chants), *mele* (songs), traditional *mo‘olelo* (stories), traditional subsistence and gathering methods, ritual and ceremonial practices, and more. Background research focuses on land transformation, development, and population changes beginning with the early post-Contact era to the present day.

Cultural documents, primary and secondary cultural and historical sources, historic maps, and photographs were reviewed for information pertaining to the study area. Research was primarily conducted at the CSH library. Other archives and libraries where CSH cultural researchers gather information include the Hawai‘i State Archives, the Bishop Museum archives, the University of Hawai‘i at Mānoa’s Hamilton Library, Ulukou, the Hawaiian Electronic Library (Ulukeu.org 2004), the State Historic Preservation Division (SHPD) Library, the State of Hawai‘i Land Survey Division, the Hawaiian Historical Society, and the Hawaiian Mission Houses Historic Site and Archives. Information on Land Commission Awards (LCAs) were accessed via Waihoana ‘Aina Corporation’s Māhele database (Waihoana ‘Aina 2000), the Office of Hawaiian Affairs (OHA) Papakilo Database (Office of Hawaiian Affairs 2015), and the Ava Konoehiki Ancestral Visions of ‘Aina website (Ava Konoehiki 2015).

### 2.1 Community Consultation

#### 2.1.1 Scoping for Participants

The cultural department commences our consultation efforts by utilizing our previous community contact list to facilitate the interview process. We then review an in-house database of *kāpuna* (elders), *kama āina* (native born), cultural practitioners, lineal and cultural descendants, Native Hawaiian Organizations (NHOs), includes Hawaiian Civic Clubs and those listed on the Department of Interior’s NHO list), and community groups. CSH also contacts agencies such as SHPD, OHA, and the appropriate Burial Council for the island on which the proposed project is located for their response to the project and to identify lineal and cultural descendants, individuals and/or NHO with cultural expertise and/or knowledge of the study area. CSH is also open to referrals and new contacts.

#### 2.1.2 “Talk Story” Sessions

Prior to the interview, CSH cultural researchers explain the role of a CIA, how the consent process works, the project purpose, the intent of the study, and how their *‘ike* (knowledge) and *mana‘o* (thought, opinion) will be used in the report. The interviewee is given an Authorization and Release Form to read and sign.

“Talk Story” sessions range from the formal (e.g., sit down and *kāikā* [consultation, discussion]) in the participant’s place of choice over set interview questions) to the informal (e.g., hiking to cultural sites near the study area and asking questions based on findings during the field outing). In some cases, interviews are recorded and transcribed later.

CSH also conducts group interviews, which range in size. Group interviews usually begin with set, formal questions. As the group interview progresses, questions are based on interviewees’ answers. Group interviews are always transcribed and notes are taken. Recorded interviews assist

the cultural researcher in 1) conveying accurate information for interview summaries, 2) reducing misinterpretation, and 3) adding missing details to *mo‘olelo*.

CSH seeks *kōkua* (assistance) and guidance in identifying past and current traditional cultural practices of the study area. Those aspects include general history of the *āhupua‘a* (traditional land division extending from the mountain to the sea); past and present land use of the study area; knowledge of cultural sites (for example, *wahi pana*, archaeological sites, and burials); knowledge of traditional gathering practices (past and present) within the study area; cultural associations (*ka‘ao* and *mo‘olelo*); referrals; and any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the study area.

#### 2.1.3 Interview Completion

After an interview, CSH cultural researchers transcribe and create an interview summary based on information provided by the interviewee. Cultural researchers give a copy of the transcription and interview summary to the interviewee for review and ask that they make any necessary edits. Once the interviewee has made those edits, CSH incorporates their *‘ike* and *mana‘o* into the report. When the draft report is submitted to the client, cultural researchers then prepare a finalized packet of the participant’s transcription, interview summary, and any photos that were taken during the interview. We also include a thank you card and honoraria.

It is important that CSH cultural researchers cultivate and maintain community relationships. The CIA report may be completed, but CSH researchers continuously keep in touch with the community and interviewees throughout the year—such as checking in to say hello via email or by phone, volunteering with past interviewees on community service projects, and sending holiday cards to them and their *‘ohana* (family). CSH researchers feel this is an important component to building relationships and being part of an *‘ohana* and community.

“*I ulu no ka lālā i ke kumu—the branches grow because of the trunk,*” is an *‘ōlelo no‘eau* (#1261) shared by Mary Kawena Pukui with the simple explanation: “Without our ancestors we would not be here” (Pukui 1983:137). As cultural researchers, we often lose our *kāpuna* but we do not lose their wisdom and words. We routinely check obituaries and gather information from other community contacts if we have lost our *kāpuna*. CSH makes it a point to reach out to the *‘ohana* of our *kāpuna* who have passed on and pay our respects including sending all past transcriptions, interview summaries, and photos for families to have on file for genealogical and historical reference.

## Section 3 Ka'ao (Legends)

Hawaiian storytellers of old were greatly honored and played a major source of entertainment and contained teachings while interweaving parts of Hawaiian lifestyles, genealogy, history, relationships, arts, and the natural environment (Pukui 1995:IX). According to Pukui (1995), storytelling is better to be heard rather than read for much becomes lost in the transfer from the spoken word to the written word and *ka'ao* (legends) are often full of *kaona* or double meanings.

Martha Beckwith (1940:1) notes that Hawaiians use the term *ka'ao* "for a fictional story or one in which fancy plays an important part." Beckwith defines *mo'olelo* as "a narrative about a historical figure, one which is supposed to follow historical events. Stories of the gods are *mo'olelo*" (Beckwith 1940:1). In reality, the distinction between *ka'ao* and *mo'olelo* are fiction and fact, respectively, and cannot be "pressed to closely" as "it is rather in the intention than in the fact" (Beckwith 1940:1). Thus a *mo'olelo*, which may be enlivened by fantastic adventures of *kupua* (supernatural beings) "nevertheless corresponds with the Hawaiian view of the relation between nature and man" (Beckwith 1940:1). A *ka'ao* "is consciously composed to tickle the fancy rather than to inform the mind as to supposed events" (Beckwith 1940:1).

### 3.1 Traditional Legends

#### 3.1.1 'Ai'ai and Puniaki in Kou

The *alupua'a* (land division extending from the mountain to the sea) of Kou was subdivided into several smaller land divisions, known as *'ili*. The area between Maunakea Street and Nu'uamu Stream and *makai* (towards the sea) of King Street was known as Kapu'ukolo. The area between Maunakea and Nu'uamu Stream *mauika* (towards the mountains) of King Street to Beretania Street was called Kikihale. In Pukui et al.'s (1974:110) *Place Names of Hawaii*<sup>1</sup>, no meanings are given for these names, but they do state that Kikihale was named for the daughter of the chief, Kou, for whom the district was named. Many of these names are mentioned in the legend of 'Ai'ai (Thrum 1998:230-254).

Kū'ula, the god presiding over the fish of the sea had a son named 'Ai'ai. He was the first to teach the Hawaiians how to make various fishing lines and nets, the first to set up a *ko'a kā'ula*, a rock shrine on which the fishermen would place their first catch as an offering to Kū'ula, and the first to set up *ko'a i'a*, fishing stations where certain fish were known to gather (Thrum 1998:231). Leaving his birthplace in Maui, 'Ai'ai traveled around the islands, establishing *ko'a kā'ula* and *ko'a i'a*.

He landed first at Keana Point, then traveled around the island of O'ahu, stopping in Kaka'ako (an *'ili* now covered by One Waterfront Plaza) to visit his friend, Apua. Here he met the famed O'ahu chief, Kou, a skilled fisherman who caught the large *aku* (bonito; *Katsuwonus pelamis*) in the bay of Māmala (ancient name for the mouth of Honolulu Harbor). 'Ai'ai soon met a young woman named Puiwa, married her, and had a son named Puniaki. One day the family went to a dam on the Nu'uamu Stream to catch *'o'opu* (gobies) and *'ōpae* (shrimp). When Puiwa left the newborn Puniaki on the bank of the river, the baby started to cry. 'Ai'ai told his wife to tend to the child but she answered him back saucily, so 'Ai'ai called on his ancestors and a storm came up, flooding the dam and sweeping the child into the stream. Leaving his wife, he went downstream to the *'ili* of Kaumakapili. Here he saw the chiefess Kikihale gather a large *'o'opu* from the stream.

Kikihale's guardian advised her to put it in a calabash with water and keep it as a pet. 'Ai'ai realized that the *'o'opu* was Puniaki, his transformed child who had been swept downstream to Kikihale (to the person and also to the *'ili* named Kikihale). The next day the chiefess's guardian saw that the *'o'opu* had turned back into a child, and Kikihale instructed her to raise the child until it was an adult, so that she could take the young man for a husband. This came to pass, but the chiefess was not satisfied with her husband Puniaki since he did not bring fish home as the other men in the islands. Puniaki was annoyed with her complaints, and took the pearl fishhook, Kahua, given to him by his father 'Ai'ai, and went out with the men of Kou to fish for the *aku*. When Puniaki held the pearl fishhook in his hand:

... the *akus*, unprecedented in number, fairly leaped into the canoes. They became so filled with the fish, without labor, that they sank in the water as they reached Kapuukolo, and the men jumped overboard to float them to the beach. (Thrum 1998:247-248)

This suggests that not only was Kapu'ukolo an *'ili* name, but also a canoe landing, a place to come ashore after *aku* fishing.

#### 3.1.2 Keomelemele

The story of Keomelemele begins with Mooiamea, the supernatural who divided herself into five divisions: the chiefly lines, godly lines, the prophet lines, the priestly lines, and the lineages of the common people. From the godly lines came Ku and Olopana, both *kāne* (men). Following them were Hiiilei and Hinawelelani, both *wahine* (women) (Manu 2002:99). When Mooiamea discovered the latter born were *wahine*, she set aside the lands of Kuaihelani for them to live on so they would not see Ku and Olopana. The purpose of having them live separate was to find true peace without being defiled before reaching maturity.

Mooiamea decided to introduce one of the *kāne* to a *wahine*. When Ku met Hinawelelani, he carefully observed her features and said, "The elegance of Waipi'o with its matching cliffs," (Manu 2002:100). When Hinawelelani glanced at Ku, she thought "he was like an ohia lehua tree standing out amid the leafy shade of the forest" (Manu 2002:100). The two married and soon Hinawelelani became pregnant. Several days later, the gods Kāne and Kanaloa, standing upon the cliff Waolani in Nu'uamu, recognized Hinawelelani's pregnancy through their godly nature. Then came the task of creating temples at Waolani by the Menehune (a legendary race of small people who worked at night, building fish ponds, roads, temples). These temples can still be seen at Waolani to this day. Hina then gave birth to a boy. Kāne and Kanaloa sent their sister, the rainbow goddess Keannuue, to fetch the child for them to raise. However, when she arrived, Ku was holding the newborn. She then decided to make a request through Mooiamea. Agreeing to the request, Mooiamea commanded, "Return to our lord-brothers, and wait until your young charge is grown up, and when you intend to pair him up with a wife, do not agree to some woman of Hawai'iuaika; the wife he should take will be here, so that your foster child will not be tainted" (Manu 2002:101).

Heeding Mooiamea's words, Keannuue agreed to fulfill her commands and replied, "And if I get the child now from Ku and the others, who will bestow a name on the child?" Mooiamea answered,

Return with the child until you come before our brothers, and they shall be the ones to name the child, not I, nor the child's parents, lest I be wrong, because if our

brothers had not sent you to fetch the child, then I would have been the one to give the name, so you return and tell them what you and I are discussing here, though they probably know of our discussion, and that shall be it. [Manu 2002:101]

Keanuenue agreed to fulfill Moonanea's orders. In an instant, Keanuenue was at the doorstep of Ku and Hina's home in the form of a red mist. Hina turned to Ku and said,

Amazing, there is no rain outside that would bring the red mist, so step outside to see what the red mist is about. [Manu 2002:101]

Ku went outside and saw seven rainbows at once with no rain clouds. As Ku went to tell Hina about this unusual sight, the red mist and rainbow merged and a woman took form. The woman was beautiful and wore a rainbow cloak. The stranger was greeted by the pair before being invited in.

'We have never seen you before today, where have you come from?' Keanuenue responded, 'From the high heavens, I am a messenger sent by my brothers to fetch your newborn child for us to raise. The child is yours by birth, and I and my brothers shall only raise him, and if he grows to be a man and loves you two as his parents, that's fine, but if he cares for our raising him, that would be appropriate, like a little fish of Kahoolawe, like an uku—a just reward.' [Manu 2002:102]

Hina was incredibly sad hearing Keanuenue's words. Ku thought for a bit before retorting,

'Listen, Stranger, what you've told us is good, but here is my only concern. If what you've told us deals with Moonanea, then it's all fitting and proper, because you obtain the child through her. Therefore, if you go to her first and let her hear your case, you'll get the child through her, but you won't get your way unless you get it through her.' [Manu 2002:102]

Keanuenue then stated that Ku and Hina's child was already hers, as she had previously discussed the matter with Moonanea. Hina turned to Ku and said, "Let the child be given as she says, lest we do wrong in Moonanea's opinion, because she is telling us the truth, so let the child be released for the gods to raise" (Manu 2002:102). The couple agreed and handed over the child to Keanuenue who called out for the mist and grabbed a fragment of the rainbow cloak to wrap the child in before disappearing.

Ku stepped out of his *hale* (house) and in the sky was a rainbow, the red mist, and a fragment of the rainbow cloak floating away. Soaring above the ocean, Keanuenue tossed the placenta of the child into the ocean where it became a large red octopus. When Keanuenue reached Waolani, she entered the home of her brothers, Kāne and Kanaloa. The two took the child and entered the *heiau* to sanctify the child under a godly *kapu* (taboo). A portion of the child's umbilical cord was cut and placed on a *pali* (cliff) called Kaipuolono ("Lono's offering gourd") by Kanaloa (Manu 2002:103).

After Kanaloa returned, he asked to Kāne who should stay with Keanuenue. Kāne felt it was appropriate "to gather those who are despised, not young and handsome people, lest they tempt our sister and she leave our foster child" (Manu 2002:103). Their wishes were immediately fulfilled. The two gathered approximately 400 people who were red-eyed, crippled, deformed, and

flawed. Homes were constructed, groups were divided, and work duties were assigned. Keanuenue oversaw this group and it was instructed for them to heed her words.

Kāne and Kanaloa named the boy Kahanaiakeakua ("Foster-child-of-the-gods"), Kahihikuakalani ("The-spreading-over-the-back-of-heaven"), and Kamakaokautila ("The-cyces-of-lightning"). Keanuenue was ordered to take care of the child per her brother's instructions. Kāne also had an idea to have Kamanuwai ("The-water-bird") take their foster son wherever he wanted to go. Kamanuwai was a wild duck; it is also the name of a place near Kaunakapili (Manu 2002:103). Kunawai became the bathing pool for the child and Keanuenue (Figure 5 and Figure 6). The owner of the bathing pool was a *mo'ō* (lizard, water spirit). The bathing pool bears the name of the *mo'ō* to this day. Kamanuwai would take Kahanaiakeakua wherever he wanted to go then the two would go to Kunawai before heading back to Waolani. The lands of Waolani then became *kapu*.

Two *ōlelo mo'ēau* (see Section 3.3.2 and 3.3.8) describe those who inhabited the lands of Waolani.



Figure 5. Photo of Kunawai Springs, bathing pool for Kahanakeakua, Kahihikuakalani, Kamakaouila, and Keanuenu (CSH 2014)



Figure 6. Photo of plaque at Kunawai Springs (CSH 2014)

### 3.1.3 The Legend of Kapo'i Kukaemahiokapueo

In one legend, Kewalo is a marsh near the beach, where tall *pili* grass grew. A man named Kapo'i went to this area to get thatching for his house. While there, he found seven eggs of a *pueo* (Hawaiian short-eared owl) and took them home to cook for his supper. An owl perched on the fence surrounding his house and cried out "O Kapo'i, give me my eggs!" After several such pleas, Kapo'i eventually returned the eggs. In return, the owl became his *aumakua* (deified ancestor) and instructed him to build a *heiau* named Mānoa. Kapo'i built the *heiau*, placed some bananas on the altar as a sacrifice, and set the *kapu* days for its dedication. The king of O'ahu, Kākuihewa, who was building his own *heiau*, had made a law that if any man among his people erected a *heiau* and set the *kapu* before him, that man should die. Kapo'i was seized and taken to the *heiau* of Kūpalaha at Waikī. Kapo'i's *aumakua* asked for aid from the king of the owls at Pu'u Pueo in Mānoa, who gathered all of the owls of the islands. They flew to Kūpalaha and battled the king's men, who finally surrendered: "The owls scratched at the eyes and noses of the men and befouled them with excrement" (Kamakau 1991:23). From this time, Hawaiians considered the owl a powerful *akua* (god, divine). Because of this battle, the Hawaiians named the area Kukaemahiokapueo, which means, "the confused noise of owls rising in masses" (Thrum 1998:200-202; Westervelt 1963:135-137).

### 3.2 Wahi Pana (Legendary Places)

A Hawaiian *wahi pana*, also referred to as a place name, "physically and poetically describes an area while revealing its historical or legendary significance" (Landgraf 1994: v). *Wahi pana* can refer to natural geographic locations, such as streams, peaks, rock formations, ridges, offshore islands and reefs, or they can refer to Hawaiian land divisions such as *ahupua'a*, or *ili*, and man-made structures, such as fishponds. In this way, the *wahi pana* of Honolulu and the study area tangibly link the *kama āina* (native born) of Honolulu to their past.

According to Westervelt (1915), Honolulu is a name made by the union of the two words *hono* and *lulu*. Several translations include "sheltered hollow" and "abundance of peace" (Hawaiian Historical Society 1904:24). Pukui translates Honolulu as "protected bay" (Pukui et al. 1974:50). Westervelt adds that Honolulu was most likely a name of a very rich farm land near the junction of Liliha and School Streets. A high chief of this area was known as Honolulu. According to legends, he ruled this area during the time of Kākuihewa.

Kākuihewa was the *mō'i* (king, sovereign) of O'ahu prior to Kamehameha's rule. Kākuihewa divided the island of O'ahu amongst his favorite chiefs and officers and offered their names to the places that they received from their ruler. What is often referred to as Honolulu was once known as Kou. The area was named after a chief who was an *ilāmuku* (marshal) under Kākuihewa. For more on the area Kou, refer to Section 3.2.2.

Near the current alignment of Richards and Queens Streets was Hono-kau-pu—a noted field for *'ulu maika*, an ancient Hawaiian game suggesting bowling (Westervelt 1915:16). Kou was the popular *'ulu maika* field amongst chiefs (see Section 3.2.2). The track at Hono-kau-pu was approximately 12 feet wide and extended from the current location of Merchant and Fort Streets, traveling 'Ewa (westward) to the intersection of Merchant Street and Nu'uau Avenue. It is said that Kamehameha I used this *maika* track (Westervelt 1915:16). At the foot of the present Richards Street was once the site of lumber yards. In ancient times, this area was called Ula-kua and idols

were once made here. Near Ula-kua was Ke-kau-kukui, a place where people gathered to play *kōnane*, an ancient game that resembled checkers (see Section 3.2.3 for expanded *mo'olelo*). Ke-kau-kukui was also where Kekiamā'oa, father of Kamehameha V (Lot Kapuāiwa), built his home (Westervelt 1915:17).

Ka-wai-hao ("the water belonging to Ha'o") was and still is the site of an old Native Hawaiian church (Pukui et al. 1974:97). This was the site of a spring used by the chiefess Ha'o. It is said that the chiefess was carried from her home in Mō'ili'i for ceremonial bathing and purification in a spring. Pukui places the spring "near the present News Building," which is most likely the former location of the Honolulu Advertiser building located at 605 Kap'i olani Boulevard, approximately a block Ewa of the current location of Kawāiha'o Church (at the intersection of South King Street and Punchbowl Street). See Section 3.2.7 for an expanded story of Kawāiha'o.

Pukui et al. (1974) do not give a meaning for the place name Kaka'ako, but Pukui and Elbert (1986:110) translate the word *kākā'āko* as "dull, slow," and Thrum (1922:639) translated the word as "prepare the thatching," as *kākā* means "to chop, beat, or thresh" and *ako* means "thatch." If Thrum's translation is correct, it could be related to the fact that salt marshes, such as areas like Kaka'ako, were excellent places to gather tall *pili* (a type of grass; *Heteropogon contortus*), which the Hawaiians traditionally used to thatch their houses.

Ka'ākaukukui, a filled-in reef, means "the right (or north) light," and it may refer to a maritime navigation landmark. According to Kekahuna (1958:4), Ka'ākaukukui was "a beautiful sand beach and reef that formerly extended a quarter mile along Ala Moana Park to Kewalo Basin. Various translations of Ka'ākaukukui include "radiating place for lamp" (Thrum 1922:635) and "to the right of the lighthouse" (Gesler 1937:187). This would have been an accurate description of the area at that time as Ka'ākaukukui was east, or "to the right" of the Honolulu Lighthouse in the harbor. This is probably a historic, not an ancient, interpretation as the Honolulu Lighthouse was not built until 1869 (Dean 1991:7). Ka'ākaukukui was a *lele* (a detached part or lot of land belonging to one *ili* and located in another) with one parcel on the coast and two other, non-contiguous parcels inland. Ka'ākaukukui was adjacent on the *mauka* side to several other small *ili* and *lele* lands, including portions of Pu'unui (big hill) and Pualoalo (*Hibiscus kōkio*; Thrum 1922:667).

Kukuluāe'o, which translates literally as the "Hawaiian stilt (bird)," means "to walk on stilts." This area on the upland side of Ka'ākaukukui (Kekahuna 1958:4) formerly fronted Kewalo Basin and was an ideal environment for the Hawaiian stilt with its marshes, salt pans, and small fishponds (Griffin et al. 1987:36).

Kolowalu was a small land section between Kukuluāe'o and Kewalo that encompassed a large fishpond. Pukui et al. (1974:116-117) do not give a meaning for Kolowalu Pond, but they interpret the name of Kolowalu, a ridge in Mānoa, as "eight creeping." As Kolowalu Kai was probably associated with Mānoa, it is possible that "eight creeping" is also the correct interpretation for the pond name. Thrum (1922:652) interpreted *kolowalu* as "a beneficent law of Kua'ali." The *kolowalu* law was initiated by the Hawaiian chief Kūāli'i, who ruled O'ahu from about 1720 to 1740 (Cordy 2002:19). This law protected the rights of commoners and provided food to the hungry (Formander 1917:4 (2):432).

Kewalo literally means "the calling (as an echo)." Land Commission and other historic-era documents identify it as the area between Cooke and Sheridan streets *mauka* of Queen Street and

the coastal sections of Ka'ākaukukui, Kukuluāe'o, and Kālia. According to Pukui et al. (1974:109), *kaunāwā*, or members of a pariah caste, intended for sacrifice were drowned there. At one time, there was a sand beach at Kewalo, where various sports, such as surfing were held (Kekahuna 1958).

Kō'ūla (red sugar cane) is the area around Thomas Square and the *mauka* portion of the Ward Estate, suggesting Kawailumalumi Pond may have been east of the Ward Estate.

Pūowaina, also known as Punchbowl in modern times, translates to "hill of placing [human sacrifices]" (Pukui et al. 1974:195). Hawaiian historian Samuel Kamakau related the following:

I had heard of the famous place of O'ahu from Makuaka'ūmana and came to see them for myself. Kou was the harbor, Māmala the entrance, Pākākā the *heiau*. Pūowaina was the place where men were burned, *pūhi kanaka* [burning man]. Hekili was the oven, *imu pīka'o* [cooking oven], where chiefs captured in war were parched. Kewalo was the place where the *kaunāwā* were held under water to drown according to Kānāwai Kaihehe'e [Kamakau 1991:6].

For more on Pūowaina and *heiau* that surrounded the area, see Section 3.2.8 for an expanded story.

Nū'uānu ("cool height") may derive from the contraction of *nuku* (mountain pass) to reference the cold wind near the summit of the Pali (Lyons 1901:181). Nū'uānu Valley contains many *wahi puaa* including the peak of Kōnāhuanui ("large fat innards"), the home of the gods Kāne and Kanaloa, which is also the highest peak of the Ko'olau Mountains (Miami 2002:99). The name of the *pū'u* (peak) refers to a story about a giant who threw his testicles (*kona hua nuu*) at a woman who escaped from him (Pukui et al. 1974:117). Pū'u Lanihuli ("where the heavens change") describes the abrupt changes in the winds at the peak (Raphaelson 1925). Nestled between Kōnāhuanui and Lanihuli is the Ka Nuku, the *nuku* (entrance) that leads to the Nū'uānu Pali. Smaller peaks include Napu'umaia ("the banana hills") and Waolani ("heavenly mountain area") on the west side of the valley (Pukui et al. 1974). *Mo'olelo* describe how Menehune contended for the possession of a *pōhaku* called Pōhaku a 'Ume'ume ("stone of contention"), which was hurled back and forth between Waolani and Kupamihī (Pacific Heights) (Cummins in Sterling and Summers 1978:303). Kamakau (1922:130) states that one of the earliest *heiau* on O'ahu was built at Waolani (see Section 3.1.2 in relation to the *mo'olelo* of Keomelemele). Thrum (1906:44) mentions a *luakini* (sacrificial) class *heiau* in Waolani called Kawaluna similarly constructed by Wākea and consecrated by the *mō'i* (paramount ruler) of O'ahu, Kūāli'i, in 1685. According to a Hawaiian language newspaper, Kawaluna Heiau was located on the east ridge of Waolani Valley (*Ka Nai Atupuni* 1906 in Sterling and Summers 1978:304). Waolani is also where the legendary musical shell Kīha-pu had its first home before it was stolen by Kapuni and carried to its historic home in Waipi'o Valley, Hawai'i (Formander 1915:20).

### 3.2.1 Pākākā and the Honolulu Fort

Pākākā was the name of a coastal point, a canoe landing, a wharf built off the point in 1827, and the name of a *heiau* built on the point. The name literally means "to skim, as stones over the water" (Pukui et al. 1974:175). Thrum (1906) generated several lists and surveys of *heiau* and noted that Peter Corney, a visitor to the island in 1819, saw several *heiau* along the Honolulu shore:

There are several morais [*heiau*], or churches in the village, and at new moon the priests, chiefs and hikanees (aikane) [friends] enter them with offerings of hogs, plantains, and coconuts, which they set before the wooden images. The place is

fenced in, and have [sic] pieces of white flags flying on the fences. [Corney 1896:101]

Westervelt (1915:21) identifies Pākākā Heiau as once being the main royal temple in Honolulu and the headquarters for priests, with the nearby wharf a possible part of the complex. The walls of the *heiau* were decorated with sacrificial heads of men. Westervelt relates that Pākākā was built before the time of Kākuhihewa, and was later owned by Kīna'u, the mother of Kamehameha V.

In 1816, a fort named Kekuanohu was constructed in this area, roughly *mauka* of Pākākā Heiau; the adjacent street was called Fort Street. Liloloho, Kamehameha II, built a palace complex in this area in 1821, possibly on the former Pākākā Heiau platform. P. Christiaan Klieger (1997:15-16) has suggested the Pākākā Palace complex may have lasted until around 1826, when a new royal compound was built for Kamehameha III within the town of Honolulu, near the modern junction of Alahea and Beretania streets.

Kekuanohu Fort was demolished in 1857 and the stones from the wall were used to create a seawall (Pukui et al. 1974:30), which was then filled to create a new land, called the Esplanade or 'Āmahau, from the *hau* tree (beach hibiscus; *Hibiscus tiliaceus*) land (Pukui et al. 1974:7).

### 3.2.2 Kou

The conflicting use of the name Kou traces its origins back to pre-Contact Hawaii. The *kou* (*Cordia subcordata*) tree is a beautiful wood, soft, but lasting, was valuable to the early Hawaiians and was used for cups, dishes, and calabashes (Pukui and Elbert 1986:167). Kou was also the name of a chief officer who lived in the area, and the "old name, until 1800, for Honolulu Harbor and vicinity, including the area from Nu'uamu Avenue to Alahea Street and from Hotel Street to the sea, noted for *kōnane* and for *ulu maika*, and said to be named for the executive officer of Chief Kākuhihewa of O'ahu" (Pukui et al. 1974:117-118). Westervelt (1915:16) adds that *kōnane* was so competitive here that chiefs gambled away property and lives.

### 3.2.3 Māmala

Spanning from Honolulu Harbor to Pearl Harbor, Māmala was named for a shark woman who lived at the entrance of Honolulu Harbor. Ke kai o Māmala is the surf in the outer entrance of Honolulu Harbor. The chiefess Māmala loved to play *kōnane*, drink *awa* (kava; *Piper methysticum*) and ride the surf (Pukui et al. 1974:106). Māmala left her shark husband, 'Ouha, for Honoka'upu. 'Ouha then became the shark god of Waikiki and of Koko Head (Pukui et al. 1974:144).

### 3.2.4 Nihoa

Nihoa was the waterfront area in downtown Honolulu formerly owned by Ka'ahumanu and named by her in honor of her visit to Nihoa Island (T 1959:166). This area had a sandy beach where natives could land and pull up their canoes on shore. In the early nineteenth century, western ships were also beached here for mooring and repair. In the time of Kamehameha I, "the shore at Nihoa . . . was a shipyard where foreign style vessels were being made by Hawaiians under the tutelage of whites" (T 1959:64).

### 3.2.5 Kukulūāe'o

Translated literally as the "Hawaiian stilt" (*Himantopus himantopus*), *kukulūāe'o* means "to walk on stilts." Pukui et al. (1974:123) identify the area as "formerly fronting Kewalo Basin" and "containing marshes, salt ponds, and small fishponds," an environment well-suited for this type of bird (Griffin et al. 1987:36). The ethnographer Henry Kekahuna (1958:4) described Kukulūāe'o as an area where salt was formerly made.

### 3.2.6 Pu'uokea Heiau

The chief Huanuikaiala'iala'i governed Pu'uokea Heiau in the land section of Kukulūāe'o, according to Kamakau (1991:24). Pu'uokea literally means "white hill" and is also the name of a small land division within the 'ii of Kukulūāe'o that is mentioned in at least two Land Commission cases, LCA 1502 (not awarded) and LCA 1504. LCA 1504 is located near the junction of Halekauwila and Cooke streets. It is common for a *heiau* to have the same name as the 'ii in which it is located, so it is possible Pu'uokea Heiau was also near the junction of Halekauwila and Cooke streets. The majority of the house sites in the mid-nineteenth century in Kukulūāe'o were located near Halekauwila and Queen streets, *mauka* of the low-lying coastal swamplands on higher, dry ground. It is possible the *heiau* platform or the area that it was built on was one of the few elevated locations in the flat, low-lying swamp that surrounded it, and thus gained the name *pu'u kea*, or "white hill." Kamakau mentions Pu'uokea Heiau in a traditional *wānana* (prophecy) (1991:24-25):

[*Ka makana ua kahi o 'Ewa*]

*Ua puni ka i'a o Mokumoa,*

*Ua kau i'a ka nene;*

*Ua ha'a kalo ha'a ni;*

*Ha'a ka i'a o ke'awalo,*

*Ha'a na 'uahu o Pahua,*

*Ha'a ka mahiki i Pu'uokea,*

*Ha'a ka ununu i Pele'ula,*

*Ha'a Makaanoho i ke ala.*

*E Kū e, ma ke kaha ka ua, e Kū,*

[*'U ai 'ha ka i'a o Maunaula*] . . .

[The increasing 'first rain' of 'Ewa]

Overcomes the fish of Mokumoa,

Washes up fish to the nene plants;

Lays low the taro as it patters down;

Lays low the fish of Kewalo,

Lays low the sweet potatoes of Pahua,

Lays low the mahiki grass at Pu'uokea,

Lays low the growing things at Pele'ula

Lays low Makaanoho [Makāhō] in its path

O Kū, the rain goes along the edge [of the island]. O Kū

[ 'Eating' the fish of Maunaula ] . . .

Thrum (1906:37-47), does not mention Pu'uokea Heiau. In his report on O'ahu sites in the early 1930s, McAllister (1933:80) says of Honolulu: "Information regarding former sites within the present limits of Honolulu must come entirely from literary sources."

### 3.2.7 Kawaiha'o and the Waters of Ha'o

Two springs in Kewalo are mentioned in the *mo'olelo* of the *Waters of Ha'o*, which describes two children of the chief Ha'o who ran away from their cruel stepmother. They stayed a time with the caretakers of Kewalo Spring, which may have been located close to the trail that connected Waikiki and Honolulu. The children then left when they heard that the chiefess had sent men to look for them. The two children followed the moonlit trail across the plain toward Kou (Honolulu), but finally collapsed from weariness and thirst. In a dream, the boy's mother told him to pull up a plant close to his feet. When he did, he found a spring under the plant, which was called the Water

of Ha'ō, or Kawaiha'a. This spring is located at the western end of the trail, near Kawaiha'a'o Church in Kaka'ako (Pukui 1988:87-89).

### 3.2.8 Pūowaina

There were six *heiau* and one home for priests located on Pūowaina, commonly referred to as Punchbowl Crater today (Figure 7). Some of these *heiau* were located on the Makiki side of the crater and also on the Pauoa ('Anwaiolimu) side. These *heiau* acted as temples, forts, and as part of the complex for the priests of Pūowaina, and were important sites during the Battle of Nu'uuanu in 1795 when Kamehameha conquered the island of O'ahu. The approximate locations of the *heiau* were first noted by Emma Nakuina (1909) in an article on the battle published in the *Pacific Commercial Advertiser*:

The battle of Nuuanu commenced at the heiau of Kanelaaau just below the old flagstaff station on Punchbowl about where Alapai joins Kimau and Lunalilo Streets and raged along a series of heiaus that formed the guard or outposts of the Puowaina sacred *heiau*. There was one called Mana above the Queen's Hospital, Kahehuna (Royal School site) and one at Kaakopua (Princess Ruth's now the Central Grammar). Here the battle raged the fiercest and the Oahuans were so hard pressed they were divided into two sections, one fleeing Ewa-ward . . . .

The main portion of the Oahu army retreated fighting up Pauoa way but were met by the Hawaiians under Heulu who had stole a march around Punchbowl and poured down on the retreating defenders by the pass above Punchbowl, Papakolea. [Emma Nakuina, *Pacific Commercial Advertiser* June 29, 1909, cited in Sterling and Summers 1978:317]

For more information on the two invasions in Pauoa, see Section 4.1.1.

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Kai'ua



Figure 7. Photo of Punchbowl from Pacific Heights, circa 1890 (courtesy of Myatt 1991)

CIA for the Mixed Use Project, 902 Adler Street, Honolulu, O'ahu  
 TMK: [1] 2-3-012.019

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### 3.3 'Ōlelo No 'eau (Proverbs)

Hawaiian knowledge was shared by way of oral histories. The following section draws from author and historian Mary Kawena Pukui and her knowledge of Hawaiian proverbs describing *ʻāina* (land), weather, and places.

#### 3.3.1 'Ōlelo No 'eau #1016

The following *ʻōlelo no 'eau* describes the sustainable food source provided in the *mauka* area of Nu'uau Valley above Honolulu.

Ho'ā ke ali, kō'ala ke ola.  
O na hale wale no ka i Honolulu;  
o ka 'ai a me ka i'a i Nu'uau.

*Light the fire for there is life giving substance.  
Only the houses stand in Honolulu;  
the vegetable food and meat are in Nu'uau.*

An expression of affection for Nu'uau. In olden days, much of the taro lands were found in Nu'uau, which supplied Honolulu with *poi* (the Hawaiian staff of life, made from cooked taro corms, pounded and thinned), taro greens, *o'opu* (general name for fishes included in the families *Eleotridae*, *Gobiidae*, and *Blenniidae*), and freshwater shrimp. So it is said that only houses stand in Honolulu. Food comes from Nu'uau. [Pukui 1983:109]

#### 3.3.2 'Ōlelo No 'eau #1033

This proverb speaks of those found at Waolani in Nu'uau. This *ʻōlelo no 'eau* relates to the *ka'ao*, Keamelemele:

Ho'i i Waolani i kāhi o ka 'e'epa.

*Go to Waolani where the supernatural beings dwell.*

Said to one who can't be fathomed. It is the equivalent of, "Go and join your peculiar kind of people." Waolani, in Nu'uau, O'ahu, was once the home of gods, *Menehune*, *Nāwā* (Noisy beings), *Nāmū* (Silent beings), and all manner of disgruntled, misshapen, and joyous characters who were grouped under the term *'e'epa*. [Pukui 1983:110]

#### 3.3.3 'Ōlelo No 'eau #1128

The following proverb describes Kou, the ancient name for Honolulu. Kou was considered a gathering place for *maka'āinana* and *ali'i*:

Hui aku na maka i Kou.

*The faces will meet in Kou.*

We will all meet there. Kou (now central Honolulu) was the place where the chiefs played games, and people came from everywhere to watch [Pukui 1983:120].

#### 3.3.4 'Ōlelo No 'eau #1423

The following *ʻōlelo no 'eau* describes the beautiful weather characteristic of the Honolulu area. Ka lā ikaiki o Honolulu.

*The intensely warm days of Honolulu.*

People from the country often claim that Honolulu is excessively warm. [Pukui 1983:154]

#### 3.3.5 'Ōlelo No 'eau #1510

The following *ʻōlelo no 'eau* discusses Māmala, the entrance to Honolulu Harbor:

Ka nuku o Māmala.

*The mouth of Māmala.*

The entrance to Honolulu Harbor, named for a shark goddess who once lived in the vicinity. [Pukui 1983:163]

#### 3.3.6 'Ōlelo No 'eau #1575

The following *ʻōlelo no 'eau* describes the sound of the rain that falls on the southern coast of O'ahu, in the Honolulu area. To the Hawaiians, each and every valley possessed particular qualities of rain in the smel, the way it fell, the density of each drop, and based on these characteristics, each rain had its own name, characteristic to the area.

Ka ua Kukaiahale o Honolulu.

*The Kukaiahale rain of Honolulu.*

The rain that announces itself to the homes by the pattering it makes on the roofs as it falls. Often mentioned in songs. [Pukui 1983:170]

#### 3.3.7 'Ōlelo No 'eau #1652

The following proverb describes a fresh water spring in the Kewalo area:

Ka wai huahua i o Kewalo.

*The bubbling water of Kewalo.*

Kewalo once had a large spring where many went for cool, refreshing water. [Pukui 1983:178]

#### 3.3.8 'Ōlelo No 'eau #2113

Similar to *ʻōlelo no 'eau* # 1033, this proverb also talks of those who inhabited Waolani in Nu'uau: Mākole la i Waolani.

*The red-eyed ones of Waolani.*

Waolani, Nu'uau, was said to have been the home of many defective people—the hunchbacked, the club-footed, the red-eyed, and so forth. To see such a person anywhere outside of Waolani was regarded as a sign of bad luck.

**3.3.9 Ōlelo No'eau #2486**

The following proverb discusses a rain known as Wa'ahila, which frequents Nu'uauu and Mānoa Valleys, that supplies Honolulu with water. Wa'ahila is also the name of a ridge that separates Mānoa Valley from Pālolo Valley.

Ola ke awa o Kou i ka ua Wa'ahila.

*It is the rain of Nu'uauu that gives water to Kou (now central Honolulu).* [Pukui 1983:272]

**3.4 Oii (Chants)****3.4.1 The Epic Tale of Hi'iaikaikapoliopole**

*The Epic Tale of Hi'iaikaikapoliopole* takes the reader on a literary adventure throughout the Hawaiian Islands. The saga begins with the fire goddess, Pele, in pursuit of a lover. Hi'iaikaikapoliopole, Pele's younger sister, is tasked with bringing back the handsome *ali'i* of Kaua'i, Lohi'au.

Hi'iaikaikapoliopole, her *aikāne* (friend) Wahine'ōma'ō, and Lohi'au board a canoe at Pu'uloa (now known as Pearl Harbor) and plan to sail to Waikīkī. At Pu'uloa, Hi'iaika meets a party who were planning on traveling to the house of the chiefess Pele'ula in Waikīkī. Hi'iaika recites the following chant, telling the party despite the fact that she would be traveling by boat and they would be walking, they would meet again in Kou:

'O Kou ka papa  
'O Ka'ākaukui ka loko  
'O ka 'alamihī a e nō  
'O ka lā a pō iho  
*Hui aku i Kou nā maka.*  
[Ho'oulumāhiehie 2006a:277; Ho'oulumāhiehie 2006b:297]

Kou is the coral flat  
Ka'ākaukui is the pool  
Some 'alamihī [a black crab], indeed  
Wait all day until night  
Friends shall meet in Kou.

The party continues to sail towards Waikīkī where they reach the outside area of Kou. Hi'iaika turns, looks towards the uplands of Nu'uauu and sees Hāpu'u and Kala'ihauola. Hi'iaika says to them, "I might have forgotten you two, Hāpu'u and Kala'ihauola. I do not want you to say I did not acknowledge you, so here are the chanted regards from the traveler." She then offers the following *kānaeae* (chanted supplicating prayer):

*E Hāpuu laua me Kalathauola e*  
*E na wahine no noho Koolau*  
*E no nonoho ana i ke Alanui*  
*Kanaeae au a ka mea hele i'ai'a.* [Ka Na'i Aupuni, Volume II, Number 10, 13  
June 1906]

Translation:

O Hāpu'u and Kala'ihauola  
O women who dwell on the Ko'olau range

Residing upon the pathway

I offer this chant for those who pass that way. [Ho'oulumāhiehie 2007a:278]

**3.4.2 The Battle of Nu'uauu**

The *heiau* of Pu'ukea and an area called Kaka'ako are mentioned in the chant "The Battle of Nu'uauu," which concerns the 1795 invasion and conquest of O'ahu by Kamehameha I. One section of the chant describes locations in Honolulu, possibly listing them from east to west:

75 *Lauwili i Pūkē (Pu'ukea) i Ka-imu-hai-kanaka,*  
76 *I Kai-hua, i Kakaako, i Mamala,*  
77 *I ke kai o Kuloloā, Pakaka,*  
78 *I ka-imu-hai-kanaka, i ka-wai-apuka-Kāne.* [Kala'ikuahulu 1880:131]

## Section 4 Traditional *Mo'olelo* and Historical Accounts

### 4.1 Traditional *Mo'olelo*

#### 4.1.1 Battles in Pauoa Valley

Pauoa Valley was associated with two famous invasions in 'Auwaiolimu 'Ili and near a *heiau* (temple) called Kānelā'au.

##### 4.1.1.1 Kahekili and Kahahana

In 1783, the Maui chief Kahekili invaded O'ahu, landing at Waikīkī. The chief of O'ahu, Kahahana, was in the uplands of Nu'uauu.

In the beginning of 1783—some say it was in the month of January—Kahekili, dividing his forces in three columns, marched from Waikiki by Puowāina, Pauoa, and Kapena [in Nu'uauu], and gave battle to Kahahana near the small stream of Kaheiki. Kahahana's army was thoroughly routed, and he and his wife Kekua-poi-ula fled to the mountains. [Fornander 1996:224-225]

Samuel Kamakau (1992:136) gives additional information on this battle and the distribution of forces in Pauoa:

*I ka malama 'o Ianuari 1, o ka A.D. 1783, ua 'ākoakoā nā ali'i a me nā pūkaua, nā pū'ali a me nā koa o Kahekili, a māhele 'ia ihola 'elua po'e kaua. Māhele 1. 'O Kahekili ka pūkaua. Māhele 2. 'O Hū'eu ka pūkaua. 'O kā Hū'eu po'e kaua ma uka o Kānelā'au a ma Kapapakōlea, ma uka o Puowāina. 'O ka māhele mua ma luna o Hekili a hiki i Kahēhuma a me 'Auwaiolimu. "'O Kaheiki ke kahua kaua.*

*Ma kēia ho'ouka kaua 'ana, ua lilo ka wai o ke kahawai o Kaheiki i koko, no ke āhau lālā kakui o ka heana i ka wai, no ka mea, ua kāmamo 'ia ke kahawai i ke kino o nā kānaka i make i ke kaua. 'O ke kaua ma luna iho o ka heiau 'o Kaheiki ke kaua i he'e ai, no ka mea, ua pi'i a 'ela kekahi kaua ma ka kualapa pili o Pauoa, a iho ma Kapena, a uluāo 'a 'ela ka ho'ouka 'ana o ke kaua. 'O ka puehu ihola nō ia o nā koa o Kahahana (Kamakau 1867; Ka Nāpepa Kū'oko 'a, March 30, 1867).*

#### Translation

In January, 1783, a decisive battle was fought with Kahe-iki as the battlefield. Kahekili's forces were divided into two companies, one under Hū'eu's leadership stationed at Kanela'au and Kapapakōlea back of Pu'owaina and the other under his own command stationed from above Hekili to Kahehuma and 'Auwaiolimu. In this battle the waters of the stream of Kahe-iki ran red with blood from the heaps of broken corpses that fell into the water; the stream was dammed back with the corpses of those who died in battle. On the ridge facing Pauoa and from thence down to Kapena another attack was made against the defense station back of the heiau of Kahe-iki. Confusion seized the ranks; the warriors of Kahahana were dispersed. [Kamakau 1992:136]

#### 4.1.1.2 Kamehameha and Kalanikūpule

In 1795 Kamehameha I's landed his army at Waikiki to make war against Kalanikūpule, king of Maui and O'ahu and begin to unite all of the Hawaiian Islands under his rule:

Immediately on disembarking the army was formed in lines of battle and marched to Nuuanu Valley to meet Kalanikūpule. Several running engagements took place between the opposing forces, commencing at the opening of the valley on the Ewa side of Punchbowl (Puowāina), then again at about the present cemetery sites, and around where the royal mausoleum stands . . . (Nakuina 1904:18)

The forces met at a pitched battle at Pū'īwa, where the men of Kalanikūpule were then pushed further in Nu'uauu Valley. They fled up the valley and were finally driven over the *pali* (cliff); thousands were killed. A young chiefess who lived on Punchbowl Crater was forced to marry one of Kamehameha's generals, but in defiance she named her first born son Kaheanani, which means "the great heap of the slain," to commemorate the slaughter (Nakuina 1904:17-21).

In a recent study on the Nu'uauu battle, Neil Dukas (2010) noted:

The two armies meet in full-on battle at the foot of Pūowaina (Punchbowl Crater). The allied defenders . . . are well entrenched, employing several heiau as forward bastions or redoubts. These are prepared defenses.

. . . it is more than likely the defenders have established gun emplacements atop these heiau. The first position to receive a direct assault by the Hawaiians in Kānelā'au heiau, located somewhere near the intersection of today's Alapa'i and Kīna'u streets. The other three bastions [Mana, Kahehuma, and Kaakopua] come into play one at a time as the Hawaiian vanguard, and then the main body, pivots around to face the defenders.

Arranged in a rough semi-circle, the fortified heiau divide the attentions of the attacking force, luring the enemy into a shared killing ground. [Dukas 2010:24]

It was at these fortified *heiau* that, according to Emma Nakuina, the "battle raged the fiercest" (Sterling and Summers 1978:317). However, the invading forces soon isolated the defenders of each fort, destroying their united force. The invading Hawaiians somehow managed to take Papakōlea Heights *manuka* of Punchbowl, thus surrounding the O'ahu forces on two sides. The O'ahu warriors made a strategic retreat from Punchbowl upward into Pauoa Valley. Eventually they were cornered on the Pali at the head of Nu'uauu Valley, where the remaining forces were destroyed or escaped in small groups.

#### 4.1.2 Honolulu

The area that today comprises the portion of downtown Honolulu that surrounds Honolulu Harbor and extends to the mouth of Nu'uauu Stream was known to the Hawaiians as "Kou," a center of population and activity similar to Waikīkī, its preeminent neighbor to the southeast. Kou stretched from "Nu'uauu to Alakea streets and from Hotel Street to the sea" (McAllister 1933:80) and possessed shoreward fishponds and irrigated fields fed by streams descending from Nu'uauu and Pauoa valleys.

After defeating Kalanikūpule in the battle of Nu'uauu, Kamehameha moved his court, government, and residence from Waikīkī to Honolulu. Kamehameha was known to have taken a

special interest in farming and would work in the fields alongside the commoners to demonstrate the importance of agriculture. Crops such as yams were developed under Kamehameha and were often sold to the captains of foreign ships in need of provisions at Honolulu Harbor (‘Ii 1959:69).

Honolulu was somewhat slow to catch on as a major destination for foreigners visiting the archipelago. The only stop of Cook’s ships on O’ahu was at Waimea Bay (1779), not viable as a significant port owing to the famous winter swell that breaks there. A discouraging factor for early trade at O’ahu was political instability. The ruling chief Peleiohōlani died around 1780, and his heir, Kumuhana was almost immediately deposed in a coup d’état. A period of political unrest followed including Kahekehi’s invasion in 1783, the bloody crushing of the O’ahu rebellion in 1786, the invasion by the Kaua‘i ruler Ka‘oekūlani in 1791, the passing of the rule following Kahekehi’s death in 1794 to Kalamikūpule, and finally, his defeat by Kamehameha I in 1795 (Beechert 1991:12-14).

E.S. Craighill Handy and Elizabeth G. Handy give a description of Honolulu:

What is now Honolulu was originally that flatland area between the lower ends of Nu‘uanu and Paoua Valleys and the harbor. Westervelt (1915, p. 1) wrote that ‘Honolulu’ was probably a name given to a very rich district of farm land near what is now . . . the junction of Liliha and School Streets, because its chief was Honolulu, one of the high chiefs at the time of Kakuhihewa . . . It is probable that the chief referred to by Westervelt took his name from the harbor and adjoining land. The original name of the land where the town grew when the harbor became a haven for foreign ships was Kou (Pukui and Elbert, 1957, p. 154). The number of heiau in this area indicates that it was a place of first importance before the era of foreign contact. [Handy and Handy 1972:479]

Rev. Hiram Bingham arrived in Honolulu in 1820. He described Honolulu as a still predominantly native Hawaiian environment—still a “village”—on the brink of western transformations:

We can anchor in the roadstead abreast of Honolulu village, on the south side of the island, about 17 miles from the eastern extremity . . . Passing through the irregular village of some thousands of inhabitants, whose grass thatched habitations were mostly small and mean, while some were more spacious, we walked about a mile northwardly to the opening of the valley of Paoua, then turning southeasterly, ascending to the top of Punchbowl Hill, an extinguished crater, whose base bounds the northeast part of the village or town . . . Below us, on the south and west, spread the plain of Honolulu, having its fishponds and salt-making pools along the seashore, the village and fort between us and the harbor; and the valley stretching a few miles north into the interior, which presented its scattered habitations and numerous beds of *kalo* (*arum esculentum*) in its various stages of growth, with its large green leaves, beautifully embossed on the silvery water, in which it flourishes. [Bingham 1847:92-93]

This description is borne out in an 1817 map by Otto von Kotzebue (Figure 8), showing the land between Pūowaina (Punchbowl Crater) and the shoreline as characterized by fishponds, salt ponds, trails connecting Honolulu and Waikīkī, and occasional taro *lo‘i* and habitation sites.

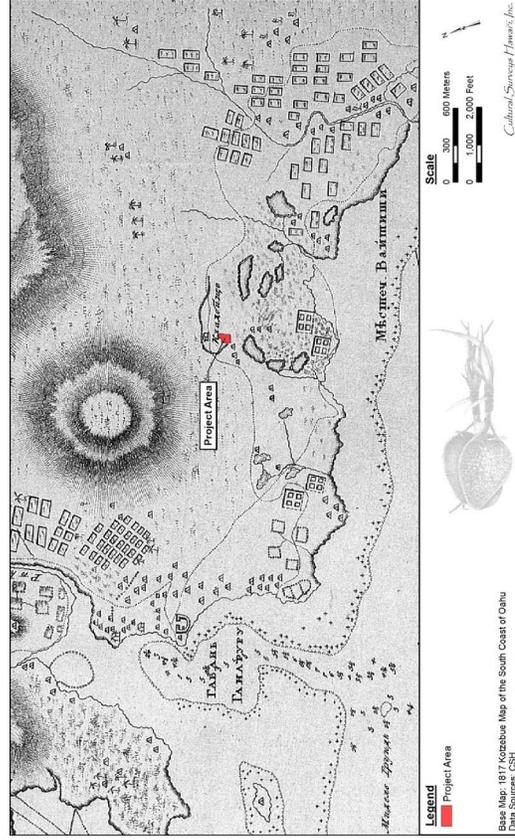


Figure 8. 1817 map (portion) made during the visit of Otto von Kotzebue of the Russian Ship *Rurick*, indicating the approximate location of the project area. Note the presence of Pūowaina, *mauka* of the project area, as well as the location of a cemetery (labeled in Russian as “Кладбище,” meaning “Cemetery of Foreigners”) and the grid-like symbols indicating salt pans.

#### 4.1.3 The Māhele and the Kuleana Act

The Organic Acts of 1845 and 1846 initiated the process of the Māhele—the division of Hawaiian lands—that introduced private property into Hawaiian society. In 1848, the Crown and the *aliʻi* received their land titles as *konoʻihiki* (land manager) awards. *Kuleana* (Native land rights) awards to commoners for individual parcels within the *ahupuaʻa* were subsequently granted in 1850 and thereafter. The Crown Lands were considered the private lands of the monarch, and many lands were sold or mortgaged during the reigns of Kamehameha III and IV to settle debts to foreigners. To end this practice, the Crown Lands were made inalienable in 1865, and their dispensation was regulated by a Board of Commissioners of Crown Lands, which effectively put them under the administrative control of foreign-born residents (Kameʻeleihiwa 1992:310).

To apply for simple title to their lands, native tenants were required to file their claim with the Land Commission on or before 14 February 1848. In 1850, the Privy Council passed resolutions that affirmed and protected the rights of the commoners or native tenants, including the Kuleana Act. Under this act, the claimant was required to have two witnesses who could testify they knew the claimant and the boundaries of the land, knew that the claimant had lived on the land for a minimum of two years, and knew that no one had challenged the claim. The land also had to be surveyed (Chinen 1958:31).

These awards were presented to tenants, Native Hawaiians, naturalized foreigners, non-Hawaiians born in the Islands, or long-term resident foreigners who could prove occupancy on the parcels before 1845. LCA documents indicate these parcels were awarded to a variety of Native Hawaiians and foreign settlers who had moved into Honolulu as the city developed.

On 8 March 1848, Kamehameha III divided his property in the Islands reserved for him through the Māhele into two parts; the smaller portion he retained for himself and his heirs, while the larger portion was given “to his Chiefs and People”; the latter became known as “Government Lands” (Chinen 1958:26). Fifty-two *ʻili* in Honolulu, Kalihi, and Waikīkī were set aside from the Government Lands as “Fort Lands” for the support of the garrison of the fort at Honolulu. A distinct series of LCAs were issued for the *kuleana* in these lands, marked FL (Fort Land) to distinguish them from other awards. The Fort Land *kuleana* were granted free of charge to the awardees. Most of the LCAs in Honolulu were house lots and store lots *mauka* of Queen Street.

A small portion on the *makaʻai* side of the project area is situated on LCA 10605, which belonged to Piʻikoi. A few fishponds or possible salt pans can be found on Piʻikoi’s land *makaʻai* of the project area. LCA testimonies do not validate if any fishponds or salt pans were on Piʻikoi’s land. For detailed information on LCA 10605, see Appendix A

#### 4.1.4 Mid- to Late 1800s

In 1846, Honolulu was made the capitol of the Hawaiian Kingdom and was well on its way to becoming the commercial and political hub of the Islands. By 1850, Honolulu was, as described by Charles Wilkes, “very conspicuous from the sea and has more the appearance of a civilized land, with its churches and spires, than any other island in Polynesia” (Wilkes 1856:373). An 1855 map by Joseph de LaPasse (Figure 9) shows an increased number of structures dotting the southern coast of Oʻahu.

During this period there was an obvious increase in density of land use and urbanization. The waterfront of Honolulu changed significantly during this period. Experiencing the peak of the whaling industry around 1850, the harbor area became crowded with trading and whaling vessels, and required additional wharfs to accommodate them.

Honolulu was in a period of rapid change. Reverend Sereno Bishop offers a unique perspective on the changes in the layout of Honolulu and the structures that lined the streets:

When I returned to Honolulu in 1853, after an absence of thirteen years, I was struck by the many changes . . . [In 1840] The major portion of the residents of Honolulu still lived in thatched houses. In fact the town was almost entirely composed of this kind of dwellings . . . When I went away there were only Punchbowl Road, Beretania Street, King Street and Merchant Street. This was the condition of the city in 1840. [Bishop 1916:58]

During the whaling era, when scamen came ashore for “rest and relaxation,” the downtown area from Nuʻuanu Street west to Nuʻuanu Stream was a district of “dilapidated native huts and tenements, tiny bar-rooms, coffee-shops, and run-down ‘boarding houses,’ all turning to the harbor for their opportunities and income” (Daws 2006:239).

##### 4.1.4.1 Cholera Epidemic of 1895

In 1895, a cholera epidemic struck the Islands and spread due to the unsanitary conditions of the harbors and Nuʻuanu Stream. Near the King Street bridges were many laundries. This area was called *ʻaʻala* (fragrant) by the Hawaiians, an ironic statement on the odors of the area. The cholera

. . . came in the form of active cases among Chinese steerage passengers on the *Belgic*, which arrived August 9. The harbor waters—stagnant, alkaline, and heavily contaminated with sewage and refuse became infected and crabs feeding upon this infected material were believed to have been the means through which it spread, first to a native woman, and then to guests at a luau in her house. One of these secondary cases washed his clothing at the Aala laundries and infected the Nuanu stream, and various rice and taro patches became contaminated in a similar manner. [Arnold 1956:317]

A total of 88 cases, of which 76 were Hawaiians, were reported between the start of the epidemic in August to its end in October. A total of 64 people died, all in the Honolulu area (Arnold 1956:317; Schmitt 1977:363).

Spurred by these deaths, the government began to plan and institute public improvements to the roads, bridges, sewer systems, and streams in the western Honolulu area. Thomas Thrum, editor of the *Hawaiian Almanac and Annual*, reported on these improvements in his annual retrospect of the preceding year:

The new spirit of public improvements . . . has been pushed with vigor. The relaying of larger water mains through a number of streets and completion of the new pumping plant, auxiliary to the reservoir system, was effected in time to do valuable service during the cholera period by shutting off the reservoir supply with its possible contamination, and flushing the mains with artesian water. . . . the enlargement of the inner harbor by dredging, with contemplated increased wharfage facilities along the extension of Queen street toward the King street bridge has already been entered upon. The dredging serves the further beneficial purpose of filling in the low land partly occupied, till recently, by the old wash houses, on the northern side of Nuuanu stream which is to be assigned to [A'ala] park purposes for the benefit of the residents in that part of the city and the improvement of its sanitary condition. [Thrum 1896:144]

In the retrospect for 1897, the *Hawaiian Annual* gave an update on the project:

The dredging of Honolulu harbor and rock cutting to deepen the site at the Waikiki end of the Pacific-Mail Wharf selected for the special needs of the big steamers of the Orient line, has been pushed, and considerable progress made in filling in the Aala and other tracts adjacent to the Nuuanu stream. There remains much yet to be done to complete the extensive channelization contemplated by this river and harbor improvement. [Thrum 1898:158]

4.1.4.2 Kaka'ako Salt Works and the Salt Pans of Kewalo and Kukuluāe'o

Much of the land in Ka'ākaūkui was used to produce salt. The Hawaiians used *pa'akai* (salt) for a variety of purposes: to flavor food, to preserve fish by salting, for medicines, and for ceremonial purposes. David Malo describes the traditional method of making salt:

O ka paakai kekahi mea e pono ai, he mea e ono ai, ka ia, a me ke koekoe o ka pama ana, he mea hana ia ka paakai, ma kekahi aina, aole i hana a ma kekahi aina, o ke kai makai, e kii aku no ka wahine, a lawe mai ma ke poi, a ke kai hooholo ia mai kekahi ma kauhahi mai.

E waiho kela kai ma kekahi poho paha, he ekaha paha, he kahe ka paha, a liu malaila, alaila lawe ana kauhahi e, a paakai iho ia no ia, o ka papa laau ka mea kui poi. [Malo 2006:73]

Translation:

Pa'akai (salt) is another beneficial item. It is used to make fish delicious and tasteless foods edible. Pa'akai is made at a particular place, [but] it [salt] is not actually made from this spot, rather it [salt water] came from the sea. A woman went to get some when the sea crashed [upon the rocks] and she ran back [the salt water] to this particular spot. That salt water (kai) is placed in, perhaps, a depression (poho) or a 'Bird's nest' (ēkeha) or rock basin (kāheka) and allowed to evaporate (liu). Then it is taken to another spot and is formed into pa'akai. Wooden boards (papa lā'au) are used to pound poi (mashed cooked kalo corms) on. [Malo 2006:95]

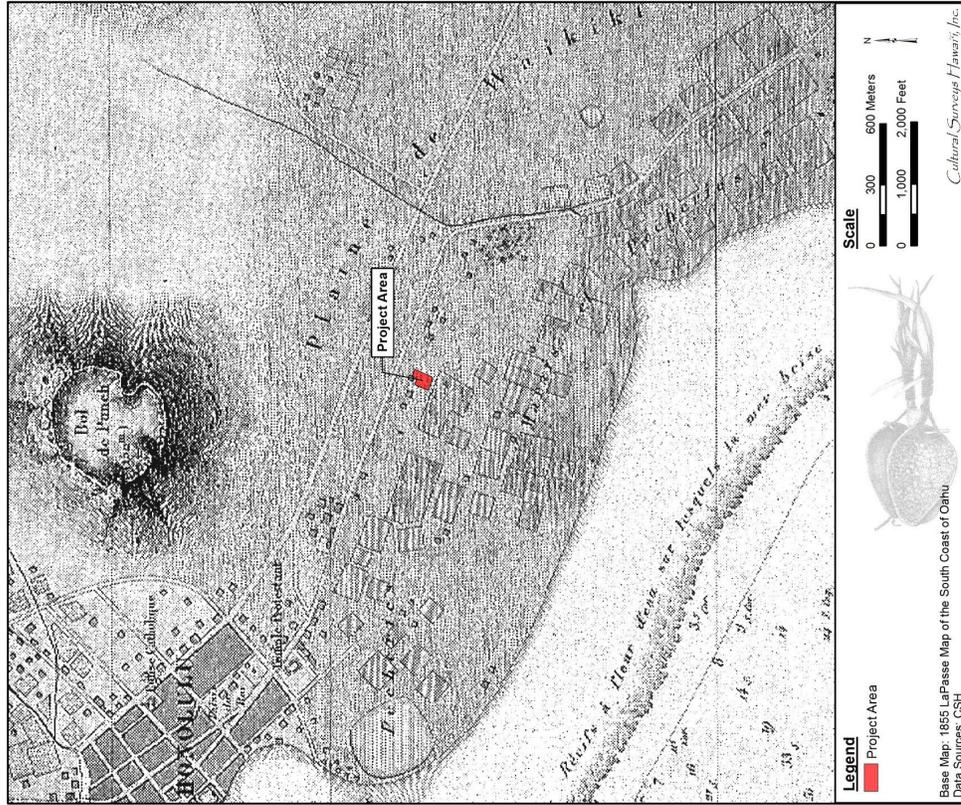


Figure 9. 1855 LaPasse Map of the South Coast of O'ahu with project area; note a trail is found just *manuka* of the project area that traverses Honolulu to Waikiki Ahupua'a

In 1903, Nathaniel Emerson translated David Malo's articles on early Hawaiian life. In his publication, the translations are not literal, but include information that Emerson added for clarity:

Salt was one of the necessities and was a condiment used with fish and meat, also as a relish with fresh food. Salt was manufactured in certain places. The women brought sea-water in calabashes, or conducted it in ditches to natural holes, hollows and shallow ponds (kekaha) on the sea-coast, where it soon became strong brine from evaporation. Thence it was transferred to another hollow or shallow vat, where crystallization into salt was completed. [Mal0 1951:123]

Captain Cook was the first to note the method of making salt in prepared "saltpans":

Amongst their arts, we must not forget that of making salt, with which we were amply supplied, during our stay at these islands, and which was perfectly good of its kind. Their saltpans are made of earth, lined with clay; being generally six or eight feet square, and about eight inches deep. They are raised upon a bank of stones near the high-water mark, from whence the salt water is conducted to the foot of them, in small trenches, out of which they are filled, and the sun quickly performs the necessary process of evaporation . . . Besides the quantity we used in salting pork, we filled all our empty casks, amounting to sixteen puncheons, in the Resolution only. [Cook 1784:151]

The export of salt declined in the late nineteenth century. Thrum (1924:116) states that the apex of the trade was in 1870, but by 1883 he noted that "salt and oil have disappeared entirely" from the list of yearly exports (Thrum 1884:68). By 1916, only one salt works, the Honolulu Salt Company, was still in operation. However, salt continued to be manufactured for local use. The Kaka'ako Salt Works appears as late as 1891 and a page in Victoria Ward's ledger for 1883 notes a yearly income of \$651.50 received from her "Salt Lands" in Kukulūā'e o (Hustace 2000:50). As noted above, Thrum (1924:116) said the Honolulu Salt Company was the only salt producer on O'ahu in 1916. A 1916 Commerce Report (Taylor 1916:723) states the Honolulu Salt Company operates "salt beds at Puuloa, Kalihī, and Waikiki, on the island of O'ahu." No mention is made of Kaka'ako, suggesting the Kaka'ako salt works had closed before 1916.

The traditional method of salt production was gradually replaced by the more labor intensive Chinese method, as Chinese immigrants began to take over the traditional salt and fishponds of Honolulu in order to grow rice, to raise ducks, and to make salt. In a 1906 article, Rev. Westervelt (1906:43-46) explained the Chinese method of salt evaporation for the Honolulu salt beds. The Chinese worker first used a water pump to draw the seawater from the larger ditch below to the salt-evaporation beds above. The man moved the two handles back and forth to work the pump. The evaporation beds were lined with clay, wet with sea water, and tramped and pounded down. Each pan was about 20 ft square, covered with about 2 inches of water, and bound by an earth dyke. On early historic maps, the area of salt pans is often marked out as a large grid of contiguous squares (Figure 8).

After allowing the sun to evaporate some of the water, the worker stepped into the evaporation pan and scraped the salt into a pile in the center with a simple wooden scraper. The worker then threw a large basket-shaped scoop into the brine and used a tin dipper to move the salt to the basket. Two baskets, one on each side of a pole, were then carried on the back of a worker across the thin earth dykes between the salt pans. The baskets were dumped into large drying piles, where the

remaining water seeped out into the ground. The salt was then sewn into gunny sacks and sent to the market for sale.

By 1901, most of the fishponds and salt pans *makai* of King Street were reported as abandoned. In that year, the Hawai'i Legislature proposed to build a ditch to drain away the "foul and filthy water that overflows that district at the present time."

The district *makai* of King St. and the Catholic Cemetery, Ewa of Mrs. Ward's (the Old Plantation), *mauka* of Clayton St., and Waikiki of the land from King St., leading to the Hoomananaau Church, consists of six large abandoned fish ponds and a large number of smaller ones, all in filthy condition, fed by springs and flowing into Peck's ditches. Just *makai* of these ponds, at the end of Clayton street, The rear portion of Mrs. Ward's property down to Waimanu St. used to be fish ponds all connecting to the sea by a ditch which is fed by an artesian well. These ponds, with the exception of three, are abandoned. Next to Mr. Ward's, is Peck's place. An artesian well flushing the wash houses flows into two foul ditches, thence to the big pond which is Waikiki of what used to be Cyclomere and next to Mrs. Ward's line [ditch] extending down to Waimanu St. [Hawaii Legislature 1901:185]

#### 4.1.4.3 Kewalo Harbor Improvement

Prior to dredging, Kewalo Basin was a natural deep pocket in the reef seaward of Ala Moana Boulevard between Ward Avenue and Kamake'e Street. It had been used as a canoe landing in pre-Contact times. In 1919, the Hawai'i Government appropriated \$130,000 to improve the small harbor of Kewalo for the aim of "harbor extension in that it will be made to serve the fishing and other small craft, to the relief of Honolulu harbor proper" (Thrum 1920:147). As the area chosen for the harbor area was adjacent to several lumber yards, the basin was initially made to provide docking for lumber schooners, but by the time the wharf was completed in 1926, this import business had faded, so the harbor was used mainly by commercial fishermen. The dredged material from the basin was used to fill a portion of the Bishop Estate on the western edge of Waikiki and some of the Ward Estate in the coastal area east of Ward Avenue (U. S. Department of Interior 1920:52). In 1941, the basin was dredged and expanded to its current 55 acres. In 1955, dredged material was placed along the *makai* side to form an 8-acre land section protected by a revetment, now part of the Kewalo Basin Park (Kewalo Basin Harbor 2014).

#### 4.1.5 1900s

##### 4.1.5.1 Contemporary Land Use

Honolulu in the late nineteenth century consisted of many streets still unpaved and several small lanes (that no longer exist) between major roads. Bishop Street, the main road now between Fort and Alakea streets, did not exist. Union Street exists now only as a pedestrian walkway between buildings.

By 1919 however, Honolulu had wide paved streets, with blocks of contiguous brick and stone stores along all major downtown roads. The first section of Bishop Street, between Fort and King streets, was built in 1900. This street quickly became the financial sector of the city, and many of the "Big Five" companies built their headquarters and their banks on this street (Ames 1996:27). By 1918, the section from the harbor to King Street had been completed and paved (Ames 1996:119). In 1919, the *mauka* extension of Bishop Street from Hotel to Beretania Street began construction. The city condemned all of the property in the way of this new thoroughfare and in



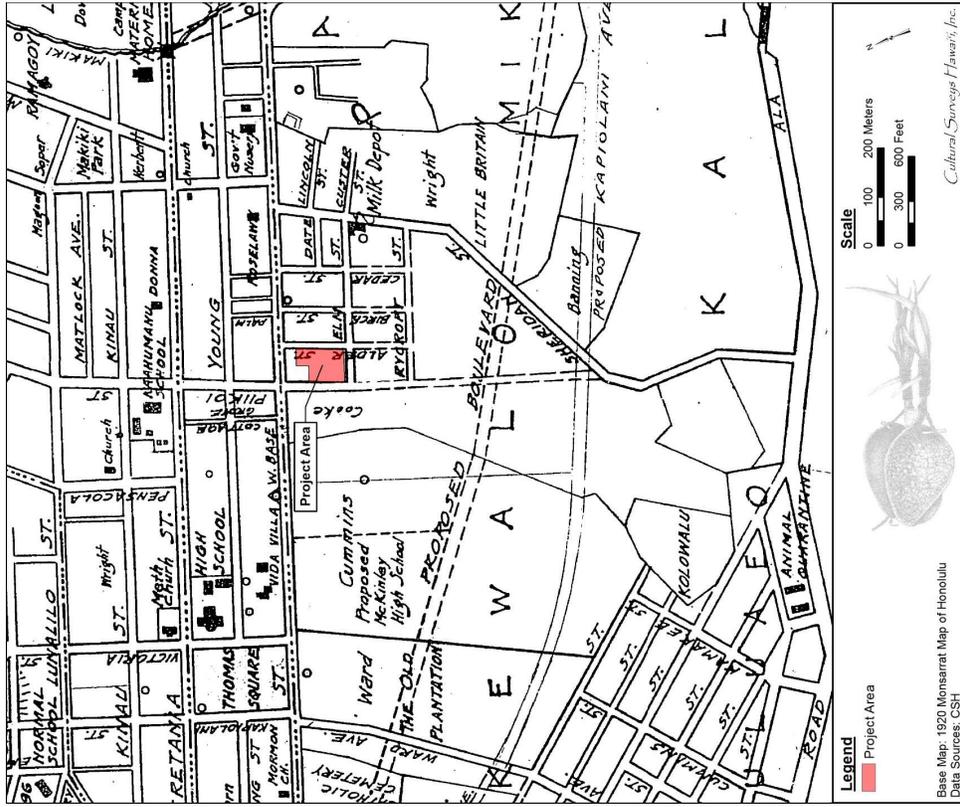


Figure 11. 1920 Monsarrat Map of Honolulu with project area; note McKinley High School has not been constructed, the Ward Estate was still existent, and a proposed Kapi'olani Boulevard cuts through both properties

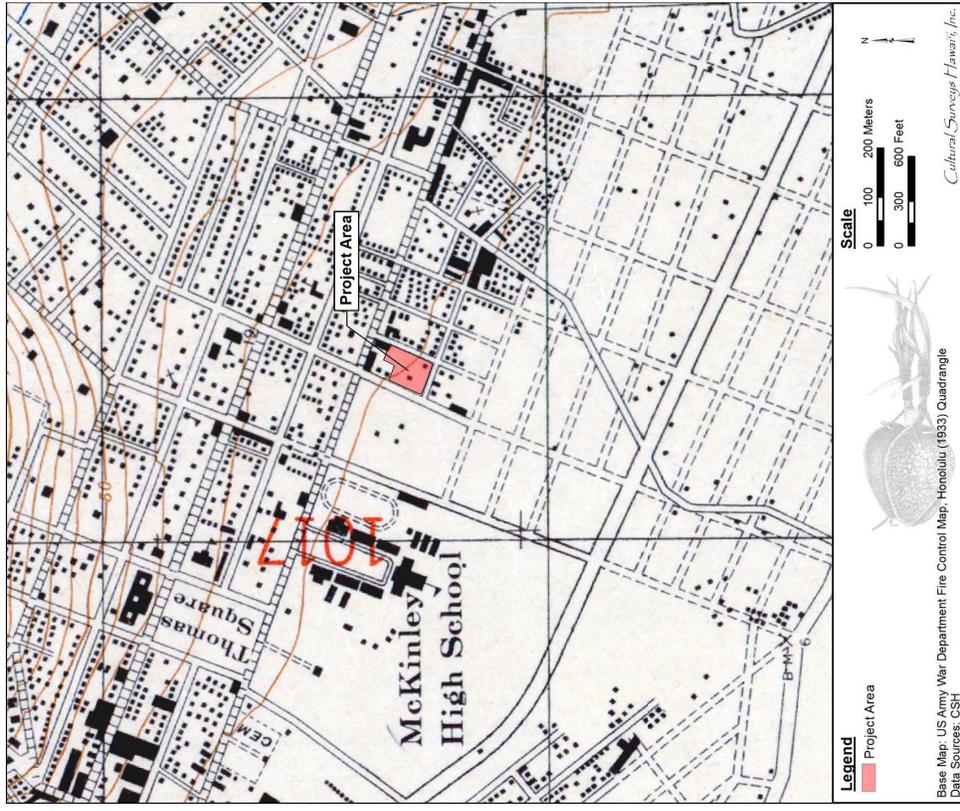


Figure 12. 1933 US Army War Department Fire Control Map, Honolulu Quadrangle with project area; note that Kapi'olani Boulevard has now been constructed and few homes are located makai of the project area in the Kaka'ako area

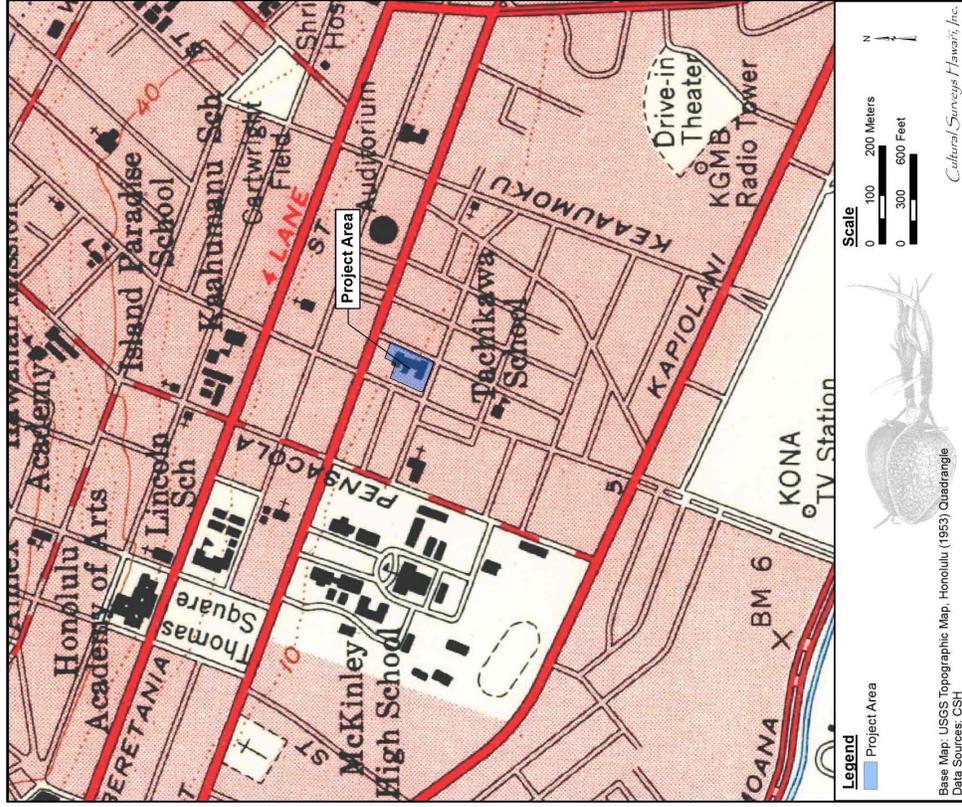


Figure 13. 1953 USGS Topographic Map, Honolulu Quadrangle with project area depicted in blue; the large white space makai of the Kapi'olani Boulevard will be the future location of Ala Moana Center

## 4.2 Previous Archaeological Research

Below are descriptions of archaeological studies that have been conducted in the vicinity of the current project area. Figure 14 depicts previous archaeological studies that have been conducted in the vicinity of the project area. Table 1 references type of study, location, and results of previous work done in the vicinity of the project area. Figure 15 depicts historic properties, burials, and historic districts near the project area. Table 2 describes historic properties near the project area.

### 4.2.1 Smith (1989)

In 1989, four bone fragments were found by construction workers in a property (TMK: [1] 2-3-039-019) on the southeast corner of Kapi'olani Boulevard and Pi'ikoi Street. The find was reported to Marc Smith of the SHPD. In his memorandum (Smith 1989), Smith examined the bones and determined only one was human; the remaining bones were pig bones. The human bone was a right tibia shaft fragment. The bone was temporarily taken to the Honolulu SHPD office and the site was given the designation of State Inventory of Historic Places (SIHP) # 50-80-14-4243.

### 4.2.2 Athens et al. (1994)

In 1994, during the excavation of a trench for an underground telephone line near the northeast corner of Pi'ikoi Street and Kapi'olani Boulevard, the remains of a single individual were inadvertently discovered and later disinterred (Athens et al. 1994). Osteological analysis revealed the remains (SIHP # -4847) were the fairly complete skeleton of a 12- to 15-year old female. Radiocarbon analysis of a sample of bone collagen yielded a date of death between AD 1295 and 1473, supporting the osteological determination of Hawaiian/Polynesian ancestry. The remains were interred within a wetlands environment at a shallow depth of 50-80 cm (centimeters [cm] below surface). A lack of burial goods and the presence of the remains within an unusual wetlands context strongly suggested the location of the remains did not reflect an intentional burial. Osteological analysis revealed severe bone infection of the right pubis as the probable cause of death. The individual probably passed away, undiscovered, at the very spot of interment. Athens et al. (1994-8) placed the location of this burial near an earth embankment that was probably used as a trail between a fishpond and other marshy areas in the Kewalo region.

### 4.2.3 Sinoto (2000) and McElroy (2010)

In an area bounded by Sheridan and Ke'eaumoku streets is the "Wal-Mart Site." Aki Sinoto Consulting conducted an archaeological assessment (Sinoto 2000) and prepared an archaeological monitoring plan for the Makalao-Sheridan Sam's Club/Wal-Mart project. Archaeological monitoring of the project was conducted from 2002 to 2004 and ended up being summarized by McElroy (2010) who was not directly involved in the fieldwork. Human remains recovered were from a minimum number of 64 individuals (MNI = 64) and were observed in six areas within the project parcel (designated SIHP #s -6516, -6661, and -6662). The burials appear to represent both pre- and post-Contact burials.

### 4.2.4 O'Hare et al. (2003)

CSH completed an archaeological inventory survey (O'Hare et al. 2003) of an approximately 6-acre parcel in the vicinity of the project area. No burials were found in the 24 trenches excavated during the inventory survey, as predicted. No pre-Contact or pre-twentieth century habitation deposits were recorded, but historical trash pits (SIHP # -6637) and a new defined berm

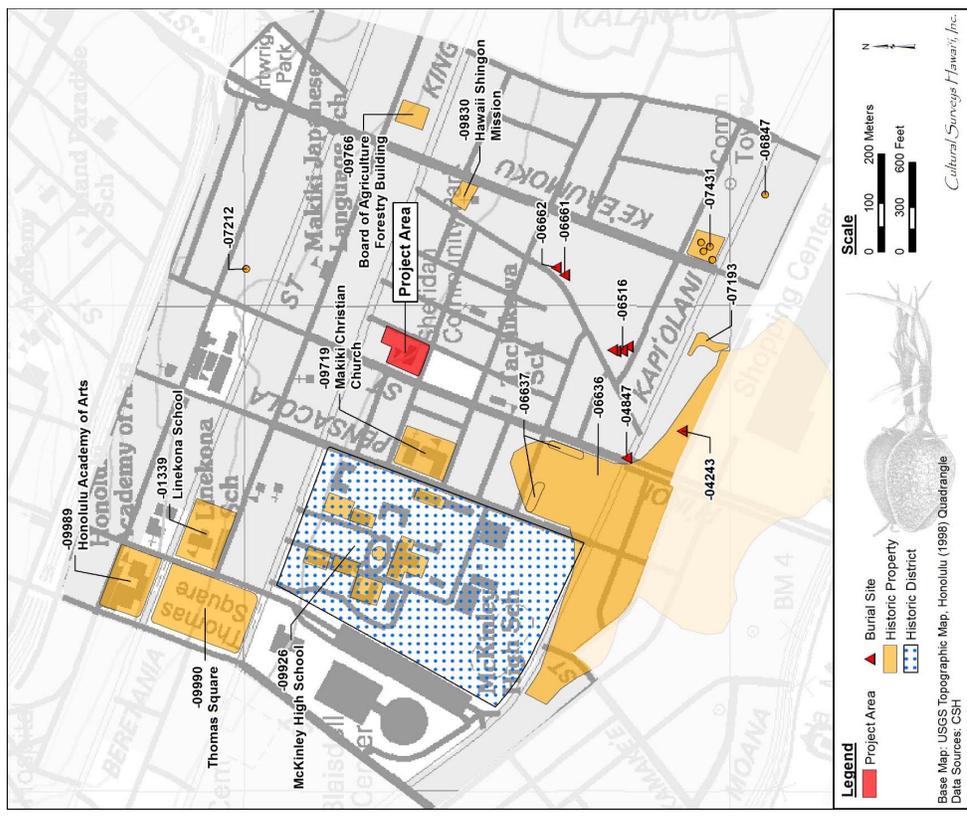


Figure 14. 1998 USGS Topographic Map, Honolulu Quadrangle with previous archaeological study areas in the vicinity of the project area

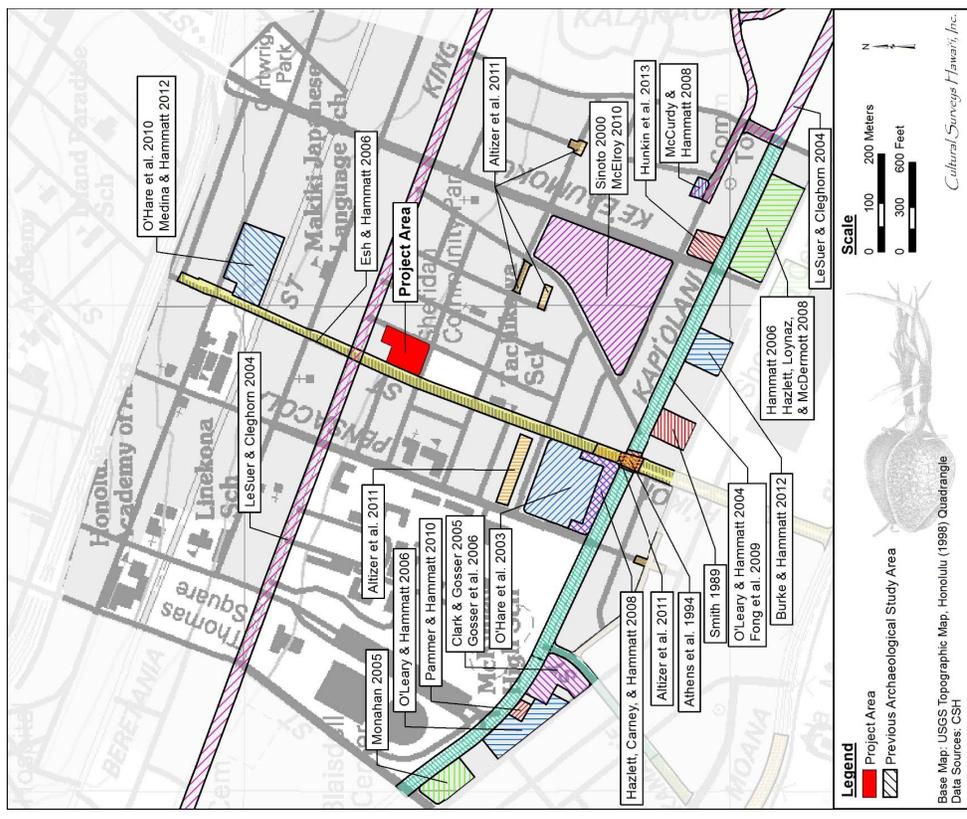


Figure 15. 1998 USGS Topographic Map, Honolulu Quadrangle with historic properties including burials and historic districts in the vicinity of the project area

(SIHP # -6636) related to agricultural activities were documented. SIHP # -6637 consists of a trash dump found in six trenches, all located in the northeast corner of the project area near Pi'ikoi Street. This trash pit contained wood, brick, tires, ceramic dinnerware, insulators, rusted metal, and glass bottles. Many of the glass bottles were dated to the 1920s to 1940s, some specifically to the 1930s. The type of material present does not seem to be individual household garbage, but may be related to the businesses in the surrounding area.

#### 4.2.5 LeSuer and Cleghorn (2004)

Pacific Legacy, Inc. completed an archaeological assessment (LeSuer and Cleghorn 2004) for proposed routes of the HECO East O'ahu Transmission project in 2004. The King Street portion of the electric line route is near the current study area. The report authors note the route is near six historic sites: Thomas Square (SIHP # -9990), which has ties to the return of sovereignty from the British in 1843; Linekona School (SIHP # -1339), established in 1925; McKinley High School (SIHP # -9926), built at its current location in 1923; a Catholic cemetery (*makai* of King Street) first used in 1851; and two former fishponds.

#### 4.2.6 O'Leary and Hammett (2004) and Fong et al. (2009)

From August to October 2004, CSH conducted archaeological monitoring (O'Leary and Hammett 2004) for emergency sewer line repairs that occurred along Kapi'olani Blvd. A total of five 0.6-m deep trenches were excavated. Excavations took place in fill materials associated with the original placement of the sewer pipes; no cultural material was encountered.

In 2009, CSH completed archaeological monitoring (Fong et al. 2009) of construction associated with the upgrading of existing drainage, water, and sewer systems within Kapi'olani Boulevard from Kalākaua to Ward avenues, within Kamake'e Street from Kapi'olani Boulevard to Auahi Street, and within Atkinson Drive from Kapi'olani Boulevard to Ala Moana Boulevard. No historic properties were observed. Observed stratigraphy consisted primarily of imported fill material associated utility and road construction. In some instances pockets of naturally deposited sediment (Jaueas sand and wetland clays) were observed beneath fill deposits.

#### 4.2.7 Monahan (2005)

In 2005, Scientific Consultant Services (conducted an archaeological assessment Monahan 2005) for three parcels bounded by Ward Avenue, Kapi'olani Boulevard, and Waimanu Street. Nine backhoe assisted trenches were excavated within the project area. The trenches were excavated to an average depth of 103 cm below ground surface. Although no historic artifacts, features, or artifacts were recorded as a result of the survey, compacted fill layers were still encountered at the base of excavation in some trenches. As a result, archaeological monitoring was recommended for all areas to ensure there were no cultural remains under these compacted fill layers

#### 4.2.8 Clark and Gosser (2005) and Gosser et al. (2006)

Between 2005 and 2006, Pacific Consulting Services carried out an archaeological inventory survey (Clark and Gosser 2005) and archaeological monitoring (Gosser et al. 2006) for a storage facility on the southwest corner of Kapi'olani Boulevard and Kamake'e Street. These studies documented SIHP # -6636, a subsurface remnant of a small pond present in northern portions of the project area.

#### 4.2.9 Esh and Hammett (2006)

In August 2004, CSH conducted archaeological monitoring (Esh and Hammett 2006) for the Rehabilitation of Streets, Unit 5B on Pi'ikoi Street between Ala Moana Boulevard and Matlock Street. Monitoring was only required at the intersection of Pi'ikoi and Young streets, as excavations in other areas did not extend deeper than 30 cm below base course fill. No cultural materials were observed.

#### 4.2.10 Hammett (2006)

CSH concluded a literature review and field check (Hammett 2006) on a 1.43-acre parcel on Kapi'olani Boulevard near the Pi'ikoi Street junction. Documentary evidence suggests the project area, before being filled and graded during the first half of the twentieth century to create the present land surface, comprised a portion of Kewalo 'ili that included habitation sites, taro 'lo'i, and ponds situated amid the encompassing marshlands of the Honolulu plain. The documentation of the project area suggested a more dryland environment in traditional Hawaiian times than a ponded one.

#### 4.2.11 O'Leary and Hammett (2006)

CSH conducted an archaeological inventory survey (O'Leary and Hammett 2006) at the Moana Vista project. The project area was bounded Kapi'olani Boulevard, Kamake'e Street, Waimanu Street, and Ward Avenue. Twenty-four backhoe assisted trenches were excavated within the project area. No historic properties were encountered during the course of the survey.

#### 4.2.12 Hazlett, Carney, and Hammett (2008)

CSH concluded an archaeological monitoring report (Hazlett, Carney, and Hammett 2008) for the Honolulu Design Center Phase III project (TMK: (1) 2-3-010;048, 050, and 052-056) which is bounded by Kapi'olani Boulevard, Pensacola, Kamaile, and Pi'ikoi Streets. No cultural resources were identified during the monitoring of this project.

#### 4.2.13 Hazlett, Loynaz, and McDermott (2008)

CSH concluded an archaeological monitoring report (Hazlett, Loynaz, and McDermott 2008) for an approximately 6-acre Ala Moana Center Expansion project (TMK [1] 2-3-38: 001 and 2-3-40: 005, 007, 009, 011, 014, 016, & 018) comprising the construction of a Nordstrom store, other retail space, and a parking garage. No historic properties were identified. The observed stratigraphy generally consisted of imported construction fill, overlying a buried A horizon (former land surface) consisting of naturally deposited sandy loam. Underlying the buried A horizon were varying layers of naturally deposited sediments, consisting of loams and clays, indicative of the marsh environment that preceded the land reclamation and subsequent development of the area.

#### 4.2.14 McCurdy and Hammett (2008)

CSH completed archaeological monitoring (McCurdy and Hammett 2008) of construction activities at the Makaloa Substation. No historic properties were identified; however, pond/wetland deposits were encountered and tested. Pollen analysis was conducted and documented abundant Cyperaceae (sedge) pollen and *Saccharum*-type (sugar cane) pollen. *Prosopis* sp. (*kiawe*) pollen found within the wetland samples suggest the wetlands did see intrusion of invasive species in the historic era. *Ipomoea hataias* (sweet potato) was found in an isolated sample, suggesting some small scale agriculture may have been conducted in this area.

**4.2.15 O'Hare et al. (2010) and Medina and Hammatt (2012)**

CSH completed an archaeological literature review and field inspection (O'Hare et al. 2010) with limited subsurface testing for the Safeway/ Schuman Carriage property project. (TMK: [1] 2-4-011-008, 009, 010, 011) located between Beretania and Kīna'u streets on the east side of Pi'ikoi Street. Five backhoe test trenches were excavated, documented, and sampled. The stratigraphy generally consisted of asphalt, base course, and modern construction fill overlying alluvial clay loam and undisturbed volcanic cinder. Only one feature, a fire pit, was encountered during subsurface excavation. The fire pit was interpreted as a modern feature associated with the demolition of previously existing structures present during the 1960s.

CSH subsequently produced an archaeological monitoring report (Medina and Hammatt 2012) for the development of the former Schuman Carriage property. In general, the observed and recorded stratigraphy for this project area includes various modern fill layers related to modern development (post 1960) above naturally deposited alluvial sediment, above a natural volcanic cinder layer. One historic property was observed (SHIP# 50-80-14-7212), a post-contact trash pit containing historic era refuse.

**4.2.16 Pammer and Hammatt (2010)**

CSH produced an archaeological assessment (archaeological inventory survey scope of work with no findings; Pammer and Hammatt 2010) for an approximately 0.26-acre Moana Vista Project Area on Kapi'olani Boulevard (TMK [1] 2-3-003:084). The subsurface testing program included excavation of 4 test trenches in order to document stratigraphy, as well as potential subsurface cultural deposits. No historic properties were identified.

**4.2.17 Altizer et al. (2011)**

CSH (Altizer et al. 2011) reported on archaeological monitoring on ten sewer line segments in the greater Kapi'olani area. Of note was further documentation of previously documented SHIP # -6636, a wetland deposit in Sewer Line G off Pensacola Street between Ho'ola'i and Kamaile streets. This was a pre-Contact to early twentieth century land surface that underlays dredged fill materials from the Kewalo and Ala Wai Canal land reclamation projects.

**4.2.18 Burke and Hammatt (2012)**

CSH (Burke and Hammatt 2012) carried out an archaeological inventory survey report for a 1391 Kapi'olani Boulevard parcel. A single historic property was identified within the project area, SHIP # -7193, which consists of a layer of historic trash. This layer was seen in nine trenches and yielded vast quantities of mid-twentieth century beer and milk bottles.

**4.2.19 Hunkin et al. (2013)**

CSH completed an archaeological inventory survey (AIS) report for the project area (Hunkin et al. 2013). Two historic properties were identified during AIS test excavations for the proposed Walgreens Kapi'olani redevelopment project. One was a remnant wetland deposit, an addition to an existing historic property (SHIP # -6636), and the other newly identified remnant historic concrete structures (SHIP # -7431). Subsurface investigations indicated relatively consistent stratigraphy throughout the project area. Silty clay sediments indicative of a wetland deposit (SHIP # -6636) were documented in all the trenches excavated. In general, the wetland sediment contained bluish to greenish gray sandy clay variations. Evidence of A horizon soil formation

processes was observed in some test excavations, characterized by darker, organically enriched clays that contained decomposing rootlets and reed vegetation remnants. Two diagnostic historic glass bottle artifacts were recovered in this wetland sediment during excavation from one of the test excavations.

Table 1. Previous Archaeological Studies in the Vicinity of the Project Area

Reference	Type of Study	Location	Results (SIHP #s 50-80-14)
Smith 1989	SHPD burial call report	Kapi'olani and Pi'ikoi	Inadvertent disturbed burial find in back dirt pile (SIHP # -4243)
Athens et al. 1994	Archaeological investigation of inadvertently discovered human remains	Kapi'olani and Pi'ikoi	Inadvertent in situ burial find—one individual (SIHP # -4847)
Sinoto 2000	Archaeological assessment (literature review and field inspection)	Proposed Wal-Mart	Assessment of project area before construction; during monitoring between Jan. 2003 and April 2003; 64 burials found, but final report on these findings not completed
O'Hare et al. 2003	Archaeological inventory survey	Block on corner of Kapi'olani Blvd and Pi'ikoi St, TMKS: [1] 2-3-010-028, 048, 050, 052-056	Total of 24 trenches excavated in a lot on east side of Pi'ikoi St; two sites identified, several historical trash pits (SIHP # -6637), a wetland stratum with a defined sand berm (SIHP # -6636), which can be seen on late nineteenth century maps
LeSuer and Clegghorn 2004	Archaeological assessment	King Street	Assessment of proposed electric line routes, noted the presence of six historic sites: Thomas Square, Linekona School (SIHP # -1339); McKinley High School (SIHP # -9926); a Catholic cemetery, and two former fishponds
O'Leary and Hammatt 2004	Archaeological monitoring	Unit 9 Streets	No cultural remains found
Clark and Gosser 2005	Subsurface archaeological inventory survey	TMKS: [1] 2-3-003:075, 085, and 086	SIHP # -6636 designates a subsurface remnant of a small pond present in northern portions of project area
Momahan 2005	Archaeological assessment	909 Kapi'olani Blvd, TMKS: [1] 2-3-003:073 and 096	Nine backhoe test excavations conducted; no historic properties identified

Reference	Type of Study	Location	Results (SIHP #s 50-80-14)
Esh and Hammatt 2006	Archaeological monitoring	Pi'ikoi St, Ala Moana Blvd to Matlock St	Monitoring of Unit 5 B Streets; no cultural materials found
Gosser et al. 2006	Archaeological monitoring	TMKS: [1] 2-3-003:075, 085, and 086	SIHP # -6636 subsurface remnant of small pond present in northern portions of project area; during archaeological monitoring in southern portion of project area, observed a buried A horizon, Layer II, previously identified during subsurface testing
Hammatt 2006	Archaeological literature review and field inspection	[391 Kapi'olani Blvd parcel, TMK [1] 2-3-039:011	Noted project area within LCA 100 FL and near burials found at junction of Kapi'olani Blvd and Pi'ikoi St
O'Leary and Hammatt 2006	Archaeological inventory survey	Moana Vista project on Kapi'olani Blvd, TMKS: [1] 2-3-003:072, 088, 102	No historic properties identified
Hazlett, Carney, and Hammatt 2008	Archaeological monitoring	Honolulu Design Center Phase III, TMKS: [1] 2-3-010:048, 050, 052, 053, 054, 055, 056	No historic properties identified
Hazlett, Loynaz, and McDermott 2008	Archaeological monitoring	Approx. 6-acre Ala Moana Center Expansion, TMKS: [1] 2-3-038: 001 and 2-3-040:005, 007, 009, 011, 014, 016, and 018	No historic properties identified

Reference	Type of Study	Location	Results (SIHP #s 50-80-14)
McCurdy and Hammatt 2008	Results of subsurface testing	Hawaiian Electric Company East O'ahu Transmission Project (Makaloa Substation), TMK: [1] 2-3-021:027	No cultural materials (middens, charcoal, or artifacts) observed; results of analysis determined sedges and grasses by far most abundant plants represented in this record; Cyperaceae (sedge) pollen almost 30% of total pollen; Saccharum-type pollen (sugar cane), most common of grass pollen at roughly 25% of total, consistent with a pond or wetland in the area; identification of <i>Ipomoea batatas</i> -type pollen indicates cultivation of sweet potato at edges of existing pond
Fong et al. 2009	Archaeological monitoring	Kapi'olani Blvd from Kalākaua Ave to Ward Ave. Kamake'e St from Kapi'olani Blvd to Auahi St. and Atkinson Dr from Kapi'olani Blvd to Ala Moana Blvd	No human remains or historic properties identified; several historic items encountered, all post-dating 1890, indicative of conversion of area from agriculture land to residential suburbs; fill material also found at various locations in project area, deposited during reclamation activities in the 1920s and 1930s
McElroy 2010	Archaeological monitoring	Makaloa-Sheridan Sam's Club/Wal-Mart, TMKs: [1] 2-3-016:009 and 043	Human remains found in six areas of work site, designated as Burial Findspots (BFS-1-BFS-6); three site numbers assigned: SIHP # -6516 includes BFS-1, -3, -4, and -5; SIHP # -6661 composed of BFS-2; and SIHP # -6662 encompasses BFS-6; these three sites evaluated as significant under Criterion d of §13-275-6(b) for information on history and pre-history they might yield; examination of stratigraphy indicates multiple, extensive disturbance episodes throughout much of project site
O'Hare et al. 2010	Archaeological literature review and field inspection	Safeway/Schuman Carriage property	Historic documents and previous archaeological studies indicate low potential for intact cultural deposits, including pre-Contact deposits, historic deposits, and possibly pre-Contact and post-Contact burials

Reference	Type of Study	Location	Results (SIHP #s 50-80-14)
Pammer and Hammatt 2010	Archaeological assessment	Approx 0.26-acre Moana Vista project area on Kapi'olani Blvd, TMK: [1] 2-3-003:084	No historic properties discovered
Alfizer et al. 2011	Archaeological monitoring	Kapi'olani Area Revised Sewer System, TMKs: [1] 2-3-004, 005, 007, 009, 010, 013, 014, 017, 018, 022, 035, 036, 038, and 041	Excavation activities included replacement of ten sewer line segments; three segments rehabilitated with cured-in-place pipe method and no open trenching conducted at these segments; previously documented SIHP # -6636, a wetland deposit, documented in Sewer Line G off Pensacola St between Ho'ola'i and Kamaile streets
Burke and Hammatt 2012	Archaeological inventory survey	1391 Kapi'olani Blvd parcel, TMK: [1] 2-3-039:011	Single historic property identified within project area, SIHP # -7193, consists of layer of historic trash; layer seen in nine trenches within northern and eastern portions of project area
Medina and Hammatt 2012	Archaeological monitoring	Safeway, Inc. development project, TMKs: [1] 2-4-011:008, 009, 010, and 011	Observed and recorded stratigraphy includes various modern fill layers related to modern development (post-1960) overtop naturally deposited alluvial sediment, over top of natural volcanic cinder layer; one historic property observed (SIHP # -7212), a post-Contact trash pit containing historic era refuse
Hunkin et al. 2013	Archaeological inventory survey	Walgreens Kapi'olani Redevelopment project, TMKs: [1] 2-3-021:008, 009, and 010	Two archaeological historic properties identified: <ul style="list-style-type: none"> <li>• SIHP # -6636, former wetland surface for region with potential to yield information related to past land use</li> <li>• SIHP # -7431, historic structural remnants associated with past industrial and commercial land use in 1950s</li> </ul>

Table 2. Previously Identified Historic Properties in the Vicinity of the Project Area

SIHP # (50-80-14-)	Description of Site	General Location	Source
01339	Linekona School	300 m west of north end of project area	HRHP and NRHP
04243	Human bone at 1341 Kapi'olani Ave	500 m south of south end of project area	Smith 1989
04847	Archaeological investigation of inadvertently discovered human remains at Pi'ikoi and Kapi'olani intersections	300 m southeast of south end of project area	Athens 1994
06516	Burials (BFS-1, -3, -4, and -5, 62 burials)	300 m southeast of south portion of project area	McElroy 2010
06636	Subsurface wetland sediments (estimated extent)	Extensive area 250 m south of project area extending <i>makai</i>	Altizer et al. 2011, and further south: O'Hare et al. 2003, O'Hare et al. 2004, Clark and Gosser 2005, Tulechin and Hammatt 2005, Runyon et al. 2011, Runyon et al. 2012, Hammatt 2013, Morriss et al. 2013
06637	Historic trash pit	300 m south of project area	O'Hare et al. 2003
06661	Burial (BFS-2, one burial)	350 m southeast of project area	McElroy 2010
06662	Burial (BFS-6, one burial)	350 m southeast of project area	McElroy 2010
06847	Wood lined subsurface feature	700 m southeast of project area	Hammatt 2006
07193	Historic trash pit	500 m SSE of project area	Burke and Hammatt 2012
07212	Subsurface refuse deposit	300 m NNE of project area	McEdina and Hammatt 2012
07431	Subsurface historic structure remnants	600 m southeast of project area	Hunkin et al. 20213
09719	Makiki Christian Church	100 m southwest of project area	HRHP

SIHP # (50-80-14-)	Description of Site	General Location	Source
09766	Board of Agriculture Forestry Building	400 m east of project area	HRHP
09830	Hawaii Shingon Mission	300 m east of project area	HRHP and NRHP
09926	Commercial Building (McKinley HS)	300 m west of project area	HRHP and NRHP
	Home Economics Building (McKinley HS)	300 m west of project area	HRHP and NRHP
	Art Building (McKinley HS)	300 m west of project area	HRHP and NRHP
	Mathematics Building (McKinley HS)	300 m west of project area	HRHP and NRHP
	Auditorium (McKinley HS)	300 m west of project area	HRHP and NRHP
09989	Senior Core Building (McKinley HS)	300 m west of project area	HRHP and NRHP
09990	Honolulu Academy of Arts	600 m northwest of project area	NRHP
	Thomas Square	500 m northwest of project area	NRHP

### 4.3 Background Summary and Predictive Model

The project area lies in an area traditionally known as Kulaokahu'a, in the 'ili of Kewalo, (Fitzpatrick 1989:25). John Papa I'i identified Kulaokahu'a as a "playground, where the 'maika' etc. was played" (Hawaii Commission on Boundaries, Kewalo in King 1989:26). *Maika* is a Hawaiian sport that uses a disc-shaped stone called an *ulu maika* for a bowling type of game.

Kewalo literally means "the callings," as in an echo (Pukui et al. 1974:109). Kewalo once had a freshwater spring in the central portion (current location unknown), as seen in the proverb "*Ka wai huahua i o Kewalo*," which translates as "The bubbling water of Kewalo." Two springs are mentioned in a traditional story of the *Waters of Ha'o*, one located near Kawaiaha'o Church in Kaka'ako (Pukui 1988:87-89). In legendary accounts, Kewalo was noted for its fishponds, its marsh lands where *pili* grass could be collected, for ceremonial sites such as the Kewalo spring and the fishpond at which sacrifices were made, and for its trails that allowed transport between the more populated areas of Waikiki and Honolulu. Important chiefs were born in the area and conducted religious rites, and commoners traveled to the area to procure food and other resources, while others probably lived in the area.

The 1817 map by Otto von Kotzebue (Figure 8) depicts a wall terminating near the southwestern to south-central boundary of the project area, defining an area that Kotzebue labeled "cemetery." This is likely the "Cemetery for Foreigners" discussed in detail by Robert Schmitt (2000). Developments in the Kewalo area during the second half of the nineteenth century include increased western-conceived urbanization exemplified by Thomas Square and the "Old Plantation." Historic maps indicate that in the late 1800s the area surrounding the project area was swampy, with a pond approximately 150 m to the southwest, a rectilinear corral in the southeast corner of the project area (Figure 16 and Figure 17), and the house of H.M. Whitney built on the west-central boundary of the project area. Whitney, a prominent member of the Honolulu community, may have entertained the young Samuel Clemens (Mark Twain) at this house. Previous archaeology in the vicinity of the project area documents the presence of isolated burials, cemeteries, wetlands and resource ponds, and historic trash pits and lenses.

Based upon the background ethno-historical and previous archaeological research, archaeological investigations within the project area may encounter traditional Hawaiian materials including houses, middens, burials, resource ponds, and gaming artifacts such as *ulu maika*. The wall of the "Cemetery for Foreigners" may be near the southwestern boundary of the project area and a corral wall may be near the southeast corner of the project area. Material culture related to the H.M. Whitney house may also be present and with that, there is the probability that some of these materials are related to Samuel Clemens, whom Whitney entertained.

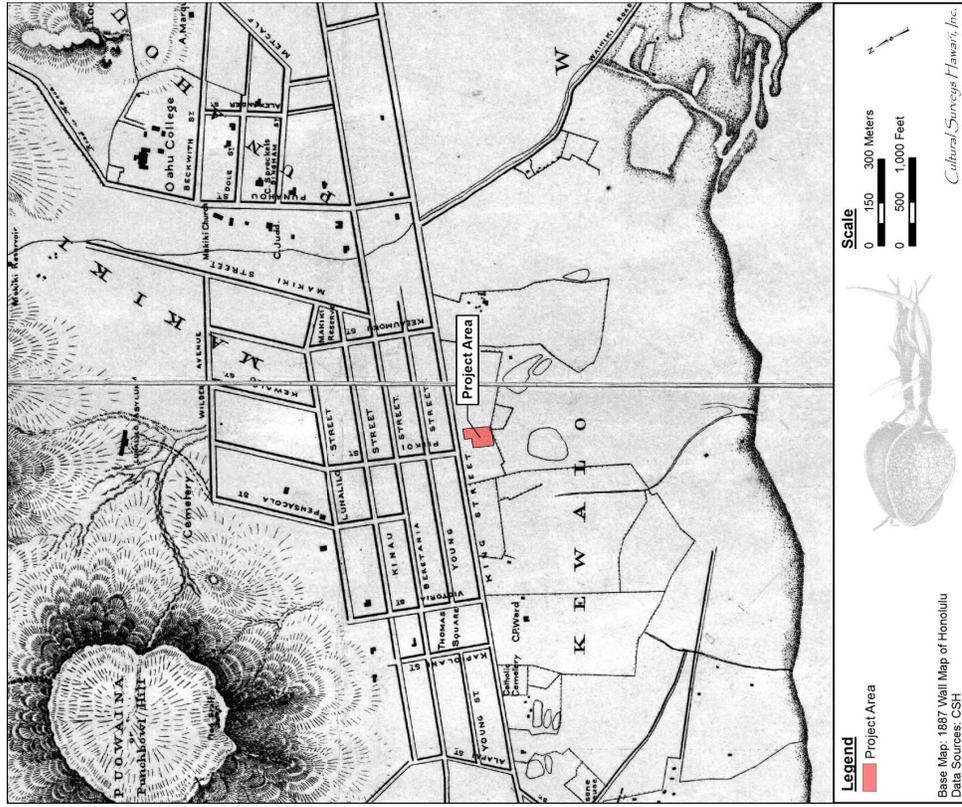


Figure 16. 1887 Wall Map of Honolulu with project area; note roads constructed *maika* of the project area while the *maika* portions still remain undeveloped



Figure 17. 1893 Wall Map of Honolulu (RM 1690) with project area; note the ponds *makai*

## Section 5 Previous Oral History Research

The following section draws from previous oral history research conducted by the University of Hawaii's Center for Oral History (UHCOH) to highlight the voices of several people who have or have had deep knowledge of the culture and history of the project areas. Indigenous cultures have used oral history to preserve a record of their past in the absence of written records.

In 1976, the Center for Oral History (COH) was established by the Hawaii's State Legislature with the intent to preserve the memories of Hawaii's people through oral interviews for the purpose of disseminating transcripts to researchers, students, and the general community. To date, 12 communities have been recorded by the COH. Below are summaries and excerpts from this vast collection of oral histories. Please note the variations in the use of Hawaiian diacritical marks; direct quotations preserve diacritical marks as they appear in the actual UHCOH study.

### 5.1 Remembering Kaka'ako

#### 5.1.1 Eleanor Nahiaipo Wilson Heavy

Mrs. Eleanor Nahiaipo Wilson Heavy, a Hawaiian-English-Chinese woman, was born in Kaka'ako in 1912 and lived there until 1938 (UH 1978:340-405). Her home was on Pohukaina and South streets and she attended Muriel Kindergarten in Kaka'ako. She used to help her mother collect herbs such as *pōpolo* (black nightshade; *Solanum nigrum*) for cold and congested chest, and the *'ūhaloa* (American weed; *Waltheria indica var. americana*) root for colds. The people in Kaka'ako at this time still went to the medicinal *kahuna*; the hospital was a place where you would go when no hope remained.

Her mother traveled to the Squattersville area (Ka'ākaukukui area west of project parcels) to gather *limu* (seaweed), *wana* or *'ina* (sea urchins), squid, and *'ōpae* (shrimp) for the family's meals. Mrs. Heavy also remembered that they used Hawaiian salt to embalm bodies. They would stuff the *'ōkole* (buttocks) with salt, working it in with *ti* leaves. They also put salt in cuts under the armpit, and within the mouth, nose, and ears. The body then could be viewed by relatives at the undertakers for several days. The body was later put into a coffin for burial at the Catholic Cemetery or at the Kawaiaha'o Church cemetery, both on King Street.

#### 5.1.2 David Tai Loy Ho

Mr. David Tai Loy Ho, Chinese-Hawaiian, was born in Kaka'ako in 1910 (UH 1978:405-465). As a child he made money picking *kīawe* (Algaroba tree; *Prosopis pallida*) beans, selling newspapers, and diving for coins at Honolulu Harbor when the large tourist cruise lines came into port. His home was on the corner of Queen and Cooke streets. The best place to pick the beans was the private property of the Ward Estate, between Queen and King streets. He and his brothers would sneak under the wire fence and load up on the *kīawe* beans near the Ward horse stables. The *kīawe* beans were sold as horse and cattle feed.

Mr. Ho said there were not many Chinese in the area:

Well, the Chinese people who lived there were all storekeepers. Well, let's see, they were laundry men and storekeepers. The two storekeepers right on the corner there. The barbers were Japanese. The poi men were Chinese; the poi men were all

Chinese because I guess they got the poi from the Chinese who lived on the farms. The Chinese planted rice and later on, they changed to taro because rice came from California . . . They lived right in the buildings [stores], right in the back. They'd eat; they have a little stove in the back. Live with their family. [UHCOH 1978:413-414]

### 5.1.3 Joseph Kekeanoa

Mr. Joseph Kekeanoa, a Hawaiian, was born in Kaka'ako in 1920 (UH 1978:633-669). His mother worked at the American Sanitary Laundry, his father at the Honolulu Iron Works. He attended Pohukaina School and his family attended the Latter Day Saints Church on Cooke and Ilianiwai. He began to play slack-key guitar and Hawaiian music after he left Kaka'ako, but sometimes returned to play at Felix Florentine's Garden. He remembered some of the residential areas and the stores of Kaka'ako:

So had Magoon Block and Kumulae Block (where dad gambled), Magoon Block was, if you facing this way, it's on the left. If you going towards Waikiki. And Kumulae Block was one laundry store. One laundry and the poi factory in the back. And Magoon Block had all stores—barber shop, and small snack and everything. And at the corner of South and Queen used to be Murata Furniture Store. . . . And then, across, if you see where the new fire station is at, Kakaako fire station, across the street used to be Kawaiahao Court. That's another section of people besides the graveyard and the poi factory there. Another poi factory. And along side where that big McKesson something, alongside there was another poi factory. We had about 1, 2, 3 poi factories in Kakaako. Because all Hawaiian—they got to have their poi or whatever. [UHCOH 1978:637]

### 5.1.4 Mary Ka'uahane Naito

Mary Ka'uahane Naito, Hawaiian-Caucasian, was born in Kaka'ako in 1920 (UH 1978:877-912). Her father worked at the Hawaiian Electric powerhouse. Their family lived for a time in Squattersville, and they were one of the families evicted when the houses were torn down. Although she remembered that Kaka'ako was mainly a district of poor people, she still talked of her birthplace with pride:

I going tell I'm proud because I come from Kakaako because we had good people. We get along with one another. You know? And if there's a Palama team going, and Kakaako team go, we still stick together. You know. Regardless of what, we still stick. And we all born and raise in Kakaako. . . . That's why I'm not ashamed to say that I came from Kakaako because all the people in Kakaako was good. [UHCOH 1978:911]

### 5.1.5 Charlie Correa

Charlie Correa, of Portuguese ethnicity, was born in Kaka'ako in 1917 (UH 1978:102-127). His father was a driver for the City Transfer Company, but he was hurt on the job and his family depended on his mother and grandmother who made and sold Portuguese sausage and sweet bread (UH 1978:102). In 1978, he recalled that electricity was still uncommon in some areas in the late 1920s. One of his tasks as a child was to gather *kiaawe* branches and other wood for the kerosene stoves. The wood was also used to boil water for washing, which was done in large metal tubs in

the backyard. Toilets in each house were not common until about 1927. Mr. Correa went to the Ala Moana Opportunity School, a vocational school in Kaka'ako, where he took classes in carpentry and other skills. After leaving school, he worked for H.C. and D., who had a yard on South Street, delivering ice for the Hawaiian Electric Company. Later he drove a tractor that picked up merchandise from the piers at Honolulu Harbor. His first house in Kaka'ako was on Queen Street between Cooke and Kamani streets. It was adjacent to a rice-bagging warehouse and a rooming house for single Filipino and Hawaiian men. In their second house, also on Queen Street, they had a brick Portuguese oven in their backyard, where his mother would bake bread about once a month.

He remembered an early air strip on the beach called Malolo Field, in the area now covered by the Ala Moana Center, where the first one-seat plane landed. He recalled,

Malolo was the first one that landed there. When they named the plane, a one-seater, Malolo because . . . like the fish in the ocean, when the liner travels, this fish is right alongside the liner when she flies up in the air and she goes down. That's the malolo. And that's when they named the plane 'Malolo.' [UHCOH 1978:119]

A biplane called "Malolo" was owned by the Lewis Air Tour's Martin Jensen in the 1920s. Holbrook Goodale, who tried to start the first commercial inter-island flying service, the Hawaiian Air Transportation Company of Honolulu, was taught to fly by this company. He was flying the Lewis plane "Malolo" in 1927 when it crashed in Lā'ie, putting an end to the early dream of the air service company. Mr. Correa seems to be referencing an early grass airfield in Kaka'ako in the 1930s or 1940s. A more elaborate, paved airport, called the Ala Moana Airport, was planned in 1944 by the Territorial Department of Public Works, but it was never built (Hawaii Aviation 2010).

### 5.1.6 Usaburo Katamoto

Mr. Usaburo Katamoto is a retired boat builder of Japanese descent who moved to Kaka'ako in 1910 (UH 1978:534-632). He shared a great deal of information about the fishing boats that used Kewalo Basin. He recollected the dredging of the area to make Kewalo Basin and Ala Moana Park, an area once used for salt making. He said,

Used to be salt field [Ala Moana Boulevard area]. You know, Chinese had the salt field there. High tide come, they put the sea water go in. And shut the gate. And throw the sea water on the field and make it dry. And then rake it up and put 'em in the trough like, you know. Make the salt water richer (dried in the field, more concentrated). How they make that Hawaiian salt. [UHCOH 1978:622]

### 5.1.7 Wallace Amioka

Mr. Wallace Amioka, of Japanese ancestry, was born on South Street in Kaka'ako in 1914 (UH 1978:20-63). His father was a fisherman and his mother came to Hawai'i as a picture bride. Wallace attended Pohukaina School and then McKinley High School, and participated in sports sponsored by the schools and by the Kaka'ako YMA, or Young Man's Association. These sporting events often became rough when rival football teams met at the Honolulu Stadium and squared off after the games. His family were Buddhists, so they attended the Jodo Shu Temple in Kaka'ako. He remembered watching sumo wrestling matches and going with his family to Japanese movies on the grounds of the Japanese Temple. The Kaka'ako people of different ethnicities lived in different "camps." Mr. Amioka explained this concept:

By camp I mean the houses are very close together. Okay? You don't have a big, lush yard like you find in homes today. You don't have a 10,000 square foot lot, now. You just, your house is here. There's a common, right? Common, ah, roadway you might say. The next house is almost next door to you. You know, very close . . . that's what we mean by camp. Sec? And you'd have the main street, of course. But you have these clusters, or groupings of houses. Cluster houses what they would call today. [UHCOH 1978:33]

### 5.1.8 Francis Zane

Francis Zane was one of the few Chinese living in Kaka'ako (UH 1978:1147-1183). His family moved there in 1909 when he was about 10 years old. His father worked for various companies, the E. Hall and Son Company, the Bank of Hawaii, and the Soda Water Works in Honolulu. Francis made extra money for the family by selling newspapers and by diving for coins in Honolulu Harbor. On the way to the harbor, he would pass the manshi areas near the base of Ward Avenue. He noted,

And you know Ward Street, coming down. Before you reach the Fisherman Wharf, coming down? It's on the right side. They used to have a place, where they used to make salt. Gee, you pass it when the sun shine, that's salt, eh, burn your eye, you know, from the salt . . . red salt, white salt? [UHCOH 1978:1178]

## Section 6 Community Consultation

### 6.1 Introduction

Throughout the course of this assessment, an effort was made to contact and consult with individuals who might have knowledge of and/or concerns about traditional cultural practices specifically related to the *ahupua'a* and/or project area; Native Hawaiian Organizations (NHOs); and government agencies. This effort was made by letter, email, telephone, and in-person contact. The initial outreach effort began in August 2015 and ended in October 2015.

### 6.2 Community Contact Letter

In the majority of cases, an aerial photograph, USGS map, and a letter describing the project were mailed. Text in the letter can be found below. Figure 18 displays consultation letter sent to community.

At the request of SSFM International, Inc. on behalf of the State of Hawai'i Department of Accounting and General Services (DAGS), Cultural Surveys Hawai'i, Inc. (CSH) is preparing a cultural impact assessment (CIA) for the mixed use project at 902 Alder Street, DAGS JOB NO. 12-21-7550, Honolulu Ahupua'a, Honolulu (Kona) District, O'ahu, Tax Map Key (TMK) [1] 2-3-012.019. Please see accompanying USGS, Aerial, and TMK maps.

The project area is immediately bound by Pi'ikoi Street to the west, Elm Street to the south, and Alder Street to the east. Other businesses can be found to the north of the project area, which front South King Street. The project will replace the old Judiciary facility with a new one. The Hawaii Housing Finance Development Corporation (HHFDC) will jointly develop the subject property by adding an affordable housing component to the project. Ground disturbance is expected to impact the entirety of the project area, relating to demolition, utilities trenching, and new building footings. The project area is 1.4 acres.

We are seeking your *kōkua* and guidance regarding the following aspects of our study:

- **General history and present and past land use of the project area.**
- **Knowledge of cultural sites which may be impacted by future development of the project area - for example, historic sites, archaeological sites, and burials.**
- **Knowledge of gathering practices in the project area, both past and ongoing.**
- **Cultural associations of the project area, such as legends and traditional uses.**
- **Referrals of *kāpuna* and *kama'āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua'a* lands.**

- Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.



**Cultural Surveys Hawaii's, Inc.**  
Archaeological and Cultural Impact Studies  
Hallett H. Hammatt, Ph.D., President

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Job code: **HONOLULU 59** [nishihara@culturalsurveys.com](mailto:nishihara@culturalsurveys.com) August 2015

Aloha,

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- Knowledge of gathering practices in the project area, both past and ongoing.
- Cultural associations of the project area, such as legends and traditional uses.
- Referrals of *kāpuna* and *kama'āina* who might be willing to share their cultural knowledge of the project area and the surrounding *ahupua'a* lands.
- Any other cultural concerns the community might have related to Hawaiian cultural practices within or in the vicinity of the project area.

I invite you to contact me at (808) 262-9972 or (e-mail: [nishihara@culturalsurveys.com](mailto:nishihara@culturalsurveys.com)) if you have any information you would like to share.

Me ka ha'aha'a,  
  
Nicole Ann Nāhōkūlaniāhāhi Ishihara  
CSH Supervising Cultural Researcher

Figure 18. Consultation letter sent to the community

### 6.3 Community Contact Table

Below in Table 3 are names, affiliations, dates of contact, and comments of NHOs, individuals, organizations, and agencies that were contacted for the project.

Table 3. Results of Community Consultation

Name	Affiliation	Comments
Becket, Jan	Author, photographer, knowledgeable in cultural sites Kona Moku Representative for the Committee on the Preservation of Historic Sites and Cultural Properties	Letter and figures sent via email 1 September 2015 Mr. Becket responded via email on 1 September 2015 stating availability and sites within Honolulu Ahupua'a to visit CSH emailed Mr. Becket dates of availability on 22 September 2015 for an interview and site visit Mr. Becket responded on 22 September 2015 via email; site visit scheduled for 29 September 2015 to Pūowaina and Makiki Heights; CSH confirmed date for site visit Site visit to Pūowaina and Makiki Heights 29 September 2015 with Mr. Becket Draft summary sent to Mr. Becket via email on 6 October 2015 for review and approval Mr. Becket sent revisions to draft on 6, 7, and 8 October 2015 Approval of summary 10 October 2015
Crabbe, Kamana'opono	Ka Pūhāna (Chief Executive Officer), Office of Hawaiian Affairs	Letter and figures sent via USPS 14 August 2015
DaMate, Leimana	Executive Director, Department of Land and Natural Resources (DLNR)—Aha Moku Advisory Committee	Letter and figures sent via email 18 August 2015 Second letter and figures sent via email 22 September 2015

Name	Affiliation	Comments
Del Toro, Benjamin	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Del Toro, Daniel	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Del Toro, Rachel	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Del Toro, Samuel	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Faulkner, Kiersten	Executive Director, Historic Hawaii <sup>1</sup> Foundation	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via email 22 September 2015
Friends of 'Iolani Palace		Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Gomes, Phoebe	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Gomes, Robin	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Hawaiian Civic Club of Honolulu		Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015

Name	Affiliation	Comments
Hawaiian Historical Society		Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Higgins, Collette	<i>Kiipuna, kama iāna of</i> Kaka'ako	Letter and figures sent via email 18 August 2015 Second letter and figures sent via email 22 September 2015
Hilo, Regina	O'ahu Island Burial Sites Specialist, DLNR—State Historic Preservation Division (SHPD)	Letter and figures sent via email 18 August 2015 Forwarded letter and figures to Sheleigh Solis, O'ahu Cultural Historian at DLNR-SHPD, on 18 August 2015 via email
Kaleikini, Ali'ikaua	Lineal Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Kaleikini, Hāloa	Lineal Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Kaleikini, Kaia	Lineal Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Kaleikini, Moehonua	Lineal Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Kaleikini, No'eau	Lineal Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Kaleikini, Paulette Ka'anohi	Lineal Descendant	Letter and figures sent via USPS 14 August 2015

Name	Affiliation	Comments
		<p>Second letter and figures sent via email 22 September 2015</p> <p>Ms. Kaleikini responded via email to CSH on 9 October 2015. Her response is below:</p> <p>Sorry so late in responding to this inquiry.</p> <p>The area of this project sits within the urban corridor. It is situated very close to the Walmart where a cemetery was found. Chances of impacting a cultural layer or historic property at this project site is high.</p> <p>This was an area favored not only by the alii but the lahui in general. It was agricultural land and water &amp; ponds were in various locations close to this site. So where there was good fertile land and water, the people lived and died nearby.</p> <p>I would recommend proceeding with a full archaeological inventory survey coupled with cultural monitoring.</p> <p>My kupuna lived in this area. And my 'ohana will look forward to participating in any future discussions regarding this project.</p> <p>Please keep me informed. I request a</p>

Name	Affiliation	Comments
		<p>copy of the final CIA for this project.</p> <p>Mahalo nui</p> <p>P. Kaano'hi Kaleikini</p>
Keana'āina, Betty	Descendant	<p>Letter and figures sent via USPS 14 August 2015</p> <p>Second letter and figures sent via USPS 24 September 2015</p>
Keana'āina, Kīhei	Descendant	<p>Letter and figures sent via USPS 14 August 2015</p> <p>Second letter and figures sent via USPS 24 September 2015</p>
Keana'āina, Luther	Descendant	<p>Letter and figures sent via USPS 14 August 2015</p> <p>Second letter and figures sent via USPS 24 September 2015</p>
Keana'āina, Noelani	Descendant	<p>Letter and figures sent via USPS 14 August 2015</p> <p>Second letter and figures sent via USPS 24 September 2015</p>
Keana'āina, Regina	Descendant	<p>Letter and figures sent via USPS 14 August 2015</p> <p>Second letter and figures sent via USPS 24 September 2015</p>
Keana'āina, Vicky	Descendant	<p>Letter and figures sent via USPS 14 August 2015</p> <p>Second letter and figures sent via USPS 24 September 2015</p>
Keana'āina, Wilsam	Descendant	<p>Letter and figures sent via USPS 14 August 2015</p> <p>Second letter and figures sent via USPS 24 September 2015</p>
Kēkēkē, Ashford	Descendant	<p>Letter and figures sent via USPS 14 August 2015</p>

Name	Affiliation	Comments
		Second letter and figures sent via USPS 24 September 2015
Kekaula, Mary K.	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Keli'inoi, Kalahikiola	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Keli'inoi, Kilinahe	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Keli'inoi, Moani	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Keli'ipa'akaua, Chase	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Keli'ipa'akaua, Justin	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Keohokālole, Ema	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Keohokālole, Jeanine	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Keohokālole, Joseph	Descendant	Letter and figures sent via USPS 14 August 2015

Name	Affiliation	Comments
		Second letter and figures sent via USPS 24 September 2015
Keohokālole, Lori	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Kini, Debbie	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Kini, Nalani	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Lew, Haumea	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Lopes, Leina'ala	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Luka, Alike	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Nishiyama, Kur'ulei	Papakolea Hawaiian Civic Club	Referred to CSH by Ka'ahiki Solis of DLNR-SHPD Letter and figures sent via email 13 October 2015
Norman, Carolyn	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Norman, Eileen	Descendant	Letter and figures sent via USPS 14 August 2015

Name	Affiliation	Comments
Norman, Kalco	Descendant	Second letter and figures sent via USPS 24 September 2015 Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Norman, Keli'inui	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Norman, Theodore	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Paik, Kaleo	Cultural practitioner	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Papa, Jr., Richard Likeke	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Rash, Regina	Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Rodrigues, Himano	History and Culture Branch Chief, DLNR-SHPD	Letter and figures sent via email 18 August 2015
Soares, Moani	Lineal Descendant	Letter and figures sent via USPS 14 August 2015 Second letter and figures sent via USPS 24 September 2015
Solis, Sheleigh	O'ahu Cultural Historian, DLNR-SHPD	Letter and figures forwarded from Regina Hilo 18 August 2015

Name	Affiliation	Comments
Wong-Kalu, Hinaletmoana	O'ahu Island Burial Council (OIBC) Chair,	Second letter and figures sent via email 22 September 2015 Ms. Solis responded via email to CSH on 22 September 2015. Her response is below:  I do have the place names historian John Clark is very wonderful and consented to be a community outreach person. I am not sure that he would be of any kokua to you as his area of specialization is surf history. He is interested in Place Names and has tons of knowledge. Off hand that is all I can think of as far as referrals.  I know the oral history project at UH Manoa may have kupuna and makua info relative to the project area. I would suggest Civic Club members in Papakolea because of their standing as the first Hawaiian Homestead perhaps their Community Center would have kupuna informants that like to talk story. I do not have the information but I am sure it would not be hard to find.  Mahalo nui.  Letter and figures sent via email 18 August 2015

Name	Affiliation	Comments
Kona Moku Representative		<p>Second letter and figures sent via email 22 September 2015</p> <p>Ms. Wong-Kalu responded via email to CSH on 29 September 2015. Her response is below:</p> <p>I do not have any information to provide to you except that I spent my childhood years growing up in this area right up the road on Piikoi.</p> <p>By the time I came along into this world it pretty much looked like what it does today with the exception of the changes in businesses in the area.</p> <p>Mahalo for reaching out to me and I look forward to any important updates re: the project should they come up.</p>

**6.4 Kama'āina Interviews**

*Kama'āina* and *kāpuna* with knowledge of the proposed project area participated in semi-structured interviews from August 2015 to October 2015. CSH initiated the interviews with questions from the following five broad categories: *wahi pana* and *mo'olelo*, agriculture and gathering practices, freshwater and marine resources, cultural and historic properties, and burials.

The authors and researchers of this report extend our deep appreciation to everyone who took time to speak and share their *mana'o* and *'ike* with CSH whether in interviews or brief consultation, including contacts who opted not to contribute to the current cultural impact assessment, but nevertheless spent time explaining their position on the proposed project. We request that if these interviews are used in future documents, the words of contributors are reproduced accurately and in no way altered, and that if large excerpts from interviews are used, report preparers obtain the express written consent of the interviewee/s.

**6.4.1 Jan Becket**

Jan Becket is a retired teacher with Kamehameha Schools who is well-recognized for his black-and-white photographic documentation of sacred sites. He has conducted extensive archival

research on sites of cultural significance, learned from *kāpuna*, and photographed many undocumented sites on O'ahu, which resulted in a co-written book, *Pana O'āhu* (Becket and Singer 1999). He is a member of the Committee for the Preservation of Cultural Sites and Properties under the O'ahu Council of Hawaiian Civic Clubs, and reports back to the chair of the committee (Shad Kāne) on issues concerning cultural sites in the Kona district of O'ahu.

On 29 October 2014, Mr. Becket led a CSH to visit several cultural sites within Honolulu Ahupua'a. The first site is located near the Honolulu and Kāne'ole Ahupua'a border. A large *pōhaku* can be found in a bamboo forest at the Nu'uamu Pali State Wayside park (Figure 19). The *pōhaku* can be found on an incline near the ridge line of a *pali*. Below the *pōhaku* several water worn rocks somewhat resembling remnants of a terrace are evident. Walking towards the Pali Lookout, a second *pōhaku* once stood on a small portion of land to the side of the original Pali Road. Mr. Becket recalls passing the *pōhaku* on the road growing up. Today, the stone is no longer there. He believes the stone was either pushed down the cliff or blasted during the construction of the Pali Tunnels. All that remains where the *pōhaku* once stood is heavy vegetation including *hau* and ginger (Figure 20). Mr. Becket believes that this stone may have been Kalanaihaoula, a *mo'o* who guarded the Pali. Across from the former location of the *pōhaku* thought to be Kalanaihaoula are several circular holes in the mountainside. He stated he has seen a woman stuffing *piko* (navel cord) in these holes.

Mr. Becket led CSH to an *'i'i* known as Makuku located 10-15 minutes *makai* from Nu'uamu Pali Drive, the road that exits town-bound from the Pali Lookout State Wayside park. He indicated that he knows of a possible *heiau*, upright stone, and a burial under a rock mound (Figure 21). The last time he visited and photographed the sites at Makuku was during the 1990s. Mr. Becket led CSH to a wooded area of strawberry guava, ginger, ti, and *palaupalai* (fern). The rock mound paved with *'i'i* (pebble, small stone) with an upright stone marks a possible burial. The mound and upright stone run parallel to the Pali Highway. A scattering of various sized *pōhaku* were observed approximately 50 feet *makai* of the mound and upright stone. Unfortunately, we were unable to locate the possible *heiau*. However, Mr. Becket believes that we were in the vicinity of the possible *heiau* and may have just not inspected the area thoroughly.

Other cultural sites that Mr. Becket shared with CSH include the original location of Kaunakapili Church and Pākākā Heiau, which have been completely destroyed. The original location of Kaunakapili was near the current location of Maunakea Street and North Beretania Street. Prior to the construction of Kaunakapili Church was where Kahuo'i's shrine once stood. It is said that Kahuo'i would fish with his pet bird named Kau-maka-pili ("perched with eyes closed"). The translation of Kau-maka-pili tells the way the bird would catch its prey—it would swoop from above and close one eye before grabbing a fish. The name of the church is deliberately tied to the *wahi pana*. Pākākā Heiau was once located near the foot of the *makai* end of Fort Street Mall. Mr. Becket assumes that some of the rubble from Pākākā Heiau was most likely used for the construction of roads in downtown Honolulu. Pākākā Heiau was the most important *heiau* in Honolulu Ahupua'a. It was near Kamehameha's compound and was possibly the headquarters for Kahuna Kū.



Figure 19. Possible *pōhaku kōi'i* (stone guard, watchman) on the 'Ewa (place name west of Honolulu, used as a direction term) side of the Pali Lookout, October 2014 (photo courtesy of Jan Becket)

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Figure 20. Photo of the former location of *mō'ō* and *pōhaku*, Kalamihauola, once stood where the *hau* grows in the foreground, Laninui peak in the background, October 2014 (photo courtesy of Jan Becket)

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The last stop of the day was Kunawai Springs located in Liliha. According to Pukui, the springs and pools were named after a supernatural fresh water eel (*kūma*). This eel lived in a pool of water (wā) were wild ducks never swam. Kahānaiakēkua, a chief, bathed in this pool. Kahānaiakēkua was raised at Waolani Heiau by the gods Kane and Kanaloa. Kahānaiakēkua eventually married his sister and became the ruling chief of O‘ahu over the Mū (legendary people of Lā‘au-ha‘eia-mai, Kāua‘i), Wā (shouting people), and Menehune. Some believe that the water from Kunawai Springs had healing qualities. The springs are located on Kunawai Lane just *mauka* of Kuakini Medical Center in the Liliha area. The Kunawai Springs Urban Park consists of a landscaped area with a large pool of water and amphitheater seating. A plaque with the story of Kunawai Springs is located near the pool emblazoned with the following *mo‘olelo*:

#### KUNAWAI SPRINGS

The water bubbling into this pool comes from the Kunawai Springs, natural source of water situated beneath this and nearby properties on Kunawai Lane.

The springs were the site of an ancient healing center, as recently as the late 1860’s, the healing center was regulated by a wahine kahuna (priestess) who believed herself to be a descendant of the first moo [mo‘o] sent to earth. (Moo [mo‘o] were supernatural peoples of olden Hawaii sent to earth by the gods to guard the fresh water sources.)

Many springs and lakes were originally in the area. In later years the following six were well known: Kuna-wai-nui, Kuna-wai-iki, Ka-wai-olena, Kumu-habana, Kalua Palolo, and Kalua Moo.

The springs were noted for the curative benefits derived from the waters and from clay found at the bottom of one of the springs. Only the aii [‘ali‘i] (nobility) were allowed in any of the places on Kunawai Lane, the Kumu-Hahana and Kalua Moo. [Mo‘o] pools were considered very sacred.

Medicines were made with waters from Ka-wai-olena which is located under the adjacent ewa properties. Treatment for the ill began with use of the medicines and ended with a bath in Ka-wai-nui, the largest of the bodies of fresh water, which is under Kunawai Playground across the street, the sick could bathe in Kuna-wai-nui and Kuna-wai-iki with permission of the guardian moo [mo‘o] after proper prayers and offerings were presented. It was believed that the pure waters of the springs and lakes washed away the sins causing the illness.

Clay for which Kunawai was known was found at the bottom of Kalu Palolo. It was whitish gray and was valuable as a pack for irritated skin and for falling of dull hair.

The Kunawai waters were important also because they irrigated the taro patches in lower Nuuanu [Nu‘uanu] Valley and thus helped to provide Hawaiians with their staff of life.

Department of Parks and Recreation  
City and County of Honolulu  
1966



Figure 21. Photo of upright stones in Makuku ‘Ili, October 2014 (photo courtesy of Jan Becket)

A small pool of water, umbrella sedge, and mud was found several feet away from the plaque. A sidewalk divides the small pool of water with sedge from the larger pool which is home to several ducks (Figure 22). CSH observed the small pool of water and noticed that it was slowly bubbling as water spilled onto the sidewalk. The larger pool is lined by a cement and rock wall. A PVC pipe was observed in the rock wall and carried a steady flow of water, emptying into the larger pool. Mr. Becket mentioned that the springs were capped years ago, however, it was evident that there was a steady water source coming from the smaller pool, which drained into the larger pool. As we walked the perimeter of the larger pool, we observed a drain to west. The water is then transported to the western edge of Kunawai Springs Urban Park and flows *makai* into an historic cement and rock ditch. The ditch appears to run in back of several private residences. Mr. Becket recalls in the past residents who lived along the ditch would place a hose or pipe into the water and siphon the water. No hoses or pipes were observed in the ditch.

Mr. Becket and the plaque indicated that another spring related to the Kunawai Spring system was across the street. Directly across the street from Kunawai Springs Urban Park is another park. The park is divided in half by a sidewalk that runs *maka* to *makai*. The Diamond Head portion consists of a playground and basketball court; while the 'Ewa portion is an open grassy area. In the northwestern corner of the 'Ewa portion, a small pool was observed. The perimeter is comprised of flat *pōhaku* cemented in place. A shower tree stands in the northeast portion of the wall. In the northwest portion of the wall is a *halia* (pandanus; *Pandanus odoratissimus*) tree, which is also located near the drainage point of this pool. The drain empties into a cement and stone lined ditch borders the park's limits and travels *makai*. The pool is rather shallow measuring no more than a few inches in height and appears to be cemented in. The pool appears to be dry, however, with closer inspection a trickle of water stems from the northeast corner of the wall before it crosses the center of the pool and drains to the western corner. A pottery shard and a piece of coral were found at the pool. CSH inspected the neighborhood *maka* of the second pool but did not see any other sources of water in the area.

CSH and Mr. Becket met again on 11 November 2014 on Country Club Road located in Waolani 'Ili, Nu'uano. In correspondence, Mr. Becket mentioned a possible *heiau* within the O'ahu Country Club property located just *maka* of the fairway. He notes this might be Kawaluna Heiau and describes it via email as "a very important heiau." He recalls the *heiau* being in excellent condition, however, it needs a good vegetation clearing. CSH attempted to contact O'ahu Country Club General Manager, Peter Hansen, asking permission to access the *heiau* and document the structure. Unfortunately due to time constraints, we were unable to secure a visitation.

Another site in the vicinity of O'ahu Country Club is Pōhaku Aumeume, a stone connected to the Menelune (Figure 23). The *pōhaku* is located in the backyard of a private residence. Mr. Becket photographed the stone years ago and also shared a *mo'olelo* from his friend, Mr. Becket's friend recalled when her friend from the mainland had moved to O'ahu and rented a home near the O'ahu Country Club. Without any prior cultural or historic knowledge of the Hawaiian Islands, this person mentioned how "little, deformed men" would wake her up in the middle of the night and surround her in her room. She moved out of the home as soon as possible. CSH and Mr. Becket located the *pōhaku* on the backside of the residence. The Pōhaku Aumeume is on a paved platform shaded by a *hau* tree. Branch coral and *'ili-'ili* sit within the many



Figure 22. Kunawai Spring, October 2014 (photo courtesy of Jan Becket)

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crevices of the *pōhaku*. Branch coral at a cultural site indicated a possible burial or ceremonial function. Mr. Becket added that these crevices are fingerprints from the Menehune when they threw the *pōhaku*.

Mr. Becket wanted to investigate another site, located in the backyard of a home on the 2200 block of Liliha Street that Mr. Earl “Buddy” Neller, former SHPD archaeologist, had mentioned to him years ago. There was an alleged *heiau* or remnants of one within property of a private residence. We parked along Liliha Street on the 2200 block to investigate the possible remnants. It appears that two properties have a scattering of large *pōhaku* in their yard and are confined by historic stone walls. The corner property on the 2200 block contained more *pōhaku* than its neighbor. Unfortunately, no one was home at the corner property to question regarding the history of the stones. It appears that *makai* of the home within the property limits is a grouping of large *pōhaku* with a scattering of medium rocks leading *mauka*. Some of these *pōhaku* are being held in place with pieces of rebar and the yard is very well maintained.

CSH visited the neighboring home and asked a tenant there if she knew anything about the rocks. She replied that the rocks were put there by a landscaper years ago. Evidence of a possible *heiau* or other traditional structure on the 2200 block on Liliha Street were inconclusive and further investigation and research needs to be conducted.

The next stop was Lulumahu Valley. We met with Māhealani Cypher of the Ko’olau-poko Hawaiian Civic Club at the intersection of the Pali Highway and Nu’uanu Pali Drive. From there we drove to the Nu’uanu Reservoir No. 3 owned by the Board of Water Supply and parked our vehicles at the trailhead of Lulumahu Valley. Ms. Cypher led the group to an area near the reservoir where she pointed out the valley. The valley blends in with the mountains creating the illusion that it is just another ridgeline along the Ko’olau Mountain Range. However, upon closer inspection, the valley is actually hidden with the ridge facing *makai*.

The group began to head *mauka* on the Lulumahu Trail where several historic water control features were observed. Ginger, *hau*, *māmaki* (*Pipturus spp.*), strawberry guava, and the invasive *clidemia hirta* grow alongside the trail. Significantly large *pōhaku* were spotted alongside the trail as well as burial mounds. In the past, Mr. Becket photographed a stacked terrace wall with an upright stone on the left side of the trail. The group stopped to *mālama* (to take care of) the terrace wall by clearing fallen debris and invasive plants. A large piece of rebar was nestled between tree branches at the foot of the terrace (Figure 24). *Mauka* of the wall was a large stone mound. After debris and vegetation removal, it became apparent that there were two terrace walls and three upright stones. Ti plants were spread amongst the site including one next to an upright stone. Native plants such as *palapalai* and *laua’e* (fragrant fern) were not removed from the terrace wall. After Mr. Becket photographed the wall and took GPS (Global Positioning System) coordinates of the site, the group traversed the trail to the trailhead where we parted ways with Ms. Cypher.

CSH and Mr. Becket then drove to the Nu’uanu 822 Reservoir Site located along Nu’uanu Pali Drive. CSH had previously contacted Michael Matsuo of the Board of Water Supply’s Land Division for permission to access the Nu’uanu 822 Reservoir. We parked within the Board of Water Supply property and began walking to the left of the reservoir where stone paving was observed alongside a footpath. After passing the stone paving, the footpath ended and a small, dry *‘aunwai* (irrigated ditch) was observed. After crossing the *‘aunwai*, we were in a dense bamboo forest, which then opened into a grove of *hau* and Christmas Berry. After exiting the grove of

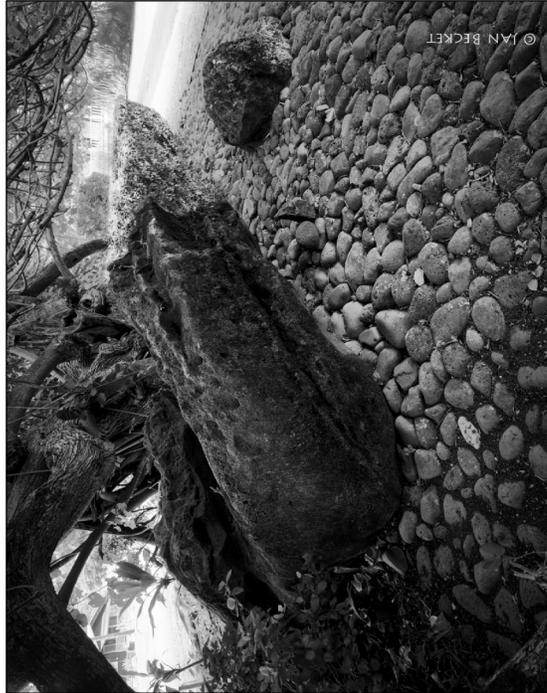


Figure 23. Pōhaku ‘Aunumeke, n.d. (photo courtesy of Jan Becket)

tangled *haui* and Christmas Berry, we found ourselves on the shoulder of the Pali Highway where we proceeded to walk *makai*. Mr. Becket recalls a petroglyph rock on the side of the Pali Highway.

After walking down several feet *makai* we spotted a *pōhaku* a foot or two into the dense bamboo forest. The medium-sized *pōhaku* consists of one human stick figure. Mr. Becket learned about the site from the late J. Mikilani Ho-Holoole, petroglyph and Hawaiian sites specialist. After a brief discussion, there is a possibility that the *pōhaku* may have been moved out of the way for the construction of the Pali Highway but it is unclear.

Mr. Becket wanted to show CSH an enclosure just off of the Pali Highway. We continued to travel *makai* along the highway where we reached a drainage ditch, hiked down, and into another dense bamboo forest. A steep *auwai* cuts through the bamboo forest, which leads to the previously mentioned drainage ditch. The enclosure is on the opposite side of the stream bank immediately exiting the *auwai* (Figure 25). The enclosure is in excellent condition with the exception of several stalks of bamboo that have managed to sprout between the *pōhaku*. The wall is approximately one to three feet in height and three to four feet in width (Figure 26). CSH explored *mauka* of the enclosure and discovered a second enclosure with historic bottle and plate shards amongst the site. Mr. Becket referred to the enclosure as Kahapa'akai. We discussed the site's name trying to connect the word *pa'akai* to the location, as it is far from the ocean. After conducting some research, Kahapa'akai is an *'ili* (1874 Lyons; Registered Map 133) within Nu'uano Valley. The term *kaha* translates to "place." The word *pa'akai* is usually associated with salt, however, it is also a variety of taro and also a variety of *limu* (seaweed) (Pukui and Elbert 1986). In this case, the term refers to a type of taro that was usually grown in the uplands and used for *poi*, the Hawaiian staff of life made from cooked *kalo* corms. The name Kahapa'akai simply translates to "taro place," which is appropriate as Nu'uano Mauka was an excellent source for cultivating *kalo* based on its many streams and terraces (Handy and Handy 1972).

Mr. Becket escorted CSH to several cultural sites on 29 September 2015 within Honolulu Ahupua'a. The first stop was Pūowaina ("hill of placing [human sacrifices]"), commonly known as Punchbowl (Figure 27). Today, the crater is home to the National Memorial Cemetery of the Pacific. Mr. Becket shared that his grandparents came from Holland via a Thomas Cook Tour. His grandparents lived near Washington Place and would talk to Queen Lili'uokalani regularly. Mr. Becket's late uncle, Siebrand Schaffsma, who grew up in Honolulu during the 1920s, always referred to the Punchbowl as "The Devil's Punchbowl." Mr. Becket commented that it was common practice for early white settlers to re-name Native American sacred places with names beginning with "The Devil's..." He adds that the name "The Devil's Punchbowl" clearly follows the same practice in the re-naming of Pūowaina.

We walked to the rim of the crater overlooking Kaka'ako and Honolulu. Mr. Becket pointed out several sites below including O Kāne Lā'au Heiau (located at the base of Pūowaina where the H-1 Freeway stands); Manua Heiau, where *kahuna nui* (high priest) of Pūowaina resided (the present location of Queen's Hospital); Po'ouahi Heiau (the present location of Stevenson Intermediate School); Ka'akopua Heiau (present location of Central Intermediate School); Kahehuna Heiau (the location of Royal School); Puowaina Heiau and Inu Ahi, a *luakini heiau* and sacrificial stone (located at Pūowaina); Kahahaimaui Heiau ('Iolani Palace); and Kahe Iki Heiau (located on the ridge line at Pauoa extending towards Kapena Falls). Mr. Becket noted that Kahe Iki Heiau was an important site, as a battle ensued between Kahekili and Kahahana.

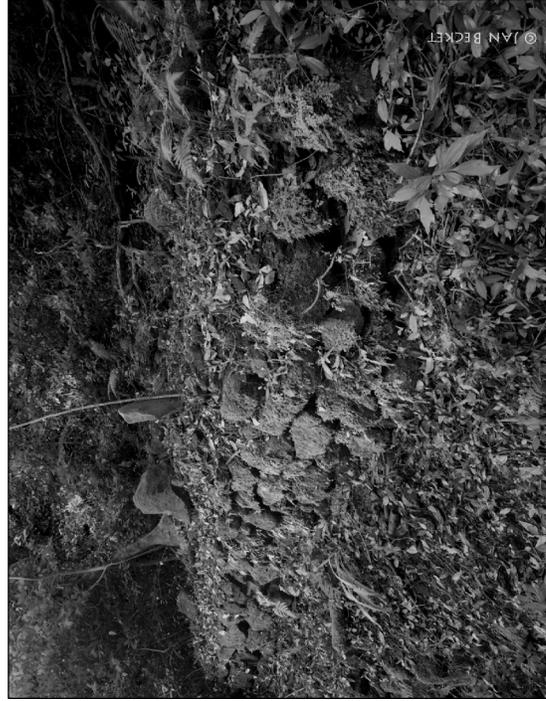


Figure 24. Lulumahu Valley terrace wall and upright stones, November 2014 (photo courtesy of Jan Beckett)

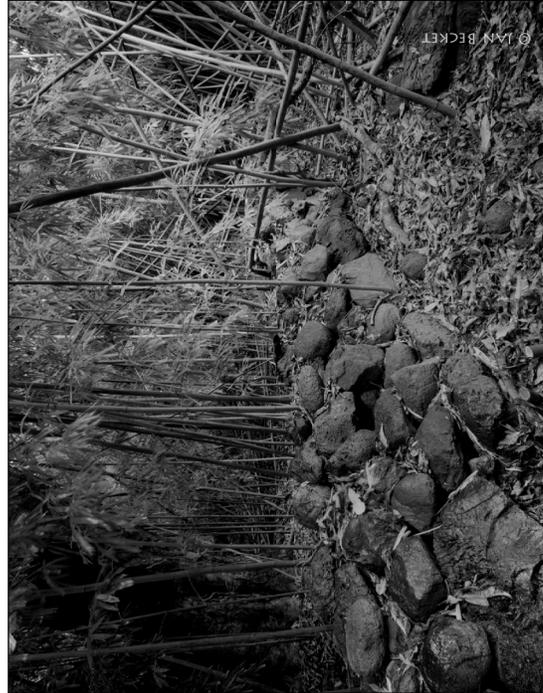


Figure 25. Photo of enclosure in Kahapa'akai 'Ili, November 2014 (photo courtesy of Jan Beckett)

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Figure 26. Photo of enclosure Kahapa'akai 'Ili facing mauike, November 2014 (photo courtesy of Jan Beckett)

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Below was the Nu'uau Stream which ran red with blood from warriors that were killed in battle. He also indicated that a *hōlua* (sled) slide was on the eastern slope above Stevenson Intermediate School. A majority of these sites were passed mentioned to Mr. Becket by Mr. Buddy Neller. The former locations of some of these sites can be seen in Figure 28.

A point of interest that Mr. Becket wanted to locate was the Imu Ahi, a sacrificial stone that once stood near the rim of the Pūowaina. We walked the perimeter of the overlook but did not find any large *pōhaku* that indicated it was the Imu Ahi. He found a small overhang below that appeared to be a storage area for cemetery service workers. No *pōhaku* was observed on the overhang.

CSH asked a cemetery worker if they knew of any cultural sites on the property. The cemetery worker pointed out the *hōlua* slide on the eastern slope of Pūowaina and a platform on the western rim of the crater. CSH asked if it was possible to access the platform. However, due to the thick brush and steep slopes, access was not possible. The cemetery worker also indicated that a pre-Contact human mandible was inadvertently identified while excavating for a grave several years ago.

We attempted to find any remnants of the platform on the western rim of the crater mentioned by the cemetery worker. On a slope below the western rim of the crater, a small section under a banyan tree suggested some terracing and alignments running east to west with *'ili'ili*. However, further east the area became ambiguous. Portions of the slope indicated natural terracing with some modification. Excessive fallen vegetation on the slope and no access to the rim made it difficult to determine the size of the platform. Results of a possible platform were inconclusive.

We stopped at a lookout overlooking Stevenson Intermediate School. We attempted to locate the exact area of the *hōlua* slide but were unable to with the thick brush below. *Kiawe* (*Algaroba*; *Prosopis pallida*) trees, Castor Bean plants, and *haole koa* (*Leucaena leucocephala*) litter the hillside. Mr. Becket added that the *hōlua* slide was once visible on Google Earth. We estimated the location of the *hōlua* slide to be on a hillside overlooking and leading into the Stevenson Intermediate School baseball field.

Our last stop was in Makiki. We made our way *mauka* on Makiki Heights Drive towards the Department of Forestry and Wildlife (DOFAW) office. Adjacent to the DOFAW office is a parking lot that crosses the Kanahā Stream and leads to the Maunalaha Trailhead. We began our trek and immediately observed many low terraces and upright stones. To the right of the trail, Mr. Becket pointed out an upright stone that he photographed for his book *Puna O'ahu* (Figure 29). The stone stands at approximately two feet in height and has a smooth front face. He pointed out that the backside of the stone has an L-shaped shelf that appears intentionally carved out. Across the trail path was a small clearing that overlooked the Kanahā Stream. Across the stream was a terraced wall. It was unknown if this was pre-Contact or restored. Banana plants, *'ape* (*Alpacasia macrorrhiza*), *kalo*, and miscellaneous wetland plants dot the streambed. Farther up the trail were more terrace walls eventually leading to two small *lo'i* (irrigated terrace) to the west of the trail. These *lo'i* are maintained by the students of nearby charter school, Hālau Kū Māna (Figure 30). An *'ānawai* offshoots from Kanahā Stream and feeds into the two small *lo'i* before emptying back into the stream. Across the stream are retaining terrace walls that have been modified. Wild *kalo*, *tū*, *waike* (paper mulberry; *Broussonetia papyrifera*), *palapalai*, and button ginger were observed

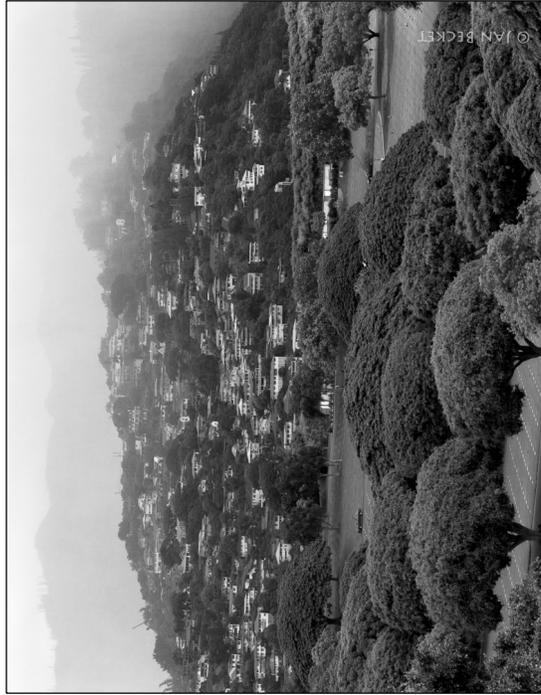


Figure 27. Photo of Pūowaina, commonly known as Punchbowl, former site of a *heiau* and sacrificial stone, September 2015 (photo courtesy of Jan Becket)



Figure 29. Photo of upright stone in Makiki Heights; Mr. Becket photographed this *pōhaku* for his book *Pana O 'āhu*; September 2015 (photo courtesy of Jan Becket)



Figure 28. Photo of former *heiau* in the lower portions of Honolulu Ahupua'a; former locations of *heiau* include O Kane La'au (foreground, H-1 Freeway), Kahehuna (right foreground, behind H-1 Freeway), Ka'akopua (midground, Central Intermediate); September 2015 (photo courtesy of Jan Becket)

in the streambed. A small upright stone sits above the streambed, notched, with a *lei* of ti sitting on the upper portion of the stone. Figure 31 is a composite of sites visited within Honolulu Ahupua'a with Mr. Jan Becket.

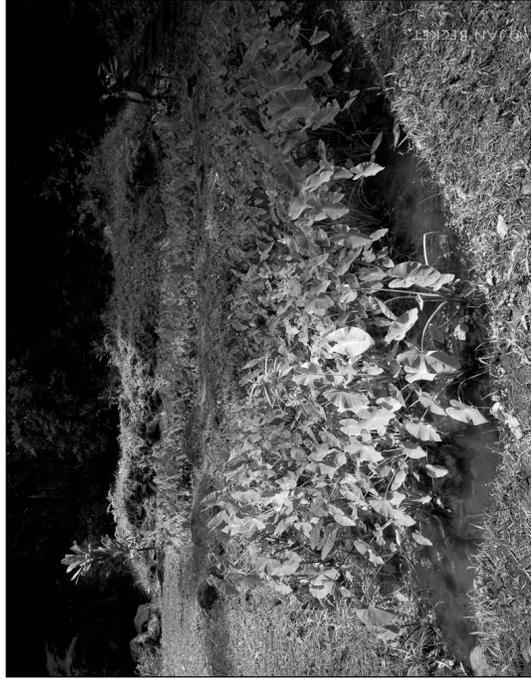


Figure 30. Photo of *lo'i kolo* adjacent to the Kamahā Stream in Makiki Valley, the *lo'i* is maintained by the students of Hālau Ka Māna charter school mauka of the park; September 2015 (photo courtesy of Jan Becket)

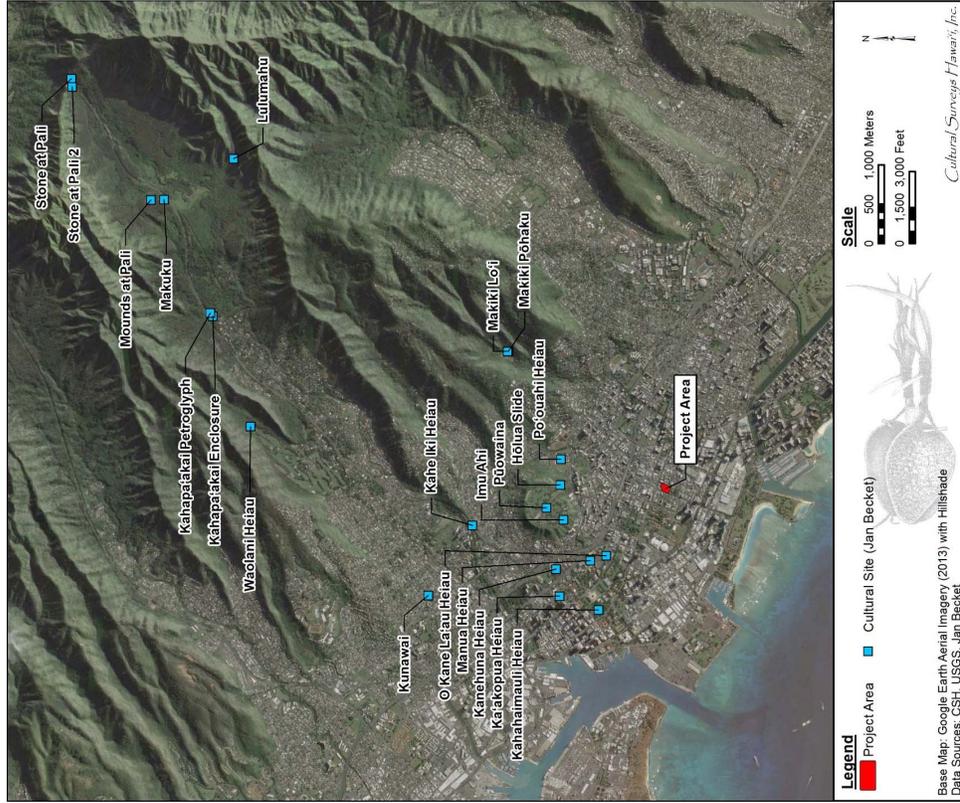


Figure 3.1. 2013 Google Earth Aerial Imagery with cultural sites visited with Mr. Jan Becket throughout Honolulu Ahupua'a

### 6.5 Summary of Kama'āina Interviews

CSH completed the community consultation component of this CIA in October 2015. Author, photographer, and Honolulu Representative for the Committee for the Preservation of Cultural Sites and Historic Properties, Jan Becket, was interviewed for the current project on 29 September 2015. He was previously interviewed for past projects in Honolulu Ahupua'a on 20 October 2014 and 11 November 2014.

Mr. Becket, who is knowledgeable in *wahi pana* and cultural sites, escorted CSH to various sites within Honolulu Ahupua'a. On 20 October 2014, two significantly large *pōhaku* were visited at the Nu'uauu Pali State Wayside park. He believes that one of the *pōhaku* may have been Kalanaihuola, a *mo'o* who guarded the Pali. A possible *heiau*, upright stone, and burial under a rock mound in Makuku 'Ili were also visited. Makuku 'Ili is located on the 'ewa side of Nu'uauu Mauka, approximately 10-15 minutes *makai* of the Nu'uauu Pali State Wayside park. Mr. Becket also escorted CSH to the Kunawai Springs located in Liliha. He stated that the springs were capped years ago; however, a steady water source continues to emerge from the ground. Another spring related to the Kunawai Spring system was across the street. A cemented pool stands in the 'Ewa corner of the park. A trickle of water came from the *mauka* portion of the pool indicating there is still water underground. A pottery shard and a piece of coral were found at the pool. Branch coral at a cultural site usually denotes a burial or ceremonial function.

During our 11 November 2014 *hauka'i* (voyage), we visited the *wahi pana* known as Pōhaku Aumeume. The stone is connected to Menehune. Mr. Becket shared a story from his friend who had moved from the mainland to O'ahu. Without any prior cultural or historic knowledge of O'ahu, his friend rented a home near the O'ahu Country Club. This friend then told Mr. Becket how "little, deformed men" would wake her in the middle of the night and surround her in her room. The *pōhaku* is located on the backside of a private, gated residence. The Pōhaku Aumeume sites on a paved platform under a grove of *hau*. Branch coral and *'ili'ili* sit within the many crevices of the stone. He added these crevices are fingerprints from the Menehune when they threw the *pōhaku*. Another site visited was on the 2200 block of Liliha Street. Mr. Becket stated that Mr. Earl "Buddy" Neller, former SHPD archaeologist, had mentioned a possible *heiau* or remnants of one on someone's property. It appeared that two properties had a scattering of *pōhaku* in both yards. CSH visited a neighboring home and asked a tenant if they knew anything about the rocks. She replied that they rocks were put there by a landscaper years ago. We also visited Lulumahu Valley where several large *pōhaku*, a stacked terrace wall with uprights, and a large stone mound were observed. The last stop was at the Nu'uauu 822 Reservoir Site located along Nu'uauu Pali Drive. Within the Board of Water Supply property and to the left of the reservoir, a stone paving was observed alongside a footpath. After passing the stone paving, the footpath ended and led us to an old *'arawai*. We crossed the *'arawai* and passed through a grove of Christmas Berry and *hau*, which led to the shoulder of the Pali Highway windward bound. We walked *makai* and entered a bamboo forest where Mr. Becket pointed out a single, medium sized *pōhaku* with a single human stick figure petroglyph. Mr. Becket learned about the site from the late J. Mikilani Ho-Holuole, petroglyph and Hawaiian sites specialist. Further *makai* in the bamboo forest are two enclosures in the *'ili* known as Kahapa'akai. Both enclosures are in excellent condition with the exception of several stalks of bamboo that have managed to sprout between the enclosure walls. At the second enclosure historic bottles and plate shards were observed. We discussed the *'ili* name. The word *kaha* means "place" while the word *pa'akai* is usually associated with "salt." However, in this case

the term *pa akai* is referring to a variety of taro. The name Kahapa akai translates to “taro place,” which is appropriate as Niu uanu was an excellent place to cultivate taro based on the many streams and terraces in the valley.

The last *hauka i* with Mr. Becket was on 29 September 2014. We visited Pūowaina, commonly known as Punchbowl. Mr. Becket shared that his late uncle, Siebrand Schaffsma, would refer to Punchbowl as “the Devil’s Punchbowl.” Mr. Becket commented that it was common practice for early settlers to re-name Native American sacred places with “The Devil’s...” Mr. Becket added that “The Devil’s Punchbowl” clearly follows the same practice for renaming Pūowaina. Overlooking Kaka’ako and Honolulu, Mr. Becket pointed out several sites below including O Kāne La’au Heiau, Manua Heiau, Po’ouahi Heiau, Ka’akopua Heiau, Kahahaimaui Heiau, and Kahe Iki Heiau. He also indicated that a *hālua* slide was on the eastern slope above Stevenson Intermediate School. A majority of these sites were mentioned by Mr. Neller as well. The last stop was to the Maunalaia Trail. Alongside the trail an upright stone with an intentionally carved L-shaped shelf and two small *lo i kalo* were observed.

Sites that were not visited but were discussed were the original locations of Kaumakapili Church and Pākākā Heiau, which have been completely destroyed. The original location of Kaumakapili was near the current location of Maunakea Street and North Beretania Street. Prior to the construction of the church was where Kahuoi’s shrine once stood. It is said that Kahuoi would fish with his pet bird, Kau-maka-pili (“perched with eyes closed”). The translation of Kau-maka-pili tells the way the bird would catch its prey—it would swoop from above and close one eye before grabbing a fish. The name of the church is deliberately tied to the *wahi pūana*. Pākākā Heiau was once located near the foot of the *makai* end of Fort Street Mall. Mr. Becket assumes that some of the stones from Pākākā Heiau was most likely used for the construction of roads in Honolulu. Pākākā Heiau was the most important *heiau* in Honolulu Ahupua’a. It was near Kamehameha’s compound and possible the headquarters for Kāhuna Kū.

## Section 7 Traditional Cultural Practices

### 7.1 Gathering of Plant Resources

*Kalo* was the sacred staple in the Hawaiian diet and way of life. According to the Kumulipo, the Hawaiian genesis chant, Hāloa was the second son of Wākea and Papa. Hāloa-naka, the first-born, was born prematurely and died shortly after birth (Kanahahe 1995:17). After burying Hāloa-naka, a *kalo* sprouted from his grave. Hāloa was born shortly after the sprouting of this *kalo* plant. Hāloa symbolizes *kalo* and man. Kanahahe explains that *kalo* is a metaphor for life and that “plants have been used to symbolize human spiritual growth. Hawaiians made taro a metaphor for life because, like the taro plant, it needs to be rooted in good soil and to be constantly nourished with the waters of Kāne” (Kanahahe 1995:18).

Honolulu Ahupua’a was abundant in taro. Upper Niu’uanu Valley provided an abundance of water to the lower portion of the *ahupua’a*. Taro lands extended *makai* to at least half-way of upper Niu’uanu Valley (Handy and Handy 1972:475). Author and photographer, Mr. Ian Becket, escorted CSH to an enclosure just off of the Pali Highway in an *‘i‘i* called Kahapa akai. The term *kaha* translates to “place,” while the word *pa akai* is commonly known as “salt.” However, it also refers to a variety of *kalo* as well as a variety of *limu* (Pukui and Elbert 1986). In this case, the term refers to a type of *kalo* that was usually grown in the uplands and used for *poi*, the Hawaiian staff of life. The name Kahapa akai simply translates to “taro place,” indicating the abundance in *kalo* and its many streams and terraces (Handy and Handy 1972).

The Kaka’ako area is located between two traditional centers of population, Homolulu and Waikīki. The *ahupua’a* of Waikīki consisted of a large system of irrigated *lo i* ascending from Makiki, Mānoa, and Pāloa valleys toward the ocean. A network of fishponds and salt pans dotted the shoreline in Kaka’ako and Waikīki (Bingham 1847:92–93). Ms. Paulette Ka’anohi Kaleikini, State of Hawaii<sup>1</sup> recognized lineal descendant, indicated that the project area was favored by *ali i* and the *lāhui* in general with its vast agricultural lands and waterways.

UHCOH interviewee, Mrs. Eleanor Nahiaop Wilson Heavy, recalls helping her mother collect *pāpalo* used for cold and congested chest, as well as *‘uhaloa* root for colds. During the time Mrs. Heavy collected these herbs, the people of Kaka’ako still went to the medical *kahuna*. You only went to the hospital when there was no hope. Mrs. Heavy’s mother often ventured to Ka’ākaūkui ‘Ili where she gathered *limu*, *wana*, *ina*, squid, and *‘ōpae* for the family’s meals. Another UHCOH interviewee, Mr. David Tai Loy Ho, made money by picking *kiawe* beans as a child. He states that the best place to pick *kiawe* beans was at the Ward Estate, between Queen and King Streets. The beans were sold as horse and cattle feed. UHCOH interviewee Charlie Correa often picked *kiawe* branches and other wood for the kerosene stoves.

### 7.2 Burials

Ms. Kaleikini has stated that “where there was good fertile land and water, the people lived and died nearby.” She adds that the project area is within the urban corridor and points out that it is very close to the Walmart on Ke’eaumoku Street where a cemetery was found in the past. She indicates that the chances of impacting a cultural layer or historic property within the project area is high.

Previous archaeological studies indicate that burials have been found *makai* of the project area. Human remains were found in six areas of the Makaloa-Sheridan work site of the Sam's Club/Walmart project (McElroy 2010). SIHP # -6661 and -6662 were two burials found east of Sheridan Street. SIHP # -6516 consisted of 62 individuals. Burials were dated to both pre- and post-Contact eras. Farther *makai* include SIHP # -4847, an inadvertent in situ burial at Kapi'olani Boulevard and Pi'ikoi Street (Athens et al. 1994), and SIHP # -4243, a right tibia shaft fragment found in a back dirt pile (Smith 1989).

Mrs. Eleanor Heavy recalls Hawaiian salt being used to embalm bodies. Salt would be stuffed into the *'ōkole* while being worked in by *ti* leaves. Salt would also be distributed into cuts under the armpit and other orifices such as the mouth, nose, and ears. The body would be viewed by several days until it was transferred into a coffin for burial.

### 7.3 Cultural Sites

Mr. Becket escorted CSH to several *wahi pana* within Honolulu Ahupua'a. A large *pōhaku* near the Honolulu and Kane'ōhe Ahupua'a border that sits near the ridge line of a *pali* on the *'ewa* side of the Nu'uano Pali State Wayside park. Several water worn rocks resembling a terrace sit below the *pōhaku*. A second *pōhaku* once stood on a small portion of land on the side of the original Pali Road. Mr. Becket recalls passing this *pōhaku* when he was younger. Today, the stone is no longer there. Mr. Becket believes the stone was either pushed down the cliff or blasted during the construction of the Pali Tunnels. He believes this stone may have been Kalanaihuauola, a *mo'ō* who guarded the Pali. Several historic water features, large *pōhaku*, burial mounds, and a stacked terrace with upright stones were found in Lulumahu Valley. Off the Pali Highway, Mr. Becket also showed CSH a single petroglyph and an enclosure in the *'ili* of Kahapa'akai. Another point of interest that Mr. Becket pointed out was Pūowaina, commonly known as Punchbowl. From the rim of the crater, Mr. Becket pointed out the former locations of several cultural sites including O Kāne La'au Heiau, Manua Heiau, Po'ouahi Heiau, Ka'akopua Heiau, Kahehuna Heiau, Kahaimaui Heiau, and Kahe Iki Heiau. Pūowaina Heiau and Imu Ahi, a sacrificial stone, could be found within Punchbowl. On the eastern slope was a *hōlua* slide. On the Maumalaha Trail, Mr. Becket pointed out two sites: an upright stone with an intentionally caved L-shaped shelf and an old *lo'i*.

### 7.4 Ka'ao and Mo'olelo

Traditional Hawaiian knowledge was preserved through a narrative dialogue known as *mo'olelo*, the oral history and legends of the Hawaiian people, as factual as any written account of history. Origin myths, cosmology, and genealogies are indigenous forms of knowledge that account for the creation of the world and the first Hawaiians. *Mo'olelo* also chronicle the rise and fall of divine kingship throughout Hawai'i (Kirch 2010).

Mr. Becket escorted CSH to several *wahi pana*. In addition, he has shared *mo'olelo* of cultural sites that we were unable to visit or have been destroyed. Mr. Becket shared that the original location of Kaumakapili Church was near the current alignment of Maunakea Street and North Beretania Street. The caretaker of Kaumakapili was Kahuoi. The translation of Kau-maka-pili describes the way the bird would catch its prey—swooping from above and closing one eye before grabbing a fish. Pākākā Heiau was once located near the foot of the *makai* end of Fort Street Mall.

Pākākā Heiau was the most important *heiau* within Honolulu Ahupua'a. It was near Kamehameha's compound and was possibly the headquarters for Kahuna Kū.

The story of Keaomelemele takes place in Nu'uano. Ku and Hinwelelani married and were soon expecting a baby together. The gods, Kāne and Kamaloa, recognized that a child would soon enter the world while standing in Waoiani (the area where the O'ahu County Club stands today). The two gods tasked out the construction of temples in Waoiani to the Menehune. These temples can still be seen in Waoiani today.

Mr. Becket shared a *mo'olelo* from his friend whose friend had rented a home near the O'ahu Country Club in Nu'uano Valley. Without any prior cultural or historic knowledge of the Hawaiian Islands, this person mentioned to Mr. Becket's friend how "little, deformed men" would wake her up in the middle of the night and surround her in her room. She moved out of the home as soon as possible. The Pōhaku Aumeume, a stone connected to the Menehune, is a block away from the O'ahu Country Club. The *pōhaku* was supposedly thrown by the Menehune. Small crevices can be observed from the front of the *pōhaku*. Mr. Becket added that these crevices are fingerprints from the Menehune when they threw the stone.

## Section 8 Summary and Recommendations

CSH undertook this CIA at the request of SSFM International. The research broadly covered the entire *ahupua'a* of Honolulu, including the 1.4-acre project area.

Background research for this study yielded the following results which are presented in approximate chronological order:

1. The traditional name for Honolulu Ahupua'a was Kou. This *ahupua'a* was subdivided into smaller land divisions called *'i'i*. The area between Maunakea Street and Nu'uano Stream and *makāi* of King Street was known as Kapu'ukolo. The area *mauka* between Maunakea Street and Nu'uano Stream was known as Kikihale. Pukui et al. (1974:110) state that Kikihale was named for the daughter of the chief Kou for whom the area was named. Honolulu literally translates to "protected bay," which refers to Honolulu Harbor (Pukui et al. 1974:49-50). Other translations include "sheltered hollow" and "abundance of peace" (Hawaiian Historical Society 1904:24). Westervelt adds that Honolulu was most likely a name of a very rich farm land near the junction of Liliha and School Streets.
2. Pākākā was the name of a coastal point, canoe landing, wharf built off the point in 1827, and *heiau*. The name literally means "to skim, as stones over the water" (Pukui et al. 1974:175). Thrum (1906) mentions Pākākā Heiau being the main royal temple in Honolulu. This *heiau* would be located near the foot of Fort Street today.
3. Pukui et al. (1974) does not give a meaning for the place name Kaka'ako. However, Pukui and Elbert (1986:110) translates the word *kākā'āko* as "dull, slow," and Thrum (1922:639) translated the word as "prepare the thatching." If Thrum's translation is correct, it could be related to the many salt marshes in Kaka'ako were excellent places to gather *pili*, which Hawaiians used to thatch their houses.
4. Kewalo 'Ili means "the calling (as an echo)" and was once the place where *kanōwā*, members of a pariah caste intended for sacrifice, were drowned (Pukui et al. 1974:109).
5. Pūowaina, also known as Punchbowl in modern times, translates to "hill of placing [human sacrifices]" (Pukui et al. 1974:195). There were six *heiau* and one home for priests located on Pūowaina. These sites were first noted by Emma Nakuina in 1909 (Sterling and Summers 1978:317).
6. Several battles ensued in Pauoa Valley including the invasion led by Maui chief Kahekili, battling the chief of O'ahu, Kahahana in 1783. Almost a decade (1795) later Kamehameha I landed his army in Waikīki to feud with Kalamikūpule, king of Maui and O'ahu.
7. In 1846, Honolulu was the capital of the Hawaiian Kingdom and was on its way to becoming the commercial and political hub of the Islands. During this time there was an obvious increase in population, land use, and urbanization. The waterfront area changed dramatically to accommodate trading and whaling vessels.
8. In 1895, a cholera epidemic struck the Islands and spread rapidly due to unsanitary conditions of the harbors and Nu'uano Stream. The epidemic broke out in August and ended in October. A total of 64 people died. Shortly after the end of the epidemic, the government began to plan and institute public improvements to roads, bridges, sewage systems, and streams.
9. The Kaka'ako area has been heavily modified for the last 150 years due to historic filling of the area for land reclamation.

11. By the 1880s, the Kaka'ako area was being filled in for the construction of new roads and improvements of older roads. The justification for filling former mud flats, marshes, and fishponds was that low-lying areas were frequently being cited for unsanitary conditions and contributing to cholera outbreaks and breeding areas for rats and mosquitoes. By February 1914, the land from South Street to Ward Avenue and from Ala Moana Boulevard to Queen Street had been filled in.

CSH attempted to contact Hawaiian organizations, agencies, and community members as well as cultural and lineal descendants of Kaka'ako in order to identify individuals with cultural expertise and/or knowledge of the project area and vicinity. Results are below:

1. Mr. Jan Becket, a retired Kamehameha Schools teacher who is well recognized for his photographic documentation of *wahi pana* (storied places), escorted CSH to multiple cultural sites from October 2014 to September 2015 within Honolulu Ahupua'a. A total of 28 sites within Honolulu Ahupua'a have been mentioned for the current study. None of the sites visited were in the vicinity of the project area.
2. Pākākā Heiau was once located near the foot of the *makāi* end of Fort Street Mall. Mr. Becket assumes that some of the rubble from Pākākā Heiau was most likely used for the construction of roads in downtown Honolulu. Pākākā was the most important *heiau* in Honolulu Ahupua'a. It was also near Kamehameha's compound and was possibly the headquarters for Kahuna Kū.
3. Mr. Becket states the original location of Kaumakapili Church was near the current alignment of Maunakea Street and North Beretania Street. Prior to the construction of Kaumakapili Church was where Kahui's shrine once stood. It is said that Kahui would fish with his pet bird named Kau-maka-pili ("perched with eyes closed"). The translation of Kau-maka-pili tells how the bird would catch its prey, swooping down from above and closing one eye before grabbing a fish.
4. Mr. Becket escorted CSH to Pūowaina, commonly known as Punchbowl. The name translates to "hill of placing [human sacrifices]." Mr. Becket's late uncle, Siebrand Schaffisma, grew up in Honolulu during the 1920s and referred to Punchbowl as "The Devil's Punchbowl." Mr. Becket added that it was common practice for early white settlers to re-name Native American sacred places with names beginning with "The Devil's..." He commented that the name "The Devil's Punchbowl" clearly follows the same practice in the re-naming of Pūowaina.
5. Important sites that have been destroyed below Pūowaina include O Kāne La'au Heiau, Manua Heiau, Po'ouahi Heiau, Ka'akopua Heiau, Kahahuna Heiau, Kahahaimauli Heiau, and Kahe Iki Heiau. Pūowaina Heiau and Imu Ahi, a sacrificial stone, were located at Pūowaina. In addition, a *hōliua* slide was located on the eastern slope above Stevenson Intermediate School.
6. Paulette Ka'anohi Kaleikini, State of Hawaii's recognized lineal descendant, indicated that her *kūpuna* (elders) once lived in this area. She adds the project area is within the urban corridor and is in the vicinity of Walmart on Kē'eaumoku Street "where a cemetery was found." Ms. Kaleikini states that "chances of impacting a cultural layer or historic property at this project site is high."
7. Ms. Kaleikini points out that this area was favored by *ali'i* (chiefs) but also by the *lāhui* (nation, race, people). The area once consisted of agricultural lands including water and

ponds. Ms. Kaleikini adds because of the land was fertile, people lived and died in these areas.

8. Ms. Kaleikini recommends an archaeological inventory survey and cultural monitoring.

Based on the information gathered from the cultural and historic background and community consultation detailed in this CIA report, the proposed project may have potential impacts. To avoid these, we suggest the following:

1. Personnel involved in the construction activities should exercise caution due to the culturally sensitive nature of the proposed project area as indicated by a community participant.
2. Personnel involved in the construction activities of the project should be informed of the possibility of inadvertent cultural finds, including human remains. Should burials or other cultural finds be encountered during ground disturbance, the construction contractor should immediately cease all work and the appropriate agencies should be notified pursuant to applicable law.
3. If any *iwi kūpuna* or other inadvertent cultural finds are found during ground disturbance, the State of Hawaii<sup>1</sup> Department of Accounting and General Services in conjunction with the State Historic Preservation Division (SHPD) and the O'ahu Island Burial Council (OIBC) should consult with lineal and cultural descendants of Honolulu (including Kaka'ako) to develop a reinterment plan, as well as a cultural preservation plan in the event that any human remains or cultural sites or artifacts are uncovered during construction of long-term maintenance for the project.

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## Appendix A LCA 10605

No. 10605\*O, Iona Piikoi, Honolulu, February 10, 1848  
N.R. 563v4

Greetings to you the Land Commissioners: We hereby enter our claims for land, being the lands which passed to us by the division of lands of the Mo'i. Here are Iona Piikoi's:

1. Paa, with its lihis and its leles, Ahupua'a at Kona, Kauai
2. Pualoalo and its lihi and leles, 'ili at Honolulu, Oahu.
3. Kaluaoopu, with its lihis and its leles, 'ili at Waiawa, Ewa.
4. Mikiola, with its lihis and leles, 'ili at Kaneohe, Koolau.
5. Kanneche, with its lihis and leles, Ahupua'a at Lahaina, Maui.

Here at Kamakee's:

6. Keapuka, lihis and leles, perhaps, 'ili at Kaneohe, Koolau.
7. Kewalo, lihis and leles, perhaps, at Honolulu, Oahu.

Kindly award our claims, with their lihis and their leles, and all the places which wrongfully went to someone else, and which were trespassed upon and which were perhaps wrongfully occupied, and the places which were conveyed by lease, and all the rights which pertain in the names of those lands - the right to the protected fish and the wood and the water and everything which is said to pertain to these lands. That is what we give to you to work on and quiet title to us and to award in a way as to benefit the populace who are living on the land, and the lands which we occupy which also are for us. Here are these claims: a house lot in Honolulu, also, at Kamooiki, Honaunala, is a plantation of coconut trees.

I am, respectfully,

I. PIKOI, KAMAKEE

/Translator's note: As far as I can determine, lihi is a pretty elastic term, meaning boundary or edge, but stretched to mean other areas not necessarily contiguous. Lele, of course, means "jump" areas./

F.T. 387-388v3

No. 10605, Kamakee Piikoi, September 28th, 1852

A portion of land in claimant's survey of Kewalo uka, called "Kapuni" is disputed by M. Kekuanaoa, also by the Government. Claimant avers that it is a part of Kewalo & therefore hers.

Kaia, sworn, says he is a kamaaina of Kewalo. Kaholoau was Luma of Kewalo in the time of Kaahumani. After him were Mahina and Kcaho. The name of the small piece of land now disputed is "Kapuni." It belonged to Kaahumani. The above named Lumas were under Kaahumani. "Kapuni" is a pauku aina in Kewalo. It does not belong to Kalokohou, "Kapuni" was always

included in Kewalo in the collection of taxes, and the people of "Kapuni" always worked for the konohiki of Kewalo. Naone, the present tax collector has lately caused this pauku of Kewalo to be included in Kalokohonu.

Mahina, sworn, I was Luna of Kewalo in the time of Kaahumanu, after Kaholoau. This pauku of land now in dispute, called "Kapuni," always formed part of Kewalo. "Kapuni" was always included with Kewalo in taxation and the people of "Kapuni" worked for the konohiki of Kewalo. "Kapuni" never belonged to Kalokohonu until the decision given by Naone to that effect, last year.

Mahu, sworn, says he is a kamaaina of Kewalo, and knows the piece of land now in dispute, called "Kapuni." It has always formed a part of the ili of Kewalo, from ancient times.

Cross Examination. I have lived on Kewalo since the time of Kaio, the konohiki, in the time of Kamehameha I. I know the boundaries of Kewalo uka pretty well. I know Kailepulu who lives there, but he is a newcomer. Witness gave the names of a long line of konohikis.

Paimuui, sworn (for the Government), I am a kamaaina of Auwailimu adjoining Kewalo. When I was a boy, I lived on Kewalo, when Kapaukahi was konohiki in the time of Kamehameha I. I know the pauku aina called "Kapuni," now in dispute. "Kapuni" belonged to Kaahumanu, i.e. to her ili of Kewalo. She had her Lunas there. Witness named some of the lunas. The men of "Kapuni" worked for the konohiki of Kewalo. It is about 40 years since "Kapuni" was joined to Kewalo - shortly after the sickness which destroyed the people's hair. "Kapuni" always formed part of Kewalo from that time till Naone's decision about 18 months ago.

N.T. 21-22v10

No. 10605, J. Pitkoi, 1 July 1851, See page 387, vol. 3

No. 3176, G. Kailaa for Kamakee vs Kaaukai

Kukahiko, sworn, I have seen this house lot in Honolulu, the boundaries are:

Mauka by Kekualaula's lot, Kahamaumaikai's lot

Waikiki by Puowaina street

Makai by Kaaoaohuna lot, S. Reynold's lot

Ewa by Road.

Land from Kaauka (i [kane?]) in 1843, Kaaukai had received it in 1832. When Kamakee had it permanently, G. Kailaa lived on the land and Ihu had enclosed it. Kaaukai built the house and Ihu had helped also by buying the material for thatching. Kailaa has lived there to the present time, no disputes.

I have heard Kaaukai had bequested this place to Kamakee at the time Kapili had returned the deed of the land to Kaaukai. Kamaikaaloo had given this lot to Kaaukai, the chief had given her; her land. She had given orally to her brother Kamakee saying, "I am leaving for Hawaii, you are the chief's tenant, here is your house lot," Kaaukai lived on the land until her death.

Kanautu, sworn for Kaaukai, I heard there were two of them on this place, Kamaikaaloo mauka and Kaaukai, Makai. This had been from the chief, later they had separate land. Then Kaaukai left for the island of Hawaii and I saw Kailaa living on that land. I have not known Kaaukai's bequest for anyone else and I have always seen Kailaa living there to the present time since the time of Kaahumanu I. Kailaa built his house and Pahua helped him to enclose the land. I have heard on Maui they had lived together and they had agreed that the land would be for the other should either one of them die, so at Kaaukai's passing, the land was possessed by Kamaikaaloo. I have not heard Kamaikaaloo's bequest.

Pahua (female), sworn, I have seen this coconut grove at Mooiki of Honuaula, Maui.

Mauka by Government land

Kipahulu by "Makeaka" land

Makai by sea

Lahaina by "Nahupaka" land.

Kamakee, the wife of J. Pitkoi, had received this land from Kapili, her brother in 1842. he had received it from their father, Ihu in 1841. Ihu had received it from Kaikioewa at the time of Liholiho and he has lived comfortably. He has planted coconut trees, the children have them now, no one has disputed the government has retaken the land since the great Mahele, except for the coconut grove. They are for Kamakee.

Kaahumanu, sworn, as a child, I had seen Ihu himself and his men plant those coconut trees at the time of Liholiho to the present time, no disputes. Cont. page 161.

N.T. 161v10

No. 10605, Johan Pitkoi (from page 21)

COPY

Na Paa ahupuaa, Kona, Hawaii

Pualoalo ili of Honolulu, Kona, Oah.

Kaluaoopu ili for Waiau, Ewa, Oahu.

Mikiola ili for Kaneohe, Koolaupoko, Oahu.

Kamehe ahupuaa, Lahaina, Maui.

This distribution is good, the lands listed above are for Jonah Pitkoi, he has been permitted to present his claims before the land officers.

(signature) Kamehameha, Seal

This Palace, 28 January 1848

This is a true copy from the Mahele Book

A.G. Thurston, Secretary K.K. Interior Minister Office, 31 March 1852

No. 10605, Kamakee Piikoi

COPY

Kewalo ili for Honolulu, Kona, Oahu.

Keopuka ili for Kaneohe, Koolaupoko, Oahu.

This distribution has been approved, it is good. The lands listed above are for Kamakee Piikoi and has been permitted to present this before the land officers.

(signature) Kamehameha II, Seal

This Palace, 28 January 1848

See page 328, True copy from the Mahele Book

A.G. Thurston, Secretary K.K. Interior Minister Office, 31 November 1852

N.T. 328x10

No. 10605, Jonah Piikoi

Jonah Piikoi's land distributions.

Na Paa ahupuaa, Kona, Hawaii.

Puaaloalo ili, Honolulu, Oahu.

Kaluaoopu ili, Waiau, Oahu.

Mikiola ili, Kaneohe, Koolaupoko, Oahu.

Kainehe ahupuaa, Lahaina, Maui.

TRUE COPY

Interior Office, A. Thurston, Chief Clerk

November 17, 1853

[Award 10605; R.P.; 2672, Kewalo Honolulu; 3 ap.; 60.44 Acs; R.P. 5715; Kewalo Honolulu; 4 apana, 88 Ac. 5 Roods, 78 Rods (location index gives 3 apana; 60.44 Acres); R.P. 5716; Koula Honolulu Kona; 1 ap.; 270.84 Acs; (Kamakee Piikoi); R.P. 5567, Puaaloalo Honolulu; 1 ap.; 3.37 (Ap. 2); R.P. 5569, Puaaloalo Honolulu; 2 ap.; 8.65 Acres; (Ap. 1 & 3); R.P. 1739; Punchbowl St.; 1 ap.; 1.17 Acs; (Iona & Kamakee Piikoi); R.P. 8135; Mikiola Kaneohe Koolaupoko; 2 ap.; 43.5 Acs; R.P. 6557; Waiau Ewa; 2 ap.; 35.7 Acs; (Apana 5); R.P. 5611; Kaneohe Koolaupoko; (Maui) R.P. 8400; Kainehe Lahaina; (Kauai) no R.P. Paa Kona; 1 ap.; 3263 Acs 1 rood 33 rods (ahupua a); See also Award 3176 for Oahu]

# **Appendix H: Traffic Impact Assessment**



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**DRAFT**

**Joint Development for Affordable  
 Rental Housing and Juvenile Services Center/Shelter  
 Traffic Impact Analysis Report**

902 Alder Street  
 Honolulu, Hawai‘i

**December 11, 2015**

Prepared for  
 Department of Accounting and General Services,  
 State of Hawai‘i



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## I. INTRODUCTION

The State of Hawai'i Housing Finance Development Corporation (HHFDC) and the Judiciary Courts of the State of Hawai'i, Juvenile Detention Facility Redevelopment Planning (Judiciary) are proposing a joint development at 902 Alder Street in Honolulu on the island of O'ahu. The project site is identified as Tax Map Key (1) 2-3-012:019 and is on a block bordered by King Street on the mauka (mountain) side, Elm Street on the makai (ocean) side, Pi'ikoi Street on the west ('Ewa) side and Alder Street on the east (Diamond Head) side.

The project is within 1/2-mile of the Ala Moana Rail Transit Station and therefore falls within a transit oriented development (TOD) transit influence zone (TIZ). The project location is shown in Figure 1. The project has an anticipated full build-out and occupancy year of 2022. This follows the construction and operation of the Honolulu Rail Transit guideway and stations which are expected to be complete by 2019 or 2020.

The project site is approximately 1.45 acres and currently contains two partially utilized buildings. This includes the former Juvenile Detention Home, which was relocated to Kapolei/Judiciary Complex in 2010, and Shelter. The Juvenile Shelter and some services continue to operate on site.

The proposed project would result in the construction of approximately 254,000 square feet of floor area for approximately 180 affordable rental housing units targeted for working individuals and families. The housing would be located in a 19-story building, of which the Judiciary would occupy approximately 35,000 square feet on the first three floors. Parking for residents, employees, and visitors would be located in an adjacent structure. The parking structure will be four stories tall. Part of the roof of the parking structure may be used as a recreational deck for residents. The structure will contain approximately 290 vehicular parking stalls.

Two driveway accesses are being proposed to this joint mixed-use facility. One will be from a driveway off of Alder Street at the location of an existing curb-cut. The other will be from a driveway off of Pi'ikoi Street, directly across from Alohi Street. The proposed development site plan is shown in Figure 2.

This traffic impact analysis report (TIAR) is being prepared in support of an environmental assessment being prepared for the project. Future conditions will be evaluated for the year 2022 for determination of project impact as well as the completion of the Honolulu Rail Transit project.

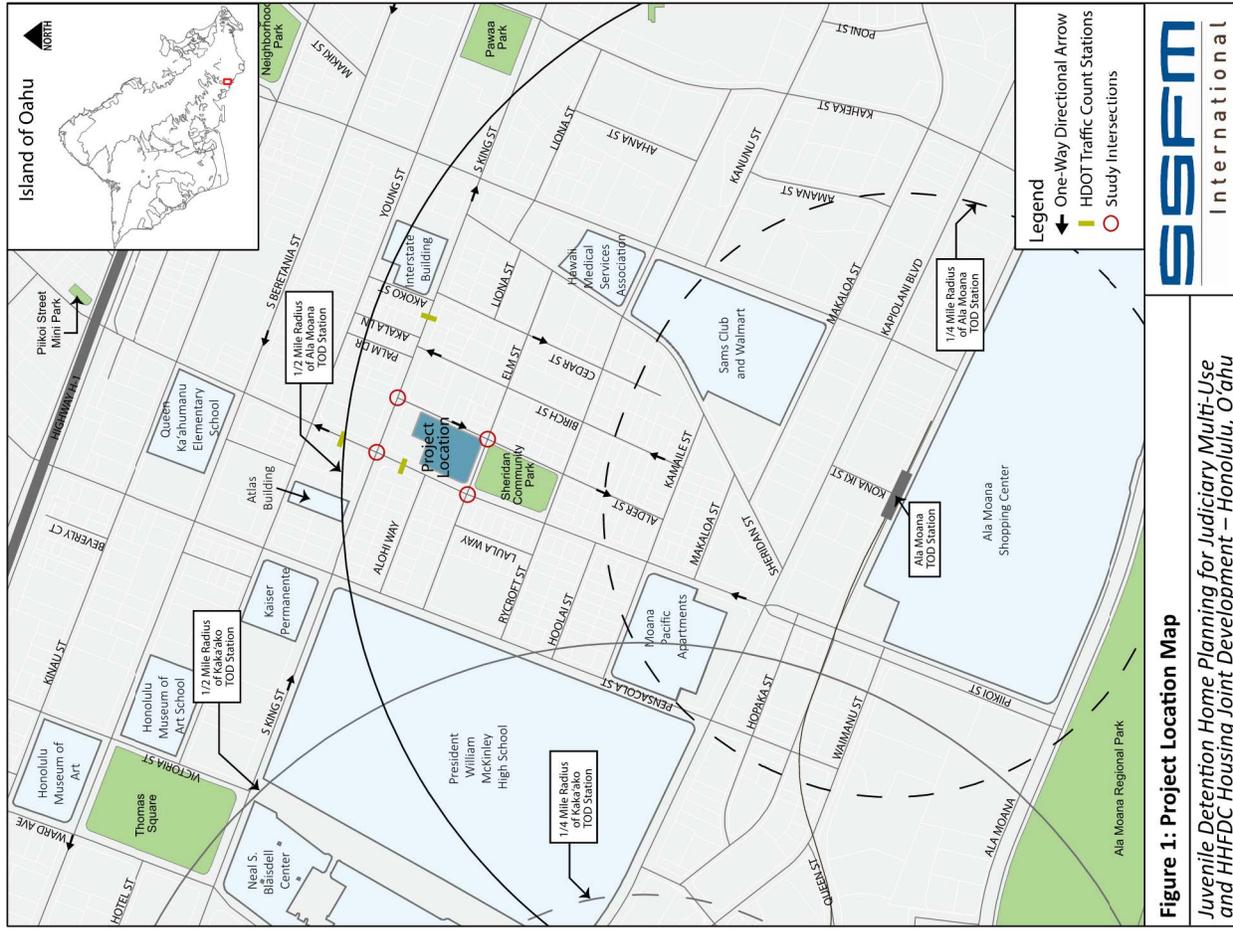


Figure 1: Project Location Map

Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development – Honolulu, O'ahu

## II. EXISTING (2015) CONDITIONS

The surrounding neighborhood is in an urban district that has a mix of commercial and residential uses. The neighborhood is also considered a high employment zone due to its proximity to commercial, institutional, and retail establishments. There are numerous single and multi-family buildings surrounding the project area, making it a medium to high-density residential neighborhood. The Sheridan Community Park is located adjacent to the project site on the makai side of Elm Street. Currently, the buildings located at 902 Alder Street have minimal use and resulting trips generated.

### A. Transportation Network

#### 1. Roadway Network Users

##### a) Passenger Vehicles and Heavy Vehicles

The surrounding transportation network consists of a grid network of streets. The block in which the project is located is approximately 450 feet by 250 feet in size. There are some "superblocks" (large blocks that interrupt the street grid) in the area which include the Neal S. Blaisdell Center/Blaisdell Concert Hall/McKinley High School to the west and Walmart/Sams Club to the east. These superblocks concentrate vehicular volumes at major intersections resulting in multiple travel lanes, long signal timing cycle lengths, and strained capacity. They make it difficult to maintain connectivity and mobility for other transportation modes.

##### b) Buses

There are no bus stops directly adjacent to the project site. However, Stop 138 is at the corner of King Street and Pi'ikoi Street and there are several other stops within a 1/4-mile of 902 Alder Street. Buses that service this area include Routes: 17, 18, 1, 1L, 2 and 2L. Bus routes that fall within 1/2-mile from the project site include Routes: 3, 5, 6, 9, 13, 40, 52, 53, and 62. The location of the bus stops near the project site are shown in Figure 3. Appendix A includes the detailed bus route schedule and map for these routes.

#### 2. Pedestrian Facilities

Sidewalks line both sides of Alder Street, Elm Street, Pi'ikoi Street, and King Street. Sidewalk widths in the surrounding project area range from six-feet on Alder Street to four to eight-feet on Pi'ikoi Street and King Street. The City and County of Honolulu's *Traffic Standards Manual* (C&C, 1979) states that in most cases, concrete sidewalks shall be at least four feet wide in residential districts. However, wider sidewalks are recommended in commercial areas. Along Alder Street, Pi'ikoi Street and King Street adjacent to the project area, there are frequent driveway locations that interrupt the sidewalks along both sides of the street. Marked crosswalks exist at the intersection of King Street and Pi'ikoi Street with pedestrian signal heads and push-buttons. Marked crosswalks also exist at the two-way stop sign controlled (TWSC) intersection of Pi'ikoi Street and Elm Street on the south leg (unprotected), east leg and west leg. An additional unprotected marked crosswalk exists across Pi'ikoi Street at the TWSC intersection with Alohi Way, approximately 230 feet from the intersection with King Street.



Figure 2: Site Plan

**3. Bicycle Facilities**

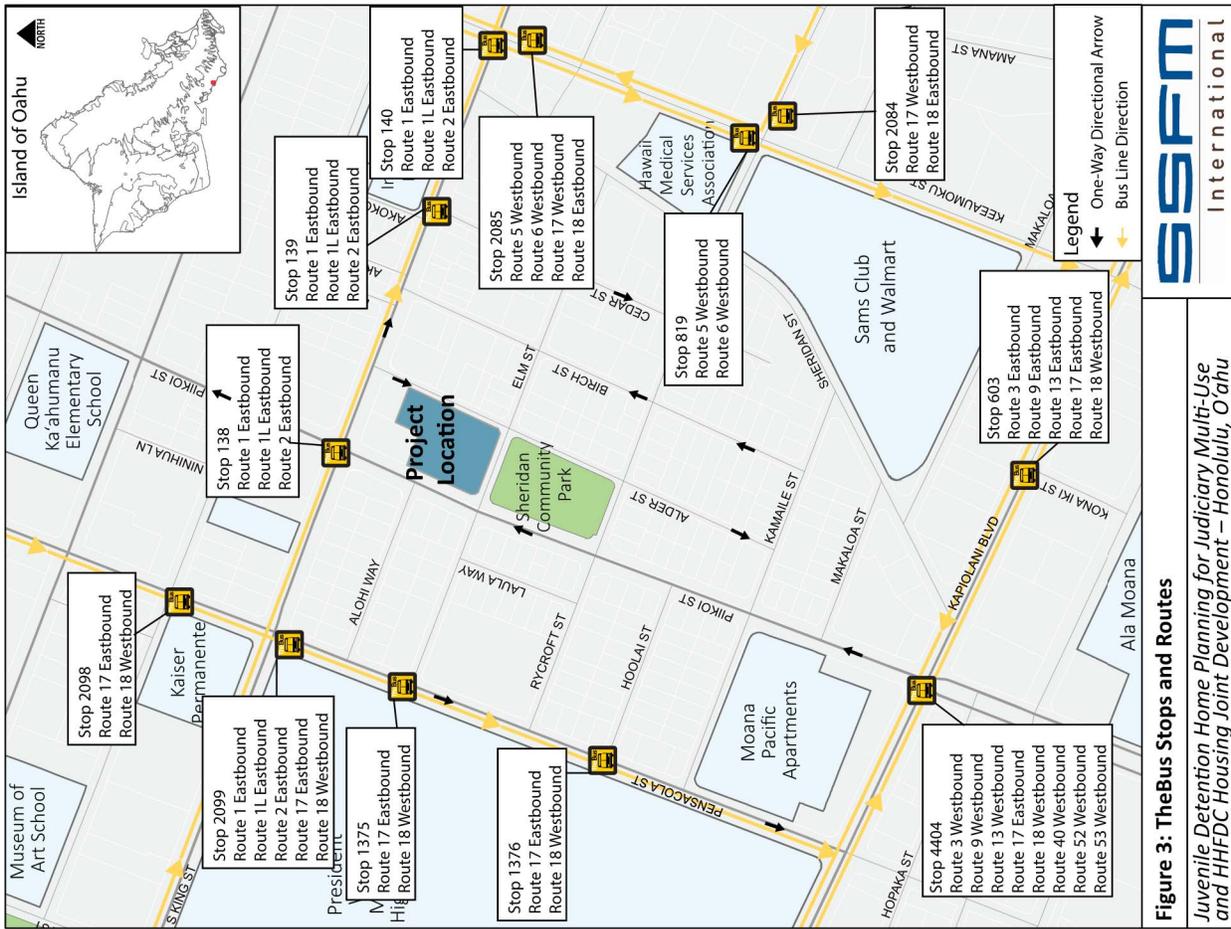
There is a two-way protected bike lane (i.e., bike lanes that are physically separated from traffic) along King Street between Alapai Street and Isenberg Street. An additional bike route exists along Young Street which is comprised of signage and sharrows. Ease of biking in the surrounding project area is not optimal because of the lack of designated bikeway connectivity and the presence of heavy vehicle traffic. There are no existing designated mauka-makai bicycle facilities in the surrounding area. Proposed mauka-makai bikeways on Pi'ikoi Street and Ke'eumoku Street are recommended in the *Oahu Bike Plan, A Bicycle Master Plan* (HHF, August 2012). Figure 4 provides the existing and proposed bicycle facilities surrounding the project site, as provided in the *Oahu Bike Plan*.

**B. Geometric Configuration**

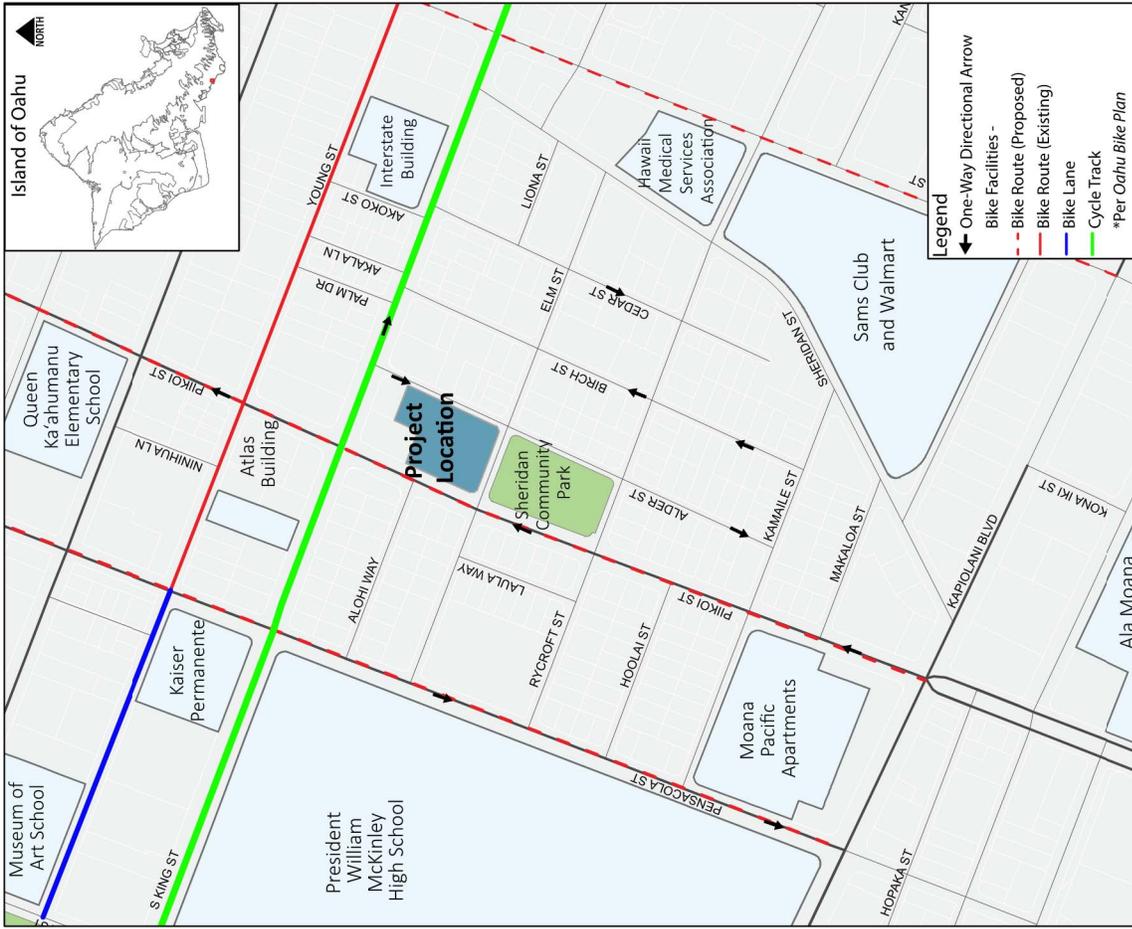
**1. Intersection Configuration**  
 Primary study intersections in the project area include the following:

1. King Street and Pi'ikoi Street
2. King Street and Alder Street
3. Alder Street and Elm Street
4. Elm Street and Pi'ikoi Street

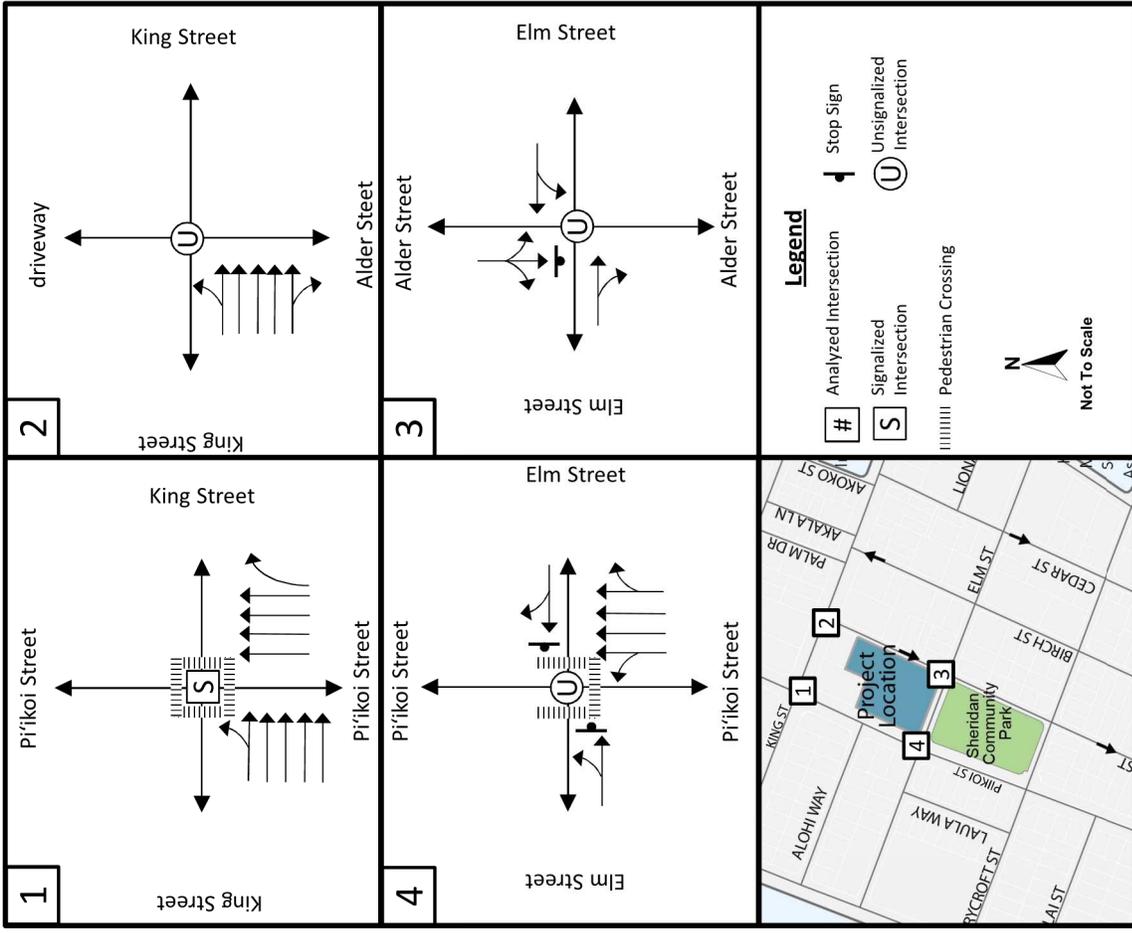
Existing (2015) lane configurations, marked pedestrian crosswalks, and traffic control at the study intersections are shown in Figure 5.



**Figure 3: TheBus Stops and Routes**  
 Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development – Honolulu, Oahu



**Figure 4: Bikeway Details**  
Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development – Honolulu, O'ahu



**Figure 5: Existing (2015) Lane Configurations**  
Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development – Honolulu, O'ahu

**2. Roadway Configuration**

King Street is a principal arterial owned by the City and County of Honolulu. It is a one-way roadway with five lanes in the eastbound direction. There is on-street parking on both sides of the street; parking is restricted on both sides from 3:30pm to 6:30pm on weekdays. King Street has sidewalks on both sides of the street. The posted speed limit is 30 mph. There is a two-way protected bike lane on the mauka side of the street between Alapai Street and Isenberg Street.

Pi'ikoi Street is a minor arterial owned by the City and County of Honolulu. It is a one-way roadway in the mauka-bound direction between Kapi'olani Boulevard and Pensacola Street. Pi'ikoi Street is a four-lane roadway adjacent to the project site. At the intersection with King Street, Pi'ikoi Street has four through lanes and one dedicated right-turn lane. Mauka of that, Pi'ikoi Street becomes six lanes between King Street and Young Street. The posted speed limit is 25 mph. There is unmarked, on-street parking on both sides of the street. Sidewalks exist on both sides of the street.

Alder Street is a one-lane, one-way roadway that runs makai-bound between King Street and Kamaile Street. The posted speed limit is 25 mph. Alder Street primarily provides access to residential units. There is no traffic control at the intersection of King Street and Alder Street since the only permitted turning movement is for vehicles making a right turn from King Street onto Alder Street. The intersection of Alder Street and Elm Street is controlled by a stop sign on the Alder Street approach. There are unmarked, on-street parking spaces on the west side of the street. Sidewalks exist along both sides of the street.

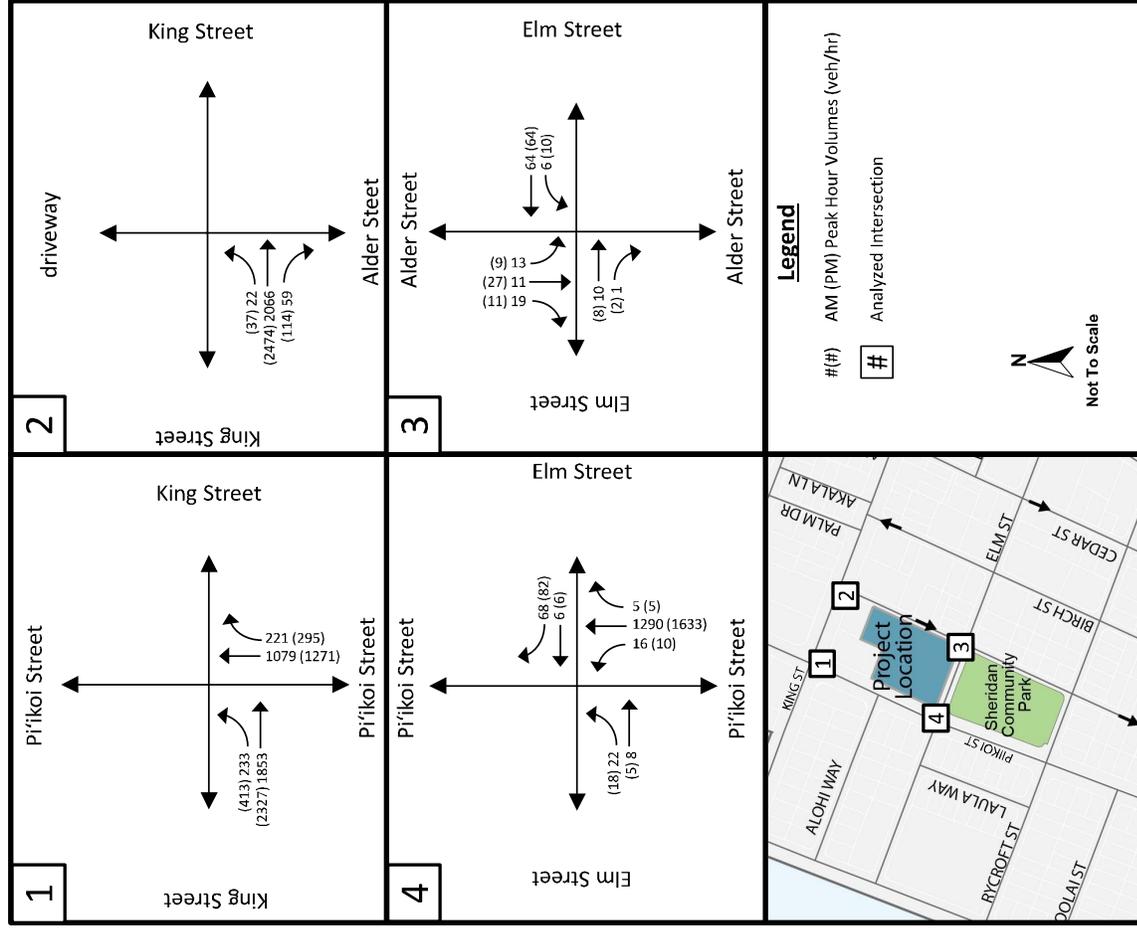
Elm Street is a two-lane local road. The road mainly provides access to residential units. The posted speed is 25 mph. Parking is allowed along the mauka side of the roadway. Sidewalks exist along both sides of the street.

Driveway accesses to existing properties in the project area, including the subject project site, are prevalent along all streets. Fronting the property, sidewalks exist along both sides of the street, with various widths. There are three driveways accessing the existing project site; two off of Alder Street and one off of Pi'ikoi Street.

**C. Volumes**

**1. Peak Hour Volumes**

Intersection peak period turning movement traffic counts were taken on Wednesday, September 16, 2015. These counts also included the tabulation of heavy vehicles, bicycles, and pedestrian movements at all intersections. Counts were taken during the AM and PM peak periods from 6:30-8:30 AM and 3:45-5:45 PM. Peak hours varied per intersection and are provided in Table 1. Peak hour vehicle volumes are shown in Figure 6. Peak hour bicycle and pedestrian volumes are shown in Figure 7. Appendix B includes the detailed traffic count data.



**Figure 6: Existing (2015) Peak Hour Vehicular Volumes**  
 Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development – Honolulu, O'ahu



Table 1: Intersection Peak Hours

Intersection	AM Peak Hour	PM Peak Hour
King Street and Pi'ikoi Street	7:15 – 8:15 AM	4:45 – 5:45 PM
King Street and Alder Street	7:00 – 8:00 AM	4:45 – 5:45 PM
Alder Street and Elm Street	7:00 – 8:00 AM	3:45 – 4:45 PM
Elm Street and Pi'ikoi Street	7:15 – 8:15 AM	4:45 – 5:45 PM

2. 24-Hour Roadway Volumes

Average daily traffic (ADT) along Pi'ikoi Street and King Street are shown in Table 2. The 2011 ADT along Pi'ikoi Street, adjacent to the project site, is approximately 27,700 vehicles per day (vpd). The 2013 ADT along Pi'ikoi Street between King Street and Young Street is approximately 31,500 vpd. The 2011 ADT along King Street, east of Pi'ikoi Street is approximately 33,000 vpd.

Table 2: Existing Roadway ADT

Roadway	Station	Location	Year	ADT
Pi'ikoi Street	B727 513 00027	Between Alohi Way and King Street	2011	27,700
King Street	B727 503 00153	Between King Street and Young Street	2013	31,500
King Street	B727 402 00310	Between Akala Lane and Cedar Street	2011	33,000

Source: Historical Traffic Station Maps (HDOT)

The 24-hour traffic volume distribution along Pi'ikoi Street and King Street at the traffic count stations shows the variation in travel patterns in the project area (see Figures 8, 9 and 10). AM and PM peak hours for Pi'ikoi Street between Alohi Way and King Street are 7:00-8:00 AM and 2:00-3:00 PM. The AM and PM peak hour volumes are about 1,500 vehicles per hour (vph) and 2,200 vph respectively.

There is no discernible morning peak hour along Pi'ikoi Street between King Street and Young Street. The peak hour occurs in the afternoon from 3:30-4:30 PM with around 2,500 vph.

The AM and PM peak hour along King Street between Akala Lane and Cedar Street is 7:00-8:00 AM and 4:45-5:45 PM. The AM and PM peak hour volume has about 2,100 vph and about 3,200 vph, respectively.

Detailed 24-hour counts are included in Appendix B.

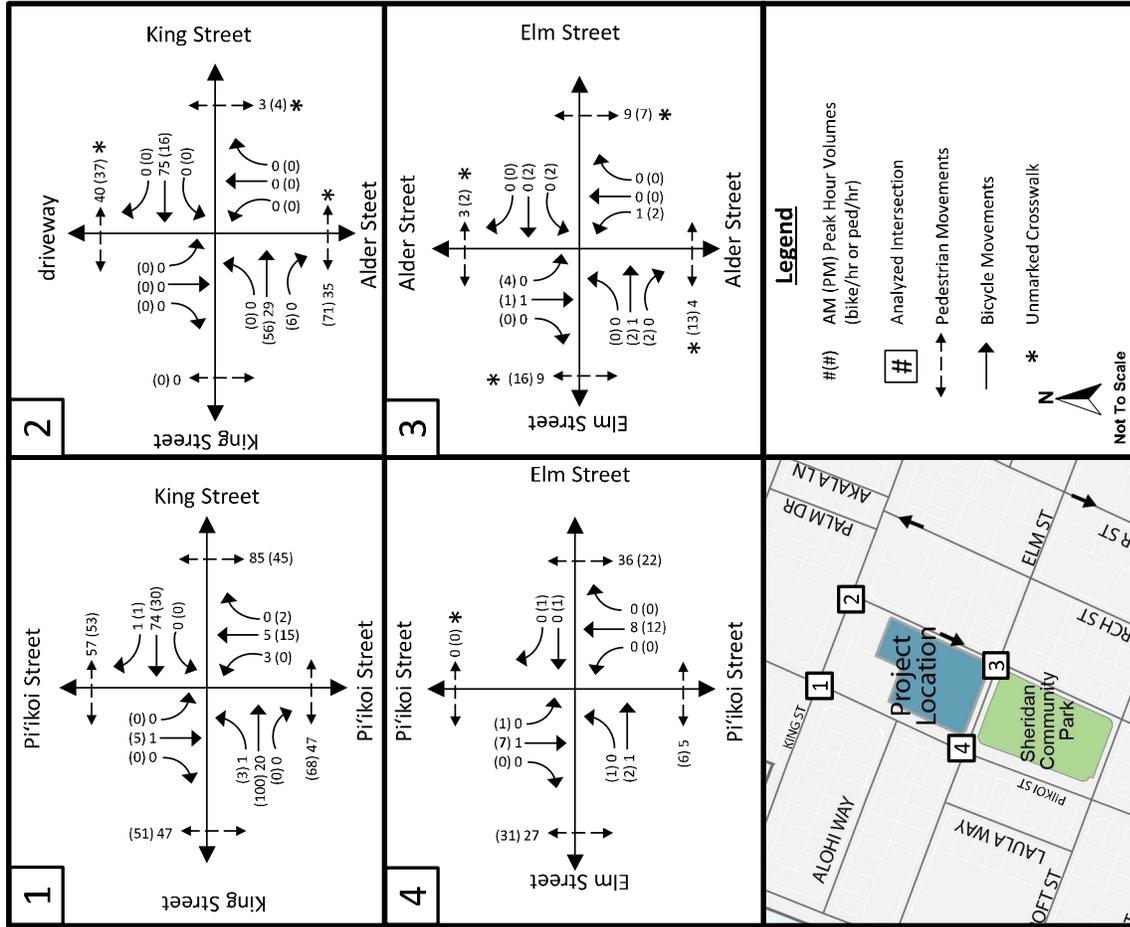


Figure 7: Existing (2015) Peak Hour Bicycle and Pedestrian Volumes

Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development – Honolulu, O'ahu



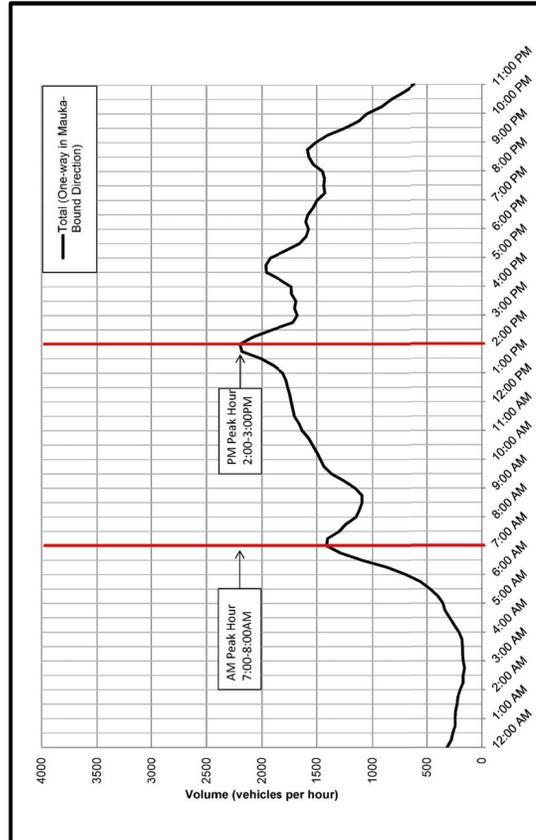


Figure 8: Pihiko Street between Alohi Way and King Street, 24-Hour Volume Distribution  
 Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development – Honolulu, O’ahu

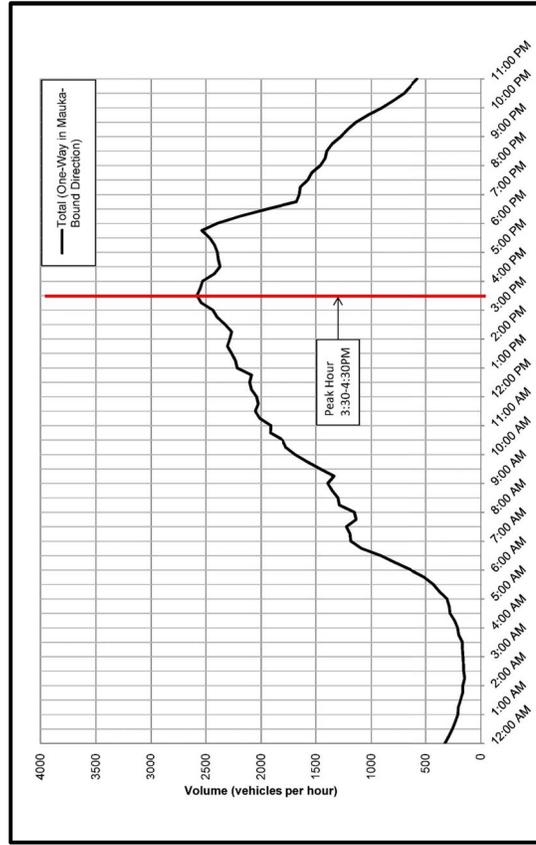


Figure 9: Pihiko Street between King Street and Young Street, 24-Hour Volume Distribution  
 Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development – Honolulu, O’ahu



3. Multi-Modal Volumes

a) **Buses and Heavy Vehicles**

Tabulated heavy vehicles include TheBus transit service, tourist bus/trolleys, and delivery trucks. Table 3 provides the peak hour volumes and percentage of heavy vehicles as compared to the total vehicles counted. These heavy vehicle percent are relatively small.

**Table 3: Intersection Peak Hour Heavy Vehicle Volumes and Percentage**

Intersection	AM Peak Hour		PM Peak Hour	
	Volumes	Percent	Volumes	Percent
King Street and Piʻikoi Street	94	2.6	29	0.6
King Street and Alder Street	62	2.8	7	0.3
Alder Street and Elm Street	2	1.3	2	1.2
Elm Street and Piʻikoi Street	42	2.8	11	0.6

Daily total TheBus ridership at Stop 338 for boarding and alighting passengers was 250 and 396 riders respectively. Stops in the area include transit centers which range up to 1,000 boarding and alighting passengers (see Table 4). Data was provided by the City and County of Honolulu, Oahu Transit Services.

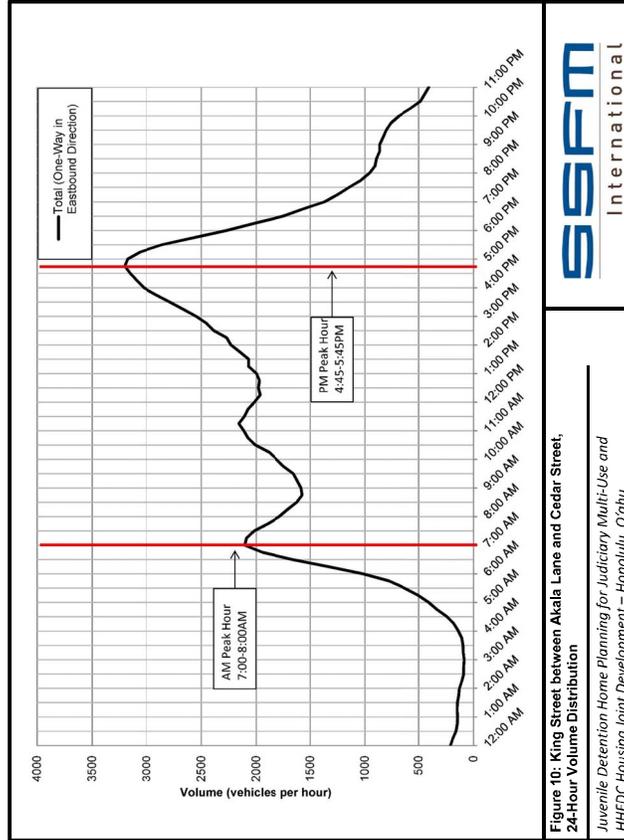
**Table 4: TheBus Daily Ridership**

Stop # (Geoid)	TheBus Stop	Daily Totals	
		On	Off
138	King Street, at Piʻikoi Street	250	396
139	King Street, at Cedar Street	82	199
140	King Street at Keʻeaumoku Street	561	679
2098	Pensacola Street, at Young Street	132	48
2099	Pensacola Street, at King Street	42	38
1375	Pensacola Street, Opposite Elm Street	2	4
1376	Pensacola Street, Opposite Hoolai Street	20	34
4404	Kapiʻolani Boulevard at Piʻikoi Street	343	246
603	Kapiʻolani Boulevard at Kona Iki Street	955	983
2084	Rycroft Street, at Keʻeaumoku Street	64	50
819	Keʻeaumoku Street, at Rycroft Street	46	62
2085	Keʻeaumoku Street at King Street	62	42
Daily Totals		2,559	2,781

Source: The Bus, City and County of Honolulu

b) **Pedestrians**

Large pedestrian volumes were counted crossing at the study intersections during the AM and PM peak hours (see Table 5). This is a result of the neighborhood being an urban district with high employment, commercial, and residential accessibility.



**Figure 10: King Street between Akala Lane and Cedar Street, 24-Hour Volume Distribution**  
 Juvenile Detention Home Planning for Judiciary Multi-Use and HHFDC Housing Joint Development – Honolulu, Oahu



Table 5: Intersection Peak Hour Pedestrian Volumes

Intersection	AM Peak Hour	PM Peak Hour
King Street and Pi'ikoi Street	236	217
King Street and Alder Street	78	112
Alder Street and Elm Street	25	38
Elm Street and Pi'ikoi Street	104	59

### c) Bicycles

High bicycle volumes were counted on King Street during the AM and PM peak hours (see Table 6) near the project area. Most of these were in the two-way protected bike lane; however these volumes were not differentiated. Some bicyclists rode outside of the bike lane; some rode on the sidewalks. Table 6 identifies all bicycles counted during the peak hours, regardless of where they were riding.

Table 6: Intersection Peak Hour Bicycle Volumes

Intersection	AM Peak Hour	PM Peak Hour
King Street and Pi'ikoi Street*	105	156
King Street and Alder Street *	104	78
Alder Street and Elm Street	3	15
Elm Street and Pi'ikoi Street	10	25

\*- Bicycles using protected bike lane included in this count.

## D. Level of Service

### I. LOS Methodology

Level of service (LOS) is an operational analysis rating system used in traffic engineering to measure the effectiveness of vehicular roadway operating conditions. There are six LOS ranging from A to F. LOS A is defined as being the least interrupted flow conditions with little or no delays, whereas LOS F is defined as conditions where extreme delays exist. Guidelines from *A Policy on Geometric Design of Highways and Streets* (AASHTO, 2011) states that appropriate LOS for an urban road is LOS D or better.

#### a) Two-Way Stop Controlled Intersection LOS

The *Highway Capacity Manual* (TRB, 2010) (referred to hereafter as *HCM*) LOS for a two-way stop controlled (TWSC) intersection is determined by the measured control delay (see Table 7). It is defined for each minor movement, not for the intersection as a whole. Vehicles traveling along the major, free-flow road of a TWSC intersection proceed through with minimal delay. Those vehicles approaching the intersection along the minor movement are controlled by a stop sign and thus experience delay attributable to the volume of vehicles passing along the free-flow road and the gaps available.

Table 7: LOS Criteria for Unsignalized Intersections

Average Control Delay (s/veh)	LOS by v/c Ratio	
	≤1.0	>1.0
≤ 10.0	A	F
>10 and ≤15	B	F
>15 and ≤25	C	F
>25 and ≤35	D	F
>35 and ≤50	E	F
>50	F	F

Source: *HCM* (TRB, 2010)

### b) Signalized Intersection LOS

The LOS analysis for signalized intersections is based on average total vehicle delay based on the methodologies of the *HCM* (TRB, 2010) shown in Table 8. High numbers of vehicles passing the intersection, long cycle lengths, inappropriate signal phasing, or a poor signal progression can result in long delays, and consequently poor LOS.

Table 8: LOS Criteria for Signalized Intersections

Average Control Delay (s/veh)	LOS by v/c Ratio	
	≤1.0	>1.0
≤ 10.0	A	F
>10 and ≤20	B	F
>20 and ≤35	C	F
>35 and ≤55	D	F
>55 and ≤80	E	F
>80	F	F

Source: *HCM* (TRB, 2010)

Another measure of intersection operation is the volume to capacity (v/c) ratio. This is the ratio of the volume of traffic utilizing the intersection compared to the maximum volume of vehicles that can be accommodated by the intersection during a specific period of time. A v/c ratio under 0.85 means the intersection is operating under capacity and excessive delays are not experienced. An intersection is operating near its capacity when v/c ratios range from 0.85 to 0.95. Unstable flows are expected when the v/c ratio is between 0.95 and 1.0. Any v/c ratio greater than or equal to 1.0 indicates that the intersection is operating at or above capacity which results in a LOS F per the *HCM* (TRB, 2010). A traffic movement can have a poor LOS but low v/c which suggests that the traffic volumes along that movement are low but have to wait a long time to make the movement. This is common for low volume protected turn movements or side streets that have to wait through a long cycle length for their split to come up.

**2. Existing Intersection LOS Conditions**

Existing (2015) unsignalized and signalized intersection LOS, v/c ratio and delay were determined for the AM and PM peak hours (see Tables 9 and 10). Three of the four study intersections were able to be analyzed for delay in their current configuration. The intersection of King Street and Alder Street has no conflict between vehicles and therefore no vehicular delay can be calculated using traffic signal software.

The unsignalized intersection of Alder Street and Elm Street resulted in LOS A for all movements. At the intersection of Pi'ikoi Street and Elm Street, Pi'ikoi has four lanes in one direction. HCM 2010 states that analysis can only be done for a maximum of three lanes in one direction. Since there are four one-way lanes along Pi'ikoi Street, the analysis cannot be completed for the existing configuration. So as to evaluate worst case conditions, the intersection was reconfigured in the traffic model to show three lanes, thereby reducing the intersection capacity. Even with this reduction in capacity, the intersection resulted in LOS D or better.

The signalized intersection of King Street and Pi'ikoi Street resulted in LOS C or better. Detailed analysis reports for these intersections during Existing (2015) conditions are provided in Appendix C.

**Table 9: Existing (2015) Unsignalized Intersection Level of Service**

Unsignalized Intersection	Approach	Movement	AM Peak Hour		PM Peak Hour	
			Delay (s/veh)	v/c	Delay (s/veh)	LOS
Alder Street and Elm Street	Eastbound	L	-	-	-	A
	Westbound	LT	7.2	0.01	7.2	0.01
	Southbound	LTR	9.0	0.06	9.0	0.05
Pi'ikoi Street and Elm Street*	Westbound	TR	20.6	0.27	27.1	0.37

\* - Model limitations required that three lanes be analyzed instead of four lanes.

**Table 10: Existing (2015) Signalized Intersection Level of Service**

Signalized Intersection	Approach	Movement	AM Peak Hour		PM Peak Hour	
			Delay (s/veh)	v/c	Delay (s/veh)	LOS
Pi'ikoi Street and King Street	Eastbound	TL	20.1	-	22.2	-
		T	24.6	0.70	27.0	0.81
		T	22.7	0.72	22.4	0.83
Northbound	R	T	15.2	0.37	19.6	0.49
		R	15.4	0.31	20.9	0.46

**III. FUTURE (2022) CONDITIONS**

Full build-out and occupancy of this project is planned for 2022. Therefore the Future Without Project (no-action) and Future With Project (full-build) conditions were evaluated for that year.

**A. Surrounding Area Conditions**

Research through the State of Hawaii Office of Environmental Quality Control (OEQC) library showed no adjacent projects planned for construction by 2022. The "Ala Moana Center 'Ewa wing expansion'" is currently under construction. Part of the expansion was opened on November 12, 2015. Further away are other projects under construction that include Kalakaua Gardens, located at 1723 Kalakaua Avenue, which has a proposed opening in early 2016. The Plaza Assisted Living, located at 1812 across from the Hawaii Convention Center, opened in October 2015. Both of these projects are designated senior housing.

Plans for final construction of the Honolulu Rail Transit guideway and rail station estimate full-build out and operation by 2019 or 2020 and, therefore, were included in the analysis of Future (2022) conditions.

**B. Transportation Network**

**1. Vehicular Facilities**

**a) Passenger Vehicles**

Vehicular accesses to the project are being proposed through a driveway off Alder Street, an existing curb cut, and a driveway off Pi'ikoi Street, across of Alohi Street.

**b) Bus and Heavy Vehicles**

Changes are expected for bus routes in advance of the Honolulu Rail Transit system opening. Such changes may include alterations of available routes, the location of the bus stops, and queuing. It is not expected that this will have a significant effect on this project.

**2. Pedestrian Facilities**

The *Ala Moana Neighborhood TOD Plan* (RTKL, 2014) calls for improving pedestrian facilities. These improvements provide additional width and buffer from traffic with the redevelopment of parcels in the area to improve walkability in this urban TOD TIZ area.

**3. Bicycle Facilities**

Future bikeways included in the *Oahu Bike Plan, A Bicycle Master Plan* (HH&F, August 2012) are shown on Figure 4. Priority I projects in the project area anticipated to be built in the next five to ten years include a bike route along Pi'ikoi Street. It is expected that this could be in the form of standard or protected bike lanes. The lack of mauka-makai bike facilities, and forthcoming installation of bike stations with Bikeshare Hawai'i, increases the desirability and likely use of a facility.

**C. Geometric Configuration**

With limited right-of-way in this urban transportation network, no changes in roadway configuration are expected. Future (2022) conditions are evaluated using existing lane configurations which are shown in Figure 5.

**D. Traffic Volumes**

**1. Background Growth**

Changes in traffic volume along roadways in the surrounding area over the past ten years have been mixed. Despite large scale development and increased density from high-rise condominiums, vehicular traffic volumes have not grown. A decrease in ADT is noted for some roadway segments while there are slight increases for others. Increases in redevelopment and added density will be offset by a transition towards multimodal mobility due to the existing urban nature and future TOD TLZ. Therefore, it is likely that more people moving into this area will look towards walking, biking, and taking transit as opposed to making personal vehicle trips. Pi'ikoi Street provides this access to/from the Ala Moana Rail Station while the rail guideway parallels King Street and therefore should absorb trips. Therefore, it was assumed there will be no surrounding area vehicular growth in Future (2022) conditions and Future (2022) Without Project Volumes will be similar to Existing (2015) conditions.

**2. Project Related Volumes**

The addition of trips resulting from the project was calculated using the four step trip generation methodology: trip generation, trip distribution, modal choice, route assignment.

**a) Trip Generation**

The proposed joint mixed-use development is planning to include affordable apartment units and a juvenile detention service center. The proposed project would result in the construction of approximately 180 affordable rental housing units (not exceeding 187 units) and an approximately 35,000 to 35,455 square foot juvenile detention center. Resulting trip generation for the proposed development was calculated using *Trip Generation, 8<sup>th</sup> Edition* (ITE, 2008) and related trip generation rates are shown in Table 11. The juvenile detention center was assumed to be similar to the “single tenant office building” land use while the affordable apartment units was similar to the “high rise apartment”. Resulting trip generation volumes for the AM and PM peak hours are shown in Table 12.

**Table 11: Development Trip Generation Rates**

Land Use [ITE Code]	Quantity	Units	Trip Generation Average Rate	
			AM Peak Hour	PM Peak Hour
High Rise Apartment [222]	187	Dwelling Units	0.30	0.35
Single Tenant Office Building [715]	35,455	1,000 Square Feet	1.80	1.73
				Daily
				4.20
				11.57

**Table 12: Development Trip Generation Volumes**

Land Use [ITE Code]	Project Related Trips					
	AM Peak Hour		PM Peak Hour		Daily	
	In	Out	Total	In	Out	Total
High Rise Apartment [222]	14	42	56	40	25	65
Single Tenant Office Building [715]	57	7	64	9	52	61
						410

Methodologies described in *Trip Generation Handbook, 2<sup>nd</sup> Edition* (ITE, June 2004) state that although total project trips are calculated for a specified development, the total trips will not necessarily be new vehicles added to the adjacent roadways. The three types of project related trips considered are pass-by trips, diverted trips and primary trips. The definition of each type of trip is shown in Table 13.

**Table 13: Project Related Trip Definitions**

Type	Definition
Pass-by	Traffic currently passing the site on an adjacent street or roadway that offers direct access to the generator.
Diverted	Trips that are attracted from the traffic volume on roadways within the vicinity of the generator but require a diversion from that roadway to another roadway to gain access to the site.
Primary	Trips made for the specific purpose of visiting the generator. The stop at the generator is the primary reason for the trip.

Source: *Trip Generation Handbook, 2<sup>nd</sup> Edition* (ITE, June 2004)

All trips from the juvenile detention services center and the housing development will be considered to be primary trips and will be considered for distribution.

**b) Trip Distribution**

Existing and future tripmakers' origin and destination were considered when evaluating future travel in the area. The *Kakaako Mauka Area Plan Transportation Analysis* (AECOM, April 2009) identified the future trip distribution trends (see Figure 11) using the *OahuMPO Travel Demand Forecast Model*. This future trip distribution is considered applicable for the joint mixed-use facility development because the study area is directly adjacent to the project site.

The following trip distribution was assumed for the project related trips:

- Westbound (via surface streets): 25%
- East bound (via surface streets): 22%
- Westbound (via H-1): 19%
- East bound (via H-1): 24%
- Mauka bound: 3%, and,
- Within the project area: 7%.



Figure 11: Future Trip Distribution

**c) Modal Choice**

This project site is in an urban setting with high proximity to existing transit and rail options, a high degree of alternative travel modes exist. The *Kakaako Mauka Area Plan Transportation Analysis* (AECOM, April 2009) states that because of the difficulty in estimating ongoing redevelopment and TOD elements on travel behavior, existing modal split is still deemed appropriate for use in the near term. The proposed housing development involves affordable housing. It can be assumed that there will be a lower use of personal vehicles and higher use of other transportation modes as compared to a similarly sized market-priced development. However, as a “worst case” scenario (highest volume of vehicle trips) the existing modal split percentage was used to calculate project related trips (see Table 14).

**Table 14: Project Related Transportation Mode**

Transportation Mode	Percentage*	Project Related Trips	
		AM Peak Hour	PM Peak Hour
Private Vehicle	76.9%	92	99
Transit (Bus and Rail)	12.8%	15	15
Bike	2.3%	3	3
Walk	8.0%	10	9

\* Source: *Kakaako Mauka Area Plan Transportation Analysis* (AECOM, April 2009)

**d) Route Assignment**

Project related trips associated with the proposed development during the AM and PM peak hours were distributed along the adjacent roadways using existing intersection distribution and future travel patterns. Project related vehicular volumes (see Figure 12) were distributed through the study intersections. Project related transit use will increase the demand for and volume from transit riders.

**3. Future Peak Hour Volumes**

Project related vehicular volumes were added to the Existing (2015) traffic volumes for the resulting Future (2022) With Project traffic volumes shown in Figure 13. This is reflective of future traffic conditions after the build out of the judiciary and housing development project.

**4. Future 24-Hour Volumes**

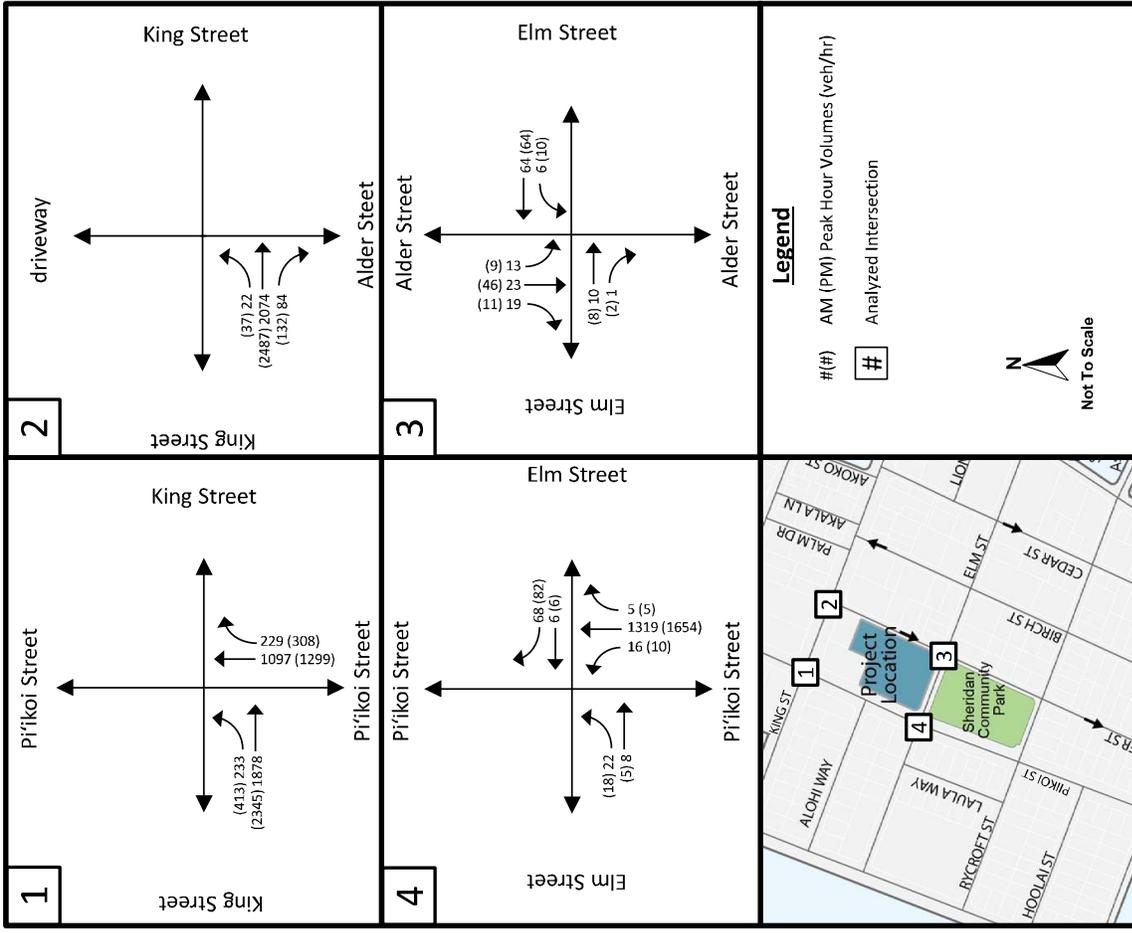
Considering the anticipated growth in the area, projected Future (2022) ADT in the project area is shown in Table 15.

**Table 15: Future (2022) Roadway ADT**

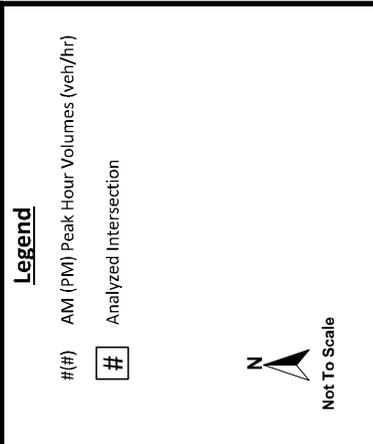
Roadway	Location	ADT
Pi'ikoi Street	Between Alohi Way and King Street	28,100
	Between King Street and Young Street	31,700
King Street	Between Akala Lane and Cedar Street	33,100



**Figure 12: Project Related Peak Hour Volumes**  
 Juvenile Detention Home Planning for Judiciary Multi-Use and  
 HHFDC Housing Joint Development – Honolulu, O'ahu



**Figure 13: Future (2022) With Project Peak Hour Volumes**  
 Juvenile Detention Home Planning for Judiciary Multi-Use and  
 HHFDC Housing Joint Development – Honolulu, O'ahu



5. Multi-Modal Volumes

a) **Buses and Heavy Vehicles**

It is anticipated that for Future (2022) conditions, bus transit services will be rerouted, if necessary, to accommodate the changes in demand.

b) **Pedestrians**

It is anticipated that with additional TOD development in the area, pedestrian volumes will increase, as will the facilities and infrastructure to accommodate them with the redevelopment of parcels.

c) **Bicycles**

As with pedestrian increase, the TOD development in the area, as well as the additional dedicated bicycle facilities and bikeshare use will increase volumes in the area.

E. Level of Service

1. **Future (2022) Without Project LOS**

The LOS results for Future (2022) Without Project conditions will remain similar to Existing (2015) conditions.

2. **Future (2022) With Project LOS**

Future (2022) With Project LOS, v/c ratios and delay for the study intersections are shown in Tables 16 and 17. As with Existing conditions, at the intersection of Pi'ikoi Street and Elm Street, a lane configuration was used that has three lanes along Pi'ikoi Street. For Future (2022) With Project conditions, the intersections operated at acceptable LOS D or better. Detailed analysis reports for Future (2022) With Project conditions are provided in Appendix D.

**Table 16: Future (2022) With Project Unsignalized Intersection Level of Service**

Unsignalized Intersection	Approach	Movement	AM Peak Hour		PM Peak Hour			
			Delay (s/veh)	v/c	LOS	Delay (s/veh)	v/c	LOS
Alder Street and Elm Street	Eastbound	L	-	-	A	-	A	
	Westbound	LT	7.2	0.01	A	7.2	0.01	A
	Southbound	LTR	9.1	0.07	A	9.1	0.08	A
Pi'ikoi Street and Elm Street*	Westbound	TR	21.2	0.27	C	27.8	0.37	D

\* - Model limitations required that three lanes be analyzed instead of four lanes.

**Table 17: Future (2022) With Project Signalized Intersection Level of Service**

Signalized Intersection	Approach	Movement	AM Peak Hour		PM Peak Hour			
			Delay (s/veh)	v/c	LOS	Delay (s/veh)	v/c	LOS
Pi'ikoi Street and King Street	Eastbound	TL	20.2	-	C	22.4	-	C
		T	24.7	0.70	C	27.3	0.81	C
		T	22.7	0.73	C	22.6	0.83	C
Northbound	T	15.4	0.38	B	19.8	0.50	B	
	R	15.7	0.32	B	21.4	0.48	C	

F. Mitigation

With the proposed redevelopment of the project site, best practices for multi-modal access should be constructed to improve access and reduce the demand for passenger vehicle use.

1. **Pedestrians**

Pedestrians should have wide sidewalks separated from vehicular travelways with landscaped buffers and street trees to provide shade. At corners, curb extensions should be added where possible to shorten the distance for pedestrian crossings. The marked crosswalk across Pi'ikoi Street at the intersection with Aloh Way should be considered for removal due to it being located less than 300 feet from the intersection (and crosswalk) at King Street. Due to the 60-foot crossing distance, the marked crosswalk across Pi'ikoi Street at Elm Street should be studied for potential improved protection by adding beacons or other pedestrian safety measures.

2. **Bicycles**

With the future potential of bike lanes on Pi'ikoi Street, the curb line should remain along the east side of Pi'ikoi Street, for the possible removal or relocation of on-street parking and installation of bike lanes. To improve accessibility and access, the development should ensure ease of access to the building as well as provide on-site bike storage.

3. **Transit**

With no transit stops directly adjacent to the project, pedestrian accessibility and access to these stops should be improved through pedestrian improvements noted previously.

4. **Vehicles**

The proposed vehicular access locations are over 150 feet from adjacent intersections on Alder Street and across from the intersection with Aloh Way on Pi'ikoi Street so as to reduce conflicts. This also results in a reduction in the number of access points to the project site. As shown with the acceptable LOS at all intersections, a reduction of one travel lane along Pi'ikoi Street would likely not result in unacceptable operations. Therefore, the ability to remove one travel lane in favor of a dedicated bikeway is feasible. The vehicle volume able to travel through the intersections is actually constrained by the lack of capacity at intersections further mauka. Therefore, vehicle demand is likely greater than actual volume counted. The limiting factor is in the ability to process vehicles at the H-1 entrance.

#### IV. SUMMARY

The Judiciary's Juvenile Detention Home Multi-Use and HHFDC's Housing Joint Development will include approximately 35,000 square foot juvenile services center and approximately 180 residential units at 902 Alder Street. The proposed completion and full occupancy are anticipated to occur in 2022 which follows the expected construction and operation of the Honolulu Rail Transit. With the proposed construction of the Ala Moana Rail Station, the project falls within a transit oriented development transit impact zone. Vehicular access to this facility will be through two driveways; one off of Alder Street and the other off of Pi'ikoi Street, across from Alohi Street.

Existing (2015) conditions resulted in appropriate LOS conditions for King Street and Pi'ikoi Street intersection and at Alder Street and Elm Street. With the development of the Honolulu Rail Transit and the resulting redevelopment in the TOD areas, including associated multi-modal infrastructure, more travelers will utilize alternative modes of transportation. This includes walking, bicycling, bus and rail transit. With the addition of project related traffic volumes, Future (2022) With Project conditions resulted in appropriate intersection operations.

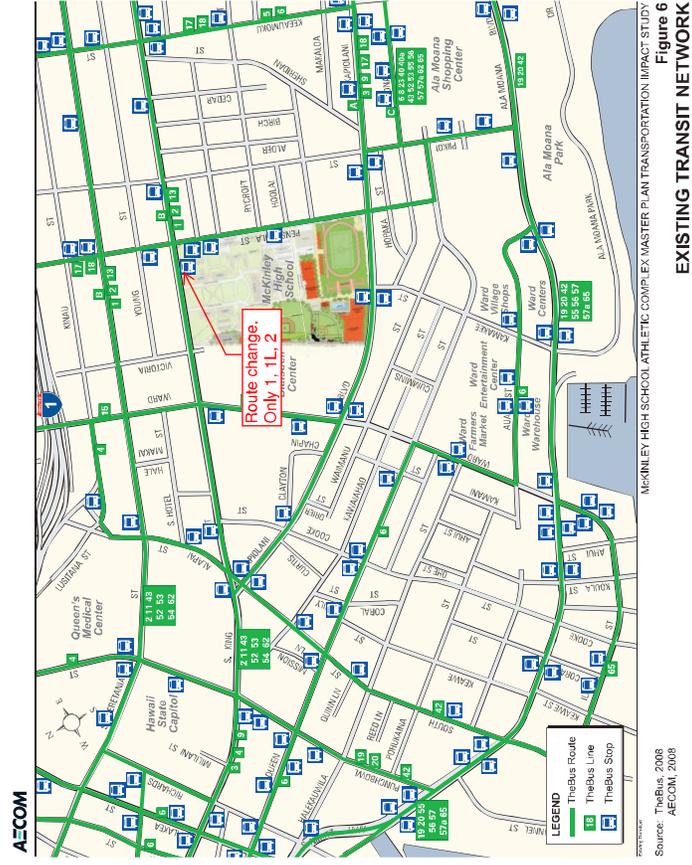
In conclusion, the proposed Judiciary's Juvenile Detention Home Multi-Use and HHFDC's Housing Joint Development will have minimal impact on the transportation network. Multi-modal infrastructure could be improved by providing adequate sidewalks and pedestrian crossings as well as bicycle accessibility and storage on site.

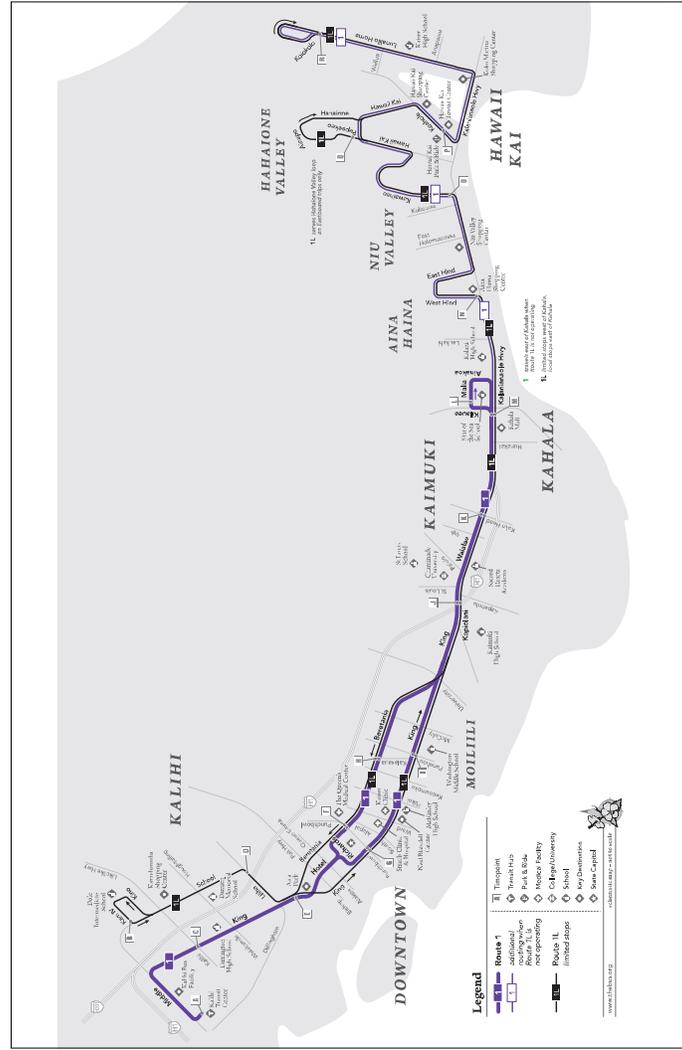
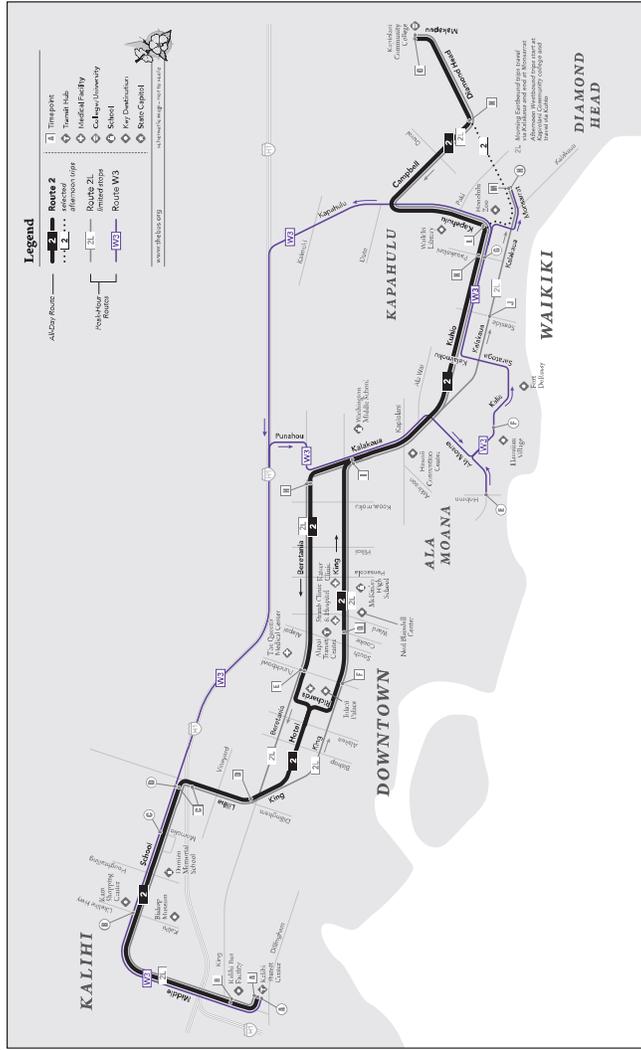
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# Appendix A

## TheBus Route Maps

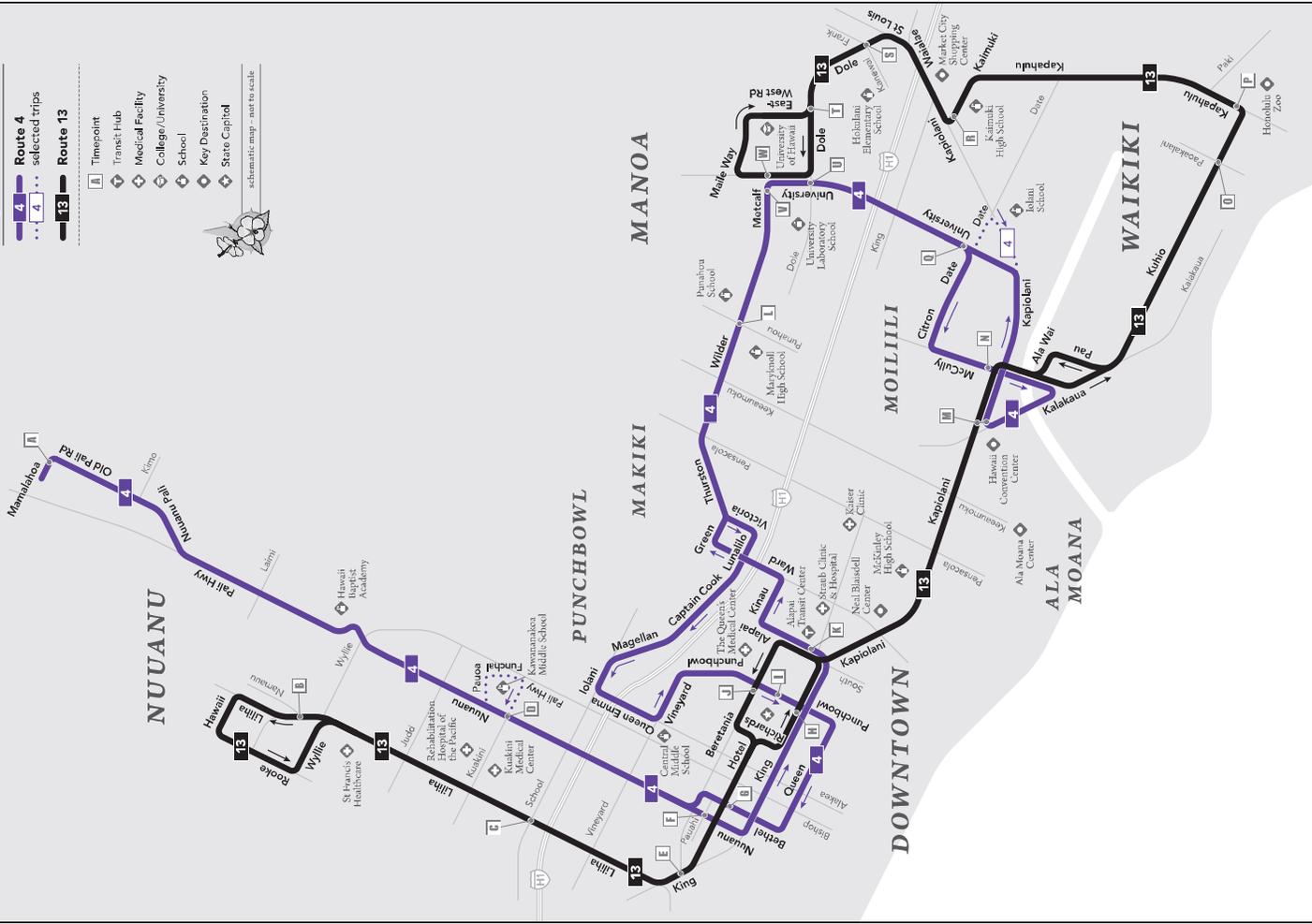




**Legend**

-  **Route 4**
-  selected trips
-  **Route 13**
-  selected trips

-  Timepoint
  -  Transit Hub
  -  Medical Facility
  -  College/University
  -  School
  -  Key Destination
  -  State Capitol
- schematic map - not to scale

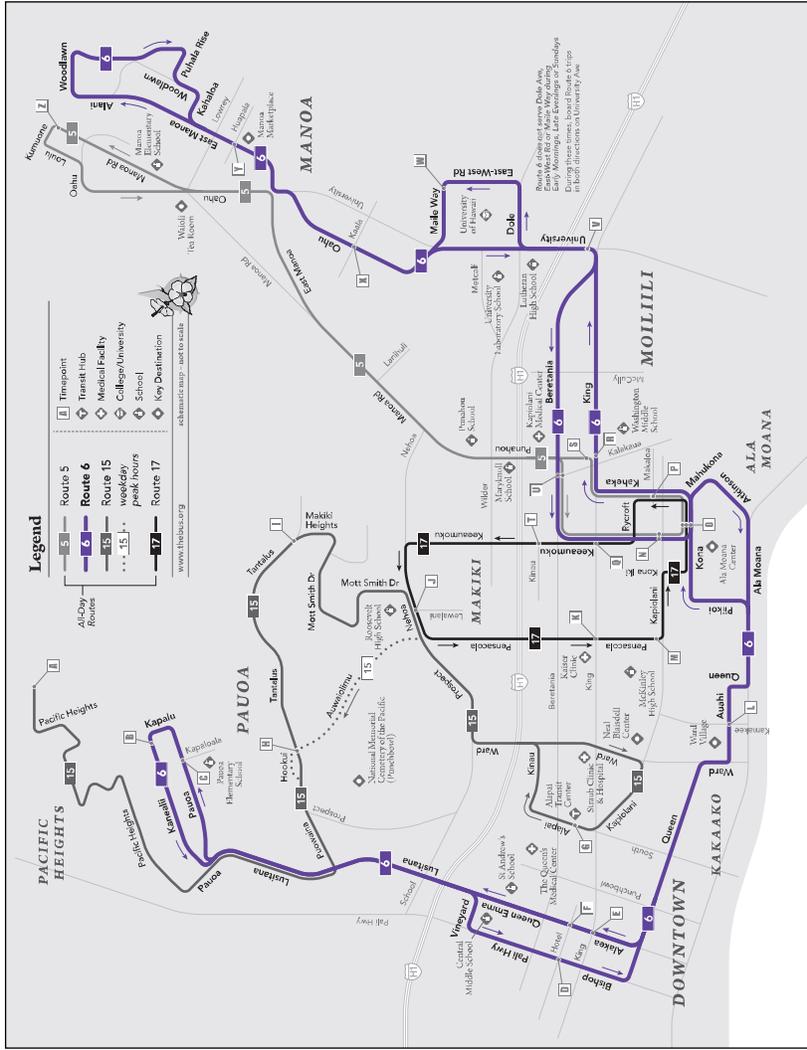
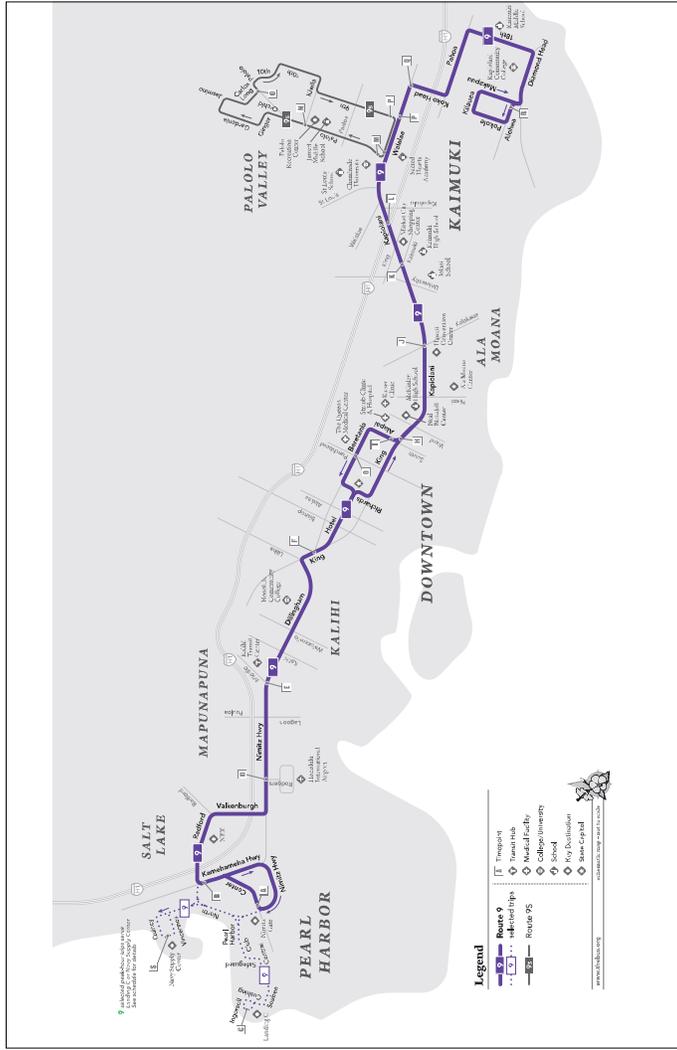


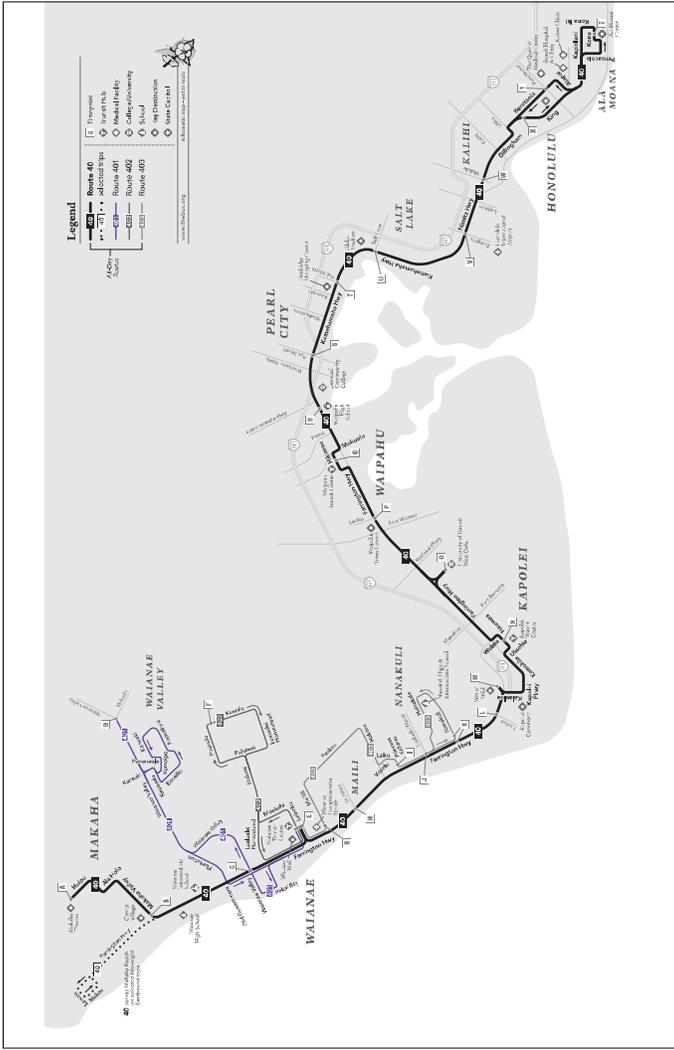
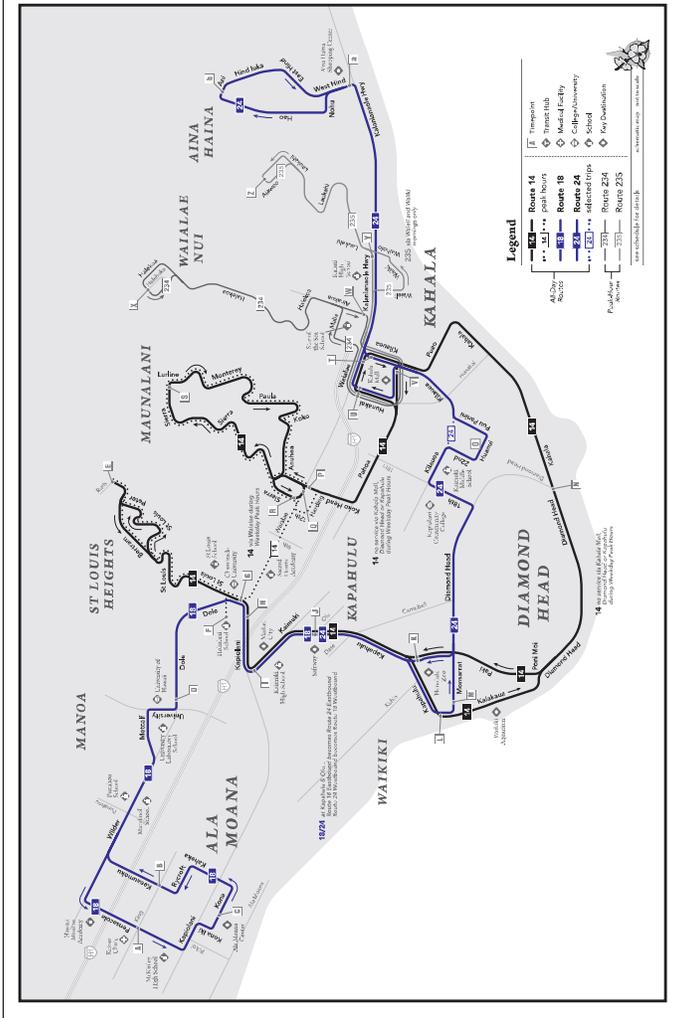
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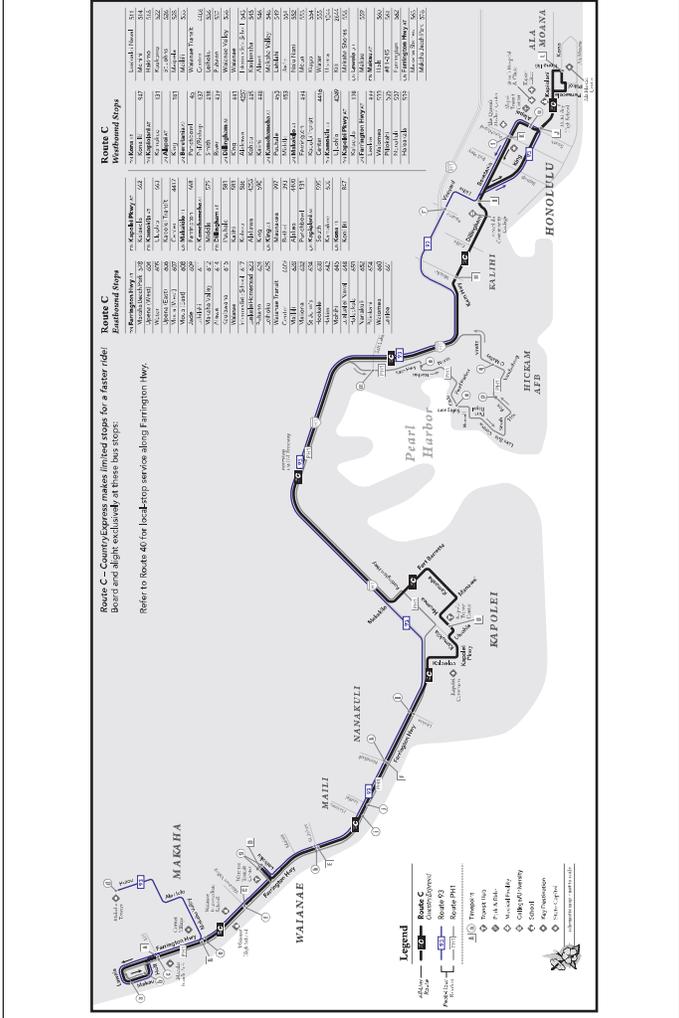
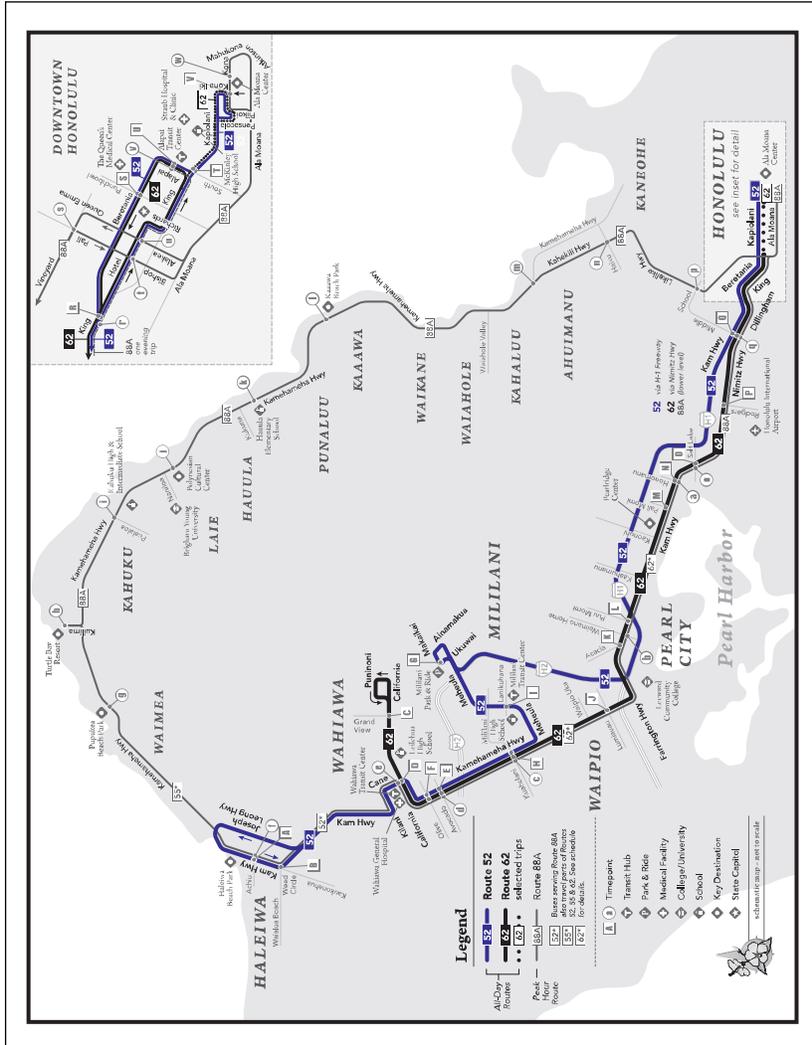
-  **Route 3**
-  selected trips
-  **Route 5**
-  selected trips

-  Timepoint
  -  Transit Hub
  -  Medical Facility
  -  College/University
  -  School
  -  Key Destination
  -  State Capitol
- schematic map - not to scale

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# Appendix B

## Intersection Peak Period Traffic Counts and 24-Hour Traffic Data

**SSFIM International**

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 PiliKoi\_King AM  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

Start Time	Pikea Street Southbound				King Street Westbound				Pikea Street Northbound				King Street Eastbound					
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
06:30 AM	0	0	0	4	0	0	0	9	0	204	29	7	240	24	213	0	240	
06:45 AM	0	0	0	13	0	0	0	15	0	435	44	18	504	70	518	0	582	
<b>Total</b>	0	0	0	17	0	0	0	25	0	435	51	18	504	70	518	0	622	
07:00 AM	0	0	0	16	0	0	0	17	0	283	48	15	356	49	386	0	443	
07:15 AM	0	0	0	14	0	0	0	9	0	263	44	16	322	46	409	0	356	
07:30 AM	0	0	0	11	0	0	0	11	0	263	56	23	342	46	409	0	356	
07:45 AM	0	0	0	11	0	0	0	16	0	292	53	19	363	69	461	0	21	
<b>Total</b>	0	0	0	48	0	0	0	52	0	1123	224	75	1422	223	1822	0	46	
08:00 AM	0	0	0	15	0	0	0	22	0	219	45	25	319	59	417	0	485	
08:15 AM	0	0	0	7	0	0	0	2	0	230	41	10	281	55	379	0	7	
<b>Grand Total</b>	0	0	0	83	0	0	0	101	0	2037	361	128	2526	407	3136	0	76	
<b>Approach %</b>	0	0	0	100	0	0	0	100	0	86.6	14.3	5.1	57.8	11.2	86.7	0	2.1	
<b>Total %</b>	0	0	0	13	0	0	0	16	0	39.2	3.7	1.8	24.9	3.4	39.5	0	7.2	
% Heavy Vehicles	0	0	0	100	0	0	0	100	0	87.4	88.3	100	87.7	86.8	86.9	0	100	
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	2.6	1.7	0	3.9	3.2	3.9	0	3.1	
Peak Hour	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM	06:45 AM
Peak Hour Approach %	0	0	0	100	0	0	0	100	0	86.6	14.3	5.1	57.8	11.2	86.7	0	2.1	
Peak Hour Total %	0	0	0	13	0	0	0	16	0	39.2	3.7	1.8	24.9	3.4	39.5	0	7.2	
% Heavy Vehicles	0	0	0	100	0	0	0	100	0	87.4	88.3	100	87.7	86.8	86.9	0	100	
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	2.6	1.7	0	3.9	3.2	3.9	0	3.1	

Start Time	Pikea Street Southbound				King Street Westbound				Pikea Street Northbound				King Street Eastbound				
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	
07:15 AM	0	0	0	14	0	0	0	16	0	299	53	18	366	69	444	0	71
07:30 AM	0	0	0	14	0	0	0	16	0	299	53	18	366	69	444	0	71
07:45 AM	0	0	0	14	0	0	0	16	0	299	53	18	366	69	444	0	71
<b>Total</b>	0	0	0	42	0	0	0	48	0	897	160	54	1011	207	1332	0	213
Approach %	0	0	0	100	0	0	0	100	0	86.6	14.3	5.1	57.8	11.2	86.7	0	2.1
Total %	0	0	0	13	0	0	0	16	0	39.2	3.7	1.8	24.9	3.4	39.5	0	7.2
% Heavy Vehicles	0	0	0	100	0	0	0	100	0	87.4	88.3	100	87.7	86.8	86.9	0	100
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	2.6	1.7	0	3.9	3.2	3.9	0	3.1

# SSFIM International

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 PliikoI\_King PM  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

Start Time	Pikee Street Southbound			King Street Westbound			Pikee Street Northbound			King Street Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Approach %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Peak Hour Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Heavy Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Passenger Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Start Time	Pikee Street Southbound			King Street Westbound			Pikee Street Northbound			King Street Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Approach %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Peak Hour Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Heavy Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Passenger Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Start Time	Pikee Street Southbound			King Street Westbound			Pikee Street Northbound			King Street Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Approach %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Peak Hour Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Heavy Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Passenger Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Start Time	Pikee Street Southbound			King Street Westbound			Pikee Street Northbound			King Street Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Approach %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Peak Hour Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Heavy Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Passenger Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

# SSFIM International

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 PliikoI\_King AM  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

Start Time	Pikee Street Southbound			King Street Westbound			Pikee Street Northbound			King Street Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Approach %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Total %</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>Peak Hour Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Heavy Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
<b>% Passenger Vehicles</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Start Time	Pikee Street Southbound			King Street Westbound			Pikee Street Northbound			King Street Eastbound			Int. Total
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
09:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>0</b>	<b>0</b>											

**SSFIM International**

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 PiliKoi\_King PM  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

Start Time	Pikea Street Southbound						King Street Westbound						Pikea Street Northbound						King Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:45 PM	1	1	0	0	2	2	0	6	0	0	6	6	0	6	0	0	6	6	0	7	0	0	7	7
Total	1	1	0	0	2	2	0	6	0	0	6	6	0	6	0	0	6	6	0	7	0	0	7	7
04:00 PM	0	1	0	0	1	1	0	8	0	0	8	8	1	4	0	0	5	5	0	8	0	0	8	8
04:15 PM	0	1	0	0	1	1	0	10	0	0	10	10	1	4	0	0	5	5	0	18	0	0	18	18
04:30 PM	0	2	0	0	2	2	0	8	0	0	8	8	0	2	0	0	2	2	0	20	0	0	20	20
04:45 PM	0	3	0	0	3	3	0	6	0	0	6	6	0	2	0	0	2	2	0	25	0	0	25	25
Total	0	5	0	0	5	5	0	31	0	0	31	31	1	10	0	0	11	11	2	64	0	0	64	64
05:00 PM	0	0	0	0	0	0	0	7	0	0	7	7	0	7	0	0	7	7	0	18	0	0	18	18
05:15 PM	0	3	0	0	3	3	0	4	0	0	4	4	0	2	0	0	2	2	0	21	0	0	21	21
05:30 PM	0	3	0	0	3	3	0	4	0	0	4	4	0	2	0	0	2	2	0	23	0	0	23	23
Grand Total	1	11	0	0	12	12	0	58	1	0	59	59	2	28	2	0	31	31	3	154	2	0	159	159
Approach %	8.3	91.7	0	0	0	0	3.2	96.3	1.7	0	22.6	22.6	0.4	10.7	0.8	0	11.9	11.9	1.1	59	0.8	0	60.9	60.9
Total %	0.4	4.2	0	0	4.9	4.9	0	22.2	0.4	0	22.6	22.6	0.4	10.7	0.8	0	11.9	11.9	1.1	59	0.8	0	60.9	60.9

Start Time	Pikea Street Southbound						King Street Westbound						Pikea Street Northbound						King Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total
03:45 PM	1	1	0	0	2	2	0	6	0	0	6	6	0	6	0	0	6	6	0	7	0	0	7	7
Total	1	1	0	0	2	2	0	6	0	0	6	6	0	6	0	0	6	6	0	7	0	0	7	7
04:00 PM	0	1	0	0	1	1	0	8	0	0	8	8	1	4	0	0	5	5	0	8	0	0	8	8
04:15 PM	0	1	0	0	1	1	0	10	0	0	10	10	1	4	0	0	5	5	0	18	0	0	18	18
04:30 PM	0	2	0	0	2	2	0	8	0	0	8	8	0	2	0	0	2	2	0	20	0	0	20	20
04:45 PM	0	3	0	0	3	3	0	6	0	0	6	6	0	2	0	0	2	2	0	25	0	0	25	25
Total	0	5	0	0	5	5	0	31	0	0	31	31	1	10	0	0	11	11	2	64	0	0	64	64
05:00 PM	0	0	0	0	0	0	0	7	0	0	7	7	0	7	0	0	7	7	0	18	0	0	18	18
05:15 PM	0	3	0	0	3	3	0	4	0	0	4	4	0	2	0	0	2	2	0	21	0	0	21	21
05:30 PM	0	3	0	0	3	3	0	4	0	0	4	4	0	2	0	0	2	2	0	23	0	0	23	23
Grand Total	1	11	0	0	12	12	0	58	1	0	59	59	2	28	2	0	31	31	3	154	2	0	159	159
Approach %	8.3	91.7	0	0	0	0	3.2	96.3	1.7	0	22.6	22.6	0.4	10.7	0.8	0	11.9	11.9	1.1	59	0.8	0	60.9	60.9
Total %	0.4	4.2	0	0	4.9	4.9	0	22.2	0.4	0	22.6	22.6	0.4	10.7	0.8	0	11.9	11.9	1.1	59	0.8	0	60.9	60.9

**SSFIM International**

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 King\_Alder AM adj  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

Start Time	Alder Street Southbound						King Street Westbound						Alder Street Northbound						King Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Passenger Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Time	Alder Street Southbound						King Street Westbound						Alder Street Northbound						King Street Eastbound					
	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total	Left	Thru	Right	Peds	App. Total	Int. Total
06:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
06:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Passenger Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



# SSFIM International

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 King\_Alder PM adj  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

Start Time	Alder Street Southbound				King Street Westbound				Alder Street Northbound				King Street Eastbound						
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			
03:45 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	7	0	2	9	14
04:00 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	0	1	3	5	11	17
04:15 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	10	0	2	12	17
04:30 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	11	2	1	14	20
04:45 PM	0	0	0	0	0	2	0	0	0	0	0	0	0	0	14	2	1	18	29
Total	0	0	0	0	0	20	0	0	0	0	38	5	6	47	60.3	5.1	8.1	73.5	106
05:00 PM	0	0	0	0	0	3	0	0	0	0	12	1	2	15	18	0	0	33	48
05:15 PM	0	0	0	0	0	4	0	0	0	0	16	0	1	12	18	0	0	34	49
05:30 PM	0	0	0	0	0	4	0	0	0	0	11	0	1	12	18	0	0	33	48
Grand Total	0	0	0	0	0	36	0	0	0	0	82	7	11	100	136	0	0	243	347
Approach %	0	0	0	0	0	26.5	0	0	0	0	60.3	5.1	8.1	73.5					
Total %	0	0	0	0	0	26.5	0	0	0	0	60.3	5.1	8.1	73.5					

Start Time	Alder Street Southbound				King Street Westbound				Alder Street Northbound				King Street Eastbound						
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			
05:00 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0
Total %	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Time	Alder Street Southbound				King Street Westbound				Alder Street Northbound				King Street Eastbound						
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			
05:00 PM	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
05:45 PM	0	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0
Total %	0	0	0	0	0	18	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Time	Alder Street Southbound				Elm Street Westbound				Alder Street Northbound				Elm Street Eastbound						
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			
06:30 AM	1	2	0	3	1	10	1	0	0	0	0	0	0	1	0	2	3	18	
06:45 AM	2	3	0	5	3	18	1	1	23	0	0	0	3	0	1	4	7	53	
Total	3	12	4	20	4	28	2	1	23	0	0	3	3	0	2	6	10	71	
07:00 AM	6	0	2	8	3	15	0	0	18	0	0	1	1	0	2	0	3	29	
07:15 AM	5	0	5	10	16	0	0	3	19	0	0	1	1	0	4	1	5	36	
07:30 AM	4	5	6	15	0	15	0	0	15	0	0	1	1	0	4	1	5	36	
07:45 AM	4	3	6	13	2	20	0	0	22	0	0	4	4	0	0	2	2	45	
Total	13	11	19	52	6	64	0	3	73	0	0	9	9	0	10	1	4	149	
08:00 AM	3	4	2	9	0	8	0	1	9	0	0	1	1	0	3	1	5	39	
08:15 AM	4	4	2	10	0	8	0	0	8	0	0	1	1	0	0	6	7	27	
08:30 AM	23	31	27	81	9	98	1	5	113	0	0	14	14	0	16	3	17	316	
08:45 AM	24	33	28	85	8	96	0	4	100	0	0	14	14	0	16	3	17	316	
Grand Total	24.5	33	28.7	86.2	8.8	96.7	0.9	4.4	111.1	0	0	15.4	15.4	0	17.6	3	17.6	327.7	
Approach %	29.5	17.1	10.5	31.1	3.6	35.1	0.4	1.9	41.4	0	0	5.4	5.4	0	6.2	1.2	5.6	114	
Total %	33	19	10	33	10	36.2	1.3	5.3	51.3	0	0	10	10	0	11.8	1.5	6.8	154	
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Start Time	Alder Street Southbound				Elm Street Westbound				Alder Street Northbound				Elm Street Eastbound						
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total			
06:30 AM	1	2	0	3	1	10	1	0	0	0	0	0	0	1	0	2	3	18	
06:45 AM	2	3	0	5	3	18	1	1	23	0	0	3	3	0	1	4	7	53	
Total	3	12	4	20	4	28	2	1	23	0	0	3	3	0	2	6	10	71	
07:00 AM	6	0	2	8	3	15	0	0	18	0	0	1	1	0	2	0	3	29	
07:15 AM	5	0	5	10	16	0	0	3	19	0	0	1	1	0	4	1	5	36	
07:30 AM	4	5	6	15	0	15	0	0	15	0	0	1	1	0	4	1	5	36	
07:45 AM	4	3	6	13	2	20	0	0	22	0	0	4	4	0	0	2	2	45	
Total	13	11	19	52	6	64	0	3	73	0	0	9	9	0	10	1	4	149	
08:00 AM	3	4	2	9	0	8	0	1	9	0	0	1	1	0	3	1	5	39	
08:15 AM	4	4	2	10	0	8	0	0	8	0	0	1	1	0	0	6	7	27	
08:30 AM	23	31	27	81	9	98	1	5	113	0	0	14	14	0	16	3	17	316	
08:45 AM	24	33	28	85	8	96	0	4	100	0	0	14	14	0	16	3	17	316	
Grand Total	24.5	33	28.7	86.2	8.8	96.7	0.9	4.4	111.1	0	0	15.4	15.4	0	17.6	3	17.6	327.7	
Approach %	29.5	17.1	10.5	31.1	3.6	35.1	0.4	1.9	41.4	0	0	5.4	5.4	0	6.2	1.2	5.6	114	
Total %	33	19	10	33	10	36.2	1.3	5.3	51.3	0	0	10	10	0	11.8	1.5	6.8	154	
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# SSFIM International

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 Alder\_Elm AM  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

Start Time	Alder Street Southbound				Elm Street Westbound				Alder Street Northbound				Elm Street Eastbound					
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total		
06:30 AM	1	2	0	3	1	10	1	0	0	0	0	0	0	1	0	2	3	18
06:45 AM	2	3	0	5	3	18	1	1	23	0	0	3	3	0	1	4	7	53
Total	3	12	4	20	4	28	2	1	23	0	0	3	3	0	2	6	10	71
07:00 AM	6	0	2	8	3	15	0	0	18	0	0	1	1	0	2	0	3	29
07:15 AM	5	0	5	10	16	0	0	3	19	0	0	1	1	0	4	1	5	36
07:30 AM	4	5	6	15	0	15	0	0	15	0	0	1	1	0	4	1	5	36
07:45 AM	4	3	6	13	2	20	0	0	22	0	0	4	4	0	0	2	2	45
Total	13	11	19	52	6	64	0	3	73	0	0	9	9	0	10	1	4	149
08:00 AM	3	4	2	9	0	8	0	1	9									





**SSFIM International**

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 Ptkoi\_Elm PM  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

Start Time	Groups Printed- Passengers Vehicles - Heavy Vehicles															
	Pikea Street Southbound				Elm Street Westbound				Pikea Street Northbound				Elm Street Eastbound			
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Passenger Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

**SSFIM International**

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 Ptkoi\_Elm AM  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

Start Time	Groups Printed- Bikes															
	Pikea Street Southbound				Elm Street Westbound				Pikea Street Northbound				Elm Street Eastbound			
	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total	Left	Thru	Right	App. Total
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
07:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
08:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total %	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peak Hour Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Passenger Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

# SSFIM International

501 Summer Street, Suite 620  
Honolulu, HI 96817

File Name : 150916 Piko\_Elm  
Site Code : 00000000  
Start Date : 9/16/2015  
Page No : 1

### Groups Printed- Bikes

Start Time	Piko Street Southbound			Elm Street Westbound			Piko Street Northbound			Elm Street Eastbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	1	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	1	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	1	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Approach %	7.7	0	0	0	0	0	0	0	0	0	0	0
Total %	2.2	0	0	0	0	0	0	0	0	0	0	0

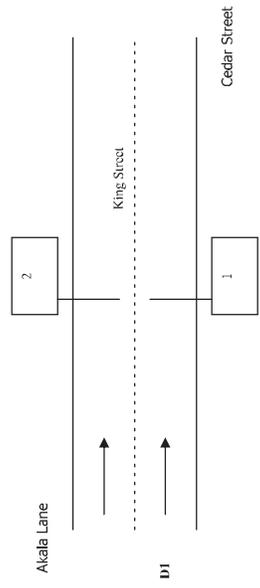
Start Time	Piko Street Southbound			Elm Street Westbound			Piko Street Northbound			Elm Street Eastbound		
	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
03:45 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
04:30 PM	1	0	0	0	0	0	0	0	0	0	0	0
04:45 PM	1	0	0	0	0	0	0	0	0	0	0	0
<b>Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
05:00 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:15 PM	0	0	0	0	0	0	0	0	0	0	0	0
05:30 PM	1	0	0	0	0	0	0	0	0	0	0	0
<b>Grand Total</b>	<b>2</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>
Approach %	7.7	0	0	0	0	0	0	0	0	0	0	0
Total %	2.2	0	0	0	0	0	0	0	0	0	0	0

## Traffic Data Service

### Traffic Station Sketch

Island: Oahu  
Area: Honolulu

Section ID/Station #: B77240200310



Meter # : 8997  
File Name : D012M07\_B77240200310  
GPS : 21.29921, -157.8422  
21.29921, -157.8422

Station Description: King Street, Akala Lane to Cedar Street	
Survey Beginning Date/Time: 1/20/2011 @ 0000	Survey Ending Date/Time: 1/21/2011 @ 2400
Survey Method: Road Tube	Data Type: Volume
Survey Crew: LM	By: SR
Remarks:	
FACILITY NAME King Street	JURI 3
AREA TYPE 7402	ROUTE MILE
D1= Direction to End D2= Direction to Begin	

Run Date: 2011/08/26  
 Hawaii Department of Transportation  
 Highways Division  
 Highways Planning Survey Section

Site ID: B727402003010  
 Functional Class: URBAN/PRINCIPAL ARTERIAL - OTHER  
 Location: King St @ Aiea St @ Pain Dr.

2011 Program Count - Summary  
 Town: Oahu  
 Count Type: VOLUME  
 Counter Type: 1009  
 DIR 1: -MP  
 DIR 2: NonIP  
 Final AADT: 0  
 Route No.: 7402

DATE: 01/20/2011	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
12:00-12:15	55	0	58	113	06:00-06:15	158	0	158	06:00-06:15	511	0	511
12:15-12:30	70	0	70	140	06:15-06:30	223	0	223	06:15-06:30	479	0	479
12:30-12:45	59	0	59	118	06:30-06:45	281	0	281	06:30-06:45	527	0	527
12:45-1:00	50	0	50	100	06:45-07:00	363	0	363	06:45-07:00	660	0	660
1:00-1:15	37	0	37	74	07:00-07:15	485	0	485	07:00-07:15	468	0	468
1:15-1:30	39	0	39	78	07:15-07:30	553	0	553	07:15-07:30	358	0	358
1:30-1:45	35	0	35	70	07:30-07:45	542	0	542	07:30-07:45	314	0	314
1:45-2:00	27	0	27	54	07:45-08:00	593	0	593	07:45-08:00	282	0	282
2:00-2:15	33	0	33	66	08:00-08:15	465	0	465	08:00-08:15	474	0	474
2:15-2:30	33	0	33	66	08:15-08:30	468	0	468	08:15-08:30	472	0	472
2:30-2:45	28	0	28	56	08:30-08:45	432	0	432	08:30-08:45	545	0	545
2:45-3:00	33	0	33	66	08:45-09:00	418	0	418	08:45-09:00	182	0	182
3:00-3:15	21	0	21	42	09:00-09:15	378	0	378	09:00-09:15	240	0	240
3:15-3:30	21	0	21	42	09:15-09:30	379	0	379	09:15-09:30	240	0	240
3:30-3:45	28	0	28	56	09:30-09:45	374	0	374	09:30-09:45	187	0	187
3:45-4:00	21	0	21	42	09:45-10:00	418	0	418	09:45-10:00	191	0	191
4:00-4:15	31	0	31	62	10:00-10:15	394	0	394	10:00-10:15	170	0	170
4:15-4:30	21	0	21	42	10:15-10:30	402	0	402	10:15-10:30	129	0	129
4:30-4:45	21	0	21	42	10:30-10:45	402	0	402	10:30-10:45	129	0	129
4:45-5:00	54	0	54	108	10:45-11:00	528	0	528	10:45-11:00	90	0	90
5:00-5:15	83	0	83	166	11:00-11:15	467	0	467	11:00-11:15	78	0	78
5:15-5:30	87	0	87	174	11:15-11:30	543	0	543	11:15-11:30	86	0	86
5:30-5:45	134	0	134	268	11:30-11:45	518	0	518	11:30-11:45	89	0	89
5:45-6:00	129	0	129	258	11:45-12:00	521	0	521	11:45-12:00	74	0	74

AM/COMPUTER PERIOD (05:30-05:50) DIR 1 2123 DIR 2 3241  
 TWO DIRECTIONAL PEAK AM - PEAK HR VOLUME 2123 3241  
 AM - K FACTOR (%) 3241  
 DIR PERIOD (06:00-6:30) DIR 1 3241 DIR 2 3241  
 AM - PEAK HR TIME 06:00 AM to 06:30 AM  
 AM - PEAK HR VOLUME 3241  
 AM - D (%) 3241  
 TWO DIRECTIONAL PEAK PM - PEAK HR VOLUME 3241  
 PM - K FACTOR (%) 3241  
 DIR PERIOD (12:00-12:30) DIR 1 3241 DIR 2 3241  
 AM - PEAK HR TIME 12:00 PM to 12:30 PM  
 AM - PEAK HR VOLUME 3241  
 AM - D (%) 3241  
 NON-COMMUTER PERIOD (09:00-10:00) DIR 1 10369 DIR 2 11454  
 TWO DIRECTIONAL PEAK AM - PEAK HR VOLUME 10369 11454  
 AM - K FACTOR (%) 11454  
 DIR PERIOD (09:00-9:30) DIR 1 2109 DIR 2 20276  
 AM - PEAK HR TIME 09:00 AM to 09:30 AM  
 AM - PEAK HR VOLUME 20276  
 AM - D (%) 20276  
 TWO DIRECTIONAL PEAK PM - PEAK HR VOLUME 32320  
 PM - K FACTOR (%) 32320  
 DIR PERIOD (12:00-12:30) DIR 1 2109 DIR 2 32320  
 AM - PEAK HR TIME 12:00 PM to 12:30 PM  
 AM - PEAK HR VOLUME 32320  
 AM - D (%) 32320

Run Date: 2011/08/26  
 Hawaii Department of Transportation  
 Highways Division  
 Highways Planning Survey Section

Site ID: B727402003010  
 Functional Class: URBAN/PRINCIPAL ARTERIAL - OTHER  
 Location: King St @ Aiea St @ Pain Dr.

2011 Program Count - Summary  
 Town: Oahu  
 Count Type: VOLUME  
 Counter Type: 1009  
 DIR 1: -MP  
 DIR 2: NonIP  
 Final AADT: 0  
 Route No.: 7402

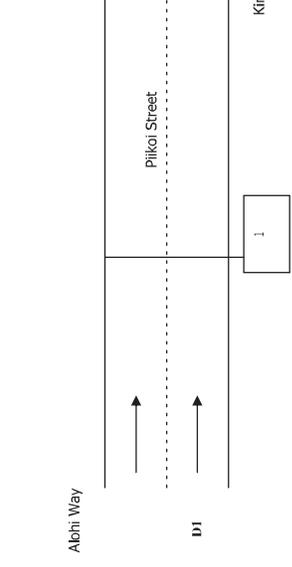
DATE: 01/21/2011	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
12:00-12:15	59	0	59	118	06:00-06:15	195	0	195	06:00-06:15	571	0	571
12:15-12:30	57	0	57	114	06:15-06:30	196	0	196	06:15-06:30	566	0	566
12:30-12:45	49	0	49	98	06:30-06:45	270	0	270	06:30-06:45	548	0	548
12:45-1:00	46	0	46	92	06:45-07:00	345	0	345	06:45-07:00	505	0	505
1:00-1:15	34	0	34	68	07:00-07:15	465	0	465	07:00-07:15	420	0	420
1:15-1:30	33	0	33	66	07:15-07:30	524	0	524	07:15-07:30	320	0	320
1:30-1:45	41	0	41	82	07:30-07:45	598	0	598	07:30-07:45	348	0	348
1:45-2:00	35	0	35	70	07:45-08:00	527	0	527	07:45-08:00	307	0	307
2:00-2:15	33	0	33	66	08:00-08:15	465	0	465	08:00-08:15	420	0	420
2:15-2:30	33	0	33	66	08:15-08:30	467	0	467	08:15-08:30	226	0	226
2:30-2:45	25	0	25	50	08:30-08:45	432	0	432	08:30-08:45	222	0	222
2:45-3:00	24	0	24	48	08:45-09:00	428	0	428	08:45-09:00	227	0	227
3:00-3:15	15	0	15	30	09:00-09:15	399	0	399	09:00-09:15	246	0	246
3:15-3:30	15	0	15	30	09:15-09:30	399	0	399	09:15-09:30	246	0	246
3:30-3:45	23	0	23	46	09:30-09:45	382	0	382	09:30-09:45	204	0	204
3:45-4:00	28	0	28	56	09:45-10:00	448	0	448	09:45-10:00	214	0	214
4:00-4:15	21	0	21	42	10:00-10:15	451	0	451	10:00-10:15	255	0	255
4:15-4:30	19	0	19	38	10:15-10:30	432	0	432	10:15-10:30	257	0	257
4:30-4:45	19	0	19	38	10:30-10:45	432	0	432	10:30-10:45	257	0	257
4:45-5:00	57	0	57	114	10:45-11:00	468	0	468	10:45-11:00	163	0	163
5:00-5:15	89	0	89	178	11:00-11:15	595	0	595	11:00-11:15	135	0	135
5:15-5:30	81	0	81	162	11:15-11:30	542	0	542	11:15-11:30	113	0	113
5:30-5:45	119	0	119	238	11:30-11:45	591	0	591	11:30-11:45	136	0	136
5:45-6:00	129	0	129	258	11:45-12:00	578	0	578	11:45-12:00	101	0	101

AM/COMPUTER PERIOD (05:30-05:50) DIR 1 2108 DIR 2 3165  
 TWO DIRECTIONAL PEAK AM - PEAK HR VOLUME 2108 3165  
 AM - K FACTOR (%) 3165  
 DIR PERIOD (06:00-6:30) DIR 1 3165 DIR 2 3165  
 AM - PEAK HR TIME 06:00 AM to 06:30 AM  
 AM - PEAK HR VOLUME 3165  
 AM - D (%) 3165  
 TWO DIRECTIONAL PEAK PM - PEAK HR VOLUME 3165  
 PM - K FACTOR (%) 3165  
 DIR PERIOD (12:00-12:30) DIR 1 3165 DIR 2 3165  
 AM - PEAK HR TIME 12:00 PM to 12:30 PM  
 AM - PEAK HR VOLUME 3165  
 AM - D (%) 3165  
 NON-COMMUTER PERIOD (09:00-10:00) DIR 1 10317 DIR 2 11537  
 TWO DIRECTIONAL PEAK AM - PEAK HR VOLUME 10317 11537  
 AM - K FACTOR (%) 11537  
 DIR PERIOD (09:00-9:30) DIR 1 2354 DIR 2 22206  
 AM - PEAK HR TIME 09:00 AM to 09:30 AM  
 AM - PEAK HR VOLUME 22206  
 AM - D (%) 22206  
 TWO DIRECTIONAL PEAK PM - PEAK HR VOLUME 33203  
 PM - K FACTOR (%) 33203  
 DIR PERIOD (12:00-12:30) DIR 1 2354 DIR 2 33203  
 AM - PEAK HR TIME 12:00 PM to 12:30 PM  
 AM - PEAK HR VOLUME 33203  
 AM - D (%) 33203

**Traffic Data Service**  
Traffic Station Sketch

Island: Oahu  
Area: Honolulu

Section ID/Station #: B7275130027



Meter #  
1. 7447

File Name:  
D:\210009\_B7275130027

GPS  
21.259853, -157.8443

Station Description: <b>Abahi Way to King Street</b>	
Survey Beginning Date/Time: 2/10/2011 @ 00:00	Survey Ending Date/Time: 2/11/2011 @ 24:00
Survey Method: Road Tube	Data Type: Volume
Survey Crew: LM	V1
Sketch Updated:	By: SR
Remarks:	
FACILITY NAME Pili'koi Street	JURI 16
AREA TYPE	NO. 2
ROUTE MILE	7513
D1: King Street / Pensacola Street D2: Abahi Way / Ala Moana Boulevard	

Run Date: 2012/04/02

Hawaii Department of Transportation  
Highways Division

Highways Planning Survey Section

2011 Program Count - Summary  
Town: Oahu  
DIR 1: r/MF  
DIR 2: None  
Final AADT: 0  
Count Type: VOLUME  
Counter Type: Tube  
Route No: 7513

Location: Pili'koi Street - Kapolei (Boulevard - K)

DATE	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
02/10/2011	12:00-12:15	67	0	67	03:00-03:15	115	0	115	12:00-12:15	400	0	400
	12:15-12:30	62	0	62	03:15-03:30	163	0	163	12:15-12:30	415	0	415
	12:30-12:45	69	0	69	03:30-03:45	160	0	160	12:30-12:45	469	0	469
	12:45-1:00	66	0	66	03:45-04:00	157	0	157	12:45-1:00	479	0	479
	01:00-01:15	66	0	66	04:00-04:15	384	0	384	01:00-01:15	407	0	407
	01:15-01:30	68	0	68	04:15-04:30	383	0	383	01:15-01:30	451	0	451
	01:30-01:45	55	0	55	04:30-04:45	348	0	348	01:30-01:45	354	0	354
	01:45-02:00	73	0	73	04:45-05:00	350	0	350	01:45-02:00	429	0	429
	02:00-02:15	51	0	51	05:00-05:15	372	0	372	02:00-02:15	431	0	431
	02:15-02:30	51	0	51	05:15-05:30	306	0	306	02:15-02:30	498	0	498
	02:30-02:45	48	0	48	05:30-05:45	307	0	307	02:30-02:45	434	0	434
	02:45-03:00	36	0	36	05:45-06:00	284	0	284	02:45-03:00	414	0	414
	03:00-03:15	30	0	30	06:00-06:15	274	0	274	03:00-03:15	358	0	358
	03:15-03:30	33	0	33	06:15-06:30	286	0	286	03:15-03:30	370	0	370
	03:30-03:45	23	0	23	06:30-06:45	256	0	256	03:30-03:45	406	0	406
	03:45-04:00	61	0	61	06:45-07:00	287	0	287	03:45-04:00	362	0	362
	04:00-04:15	40	0	40	07:00-07:15	360	0	360	04:00-04:15	434	0	434
	04:15-04:30	42	0	42	07:15-07:30	359	0	359	04:15-04:30	388	0	388
	04:30-04:45	44	0	44	07:30-07:45	381	0	381	04:30-04:45	472	0	472
	04:45-05:00	60	0	60	07:45-08:00	374	0	374	04:45-05:00	520	0	520
	05:00-05:15	63	0	63	08:00-08:15	380	0	380	05:00-05:15	469	0	469
	05:15-05:30	100	0	100	08:15-08:30	385	0	385	05:15-05:30	457	0	457
	05:30-05:45	80	0	80	08:30-08:45	485	0	485	05:30-05:45	378	0	378
	05:45-06:00	108	0	108	08:45-09:00	386	0	386	05:45-06:00	347	0	347

AM COMUTER PERIOD (05:00-09:00)	DIR 1	DIR 2	TOTAL	PM COMUTER PERIOD (16:00-19:00)	DIR 1	DIR 2	TOTAL
TWO DIRECTIONAL PEAK				TWO DIRECTIONAL PEAK			
AM - PEAK HR VOLUME	1893	0	1893	PM - PEAK HR VOLUME	1730	0	1730
AM - K FACTOR (%)				PM - K FACTOR (%)			
AM - D (%)				PM - D (%)			

DIRECTIONAL PEAK	AM - PEAK HR VOLUME	AM - K FACTOR (%)	AM - D (%)	DIRECTIONAL PEAK	PM - PEAK HR VOLUME	PM - K FACTOR (%)	PM - D (%)
TWO DIRECTIONAL PEAK	07:45 AM to 08:15 AM	1393		TWO DIRECTIONAL PEAK	04:30 PM to 05:30 PM	1730	
AM PERIOD (06:00-9:00)				PM PERIOD (12:00-24:00)			
AM - PEAK HR TIME	1:00 AM to 12:00 PM	1589		PM - PEAK HR TIME	01:45 PM to 05:45 PM	1654	
AM - K FACTOR (%)				PM - K FACTOR (%)			
AM - D (%)				PM - D (%)			

NONCOMUTER PERIOD (09:00-15:00)	DIR 1	DIR 2	TOTAL
TWO DIRECTIONAL PEAK			
PEAK HR TIME	01:45 PM to 02:45 PM		7484
PEAK HR VOLUME	1854		8025
DIR 1 - PEAK HR TIME			9380
DIR 2 - PEAK HR TIME			8644
PEAK HR VOLUME	01:45 PM to 02:45 PM		26,017
PEAK - K FACTOR (%)			
PEAK - D (%)			

6-HR, 12-HR, 24-HR PERIODS	DIR 1	DIR 2	Total
AM 6-HR PERIOD (06:00-12:00)			7,484
AM 12-HR PERIOD (05:00-12:00)			8,025
PM 6-HR PERIOD (12:00-18:00)			9,380
PM 12-HR PERIOD (12:00-24:00)			10,644
24-HOUR PERIOD			26,017
D (%)			

**Hawaii Department of Transportation  
Highways Division**

**2011 Program Count - Summary**  
 Town: Oahu    DIR 1: r/MF    DIR 2: None    Final AADT: 0  
 Count Type: VOLUME    Counter Type: Tube    Route No: 7513

DATE	DIR 1	DIR 2	TOTAL	TIME-AM	DIR 1	DIR 2	TOTAL	TIME-PM	DIR 1	DIR 2	TOTAL
12/00-12/15	111	0	111	08:00-08:15	144	0	144	12:00-12:15	441	0	441
12/15-12/30	89	0	89	08:15-08:30	161	0	161	12:15-12:30	460	0	460
12/30-12/31	82	0	82	08:30-08:45	172	0	172	12:30-12:45	441	0	441
01/00-01/15	66	0	66	08:45-09:00	175	0	175	12:45-01:00	441	0	441
01/15-01/30	56	0	56	07:00-07:15	295	0	295	07:00-07:15	418	0	418
01/30-01/45	53	0	53	07:15-07:30	390	0	390	07:15-07:30	393	0	393
01/45-02/00	50	0	50	07:30-07:45	373	0	373	07:30-07:45	368	0	368
02/00-02/15	42	0	42	07:45-08:00	376	0	376	07:45-08:00	353	0	353
02/15-02/30	42	0	42	08:00-08:15	301	0	301	08:00-08:15	327	0	327
02/30-02/45	44	0	44	08:15-08:30	299	0	299	08:15-08:30	375	0	375
02/45-03/00	48	0	48	08:30-08:45	279	0	279	08:30-08:45	365	0	365
03/00-03/15	38	0	38	08:45-09:00	251	0	251	08:45-09:00	469	0	469
03/15-03/30	30	0	30	09:00-09:15	443	0	443	09:00-09:15	469	0	469
03/30-03/45	30	0	30	09:15-09:30	392	0	392	09:15-09:30	368	0	368
03/45-04/00	48	0	48	09:30-09:45	301	0	301	09:30-09:45	335	0	335
04/00-04/15	38	0	38	09:45-10:00	356	0	356	09:45-10:00	335	0	335
04/15-04/30	53	0	53	10:00-10:15	381	0	381	10:00-10:15	324	0	324
04/30-04/45	54	0	54	10:15-10:30	381	0	381	10:15-10:30	285	0	285
04/45-05/00	79	0	79	10:30-10:45	395	0	395	10:30-10:45	265	0	265
05/00-05/15	82	0	82	11:00-11:15	403	0	403	11:00-11:15	203	0	203
05/15-05/30	79	0	79	11:15-11:30	403	0	403	11:15-11:30	219	0	219
05/30-05/45	81	0	81	11:30-11:45	388	0	388	11:30-11:45	166	0	166
05/45-06/00	82	0	82	11:45-12:00	412	0	412	11:45-12:00	147	0	147

AM COMMUTER PERIOD (05:00-09:00)	DIR 1	DIR 2	TOTAL	PM COMMUTER PERIOD (16:00-19:00)	DIR 1	DIR 2	TOTAL
TWO DIRECTIONAL PEAK	1434	0	1434	TWO DIRECTIONAL PEAK	2234	0	2234
AM - PEAK HR VOLUME	1434	0	1434	PM - PEAK HR VOLUME	2234	0	2234
AM - D (%)	0	0	0	PM - D (%)	0	0	0
DIRECTIONAL PEAK	0700 AM to 08:00 AM	04:45 PM to 05:45 PM					
AM PERIOD (09:00-12:00)	1660	0	1660	PM PERIOD (12:00-24:00)	2560	0	2560
AM - PEAK HR TIME	1660	0	1660	PM - PEAK HR TIME	2560	0	2560
AM - K FACTOR (%)	0	0	0	PM - K FACTOR (%)	0	0	0
AM - D (%)	0	0	0	PM - D (%)	0	0	0
NONCOMMUTER PERIOD (09:00-15:00)	2580	0	2580	6-HR 12-HR 24-HR PERIODS	DIR 1	DIR 2	Total
PEAK HR TIME	2580	0	2580	AM 6-HR PERIOD (08:00-12:00)	7,588	0	7,588
DIR 1 PEAK HR VOLUME	2580	0	2580	AM 12-HR PERIOD (05:00-12:00)	9,055	0	9,055
DIR 2 PEAK HR VOLUME	0	0	0	AM 6-HR PERIOD (12:00-18:00)	12,157	0	12,157
PEAK HR TIME	0	0	0	PM 6-HR PERIOD (12:00-18:00)	9,055	0	9,055
PEAK HR VOLUME	0	0	0	24-HOUR PERIOD	28,474	0	28,474
				D (%)			

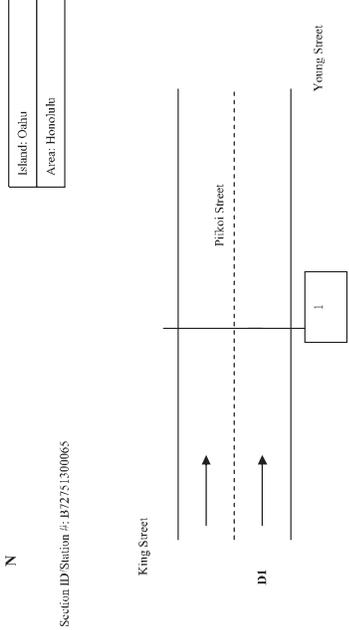
Run Date: 2012/04/02

Site ID: B72751300027

Functional Class: URBAN/MINOR ARTERIAL

Location: Piikoi Street - Kapikian Boulevard - K

**Traffic Data Service**  
Traffic Station Sketch



Master # 08651

File Name: D:\A\0005\_B72751300065

CBS: 213M0319 - 157,8438

Station Description:	Piikoi Street - King Street to Young Street (One Way)		
Survey Beginning Date/Time:	4/30/2013 @ 0900	Survey Ending Date/Time:	5/1/2013 @ 2400
Survey Method:	Road Tube	Date Type:	Volume
Survey Crew:	LM	By:	VJ
Sketch Updated:	5/16/13 - 439		SR
Remarks:			
FACILITY NAME	JURI	FUNC CLASS	ROUTE
Piikoi Street		16	7513
DI = Direction to End	DI: Young Street / Pensacola Street		
DI2 = Direction to Begin			

Run Date: 2014/05/21

Hawaii Department of Transportation  
Highways Division  
Highways Planning Survey Section

2013 Program Count - Summary  
Town: Oahu  
Count Type: VOLUME  
Counter Type: Tube  
DIR 1: r1MP  
DIR 2: None  
Final AADT: 28500  
Route No: 7513

Site ID: 187275130005  
Functional Class: URBAN/MINOR ARTERIAL  
Location: Piki Street: King St to Young St

Table with columns: TIME-AM, DIR 1, DIR 2, TOTAL, TIME-PM, DIR 1, DIR 2, TOTAL. Rows include time intervals from 12:00-12:15 to 05:45-05:00.

Summary table for AM COMMUTER PERIOD (05:00-05:00) and TWO DIRECTIONAL PEAK. Includes AM - PEAK HR TIME, AM - K FACTOR (%), AM - D (%), and DIRECTIONAL PEAK.

Summary table for PM COMMUTER PERIOD (05:00-05:00) and TWO DIRECTIONAL PEAK. Includes PM - PEAK HR TIME, PM - K FACTOR (%), PM - D (%), and DIRECTIONAL PEAK.

Summary table for NONCOMMUTER PERIOD (09:00-15:00) and TWO DIRECTIONAL PEAK. Includes PEAK HR TIME, PEAK HR VOLUME, DIRECTIONAL PEAK, and PEAK HR VOLUME.

Run Date: 2014/05/21

Hawaii Department of Transportation  
Highways Division  
Highways Planning Survey Section

2013 Program Count - Summary  
Town: Oahu  
Count Type: VOLUME  
Counter Type: Tube  
DIR 1: r1MP  
DIR 2: None  
Final AADT: 28500  
Route No: 7513

Site ID: 187275130005  
Functional Class: URBAN/MINOR ARTERIAL  
Location: Piki Street: King St to Young St

Table with columns: TIME-AM, DIR 1, DIR 2, TOTAL, TIME-PM, DIR 1, DIR 2, TOTAL. Rows include time intervals from 12:00-12:15 to 05:45-05:00.

Summary table for AM COMMUTER PERIOD (05:00-05:00) and TWO DIRECTIONAL PEAK. Includes AM - PEAK HR TIME, AM - K FACTOR (%), AM - D (%), and DIRECTIONAL PEAK.

Summary table for PM COMMUTER PERIOD (05:00-05:00) and TWO DIRECTIONAL PEAK. Includes PM - PEAK HR TIME, PM - K FACTOR (%), PM - D (%), and DIRECTIONAL PEAK.

Summary table for NONCOMMUTER PERIOD (09:00-15:00) and TWO DIRECTIONAL PEAK. Includes PEAK HR TIME, PEAK HR VOLUME, DIRECTIONAL PEAK, and PEAK HR VOLUME.

# Appendix C

## Analysis Reports

### Existing (2015) Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	233	1853	0	0	0	0	0	1079	221	0	0	0
Future Volume (veh/h)	233	1853	0	0	0	0	0	1079	221	0	0	0
Number	7	4	14	0	0	0	5	2	12	0	0	0
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/h	1800	1845	0	0	0	0	1845	1845	1845	1845	1845	1845
Adj Flow Rate, veh/h	243	1930	0	0	0	0	1124	230	230	230	230	230
Adj No. of Lanes	0	5	0	0	0	0	4	1	1	1	1	1
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh. %	3	3	3	3	3	3	3	3	3	3	3	3
Cap. veh/h	380	2647	0	0	0	0	3035	750	750	750	750	750
Arrive On Green	0.42	0.42	0.00	0.00	0.00	0.00	0.48	0.48	0.48	0.48	0.48	0.48
Sat. Flow, veh/h	762	6597	0	0	0	0	6604	1568	1568	1568	1568	1568
Grp Volume(v), veh/h	511	1662	0	0	0	0	1124	230	230	230	230	230
Grp Sat Flow(s), veh/h	1601	1360	0	0	0	0	1586	1568	1568	1568	1568	1568
Q Serve(g_s), s	24.4	22.9	0.0	0.0	0.0	0.0	10.1	8.1	8.1	8.1	8.1	8.1
Cycle Q Clear(g_c), s	24.4	22.9	0.0	0.0	0.0	0.0	10.1	8.1	8.1	8.1	8.1	8.1
Prop In Lane	0.48	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00
Lane Grp Cap(c), veh/h	734	2283	0	0	0	0	3035	750	750	750	750	750
V/C Ratio(X)	0.70	0.72	0.00	0.00	0.00	0.00	0.37	0.31	0.31	0.31	0.31	0.31
Avail Cap(c_a), veh/h	780	2447	0	0	0	0	3035	750	750	750	750	750
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.1	21.7	0.0	0.0	0.0	0.0	14.9	14.4	14.4	14.4	14.4	14.4
Incr Delay (d2), s/veh	2.5	1.0	0.0	0.0	0.0	0.0	0.3	1.1	1.1	1.1	1.1	1.1
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back(Q(50%)) veh/h	11.3	8.7	0.0	0.0	0.0	0.0	4.4	3.7	3.7	3.7	3.7	3.7
LnGrp Delay(d),s/veh	24.6	22.7	0.0	0.0	0.0	0.0	15.2	15.4	15.4	15.4	15.4	15.4
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h	2173											
Approach Delay, s/veh	23.1											
Approach LOS	C											
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2											
Phs Duration (G+Y+Rc), s	47.5											
Change Period (Y+Rc), s	4.5											
Max Green Setting (Gmax), s	40.5											
Max Q Clear Time (g_c+I), s	12.1											
Green Ext Time (p_c), s	11.1											
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay	20.1											
HCM 2010 LOS	C											

HCM 2010 TWSC  
30: Alder St & Elm St

Existing (2015)  
Timing Plan: AM Peak Hour

Intersection													
Int Delay, s/veh													
3.5													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR
Traffic Vol, veh/h	0	10	1	6	64	0	0	0	0	13	11	19	0
Future Vol, veh/h	0	10	1	6	64	0	0	0	0	13	11	19	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	-
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83	83
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	12	1	7	77	0	0	0	0	16	13	23	0

Major/Minor	Major1	Minor2	Major2	Minor2
Conflicting Flow All	77	0	13	0
Stage 1	-	-	-	92
Stage 2	-	-	-	13
Critical Hdwy	4.11	-	4.11	-
Critical Hdwy Stg 1	-	-	-	6.41
Critical Hdwy Stg 2	-	-	-	5.41
Follow-up Hdwy	2.209	-	2.209	-
Pot Cap-1 Maneuver	1528	-	1612	-
Stage 1	-	-	-	934
Stage 2	-	-	-	1012
Platoon blocked, %	-	-	-	-
Mov Cap-1 Maneuver	1528	-	1612	-
Mov Cap-2 Maneuver	-	-	-	891
Stage 1	-	-	-	929
Stage 2	-	-	-	1012

Approach	EB	WB	SB
HCM Control Delay, s	0	0.6	9
HCM LOS	-	-	A

Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBLn1
Capacity (veh/h)	1528	-	-	1612	-	-	946	-
HCM Lane V/C Ratio	-	-	-	0.004	-	-	0.055	-
HCM Control Delay (s)	0	-	-	7.2	0	-	9	-
HCM Lane LOS	A	-	-	A	A	-	A	-
HCM 95th %ile Q(veh)	0	-	-	0	-	-	0.2	-

HHFC/Judiciary Joint Development  
SSFM International

Synchro 9 Report

HCM 2010 TWSC  
40: Pliikot St & Elm St

Existing (2015)  
Timing Plan: AM Peak Hour

Intersection													
Int Delay, s/veh													
1.1													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR
Traffic Vol, veh/h	22	8	0	0	6	68	16	1290	5	0	0	0	0
Future Vol, veh/h	22	8	0	0	6	68	16	1290	5	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	-
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	25	9	0	0	7	76	18	1449	6	0	0	0	0

Major/Minor	Minor2	Minor1	Major1
Conflicting Flow All	619	1491	0
Stage 1	0	0	1488
Stage 2	619	1491	4
Critical Hdwy	5.76	6.56	-
Critical Hdwy Stg 1	-	-	5.76
Critical Hdwy Stg 2	-	-	6.56
Follow-up Hdwy	3.83	4.03	-
Pot Cap-1 Maneuver	477	121	-
Stage 1	-	-	172
Stage 2	-	-	184
Platoon blocked, %	453	184	-
Mov Cap-1 Maneuver	477	0	-
Mov Cap-2 Maneuver	477	0	-
Stage 1	-	-	172
Stage 2	-	-	119

Approach	EB	WB	NB
HCM Control Delay, s	-	20.6	-
HCM LOS	-	C	-

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1
Capacity (veh/h)	-	-	-	-	313
HCM Lane V/C Ratio	-	-	-	-	0.266
HCM Control Delay (s)	-	-	-	-	20.6
HCM Lane LOS	-	-	-	-	C
HCM 95th %ile Q(veh)	-	-	-	-	1

HHFC/Judiciary Joint Development  
SSFM International

Synchro 9 Report

HCM 2010 Signalized Intersection Summary  
 10: Pliikol St. & King St

HCM 2010 TWSC  
 30: Alder St. & Elm St

Existing (2015)  
 Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	413	2327	0	0	0	0	0	1271	295	0	0	0
Traffic Volume (veh/h)	413	2327	0	0	0	0	0	1271	295	0	0	0
Future Volume (veh/h)	7	4	14	0	0	0	5	2	12			
Number	0	0	0	0	0	0	0	0	0			
Initial Q (Ob), veh	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Parking Bus, Adj	1900	1881	0	0	0	0	1881	1881	1881			
Adj Sat Flow, veh/hIn	430	2424	0	0	0	0	1324	307	307			
Adj No. of Lanes	0	5	0	0	0	0	4	1	1			
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Percent Heavy Veh. %	1	1	0	0	0	0	1	1	1			
Cap. veh/h	556	2918	0	0	0	0	2720	672	672			
Arrive On Green	0.48	0.48	0.00	0.00	0.42	0.42	0.42	0.42	0.42			
Sat. Flow, veh/h	1020	6407	0	0	0	0	6735	1599	1599			
Grp Volume(v), veh/h	656	2198	0	0	0	0	1324	307	307			
Grp Sat Flow(s), veh/hIn	1555	1387	0	0	0	0	1618	1599	1599			
Q Serve(g,s), s	34.1	30.7	0.0	0.0	0.0	0.0	13.4	12.4	12.4			
Cycle Q Clear(g_c), s	34.1	30.7	0.0	0.0	0.0	0.0	13.4	12.4	12.4			
Prop In Lane	0.66	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00			
Lane Grp Cap(c), veh/h	812	2661	0	0	0	0	2720	672	672			
V/C Ratio(X)	0.81	0.83	0.00	0.00	0.00	0.00	0.49	0.46	0.46			
Avail Cap(c_a), veh/h	818	2681	0	0	0	0	2720	672	672			
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Upstream Filter(l)	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00			
Uniform Delay (d), s/veh	21.1	20.2	0.0	0.0	0.0	0.0	19.0	18.7	18.7			
Incr Delay (d2), s/veh	6.0	2.2	0.0	0.0	0.0	0.0	0.6	2.2	2.2			
Initial Q Delay(d3),s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
%ile Back(Q/60%),veh/In	15.9	12.2	0.0	0.0	0.0	0.0	6.1	5.9	5.9			
LnGrp Delay(d),s/veh	27.0	22.4	0.0	0.0	0.0	0.0	19.6	20.9	20.9			
LnGrp LOS	C	C					B	B	C			
Approach Vol, veh/h	2854											
Approach Delay, s/veh	23.5											
Approach LOS	C											
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2											
Phs Duration (G+Y+Rc), s	42.3											
Change Period (Y+Rc), s	4.5											
Max Green Setting (Gmax), s	37.5											
Max Q Clear Time (g_c+I), s	15.4											
Green Ext Time (g_c), s	7.1											
Intersection Summary												
HCM 2010 Ctrl Delay	22.2											
HCM 2010 LOS	C											

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 SSMF International  
 Synchro 9 Report

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Int Delay, s/veh	3.8											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	0	8	2	10	64	0	0	0	0	0	9	27
Future Vol, veh/h	0	8	2	10	64	0	0	0	0	0	9	27
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	None	None	None	None	None	None
RT Channelized	-	-	-	-	-	-	-	-	-	-	-	-
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Yeh in Median Storage, #	-	-	-	-	-	-	-	-	-	-	-	-
Grade, %	-	-	-	-	-	-	-	-	-	-	-	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	9	2	11	68	0	0	0	0	10	29	12
Major/Minor	Major1 Major2 Minor2											
Conflicting Flow All	68	0	0	11	0	0				99	100	68
Stage 1	-	-	-	-	-	-				89	89	-
Stage 2	-	-	-	-	-	-				10	11	-
Critical Hdwy	4.11	-	-	4.11	-	-				6.41	6.51	6.21
Critical Hdwy Stg 1	-	-	-	-	-	-				5.41	5.51	-
Critical Hdwy Stg 2	-	-	-	-	-	-				5.41	5.51	-
Follow-up Hdwy	2.209	-	-	2.209	-	-				3.509	4.009	3.309
Pot. Cap-1 Maneuver	1540	-	-	1615	-	-				902	792	998
Stage 1	-	-	-	-	-	-				937	823	-
Stage 2	-	-	-	-	-	-				1016	888	-
Platoon blocked, %	-	-	-	-	-	-				896	0	998
Mov Cap-1 Maneuver	1540	-	-	1615	-	-				896	0	-
Mov Cap-2 Maneuver	-	-	-	-	-	-				930	0	-
Stage 1	-	-	-	-	-	-				1016	0	-
Stage 2	-	-	-	-	-	-				1016	0	-
Approach	EB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB	WB
HCM Control Delay, s	0											9
HCM LOS												A
Minor Lane/Major Mvmt	EBL	EBT	EBR	WBL	WBT	WBR	SBL	SBLn1				
Capacity (veh/h)	1540	-	-	1615	-	-	-	949				
HCM Lane V/C Ratio	-	-	-	0.007	-	-	-	0.053				
HCM Control Delay (s)	0	-	-	7.2	0	-	9					
HCM Lane LOS	A	-	-	A	A	-	A					
HCM 95th %ile Q(veh)	0	-	-	0	-	-	0.2					

HHFDC/Judiciary Joint Development  
 SSMF International  
 Synchro 9 Report

Intersection												
Int Delay, s/veh 1.4												
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Vol, veh/h	18	5	0	0	6	82	10	1633	5	0	0	0
Future Vol, veh/h	18	5	0	0	6	82	10	1633	5	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	19	5	0	0	6	87	11	1737	5	0	0	0

Major/Minor	Minor2	Minor1	Major1
Conflicting Flow All	719	1764	0
Stage 1	0	0	1761
Stage 2	719	1764	3
Critical Hdwy	5.72	6.52	5.72
Critical Hdwy Stg 1	-	-	6.62
Critical Hdwy Stg 2	6.02	5.52	-
Follow-up Hdwy	3.81	4.01	3.81
Plat. Cap-1 Maneuver	431	84	127
Stage 1	-	-	82
Stage 2	406	137	-
Platoon blocked, %	-	-	-
Mov Cap-1 Maneuver	431	0	127
Mov Cap-2 Maneuver	431	0	127
Stage 1	-	0	82
Stage 2	406	0	-

Approach	EB	WB	NB
HCM Control Delay, s	-	27.1	-
HCM LOS	-	D	-

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBL	WBL	N1
Capacity (veh/h)	-	-	-	-	255	-
HCM Lane V/C Ratio	-	-	-	-	0.367	-
HCM Control Delay (s)	-	-	-	-	27.1	-
HCM Lane LOS	-	-	-	-	D	-
HCM 95th %ile Q(veh)	-	-	-	-	1.6	-

# Appendix D

## Analysis Reports

### Future (2022) With Project Conditions

HCM 2010 Signalized Intersection Summary  
 10: Pliikol St. & King St

HCM 2010 TWSC  
 30: Alder St. & Elm St

Future (2022) With Project  
 Timing Plan: AM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	←	←	←	←	←	←	←	←	←	←	←	←
Traffic Volume (veh/h)	233	1878	0	0	0	0	0	1097	229	0	0	0
Future Volume (veh/h)	233	1878	0	0	0	0	1097	229	0	0	0	0
Number	7	4	14	0	0	0	5	2	12	0	0	0
Initial Q (Ob), veh	0	0	0	0	0	0	0	0	0	0	0	0
Ped-Bike Adj(A <sub>pbT</sub> )	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Adj Sat Flow, veh/hln	1800	1845	0	0	0	0	1845	1845	1845	0	0	0
Adj Flow Rate, veh/h	243	1956	0	0	0	0	1143	239	0	0	0	0
Adj No. of Lanes	0	5	0	0	0	0	4	1	0	0	0	0
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Percent Heavy Veh. %	3	3	0	0	0	0	3	3	3	0	0	0
Cap. veh/h	378	2664	0	0	0	0	3023	747	0	0	0	0
Arrive On Green	0.42	0.42	0.00	0.00	0.00	0.00	0.48	0.48	0.48	0.00	0.00	0.00
Sat. Flow, veh/h	754	6607	0	0	0	0	6604	1568	0	0	0	0
Grp Volume(v), veh/h	517	1682	0	0	0	0	1143	239	0	0	0	0
Grp Sat Flow(s), veh/hln	1604	1360	0	0	0	0	1586	1568	0	0	0	0
Q Serve(g <sub>l</sub> s), s	24.7	23.2	0.0	0.0	0.0	0.0	10.4	8.5	0.0	0.0	0.0	0.0
Cycle Q Clear(g <sub>c</sub> ), s	24.7	23.2	0.0	0.0	0.0	0.0	10.4	8.5	0.0	0.0	0.0	0.0
Prop In Lane	0.47	0.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00
Lane Grp Cap(c), veh/h	738	2304	0	0	0	0	3023	747	0	0	0	0
V/C Ratio(X)	0.70	0.73	0.00	0.00	0.00	0.00	0.38	0.32	0.00	0.00	0.00	0.00
Avail Cap(c <sub>a</sub> ), veh/h	781	2447	0	0	0	0	3023	747	0	0	0	0
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(l)	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	0.00	0.00	0.00	0.00
Uniform Delay (d <sub>1</sub> ), s/veh	22.1	21.6	0.0	0.0	0.0	0.0	15.0	14.6	0.0	0.0	0.0	0.0
Incr Delay (d <sub>2</sub> ), s/veh	2.6	1.1	0.0	0.0	0.0	0.0	0.4	1.1	0.0	0.0	0.0	0.0
Initial Q Delay(d <sub>3</sub> ), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile Back(Q <sub>50</sub> ), veh/h	11.4	8.8	0.0	0.0	0.0	0.0	4.6	3.9	0.0	0.0	0.0	0.0
LnGrp Delay(d <sub>l</sub> ), s/veh	24.7	22.7	0.0	0.0	0.0	0.0	15.4	15.7	0.0	0.0	0.0	0.0
LnGrp LOS	C	C	C	C	C	C	B	B	B	B	B	B
Approach Vol, veh/h	2199											
Approach Delay, s/veh	23.2											
Approach LOS	C											
Timer	1	2	3	4	5	6	7	8				
Assigned Phs	2											
Phs Duration (G+Y+Rc), s	47.4											
Change Period (Y+Rc), s	4.5											
Max Green Setting (G <sub>max</sub> ), s	40.5											
Max Q Clear Time (g <sub>c</sub> -1), s	12.4											
Green Ext Time (g <sub>e</sub> ), s	11.3											
<b>Intersection Summary</b>												
HCM 2010 Ctrl Delay	20.2											
HCM 2010 LOS	C											

HHFDC/Judiciary Joint Development  
 SSMF International

Future (2022) With Project  
 Timing Plan: AM Peak Hour

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	
Int Delay, s/veh	4												
<b>Movement</b>													
Traffic Vol, veh/h	0	10	1	6	64	0	0	0	0	0	13	23	
Future Vol, veh/h	0	10	1	6	64	0	0	0	0	0	13	23	
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	
Yeh in Median Storage, #	-	-	-	-	-	-	-	-	-	-	-	-	
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-	
Peak Hour Factor	83	83	83	83	83	83	83	83	83	83	83	83	
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1	
Mvmt Flow	0	12	1	7	77	0	0	0	0	0	16	28	
<b>Major/Minor</b>													
Conflicting Flow All	Major1						Major2						Minor2
Stage 1	77						0						105
Stage 2	-						-						92
Critical Hdwy	4.11						-						13
Critical Hdwy Stg 1	-						4.11						6.41
Critical Hdwy Stg 2	-						-						5.41
Follow-up Hdwy	2.209						-						3.509
Pot. Cap-1 Maneuver	1528						1612						895
Stage 1	-						-						787
Stage 2	-						-						821
Platoon blocked, %	-						-						1012
Mov Cap-1 Maneuver	1528						-						891
Mov Cap-2 Maneuver	-						-						891
Stage 1	-						-						929
Stage 2	-						-						1012
<b>Approach</b>													
EB	EB						WB						SB
HCM Control Delay, s	0						0.6						9.1
HCM LOS	-						-						A
<b>Minor Lane/Major Mvmt</b>													
EBL	EBL						EBL						WBR SBLn1
1528	-						1612						946
Capacity (veh/h)	-						-						0.07
HCM Lane V/C Ratio	-						-						0.07
HCM Control Delay (s)	0						7.2						9.1
HCM Lane LOS	A						A						A
HCM 95th %ile Q(veh)	0						-						0.2

HHFDC/Judiciary Joint Development  
 SSMF International

Future (2022) With Project  
 Timing Plan: AM Peak Hour

HCM 2010 TWSC  
40: Pliikol St & Elm St

Future (2022) With Project  
Timing Plan: AM Peak Hour

Intersection	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Int Delay, s/veh	22	8	0	0	6	68	16	1319	5	0	0	0
Traffic Vol, veh/h	22	8	0	0	6	68	16	1319	5	0	0	0
Future Vol, veh/h	0	0	0	0	0	0	0	0	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0
Peak Hour Factor	89	89	89	89	89	89	89	89	89	89	89	89
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	25	9	0	0	7	76	18	1482	6	0	0	0
<b>Major/Minor</b>	<b>Minor2 Major1</b>											
Conflicting Flow All	632	1524	0	1525	1521	743	0	0	0	0	0	0
Stage 1	0	0	-	1521	1521	-	-	-	-	-	-	-
Stage 2	632	1524	-	4	0	-	-	-	-	-	-	-
Critical Hdwy	5.76	6.56	-	5.76	6.56	7.16	-	-	-	-	-	-
Critical Hdwy Stg 1	-	-	-	6.66	5.56	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.06	5.56	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	3.83	4.03	-	3.83	4.03	3.93	-	-	-	-	-	-
Poi. Cap-1 Maneuver	470	116	-	166	116	305	-	-	-	-	-	-
Stage 1	-	-	-	114	178	-	-	-	-	-	-	-
Stage 2	446	177	-	-	-	-	-	-	-	-	-	-
Platoon blocked, %	-	-	-	-	-	-	-	-	-	-	-	-
Mov Cap-1 Maneuver	470	0	-	166	0	305	-	-	-	-	-	-
Mov Cap-2 Maneuver	470	0	-	166	0	-	-	-	-	-	-	-
Stage 1	-	0	-	114	0	-	-	-	-	-	-	-
Stage 2	446	0	-	-	0	-	-	-	-	-	-	-
Approach	EB	WB	NB	WB	NB							
HCM Control Delay, s	-	21.2	-	21.2	-							
HCM LOS	-	C	-	C	-							
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLN	WBLN1							
Capacity (veh/h)	-	-	-	-	305							
HCM Lane V/C Ratio	-	-	-	-	0.273							
HCM Control Delay (s)	-	-	-	-	21.2							
HCM Lane LOS	-	-	-	-	C							
HCM 95th %ile Q(veh)	-	-	-	-	1.1							

HCM 2010 Signalized Intersection Summary  
10: Pliikol St & King St

Future (2022) With Project  
Timing Plan: PM Peak Hour

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations	413	2345	0	0	0	0	0	1299	308	0	0	0
Traffic Volume (veh/h)	413	2345	0	0	0	0	0	1299	308	0	0	0
Future Volume (veh/h)	7	4	14	0	0	0	5	2	12			
Number	0	0	0	0	0	0	0	0	0			
Initial Q (Ob), veh	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
Parking Bus, Adj	1800	1881	0	0	0	0	1881	1881	1881			
Adj Sat Flow, veh/hln	430	2443	0	0	0	0	1353	321	321			
Adj Flow Rate, veh/h	0	5	0	0	0	0	4	1	1			
Adj No. of Lanes	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96	0.96			
Peak Hour Factor	1	1	0	0	0	0	1	1	1			
Percent Heavy Veh, %	553	2924	0	0	0	0	2717	671	671			
Cap. veh/h	0.48	0.48	0.00	0.00	0.00	0.00	0.42	0.42	0.42			
Arrive On Green	1014	6415	0	0	0	0	6735	1599	1599			
Sat. Flow, veh/h	660	2213	0	0	0	0	1353	321	321			
Grp Volume(v), veh/h	1557	1387	0	0	0	0	1618	1599	1599			
Grp Sat Flow(s), veh/hln	34.5	31.1	0.0	0.0	0.0	0.0	13.8	13.1	13.1			
Q Serve(g_s), s	34.5	31.1	0.0	0.0	0.0	0.0	13.8	13.1	13.1			
Cycle Q Clear(g_c), s	0.65	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00			
Prop In Lane	814	2663	0	0	0	0	2717	671	671			
Lane Grp Cap(c), veh/h	0.81	0.83	0.00	0.00	0.00	0.00	0.50	0.48	0.48			
V/C Ratio(X)	819	2681	0	0	0	0	2717	671	671			
Avail Cap(c_a), veh/h	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00			
HCM Platoon Ratio	1.00	1.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00			
Upstream Filter(l)	21.1	20.2	0.0	0.0	0.0	0.0	19.1	18.9	18.9			
Uniform Delay (d), s/veh	6.2	2.3	0.0	0.0	0.0	0.0	0.7	2.4	2.4			
Incr Delay (d2), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0			
Initial Q Delay(d3),s/veh	16.1	12.3	0.0	0.0	0.0	0.0	6.2	6.2	6.2			
%ile Back(Q(50%)) veh/h	27.3	22.6	0.0	0.0	0.0	0.0	19.8	21.4	21.4			
LnGrp Delay(d) s/veh	C	C	C	C	C	C	B	B	C			
LnGrp LOS	2873	237					1674	201	201			
Approach Vol, veh/h	C	C					C	C	C			
Approach Delay, s/veh	1	2	3	4	5	6	7	8	8			
Approach LOS	2	2	3	4	5	6	7	8	8			
Timer	Assigned Phs	2	4	4	4	4	4	4	4			
Assigned Phs	Phs Duration (G+Y+Rc), s	42.3	47.7	47.7	47.7	47.7	47.7	47.7	47.7			
Change Period (Y+Rc), s	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5			
Max Green Setting (Gmax), s	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5	37.5			
Max Q Clear Time (g_c+I), s	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8	15.8			
Green Ext Time (g_e), s	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2	12.2			
<b>Intersection Summary</b>	<b>Intersection Summary</b>											
HCM 2010 Ctrl Delay	22.4											
HCM 2010 LOS	C											

HCM 2010 TWSC  
30: Alder St & Elm St

HCM 2010 TWSC  
40: Pliik St & Elm St

Future (2022) With Project  
Timing Plan: PM Peak Hour

Future (2022) With Project  
Timing Plan: PM Peak Hour

Intersection													
Int Delay, s/veh													
4.5													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR
Traffic Vol, veh/h	0	8	2	10	64	0	0	0	0	0	9	46	11
Future Vol, veh/h	0	8	2	10	64	0	0	0	0	0	9	46	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	-
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	0	9	2	11	68	0	0	0	0	0	10	49	12

Intersection													
Int Delay, s/veh													
1.4													
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR	SBR
Traffic Vol, veh/h	18	5	0	0	6	82	10	1654	5	0	0	0	0
Future Vol, veh/h	18	5	0	0	6	82	10	1654	5	0	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None	-
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	-	0	-
Peak Hour Factor	94	94	94	94	94	94	94	94	94	94	94	94	94
Heavy Vehicles, %	1	1	1	1	1	1	1	1	1	1	1	1	1
Mvmt Flow	19	5	0	0	6	87	11	1760	5	0	0	0	0

Major/Minor													
Major1													
Minor2													
Major2													
Minor1													
Major1													
Conflicting Flow All	68	0	0	11	0	0	99	100	68				
Stage 1	-	-	-	-	-	-	89	89	-				
Stage 2	-	-	-	-	-	-	10	11	-				
Critical Hdwy	4.11	-	-	4.11	-	-	6.41	6.51	6.21				
Critical Hdwy Stg 1	-	-	-	-	-	-	5.41	5.51	-				
Critical Hdwy Stg 2	-	-	-	-	-	-	5.41	5.51	-				
Follow-up Hdwy	2,209	-	-	2,209	-	-	3,509	4,009	3,309				
Poi Cap-1 Maneuver	1540	-	-	1615	-	-	902	792	998				
Stage 1	-	-	-	-	-	-	937	823	-				
Stage 2	-	-	-	-	-	-	1016	888	-				
Platoon blocked, %	-	-	-	-	-	-	-	-	-				
Mov Cap-1 Maneuver	1540	-	-	1615	-	-	896	0	998				
Mov Cap-2 Maneuver	-	-	-	-	-	-	896	0	-				
Stage 1	-	-	-	-	-	-	930	0	-				
Stage 2	-	-	-	-	-	-	1016	0	-				

Major/Minor													
Minor2													
Minor1													
Major1													
Minor1													
Major1													
Conflicting Flow All	728	1786	0	1787	1784	881	0	0	0				
Stage 1	0	0	-	1784	1784	-	-	-	-				
Stage 2	728	1786	-	3	0	-	-	-	-				
Critical Hdwy	5.72	6.52	-	5.72	6.52	7.12	-	-	-				
Critical Hdwy Stg 1	-	-	-	6.62	5.52	-	-	-	-				
Critical Hdwy Stg 2	6.02	5.52	-	-	-	-	-	-	-				
Follow-up Hdwy	3.81	4.01	-	3.81	4.01	3.91	-	-	-				
Poi Cap-1 Maneuver	426	81	-	123	82	250	-	-	-				
Stage 1	-	-	-	79	134	-	-	-	-				
Stage 2	401	134	-	-	-	-	-	-	-				
Platoon blocked, %	-	-	-	-	-	-	-	-	-				
Mov Cap-1 Maneuver	426	0	-	123	0	250	-	-	-				
Mov Cap-2 Maneuver	426	0	-	123	0	-	-	-	-				
Stage 1	-	0	-	79	0	-	-	-	-				
Stage 2	401	0	-	-	0	-	-	-	-				

Approach		EB	WB	SB
HCM Control Delay, s	0	1	9.1	A
HCM LOS				

Approach		EB	WB	NB
HCM Control Delay, s	27.8			
HCM LOS	D			

Minor Lane/Major Mvmt													
NBL													
NBT													
NBR													
EBLN1													
WBLN1													
WBLN1													
Capacity (veh/h)	1540	-	-	1615	-	-	949						
HCM Lane V/C Ratio	-	-	-	0.007	-	-	0.074						
HCM Control Delay (s)	0	-	-	7.2	0	-	9.1						
HCM Lane LOS	A	-	-	A	A	-	A						
HCM 95th %tile Q(veh)	0	-	-	0	-	-	0.2						

Minor Lane/Major Mvmt													
NBL													
NBT													
NBR													
EBLN1													
WBLN1													
WBLN1													
Capacity (veh/h)	-	-	-	-	-	-	250						
HCM Lane V/C Ratio	-	-	-	-	-	-	0.374						
HCM Control Delay (s)	-	-	-	-	-	-	27.8						
HCM Lane LOS	-	-	-	-	-	-	D						
HCM 95th %tile Q(veh)	-	-	-	-	-	-	1.7						



**Appendix I:**  
**Preliminary Engineering Report**

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# PRELIMINARY ENGINEERING REPORT

for

JOINT DEVELOPMENT FOR AFFORDABLE  
RENTAL HOUSING AND JUVENILE SERVICES  
CENTER/SHELTER

HONOLULU, OAHU, HAWAII 96814

TMK: 2-3-012:019

Submitted By

**SSFm INTERNATIONAL, INC.**  
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## Statement of SSFM International, Inc.'s Quality Process

*It is the policy of SSFM to have a consistent and systematic approach to the development and review of its reports and other project deliverables.*

All projects and products of our service are subject to a quality process and in no case will the quality review be eliminated. The main purpose of this process is to assure:

- ❖ Clarity, completeness, coordination, and accuracy of documents.
- ❖ That the project, study or investigation meets the Client's objectives.
- ❖ That the requirements of our Agreement with the Client have been met, and the Client has received the value of the fee to be paid.

The Preparation of This Report Was The  
Responsibility Of and Completed By:

*Joni Kormanacke*  
Signature

3/2/16  
Date

PE-16019  
Exp. 4/30/16



The Quality Review of This Report Was The  
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3/2/16  
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PE-11328  
Exp. 4/30/16



March 2, 2016



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- Figure 1: Project Location Map
- Figure 2: Land Title Survey
- Figure 3: Architectural Scheme
- Figure 4: Storm Sewer GIS Map
- Figure 5: FEMA FIRM
- Figure 6: Soil Map
- Figure 7: BWS GIS Map
- Figure 8: 2012 Existing Juvenile Detention Floor Plan
- Figure 9: DPP HoLIS GIS Sanitary Sewer Map

**Appendix B: Approved Sewer Connection Application**

**Appendix C: Proposed Fixture Units (Preliminary)**

**Appendix D: BWS Water System Pressure and Flow Data (Calculated)**

**I. INTRODUCTION**

The State of Hawaii Judiciary and Housing Finance Development Corporation (HHFDC) are proposing to jointly redevelop the property at 902 Alder Street. The proposed redevelopment is a mixed use facility to include workforce family affordable rental housing and a juvenile shelter/services center.

The objectives of this preliminary engineering report are to discuss the infrastructure requirements, design constraints, and availability of utilities to service the redevelopment project. Utility discussion will include water, sewer, drainage, and electrical utilities. The water design discussion will include an estimated count of existing plumbing fixture units that would be applied to future fees.

**II. BACKGROUND**

The property is located in urban Honolulu in the Ala Moana neighborhood. The land is zoned A-2 Medium-density Apartment District. The parcel is 1.45 acres, fronted by Pi'ikoi Street, Elm Street and Alder Street. See Figure 1 for project location. The site is presently developed. It contains low-rise structures with existing utility connections, constructed in various additions dating from the 1940's to the 1980's. The site is a partially occupied government facility, housing a juvenile shelter in one building and a defunct juvenile detention home in another building.

The proposed redevelopment project will significantly change the site in terms of occupancy and use. The site will be razed. The new project will construct a mixed-use tower and accompanying multi-level parking garage. The site will remain government owned, housing a juvenile shelter and services center on three floors, and 187 affordable rental housing units on 16 floors. It is assumed any existing utility pipes and structures within the parcel will be demolished or abandoned and new connections will be made to utility service laterals at the property line.

Figures 2 and 3 show the existing and proposed site plans. Figure 2 is a preliminary ALTA/ACSM Land Title Survey dated July 24, 2015 (survey) showing parcel and surface feature information of the existing conditions. Figure 3 shows the architect's proposed site plan scheme superimposed on the survey.

### III. DRAINAGE

#### EXISTING CONDITIONS

City and County of Honolulu (City) drainage infrastructure is in place adjacent to the property. Catch basins are located at the intersections makai of the property. The catch basin at the southeast corner of the lot, at the intersection of Elm Street and Alder Street, connects to a 42 inch RCP drainline that runs south on Alder from Elm. The catch basin near the southwest corner of the property discharges into the 36 inch x 96 inch box culvert flowing south under Pi'ikoi Street. The City has a GIS database which provides utility maps. A GIS map of the drainage system in the vicinity of the project site is shown on Figure 4. Overland flow is to the southwest on generally flat terrain. The existing site has approximately 60% impervious cover.

The project's site location has been designated to be within flood zone "X" under the Federal Emergency Management Agency (FEMA). The FEMA Flood Insurance Rate Map (FIRM) for the site is shown in Figure 5, release date January 19, 2011, Panel 15003C0362G. Zone "X" is an area that has been determined to be outside of the 0.2% annual chance (500-year) floodplain.

#### MODIFICATIONS AFTER DEVELOPMENT

The drainage system shall be designed for both storm water quantity and quality in accordance with the Department of Planning and Permitting, City and County of Honolulu, Rules Relating to Storm Drainage Standards, amended June 1, 2013, hereinafter referred to as City Drainage Standards.

For storm water quantity, the rational method shall be used with a 10 year design storm. 10 year storm rainfall intensities for the vicinity are moderate at approximately 2.5 inches per hour. City Drainage Standards require storm water runoff rates and volumes be limited to pre-development values. The proposed site will be approximately 65% impervious, an increase from the existing condition, which will likely cause a slight increase in runoff rates and volumes. The project should therefore anticipate to retain and/or detain the increase in peak storm water flows.

The project will likely disturb more than one acre of area, therefore for water quality design, the project will be classified as Type A2, projects that disturb between one and five acres. Type A2 projects must implement the following practices to meet water quality criteria:

1. Incorporate appropriate Low Impact Development site design strategies. An example is incorporating landscaped areas into the site design.
2. Incorporate appropriate Source Control BMPs. An example is including drain inlet stencils that discourage illegal dumping into drain inlets.

3. Retain or Biofilter the water quality volume with appropriate post construction treatment control BMPs. Examples include subsurface perforated chambers and vegetated swales. The water quality volume is calculated based on surface area, ground cover, a standard design storm (1 inch depth for retention facilities and 0.4 inches per hour for biofiltration facilities). Unlike storm water quantity, water quality design does not take into account the existing condition, therefore the design is not based on an increase in flow, but rather total flow from the developed condition.

Item 3, Treatment Control BMPs, will have the most impact in terms of design effort and construction and facility maintenance cost. The project should anticipate obtaining services of a geotechnical engineer to measure soil percolation rates. The owner will have obligations to the City to maintain water quality facilities that are constructed on site.

### IV. GRADING AND SOILS

A topographic survey is not yet available for the site, however it is evident from site observations that the parcel and vicinity lie on relatively flat terrain. City GIS 5 foot contours show overland slopes of approximately 1% in the vicinity.

Grading operations shall be in conformance with the Revised Ordinances of the City and County of Honolulu 1990 (ROH), however it is not anticipated that site earthwork will be a major component of construction.

The site shall be graded for accessibility in accordance with the Americans with Disabilities Accessibility Act Guidelines (ADAAG). Requirements include, in part, providing at least one accessible route from public transportation stops, accessible parking spaces, passenger loading zones if provided, and public streets or sidewalks, to an accessible building entrance. Given the gentle terrain at the site it is anticipated that the site design would be able to comply with ADAAG with little difficulty.

According to the U.S. Department of Agriculture (USDA) Soil Survey Geographic (SSURGO) database (2001) and soil survey data gathered by Foote et al. (1972), the project area's soils consist of Makiki Clay Loam, 0 to 2% slopes (MkA). See Figure 6 for the Soil Survey Map. Makiki Clay Loam soils are generally described as well-drained soils on alluvial fans and terraces and are nearly level. Permeability is moderately rapid, and runoff is slow with an erosion hazard no more than slight. The hydrologic soil group is B.

A detailed soil analysis will be performed as planning of the project proceeds. Mitigative measures, if required, will be recommended by the project's soils engineers as building design and

final locations are further defined. Mitigative measures may include removal of unsuitable soils under foundations and/or special foundation design.

## V. ROADS, SIDEWALKS AND DRIVEWAYS

### EXISTING CONDITIONS

The property is fronted by three streets owned by the City, Alder Street on the east (Diamond Head), Elm Street on the south (makai), and Pi'ikoi Street on the west (Ewa). The property is also fronted by a T-intersection on the west side, where Alohi Way, a City-owned street, meets Pi'ikoi Street. The table below summarizes the cross sectional elements of the surrounding streets.

**Table 1**  
**Roadway Summary**

	Surrounding Street Cross Section Summary		
	Pi'ikoi Street	Elm Street	Alder Street
Width	64 ft.	28 ft.	20 ft.
# lanes	4	2	1
Direction	one-way (northbound)	two-way	one-way (southbound)
Street Parking (parallel)	115 ft. unmetred (except no parking 3:30 pm - 5:30 pm)	130 ft. unmetred	40 ft. unmetred, 50 ft. restricted for police use only
Curb & Gutter	Lava rock curb, Concrete gutter	Concrete curb & gutter	Concrete curb & gutter
Sidewalk	4 ft. concrete sidewalk 1 ½ ft. landscape strip	5 ½ ft. concrete	5 ½ ft. concrete
Ownership	City and County of Honolulu	City and County of Honolulu	City and County of Honolulu

The property has four driveway aprons, three on Alder Street and one on Pi'ikoi Street. A gate and driveway on Pi'ikoi Street allows service access. One of the driveways on Alder provides access to a small parking lot. Another driveway apron provides access to a pad of illegal parking stalls that encroach onto the sidewalk. The third Alder driveway apron presently provides no vehicle access to the property.

### MODIFICATIONS AFTER DEVELOPMENT

The project will modify the layout of roadways, sidewalks and driveways. Modifications are subject to approval by the City Department of Planning and Permitting (DPP), and shall be in accordance with the ROH and Hawaii Administrative Rules. Generally, designs shall conform to the City standard details and specifications, and AASHTO design guides.

The proposed site plan has two driveway aprons, one on Pi'ikoi Street opposite Alohi Way, and one on Alder Street. The two driveway alignments are shown as co-linear on either side of the parking garage. The City is authorized to designate the location of driveways in areas zoned for hotel-apartment use, as is this project. Through an informal preliminary review, the DPP Traffic Review Branch did not see any immediate concerns regarding the proposed layout of the driveways. The Pi'ikoi Street driveway apron may conflict or not meet clearance requirements with existing utilities, specifically a fire hydrant, a utility pole and a water meter. This may require a variance from the City as well as utility relocations. Geometric design of the driveways should be straightforward with minimal challenges, given the gentle site grades and long frontage of the property.

The proposed site plan shows proposed sidewalk curb extensions (bulb outs/bump outs) into the parking lane on the mauka side of Elm Street between Pi'ikoi Street and Alder Street. The City will need to be provided a rationale for adding the curb extensions as well as impacts to the two-way traffic flow on Elm Street. Curb extensions are a feature of Complete Street design generally intended to increase pedestrian safety, enhance sidewalk use and provide traffic calming. Construction of the curb extensions will also have impacts to various existing infrastructure features, such as curb ramps, utility structures, and traffic striping and signage. These features will need to be relocated and constructed in accordance with City standards.

Segments of sidewalk, curb and gutter shall be restored where existing driveway aprons are abandoned.

The Pi'ikoi Street driveway improvements may disturb existing lava rock curb. These curbs are considered historic and therefore any disruption to them will require special handling. In some cases they are embedded deeper than standard curbs. Below grade the finish may be found to be roughewn rather than squared off. Mitigations will need to be coordinated with the City and may include reusing the lava rock curbs, or salvaging the curb and replacing with a new curb of similar finish.

A traffic impact analysis report (TIAR) is being prepared separately in support of the environmental assessment report. Existing operating conditions were evaluated during the AM and PM peak hours. Future conditions were evaluated for the year 2022 for determination of project impact as well as the completion of the Honolulu Rail Transit project.

## VI. WATER

### EXISTING CONDITIONS

The Honolulu Board of Water Supply (BWS) provides water service to the existing project site. Based on BWS system as-built plans, domestic water service is currently provided by a 4-inch lateral (3-inch compound meter no. 04094081) connected to an existing 6-inch water main along Alohi Way. A City GIS water map in the vicinity of the project site was provided by BWS and is exhibited on Figure 7.

The total existing plumbing fixture units (FU) are estimated to be 251.5 FU. The fixture count is based on an existing floor plan from the 2012 Assessment Survey Report by Pacific Architects, Inc. as shown in Figure 8 and the survey (Figure 2). The fixture counts will need to be confirmed during the construction document phase. The following table provides an estimated breakdown of the existing fixtures and corresponding total fixture units. Fixture units per each fixture type are values designated by BWS for non-low flow fixtures. Per the 2012 Assessment Report, all the existing plumbing fixtures are non-low flow.

**Table 2**  
**Estimated Existing Fixture Units**

	Lavatory	Sink	Laundry Tray	Washing Machine	Water Closet	Urinal	Shower	Hose bibs (1st)	Hose Bibs (additional)
Quantity of Fixtures	46	5	2	1	38	7	22	1	8
Fixture Units (FU) Each	1	2	2	2	3	3	2	2.5	1
Total FU	46	10	4	2	114	21	44	2.5	8

**Total Existing FU: 251.5**

Three existing fire hydrants are located within the parcel frontage. FH M02662 is located on the near side of Pi'ikoi; FH M06177 is located on the near side of Elm; and FH M06176 is located across Alder. Additionally, FH M03919 is located within the next block makai on Pi'ikoi and is closer to portions of the parcel than the other fire hydrants.

Calculated flow data obtained from BWS for the three hydrants within the parcel frontage indicates static pressures ranging 74-75 psi, residual pressures ranging 55-56 psi and flows of 2000 gpm. The data are based on BWS models of the existing water system and assumptions of a full reservoir and no demands on the water system. The static pressure represents the theoretical pressure based on the assumptions. To determine flow available at the site, on-site pressure readings will need to be taken and correlated to the provided data. See the Appendix for the December 28, 2015 letter from BWS which provided the pressure and flow data.

The existing building does not have fire sprinklers.

### PROJECTED WATER DEMAND

Domestic water, irrigation and fire sprinkler line connections will be supplied by the BWS system. The proposed project development will create significant additional water demands on the BWS system. An inquiry has been made to BWS as to whether the system has capacity to accommodate the redevelopment.

Domestic water demand planning estimates for this project, based upon BWS Water System Standards 2002, Table 100-18, Domestic Consumption Guidelines, are summarized below.

**Table 3**  
**Projected Water Demand**

Zoning Designation	Demand Rate	Quantity	Domestic Consumption gal/day
Multi-Family High Rise (HHFDC Housing)	300 gal/unit	187 units	56,100
Commercial/Residential Mix (Juvenile Shelter and Services Center)	120 gals/1000 sf	35,452 sf	4,254
<b>Total Average Daily Demand</b>			<b>60,354</b>
<b>Maximum Daily Demand (1.5x factor)</b>			<b>90,531</b>
<b>Peak Hour Demand (3x factor)</b>			<b>181,063</b>

The preliminary estimated total proposed fixture units provided by the architect is 2,036.3 FU, broken down into 1,814.7 FU for the rental housing, and 221.6 FU for the juvenile services center and shelter. See the Appendix for a breakdown of proposed fixture unit estimates.

All existing fixtures will be demolished. These existing fixture units to be removed will be taken into account by BWS when determining water charges and capacity of the system to accommodate the redevelopment. The BWS Flow Requirements worksheet used to account for new, demolished and remaining fixtures is shown below in Table 4.

**Table 4**  
**BWS Flow Requirements**

<b>Residential and Non-Residential Flow Requirements</b> ("Rapid Approval Process" and "Rapid Permit Review Process") For projects that involve removal and/or installation of new water fixtures, the FLOW REQUIREMENTS shall be placed on the construction plan (NO STICKY BACK) prior to submittal for BWS review. Please use the format as shown below:	
<b>BWS FLOW REQUIREMENTS</b>	
Premise ID #:	1014335
Meter Number (M/N):	04094081
Description	fu gpm gpd
A. Proposed Domestic: (All fixtures being installed)	1,838.3 305
B. Proposed Irrigation:	98.0 45
C. Other	Pool makeup 100.0 45
D. Total Proposed: (Do Not include irrigation gpm if less than domestic and done during off-peak hours)	1,936.3 315
E. Demolition: (All fixtures being removed)	251.5 75
F. Net Change: (Subtract "E" from "D" above)	1,684.8 290
G. Existing to Remain: (Other fixtures serviced by this meter but not affected by project)	0 0
H. GRAND TOTAL (Add "D" and "G" above)	1,936.3 315

NOTE:  
Utilize UPC to convert fixture units to gpm. GPM's shall not be added or subtracted. All gpm flow rate without specific fixture unit designations shall be converted on the tank type curve for computation purposes.

[www.BoardOfWaterSupply.com](http://www.BoardOfWaterSupply.com)  
 630 S. Beretania St. • Honolulu, HI 96843 • ContactUs@hbws.org  
 © Copyright 2004 Board of Water Supply, City & County of Honolulu

Total Proposed fixture units from line D in the worksheet above is 1,938.3 FU. This equates to a flow of approximately 315 gpm. (UPC 2015, Appendix A, Chart A 103.1(1) Estimate Curves for Demand Load). A 3-inch meter typically accommodates a maximum flow of 320 gpm (AWWA Manual M22, Table 6-1 Meter Standards). The existing 3-inch meter may be sufficient to service the proposed project, however due to the close values for flow requirement and capacity it's possible the meter will need to be upsized to a 4-inch meter when fixture unit counts are finalized.

Fire protection will be in accordance with BWS standards and the National Fire Protection Association (NFPA) Fire Code. For high rise apartments, BWS standards require a fire hydrant flow capacity of 2000 gpm for 2 hours, and a maximum hydrant spacing of 250 feet. The existing fire hydrant spacing does not appear to meet the maximum spacing requirements. Additional hydrants may need to be added for the project.

The location of the existing fire hydrants in relation to the proposed building meets the 400 ft. maximum distance to the closest point on a structure requirement of the NFPA 1 Fire Code. The hydrant on Pi'ikoi Street may be in conflict with the location of the proposed driveway, and therefore may need to be relocated.

A new fire sprinkler water service connection and DC meter will be required.

## VII. WASTEWATER

### EXISTING CONDITIONS

The existing facility is serviced by at least one 6 inch sewer lateral. Limited as-built information shows one 6 inch lateral flowing south on the property adjacent to Alder Street. The City GIS sewer map as shown in Figure 9 shows multiple 6 inch laterals connecting to the property. One lateral connects on Elm near Alder to a manhole at the Elm/Alder intersection. Another lateral connects to an 8 inch main on Alder near Elm, with an assumed wyc connection. The 8 inch main on Alder changes direction at Elm, continuing to the east on Elm, however at an apparently smaller diameter of 6 inches. The pipe diameters will need to be verified in the field. Two laterals connect to a 12 inch main on Pi'ikoi, with an assumed wyc connection.

### PROJECTED WASTEWATER FLOWS

The quantity of wastewater and design of the sewer system will be in accordance with the Design Standards of the Department of Wastewater Management, City and County of Honolulu, dated July 1993.

The estimated quantity of wastewater from the proposed project is shown below.

**Table 5**  
**Projected Wastewater Flow**

Category	Quantity of Wastewater (GPD)
HHFDC Housing (187 units)	43,424
Juvenile Shelter and Services Center (35,452 sf)	8,981
Average Wastewater Flow	52,405
<b>Design Average Wastewater Flow</b>	<b>75,332</b>
<b>Design Maximum Flow</b>	<b>284,951</b>
<b>Design Peak Flow</b>	<b>288,940</b>

Reuse of the existing sewer laterals will be assessed during the design. Where reuse of existing laterals is not feasible or insufficient, new sewer lateral(s) will be installed. Size and slope of the laterals will be based on meeting capacity and maximum velocity requirements for the Design Peak Flow, and minimum scouring velocity requirements for the Design Average Flow.

Preliminary approval to connect to the City wastewater system has been given by DPP Wastewater Branch in response to a Sewer Connection Application (SCA). The approval directs the project to connect to the 8-inch main on Alder Street. Wastewater system facility charges will be assessed during the design phase. The SCA will need to be updated and resubmitted if project parameters change, such as number of residential units, number of anticipated employees in the office space, number of shelter rooms, and water meter size. The approval is valid for two years. If construction plans are not completed and approved within this timeframe, the SCA will need to be resubmitted. See the Appendix for the approval document.

## VIII. ELECTRICAL AND TELECOM

Electrical service is available in the area. Utility poles and underground boxes are shown on the survey. An electrical assessment was done as part of the 2012 Assessment Report. The report states the existing facility has four Hawaiian Electric Company (HECO) meter boxes, all with active service. The table below summarizes the electrical service findings in the report.

Redevelopment of the site would require the existing incoming electrical service and distribution be upgraded or replaced to meet new electrical load requirements.

**Table 6**  
**Existing HECO Service Summary**

HECO Meter No.	Electrical Service
385291	120/240 volts, single phase, three wires for general lighting and receptacle loads for the detention facility.
473366	240 volts, three phase, three wires for air conditioning and refrigeration loads for the detention facility.
412101	100 ampere service. 120/208 volts, three phase, four wires for lighting and receptacle loads for the shelter facility.
487541	100 ampere service. Electrical service is 120/208 volts, three phase, four wires for air conditioning and heating/cooling type loads for the shelter facility.

A HECO underground box is located on Alder just mauka of the property.

Telephone and cable service are active at the existing facility. A Hawaiian Telcom underground box is located on Alder near Elm as shown on the survey. The survey indicates telephone and cable service is provided to the property from this box.

Coordination with and submittal to HECO, Hawaiian Telcom and Oceanic Time Warner Cable shall be coordinated as the design progresses.

## IX. REFERENCES

1. Americans with Disabilities Accessibility Act Guidelines for Buildings and Facilities, as amended through 2002, U.S. Architectural and Transportation Barriers Compliance Board (Access Board)
2. Assessment Survey Report for Juvenile Detention Home Planning for Redevelopment, Pacific Architects Inc., January 20, 2012
3. Design Standards of the Department of Wastewater Management, Volume I, Department of Wastewater Management, City and County of Honolulu, Hawaii, July 1993
4. National Fire Protection Association, NFPA 1: Fire Code
5. Revised Ordinances of the City and County of Honolulu 1990, Chapter 14 Public Works Infrastructure



6. Rules Relating to Storm Drainage Standards, Department of Planning and Permitting, City and County of Honolulu, Amended June 1, 2013
7. Sizing Water Service Lines and Meters, AWWA Manual M22, Second Edition, 2004, American Water Works Association
8. Soil Survey of Islands of Kauai, Oahu, Maui, Molokai, and Lanai, State of Hawaii. U.S. Department of Agriculture, Soil Conservation Service, August 1972
9. Uniform Plumbing Code 2015, International Association of Plumbing and Mechanical Officials
10. Water System Standards, Board of Water Supply, City and County of Honolulu, Hawaii 2002

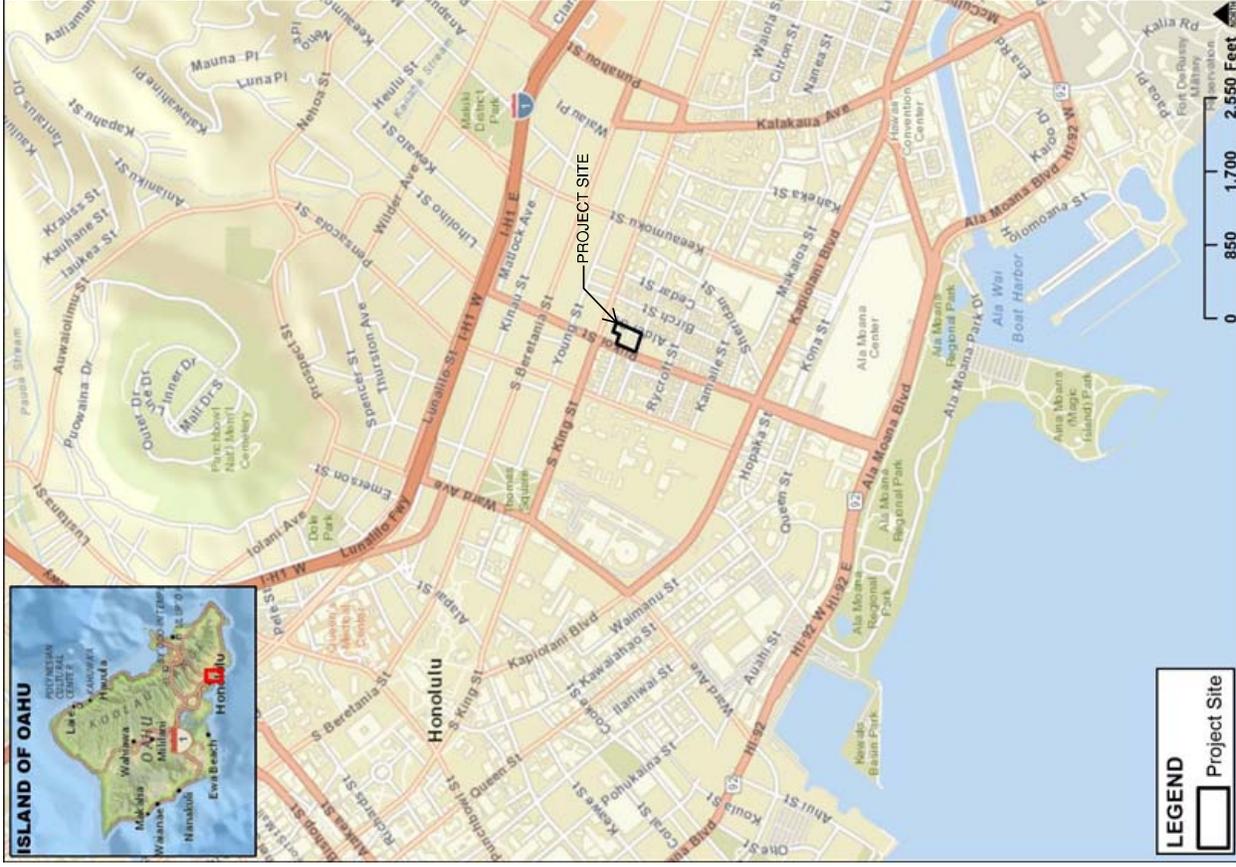


## APPENDICES

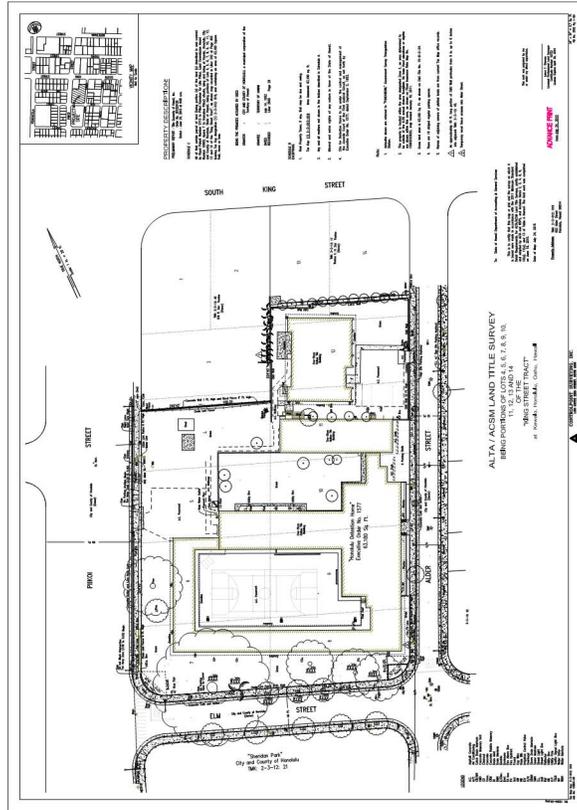
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**APPENDIX A: Figures**

- Figure 1: Project Location Map
- Figure 2: Land Title Survey
- Figure 3: Architectural Scheme
- Figure 4: Storm Sewer GIS Map
- Figure 5: FEMA FIRM
- Figure 6: Soil Map
- Figure 7: BWS GIS Map
- Figure 8: 2012 Existing Juvenile Detention Floor Plan
- Figure 9: DPP HoLIS GIS Sanitary Sewer Map

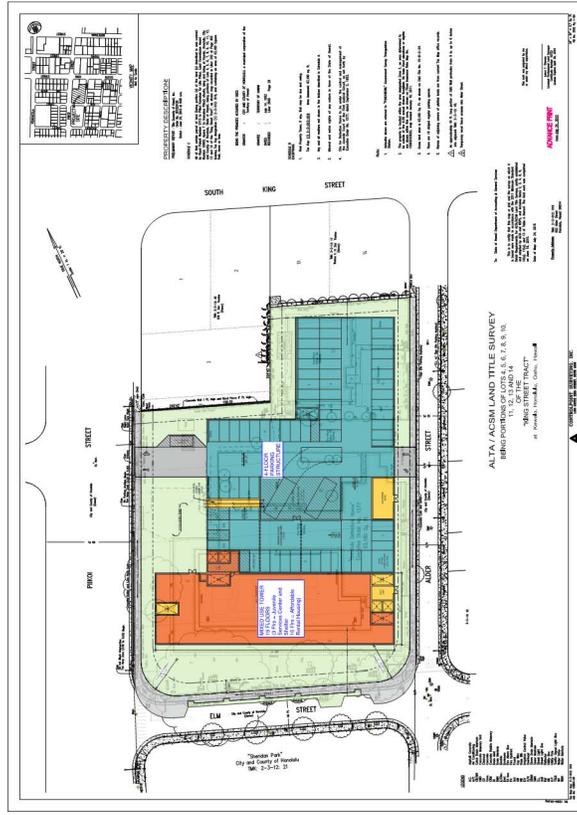


**FIGURE 1**  
**PROJECT LOCATION MAP**



Scale: 1"=80 ft (8.5x11")

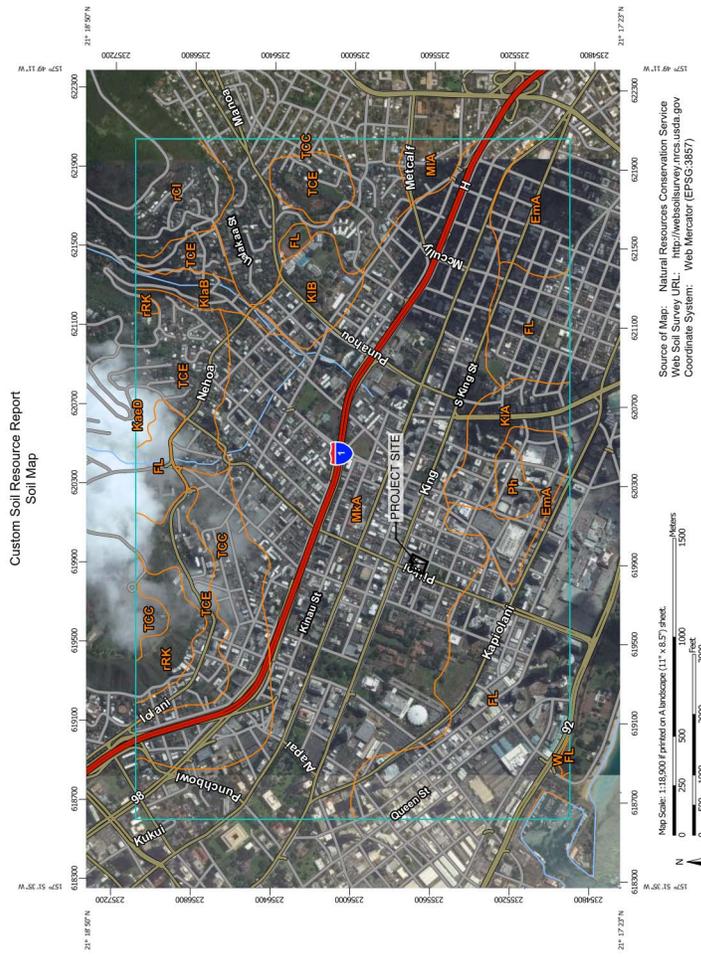
FIGURE 2  
EXISTING CONDITION



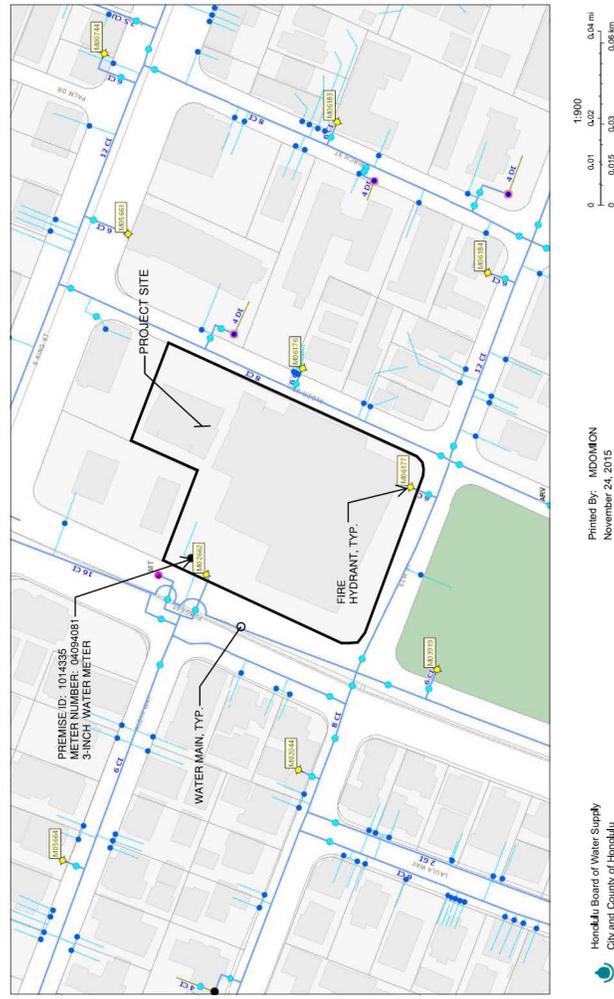
Scale: 1"=80 ft (8.5x11")

FIGURE 3  
ARCHITECT'S PROPOSED SCHEME





**FIGURE 6**  
**SOIL SURVEY MAP**



**FIGURE 7**  
**WATER GIS MAP**

Honolulu Board of Water Supply  
 City and County of Honolulu

Printed By: MDOHMION  
 November 24, 2015

11/24/2015 DPP HILLS GIS - SANITARY SEWER SYSTEM



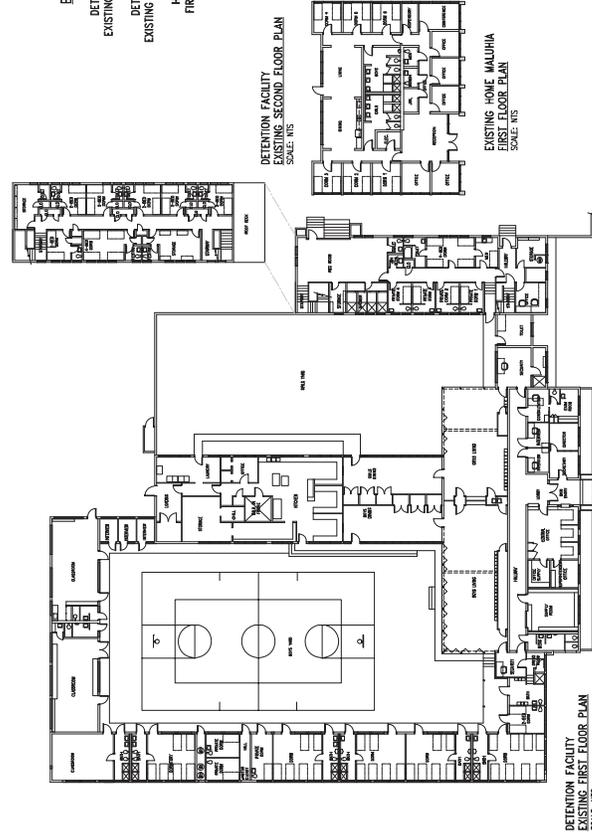
DPP HILLS GIS - SANITARY SEWER SYSTEM  
 Notes: From DPP Hills Advanced Invasive GIS Map  
 Powered by ArcGIS Server 10  
 © 2015 Esri, All Rights Reserved. 2015  
 Date: 11/23/2015

Copy Right  
 with All Map  
 Building Footprints (NGA 2009), National Geospatial-Intelligence Agency

FIGURE 9  
 SANITARY SEWER GIS MAP

http://gis.hicentral.com/PAJW/website/ 1/1

EXHIBIT "D"  
 DETENTION FACILITY  
 EXISTING FIRST FLOOR PLAN  
 DETENTION FACILITY  
 EXISTING SECOND FLOOR PLAN  
 HOME MAUIHA  
 FIRST FLOOR PLAN



JUVENILE DETENTION HOME  
 PLANNING FOR REDEVELOPMENT  
 DATE: JAN. 15, 2014

FIGURE 8  
 EXISTING FLOOR PLAN

PACIFIC ARCHITECTS, INC.



Joint Development for Affordable Rental  
Housing and Juvenile Services Center/Shelter  
Preliminary Engineering Report  
March 2, 2016

**APPENDIX B: Approved Sewer Connection Application**



DEPARTMENT OF PLANNING AND PERMITTING  
**CITY AND COUNTY OF HONOLULU**  
650 SOUTH KING STREET \* HONOLULU, HAWAII 96813  
Phone: (808) 768-8209 \* Fax: (808) 768-4210

**SEWER CONNECTION APPLICATION**

APPLICATION NO.: **2015/SCA-0935** STATUS: **Approved with conditions** **\$840,901.60**  
 DATE RECEIVED: **12/02/2015** IWDP APP. NO.: **Estimated Wastewater System Facility Charge\***  
 PROJECT NAME: **2015/SCA-0935 Judiciary Multi-Use and HHFDC Housing Joint Development**

LOCATION:

Zone	Section	Plat	Parcel
2	3	012	019

**902 ALDER ST Honolulu / Downtow 63,180 Sq. Ft.**

SPECIFIC LOCATION: **902 Alder St.**

APPLICANT: **SSFM Engineers, Inc.**  
 Attn: Lori Koehncke  
 501 Sumner Street, Suite 620  
 Honolulu, HI 96817

DEVELOPMENT TYPE: **Dwelling, Multi-family**

SEWER CONNECTION WORK DESIRED: **Existing**

OTHER USES: **Dormitory - 12 Rooms**  
**Government Offices - 35 Employees**

NON-RESIDENTIAL AREA: \_\_\_\_\_ s.f. APPROXIMATE DATE OF CONNECTION: **01/01/2018**

**PROPOSED UNITS**

**EXISTING UNITS**

**UNITS TO BE DEMOLISHED**

No. of New Units: **187**  
 Studios: **0**  
 1-Bedroom: **108**  
 2-Bedroom: **63**  
 3-Bedroom: **16**  
 4-Bedroom: \_\_\_\_\_  
 5-Bedroom: \_\_\_\_\_  
 6-Bedroom: \_\_\_\_\_

No. of Existing Units: **0**  
 Studios: \_\_\_\_\_  
 1-Bedroom: \_\_\_\_\_  
 2-Bedroom: \_\_\_\_\_  
 3-Bedroom: \_\_\_\_\_  
 4-Bedroom: \_\_\_\_\_  
 5-Bedroom: \_\_\_\_\_  
 6-Bedroom: \_\_\_\_\_

No. of Units to be Demolished: **0**  
 Studios: \_\_\_\_\_  
 1-Bedroom: \_\_\_\_\_  
 2-Bedroom: \_\_\_\_\_  
 3-Bedroom: \_\_\_\_\_  
 4-Bedroom: \_\_\_\_\_  
 5-Bedroom: \_\_\_\_\_  
 6-Bedroom: \_\_\_\_\_

REMARKS **Connect to the 8-inch main on Alder Street. WSFC pending on increase in WM size.**

APPROVAL DATE: **12/07/2015**

*Valid 2-years after approval date. Construction plans shall be completed and approved within this 2-year period. Construction shall commence within 1-year after approval or plans.*  
*\* Applicable WSFC shall be collected at the prevailing rate in accordance with ROH 1990, Chapter 14, Sections 14-10.3, 14-10.4, 14-10.5 and Appendix 14-D.*

EXPIRATION DATE: **12/06/2017**

REVIEWED BY: **Mindy Yoneshige**

*Mindy Yoneshige*  
 Site Development Division, Wastewater Branch



Joint Development for Affordable Rental  
Housing and Juvenile Services Center/Shelter  
Preliminary Engineering Report  
March 2, 2016

**APPENDIX C: Proposed Fixture Units (Preliminary)**

PLUMBING FIXTURE SUMMARY - PROPOSED PLUMBING FIXTURES FOR HERO

FIXTURES PER UNIT	TOTAL COUNT OF FIXTURES										
	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET
1 Bedroom Unit	2	2	1	1	1	1	1	1	1	1	1
2 Bedroom Unit	2	2	2	2	2	2	2	2	2	2	2
3 Bedroom Unit	3	3	3	3	3	3	3	3	3	3	3
Ground Flr Rec	...	...	...	...	...	...	...	...	...	...	...
Common Rec	...	...	...	...	...	...	...	...	...	...	...
<b>HERO</b>	<b>199</b>	<b>394</b>	<b>446</b>	446	446	446	446	446	446	446	446
											<b>276</b>

FIXTURE UNITS (FU) EACH	1.0	1.0	1.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	100.0	40.0
<b>TOTAL FU</b>	<b>304.0</b>	<b>396.4</b>	<b>766.4</b>	<b>471.2</b>	<b>2.5</b>	<b>7.0</b>	<b>3.0</b>	<b>2.0</b>	<b>2.0</b>	<b>2.0</b>	<b>40.0</b>	<b>2.0</b>	<b>100.0</b>	<b>40.0</b>

TOTAL PROPOSED FIXTURE UNITS 642.6  
1,444.3 FU  
1,314.7

PLUMBING FIXTURE SUMMARY - PROPOSED PLUMBING FIXTURES FOR JLD

FIXTURES PER UNIT	TOTAL COUNT OF FIXTURES										
	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET	WATER CLOSET
1 Bedroom Unit	2	2	1	1	1	1	1	1	1	1	1
2 Bedroom Unit	2	2	2	2	2	2	2	2	2	2	2
3 Bedroom Unit	3	3	3	3	3	3	3	3	3	3	3
Ground Flr Rec	...	...	...	...	...	...	...	...	...	...	...
Common Rec	...	...	...	...	...	...	...	...	...	...	...
<b>JLD</b>	<b>8</b>	<b>34</b>	<b>31</b>	31	31	31	31	31	31	31	31
											<b>20</b>

FIXTURE UNITS (FU) EACH	1.0	1.0	1.7	1.0	1.0	1.0	1.0	1.0	1.0	1.0	2.0	2.0	100.0	40.0
<b>TOTAL FU</b>	<b>12.0</b>	<b>30.4</b>	<b>52.7</b>	<b>33.0</b>	33.0	33.0	33.0	33.0	33.0	33.0	<b>40.0</b>	<b>2.0</b>	<b>100.0</b>	<b>40.0</b>

TOTAL PROPOSED FIXTURE UNITS 183.2  
284.4 FU  
221.0

14-077  
**JUVENILE SERVICES CENTER AND HOUSING - MASSING STUDY**  
(Collocated Residential Tower and JLD w/ separate Parking Structure)  
602 ALABAMA ST. HONOLULU, HI 96814  
DATE: 10/20/15



1000 KALANIAUOANUI BLVD  
SUITE 1000  
HONOLULU, HI 96813

**A07**



Joint Development for Affordable Rental  
Housing and Juvenile Services Center/Shelter  
Preliminary Engineering Report  
March 2, 2016

## APPENDIX D: BWS Water System Pressure and Flow Data (Calculated)

### BOARD OF WATER SUPPLY

CITY AND COUNTY OF HONOLULU  
630 SOUTH BERETANIA STREET  
HONOLULU, HI 96843



COMMUNICATIONS ARE  
RECEIVED

JAN 4 2016

XEROX

December 28, 2015

KIRK CALDWELL, MAYOR  
DUANE R. MIYASHIRO, CHAIR  
ADAM C. WONG, VICE CHAIR  
DAVID C. HUIHEE  
KAPUA SPROAT  
BRYAN P. ANDAYA  
ROSS S. SASAMURA, Ex-Officio  
FORD N. FUCHIGAMI, Ex-Officio  
ERNEST Y. W. LAU, P.E.  
Manager and Chief Engineer  
ELLEN E. KITAMURA, P.E.  
Deputy Manager and Chief Engineer

HIF

Mr. Timothy Guerrero  
SSFM International  
501 Sumner Street, Suite 620  
Honolulu, HI 96817

Dear Mr. Guerrero:

Subject: Your Email Dated November 19, 2015 Requesting Flow and Pressure Data for  
the Proposed Multi-Use and Housing Development Located Between Piikoi Street  
and Alder Street – Tax Map Key 2-3-012.019

The Board of Water Supply has suspended fire flow tests on fire hydrants as a water conservation  
measure. However, you may use the following calculated flow data for Fire Hydrant Nos. M-02662,  
M-06176, and M-06177:

Fire Hydrant Number	Location	Static Pressure (psi)	Residual Pressure (psi)	Flow (gpm)
M-02662	Piikoi Street	74	56	2000
M-06176	Alder Street	74	55	2000
M-06177	Elm Street	75	56	2000

The data are based on the existing water system, and the static pressure represents the theoretical  
pressure at the point of calculation with the reservoir full and no demands on the water system. The static  
pressure is not indicative of the actual pressure in the field. Therefore, in order to determine the flows that  
are available to the site, you will have to determine the actual field pressure by taking on-site pressure  
readings at various times of the day and correlating that field data with the above hydraulic design data.

The map showing the location of the fire hydrants is attached.

If you have any questions, please contact Robert Chun, Project Review Branch of our Water Resources  
Division at 748-5443.

Very truly yours,

*Robert Chun*  
Robert Chun  
Project Review Branch

Attachment





**Appendix J:**  
**Electrical Power and Communications**  
**Report**

---





REBUILD OF JUVENILE DETENTION CENTER (BETWEEN PIIKOI STREET/ALDER STREET)

Anticipated Electrical Scope of Work

Electrical Power Requirements

The State of Hawaii Housing Finance Development Corporation (HHFDC) and the Judiciary Courts of the State of Hawaii, Juvenile Detention Facility Redevelopment Planning are proposing a joint development project at 902 Alder Street, in Honolulu. The site, at Tax Map Key (TMK) #2-3-012-019, is on the south side of the block bordered by King Street (N), Piikoi Street (W), Elm Street (S), and Alder Street (E).

The proposed facility includes a 35,452 square foot facility which will house administrative services, a recreational center, a supervised visitation area, shelter classrooms, a laundry area, restrooms, and storage space. The HHFDC is also proposing to construct an affordable housing complex on the same site, in combination with the Juvenile Detention Facility, which includes 187 residential units, currently a mix of one, two, and three-bedroom designs.

For the purposes of our calculations, we were asked to consider each of the residential units as fully-furnished apartments, with a kitchen and water heater, and air conditioning. We provisioned for 2 washers/dryers per floor, in a space to be determined, for communal use; if the intent shifts to provide more machines, the load calculation will go up. The building also features 5 elevators - 3 in the residential wing and 2 in the other. These are also major loads factored into the calculations.

Using these parameters, we did several load calculations to determine some ranges of expected load. We did the load calculations per the 2008 National Electrical Code (NEC).

Assuming all equipment will be electrical, which we feel represents the high end of the estimate, the calculation yields an expected demand of 3910 kVA.

However, on our initial site assessment, we did note the presence of gas service to a few properties on Alder Street - if that gas service can be extended to this building as well, we could have the ranges, dryers, and water heating all on gas, which reduces the expected electrical demand on the building.

Assuming that gas service takes care of the ranges, water heating, and dryers, the NEC calculation yields a smaller expected demand of 2670 kVA - this is about 30% less power, which will also reduce the size of the service equipment and the HECO transformer.

Both options will require the installation of a large transformer by HECO, which will likely go in one of the wings, on the ground floor, in a dedicated HECO vault. Inside, a transformer pad and underground ductbank, encased in concrete, from the transformer pad to the point of nearest utility power (likely the base of a power pole with overhead power lines) will be required by HECO, and provided by the Contractor during construction. Two medium-voltage lines will then be pulled directly into this vault. We are anticipating the size of the HECO transformer at 2000 kVA; however, HECO will be the one to make the call on the actual size provided, meaning that it could be bigger or smaller. With gas service, our estimate on the HECO transformer drops to 1500 kVA.

To reduce the size of conduit and wiring, and because of the size of the power requirements, we are initially looking at distributing the power through the building at 480V, and transforming down to 208V near the intended end-user points. The main electrical room, with the large switchboard, will most likely be next to the HECO vault, and additional electrical rooms will be distributed throughout the buildings to house distribution panels and transformers.

The elevators will likely be powered by direct feeds from the switchgear or first level distribution, and will likely accept 480V power. Any A/C serving common areas or large areas, such as the office spaces, can be selected to accommodate 480V power as well.

As actual loads are decided, and equipment is selected, the overall power demand may change.

Communications Requirements

The IDC will require communications services, which will likely be provided by either Hawaiian Telcom (HTEL) or Oceanic / Time Warner Cable (OTWC).

Both companies currently offer television, telephone, and internet services via their network, so selecting a single provider is an option, and one we recommend. Unless specifically desired for some reason, we discourage having both utilities, since this will impose two sets of requirements on the comm infrastructure design and placement of equipment that will need to be met.

In addition, because this is a government facility, the managers may also want to restrict the residents' ability to have free reign on internet searches - similar to schools, which institute their own system of firewalls, search restrictions, and site blocking. The cable TV service to each room will also want to be filtered for young adults. This can be achieved two ways - either the utility institutes some general blocks and restrictions on their equipment, to filter what is allowed, and sets this on their main distribution frame in a central comm room, likely on one of the office floors; or the owner provides the backbone and mainframe, and the utility just provides the service to the main comm room.

Residential Service (to the units) should include:

- Telephone
- Cable TV
- Internet

Office/Administrative Service should include:

- Telephone
- Cable TV
- Internet
- Security
- Parking Access

Per our study of the site, both HTEL and OTWC have handholes in the area - OTWC has a sizeable handhole on Piikoi Street, and HTEL has at least two telephone lines, one at the corner of Alder Street and Elm Street, and one along Piikoi Street. These are the most likely points of connection, and underground infrastructure for the building will most likely be laid in once the site prepwork begins.



**Appendix K:**  
**Population, Economic and Fiscal Impacts**

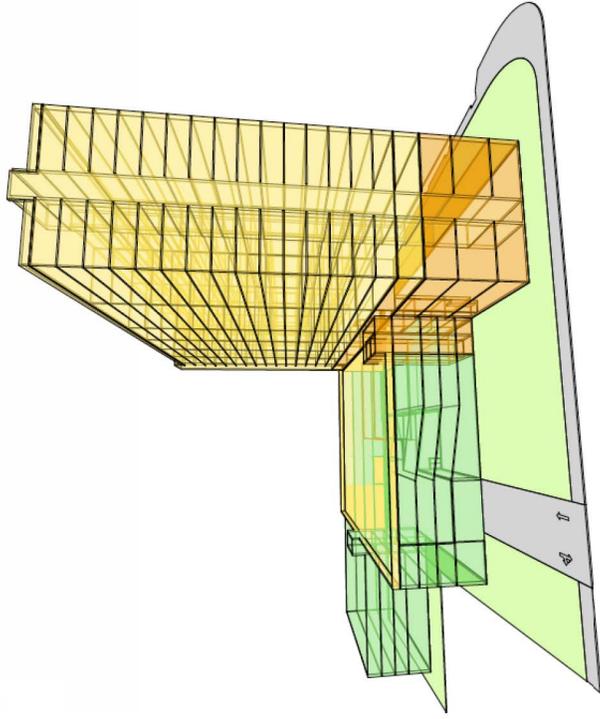
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***ALDER STREET PROJECT:  
POPULATION, ECONOMIC AND FISCAL IMPACTS***

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***ALDER STREET PROJECT:  
POPULATION, ECONOMIC AND FISCAL IMPACTS***

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*PREPARED FOR:*  
**Judiciary Courts of the State of Hawai'i  
and  
Hawai'i Housing Finance & Development Corporation**

*PREPARED BY:*  
**Plasch Econ Pacific LLC**

*UNDER SUBCONTRACT TO:*  
**SSFMI International**

**March 2016**

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no expensive schools improvements will be required; and (3) and State and County services are already provided to workers directly or indirectly involved with Project development, and to the families of these workers.

#### Operations

Both the State and the County will receive negligible tax revenues from operations. This is because (1) the property will be exempt from paying property taxes; (2) rental income will be exempt from the excise tax and surcharge; (3) the rental units will be managed by a non-profit organization (no income taxes); and (4) the regional increase in employment, payroll, and personal income taxes will be negligible.

The change in State and County support expenditures are expected to be negligible, given that both already provide services to the employees who will be working in the Project buildings, as well as to residents living in the the rental units.

### **3. SUMMARY OF COMMUNITY BENEFITS**

The primary community benefits of the Project will include:

- A new Juvenile Center that will expand the capacity of the former facility, and improve services for youth and families at risk, and for juveniles entering into or progressing through the juvenile justice system.
- About 187 affordable rental housing units for working families and seniors.
- An average of about 410 direct and indirect jobs during construction.

## **EXECUTIVE SUMMARY**

### **1. PROJECT PLANS**

The Judiciary Courts of the State of Hawaii and the Hawaii Housing Finance Development Corporation are jointly proposing to develop (1) a 19-story, mixed-use structure housing a juvenile services/shelter center (Juvenile Center) and affordable rental housing (187 units); and (2) a 4-story parking structure (283 stalls)—(“the Project”). The Project will replace an older Juvenile Center that is partially vacant.

### **2. MAJOR ECONOMIC IMPACTS**

#### **a. Residents**

The Project will provide affordable housing for about 390 residents.

#### **b. Employment**

##### Construction and Related Employment

Development of the Project will provide an average of about 140 construction jobs over the 2-year construction period, plus about 275 indirect jobs, for a total of about 410 direct-plus-indirect jobs.

##### Operations

Operations will result in a negligible increase in regional employment because most workers are already at the existing site, or will relocate from nearby State offices.

#### **c. Tax Revenues**

##### Construction Activity

Most of the tax revenues generated by development will be paid to the State, not the County. In total, the State will receive an estimated \$5 million from excise taxes, corporate income taxes, and personal income taxes. The County will receive about \$180,000 from the excise tax surcharge. Due to the exemption for qualifying low-income rental projects, this amount does not include any excise tax or surcharge on the construction costs of the residential portion of the Project.

For both the State and the County, support expenditures are expected to be negligible inasmuch as (1) no expensive government infrastructure for the Project will be required; (2)

### Accuracy of Estimates

Much of the analysis contained in this report is quantitative in nature, where numbers are used to help communicate anticipated impacts. However, these numbers should not be interpreted as precise predictions. Rather, they represent the best estimates of what is expected to occur based on available information about future development, market conditions, and tax rates. As a general rule, economic and fiscal impact estimates in this report are accurate within about 20%.

#### **c. Organization of the Report**

The material below gives the following information about the Project and its economic and fiscal impacts: a description of the Project, the economic impacts of construction and related activities, the economic impacts of Project operations and related activities, and the impact on State and County finances.

The detailed assumptions, multipliers, and calculations are shown in five tables at the end of the report. These tables cover the following:

- Table 1: Project Plans
- Table 2: Economic Impacts of Development Activities
- Table 3: Economic Impacts of Operations
- Table 4: Impacts on County Revenues and Expenditures
- Table 5: Impacts on State Revenues and Expenditures

In the tables, the quantities appearing in **bold** highlight the more significant population, economic and fiscal impacts.

#### **d. Economic Consultant**

The analysis was conducted by Plasz Econ Pacific LLC, a Hawai'i-based economic-consulting firm specializing in economic development, land and housing economics, feasibility studies, valuations, market analyses, public policy analyses, and the economic and fiscal impacts of projects.

#### **2. PROJECT DESCRIPTION**

The Judiciary Courts of the State of Hawai'i ("Judiciary") and the Hawai'i Housing Finance & Development Corporation ("HHFDC") are jointly proposing to redevelop the 1.45-acre parcel located at 902 Alder Street in Honolulu, Hawai'i (TMK 23012019).

Currently, there are two buildings on the site. The smaller building remains occupied by the Home Maluhia shelter facility for girls. The larger building consists of a main structure

## **ALDER STREET PROJECT: POPULATION, ECONOMIC AND FISCAL IMPACTS**

### **1. INTRODUCTION**

#### **a. Content and Purpose**

This report addresses the population, economic, and fiscal benefits and impacts of the Alder Street Project ("the Project"), which is planned for a site in Honolulu. The purpose of the report is to provide State and County officials with information relevant to their decisions about the Project.

The population impacts address the number of people housed at the Project, as well as the changes in number of people supported by the increased economic activity associated with the Project. The economic impacts cover expenditures and sales, profits, employment, and payroll related to (1) Project construction and related activities, and (2) Project operations and related activities. Fiscal impacts address the impact of the Project on State and County revenues and expenditures.

#### **b. Methodology**

##### Multipliers

The proposed development is translated into economic and fiscal impacts based on a number of multipliers (e.g., indirect sales generated per \$1 million in construction expenditures, construction jobs per \$1 million in construction expenditures, indirect jobs per direct job, average salary per job, tax rates, etc.). These multipliers reflect the professional judgment of the consultant, and are based on information from the following sources: *The Hawai'i State Input-Output Study: Benchmark Report*; U.S. Census data; the *State of Hawai'i Data Book*; employment and labor rates from the State Department of Labor and Industrial Relations (DLIR); County and State tax rates; and revenue and expenditure data from the State and County.

##### 2015 Dollars

Throughout the report, dollar amounts are expressed in terms of mid-year 2015 purchasing power and market conditions. Values, prices, costs, and dollar amounts for prior years are adjusted for inflation to 2015 dollars based on the Honolulu Consumer Price Index (CPI) for Urban Consumers. Dollar amounts after 2015 are not increased to account for inflation, appreciation in property values, changes in labor rates, changes in building costs, or other changes in market conditions.

and three wings that housed the former juvenile detention facilities. The larger building has been vacant since 2010 when the detention facilities were relocated to Kapolei.

The Judiciary and HHFDC are partnering in order to redevelop the underutilized State-owned property at Alder Street into a mixed-use development that will simultaneously help address the State's juvenile justice and affordable rental housing needs.

The proposed project will involve demolishing the existing buildings and replacing them with two new structures: (1) a 19-story, mixed-use structure housing a juvenile services/shelter center (Juvenile Center) and affordable housing; and (2) a 4-story parking structure.

The Juvenile Center will occupy the first three stories of the taller of the two buildings, and will offer a combination of therapeutic counseling and rehabilitative services for juveniles. It will expand the capacity of the former facility, and will incorporate current national best practices that emphasize (1) services for youth and families at risk, and (2) juveniles entering into or progressing through the juvenile justice system. The Juvenile Center will provide more shelter services for youths at risk who cannot live with their families in the short term due to safety or other concerns.

The top 16 stories of the high-rise will have approximately 187 affordable rental housing units for working families and seniors.

Parking (283 stalls) for residents, employees, and visitors would be located in the abutting lower structure.

The roof of the parking structure will be used as a recreational deck. Another recreational area will be located outdoors, adjacent to Pi'ikoi Street.

Additional information on the Project is provided in Table 1.

### 3. ECONOMIC IMPACTS OF DEVELOPMENT

Development of the Project will involve site preparation, construction of the two buildings, and finishing of the buildings (furniture, fixtures, equipment, etc.). Table 2 summarizes the direct and indirect economic impacts of development activities. The material in this table gives the development period, construction expenditures, indirect sales generated by the construction activity, profits, employment and payroll, and the number of residents and homes supported by construction activity.

#### a. Construction Period

The Project will be completed in two or more phases. Phase I, which will last about 20 months, will include construction of the apartment building, all housing units, about 24,000 square feet ("sf") of office and shelter space for the Juvenile Center, about 10,000 sf of an incomplete shell for the Judiciary, and the parking structure. The build-out of the shell will be completed in Phase II and in possible subsequent phases. Construction could require more or less time, depending on circumstances.

For the analysis shown in Tables 1 to 5, a 2-year construction period is assumed since most of the expenditures and economic impacts occur during construction.

#### b. Construction Expenditures

Total construction expenditures for the Project—including demolition of the existing facilities and site remediation—are estimated at about \$83.4 million, or about \$41.7 million per year. In practice, construction expenditures will vary over time.

#### c. Other Development Costs

Other development costs (furniture, fixtures, equipment, and professional fees) are estimated at about \$5 million.

#### d. Indirect Sales Generated by Construction Activity

In addition to construction expenditures, construction activity will generate indirect sales associated with supplying goods and services to construction companies and to the families of construction workers. In turn, the companies supplying goods and services, and the families of their employees, will purchase goods and services from other companies, and so on. These indirect sales will include sales by companies that supply building materials (cement, steel, lumber, roofing materials, plumbing equipment, electrical equipment, hardware supplies, lighting, flooring, etc.); rent out construction equipment; repair equipment; provide warehousing services; provide shipping and trucking services; etc. Indirect sales also include sales by grocery stores, drugstores, restaurants, service stations, beauty salons, medical providers, accountants, attorneys, insurance agents, etc.

Based on State economic multipliers, these indirect sales are expected to average about \$48.8 million per year.

#### e. Summary of Development Expenditures and Related Sales

Section 2.e of Table 2 summarizes anticipated expenditures and sales related to development activity. As indicated, development expenditures plus indirect sales related to construction are expected to average about \$93 million per year. About \$38.5 million will be exempt from excise taxes (the share of development costs for the low-income rental housing portion of the Project, with the share based on the square footage of the building used for housing); about \$17.8 million per year will be subject to the State 4% excise tax on final sales; and about \$36.7 million will be subject to the 0.5% excise tax on intermediate sales.

#### f. Profits Related to Development Activity

Profits on construction and indirect sales are estimated to average about \$10.1 million per year (see Section 2.f of Table 2).

#### g. Construction Employment and Related Jobs

Construction employment is expected to average about 140 jobs over the construction period (see Section 2.g of Table 2). Construction jobs will include supervisors, equipment operators, cement workers to lay foundations, metal workers, carpenters, plumbers, electricians, roofers, glass and window installers, cabinet makers, carpet and tile layers, painters, equipment installers, interior decorators, landscapers, etc. Other jobs related to construction will include architects, civil engineers, draftsmen, government inspectors, etc. These jobs will range over a variety of skill levels, including entry-level, semi-skilled, skilled, management, and professional positions.

As with indirect sales, construction activity will generate indirect jobs associated with supplying goods and services to construction companies and to the families of construction workers. In turn, the companies supplying goods and services, and the families of their employees, will purchase goods and services from other companies, and so on. Indirect jobs will include those at companies supplying building materials (cement, steel, lumber, roofing materials, plumbing equipment, electrical equipment, hardware supplies, lighting, flooring, etc.); rent construction equipment; repair equipment; provide warehousing services; provide shipping and trucking services; etc. Other indirect jobs will include those involved with supplying goods and services to employees and their families: grocery workers, store clerks, restaurant workers, service-station workers, beauty technicians, barbers, bankers, pharmacists, veterinarians, computer technicians, medical workers, accountants attorneys, etc. The jobs will range over a variety of skill levels, including entry-level, semi-skilled, skilled, and management positions.

Based on State employment multipliers, indirect employment related construction is expected to average about 275 jobs.

Thus, total direct-plus-indirect employment associated with construction activity will average about 410 jobs.

#### h. Payroll Related to Development Activity

Construction activity is expected to generate a total payroll of about \$22 million per year, of which about \$8.7 million will be for construction workers, about \$13.3 million for indirect employment (see Section 2.h of Table 2). These estimates are based on the average number of direct and indirect jobs multiplied by average wages as reported to the DLIR.

Annual wages will range from about \$30,000 to over \$100,000 per year, and are expected to average about \$63,000 for construction jobs, and about \$48,300 for indirect jobs.

#### i. Population and Housing Supported by Construction Activity

During the development period, direct and indirect jobs provided by construction activity will support about 910 residents housed in about 300 homes (see Sections 2.i and 2.j of Table 2).

#### j. Sources of Construction Workers

As noted above, construction employment is expected to average about 140 jobs, or about 0.7% of the total number of 20,660 construction workers on O'ahu. In view of this low percentage, it is expected that the construction jobs will be filled mostly by workers who are already living on O'ahu. As other construction projects are completed on the island, construction workers will be hired to work on various components of the Project, then move on to other projects. Thus, the Project will help keep existing O'ahu construction workers employed.

Special programs to increase the number of construction workers appear to be unwarranted since a sufficient number of workers are already available.

#### 4. ECONOMIC IMPACTS OF OPERATIONS

Table 3 summarizes the population, economic, and related impacts of Project operations.

##### a. Juveniles Served

The Juvenile Center will shelter 12 juveniles per night, which is five more than the old facility (see Table 3, Section 3.a). Also, the Center will serve an undetermined number of juveniles during the day.

##### b. Housing, Residents and Students

As shown in Table 3, Section 3.b., the Project will provide 187 rental units of various sizes. These units will house an estimated 390 residents, including about 23 students who will attend nearby public schools. These numbers could be higher or lower, depending on (1) the mix of unit sizes (e.g., how many 1-bedroom, 2-bedroom, 3-bedroom units); and (2) the mix of tenants (e.g., how many young families versus seniors).

The units will be rented at rates affordable to families and seniors having incomes up to 60% of the median income for Honolulu. Maximum family incomes by family size, and maximum rent by type of unit, are shown in the Table. Total rental income is estimated at \$2.7 million per year.

##### c. Employment

The Juvenile Center will provide an estimated 65.5 full-time equivalent jobs (see Table 3, Section 3.c). Although this is a significant increase over the number of jobs at the old facility, nearly all of the new jobs will relocate from other facilities in the area. Also, a few jobs some will be transferred from contract workers to State employees. Thus, the net change in regional employment is anticipated to be zero.

An estimated 6 workers will be needed to management and maintain the rental units. Indirect employment will add another 3.5 jobs, for a total of about 9.5 direct plus indirect jobs.

**d. Payroll**

The new Juvenile Center have a higher payroll than the old facility, but this is mostly because of the additional employees who will be transferred from nearby facilities. For the region, the net change in payroll will be negligible—see Table 3, Section 3.d

The payroll for the direct and indirect jobs provided by the rental complex is projected at about \$410,000 per year.

**e. Operating Expenditures**

Operating expenditures for the Project are shown in Table 3, Section 3.e. For the Juvenile Center, these expenditures will decrease by a small amount, largely because the contracted custodial workers will be replaced by State workers.

Information is not available on the operating expenditures of the rental units.

**f. Residents and Homes Supported by Increased Economic Activity**

The number of residents and homes supported by the increased economic activity related to operations are not estimated because the numbers are insignificant (Table 3, Section 3.f).

**g. Regional Sales, Profits and Payroll**

The Project will increase final sales for Honolulu by about \$2.9 million per year, most of which will be related to rental income and the remainder for consumption expenditures by additional workers and their families—see Table 3, Section 3.g. However, since rental income from a qualifying low-income housing projects is tax exempt, only about \$225,000 will be subject to excise taxes.

Profits are anticipated to exceed \$20,000 per year. The number is small because of the apartments will be managed by a non-profit organization.

The regional payroll will increase by about \$410,000 per year.

**h. Assessed Property Value**

The assessed property value will be zero because both the State-owned Juvenile Center and the low-income rental apartments will be exempt from property taxes.

**5. IMPACTS ON COUNTY REVENUES AND EXPENDITURES**

Table 4 shows the impact of the Project on the finances of the City and County of Honolulu (the “County”), including the change in the tax and expenditure base, tax revenues and expenditures related to development activity, and tax revenues and expenditures related to operations.

**a. Impacts of Development Activity**

The County will receive an estimated \$180,000 from the 0.5% excise tax surcharge on final sales related to the development of the Project (Table 4, Section 4.b). The amount is low because of the excise tax exemption on construction costs for qualifying low-income rental projects. The funds are to be used for constructing of the Honolulu Rail Transit Project. Other County taxes related to development are negligible.

Support expenditures are expected to be negligible inasmuch as no expensive County infrastructure for the Project will be required, and County services are already provided to workers who are directly or indirectly involved with Project development, and to the families of these workers.

**b. Impacts of Operations**

The Project will provide no property tax revenue to the County since the Project is exempt (Table 3, Section 3.c). The excise tax surcharge will generate about \$1,000 per year in additional revenue to the County, an amount which reflects the tax on consumption expenditures by the small increase in the number of employees. As mentioned previously, the rental income from a qualifying low-income housing project is tax exempt. Other County income sources related to Project operations are expected to be negligible due to the small change in regional employment and expenditures.

Also, the change in County support expenditures are expected to be negligible given that the County already provides services to the employees who will be working within the Project buildings, and to residents living in the the rental units.

**6. IMPACTS ON STATE REVENUES AND EXPENDITURES**

Table 5 shows the impact of the Project on the finances of the State of Hawai‘i (the “State”), including the change in the tax and expenditure base, tax revenues and expenditures related to development activity, and tax revenues and expenditures related to operations.

**a. Impacts of Development Activity**

Most of the tax revenues generated by development will be paid to the State, not the County. In total, the State will receive an estimated \$5 million from excise taxes, corporate income taxes, and personal income taxes—see Table 5, Section 5.b. Due to the exemption

for qualifying low-income rental projects, this amount does not include any excise tax on the construction costs of the residential portion of the Project.

Support expenditures are expected to be negligible inasmuch as (1) no expensive State infrastructure for the Project will be required; (2) no expensive schools improvements will be required; and (3) State services are already provided to workers directly or indirectly involved with Project development, and to the families of these workers.

Students living at the Alder Street Project will attend Ka'ahumanu Elementary School, Washington Middle School, and McKinley High School. Based on information from the Hawai'i Department of Education, all three of these schools have sufficient capacity to accommodate the projected increase in the number of students living in the Project.

#### **b. Impacts of Operations**

The Project will generate about \$31,000 per year in taxes to the State, most of which will come from excise taxes on the increase in consumption expenditures, and personal income taxes paid by the additional workers involved with managing and maintaining the apartments (Table 5, Section 5.b). Again, the rental income from a qualifying low-income housing project is tax exempt.

The change in State support expenditures are expected to be negligible given that the State already provides services to the employees who will be working in the Project buildings, as well as to residents living in the the rental units.

#### **7. SUMMARY OF COMMUNITY BENEFITS**

The primary community benefits of the Project will include:

- A new Juvenile Center that will expand the capacity of the former facility, and improve services for youth and families at risk, and for juveniles entering into or progressing through the juvenile justice system.
- About 187 affordable rental housing units for working families and seniors.
- An average of about 410 direct and indirect jobs during construction.

#### **8. REFERENCES**

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**Table 1. Project Plans**  
(Values in 2015 dollars)

Item	Source or Multiplier	New Facility	Units
<b>1.a. LAND</b>			
<b>1.b. JUVENILE CENTER AND HOUSING STRUCTURE</b>			
Floors	RMA-Architects	1,45	years
Juvenile Center		3	floors
Affordable Housing		16	+
Total Floors		19	floors
Area			
Juvenile Center		35,452	sq. ft.
Affordable Housing		230,761	+
Total Area		266,213	sq. ft.
Bedrooms, Juvenile Center		12	rooms
Affordable Housing Units		187	units
Multipurpose/Common Area for Residents		3,481	sq. ft.
Recreation Deck for Residents		19,300	+
<b>1.c. PARKING STRUCTURE</b>			
Floors	RMA-Architects	4	floors
Parking		56	spots
Juvenile Center		723	+
Affordable Housing		283	spots
Total Parking			

**Table 2. Economic Impacts of Development Activities**  
(Values in 2015 dollars)

Item	Source or Multiplier	New Facility	Net Change	Units
<b>2.a. CONSTRUCTION PERIOD</b>				
<b>2.a. CONSTRUCTION EXPENDITURES</b>				
Demolition and Remediation	RMA-Architects	\$ 1,000,000		
Site Development		\$ 2,000,000		
Industry's Office & Children's Residential Facilities		\$ 4,000,000		
Residential Tower		\$ 1,000,000		
Public Structure		\$ 1,000,000		
Total Construction Expenditures		\$ 9,000,000		
Annual Construction Expenditures (average)		\$ 4,500,000	\$ 53,400,000	
<b>2.a. OTHER DEVELOPMENT COSTS</b>				
Excavation, Furniture, and Equipment	RMA-Architects	\$ 1,000,000		
Professional Fees		\$ 4,000,000		
Total Expenditures on Other Development Costs		\$ 5,000,000	\$ 5,900,000	
Annual Expenditures on Other Development Costs		\$ 2,500,000	\$ 2,950,000	
<b>2.b. INDIRECT SALES GENERATED BY CONSTRUCTION</b>				
Final Sales	117% of const. exp.	\$ 48,750,000	\$ 48,750,000	per year
<b>2.c. SUMMARY OF EXPENDITURES &amp; SALES</b>				
Construction Expenditures	Section 2.b	\$ 41,700,000		per year
Other Development Costs	Section 2.c	\$ 2,500,000		+
Consumption Expenditures	55% of payroll, Section 2.j.	\$ 12,087,025		+
Total Final Sales		\$ 56,287,025	\$ 56,287,025	per year
Excavation, Low and Moderate Inc. Rental Housing	87% of const. & other	\$ 49,854,000		per year
Final Sales, Taxed at 4%		\$ 1,433,025	\$ 1,433,025	per year
<b>Intermediate Sales</b>				
Interest Sales Related to Construction	Section 2.d	\$ 48,750,000		+
Less Consumption	above	\$ (12,087,025)		+
Total Sales at Taxed at 0.5%		\$ 36,662,975	\$ 36,662,975	per year
<b>21. PROFITS</b>				
Profits on Total Sales	10.0% of sales	\$ 3,666,297	\$ 3,666,297	per year
Risk Premium for Construction	2.0% of construction	\$ 834,000	\$ 834,000	per year
Total Profit from Construction & Related Activity		\$ 10,132,300	\$ 10,132,300	per year

**Table 2. Economic Impacts of Development Activities**

(Values in 2015 dollars)

(continued)

Item	Source or Multiplier	New Facility	Net Change	Units
<b>2a. EMPLOYMENT (on-site &amp; off-site)</b>				
Construction Jobs	3.21 x sales \$1 mil	138	138	jobs
Indirect Jobs Generated by Construction	1.89 x direct jobs	275	275	*
<b>Total Employment</b>		<b>413</b>	<b>413</b>	<b>jobs</b>
<b>2a. PAYROLL</b>				
Construction Payroll	\$ 63,000 per job	\$ 8,694,000	\$ 8,694,000	per year
Payroll for Indirect Employment	\$ 48,300 *	\$ 13,282,500	\$ 13,282,500	*
<b>Total Payroll</b>		<b>\$ 21,976,500</b>	<b>\$ 21,976,500</b>	<b>per year</b>
<b>2b. POPULATION SUPPORTED BY DEVELOPMENT ACTIVITIES</b>				
Supported by Construction Jobs	2.2 per job	304		residents
Supported by Indirect Jobs	2.2 *	605		*
<b>Total Residents Supported</b>		<b>909</b>	<b>309</b>	<b>residents</b>
<b>2c. HOUSING FOR SUPPORTED POPULATION</b>				
Supported by Construction Jobs	0.33 per resident	100		homes
Supported by Indirect Jobs	0.33 *	200		*
<b>Total Homes Supported</b>		<b>300</b>	<b>300</b>	<b>homes</b>

**Table 3. Economic Impacts of Operations**

(Values in 2015 dollars)

Item	Source or Multiplier	Old Facility	New Facility	Change	Change, Nearby Facilities	Net Change	Units
<b>3a. JUVENILES SERVED</b>							
Number Served	Judiciary	10	12	2	-		2 per day
Capacity	*	7	12	5	-		5 per day
Average		n.e.	n.e.	n.e.	n.e.		n.e.
Daily Reporting							
<b>3b. HOUSING, RESIDENTS AND STUDENTS</b>							
<b>Rental Units</b>							
Residents	2.1 residents/unit	187	393				187 units
Students	0.08 students per unit						393 people
Elementary School Students	0.03 *	11					students
Middle School Students	0.03 *	6					*
High School Students	0.03 *	6					*
Total Students							23 students
<b>Maximum Income (80% of median)</b>							
1 Person	HFDC		\$ 40,260				per year
2 Persons	*		\$ 46,020				*
3 Persons	*		\$ 51,780				*
4 Persons	*		\$ 57,480				*
5 Persons	*		\$ 62,100				*
6 Persons	*		\$ 66,720				*
<b>Maximum Monthly Rent</b>							
1-Bedroom	HFDC		\$ 1,078				*
2-Bedroom	*		\$ 1,284				*
3-Bedroom	*		\$ 1,464				*
<b>Rental Income</b>	\$ 1,200 per unit per month		\$ 2,892,800			\$ 2,892,800	per year

n.e., not estimated

**Table 3. Economic Impacts of Operations**  
(Values in 2015 dollars)  
(continued)

Item	Source or Multiplier	Old Facility	New Facility	Change	Change, Nearby Facilities	Net Change	Units
<b>3.x. OPERATING EXPENDITURES</b>							
Juvenile Center	Judiciary	\$ 57,000	\$ 57,000	\$ -		\$ -	per year
Utilities	*	\$ 36,000	\$ 40,000	\$ 2,000	\$ -	\$ 2,000	*
Refrills	*	\$ 6,000	\$ 10,000	\$ 4,000	\$ -	\$ 4,000	*
Supplies (office, cleaning, etc.)	*	\$ 50,000	\$ 50,000	\$ -	\$ -	\$ -	*
Nurse Contract	*	\$ 14,000	\$ 14,000	\$ -	\$ -	\$ -	*
Motor Pool Cars	*	\$ 45,036	\$ -	\$ (45,036)	\$ -	\$ (45,036)	*
Catcolat Services Contract	*	\$ 210,036	\$ 171,000	\$ (39,036)	n.e.	\$ (39,036)	per year
Total		n.e.	n.e.	n.e.	n.e.	n.e.	n.e.
<b>3f. AFFORDABLE HOUSING</b>							
<b>3f. RESIDENTS AND HOMES SUPPORTED BY INCREASED ECONOMIC ACTIVITY</b>							
<b>3g. REGIONAL SALES, PROFITS &amp; PAYROLL</b>							
Final Sales						\$ 2,692,800	per year
Rent	Section 8.b					\$ 224,978	*
Consumption	55% of payroll					\$ 2,917,778	per year
Total Final Sales						\$ 2,942,800	*
Exemption, Low and Moderate Inc. Rental Housing						\$ 224,978	per year
Final Sales Taxed at 4%						n.e.	n.e.
Indirect Sales (taxed at 0.6%)						\$ 22,498	*
Profits	10% of consumption					\$ 459,050	*
Payroll						\$ -	*
<b>3h. ASSESSED PROPERTY VALUE (exempt)</b>						\$ -	*

n.e.: not estimated

**Table 3. Economic Impacts of Operations**  
(Values in 2015 dollars)  
(continued)

Item	Source or Multiplier	Old Facility	New Facility	Change	Change, Nearby Facilities	Net Change	Units
<b>3.x. EMPLOYMENT</b>							
Juvenile Center	Judiciary	4.0	8.0	4.0	(4.0)	-	jobs
Management Supervisors (\$49,058 to \$17,759/yr)	*	1.5	1.5	-	-	-	*
Instructor Teachers (average \$50,000/yr)	*	13.0	15.0	2.0	-	2.0	*
Juvenile Counselors (\$38,772 to \$87,189/yr)	*	11.0	11.0	-	(24.0)	-	*
Contractors, part-time (\$18 to \$19/hr)	*	2.0	26.0	24.0	-	24.0	*
Social Workers (\$47,400 to \$70,189/yr)	*	1.0	1.0	-	-	-	*
Nurses, part-time (average \$42/hr)	*	2.0	3.0	1.0	-	1.0	*
Janitors (\$38,684 to \$59,240/yr)	*	3.0	3.0	-	-	-	*
Kitchen Helpers	*	2.0	2.0	-	-	-	*
Juvenile Counselors, contract employees	*	3.0	-	(3.0)	2.0	(1.0)	*
Janitors, contract employees	*	2.0	-	(2.0)	-	(2.0)	*
Total Employment, Juvenile Center		39.5	65.5	26.0	(26.0)	0.0	jobs
<b>Jobs, Affordable Housing</b>							
Total Project and Related Jobs	PEP	39.5	71.5	32.0	(26.0)	6.0	jobs
Indirect jobs	0.59 per direct job, housing	3.5	3.5	-	-	-	jobs
Total Employment		39.5	75.0	35.5	(26.0)	9.5	jobs
<b>3.y. PAYROLL</b>							
Juvenile Center	Judiciary	\$ 1,443,956	\$ 1,823,188	\$ 374,232	\$ -	\$ 374,232	per year
State Employees, Onsite	*					\$ (374,232)	*
Relocated State Employees & Contract Employees	*					\$ (374,232)	*
Total Payroll		\$ 1,443,956	\$ 1,823,188	\$ 374,232	\$ (374,232)	\$ -	per year
Affordable Housing	\$ 40,000 per job	\$ -	\$ 240,000	\$ 240,000	\$ -	\$ 240,000	per year
Indirect jobs	\$ 45,300 *	\$ -	\$ 189,050	\$ 189,050	\$ -	\$ 189,050	*
Total Payroll		\$ 1,443,956	\$ 2,252,238	\$ 798,282	\$ (374,232)	\$ 424,050	per year

**Table 4. Impacts on County Revenues and Expenditures**  
(Values in 2015 dollars)

Item	Source or Multiplier	New Facility	Net Change	Units
<b>4.a. CHANGE IN TAX &amp; EXPENDITURE BASE</b>				
<b>Development Activities</b>				
Duration	Table 2, Section 2.a	2.0		years
Final Sales Subject to Surchage	Table 2, Section 2.a	\$ 17,833,075		per year
Annual Average	Table 2, Section 2.a	\$ 35,666,150	\$ 35,666,150	per year
Cumulative	Table 2, Section 2.a		\$ 224,978	per year
<b>Operations</b>				
Final Sales Subject to Surchage	Table 3, Section 3.g			per year
Assessed Property Value	Table 3, Section 3.h			per year
<b>4.b. DEVELOPMENT ACTIVITIES</b>				
<b>Additional County Revenues</b>				
Excise Tax Surchage	0.5% of final sales		\$ 178,331	per year
<b>Additional Expenditures</b>				
Infrastructure (provided by developer)			\$ -	per year
Services			\$ -	per year
<b>Net Revenues</b>			<b>\$ -178,331</b>	
<b>4.c. OPERATIONS</b>				
<b>Additional County Revenues</b>				
Excise Tax Surchage	0.5% of final sales		\$ 1,125	per year
Property Taxes	3.50 per \$1,000 of Value		\$ -	per year
<b>Additional Expenditures</b>				
Debt Service			\$ -	per year
Services			\$ -	per year
<b>Net Revenues</b>			<b>\$ 1,125</b>	<b>per year</b>

n/a; not estimated

**Table 5. Impacts on State Revenues and Expenditures**  
(Values in 2015 dollars)

Item	Source or Multiplier	New Facility	Net Change	Units
<b>5.a. CHANGE IN TAX &amp; EXPENDITURE BASE</b>				
<b>Development Activities</b>				
Duration	Table 2, Section 2.a	2.0		years
Final Sales Subject to Excise Tax	Table 2, Section 2.e	\$ 17,833,075		per year
Annual Average	Table 2, Section 2.e	\$ 35,666,150	\$ 35,666,150	per year
Cumulative	Table 2, Section 2.e		\$ 73,403,850	per year
Intermediate Sales (taxed at 0.5%)	Table 2, Section 2.f		\$ 10,132,500	per year
Annual Average	Table 2, Section 2.f		\$ 20,265,000	per year
Cumulative	Table 2, Section 2.f		\$ 40,530,000	per year
Payroll	Table 2, Section 2.h		\$ 21,976,500	per year
Annual Average	Table 2, Section 2.h		\$ 43,953,000	per year
Cumulative	Table 2, Section 2.h		\$ 87,906,000	per year
<b>Operations</b>				
Final Sales Subject to Excise Tax	Table 3, Section 3.f		\$ 224,978	per year
Indirect Sales	*		n/a	*
Profits	*		\$ 224,978	*
Payroll	*		\$ 469,020	*

**Table 5. Impacts on State Revenues and Expenditures**

(Values in 2015 dollars)

(continued)

Item	Source or Multiplier	New Facility	Net Change	Units
<b>5.b. DEVELOPMENT ACTIVITIES</b>				
<b>Additional State Revenues</b>				
Excise Tax				
Final Sales	4.0% of sales		\$ 1,476,546	
Intermediate Sales	0.5% *		\$ 387,019	
Total Excise Tax			\$ 1,793,565	
Corporate Income Taxes	5.0% of profits		\$ 1,013,290	
Personal Income Taxes	5.1% of income		\$ 2,247,503	
<b>Total State Tax Revenues</b>			<b>\$ 5,048,558</b>	
<b>Additional Expenditures</b>				
Infrastructure (provided by developer)			\$ -	
Schools Improvements			\$ -	
Services			\$ -	
<b>Net Revenues, Cumulative</b>			<b>\$ 5,048,558</b>	
<b>5.c. OPERATIONS</b>				
<b>Additional State Revenues</b>				
Excise Tax Generated by:				
Final Sales	4.0% of final sales		\$ 8,389	per year
Intermediate Sales	0.5% of int. sales		n.a.	*
Corporate Income Tax	5.0% of profit		\$ 1,125	*
Personal Income Tax	5.1% of income		\$ 20,852	*
<b>Total Revenues</b>			<b>\$ 30,386</b>	<b>per year</b>
<b>Additional Expenditures</b>				
Debt Service			\$ -	
Services			\$ -	
<b>Net Revenues, Annual</b>			<b>\$ 30,386</b>	<b>per year</b>

n.a., not estimated