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GLENN M. OKIMOTO
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STATE OF HAWAII
DEPARTMENT OF TRANSPORTATION
869 PUNCHBOWL STREET
HONOLULU, HAWAII 96813-5097

IN REPLY REFER TO:

HAR-ESP
3014.13

November 28, 2013

OFC. OF ENVIRONMENTAL QUALITY CONTROL
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TO: THE HONORABLE GARY GILL, ACTING DIRECTOR
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
DEPARTMENT OF HEALTH

FROM: GLENN M. OKIMOTO, Ph.D.
DIRECTOR OF TRANSPORTATION

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR UNIVERSITY OF HAWAII MARINE CENTER RELOCATION TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU, HAWAII
STATE PROJECT NO. H.C. 10371

The State of Hawaii, Department of Transportation (DOT) has reviewed the Draft Environmental Assessment (DEA) for the subject project and the DOT anticipates a Finding of No Significant Impact under Chapter 343. The DEA has been prepared pursuant to Chapter 343, Hawaii Revised Statutes and Chapter 11-200, Hawaii Administrative Rules. Please publish notice of this DEA in the next available issue of OEQC's *The Environmental Notice*.

We have enclosed one (1) each of the following items:

- Hardcopy of the OEQC publication form and DEA; and
- CD including the DEA and OEQC publication form in pdf format.
- Simultaneous with this letter, we have submitted the summary of the action in a text file by electronic mail to your office.

Please contact Mr. Bert Toba, P.E., Harbors Modernization Program (HMP) Development Officer at 586-2455 if you have any questions.

Enc.

OFC. OF ENVIRONMENTAL QUALITY CONTROL
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RECEIVED

AGENCY ACTIONS
SECTION 343-5(B), HRS
PUBLICATION FORM (JULY 2012 REVISION)

Project Name: University of Hawaii Marine Center Relocation to Piers 34 and 35, Honolulu Harbor

Island: Oahu

District: Iwilei, Honolulu

TMK: (1)1-5-34:7, 10, 17, 22, 24, 25, and portions of 4, 5, 8, 22, and 26; (1)1-5-35: portion 8; (1)1-5-36: portion 2

Permits: Section 10 Permit, NPDES permits (NOI, Form C, Form G), Section 401 Water Quality Certification, Section 404, CZM Consistency Determination, Grading Permit, Community Noise Control Permit, building and construction permits

Proposing/Determination Agency: Anticipated Finding of No Significant Impact (AFONSI)
Carter Luke, Engineering Program Manager
State of Hawaiʻi
Department of Transportation, Harbors Division
79 South Nimitz Highway
Honolulu, Hawaiʻi 96813
Telephone: (808) 587-1862

Consultant:
Scott Glenn
Cardno TEC, Inc.
1003 Bishop Street, Suite 1550
Honolulu, Hawaiʻi 96813

Status (check one only):

_X_DEA-AFNSI	Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of DEA, a completed OEQC publication form, along with an electronic word processing summary and a PDF copy (you may send both summary and PDF to oeqc@doh.hawaii.gov); a 30-day comment period ensues upon publication in the periodic bulletin.
__FEA-FONSI	Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and a PDF copy (send both summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__FEA-EISPN	Submit the proposing agency notice of determination/transmittal on agency letterhead, a hard copy of the FEA, an OEQC publication form, along with an electronic word processing summary and PDF copy (you may send both summary and PDF to oeqc@doh.hawaii.gov); a 30-day consultation period ensues upon publication in the periodic bulletin.
__Act 172-12 EISPN	Submit the proposing agency notice of determination on agency letterhead, an OEQC publication form, and an electronic word processing summary (you may send the summary to oeqc@doh.hawaii.gov). NO environmental assessment is required and a 30-day consultation period upon publication in the periodic bulletin.
__DEIS	The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the DEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the DEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); a 45-day comment period ensues upon publication in the periodic bulletin.

__FEIS	The proposing agency simultaneously transmits to both the OEQC and the accepting authority, a hard copy of the FEIS, a completed OEQC publication form, a distribution list, along with an electronic word processing summary and PDF copy of the FEIS (you may send both the summary and PDF to oeqc@doh.hawaii.gov); no comment period ensues upon publication in the periodic bulletin.
__ Section 11-200-23 Determination	The accepting authority simultaneously transmits its determination of acceptance or nonacceptance (pursuant to Section 11-200-23, HAR) of the FEIS to both OEQC and the proposing agency. No comment period ensues upon publication in the periodic bulletin.
__Section 11-200-27 Determination	The accepting authority simultaneously transmits its notice to both the proposing agency and the OEQC that it has reviewed (pursuant to Section 11-200-27, HAR) the previously accepted FEIS and determines that a supplemental EIS is not required. No EA is required and no comment period ensues upon publication in the periodic bulletin.
__Withdrawal (explain)	

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

The Department of Transportation, Harbors Division (DOT Harbors) proposes, with the University of Hawai'i's (UH) concurrence, to relocate the UH Marine Center (UHMC) from its current location at Snug Harbor to an approximately 6-acre site at Piers 34 and 35. The existing facility at Piers 34 and 35 would be renovated and later expanded to accommodate the new use.

The purpose of the proposed action is identified in the *Honolulu Waterfront Master Plan Final Report* and the updated plan *O'ahu Commercial Harbors 2020 Master Plan*. Since 1989 a suitable location has been sought. In 1994, Pier 38 was proposed; however, subsequent planning efforts concluded that Pier 38 would be better suited for the Fishing Village. To underscore the need for relocation to allow use of the former Kapālama Military Reservation (KMR) to expand the cargo handling capacity and capability of Honolulu Harbor while preserving the research and educational programs at UHMC, the 2006 House Concurrent Resolution 266 requested UH collaborate with DOT to pursue on a priority basis the relocation of the UHMC from the former KMR area. In 2007, Governor's Executive Order No. 4206 transferred the control of Snug Harbor and the surrounding areas currently leased to UH for its UHMC to DOT Harbors for addition to Honolulu Harbor.

The proposed action is also needed to redevelop the former KMR and adjacent lands as a full-scale modern containerized cargo terminal. It is also needed to allow the UH to judiciously plan and commit funds in furtherance of its goals and objectives for marine education and research at the UHMC.

University of Hawai‘i Marine Center Relocation to Piers 34 and 35, Honolulu Harbor, O‘ahu, Hawai‘i

Draft
Environmental Assessment

Honolulu, Hawai‘i

December 2012

Prepared For
Hawai‘i Department of Transportation
Harbors Division

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COVER SHEET

Proposed Action University of Hawaiʻi Marine Center (UHMC) Relocation to Piers 34 and 35, Honolulu Harbor, Oʻahu, Hawaiʻi

Type of Document Environmental Assessment

Summary

This Environmental Assessment was prepared in accordance with Chapter 343, Hawaiʻi Revised Statutes (HRS). The State of Hawaiʻi Department of Transportation, Harbors Division (DOT Harbors) is required to assess the significance of potential impacts of its proposed action under Chapter 343 HRS, as the proposed action is located on State of Hawaiʻi land and uses state funds. DOT Harbors is the accepting authority for this document.

The purpose of the proposed action is to relocate the UHMC as identified in the *Honolulu Waterfront Master Plan Final Report* (Department of Business, Economic Development & Tourism [DBEDT] 1989), the updated plan *Oʻahu Commercial Harbors 2020 Master Plan* (DOT Harbors 1997), and House Concurrent Resolution 266 (Hawaiʻi 2006). Since 1989, efforts have been ongoing to identify a suitable location for relocation. In 1994, the State of Hawaii DBEDT proposed the relocation of UHMC to Pier 38, as described in the *Pier 38 Master Plan Final Environmental Assessment* (DBEDT 1994); however, subsequent State planning efforts concluded that Pier 38 would be better suited for the Fishing Village (DOT Harbors 1998). To underscore the need for relocation to allow use of the former Kapālama Military Reservation (KMR) to expand the cargo handling capacity and capability of Honolulu Harbor while preserving the research and educational programs at UHMC, the 2006 House Concurrent Resolution 266 requested the University of Hawaiʻi (UH) collaborate with DOT to pursue on a priority basis the relocation of the UHMC from the former KMR area. In 2007, Governor's Executive Order No. 4206 transferred the control of Snug Harbor and the surrounding areas currently leased to UH for its UHMC to DOT Harbors for addition to Honolulu Harbor.

The proposed action is also needed to redevelop the former KMR and adjacent lands as a full-scale modern containerized cargo terminal. It is also needed to allow the UH to judiciously plan and commit funds in furtherance of its goals and objectives for marine education and research at the UHMC. With the uncertainty associated with the UHMC's future location and timing of the relocation, UH investments in capital improvements at the UHMC ceased. Since 1982, no new buildings have been constructed, and temporary portable trailers have been used to accommodate expansions.

The proposed action would not result in significant direct, indirect, or cumulative impacts on the following resource areas: climate, air quality, geological and soil resources, hydrology, water quality, hazardous materials and waste, flora and fauna, marine biology, threatened and endangered species, alien species, noise, land use, historical and archaeological resources, cultural resources, ceded lands, scenic and visual resources, recreation, and infrastructure systems and services.

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DRAFT ENVIRONMENTAL ASSESSMENT
UHMC RELOCATION TO PIERS 34 and 35

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ACRONYMS AND ABBREVIATIONS

AAQS	Ambient Air Quality Standards
BMP	Best Management Practice
BWS	Board of Water Supply
C-MORE	Center for Microbial Oceanography, Research, and Education
CCH	City & County of Honolulu
COC	contaminants of concern
CZM	Coastal Zone Management
DBEDT	Department of Business, Economic Development, and Tourism
DEM	Digital Elevation Maps
DLNR	Department of Land and Natural Resources
DNL	Day Night Level
DOH	Department of Health
DOT	Department of Transportation
DOT Harbors	Department of Transportation, Harbors Division
DPP	Department of Planning and Permitting, CCH
EPA	Environmental Protection Agency
HAR	Hawaiʻi Administrative Rules
HCC	Honolulu Community College, Marine Education Training Center
HECO	Hawaiian Electric Company
HRS	Hawaiʻi Revised Statutes
HURL	Hawaiʻi Undersea Research Laboratory
HWMP	Honolulu Waterfront Master Plan
EA	Environmental Assessment
EIS	Environmental Impact Statement
FEMA	Federal Emergency Management Agency
FONSI	Finding of No Significant Impact
GHG	Greenhouse Gas
HMRG	Hawaiʻi Mapping Research Group
HOT	Hawaiʻi Ocean Time-series Program
IDPP	Iwilei District Participating Parties
IPCC	Intergovernmental Panel on Climate Change
KCT	Kapālama Container Terminal
KMR	Kapālama Military Reservation
LiDAR	Light Detection and Ranging
LOS	level of service
MLLW	mean lower low water
MOBY	Marine Optical Buoy Program
MSRC	Marine Spill Response Corporation
NOAA	National Oceanic and Atmospheric Administration
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
OEQC	Office of Environmental Quality Control
OHA	Office of Hawaiian Affairs
OR&L	Oʻahu Railway and Land Company
OTG	Ocean Technology Group
REC	Recognized Environmental Concerns
SHPD	State Historic Preservation Division
SMA	Special Management Area

SOEST	School of Ocean and Earth Science and Technology
TIAR	Traffic Impact Assessment Report
TMDL	Total Maximum Daily Loads
TMK	Tax Map Key
TPH	total petroleum hydrocarbons
UH	University of Hawaiʻi
UHMC	University of Hawaiʻi Marine Center
UIC	Underground Injection Control
U.S.	United States
USACE	U.S. Army Corps of Engineers
USDOT	U.S. Department of Transportation
USFWS	U.S. Fish and Wildlife Service
WQC	Water Quality Certification
WWPS	Wastewater Pump Station

EXECUTIVE SUMMARY

Project Name:	University of Hawai‘i Marine Center (UHMC) Relocation to Piers 34 and 35, Honolulu Harbor, O‘ahu, Hawai‘i
Proposed Action:	Relocate the UHMC from its current location at Snug Harbor; perform site improvements; and renovate and expand the existing structure.
Applicant/Proposing Agency:	Department of Transportation, Harbors Division
Contact Information:	Carter Luke, Engineering Program Manager State of Hawai‘i Department of Transportation, Harbors Division 79 South Nimitz Highway Honolulu, Hawai‘i 96813 Telephone: (808) 587-1862
Agent for the Applicant:	Cardno TEC, Inc. 1003 Bishop Street, Suite 1550 Honolulu, Hawai‘i 96813
Action Required:	Compliance with Chapter 343, Hawai‘i Revised Statutes (HRS)
Chapter 343, HRS Trigger:	§ 343-5(a)(1) Use of state lands and funds
Alternatives Eliminated from Consideration:	(1) No action, (2) Delayed action, (3) Relocate UHMC to Sand Island, (4) Alternative Location at Sand Island, (5) Alternative Location in Honolulu Harbor, and (6) Alternative Location in another state harbor
Project Location:	Piers 34 and 35, Honolulu Harbor, O‘ahu, Hawai‘i
Project Schedule:	Construction commencement in early 2013; relocation in early 2014
Project Cost:	Approximately $18 million
Tax Map Key Parcels:	(1)1-5-34:7, 10, 17, 22, 24, 25, and portions of 4, 5, 8, 22, and 26 (1)1-5-35: portion 8 (1)1-5-36: portion 2 (see Figure 1-3)
Project Area:	Approximately 6 acres
State Land Use Designation:	Urban
Land Use Development Plan	Primary Urban Center – Harbor
County Zoning:	I-3, Waterfront Industrial
Special Management Area:	Not Applicable
Flood Insurance Rate Map:	Flood Zone X – areas within or beyond the 500-year floodplain
Existing Use:	Waterfront Industrial
Anticipated Determination:	Finding of No Significant Impact (Chapter 343, HRS)
Summary of Permits and Approvals that may be required	Section 10 Permit, NPDES permits (NOI, Form C, Form G), Section 401 Water Quality Certification, Section 404, CZM Consistency Determination, Grading Permit, Community Noise Control Permit, building and construction permits

This Environmental Assessment (EA) was prepared in accordance with Chapter 343, HRS. It analyzes and documents potential environmental consequences associated with the proposed action and alternatives. If the analyses presented in this EA indicate that implementation of the proposed action would not result in significant environmental impacts, a Finding of No Significant Impact (FONSI) would be prepared. If significant environmental issues result that cannot be mitigated to insignificance, an Environmental Impact Statement (EIS) would be prepared.

Proposed Action. The Department of Transportation (DOT), Harbors Division (DOT Harbors) proposes to relocate the University of Hawai'i (UH) Marine Center (UHMC) from its current location at Snug Harbor to an approximately 6-acre site at Piers 34 and 35. The existing facility at Piers 34 and 35 would be renovated and later expanded to accommodate the new use.

Purpose and Need. The purpose of the proposed action is to relocate the UHMC as identified in the *Honolulu Waterfront Master Plan (HWMP) Final Report* (Department of Business, Economic Development & Tourism [DBEDT] 1989), the updated plan *O'ahu Commercial Harbors 2020 Master Plan* (DOT Harbors 1997), and House Concurrent Resolution 266 (Hawai'i 2006). Since 1989, efforts have been ongoing to identify a suitable location for relocation. In 1994, the State of Hawaii DBEDT proposed the relocation of UHMC to Pier 38, as described in the *Pier 38 Master Plan Final Environmental Assessment* (DBEDT 1994); however, subsequent State planning efforts concluded that Pier 38 would be better suited for the Fishing Village (DOT Harbors 1998). To underscore the need for relocation to allow use of the former Kapālama Military Reservation (KMR) to expand the cargo handling capacity and capability of Honolulu Harbor while preserving the research and educational programs at UHMC, the 2006 House Concurrent Resolution 266 requested UH collaborate with DOT to pursue on a priority basis the relocation of the UHMC from the former KMR area. In 2007, Governor's Executive Order No. 4206 transferred the control of Snug Harbor and the surrounding areas currently leased to UH for its UHMC to DOT Harbors for addition to Honolulu Harbor.

The proposed action is also needed to redevelop the former KMR and adjacent lands as a full-scale modern containerized cargo terminal. It is also needed to allow the UH to judiciously plan and commit funds in furtherance of its goals and objectives for marine education and research at the UHMC. With the uncertainty associated with the UHMC's future location and timing of the relocation, UH investments in capital improvements at the UHMC ceased. Since 1982, no new buildings have been constructed, and temporary portable trailers have been used to accommodate expansions.

Alternatives. Alternatives eliminated from consideration include no action, delayed action, relocation of all UHMC activities to the nearby Honolulu Community College's Marine Education Training Center (HCC-METC) on Sand Island, and alternate locations in Honolulu Harbor or other state harbors.

Environmental Consequences. The proposed action would not result in significant direct, indirect, or cumulative impacts on the following resource areas: climate, air quality, geological and soil resources, hydrology, water quality, hazardous materials and waste, flora and fauna, marine biology, threatened and endangered species, alien species, noise, land use, historical and archaeological resources, cultural resources, ceded lands, scenic and visual resources, recreation, and infrastructure systems and services.

1.0 DESCRIPTION OF ACTION

1.1 PROJECT PURPOSE AND NEED

The purpose of the proposed action is to relocate the UHMC as identified in the *Honolulu Waterfront Master Plan (HWMP) Final Report* (DBEDT 1989), the updated plan *O‘ahu Commercial Harbors 2020 Master Plan* (DOT Harbors 1997), and House Concurrent Resolution 266 (Hawai‘i 2006). Since 1989, efforts have been ongoing to identify a suitable location for relocation. In 1994, the State of Hawaii DBEDT proposed the relocation of UHMC to Pier 38, as described in the *Pier 38 Master Plan Final Environmental Assessment* (DBEDT 1994); however, subsequent State planning efforts concluded that Pier 38 would be better suited for the Fishing Village (DOT Harbors 1998). To underscore the need for relocation to allow use of the former KMR to expand the cargo handling capacity and capability of Honolulu Harbor while preserving the research and educational programs at UHMC, the 2006 House Concurrent Resolution 266 requested UH collaborate with DOT to pursue on a priority basis the relocation of the UHMC from the former KMR area. In 2007, Governor’s Executive Order No. 4206 transferred the control of Snug Harbor and the surrounding areas currently leased to UH for its UHMC to DOT Harbors for addition to Honolulu Harbor. The proposed action is also needed to redevelop the former KMR and adjacent lands as a full-scale modern containerized cargo terminal. It is also needed to allow the UH to judiciously plan and commit funds in furtherance of its goals and objectives for marine education and research at the UHMC. With the uncertainty associated with the UHMC’s future location and timing of the relocation, UH investments in capital improvements at the UHMC ceased. Since 1982, no new buildings have been constructed, and temporary portable trailers have been used to accommodate expansions.

1.2 PROJECT BACKGROUND

In the 1980s, the State of Hawaii recognized the need to promote a comprehensive functionally integrated vision for the Honolulu Waterfront, in part because of the wide range of land and water uses and the complexity of the management framework associated with the area. In 1989, the *HWMP* was published. It recognized the importance of the Port of Honolulu as the lifeline of state-wide commerce and provides for the recreational, cultural, and economic needs of a growing population and presents conceptual plans, goals, and descriptions of short- and long-range development plans. One of the many projects identified under the long-range development plan was the relocation of the UHMC.

The existing facility at Snug Harbor, Pier 45, operates under a 65-year gratis lease with the Department of Land and Natural Resources (DLNR). The lease was executed in 1973 and contains a “no compensation” termination for need clause. Although it is not a requirement of the terms of the lease to assist UH with their relocation, nor to compensate them for the early termination of the lease, DOT Harbors will help by funding and constructing $18 Million of building and site work improvements at Piers 34 and 35, for the UHMC relocation.

The current lease reserves for the UHMC’s exclusive use, a 13.23-acre harbor-front parcel with a 2.89-acre parcel from the former KMR. In 1974, the state built piers with a 45-foot wide hardened cement apron to support the UHMC’s 35- and 65-ton cranes. Pier 45 is 500-feet long with a 100-foot long corner facing the main channel. Pier 44 is an inside pier that is 170-feet long. Pier 43 is a 205-foot long wooden floating pier with potential for extension and is used for small boats (UH 2006).

In the 1990s, DOT Harbors began to develop master plans for Honolulu Harbor. The plans proposed relocating the UHMC to accommodate redevelopment of the KMR. At the time, the plan proposed relocating the UHMC to Pier 38 as part of the *Pier 38 Master Plan Final Environmental Assessment* (DBEDT 1994). That relocation was cancelled in favor of the Domestic Commercial Fishing Village project, now located at Piers 36-38 (DOT Harbors 1998). Because of the uncertainty of relocation destination and timing, the UH ceased investing in capital improvements to the UHMC area. No new buildings have been constructed since 1982. UH placed temporary portable trailers to accommodate expansion.

The UHMC has agreed to a smaller lot size but with better capital facilities at its new Piers 34 and 35 location, including piers, offices, labs, warehouses, machine shops, pier aprons, staging and assembly areas, and parking. More specific requirements are listed below.

- Berth space sufficient to accommodate the UHMC's three vessels and visiting vessels. The desired berth length is 770 lineal feet, though 720 feet has been determined to be adequate. Use of Pier 34 addresses the need for visiting vessels.
- A 34-foot draft.
- Potable water, power, phone, and data for the lay berth of Pier 34.
- Dock apron capable of supporting 35- and 65-ton cranes (1,000 pounds/square foot).
- A 6.030 acres lease parcel. Flexible staging areas behind the wharf for loading supplies to maximize efficiency.
- Storage area with electrical power, water, and drainage for 16 powered containers.
- Secure and exclusive use of the facility.
- Eventual expanded building space by adding to the existing structure and keeping physical structures out of the storage yard area

Although co-locating the large ship and small boat operations and Hawaiʻi Undersea Research Laboratory (HURL) submersible facilities to increase program efficiencies is preferable, DOT Harbors discourages the presence of small boats in the main harbor channel. Therefore, the UHMC will relocate those activities to the HCC-METC on Sand Island, west of the access bridge. Those activities are outside the scope of this document. That portion of the action would fall under the jurisdiction of UH, which would be responsible for the preparation of any needed environmental assessment.

A secure access point is required by United States (U.S.) Coast Guard and Homeland Security. The UH proposes a perimeter fence, security gate, and single point of entry along Nimitz Highway.

1.3 UHMC BACKGROUND

The UHMC is a leading institution at UH, which emphasizes marine science education in its founding vision. The state's location in the center of the Pacific Ocean and its historic, cultural, and economic connections to the sea drive this vision. Marine Science is a nationally-ranked program at UH. The program continues to grow and requires training and technical support facilities to fulfill its missions. Programs at the existing UHMC include:

- School of Ocean and Earth Science and Technology (SOEST),
- Ocean Technology Group (OTG),
- Hawaiʻi Mapping Research Group (HMRG),

- Hawai‘i Ocean Time-series Program (HOT) and the Center for Microbial Oceanography, Research and Education (C-MORE),
- Marine Optical Buoy Program (MOBY), and
- Hawai‘i Undersea Research Laboratory (HURL).

The UHMC maintains nationally-recognized marine expeditionary support facilities and a fleet of academic research and education ships. The UHMC headquarters UH’s marine operations and is a technical support and training facility for UH’s marine science programs. On-site facilities include warehouses, laboratories and machine shops, libraries of marine scientific samples and data, maintenance equipment, and construction/staging areas. The piers and facilities also support other visiting U.S. academic and federal agency research fleets (UH 2006).

1.4 UHMC RELOCATION ALTERNATIVES ELIMINATED FROM CONSIDERATION

Hawai‘i Administrative Rules (HAR) § 11-200-10 (1996) requires an environmental assessment to identify and consider alternative means to realize the purpose and need of the proposed action. Relocating the UHMC within Honolulu Harbor and fulfilling the Legislature’s request to meet the UHMC’s facility requirements constrains potential alternative approaches. Alternatives eliminated from consideration include no action, delayed action, relocation of all UHMC activities to the nearby HCC-METC on Sand Island, and alternate locations in Honolulu Harbor or other state harbors.

1.4.1 No Action

Leaving the UHMC in Snug Harbor would prevent the creation of the KCT ship berths. DOT Harbors is opposed to no action because of the long-term economic consequences. This would also hinder UHMC program growth. The UH is opposed to no action and has agreed in principle to the relocation of the UHMC. This alternative would not meet the needs and purpose of the proposed action, thus is not a feasible alternative.

1.4.2 Delayed Action

A delay in relocating the UHMC need not hinder initial development of the KCT, but it is not an optimal alternative. DOT Harbors could proceed with a phased development of KMR. Under this scenario, development of the eastern berth of the proposed two Kapālama berths could begin. This would alleviate the projected cargo and berth space shortfall. While this occurs, UH could coordinate with DLNR to stage a lease exchange, conduct relocation site and infrastructure analysis, obtain environmental and construction permits, and secure necessary funding. The areas east and north of the UHMC are under the jurisdiction of DOT Harbors and may proceed without filling in Snug Harbor and compromising UHMC operations. However, a delay would only postpone the eventual need to relocate the UHMC. DOT Harbors has already initiated a lease exchange with DLNR for Snug Harbor and begun relocation site and infrastructure analysis. Additional funding is unlikely to appear during the delay.

1.4.3 Relocate Immediately to HCC-METC on Sand Island

Initially, UH proposed to relocate the UHMC to the northwest corner of Sand Island under a DLNR lease that would co-locate the entire UH marine program with the HCC-METC. This alternative would require construction of a new facility, floating pier, and dredging of the harbor. This alternative is considered to be the eventual location of the UHMC. However, the projected cost to immediately relocate the facility would be approximately $100 million, which is significantly more than the preferred alternative. This alternative would be more likely to have significant environmental effects because it is likely to require new construction and dredging. Therefore, it has been eliminated as an alternative.

1.4.4 Alternative Location in Honolulu Harbor

Alternative piers in Honolulu Harbor were considered and eliminated because the locations do not meet UHMC or DOT Harbor operational requirements.

1.4.5 Alternative Location in Another State Harbor

Alternative harbors on Oʻahu, Maui, Hawaiʻi Island, or other islands were considered and eliminated because the locations do not have space to accommodate the UHMC and constructing space is not financially feasible at this time.

1.5 DESCRIPTION OF THE PREFERRED ALTERNATIVE

The proposed action would temporarily relocate the UHMC operational activities to Piers 34 and 35. Small boat activities at the present Snug Harbor location would relocate to HCC-METC, which is under UH jurisdiction and therefore beyond the scope of this document. Existing tenants would be relocated to other piers in Honolulu Harbor. Any required environmental review documents would be prepared specifically for them.

To accommodate the UHMC at Piers 34 and 35, DOT Harbors proposes to renovate the wharf and open storage area and later to reconfigure the existing pre-engineered steel frame structure in a set of phased activities beginning with the renovation and later reconfiguring and expanding the existing structure. Figure 1-1 shows the proposed conceptual layout. The renovation and expansion is to house facility operating staff and an operational support area. The later expansion of the south end of the building would add approximately 10,678 square feet to the existing 61,200 square feet.

The open storage assembly area would accommodate both container and non-container storage. The area would provide flexible, highly accessible storage for material and equipment. It would include the wharf apron, staging assembly area, storage assembly area, and site circulation, totaling approximately 3.55 acres, or 58 percent of the site. The aggregated Storage Assembly Areas would be approximately 160-180 feet from the face of the wharf to the face of the Building “B” extension. The UHMC may also relocate some of its existing temporary structures from Snug Harbor to the Pier 35 yard area.

The container storage area would provide separate, accessible storage for dry and powered containers. Powered containers are portable “scientific vans” used for research and routinely occupied by research personnel while a vessel is underway. The containers require electrical power, water, and a drain in the storage area. The containers would be moved and stacked by forklift. This storage area would be located in the southwest corner of the site. The area would accommodate about 40 dry containers split evenly between 40-foot and 20-foot containers, which can be stacked two high. The area would also have 16 powered container spaces, without stacking. Each powered container space requires a 208/220v outlet. The area would also have eight hose bibb outlets to provide temporary water to lab sinks in the vans. Containers would be spaced at least 10 feet from any barrier, such as a fence.

An open drainage canal is located at the southern end of the project site and discharges into Honolulu Harbor. This canal is tidally-influenced. Improvements to the drainage canal are being proposed because of the existing flooding that occurs up-gradient to the project site at Nimitz Highway. This deficiency was identified by the Highway Council on May 23, 2012, and therefore made part of the proposed action but not the no-action alternative. This canal would be converted into a box culvert conveyance to allow continuous surface paving at grade of the open areas around it in order to maximize yard space for the UHMC. It would also replace the dual pipe outlets with a single outlet culvert at the Pier 35 bulkhead.

More specifically, the drainage channel would be improved to contain a 12-foot by 4-foot deep box drain, along the same alignment. The existing dual 48-inch pipes will be replaced by the box culvert that will penetrate through the existing bulkhead wall at Pier 35.

1.5.1 Project Location

The proposed location is on property that includes the Piers 34 and 35 areas at Honolulu Harbor, Hawaiʻi on the island of Oʻahu (Figure 1-2). The physical address associated with the subject property is 965 N. Nimitz Highway, Honolulu, Hawaiʻi 96817, just southwest of the intersection of N. Nimitz Highway and Alakawa Street. It encompasses the following Tax Map Keys (TMKs), including portions of parcels that are in the project area (R.M. Towill 2010a) (Figure 1-3):

- (1)1-5-34:7, 10, 17, 22, 24, 25, and portions of 4, 5, 8, 22, and 26;
- (1)1-5-35: portion 8; and
- (1)1-5-36: portion 2.

The subject property boundary encompasses land totaling 6.03 acres (R.M. Towill 2010a) that includes an area from the Piers 34 and 35 wharf face to a 10-foot line behind the existing building and approximately 873 feet south of the existing building (AECOM 2009). The existing property line is immediately adjacent to the building footprint. The east side of the building is adjacent to the Honolulu Warehouse property. This side of the building is within 6 feet of the property line.

1.5.2 Existing Conditions

The subject property is composed of three primary areas: the building area (Figures 1-4 & 1-5), the open exterior storage areas (Figure 1-6), and the wharf (Figure 1-7). The existing wharf features 720 lineal feet for docking. Its berth has a 34-foot depth.

Existing buildings on the subject property are leased by Hawaii Stevedores, Inc., United Fishing Agency, and Honolulu Freight Service from DOT Harbors until spring 2013.

The existing building acts as a barrier to entry along the east side of the Piers 34 and 35 wharf area of the subject property. A locked access gate on the south side of the subject property permits oversized trucks to access the Pasha automobile terminal at Pier 33 (AECOM 2009).

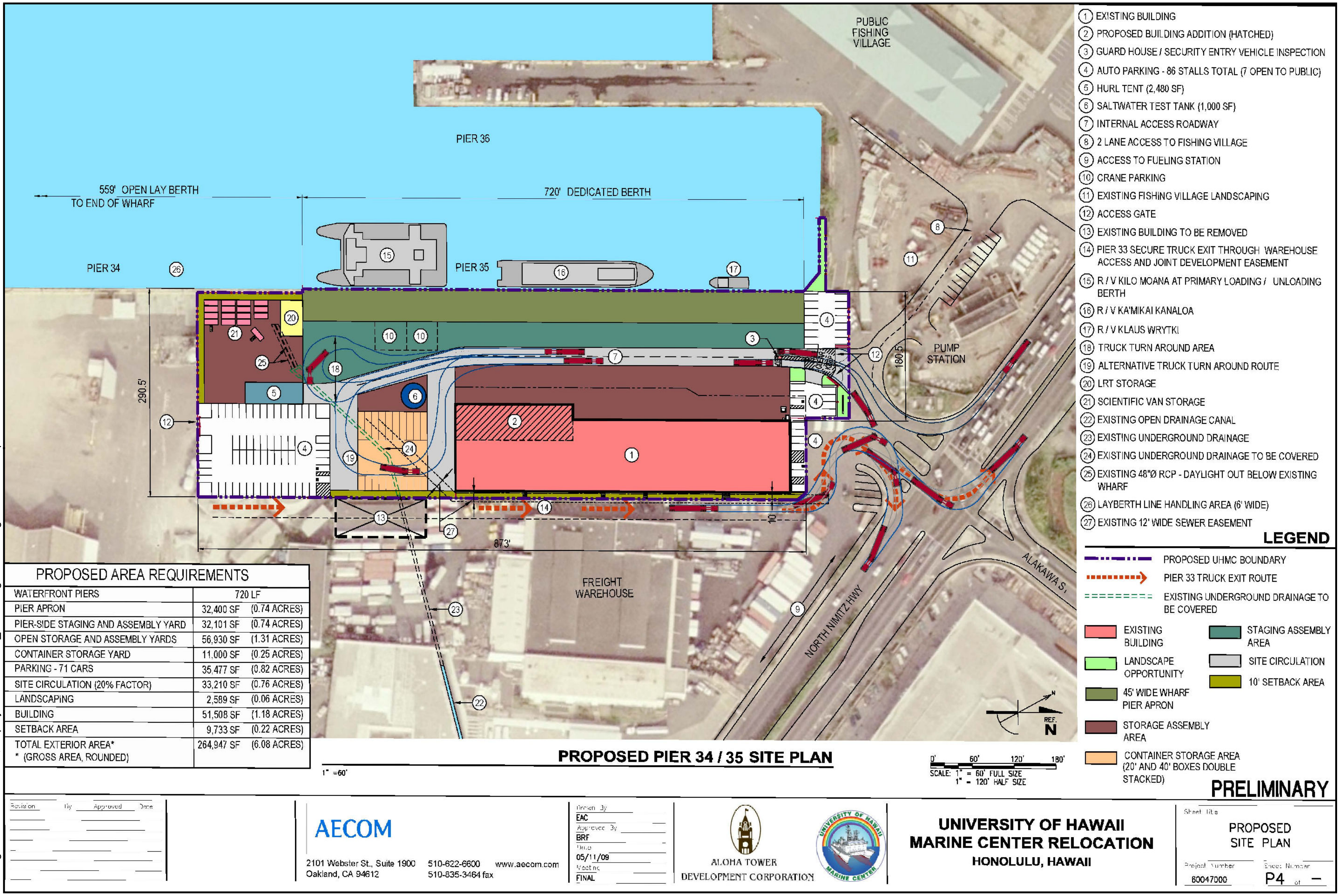
In addition, the Marine Spill Response Corporation (MSRC) moors their vessels at the wharf at Pier 35. Clean Islands Council also uses Pier 35 to berth its vessel. Sea Engineering, Inc. has been using an unimproved, open lot as a storage yard. The southern end of the wharf at Pier 34 is serves as temporary lay berthing while vessels wait for their primary berthing location (AECOM 2009).

The subject property is mostly paved and the pavement is in serviceable condition. A former cement operation has moved from the subject property, taking associated storage tanks from the southeast corner of the subject property (See Section 2.8 Hazardous Materials and Waste).

All tenants share the same area for parking, which is an unpaved and somewhat depressed area in the southeast corner of the site (AECOM 2009).

The adjoining properties are industrial or commercial and are described below.

- North (including northeast and northwest): To the north of the subject property is the Hart Street Wastewater Pump Station. To the northwest are several commercial businesses at the Pier 38 Fishing Village including POP Fishing and Marine, Uncle's Fish Market & Grill, Nico's, and United Fishing Agency. To the northeast other commercial businesses include Best Buy, Home Depot, Costco, AAA, Eagle Café, Oreck Vacuum, Enterprise, etc.
- East: To the east of the subject property are several industrial and commercial businesses including, but not limited to: Honolulu Freight, Chevron industrial fueling station, Party City, Lowe's, Sea Engineering, Inc. offices, Japan Foods, and various other industrial and commercial facilities including tank farms with large capacity petroleum product above ground storage tanks.
- South (including southeast and southwest): Pasha automobile and freight facilities south of the subject property at Pier 33. Southeast of the subject property across Nimitz Highway are various commercial businesses and to the southwest of the subject property is Honolulu Harbor.
- West: West of the subject property is Honolulu Harbor and Piers 36 and 37.



PROPOSED AREA REQUIREMENTS

WATERFRONT PIERS	720 LF	
PIER APRON	32,400 SF	(0.74 ACRES)
PIER-SIDE STAGING AND ASSEMBLY YARD	32,101 SF	(0.74 ACRES)
OPEN STORAGE AND ASSEMBLY YARDS	56,930 SF	(1.31 ACRES)
CONTAINER STORAGE YARD	11,000 SF	(0.25 ACRES)
PARKING - 71 CARS	35,477 SF	(0.82 ACRES)
SITE CIRCULATION (20% FACTOR)	33,210 SF	(0.76 ACRES)
LANDSCAPING	2,589 SF	(0.06 ACRES)
BUILDING	51,508 SF	(1.18 ACRES)
SETBACK AREA	9,733 SF	(0.22 ACRES)
TOTAL EXTERIOR AREA* * (GROSS AREA, ROUNDED)	264,947 SF	(6.08 ACRES)

Feet 0 75 150
0 20 40 Meters

Figure 1-1
Conceptual Plan
University of Hawai'i Marine Center Relocation

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Printing Date: Nov 05 2012, K:\projects\GIS\9581_UHMC\figures\EA\Figure 1-2 Project Location.mxd

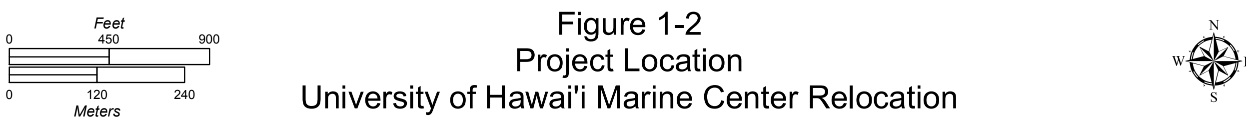

Figure 1-2
Project Location
University of Hawai'i Marine Center Relocation

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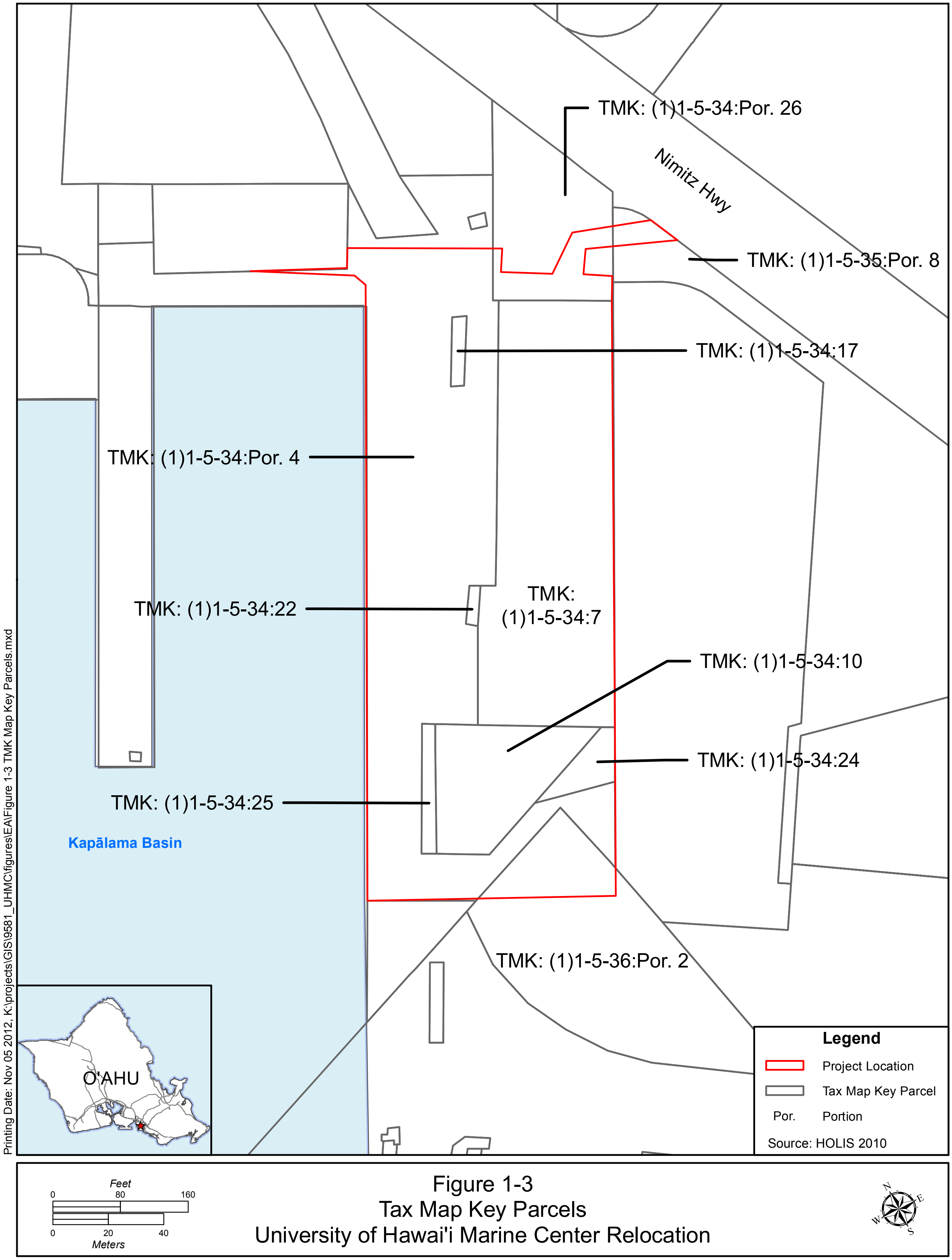

Figure 1-3
Tax Map Key Parcels
University of Hawai'i Marine Center Relocation

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Figure 1-4. View of the Northernmost Portion of the Subject Property

Figure 1-5. View of Southern Portion of the Pre-Fabricated Metal Building

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Figure 1-6. View Looking Southward of the Storage Area for Piers 35 and 34

Figure 1-7. View of the Pier 35 Wharf and Operations

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1.5.3 Site Improvements

While the proposed site is generally paved and in serviceable condition, some civil improvements are necessary (AECOM 2009):

- Convert the open drainage canal on Pier 34 into a box culvert conveyance to allow continuous surface paving at grade;
- Grade an area of more than 1 acre with asphalt, including the depressed area in the southeast corner of the site; and
- Locate a new security-controlled entry near the Nimitz Highway and Alakawa Street intersection.

The structural integrity of the wharf requires assessment for the mobile vessel loading cranes, which impose loads of up to 1,000 pounds per square foot. New asphalt pavement would be designed and graded to meet the requirements of the UHMC (AECOM 2009). Structural engineering analysis indicated weaknesses in the asphalt between the structure and the pier face. Emergency repair of concrete spalls and delaminations as well as replacement of mooring bollards is in progress.

The site would be marked and painted, including striping for pedestrians, automobile parking, and container storage. Additional internal roadway striping would be provided throughout the yard and in the gate area. Vehicle drive lanes would give access to staff vehicles inside the facility and delivery trucks and vans. The lanes would give access to the entire length of the site. Private automobile parking would be available at both the north and south ends of the site. There would be 87 spots, with the majority of spaces located within the security perimeter. Seven stalls would be located at the north end of the site outside of the security perimeter and accessible to the public. A secured entry would give public access to the first floor lobby and second floor administrative offices. The publicly-accessible area would be compliant with the American Disabilities Act (AECOM 2009).

New chain link fencing would surround the proposed site on all sides with the exception of the wharf area, which would not be fenced. Fencing would be a combination concrete barrier with chain link fence (AECOM 2009).

1.5.4 Site Utilities

Existing utilities on the subject property include (AECOM 2009):

- Electricity: Hawaiian Electric Company (HECO) services the subject property;
- Water: A two-inch transmission line conveys potable water to the subject property. Currently, the existing building does not have a sprinkler system and no fire hydrants are on the subject property; and
- Sanitary Sewer: A short gravity-feed sewer system runs from the existing building structure to the Hart Street Wastewater Pump Station just north of Piers 34 and 35. There is no sewer at the wharf line.

The proposed action would require domestic water and fire protection water, storm water/treatment, sanitary sewer, natural gas, electrical, and telephone facilities to the various building components. Not all of these exist at the site and some would require installation.

Electricity would provide power to the new entrance gates, inspection facilities, and all buildings, the guard booth, yard lighting, powered containers, and to three dock boxes in the wharf area.

Existing site lighting may be relocated to better illuminate UHMC operations. Site lighting consists of high pressure sodium flood light fixtures with external visors and internal glare shields. Site lighting poles are approximately 40-foot steel poles with concrete bases and concrete bollard protection. Light levels for the site would be five foot-candles average maintained in the yard, three foot-candles average maintained at the wharf face, maintaining an average ratio of 2.5:1 across the site. A one foot-candle maintained average would be provided at night when the yard is not operating. New lights would be shielded to limit light spill into the water.

The site would be looped east/west and north/south with conduit and vaults for telephone, data, security and fiber optic cable to serve buildings, reefers, communications, and security requirements. Communications and electrical power would be run in separate conduits. Standard telephone connections to the various buildings would be provided as conduit only. The UHMC may install security cameras under a security plan.

Existing domestic water service would be adapted for the new building use and ancillary water use on the site. At least two fire hydrants would be installed on site. Concrete or concrete-filled steel bollards would protect the fire hydrants and other fire utilities from vehicle impact.

A short gravity sewer system connects the existing building to the Hart Street Wastewater Pump Station north of Piers 34 and 35. The wharf line is not connected to the sewer system. A new, separate sewage pump system would connect vessels at the wharf to the sewer system. A lift station and pressure sewer would be provided as needed for the new wharf connection.

In addition to the utilities, storm water runoff from the subject property travels via sheet flow across the paved areas of the subject property to a storm drain located in the paved lot and to an unnamed, intermittent, and tidally-influenced drainage ditch on the southern portion of the subject property. Storm water would be discharged into the basin channel via existing outfalls. New tributary drainage areas not currently designed for storm drainage would connect to existing outfalls as capacity exists. New outfalls would be installed as needed, located at or near to existing outfalls.

All site utilities would comply with respective best management practices and federal, state, and county laws and regulations.

1.6 PROJECT SCHEDULE

Project construction is expected to begin in early 2013. The UHMC relocation is anticipated to occur in early 2014.

1.7 ESTIMATED COSTS

DOT Harbors will provide the UHMC with $18 million of improvements to existing facilities at the new site. Costs for additional site and building features and land will be solely the responsibility of UH.

2.0 DESCRIPTION OF AFFECTED ENVIRONMENT, POTENTIAL ENVIRONMENTAL IMPACTS, AND PROPOSED MITIGATION

HAR § 11-200-5(D) (1996) requires that for all proposed actions not exempt from environmental review, an environmental assessment is required that must assess the significance of the potential impacts of its action on the existing environment. The existing environment includes the physical and socio-economic environment as well as infrastructure systems and services. Potential impacts may be direct, indirect, or cumulative (HAR § 11-200-2 1996). This section presents the existing state of the environmental resources from the perspective of the preferred alternative to relocate the UHMC to Piers 34 and 35. It presents the findings and discussion of the potential direct, indirect, or cumulative impacts the proposed action may have on existing resources and identifies any necessary mitigation measures.

Direct (or primary) impacts are those impacts which are caused by the action and occur in the same place and time. Indirect (or secondary) impacts are impacts caused by the action that are later in time or farther removed in distance, but still reasonably foreseeable. These may include impacts to land use patterns, population density or growth rate, or air, water, and other natural systems. Cumulative impacts are defined as those impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Such impacts can result from individually minor but collectively significant actions taking place over a period of time (HAR § 11-200-2 1996).

This environmental assessment considers the affected environment, potential for environmental impacts, and proposed mitigation within a time horizon of approximately 27 years, until the UHMC lease expires in 2038. Short-term impacts are considered within a range of a few days to a few months, relative to the time a specific action occurs. For example, long-term noise impacts are based on the regular operations of the UHMC for the project lifespan of the lease, while short-term noise impacts are based on ephemeral activities such as construction. Because the proposed location is in a highly urbanized area, the region of influence is the subject property and immediately surrounding properties, unless otherwise noted.

2.1 CLIMATE

Climate is defined as the composite of a place's weather, including its average conditions, variability, and extremes. Hawai‘i's climate exhibits low daily and monthly variability due to consistent solar exposure and the moderating influence of the ocean on temperature. Statewide, Hawai‘i has mild temperatures, relatively uniform day lengths, moderate humidity, continuous northeasterly trade winds, and infrequent severe storms (Juvik & Juvik 1998).

Hawai‘i experiences two seasons: “summer” between May and October, and a “winter” season between November and April. During summer, the average temperature is about 81°F, while it's about 72°F during winter. Summer features steady northeasterly trade winds and sunshine, while winter has more inconsistent trade winds, “Kona” storms from the southwest, and more frequent clouds and rainfall. Annual rainfall averages approximately 20-25 inches with the greatest amount occurring in the winter (Juvik & Juvik 1998).

Hawai‘i's mountainous topography creates differences in climate and weather resulting in a variety of microclimates across each of the islands. Rainfall, solar radiation, temperature, humidity, and wind can vary over short distances.

The project is proposed to be located along the southern shore of O‘ahu. Average annual temperature range is from an average low of 70.1°F to an average high of 84°F, with an overall average of 77°F (HSCO 2010a & 2010b). During summer months, average temperature is about 80° F and rainfall averages 0.84 inches per month. During winter months, average temperature is about 74° F and rainfall averages 2.64 inches per month (HSCO 2010a & 2010b). In summer, southern swells moderately impact the area, though little area is exposed to high waves because it is sheltered by Sand Island. High winds are not unknown in winter months and may impact vessels and operations (Juvik & Juvik 1998).

Over the past century, the average temperatures of the Earth’s surface and shallow ocean have increased (Fletcher 2010). This change is attributed to the release of greenhouse gases (GHGs) into the atmosphere, so-called because certain gases absorb and “trap” solar radiation instead of reflecting it back into space. Important GHGs include carbon dioxide, methane, nitrous oxide, and chlorofluorocarbons. Scientific consensus identifies carbon dioxide as the dominant gas of concern (IPCC 2007).

The main sources of GHGs due to human activity are from the following sectors, in order from most emissions to least: fossil fuel power stations, industrial activity, transportation, agriculture, fossil fuel processing, residential and commercial activity, land use and biomass burning, and waste disposal and treatment. In 2007, the United States was responsible for about 20 percent of global carbon dioxide emissions (WRI 2010). Within Hawai‘i, O‘ahu emits about 80 percent of the state’s total carbon dioxide emissions, not accounting for carbon sinks (ICF 2008). Hawai‘i’s emissions comprise less than 1 percent of the national total, as of 2007 (Environmental Protection Agency [EPA] 2008).

Potential Impacts and Proposed Mitigation

The proposed action is not expected to impact the climate of the area. There is long-term concern about the direct, indirect, and cumulative impact of human activity on the climate. However, the UHMC activities are existing uses within Honolulu Harbor. Expansion and renovation will result in the short-term irrevocable release of GHGs from construction activity. This quantity is negligible. No mitigation is required or proposed.

2.2 AIR QUALITY

Ambient air pollutant concentrations are regulated by both federal and state Ambient Air Quality Standards (AAQS). The AAQS apply to particulate matter (PM_{10}), sulfur dioxide (SO_2), nitrogen dioxide (NO_2), carbon monoxide (CO), ozone (O_3), and lead (Pb) (HAR § 11-59 1993; EPA 2011). Some state AAQS (CO, NO_2, and O_3) are more stringent than the federal standards but are allowed to be exceeded once per year (HAR § 11-59 1993; Department of Health [DOH] 2009). Also, the state monitors hydrogen sulfide (H_2S) and in its AAQS applies a single standard while the federal version is divided into primary and secondary standards (DOH 2009). In most cases, the State of Hawai‘i’s air quality standards are more stringent than the comparable federal limits.

The state AAQS are designed to “protect public health and welfare and to prevent the significant deterioration of air quality” (HAR § 11-59 1993). The primary federal AAQS are intended to protect public health with an adequate margin for safety, while secondary standards are intended to protect public welfare through the prevention of damage to soils, water, vegetation, animals, wildlife, man-made materials, visibility climate and economic values (EPA 2011).

Areas where ambient concentration levels are below the AAQS are designated as being in "attainment." The state is in attainment of federal and state AAQS (DOH 2009). The nearest Department of Health (DOH) air monitoring station is at Sand Island across the harbor. Additional stations collect data from downtown Honolulu and Liliha, approximately one to two miles east and north-east of the project site, respectively (DOH 2009).

The primary sources of emissions in the harbor area are vehicles and light industrial and maritime uses, including cranes, tugboats and other equipment. Automobile emissions from traffic along Nimitz Highway are the major source of air pollution in the area. Despite the urban character of the surrounding area, the present ambient air quality in the project area is generally considered good due to the prevailing northeasterly trade winds and the absence of "heavy" industries (DOT Harbors 2009). However, during Kona (southerly and southwesterly) wind conditions, a buildup of particles could occur in the general project area. Petroleum-based gases being released during earth disturbing activities is possible. Generally, the prevailing northeast trade winds will cause the gases to dissipate over the harbor. However, during periods when there are west and south winds, gases would be dispersed over the project area and potentially towards other harbor facilities.

Potential Impacts and Proposed Mitigation

The proposed project is not expected to have a significant impact on air quality. Construction activities may result in short-term air quality impacts from fugitive dust and equipment emissions. The site contractor will be required to minimize the release of dust and equipment emissions through good house-keeping and by the use of properly maintained equipment. Construction related impacts to air quality will be temporary and will cease when construction is completed.

State air pollution control regulations require that there be no visible fugitive dust emissions at the project boundary. Therefore, an effective dust control plan will be implemented by the project contractor to ensure compliance with state regulations. Fugitive dust emissions can be controlled to a large extent by watering active work areas, using dust screens, keeping adjacent paved roads clean, and covering open-bodied trucks. Exhaust emissions will be mitigated by ensuring that project contractors properly maintain their internal combustion engines and comply with DOH rules regarding air pollution control (HAR § 11-59 1993 & § 11-60 1993).

Significant long-term air quality impacts are unlikely from the UHMC's continued use of Piers 34 and 35. Air quality impacts from related dock activities at the proposed improved pier would not be measurably lesser or greater than those incurred from the proposed use of the existing piers. The new improvements to Piers 34 and 35 would not, in and of themselves, result in increased long-term air quality impacts. Due to the predicted minimal impact of the project, mitigation of long-term impacts is unwarranted.

2.3 TOPOGRAPHY

The project site is relatively level, with ground elevations ranging from 6 to 8 feet above mean sea level (Figure 2-1). The existing wharf at Piers 34 and 35 is set at +7 feet MLLW, which is the mean lower low water level, defined as the average of the lowest water levels (DOT Harbors 2011).

Potential Impacts and Proposed Mitigation

The proposed action and alternatives are not expected to have a significant impact on the topography of the area. The new pavement would be at or near existing heights. No mitigation is required or proposed.

The topography of a location influences the degree of impact from natural hazards, which are discussed in Section 2.5 Natural Hazards.

2.4 SOILS AND GEOLOGY

The southern shore of Oʻahu is a flat coastal plain composed of ancient reefs and sedimentary deposits known as cap rock estimated to be about 800-900 feet thick. This rests above a basalt island core (Nichols et al. 1996).

The regional geology within the vicinity of Honolulu consists of a volcanic basalt island core that is overlain and flanked by ancient beaches, coral reefs, estuaries, and lagoons. The mixing and the inter-fingering of coral reef, beach sand, and lagoon deposits with recent Honolulu Volcanic Series tuff, lava flows and occasional alluvial deposits carried down from the mountains make the local geologic conditions highly complex. In addition, at the project site granular fill occurs below the pavement from two to five feet. Below the fill material lagoonal deposits consisting of soft to very soft sandy silt occur between 10 and 15 feet. Coralline material occurs below the sandy silt. Groundwater occurs at depths of 5 to 7 feet below the existing pavement or ground surface (CH2M Hill 2004).

The soil type for the subject property was determined based on information obtained from the NRCS website for the subject property address and existing environmental reports. Subject property soils are designated as fill and mixed fill (Figure 2-1), which typically consists of material from dredging activities and excavation material from adjacent uplands. The soil is classified for urban development, including housing and industrial facilities (USDA 2010).

Based upon soil borings in the Iwilei area of Honolulu Harbor, which includes Piers 34 and 35, the shallow sediments in the cap rock (within the upper 20 feet) that are not fill material are comprised of coral reef deposits, overlain with lagoonal silt and clay with coralline debris and/or overlain or interlayered with wetlands deposits of mud and peat. Additionally, the lagoonal sedimentary deposits are heterogeneous layers of calcareous sands, silts, and coral gravels, with occasional concrete and asphalt rubble, timbers, and debris (CH2M HILL 2002). The soils throughout the area of construction are comprised of soft muck.

Potential Impacts and Proposed Mitigation

UHMC activities are not expected to impact the soil or geology of Piers 34 and 35. No mitigation is required.

Printing Date: Nov 05 2012, K:\projects\GIS\9581_UHMC\figures\EA\Figure 2-1 Topo & Soils.mxd

Feet 0 385 770
0 100 200 Meters

Figure 2-1
Topography & Soils
University of Hawai'i Marine Center Relocation

N W E S

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2.5 HYDROLOGY

Honolulu Harbor forms the edge of Oʻahu's south central coastal plain. The underlying cap rock, estimated to be about 800-900 feet deep, has low permeability that prevents the seaward movement of potable water from the underlying basaltic aquifer (DOT Harbors 1997).

The Honolulu Harbor area was created by the continual flow of fresh water from Nuʻuanu Valley into the ocean. The freshwater restricted the growth of coral, which resulted in the forming of a basin and the beginnings of the harbor. The freshwater flows also cut channels through the existing coral reef in which sand eventually began to accumulate. These sand accumulations grew over time, forming what would later become Sand Island. Over the years soils from harbor dredging activities were used to expand Sand Island to its existing size (DOT Harbors 1997).

The subject property is located below the Underground Injection Control (UIC) Line established by the DOH. Mink and Lau (1990) evaluated the groundwater below the subject property to determine that the subject property lies over the Kalihi aquifer system within the Honolulu Oʻahu aquifer sector. At this location there are both upper and lower aquifers (Mink & Lau 1990).

The upper aquifer is considered "basal" where fresh water is in contact with seawater, "unconfined" where the water table is the upper surface of a saturated aquifer, and "sedimentary" where the geology is nonvolcanic lithology. The status code of this upper aquifer was listed as 13321 which indicates that the aquifer is replaceable, highly vulnerable to contamination, with moderate salinity (i.e., 1,000 to 5,000 milligrams per liter of chlorine), and is neither important ecologically nor as drinking water (Mink & Lau 1990).

The lower aquifer is considered "basal" where fresh water is in contact with seawater, "confined" where the aquifer is bounded by impermeable or poorly permeable formations, and "flank" consisting of horizontally extensive lavas. The status code of this lower aquifer was listed as 11113 which indicates that the aquifer is irreplaceable, has a low vulnerability to contamination, and is fresh water (i.e., less than 250 milligrams per liter of chlorine) that is currently being used as a drinking water source (Mink & Lau 1990).

Groundwater flow conditions at the subject property and Honolulu Harbor are highly variable. For example, groundwater in the immediate vicinity of the harbor is known to be tidally influenced and may change direction several times daily. However, the net groundwater flow direction is believed to be toward the harbor, but this has not been absolutely confirmed for the subject property. Groundwater within the Honolulu Harbor area has been observed to exhibit a net flow in an inland direction for periods of up to 11 days. This variable groundwater flow provides a high potential for the transport of mobile contaminants in groundwater throughout the general harbor vicinity (Earth Tech, Inc. & Oceanic Companies 1997).

Surface waters in the immediate vicinity of the project area consist of two streams: Nuʻuanu Stream which discharges into Honolulu Harbor at Piers 15 and 16, and Kapālama Stream which discharges into Honolulu Harbor (Kapālama Basin) at Piers 38-39 (Figure 2-2). In addition, within the confines of the subject property, there is a relatively small, unnamed, intermittent drainage ditch that runs along the southern portion of the subject property that is tidally influenced.

The National Wetlands Inventory classifies the Pier 35 area as "M2USN" (Figure 2-2). An "M" designation indicates open ocean and high energy coast lines with salinities exceeding 30 parts per thousand and little or no dilution except outside the mouths of estuaries; "2" indicates the area is intertidal from the extreme low water to extreme high water and associated splash zone; and "US" indicates unconsolidated shoreline, which has two characteristics: (1) unconsolidated substrates with less than 75 percent areal cover of stones, boulders or bedrock and (2) less than 30 percent areal cover of vegetation (U.S. Fish and Wildlife Service [USFWS] 2010).

Potential Impacts and Proposed Mitigation

Almost all land within the project area was previously paved and is impervious. During construction activities various areas would be excavated and subsequently repaved. These construction-related changes in site drainage patterns would be temporary and not anticipated to have long-term adverse impacts on site hydrology.

The proposed project is not expected to have a significant impact on groundwater because impervious surfaces would prevent contaminants from entering the aquifer. Implementation of appropriate Best Management Practices (BMPs) would minimize the impacts of construction and storm water runoff to the area, harbor, and watershed hydrology. Refer to Section 2.6 Water Quality for details on short-term construction mitigation measures and Section 2.22 Drainage System for details on storm water management.

2.6 WATER QUALITY

DOH classifies near shore coastal waters in the channel of Honolulu Harbor as "Class A," while Honolulu Harbor itself is designated a "Class A" embayment. Waters designated "Class A" are to be protected for recreational uses, aesthetic enjoyment, and propagation of marine life. No new sewage discharges are permitted within embayments. No new industrial discharges are permitted into Honolulu Harbor, except for acceptable non-contact thermal and drydock discharges, storm water discharges which meet basic water quality criteria, and discharges covered by a National Pollutant Discharge Elimination System (NPDES) (HAR § 11-54 2009).

Honolulu Harbor is also designated as an "impaired" water body, particularly for Sand Island Points #2 and #3 (DOH 2004). At the time of publication, Total Maximum Daily Loads (TMDL) for Honolulu Harbor have not been determined, but are undergoing analysis (DOH, personal communication, February 25, 2011). TMDL is a calculation of the maximum amount of a pollutant that a waterbody can receive and still safely meet water quality standards (EPA 2010). Honolulu Harbor has been assessed to have the following pollutants exceed standards: turbidity, total nitrogen, and chlorophyll a (DOH 2004).

Water quality is strongly influenced by surface runoff from surrounding industrial, commercial, and residential areas directly into Honolulu Harbor and indirectly by runoff into Kapālama Stream and Nuʻuanu Streams, which carry pollutants into the harbor (DOT Harbors 1999). DOH has not established TMDLs for either stream at present. Nuʻuanu Stream has been assessed through visual, numeric, and narrative techniques to have the following pollutants exceed standards: trash, nitrites/nitrates, total nitrogen, turbidity, dieldrin, and total chlordane. Kapālama stream has been visually assessed to have the following pollutants exceed standards: nutrients, turbidity, and trash (DOH 2004).

Potential Impacts and Proposed Mitigation

The UHMC is an existing use within Honolulu Harbor and its waters. Relocating it is unlikely to significantly degrade the water quality of the harbor in the long-term. Net pollutant loading is unlikely to increase given that any pollutants the UHMC may input are already permitted and accounted for at Snug Harbor and would be transferred from there to Piers 34 and 35.

Short-term construction activities have the potential to increase the pollutant load. Unknown factors such as construction equipment to be used, construction site staging areas, etc. would be evaluated when known to determine the most effective BMPs in mitigating construction-related impacts on coastal waters. Mitigation measures may include, but not be limited to, the on-site utilization of the following BMPs:

- Silt Curtains – To limit and contain the suspension of fine sediments from activities associated with excavation;
- Drainage Berms – To prevent off-site storm water from entering the site and erosion;
- Storm Drain Inlet Protection – To trap sediment around inlets and drains, preventing it from entering inlets and receiving waters;
- Sediment Traps – To retain site runoff and allow suspended sediments to settle out;
- Oil-water separators - To prevent contaminants from entering the Harbor during dewatering activities;
- Soil Stabilization – To prevent the loss of disturbed or exposed soil areas through the use of paved hard surfaces;
- Soil Containment – To establish a containment area for the storage of excavated soils and dewatered sediment; and
- No excessive watering - To prevent sheet flow from the site.

Specific BMPs for the proposed actions would be determined during the design and construction phases and incorporated into the Site-Specific Construction BMP Plan to be submitted to DOH as part of the NPDES permitting process. Refer to Section 2.22 Drainage System for more information on storm water management and associated BMPs.

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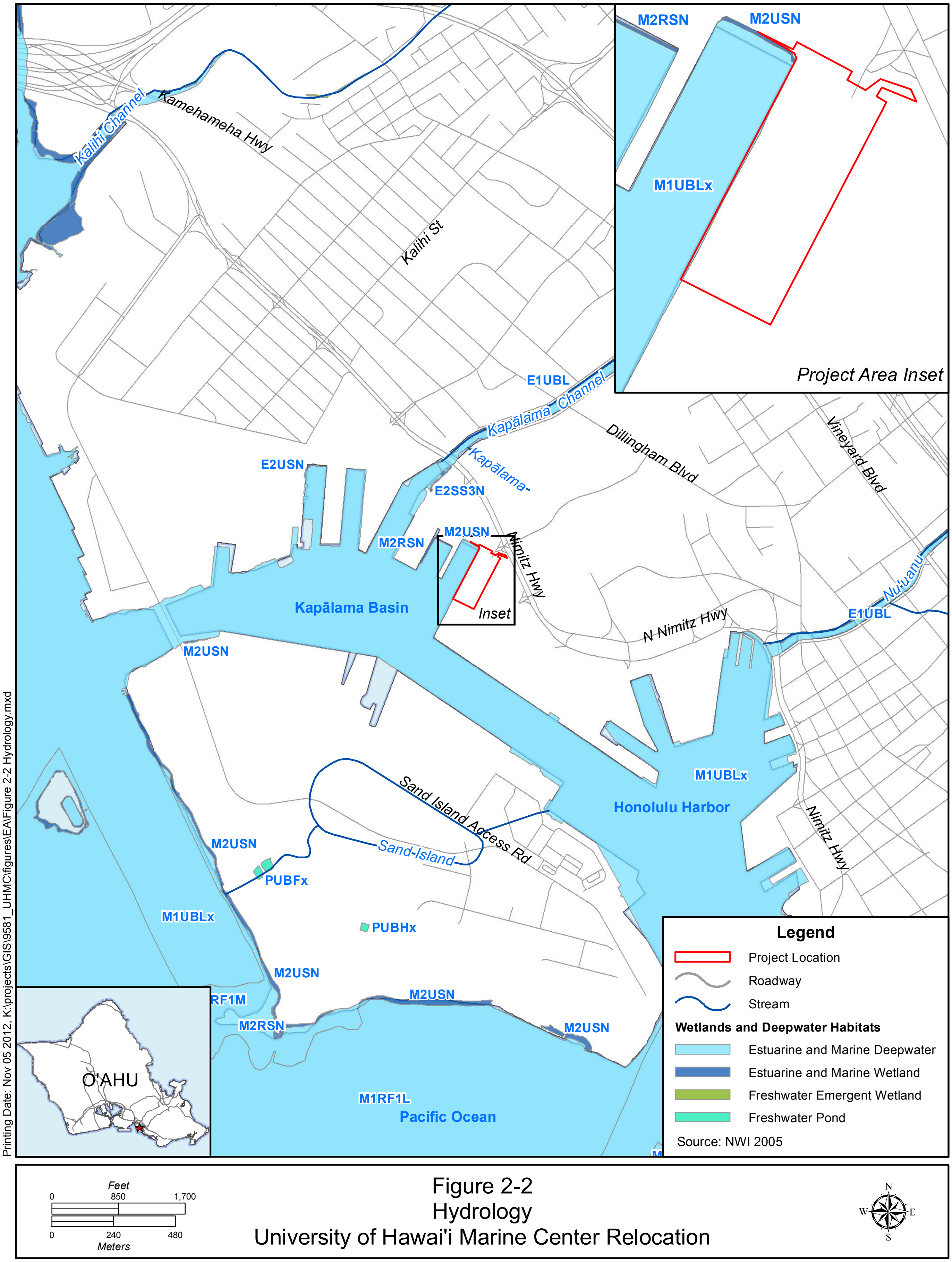

Figure 2-2
Hydrology
University of Hawai'i Marine Center Relocation

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2.7 NATURAL HAZARDS

Natural hazards are naturally-occurring events that have a negative effect on an environment or people. In general, projects do not directly cause natural hazards. Instead, a project indirectly and cumulatively impacts the resiliency of the environment to natural hazards and is itself vulnerable to their impacts. Natural hazards vary in timing, intensity, predictability, frequency, and extent. Hurricane storm surge exemplifies a generally predictable, short-term, high-intensity hazard while sea-level rise exemplifies a long-term impact uncertain in timing, intensity, or extent.

Climate change is projected to alter natural hazard variables. Current research indicates that as air and water surface temperatures increase, weather conditions will exhibit increased variability and extremes. The Intergovernmental Panel on Climate Change (IPCC) projects increased frequency and intensity of extreme weather events (IPCC 2007). In Hawaiʻi, sea-level rise resulting from global warming is predicted to directly, indirectly, and cumulatively impact weather events. Rising sea levels enable high waves, tsunamis, and hurricanes to penetrate further inland (Fletcher 2010).

This section incorporates assessments from the Honolulu Map in the *Atlas of Natural Hazards in the Hawaiian Coastal Zone* (Fletcher et al. 2002) to describe the potential for natural hazards to the subject property and surrounding area.

The Honolulu Harbor coastal area is considered to have a moderate to high overall natural hazard risk. The Honolulu coastal zone is characterized by a low coastal slope with sporadic fringing reef and is intensely developed. It is susceptible to earthquakes, tsunami, stream flooding, hurricanes, storm surge, seasonal high-wave flooding, chronic erosion, shoreline retreat, and sea-level rise (Fletcher et al. 2002).

Natural hazards common to Hawaiʻi that do not pose significant threats to Honolulu Harbor include volcanism and coastal erosion. Oʻahu does not experience volcanic eruptions. Coastal erosion is prevalent on Oʻahu, but does not impact Honolulu Harbor significantly. It is a natural process whereby the shoreline retreats inland over time as a result of wind, waves, prevailing currents, and storms. Shorelines are highly dynamic and shift frequently through time. Honolulu Harbor, including Piers 34 and 35, is a man-made structure with a hardened shoreline, above fill soils composed of material from dredging and excavation. Coastal erosion is minimal and not expected to impact Piers 34 and 35 over the lifespan of the UHMC lease. Any wharf reconstruction activities would strengthen the pier against potential erosion impacts.

2.7.1 Earthquakes

The southern shoreline of Oʻahu is within the Molokaʻi Seismic Zone. Oʻahu is classified as Seismic Zone 2A under the Uniform Building Code. Zone 2A is characterized as having earthquakes that may cause minor damage to structures. The Honolulu coastline is assessed to have moderately high vulnerability to earthquakes (Fletcher et al. 2002).

Potential Impacts and Mitigation Measures

Oʻahu has not experienced significant earthquakes. The renovations would meet prevailing building codes, which incorporate specifications to reduce vulnerability to earthquakes.

2.7.2 Tsunami

Tsunamis occur as a series of waves striking a coastline. Tsunamis can be up to 590 mph and have a wavelength of up to 120 miles. (Fletcher et al. 2002). Tsunamis can reach hundreds of feet inland and cause severe damage, depending on the wave's origin, intensity, and the coastal topography. A tsunami striking Honolulu Harbor could impact on-shore facilities and both moored and operating vessels.

The project site is located in the Tsunami Evacuation Zone (Figure 2-3) (National Oceanic and Atmospheric Administration [NOAA] 2010b).

Potential Impacts and Mitigation Measures

A tsunami event is unpreventable and unpredictable. The UHMC project site is in a Tsunami Evacuation Zone (Figure 2-3). The proposed project facilities would be designed, constructed, and operated in accordance with potential for tsunami flood inundation. The proposed project would not contribute to an increased amount of overland flooding. The UHMC would follow O'ahu Civil Defense evacuation procedures. It would identify an evacuation route and safe area at least 100 feet outside of the evacuation zone where those present may safely congregate. If time allows, vessels would be removed or deployed to deep water (at least 200 fathoms).

2.7.3 Inland Flooding, Hurricane Storm Surge, and Seasonal High Waves

Honolulu is vulnerable to flooding from inland streams, hurricane and tropical storm surge, and seasonal high waves. Nu'uanu stream and Honolulu in general historically have experienced widespread flooding (Fletcher et al. 2002).

The Federal Emergency Management Agency (FEMA) classifies the proposed project site as Flood Zone X on its Flood Insurance Rate Maps (Figure 2-4). Flood Zone X represents areas determined to be outside the 100- and 500-year flood plains (FEMA 2010).

Honolulu has yet to directly experience a major hurricane in historical record. However, the southern shore of O'ahu is extremely vulnerable to strong winds and waves generated by tropical storms. The threat from high waves is moderate to high. The region regularly experiences 6-foot waves during southern swells (Fletcher et al. 2002). The inner harbor however rarely experiences such waves because of Sand Island, which blocks or dampens incoming waves. Waves that do penetrate Honolulu Harbor lose much of this height. As noted above, the subject property is approximately 6 to 8 feet above mean sea level. The existing wharf at Piers 34 and 35 is set at +7 feet MLLW (AECOM 2009).

Potential Impacts and Mitigation Measures

The subject property does not have a significant potential for stream or inland flooding. The project site is located outside of the 500-year flood plain and the limited scope of the project is not anticipated to exacerbate any existing flooding conditions. No habitable structures are associated with the project. The project would conform to prevailing building codes, engineering standards, and hazard mitigation.

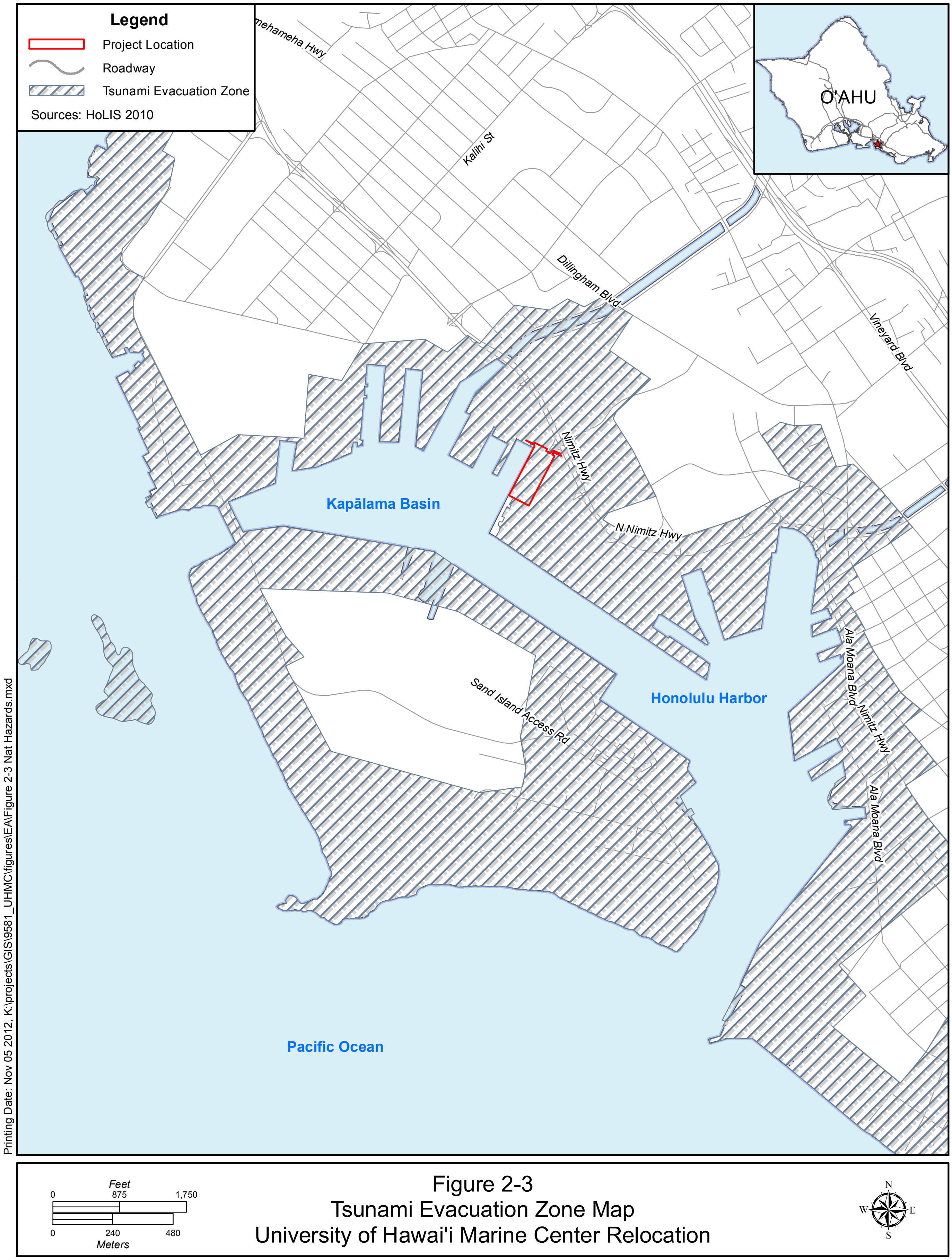

Figure 2-3
Tsunami Evacuation Zone Map
University of Hawai'i Marine Center Relocation

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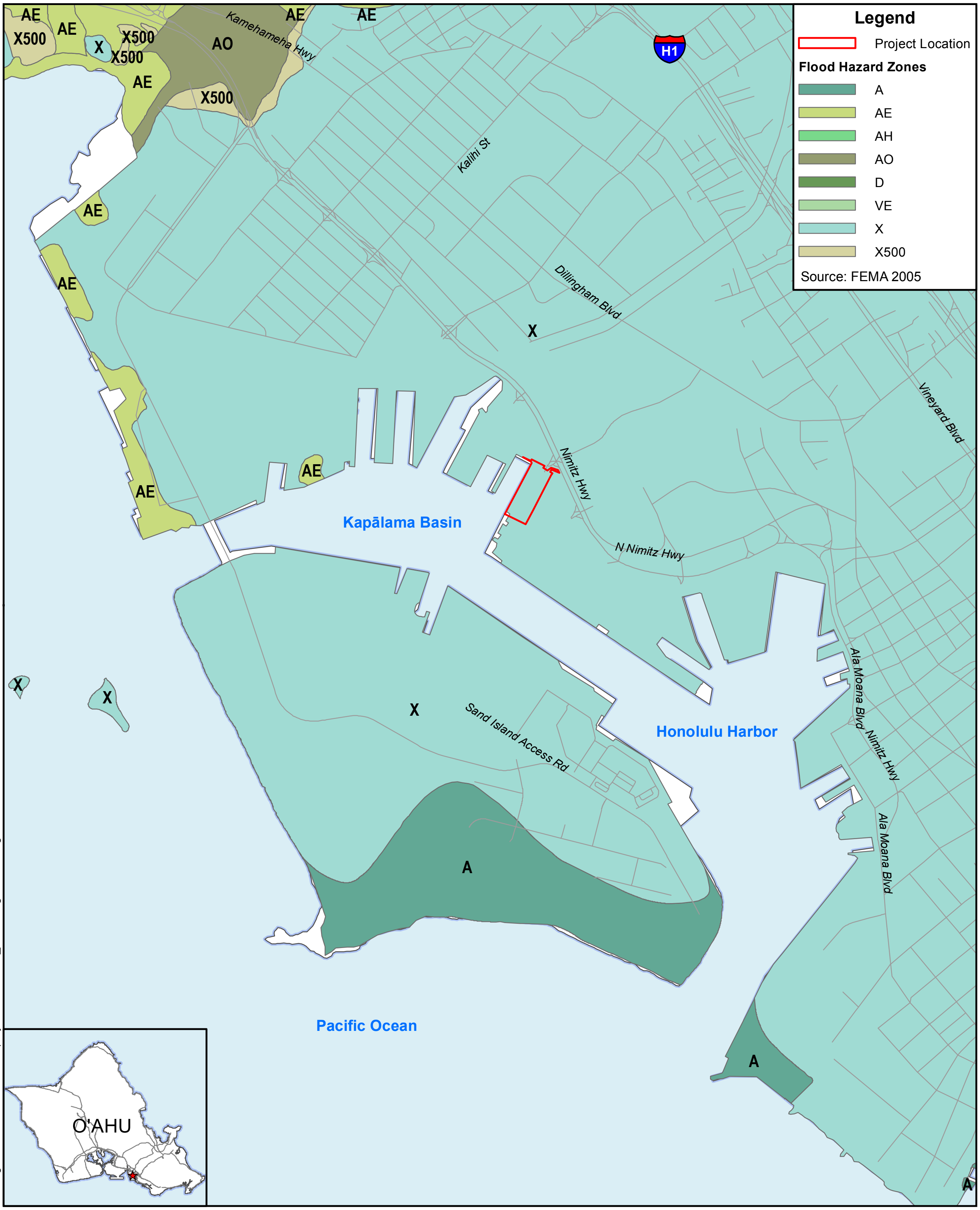
Printing Date: Nov 05 2012, K:\projects\GIS\9581_UHMC\figures\EA\Figure 2-4 Flood Hazard Zones.mxd



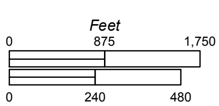


Figure 2-4
Flood Hazard Zones
University of Hawai'i Marine Center Relocation

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2.7.4 Sea-Level Rise

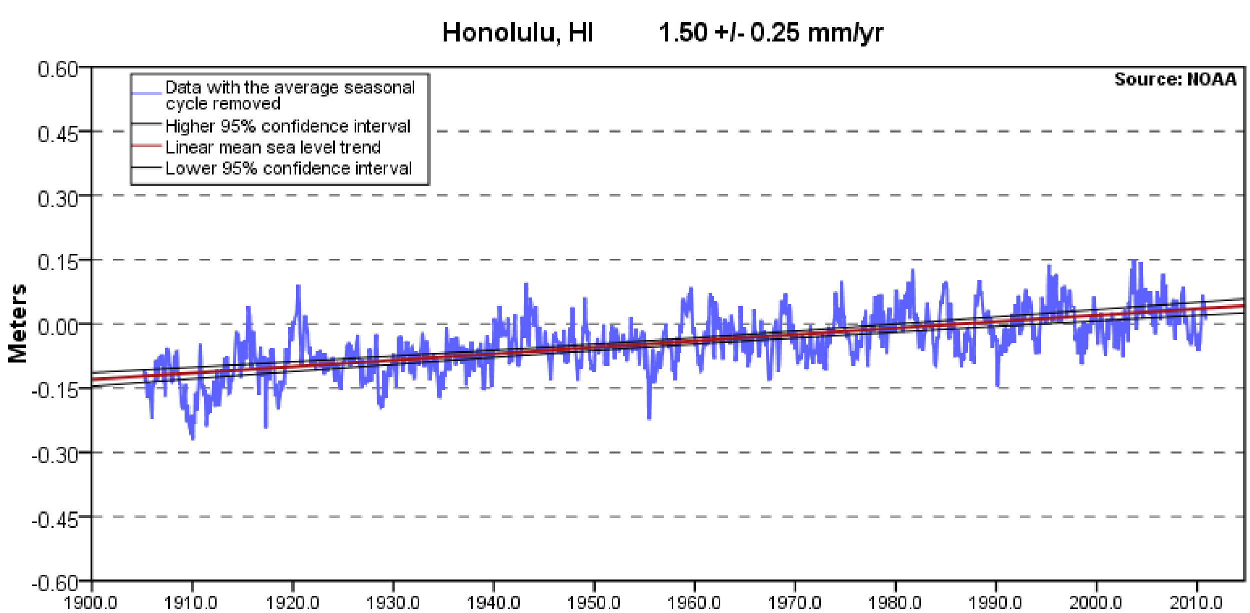
Sea-level rise is a global phenomenon, resulting from several global and local factors. Globally, changes in air and water surface temperature alter the amount of ice on land and moisture in the atmosphere. Higher temperatures melt land-locked ice such as the Greenland ice sheet and alpine glaciers. Higher air and water temperatures result in thermal expansion of ocean water because warmer water takes up more space (IPCC 2007).

Local factors can be geologic or atmospheric. Vertical land movement can occur due to tectonics (earthquakes, regional subsidence or uplift), compaction of sedimentary strata, crustal rebound in formerly glaciated areas, and withdrawal of subsurface fluids (aquifer depletion). Atmospheric phenomena such as the El Niño-Southern Oscillation influence ocean temperatures. Water levels also change with the seasons, further influenced by swells and high tides (U.S. Army Corps of Engineers [USACE] 2009).

Global sea levels have varied throughout history, and stabilized within a meter or so of its present level over the last several thousand years (IPCC 2007). Recent predictions suggest global sea-level rise of 1 foot by 2050 (Rignot et al. 2011) and 2.4 feet to 6.2 feet by 2100 (Vermeer & Rahmstorf 2009). However, sea-level rise is not uniform across the globe.

In Hawai‘i, sea level has risen approximately 0.6 inches per decade over the past century (Fletcher 2010). Honolulu Harbor Gauge 1612340 has recorded a mean sea-level rise trend of 1.50 millimeters/year (0.06 inches/year) from 1905 to 2006, or approximately 0.49 feet in 100 years, with a 95 percent confidence interval of ±0.25 millimeters/year (Figure 2-5) (NOAA 2010a). This has resulted in increased short-term sea level fluctuations along the coast, leading to episodic flooding and erosion during extreme tides, such as in Māpunapuna, O‘ahu. Current research estimates sea level to exceed 3 feet above the 1990 level by 2100. Sea-level rise is estimated to continue, and possibly accelerate, for the next several centuries, although Hawai‘i has not experienced an acceleration in rise to date (Fletcher 2010).

Figure 2-5. Honolulu Harbor Gauge 1612340 Mean Sea Level Trend



Using Light Detection and Ranging (LiDAR), an optical remote sensing technology that measures distance, Dr. Charles “Chip” Fletcher has created Digital Elevation Maps (DEM) of Honolulu Harbor that can be used to project potential inundation areas under various scenarios of sea-level rise (Fletcher, personal communication, March 2, 2011). Figure 2-6 displays the projected inundation areas with high tide and 1-foot, 2-foot, and 3-foot sea-level rise. These maps are made with a 1 meter square footprint and about 20 centimeter vertical resolution. Blue areas indicate areas susceptible to water inundation.

Lands that are closer to the ocean are highly vulnerable to inundation by seawater during high waves, storms, tsunami, and extreme water levels. Also, storm water from upland areas is likely to pool at lower elevations. Below ground structures such as basements are likely to flood, ground floors splashed by wave run-up, and seawater exit from the storm drains on most of the streets in the Iwilei area. Waves would not necessarily permanently submerge these areas. More likely, lands lying below sea level in the future would be dry at low tide during arid summers, but have high water tables, standing pools of rainwater, and backed up storm drains when it rains and tides are high (Fletcher 2008).

Potential Impacts and Mitigation Measures

As sea levels rise, areas between Honolulu Harbor and Dillingham Boulevard would experience increased periodic inundation. The subject property elevation is +7 feet MLLW. As indicated in Figure 2-6, the wharf line is unlikely to be affected by a 3-foot rise in sea level. However, the open drainage canal would experience flooding and inundate surrounding storage areas in the Piers 34 and 35. DOT Harbors proposes to cover the drainage canal with a box culvert, which would remove the inundation risk. However, risk to cumulative extreme weather events will increase over time. Higher sea level combined with a high tide, a summer swell, and heavy rains may raise water levels enough to temporarily impact the UHMC. The renovations would be designed to meet building and hazard mitigation requirements sufficient to mitigate such an impact.

Less than a 1-foot rise is projected for the life of the UHMC at Piers 34 and 35. The lease runs until 2038, after which the UHMC may relocate again. Using sea-level rise curves developed by the U.S. Army Corps of Engineers (USACE 2009), one can estimate the degree of sea-level rise by about 2038. The USACE provides three scenarios for sea-level rise: low, moderate, and high. The estimated degree of rise for each scenario by 2040 is, respectively, 1.2 inches, 3 inches, and 8.3 inches. For all three scenarios, the UHMC at Piers 34 and 35 would be above projected sea-level rise height through 2038, the reasonable lifespan of the project.

Of more concern is the surrounding feeder infrastructure outside the project boundaries and the jurisdiction of DOT Harbors. Heavy rains, high tide, and a high water table may cause periodic flooding of the area north of the subject property, including Nimitz Highway.

Printing Date: Nov 05 2012, K:\projects\GIS\9581_UHMC\figures\EA\Figure 2-6 SLR.mxd

Feet
0 450 900
0 120 240
Meters

Figure 2-6
Projected Sea-Level Rise at High Tide
University of Hawai'i Marine Center Relocation

N W E S

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2.8 HAZARDOUS MATERIALS AND WASTE

The Iwilei area of Honolulu Harbor has been examined repeatedly because of the long-term industrial and petroleum-related operations that have dominated the area. Studies have been conducted to determine the extent of the contamination as well as potential mitigation measures. A working group, the Iwilei District Participating Parties (IDPP), LLC, was organized to recommend and conduct remediation measures (DOT Harbors 2011).

Despite well-documented current and historic Recognized Environmental Concerns (RECs) and environmental concerns, there has been limited, sporadic soil and groundwater samples collected at the subject property itself and analyzed for likely contaminants of concern such as TPH-gasoline, TPH-diesel, TPH-oil, benzene, lead, arsenic, polynuclear aromatic hydrocarbons, polychlorinated biphenyls, and pesticides. (TPH stands for total petroleum hydrocarbons.) Identified current and historic RECs would seem to indicate a likelihood of possible near-surface or subsurface soil and/or shallow cap rock groundwater contamination. Although somewhat dated, the limited soil and groundwater sample data collected thus far for the subject property indicate minimal or no petroleum-related groundwater contamination and a limited area of known lead-contaminated soil, located just south of the property. The following has been concluded regarding the subject property and/or properties within close proximity (DOT Harbors 2011):

- Localized, shallow groundwater flow and associated contaminant migration patterns are highly variable, tidally influenced, and have been shown to drastically change over time;
- There are documented spills, leaks, and/or releases of hazardous materials that have occurred at the subject property;
- There are documented spills, leaks, and/or releases of hazardous materials/waste that have occurred at properties in close proximity to the subject property;
- There are known active and inactive as well as the possibility of unknown underground pipelines in close proximity to the subject property that convey/conveyed petroleum-related products that may have produced a release to subsurface soils or the shallow cap rock aquifer that could impact the subject property;
- Current uses of the subject property have identified RECs and environmental concerns;
- Current uses of properties in close proximity to the subject property have identified RECs;
- Historic uses of the subject property have identified RECs;
- Historic uses of properties in close proximity to the subject property have identified RECs; and
- Based upon current and historic uses of the subject property and properties in close proximity to the subject property, likely contaminants of concern (COCs) include petroleum-related compounds (TPH-gasoline, TPH-diesel, and TPH-oil).

In addition, lead-contaminated soils would be of potential concern especially along the southern subject property boundary and at the property immediately adjacent to the southern subject property boundary, where a tank farm had been located on the site but removed by 2011 (Figure 2-7). Other COCs may include other heavy metals such as arsenic as well as benzene, polynuclear aromatic hydrocarbons, polychlorinated biphenyls, and pesticides (DOT Harbors 2011). See Section 2.15 Historical, Archaeological, and Cultural Resources for details on past activities at the subject property and in the surrounding area.

Potential Impacts and Mitigation Measures

A Phase II Environmental Site Assessment has been recommended for the subject property for the following reasons:

- There is uncertainty regarding localized groundwater flow patterns and associated contaminant migration within the shallow cap rock aquifer relative to the subject property;
- There is well documented historic petroleum-related soil and groundwater contamination in close proximity to the subject property; and
- There are numerous identified current uses and historic RECs and environmental concerns associated with the subject property and properties in close proximity to the subject property.

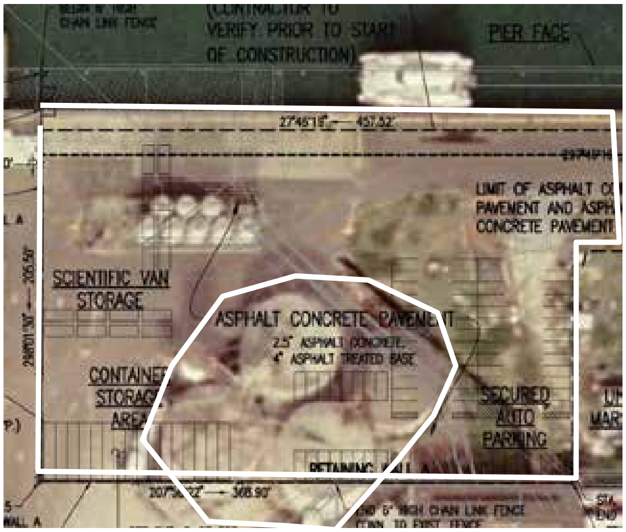
The following activities potentially require mitigation measures:

1) General excavation below the existing pavement;
2) Demolition where existing pavement is removed and excavated;
3) Trenching for utilities (water line, fire line, sewer, and drains); and
4) Excavation for installation of supports for area and security lighting.

Possible mitigation measures would be determined through consultation with permitting agencies such as USACE and DOH and may include the following:

- Cover the soil with an asphalt cap to prevent lead-contaminated soil from leaving the site through erosion, human interaction, or fugitive dust;
- Contain runoff on-site to prevent it from entering storm drains and Honolulu Harbor;
- Contain excavated material in a lined separate area for analysis; remediation, if necessary; and final disposal. Excavated material should also be covered to prevent rainwater from washing excavated material into the harbor;
- Include as a minimum provisions for oil-water separation and sediment control before discharge into storm drains or sanitary sewer. Dewatering without discharge into the storm drain or sewer system may include the use of back-trenches where discharge from one open trench is pumped into another trench where the water is allowed to seep back into the ground. Mechanical filtering of groundwater may also be considered, such as portable filtering tanks or the use of chemicals to remove contamination; and
- Take air samples when performing ground-disturbing activities. Personal protective equipment should be issued to construction workers to minimize inhalation of gases. Details should be outlined in a Site Safety and Health Plan prior to construction.

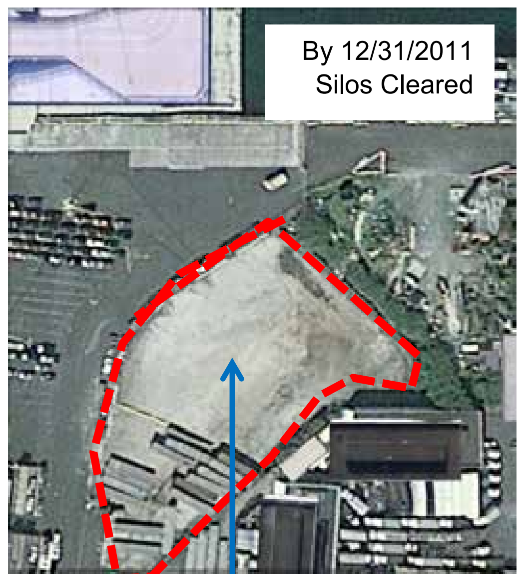
Figure 2-7. Location of Past Silos and Disturbance of Area to be Paved (Past and Current)



Historical aerial photos show that the southern banks of the canal all the way to the southern boundary of the project site at Pier 34 was used as a tank farm and has been recently cleared of the previous structures.

The exposed surface materials in this area were observed to be light tan silty coralline sand with gravel.

Source: Geotechnical Engineering Exploration, UHMC Relocation, New Box Culvert and Pavement Evaluation, Pier 35, Honolulu, O‘ahu, Hawai‘i (Geolabs, Inc., October 2012)



LEGEND

Area to be paved on former silo site

Corresponding area at Pier 35

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2.9 FLORA AND FAUNA

The proposed project area is an urban area with industrial and commercial uses. The environment is disturbed and mainly artificial. Soil is fill from prior harbor dredging while the surface is paved with asphalt or cement and covered with structures. The presence of terrestrial flora or fauna is both scattered and sparse (DOT Harbors 1999).

Flora present on-site include common non-indigenous weedy species of grasses. Given the urban character of the area, fauna present on-site may include cats (*Felix domesticus*), rats (*Rattus spp.*), dogs (*Canis familiaris*), and small Indian mongoose (*Herpestes auropunctatus*).

No rare, endangered, or endemic flora or fauna are known to inhabit the project site. Some species of migratory shorebirds may pass through but not settle at the proposed project site. Increased outdoor lighting would be installed at the facility for evening and night-time activities.

Potential Impacts and Proposed Mitigation

No adverse impacts on flora and fauna are anticipated. No rare or endangered flora and fauna are known to inhabit the project site or the alternative locations. Outdoor lighting at night has the potential to affect migratory shorebirds. Therefore, the lighting would be designed to reduce light attraction and general light pollution by directing light sources downward and reducing upward glare.

2.10 MARINE BIOLOGY

A total of 82 different species have been observed in the marine waters within Honolulu Harbor (DOT Harbors 1999). These species were comprised of a wide variety of marine life including corals, sponges, algae, nematodes, crustaceans, and fish species. The macroalga (*Mesophyllum mesomorphum*) and eight invertebrate taxa (the sponges *Mycale cecilia, Hyatella intestinalis*; the barnacle *Chthamalus proteus*; the ectoprocts *Amahtia distans* and *Diaperoecia* sp.; and the ascidans *Phallusia nigra* and *Bottryllus spp*.) occurred at every site. All of these except the macroalga and the ectoproct *Diaperoecia sp.* are known or suspected non-indigenous species introduced from areas outside of Hawaiʻi. Pier locations farther into the harbor, such as Piers 34 and 35, show a lesser diversity of organisms compared with piling-associated biota closer to the harbor entrance.

An underwater biological resources survey was conducted in August 2012 (Appendix C). The survey found that the hard substratum and pilings beneath Piers 34 and 35 are encrusted with a biofouling community typical of harbors in the main Hawaiian Islands. The existing subsurface stormwater outlets have a limited assortment of biota inhabiting the surface. No hard coral colonies are present. Most of the species identified at Piers 34 and 35 are introduced or naturalized species (non-native) and some with invasive tendencies were observed on pilings.

Potential Impacts and Proposed Mitigation

The waters within Honolulu Harbor contain complex benthic communities. It is unlikely that the proposed project would result in any significant, long-term impacts on the resident marine biota.

However, to avoid impacts from construction activities, the contractor would employ required measures from applicable NPDES or other permits. This would prevent pollutants from entering the Harbor. These are further described in Section 2.22 Drainage System.

2.11 THREATENED AND ENDANGERED SPECIES

No rare, threatened, or endangered species listed by the U.S. Fish and Wildlife Service (USFWS) (2011) utilize or inhabit the proposed project area (Appendix C). Threatened or endangered species such as humpback whales, green and hawksbill turtles, and Hawaiian monk seals, among others, are known to enter Honolulu Harbor. The project area is not a designated critical habitat by the USFWS. Previous disturbance of harbor lands and ongoing industrial and commercial activities at the harbor are not conducive habitat for threatened or endangered species.

Potential Impacts and Proposed Mitigation

No adverse impacts to threatened or endangered species are anticipated. No rare or endangered flora and fauna are known to inhabit the project site. In the event that threatened or endangered species, such as a humpback whale, green or hawksbill turtle, or Hawaiian monk seal, are encountered, construction activity would cease until the animal leaves the area.

2.12 ALIEN SPECIES

Alien species, particularly when invasive, are a continual threat to Hawaiʻi's fragile ecosystems. Hawaiʻi's geographic isolation and island setting have resulted in the uniqueness and diversity of its native flora and fauna. This isolated evolution has also resulted in a very fragile ecosystem and has produced native Hawaiian species highly vulnerable to human disturbances and invasions of introduced species. In contrast, most alien flora and fauna evolved in continental ecosystems where competition has produced aggressive species with highly successful survival strategies. However, most of Hawaiʻi's native flora and fauna are unable to compete with these more aggressive species resulting in their demise.

Harbors, like other port facilities, have the potential to introduce alien pest species into Hawaiʻi. In harbor areas, the threat of alien species introduced into Hawaiʻi’s coastal waters and becoming invasive is always present. As noted above, most of the species identified at Piers 34 and 35 are introduced or naturalized species (non-native), some with invasive tendencies.

Potential Impacts and Proposed Mitigation

The UHMC activities are existing activities within Honolulu Harbor. Protocols for inspecting vessels before returning from long trips would continue to apply to all vessels visiting the UHMC at its proposed new location. As such, the UHMC relocation is not likely to cause a new, significant risk of alien species introduction to Honolulu Harbor.

2.13 NOISE

The proposed project location is within the highly-industrialized Honolulu Harbor complex. The two major sources of noise in the area are vehicular traffic and aircraft overflights. Aircraft departure noise from Honolulu International Airport creates a relatively high ambient noise environment, between 65 and 70 DNL at the project area (DOT Airports 2009). “DNL” means the “day-night average sound level” that averages noise levels over a 24-hour period, with a penalty for evening noise. Industrial activities are generally compatible within the 70 DLN noise level (DOT Airports 2009).

Potential Impacts and Proposed Mitigation

Because of the relatively soft soils present at the site the drilling rig is expected to be sufficient for the installation of the column foundations and curtain wall. Pile driving will not be required. No noise or vibration above that normally expected within a waterfront industrial area is therefore expected.

However, unavoidable but temporary noise impacts may occur during the construction of the proposed project. Construction-related noise would be generated by both on-site equipment (e.g., pumps, generators, compressors, jack hammers, rock drills, demolition equipment, and power tools) and vehicles (e.g., trucks, front loaders, backhoes, tractors, graders, pavers, and concrete mixers-trucks, etc.).

Exterior noise levels as high as 75 decibels are generally considered acceptable for commercial, industrial, and other non-noise sensitive land uses. The proposed project would take place within an industrial area, therefore the potential for adverse noise impacts within the proposed project area is considered to be small. No residences are within 500 feet of the project area.

Noise generated by construction vehicles and on-site mechanical equipment must comply with existing DOH vehicular noise limits and property line noise limits (HAR § 11-42 1981 & § 11-46 1996). Noise from these sources would be difficult to hear at the closest noise sensitive receptors if the noise radiated beyond the harbor property boundaries are at or below the residual background ambient noise levels (approximately 50 to 55 decibels) which are controlled by roadway traffic along Nimitz Highway.

Mitigation of construction noise to inaudible levels may not be practical in all cases due to the intensity of construction noise sources (80 to 90+ decibels at 50-foot distance), and the exterior nature of the work (jackhammering, trenching, concrete pouring, hammering, etc.). However, the following mitigation measures would be implemented:

- Use of properly muffled construction equipment; and
- Adherence to DOH regulations controlling construction noise limits and construction curfew times. Under DOH permit procedures, construction activities are permitted weekdays between the hours of 7:00 AM – 6:00 PM, and on Saturdays between 9:00 AM – 6:00 PM.

2.14 LAND USE AND ZONING

The proposed project is located in the state urban district. The proposed project is within the I-3 Waterfront Industrial designation (Figure 2-8), though DOT Harbors is exempt from county zoning. The proposed project area is not located in the Special Management Area (SMA) (Figure 2-9).

The current land uses within and adjacent to the project site consist of industrial, commercial business offices and facilities, and roadways. The MSRC uses the wharf at Pier 35 for mooring of their vessels and support equipment. Pier 34 supplies lay berth functions for vessels waiting primary berthing (AECOM 2009). Located across Honolulu Harbor from the project site is Sand

Island, an island of about 500 acres housing industrial sites, a U.S. Coast Guard base and the Sand Island State Recreation Area. Approximately 7,000 feet northwest of the project site, across Keʻehi Lagoon, is the Keʻehi Lagoon Park.

Potential Impacts and Proposed Mitigation

The proposed UHMC relocation is not expected to have significant long-term adverse impacts on current or future land uses in the area. The proposed land use of the UHMC remains consistent with present-day and projected future land use in the area. No long-term mitigation measures are proposed.

Construction activities related to the proposed UHMC relocation may impact surrounding land uses in the short-term. The project construction staging area is assumed to be within the project footprint.

In order to mitigate any construction-related impacts, the contractor would follow relevant city and state regulations (erosion, dust, noise, etc.), and implement applicable BMPs.

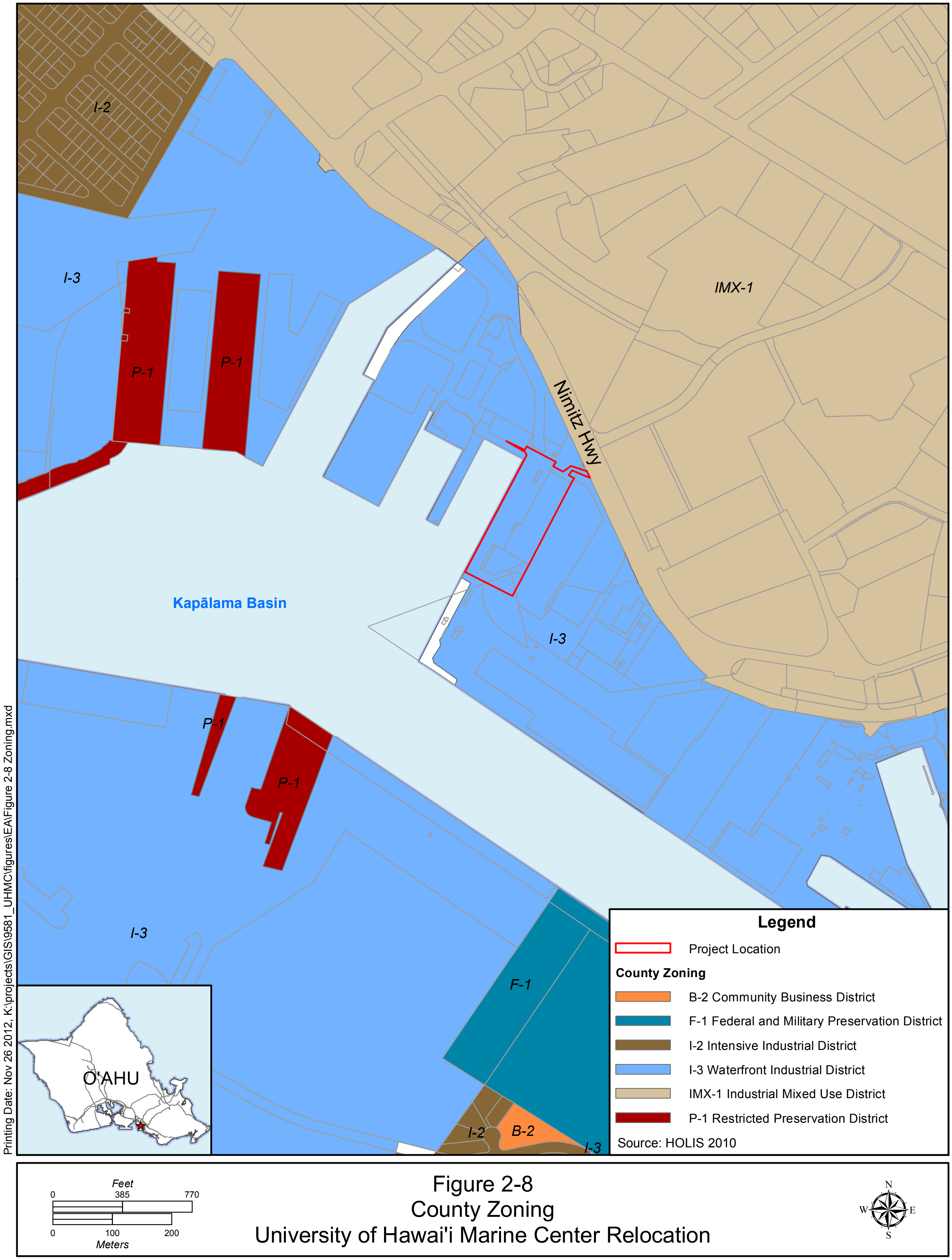

Figure 2-8
County Zoning
University of Hawai'i Marine Center Relocation

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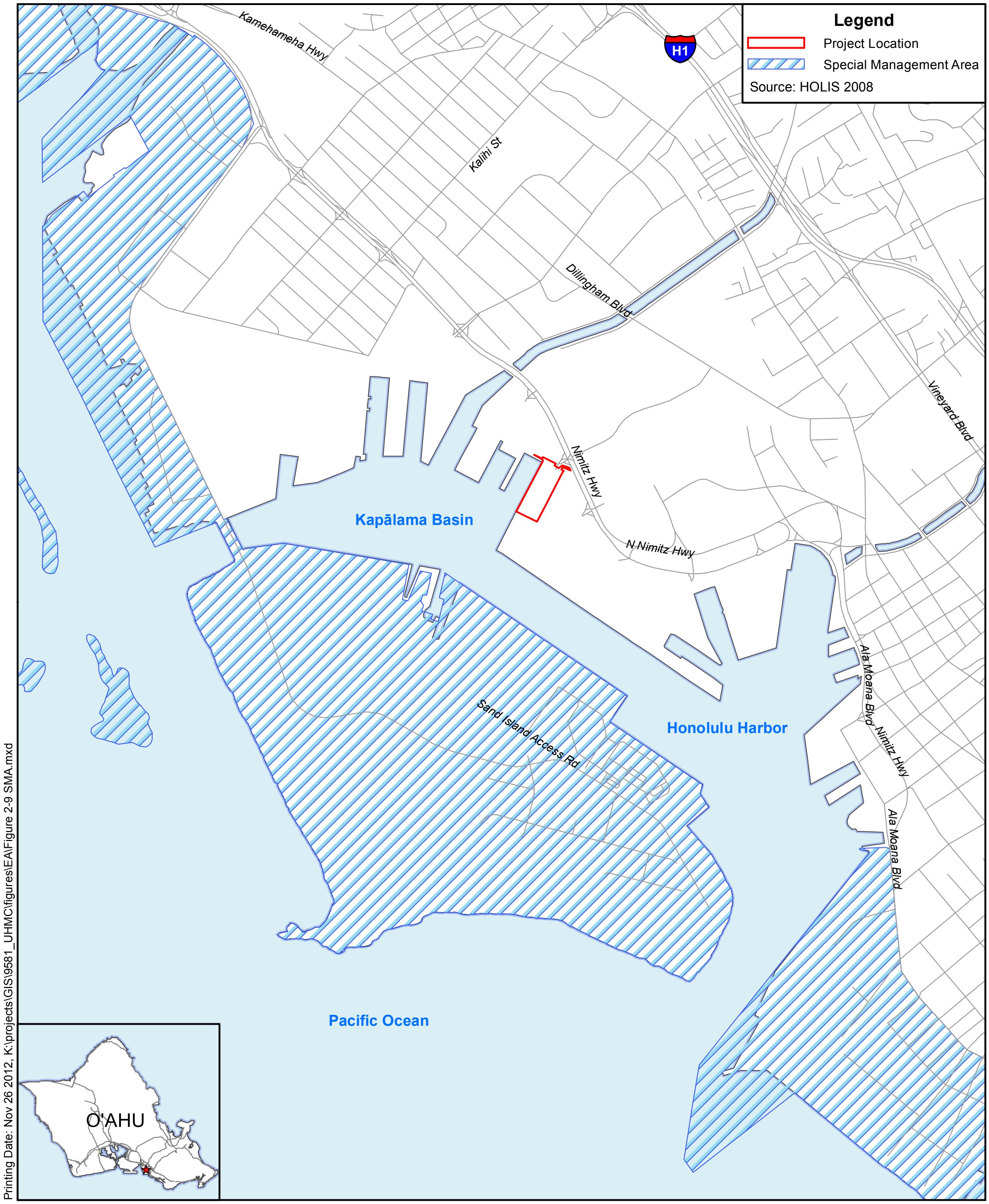

Figure 2-9
Special Management Area
University of Hawai'i Marine Center Relocation

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2.15 HISTORICAL, ARCHAEOLOGICAL, AND CULTURAL RESOURCES

The proposed project location is in the Kalihi area. In legend, Kalihi was the home of Pele's sister Kapo and of her mother Haumea, who is identified with Papa, the wife of Wākea (Pukui et al. 1974).

By the time of first contact with Europeans, the downtown area of Honolulu, known then as Kou, had been settled. Kou was comprised of shoreward fishponds and taro lo'i fed by streams extending into the Nu'uanu and Pauoa valleys (Chiogioji & Hammatt 1995). On the opposite side of Nu'uanu stream was a fishpond, identified as "Kawa" or the "King's fish pond." Iwilei at this time was a small, narrow peninsula, less populated than the Honolulu-side of Nu'uanu stream. Offshore from Iwilei was a small island on the coral reef on the west site of the bay. On the island was a small hut referred to as "Ka-moku-'akulikuli" or "Kaha-ka-'au-lana". Figure 2-10 portrays the 1897 configuration of Iwilei and the island ("Quarantine Island") to its south as substantially different from the present Sand Island and Iwilei land area and harbor line.

The development of the area as a harbor was due to foreigners, who favored it for safe anchorage because of its deep water and shelter from frequent, strong on-shore winds. Facilities for repairing and resupplying ships were built and became a popular stop. Recognizing the growing importance of this activity, King Kamehameha relocated his residence from Waikīkī to the harbor area in 1809. This move further emphasized the importance of the harbor area. Honolulu, meaning "sheltered harbor," takes its name from how foreigners referred to the area.

Foreign trade began with sandalwood and as a strategic stopping point for fur trade with China. The whaling industry eventually replaced these activities. Whaling drove the commercial development of Honolulu through the mid-19th century, transforming the town into one with brick and mortar construction and increasingly western land use patterns.

In 1817, a landing was added to the fort built in 1916, suitable for ships' boats and landing vessels. The first wharf was just north of Nu'uanu Street. It was constructed from an old hulk sunk at the spot in 1825. This was replaced in 1837 with a wharf built with permission of the King and paid for by Ladd & Co. and E. Grimes and Co. In 1827 Robinson & Co. built a wharf nearby Pākākā Point for their repair business. Another wharf was built by 1843 to the east of these two. In 1844, the Minister of Finance sold a waterfront site for the construction of another wharf.

From the second half of the 19th century, Iwilei and the nearby shoreline would undergo dramatic transformation. Iwilei Street was built, first as a dirt road called "Prison Road" connecting the prison on the Iwilei side to Honolulu. This street bisected the fishpond into two, "Kawa" and "Kuwili" fishponds. The location of the latter corresponds to present-day A'ala Park. Honolulu expanded along Iwilei Street into the Iwilei peninsula, and following it, the harbor. The small island off of Iwilei was known as Quarantine Island because passengers with contagious diseases were isolated there.

In 1889, a group of businessmen led by Benjamin Dillingham founded the O'ahu Railway and Land Company (OR&L). OR&L built Honolulu's first depot between Kuwili fishpond and King Street, west of Iwilei Street. The railroad carried sugarcane from the plantations to Iwilei. To accommodate this, the marshes and fishponds were filled in and new wharfs built. By 1901, the OR&L and other business interests had created about 500 acres of waterfront land. The docks could accommodate over 20 deepwater sailing vessels, unloading coal and loading sugar.

After annexation in 1898, the harbor was dredged using federal funds. The dredged material was used to create a small island in the harbor in order to calm the harbor and avoid constructing a breakwater. This island became Sand Island and was continuously expanded to eventually encompass Quarantine Island by the 1940s.

With the opening of the Panama Canal in 1914 and anticipated increased trans-Pacific shipping, government and business planned to further enlarge Honolulu Harbor by dredging Kalihi Channel and Kapālama Basin. However, because of military concerns, the Reserved Channel connecting Honolulu Harbor to Kapālama Basin was dredged instead. This is known as the Kapālama Channel. Honolulu Harbor expanded into the Kapālama Basin and by the early 1930s Piers 34 had been constructed. Pier 35 was constructed in 1931 to provide dedicated facilities for inter-island pineapple shipments.

Piers 34 and 35 have been in continuous operation since construction. Uses have included machine and repair shops, storage tanks (cement, metals, petroleum and petroleum-related products, pesticides, and chemicals), and warehousing (DOT Harbors 2011). In 1969 the back-up area was graded and paved and in 1976 the fender system was replaced. For Pier 34, in 1954 the berth was reconstructed to accommodate oil tankers and bulk cement shipments. In 1972 the entire pier was reconstructed and in 1988 the fender system was repaired. In 1995 the segmented areas were filled in to create a continuous 540-foot pier.

Based upon review of the National and State Register of Historic Places, there are no known archaeological or cultural sites on or adjacent to the project site (SHPD 2007 & 2010).

A traditional Hawaiian fishpond, known as *Ananoho*, existed in the area towards the mouth of Kapālama Stream (DOT Harbors 1999). According to *Sites of O'ahu* (Sterling and Summers 1978), *Ananoho* fishpond, identified in the text as Site 73 (Figure 2-10), was:

> *An oval-shaped pond 52 acres in area. The walls approximate 4700 feet in length, and average 6 feet in width. They are primarily of coral and average 3 feet in height. There are now two houses on the wall, but houses and makaha are modern (p. 322).*

The approximate location of *Ananoho* is shown in relation to the proposed project location in Figure 2-10. It is not likely within the project site boundaries,

In situ human remains have been discovered near Pier 40. That site was not typical of a traditional burial site, instead possibly being the remains of a person that died at the spot (DOT Harbors 1999).

Presently, recreational fishing is not permitted in Honolulu Harbor (DOT Harbors 1999). Prior to western contact, the waters of Honolulu Harbor were utilized by Native Hawaiian fishermen, through *konohiki* fishing rights established by the ancient Hawaiian land tenure system. After Hawai'i's annexation, the 1900 Organic Act required registration of *konohiki* (a type of chief) fishing rights with the federal government, and verification in circuit court. Only 101 of these rights were registered as required and other sites became public, and as time passed, a majority of the registered areas eventually became open to the public as well (Gregory 2010).

The project site is sparsely occupied by introduced plants and grasses and no rare, endangered, or endemic flora or fauna relevant to cultural practices are known to inhabit the project site. Section 2.9 Flora and Fauna discusses present species in more detail.

Potential Impacts and Proposed Mitigation

The project site is situated on highly developed property, formed by dredging and filling operations, that was not in existence prior to 1900 (Figure 2-10) (DOT Harbors 1999). Before European contact, the entire area of the present Piers 34 and 35 was open water or tidal reef. The land comprising Piers 34 and 35 was reclaimed from dredging Honolulu Harbor. No archaeological sites or significant historic structures have been identified previously within any portions of the Piers 34 and 35 area and none are recorded on the register of sites at the State Historic Preservation Division (SHPD).

Because of the evidence the site was open water later filled by dredged material, adverse impacts to historic, archaeological or cultural resources or practices, as described in Act 50, Session Laws of Hawai'i 2000, are not expected as it is unlikely that archaeological or cultural remains are present within or beneath the project site. Although unlikely, if archaeological material, including *iwi*, were to be uncovered during the course of the project, work in the immediate area would be discontinued and SHPD would be immediately contacted to further evaluate the site.

Private fishing activity is not permitted within Honolulu Harbor, and no endemic flora or fauna inhabit the project site, thus there would be little or no impact on traditional Native Hawaiian cultural practices such as fishing or gathering.

2.16 CEDED LANDS

The disposition of former Crown and Government lands (ceded lands) was established in the Admission Act of 1959. Sections 5(f) & (i) of the Act establish that these lands and any income or proceeds resulting from them should be held in trust by the State of Hawai'i. In addition, Section 5(f) indicates that these lands are to be used for the following purposes:

- The support of the public schools and other public educational institutions,
- The betterment of the conditions of Native Hawaiians,
- The development of farm and home ownership,
- The making of public improvements, and
- The provision of lands for public use.

Submerged lands in the State of Hawai'i are included in the ceded lands trust and any submerged parcels within the project area are identified as ceded lands, although administered by DOT Harbors. Submerged lands include any tidal lands that have been reclaimed through dredging or fill, such as the subject property (Figure 2-10) (Office of Hawaiian Affairs [OHA], personal communication, January 27, 2011).

Potential Impacts and Proposed Mitigation

As a public educational institution dedicated to advancing knowledge of the ocean and marine resources, the relocation of the UHMC meets the criteria for uses of ceded lands. There are no proposed improper uses of the ceded land or adverse impacts anticipated.

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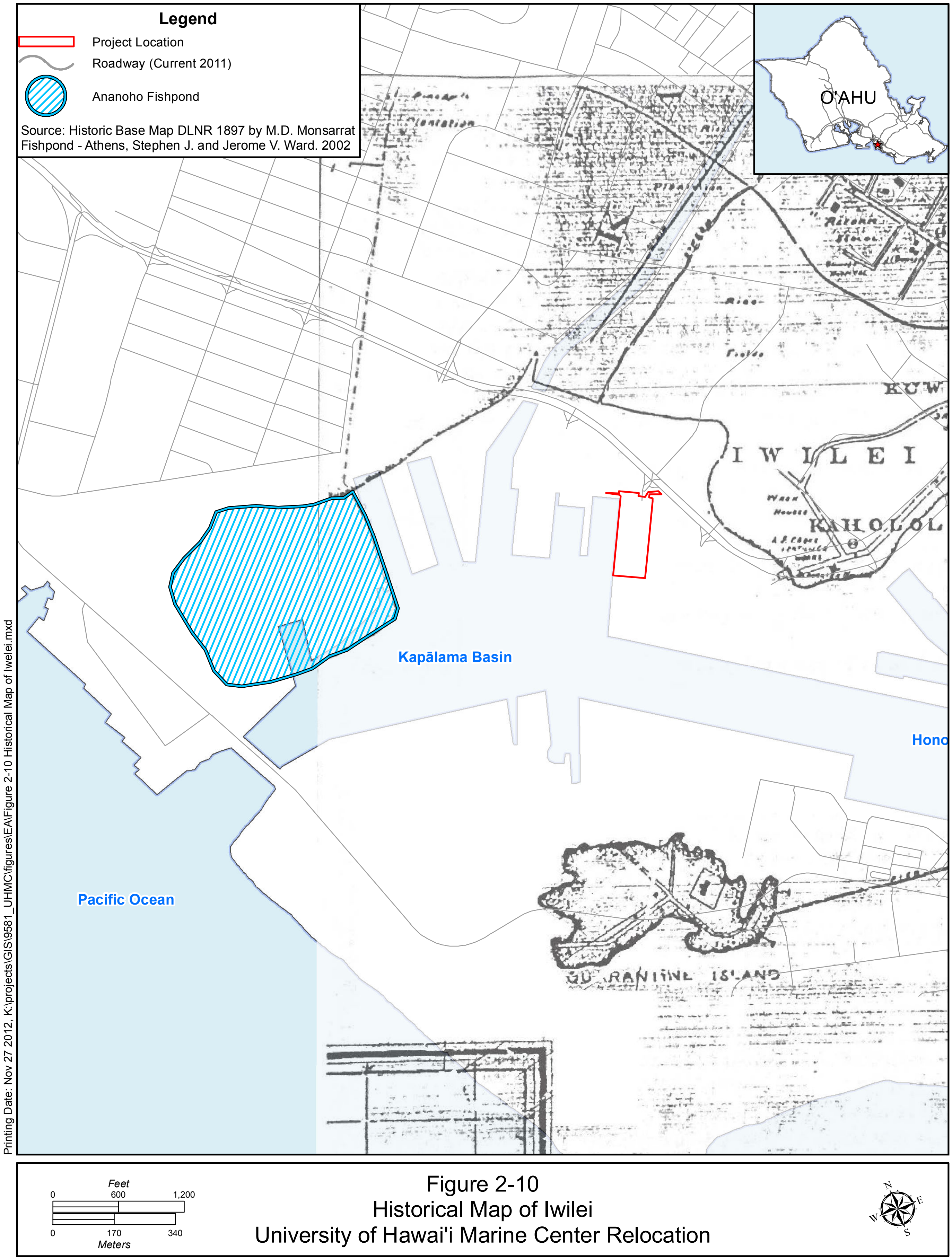

Figure 2-10
Historical Map of Iwilei
University of Hawai'i Marine Center Relocation

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2.17 SCENIC AND VISUAL RESOURCES

Honolulu Harbor is industrial in appearance and characteristic of commercial port settings (piers, pavement, heavy equipment, warehouses, etc.). In addition, the flat topography and structures surrounding the project site limit view planes.

Potential Impacts and Proposed Mitigation

The *Coastal View Study* (City and County of Honolulu [CCH] 1987) does not identify any significant views that would be affected from the proposed project site (Figure 2-11).

The proposed project is not expected to have an adverse impact on existing scenic or visual resources because the existing location already has an industrial appearance. Facility renovation and expansion would remain lower than the zoning height maximum of 60 feet. Proposed changes, including the refurbishing of an existing industrial building, the addition of new building space, and fencing at the property boundary, would not change the existing industrial appearance of the area. Furthermore, plans include multiple-use areas designed to maximize the usable area, creating a highly efficient facility, and do not include adding structures of any considerable size when compared to what is already existing at or nearby the site. Because no significant adverse impact is expected, no mitigation is proposed.

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Feet
0 1,300 2,600
0 360 720
Meters

Figure 2-11
Coastal View Planes
University of Hawai'i Marine Center Relocation

N W E S

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2.18 RECREATIONAL FACILITIES

There are no recreational facilities located within or adjacent to the project site. The closest coastal recreational areas are the Sand Island State Recreation Area, approximately 6,000 feet southwest of the project site on Sand Island, and the Keʻehi Lagoon Park, located approximately 7,000 feet northwest of the project site, across Keʻehi lagoon itself.

Potential Impacts and Proposed Mitigation

The project site is not open to public or recreational boating or fishing access, it is limited to commercial and industrial harbor uses (DOT Harbors 1999). Recreational facilities would not be impacted by the proposed relocation of the UHMC because existing facilities are considerable distances away from the project site. No mitigation measures are proposed.

2.19 POPULATION

The project site is located within the Primary Urban Center on the Island of Oʻahu. According to the DBEDT, the residential population of the City and County of Honolulu was 963,607 (DBEDT 2012). As of 2010, The Kalihi-Pālama neighborhood population was 38,113 (DBEDT 2012). The resident population on Oʻahu is projected to increase to 1,038,300 by 2035 (DBEDT 2009).

Potential Impacts and Proposed Mitigation

The proposed project is not expected to adversely impact population on Oʻahu. No mitigation measures are proposed.

2.20 TRAFFIC AND TRANSPORTATION SYSTEMS

2.20.1 Automobile

Piers 34 and 35 are accessed via Nimitz Highway at the highway's intersection with Alakawa Street, a signalized intersection. The driveway is the primary interior circulation route for the Pier 35 area. This intersection can also be used to access adjacent users located along Piers 36-38, including the Public Fishing Village, Wastewater Pumping Station, Honolulu Freight Warehouse and Chevron Fueling Station. The Pasha Auto Terminal, located at Pier 33, adjacent to the south side of the project site, also utilizes this intersection to exit their facility and access Nimitz Highway (DOT Harbors 2010).

The site would be marked and painted, including striping for pedestrians, automobile parking, and container storage. Additional internal roadway striping would be provided throughout the yard and in the gate area. Vehicle drive lanes would give access to staff vehicles inside the facility and delivery trucks and vans. The lanes would give access to the entire length of the site. Private automobile parking would be available at both the north and south ends of the site. There would be 87 spots, with the majority of spaces located within the security perimeter. Seven stalls would be located at the north end of the site outside of the security perimeter and accessible to the public. A secured entry would give public access to the first floor lobby and second floor administrative offices. The publicly-accessible area would be compliant with the American Disabilities Act (AECOM 2009).

In August 2008 a Traffic Impact Analysis Report (TIAR) was prepared by PB Americas for the Lowe's Iwilei Project. The TIAR reported the need to construct a deceleration lane along Nimitz Highway (westbound) and synchronizing the signals on Pacific Street at the two Nimitz Highway intersections. The study concluded that at project opening in 2009 the traffic level of service (LOS) would be E during the AM peak period, B during the PM peak and B on the weekends. No additional changes or improvements have been proposed for the Lowe's development (DOT Harbors 2009).

The LOS system uses the letters A through F, with A being best and F being worst. LOS A is the best, described as conditions where traffic flows at or above the posted speed limit and all motorists have complete mobility between lanes. LOS A occurs late at night in urban areas and frequently in rural areas. LOS B is slightly more congested, with some impingement of maneuverability; two motorists might be forced to drive side by side, limiting lane changes. LOS B does not reduce speed from LOS A. LOS C has more congestion than B, where ability to pass or change lanes is not always assured. LOS C is the target for urban highways in many places. At LOS C most experienced drivers are comfortable, roads remain safely below but efficiently close to capacity, and posted speed is maintained. LOS D is perhaps the level of service of a busy shopping corridor in the middle of a weekday, or a functional urban highway during commuting hours: speeds are somewhat reduced, motorists are hemmed in by other cars and trucks. In busier urban areas this level of service is sometimes the goal for peak hours, as attaining LOS C would require a prohibitive cost in bypass roads and lane additions. LOS E is a marginal service state. Flow becomes irregular and speed varies rapidly, but rarely reaches the posted limit. On highways this is consistent with a road operating over its designed capacity. LOS F is the lowest measurement of efficiency for a road's performance. Flow is forced; every vehicle moves in lockstep with the vehicle in front of it, with frequent drops in speed to nearly zero mph (DOT Harbors 2009).

LOS does not describe an instant state, but rather an average or typical service. For example, a highway might operate at LOS D for the AM peak hour, but have traffic consistent with LOS C some days, LOS E or F others, and come to a halt once every few weeks. However, LOS F describes a road for which the travel time cannot be predicted (DOT Harbors 2009).

Potential Impacts and Proposed Mitigation

The proposed UHMC relocation is not expected to have significant long-term adverse impacts on traffic and transportation systems in the area. The proposed site improvements would alter the interior traffic flow of the Pier 35 area, including rerouting the exit point for Pasha Auto Terminal and installing a security gate.

A traffic impact assessment was conducted to ascertain the extent of the potential impacts and preferred road alignment and circulation. See Appendix B for the TIAR.

The proposed action would have a short-term adverse impact on traffic delays during construction; however the volume of traffic is unlikely to significantly change because of the relocation. To mitigate traffic impacts the following measures would be required of the construction contractor:

- No movement of construction equipment on Nimitz Highway during peak morning (between 6 and 8 a.m.) and afternoon travel periods (between 3 and 5 p.m.); and
- No movement of construction equipment on Nimitz Highway on Friday and Saturday evenings (between 5 and 7 p.m.).

Over the long-term, the UHMC would likely decrease the total trip generation at the site compared to current tenants. Although a security controlled entrance would be added to the access lanes from the Nimitz Highway/Alakawa Street intersection, it would not disrupt traffic at the intersection itself, and access to adjacent users would be maintained. In addition, because Pasha Autoyard's access to Nimitz Highway via the current exit would be restricted due to fencing, the project plan mitigates for this impact through an egress route on the Honolulu Freight property to the east of the project site, dependent on the recommendation of the traffic impact assessment study.

2.20.2 Public Transit Access

Transit access to the project area is available via TheBus, bicycle lanes, and, possibly in the future, rail transit. TheBus operates Routes 19 and 20 along Nimitz Highway, stopping southeast of Pier 35 and the Nimitz Highway and Alakawa Street intersection. A bike lane runs along Nimitz Highway in both westbound and eastbound directions in the vicinity of Pier 35.

By 2020, a transit station is planned to be built within ½ mile of the subject property. Each rail station is project to exert a sphere of influence of approximate ½ mile. The Nimitz Highway/Alakawa Street intersection is within ½ mile of the projected Kapālama transit station (CCH & U.S. Department of Transportation [USDOT] 2010).

Rail service would operate on weekdays with 5-minute headways from 6 a.m. to 10 a.m. and 4 p.m. and 8 p.m. Rail service would operate with 15-minute headways on Saturdays and Sundays between 8 a.m. and 6 p.m. Upon completion of this phase, bus service would be restructured. Bus routes from 2020 onward are uncertain at this point (CCH & USDOT 2010).

The Rail EIS projects daily person trips by 2030 to be about 2,180 trips for walk/bike, 330 for bus, 60 for drop off, and 10 for parking. The presence of rail would likely have a cumulative effect of decreasing personal vehicle traffic. The location of the UHMC would be within walking distance of the future Kapālama rail station. Need for parking is expected to decrease as employees and visitors utilize the transit system (CCH & USDOT 2010).

Potential Impacts and Proposed Mitigation

The UHMC relocation would not impact bicycle or rail transportation or access. The presence of the rail station would overlap the lifespan of the UHMC lease. From approximately 2020 onward the Kapālama station would likely result in increased pedestrians and bicyclists in the area (CCH & USDOT 2010), which is unlikely to significantly affect or be affected by the relocation of the UHMC to Piers 34 and 35.

2.21 POTABLE WATER SYSTEM

The current building at the project site is serviced by a domestic water system. The current existing domestic water system would be adapted to the UHMC's building and ancillary water use requirements.

Potential Impacts and Proposed Mitigation

The proposed UHMC relocation is not expected to adversely impact the existing potable water system, and continued availability of potable water is anticipated. Analysis of UHMC water demand would be completed prior to the relocation, and any necessary requirements would be identified and remedied. However, daily water demands are not expected to increase beyond capacity.

At present, the Board of Water Supply anticipates the existing water system to be adequate to UHMC requirements. Any necessary adaptation of the existing water system would be designed per CCH standard plans and specifications and submitted to the DOT Harbors and Board of Water Supply for review and comment.

2.22 DRAINAGE SYSTEM

Piers 34 and 35 have 11 storm water outfalls into Honolulu Harbor covered by an NPDES General Permit Coverage Authorizing Discharges of Storm Water and Certain Non-Storm Water Discharges from Small Municipal Separate Storm Sewer Systems (MS4) (DOT Harbors 2007c). DOT Harbors operates 10 of these outfalls and CCH operates one (Figure 2-12), which is in the northern part of Pier 35 and consists of two underground 36-inch diameter pipes (DOT Harbors 2007c).

General activities in Honolulu Harbor may generate pollutants which may degrade storm water runoff quality, including those associated with industrial traffic on paved roadways and piers, trash and rubbish intentionally or inadvertently discarded by users and visitors, spills or leaks from petroleum or other cargo operations, and materials discharged from moored vessels (DOT Harbors 2007c).

An open drainage canal is located at the southern end of the project site and discharges into Honolulu Harbor (Figures 2-13 & 2-14). This canal is tidally-influenced. Improvements to the drainage canal are being proposed because of the existing flooding that occurs up-gradient to the project site at Nimitz Highway. This deficiency was identified by the Highway Council on May 23, 2012, and therefore made part of the proposed action. This canal would be converted into a box culvert conveyance to allow continuous surface paving at grade of the open areas around it in order to maximize yard space for the UHMC. It would also replace the dual pipe outlets with a single outlet culvert at the Pier 35 bulkhead.

More specifically, the drainage channel would be improved to contain a 12-foot by 4-foot deep box drain, along the same alignment. The existing dual 48-inch pipes will be replaced by the box culvert that will penetrate through the existing bulkhead wall at Pier 35. The upstream portion of the existing dual 48-inch pipe outlet opening through the bulkhead would be plugged with concrete.

Potential Impacts and Proposed Mitigation

The drainage system when completed will serve the same purpose with the same quantity of stormwater before and after construction. The renovation and expansion of the facility would not adversely impact the drainage system at the site. The conversion of the open drainage canal into a box-culvert covered by an impervious surface for automobile parking has the potential for impact. Short-term construction impacts may occur, particularly when disturbing one acre or more of land. The box culvert construction sequence will be designed to avoid discharge into Honolulu Harbor via dams on the vertical surface of the pier face. No discharges to waters of the U.S. will be permitted.

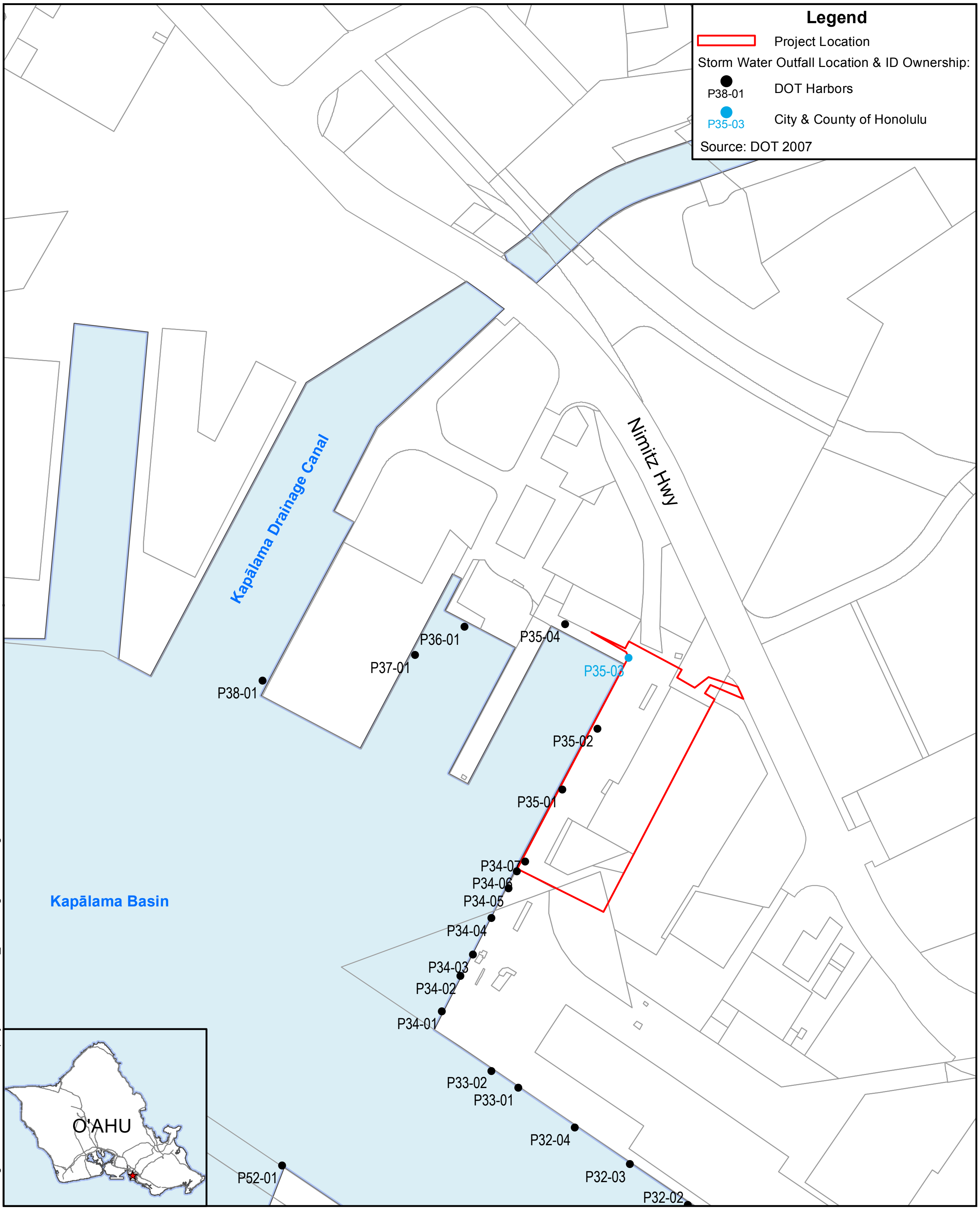
The following potential pollutants could occur at the site during construction:

- Soil erosion or release sediment;
- Release of petroleum products;
- Release of concrete effluent;
- Release of hydrotesting, dewatering or vehicle wash effluent;
- Release of chemicals; and
- Placement of temporary dams at the bulkhead.

DOT Harbors has prepared a storm water management plan (DOT Harbors 2007c) that guides compliance with the NPDES MS4 Permit. The renovations would comply with the provisions of this plan. The plan provides recommendations for construction, post-construction, and pollution prevention/good housekeeping control measures. The site renovation would not impact the CCH-owned drainage easement. Implementation of appropriate BMPs based on NPDES permit requirements for sediment controls during construction would minimize these impacts. The contractor should follow any NPDES, excavation, or grading permit conditions, which may include various control measures as listed below.

- Preparation and implementation of a Site-Specific Construction Best Management Practices Plan.
- A jet grouted curtain (wall) installed from approximately 50 feet landward of the bulkhead for approximately 200 feet. The supporting jet grouted curtain wall column foundations would be spaced in a staggered configuration, 7' on-center for the length of the culvert. Upon the completion of work the jet grout apparatus would be removed and the ground restored in anticipation of the general construction for the culvert.
- Contiguous trenching to minimize area disturbance so that the trench can be closed and stabilized as early as possible.
- Runoff barriers such as sand bags with geotextile fabric placed along the pier face and grate inlets that are layered and tightly packed to block or capture water-borne sediment.
- Filters in grate inlets and trench drains to block or capture water-borne sediment.
- Soil stockpiles places on plastic liner and surrounded by fill to prevent sediment from soil stockpiles.
- Dispose of dewatering effluent in on-site percolation trenches or offsite via tanker trucks.
- Proper vehicle and equipment maintenance to prevent the release of petroleum products.
- Secured weatherproof storage of petroleum products.
- Concrete truck wash-out facilities.

- Silt curtains/fencing as backup devices to capture spoils in case of primary BMP failure. Perform clean up of accumulated soils as needed to prevent commingling with storm water runoff.
- Temporary dams at the bulkhead.
- Control waste such as discarded building materials, concrete truck washout, chemicals, litter, and sanitary waste at the site that may cause adverse impacts.
- Regular monitoring and maintaining of all discharge pollution controls by the project contractor. This may include adjusting construction activities to rainfall events. During prolonged rainfall, control measures should be checked daily and excavated soil covered. Construction activities should stop during periods of heavy rainfall, equipment and materials secured against storm impacts, and discharge control features removed.



Printing Date: Nov 26 2012, K:\projects\GIS\9581_UHMC\figures\EA\Figure 2-12 SW Outfall Locs.mxd

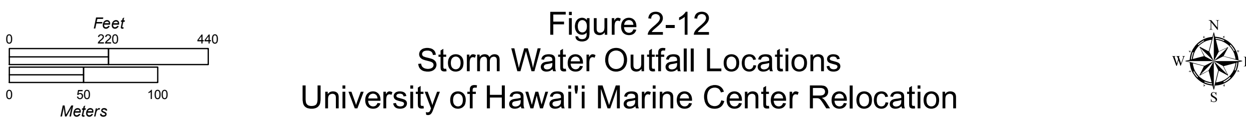


Figure 2-12
Storm Water Outfall Locations
University of Hawai'i Marine Center Relocation

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Figure 2-13. View of Unnamed Drainage Ditch across Pier 34

Figure 2-14. View of Unnamed Drainage Ditch at Pier 34 along Ditch

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2.23 WASTEWATER SYSTEM

Currently, wastewater from the existing building is directed to the Hart Street Wastewater Pump Station (WWPS) north of the project site, via a short gravity sewer system. Wastewater is conveyed from the Hart Street WWPS to the Sand Island Wastewater Treatment Plant through a force main that is installed under the Kapālama Basin in Honolulu Harbor west of Pier 30 (Figure 2-15).

No sewage system for ships is currently available at the wharf line. The UHMC desires to install sewer service at the wharf line for vessels. DOT Harbors proposes installing one to three access points and a line for the UHMC at Piers 34 and 35.

Potential Impacts and Proposed Mitigation

The UHMC relocation plan would not impact the existing wastewater system at the site. The proposed installation of a new separate sewage pump system for the use of vessels at the wharf would either connect to the existing wastewater system or run a line directly to the Hart Street WWPS. Designed per city and state requirements, the new wharf line system would include a lift station and pressure sewer.

In accordance with HAR § 11-55 (2009), the proposed wharf-line sewer improvements would require NPDES permit approvals from DOH for discharges associated with construction activity and dewatering. The NPDES permit application would require the creation of a BMPs Plan, which would be developed prior to construction activities by the contractor and would identify the most effective erosion, sedimentation, and turbidity control measures to reduce the amount of soil and sediment accumulation in the coastal waters resulting from construction activities.

If a sewer line to the wharf proves infeasible, sewage would be removed by pump into truck and transferred to the wastewater system, as is standard practice in Honolulu Harbor. This is unlikely to have a significant impact.

2.24 ELECTRICAL AND COMMUNICATION SYSTEMS

The electrical power and communications utilities which serve the Harbor are privately owned by Hawaiian Electric Company and Hawaiian Telcom. Electrical power and communications are supplied to the project site by overhead service lines along Nimitz Highway. Pad-mounted transformers step down HECO’s 11.5 kilovolt power to 480/277 volt power.

Potential Impacts and Proposed Mitigation

The proposed pier improvements would impact existing services provided by HECO and Hawaiian Telcom in that additional demand would be placed on existing systems, but it would be unlikely to exceed the capacity of the local services.

The new UHMC site electrical plan would include the provision of power to: new entrance gates, inspection facilities, buildings, the guard booth, yard lighting, powered containers, and the wharf area. Overall it is expected that the UHMC power demand would increase over that of the current Pier 35 tenants.

The new UHMC communication systems requirements include requirements for conduit and vaults for telephone, data, security and fiber optic cable. Existing communication systems would be enlarged, as necessary.

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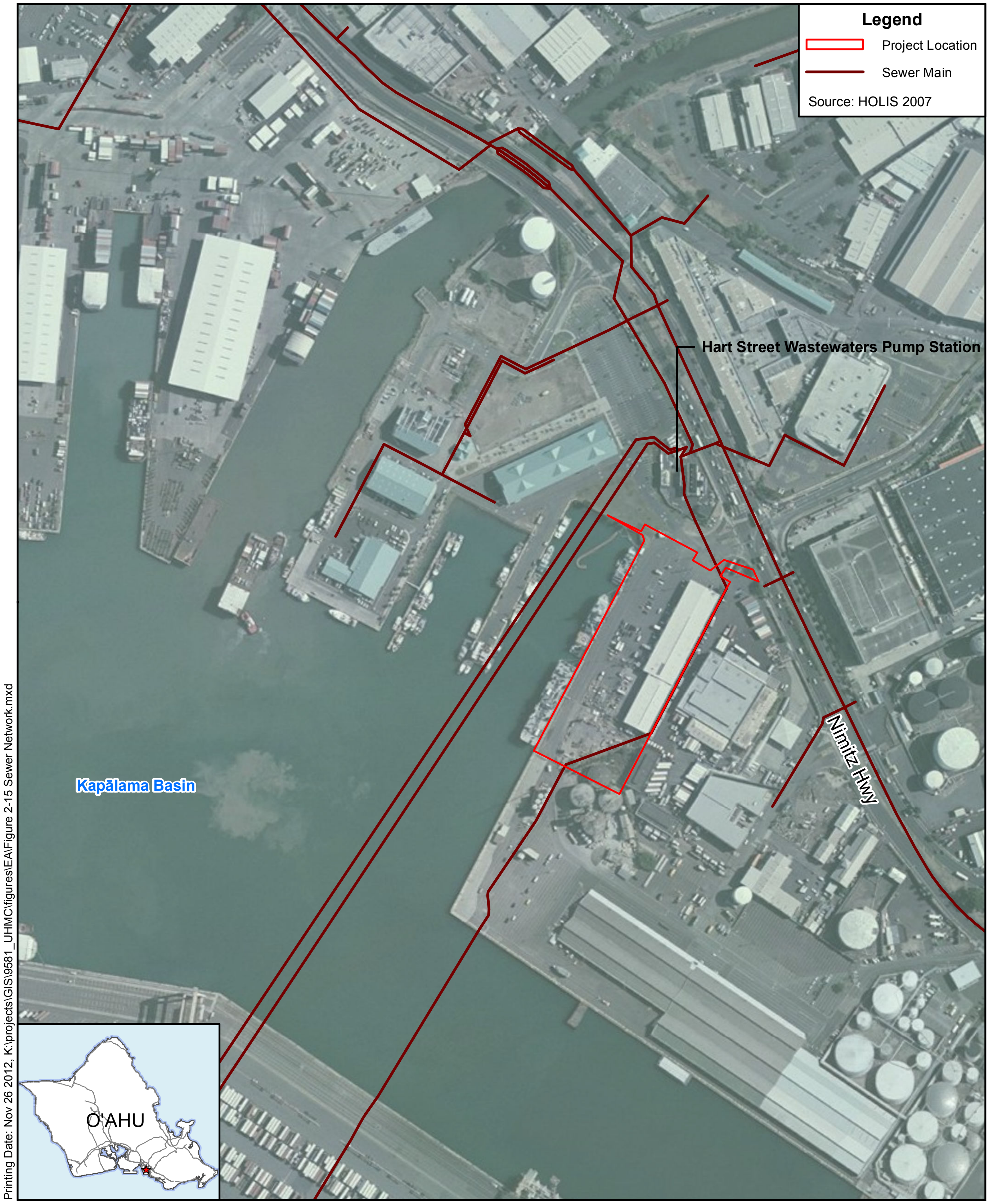

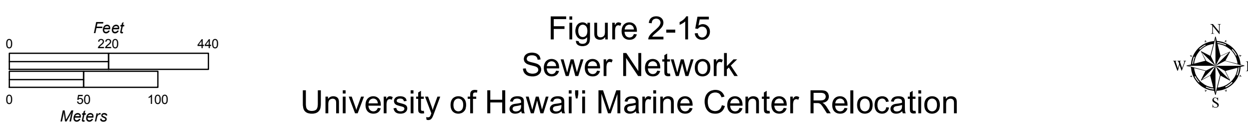

Figure 2-15
Sewer Network
University of Hawai'i Marine Center Relocation

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2.25 SOLID WASTE DISPOSAL SYSTEM

Solid commercial and industrial wastes currently generated at the project site are collected and transported directly to the Waimanalo Gulch Landfill (if it contains no combustible materials) or to O‘ahu's HPOWER facility (if combustible materials are present).

Potential Impacts and Proposed Mitigation

The UHMC relocation plan is not expected to adversely impact solid waste disposal. While the UHMC may generate more solid waste than the previous tenants, both the UHMC and the some of the previous tenants are relocating existing impacts in the harbor to other, nearby locations in the harbor. Those existing tenants at Pier 35 not relocating outside the harbor would reduce the overall impact to the harbor.

In the short-term, construction activities would produce increased amounts of solid waste. The Contractor would be responsible for disposal of such debris. Where possible materials would be recycled.

2.26 FIRE, POLICE, AND MEDICAL SERVICES

Police protection services are provided by the DT Harbor Patrol. Fire protection service is provided through the Downtown and Kapālama fire sations. Also, the Fire Boat stationed at Pier 15 provides fire protection. Major medical services in the Primary Urban Center include the Queen’s Medical Center on Punchbowl Street, Straub Clinic and Hospital at the intersection of King Street and Ward Avenue, and the Kaiser Permanente Medical Center in Moanalua. Figure 2-16 shows fire, police, and medical services in the Piers 34 and 35 vicinity.

Potential Impacts and Proposed Mitigation

The proposed project is not expected to have a significant adverse impact on fire, police and medical service requirements in the area. The relocated activities would not represent a substantial change in population that would require fire, police, and medical service providers to change service boundaries, plans, or procedures.

2.27 CUMULATIVE IMPACTS

Cumulative impacts are defined as those impacts on the environment which result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Such impacts can result from individually minor but collectively significant actions taking place over a period of time (HAR § 11-200-2 1996).

Past human activity has compromised the ecological integrity of the harbor area. Of particular concern are:

- Hazardous material and waste contamination in the soil,
- Poor drainage practices degrading harbor water quality, and
- Traffic congestion on degraded roadways from vehicle-based business development along Nimitz Highway and nearby roads that operate beyond their designed capacity.

Previous sections have discussed activities at Piers 34 and 35. For the impacts of particular concern, refer to the following sections for more information:

- Section 2.15 Historical, Archaeological, and Cultural Resources for past activities;
- Section 1.5.2 Existing Conditions for present activities;
- Section 2.8 Hazardous Materials and Waste for soil contamination;
- Section 2.22 for storm water conditions; and
- Section 2.20 for traffic conditions.

Other activities occurring in the Honolulu Harbor area that could potentially affect water quality, traffic, and the presence of hazardous materials include:

- Development of KCT,
- Reconstruction of the Pier 28 yard,
- Improvements to Piers 12 and 15,
- Pacific Shipyards and Atlantis Submarines applying to move their facilities within the harbor,
- Expansion and renovation of the Domestic Commercial Fishing Village at Piers 36-38,
- Construction of a warehouse building for A‘ala Ship Service, and
- Renovation and upgrading of other piers and facilities throughout Honolulu Harbor.

Activities outside Honolulu Harbor that are reasonably foreseeable include the Honolulu Marine Ship Repair in the Ke‘ehi Lagoon, the introduction of the Honolulu Rail Transit corridor, and higher densities of development in the Iwilei area as a result of smart growth policies being implemented by CCH.

Potential Impacts and Proposed Mitigation

The cumulative impacts associated with the proposed action would likely not have a significant effect upon the environment. The UHMC is an existing and accounted for activity in Honolulu Harbor. The relocation of the UHMC from Snug Harbor to Piers 34 and 35 and its localized impacts are evaluated in previous sections of this chapter. Other activities proposed in the Honolulu Harbor area are undergoing environmental review to determine the potential significance of the proposed action. Cumulative impacts from other past, present, and reasonably foreseeable future impacts could theoretically occur on most of the resources evaluated, such as climate, air quality, hydrology, water quality, flora and fauna, marine biology, noise, cultural resources, traffic, infrastructure, and fire, police, and medical services. However, based on the inconsequential incremental impacts of the proposed action evaluated in this chapter, and the already urbanized and planned for activity in Honolulu Harbor, such impacts would not contribute to significant cumulative impacts.

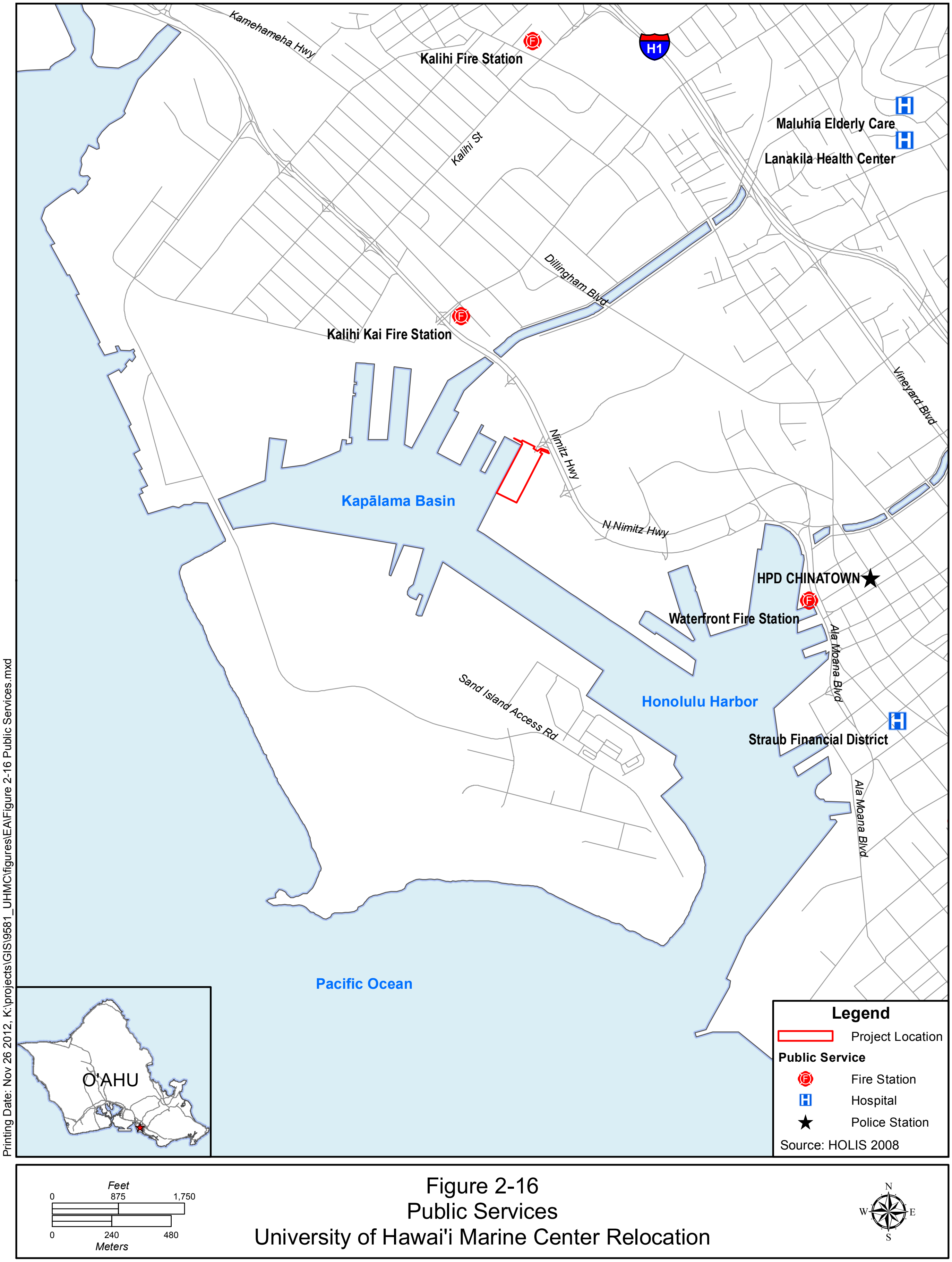

Figure 2-16
Public Services
University of Hawai'i Marine Center Relocation

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3.0 RELATIONSHIP TO STATE AND COUNTY LAND USE PLANS AND POLICIES

The State of Hawai‘i deploys a variety of state and county land use plans and policies to guide land use decision making. The Hawai‘i State Environmental Policy describes the overall aspirations of the state regarding environment protection. The Hawai‘i State Plan forms the foundation of statewide planning by setting goals, objectives, and policies for the state. To implement these, the State Plan establishes state functional plans and county general and development plans.

For the proposed action, the relevant functional plan is the Hawai‘i Statewide Transportation Plan. This is an umbrella document that guides future planning for air, water, and land transportation facilities and programs. In turn, statewide master plans for each of the transportation modes are developed. The Harbors Division is responsible for the statewide commercial harbor system, exercising control and management over the state’s commercial harbor facilities. The *Commercial Harbor System Plan* assesses statewide harbor requirements. The Harbors Division is also responsible for the development of 20-year master plans for each of the state-owned and/or operated port facilities. The current one is the *O‘ahu Commercial Harbors 2020 Master Plan*, which begins with Honolulu Harbor, the state’s primary port, then considers other ports in an interdependent manner. Also relevant is the *HWMP*.

The applicable county plans and policies are the CCH General Plan, the Primary Urban Center Development Plan, and the CCH Land Use Ordinance.

3.1 HAWAI‘I STATE ENVIRONMENTAL POLICY

Chapter 344, HRS, is the State of Hawai‘i Environmental Policy. It establishes a state policy to encourage productive and enjoyable harmony between people and the environment, promote efforts that will prevent or eliminate damage to the environment, stimulate the health and welfare of humanity, and enrich the understanding of the environment important to the people of Hawai‘i. The proposed action fulfills the State Environmental Policy in the manner listed below.

<u>Section 344-3 Environmental policy.</u> It shall be the policy of the State, through its programs, authorities, and resources to:

(2) Enhance the quality of life by:

(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

<u>Section 344-4 Guidelines.</u> In pursuance of the state policy to conserve the natural resources and enhance the quality of life, all agencies, in the development of programs, shall, insofar as practicable, consider the following guidelines:

(5) Economic Development.

(A) Encourage industries in Hawai‘i which would be in harmony with our environment;

(D) Encourage all industries including the…oceanography…industries to protect the environment;

3.2 THE HAWAIʻI STATE PLAN

The Hawaiʻi State Plan, Chapter 226, HRS is a guide to future long-range development of the state. The State Plan identifies goals, objectives, policies, and priorities for the state. It provides a basis for determining priorities and allocating limited resources, such as public funds, services, and land. It establishes a system for plan formulation and program coordination to integrate all major state and county activities.

The proposed action is consistent with the State Plan. Described below are sections of the State Plan's overall themes, goals, objectives, policies, and priorities that relate to the proposed action in terms of both the Kapālama Container Terminal and the UHMC.

Part I – Goals, Objectives, and Policies

Section 226-4 State Goals. In order to guarantee, for present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the state to achieve:

(1) A strong, viable economy, characterized by stability, diversity, and growth, that enables the fulfillment of the needs and expectations of Hawaiʻi's present and future generations.

Section 226-6 Objectives and policies for the economy – in general.

(3) Planning for the State's economy in general shall be directed toward achievement of the following objectives:

   a. Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaiʻi's people, while at the same time stimulating the development and expansion of economic activities capitalizing on defense, dual-use, and science and technology assets, particularly on the neighbor islands where employment opportunities may be limited.

(4) To achieve the general economic objectives, it shall be the policy of this State to:

   a. Expand Hawaiʻi's national and international marketing, communication, and organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.

   (4) Expand existing markets and penetrate new markets for Hawaiʻi's products and services.

Section 226-10 Objective and policies for the economy – potential growth activities.

(a) Planning for the State's economy with regard to potential growth activities shall be directed towards achievement of the objective of development and expansion of potential growth activities that serve to increase and diversify Hawaiʻi's economic base.

(b) To achieve the potential growth activity objective, it shall be the policy of this State to:

   (1) Facilitate investment and employment growth in economic activities that have the potential to expand and diversify Hawaiʻi's economy, including but not limited to diversified agriculture, aquaculture, renewable energy development, creative media, and science and technology-based sectors.

(2) Expand Hawaiʻi's capacity to attract and service international programs and activities that generate employment for Hawaiʻi's people;

(3) Enhance and promote Hawaiʻi's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts.

(5) Promote Hawaiʻi's geographic, environmental, social, and technological advantages to attract new economic activities into the State.

(6) Provide public incentives and encourage private initiative to attract new industries that best support Hawaiʻi's social, economic, physical, and environmental objectives;

(7) Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research.

(8) Develop, promote, and support research and educational and training programs that will enhance Hawaiʻi's ability to attract and develop economic activities of benefit to Hawaiʻi.

(10) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawaiʻi's social, economic, physical, and environmental objectives.

Section 226-11 Objectives and policies for the physical environment – land-based, shoreline, and marine resources.

(a) Planning for the State's physical environment with regard to land-based, shoreline, and marine resources shall be directed towards achievement of the following objectives:

(1) Prudent use of Hawaiʻi's land-based, shoreline, and marine resources.

(2) Effective protection of Hawaiʻi's unique and fragile environmental resources.

(b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:

(1) Exercise an overall conservation ethic in the use of Hawaiʻi's natural resources.

(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.

(3) Take into account the physical attributes of areas when planning and designing activities and facilities.

(4) Manage natural resources and environs to encourage their beneficial and multiple uses without generating costly or irreparable environmental damage.

(8) Pursue compatible relationships among activities, facilities, and natural resources.

(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.

Section 226-17 Objectives and policies for facility systems – transportation.

(a) Planning for the State's facility systems with regard to transportation shall be directed towards the achievement of the following objectives:

(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.

(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.

(b) To achieve the transportation objectives, it shall be the policy of this State to:

(4) Provide for improved accessibility to shipping, docking, and storage facilities.

(6) Encourage transportation systems that serve to accommodate present and future development needs of communities.

(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs.

(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification.

(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawai‘i's natural environment.

(12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation infrastructure in order to accommodate planned growth objectives.

<u>Section 226-21 Objective and policies for socio-cultural advancement – education.</u>

(a) Planning for the State's socio-cultural advancement with regard to education shall be directed towards achievement of the objective of the provision of a variety of educational opportunities to enable individuals to fulfill their needs, responsibilities, and aspirations.

(b) To achieve the education objective, it shall be the policy of this State to:

(8) Emphasize quality educational programs in Hawai‘i's institutions to promote academic excellence.

(9) Support research programs and activities that enhance the education programs of the State.

<u>Part III – Priority Guidelines</u>

<u>Section 226-103 Economic priority guidelines.</u>

(a) Priority guidelines to stimulate economic growth and encourage business expansion and development to provide needed jobs for Hawai‘i's people and achieve a stable and diversified economy:

(1) Seek a variety of means to increase the availability of investment capital for new and expanding enterprises.

(A) Encourage investments which (iv) Reinvest in the local economy.

<u>Section 226-107 Quality Education.</u> Priority guidelines to promote quality education:

(6) Pursue the establishment of Hawai‘i's public and private universities and colleges as research and training centers of the Pacific.

3.3 STATE FUNCTIONAL PLANS

State Functional Plans are the primary guidelines for implementing the Hawai‘i State Plan. The functional plans establish shorter-term goals and objectives specific to a sector, such as energy, transportation, education, and tourism (HRS 226).

The Hawai‘i Statewide Transportation Plan provides policy-level direction for near-term, mid-term, and long-term decision making. The Plan includes goals and objectives and implementing strategies that can broadly address multiple undefined projects but also narrowly provide concrete guidance. Described below are sections of the Hawai‘i Statewide Transportation Plan’s overall goals and objectives that relate to the proposed action in terms of both the Kapālama Container Terminal and the UHMC (DOT 2002).

<u>Goal I: Achieve an integrated multi-modal transportation system that provides mobility and accessibility for people and goods.</u>

Objective 1: To preserve, maintain, and improve the air, land, and water transportation system infrastructure and programs with regard to each community’s unique characteristics.

A. Improve multi-modal and inter-modal connectivity of the transportation system.

B. Increase capacity and services to respond to current needs and anticipated growth.

<u>Goal IV: Support Hawai‘i’s economic vitality.</u>

Objective 1: To provide and operate an air, land, and water transportation system to accommodate existing and emerging economic developments and opportunities.

A. Provide a direct, convenient, and physically suitable system for goods movement to transportation facilities and to commercial and industrial areas.

B. To promote efficient and cost effective operations of the transportation system.

3.4 HONOLULU WATERFRONT MASTER PLAN

The HWMP represents a comprehensive, long range vision for the Honolulu waterfront. The HWMP addresses major planning issues concerning public access and use of the waterfront, long-term integrity of commercial maritime operations, plan implementation, relocation needs, and financial feasibility (OP 1989).

The proposed project supports the overall goals of the HWMP by:

- Providing a more efficient shipping facility at KMR that will provide for the current and future needs of Hawai‘i’s residents, and
- Maximizing public benefits associated with the improvement of Piers 34 and 35 by providing facilities for marine research and program growth.

3.5 O‘AHU COMMERCIAL HARBORS 2020 MASTER PLAN

DOT Harbors is responsible for administering the state-owned or -controlled harbor facilities used by commercial cargo, passenger, and fishing operations. DOT Harbors is responsible for the control, management, use and regulation of commercial harbors and their improvements. DOT Harbors manages harbor traffic, berthing, landside usage, and facility development.

DOT Harbors has developed the *O'ahu Commercial Harbors 2020 Master Plan* (1997) ("2020 Master Plan") as an update to the *HWMP*. The 2020 Master Plan is a conceptual master plan that addresses Honolulu, Kewalo Basin, and Kalaeloa Barbers Point Harbors as dependent harbors, and functions as a long-range guide for the development and enhancement of these commercial ports. The 2020 Master Plan ensures O'ahu's commercial harbors will be capable of meeting the expanding needs of the state's growing economy through the year 2020.

Honolulu Harbor is the hub of the state's commercial harbor operations. Almost all cargo destined for overseas shipment is consolidated and shipped out of the harbor, and almost all incoming overseas cargo passes through the harbor before distribution throughout the state.

Berthing and landside accommodations within Honolulu Harbor are reaching capacity, therefore, vessel traffic, lack of berths, and insufficient operational space are daily problems.

Kalaeloa Barbers Point Harbor, which provides maritime access for O'ahu's growing central and leeward communities, was designed to alleviate some of Honolulu Harbor's congestion. However, Kalaeloa Barbers Point Harbor has already replaced Kahului Harbor as the state's second busiest harbor, and it is experiencing scheduling problems as well.

The 2020 Master Plan addresses these existing problems by serving as a long-range planning guide for the development of safe, efficient, and economically viable harbor facilities. Major objectives of the 2020 Master Plan include:

- The proper development of O'ahu's commercial harbors, thereby facilitating maritime shipments of the essential commodities required by the State of Hawai'i and its citizenry;
- Optimal utilization of land and water resources committed to marine cargo, passenger, and fishing operations in an economically responsible manner;
- Provision of and access to terminals, and other harbor facilities in locations along the Honolulu waterfront, at Kalaeloa Barbers Point and other locations in a manner that best relates to and serves Hawai'i's port system in an efficient, safe and secure manner; and
- Minimization of impacts on environmental quality and recreational opportunities contiguous with port facilities.

In summary, implementation of the 2020 Master Plan to begin improvements to O'ahu's commercial harbors is necessary considering Hawai'i imports 80 percent of its food and merchandise and approximately 99 percent of these imports – food, clothing, building materials, cars, fuel – is shipped by sea (DOT Harbors 1997). As a result of Hawai'i's geographic isolation, ocean shipping is the state's primary life-sustaining enterprise. There are no feasible alternatives to this.

The UHMC relocation is identified in and is, therefore, consistent with the 2020 Master Plan.

3.6 COASTAL ZONE MANAGEMENT PROGRAM (SPECIAL MANAGEMENT AREAS)

The Coastal Zone Management (CZM) Act of 1972 is administered in Hawai'i by the State Office of Planning, DBEDT, and affects projects that require federal permits, including USACE permits. The objectives and policies of the Hawai'i CZM Program as set forth in Chapter 205A, HRS, are to provide recreational resources; protect historic, scenic, and coastal ecosystem resources; provide economic uses; reduce coastal hazards; and manage development in the coastal zone.

Chapter 25, Revised Ordinances of Honolulu, outlines controls and policies for development within an area along the shoreline referred to as the SMA which is under CCH jurisdiction. SMA policies are administered by the Department of Planning and Permitting (DPP), CCH. The proposed improvements to Piers 34 and 35 do not fall within the CCH SMA boundary limits. The boundary of the SMA extends across Sand Island to its northern shoreline (Figure 2.8).

Environmental concerns are also addressed through the CZM consistency review process. The entire Island of O‘ahu is within the coastal zone area affected by the federal CZM Act. Because the project proposes activities that affect water bodies, federal permits may be required, triggering the need for a CZM Federal Consistency review.

3.7 STATE LAND USE LAW

The State Land Use Commission classifies all lands in the State of Hawai‘i into one of four land use designations: Urban, Rural, Agricultural or Conservation (HRS 205). The project site is located in the Urban (land use) District. Land classified as State Urban District is regulated by CCH through its zoning regulations in the Land Use Ordinance.

3.8 GENERAL PLAN AND DEVELOPMENT PLAN

While the proposed action is exempt from CCH oversight, the action fulfills objectives and meets designated uses of the CCH General Plan, Primary Urban Center Development Plan, and the Land Use Ordinance and zoning.

3.8.1 General Plan

The General Plan establishes CCH's long-term objectives and policies. These objectives tend to be broad in scope; land use policies in subsequent Development Plans provide more specific policies to achieve the General Plan objectives. General Plan objectives and policies that relate to the proposed actions at Honolulu Harbor are summarized below (CCH 2010).

<u>Transportation and Utilities</u>

> 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 13: Facilitate the development of a second deep-water harbor to relieve congestion in Honolulu Harbor.

<u>Economic Activity:</u>

> Objective A: To promote employment opportunities that will enable all the people of O‘ahu to attain a decent standard of living.
>
> > Policy 2: Encourage the development of small businesses and larger industries which will contribute to the economic and social well-being of O‘ahu residents.

<u>Physical Development and Urban Design:</u>

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

3.8.2 Primary Urban Center Development Plan

The project site is located in the Primary Urban Center of Honolulu. The Development Plan Land Use Designation is industrial which is consistent with the proposed use of the project site (CCH 2004).

3.8.3 County Land Use Ordinance and Zoning

The proposed project area is located within the I-3 Waterfront Industrial designation (Figure 2.7). All improvements within these districts are subject to review by the CCH DPP.

However, pursuant to Chapter 266-2(b), HRS, all harbor improvements, including any maritime facilities constructed by the DOT, are exempted from CCH zoning regulations.

Nonetheless, the proposed actions are a permitted use within these zones and are in accordance with the Land Use Ordinance.

4.0 PERMITS AND APPROVALS THAT MAY BE REQUIRED

The permits and approvals that may be required before implementation of the proposed action are listed below. Note: DOT Harbors is exempt from county zoning approvals, pursuant to HRS 266-2(b).

Table 4-1. List of Permits and Approvals that May be Required

Level	*Department*	*Permit Type*
Federal	USACE	Section 10 Permit (Work in Navigable Waters)
Federal	USACE	Section 404 (Discharge of Dredge or Fill Material into Water), pending USACE jurisdictional determination
State	DOH	NPDES general permit Notice of Intent (NOI)
State	DOH	NPDES, NOI, Form C (Site-Specific Construction Best Management Practices Plan)
State	DOH	NPDES, NOI, Form G (Dewatering)
State	DOH	Section 401, Water Quality Certification (WQC), pending USACE jurisdictional determination on Section 404
State	DOH	Community Noise Control Permit
State	DBEDT	CZM Consistency Determination, pending USACE jurisdictional determination on Section 404
CCH	DPP	Grading Permit
CCH	DPP	Building and construction permits

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5.0 EARLY CONSULTATION FOR DRAFT EA PREPARATION

The agencies and organizations in Table 5-1 were consulted during preparation of the Draft EA in accordance with Chapter 343, HRS requirements. Appendix A contains a copy of the early consultation letter and responses.

Table 5-1. Agencies and Organizations Contacted for Early Consultation

Department / Division	*Letter*	*Telephone / Email*
Federal Agencies		
National Marine Fisheries Service	✓	
NOAA	✓	
USACE		✓
U.S. Coast Guard	✓	✓
USFWS	✓	
State Agencies		
DBEDT, OP, CZM Program		✓
DLNR SHPD		✓
DOH Clean Air Branch		✓
DOH Clean Water Branch	✓	✓
DOT Airports	✓	
DOT Highways	✓	
Office of Hawaiian Affairs	✓	✓
CCH Agencies		
Board of Water Supply	✓	
Dept. of Design and Construction – Wastewater Division	✓	✓
Dept. of Facility Maintenance	✓	
DPP	✓	✓
Fire Dept.	✓	
Police Dept.	✓	
Political Representatives (in 2011)		
Romy M. Cachola, City Council Representative, District 7	✓	
Suzanne Chun Oakland, State Senator, District 13 (Sand Island, Snug Harbor)	✓	
Brickwood Galuteria, State Senator, District 12 (Iwilei)	✓	
Joey Manahan, State Representative, District 29 (Sand Island, Snug Harbor)	✓	
Karl Rhoads, State Representative, District 28 (Iwilei, Pālama, Downtown, Chinatown, Sheridan)	✓	
Kalihi-Pālama Neighborhood Board #15	✓	
Utilities		
The Gas Company (natural gas connector for HVAC)	✓	
HECO	✓	
Private Organizations / Individuals		
A‘ala Ship Services	✓	

Department / Division	Letter	Telephone / Email
Chevron Fueling Station	✓	
Clean Islands Council	✓	
E Noa Tours	✓	
Fishing Village Association	✓	
Fresh Island Fish	✓	
Hawaii Stevedores	✓	
Hawaiian Ice	✓	
Honolulu Freight Warehouse	✓	
Iwilei District Participating Parties, LLC (IDPP)	✓	
JFC International	✓	
Kem's Inc.	✓	
Marine Spill Response Corporation (MSRC)	✓	
Nico's at Pier 38	✓	
P & R Water Taxi	✓	
Pacific Commercial Services	✓	
Pacific Fishing & Supply	✓	
Pacific Ocean Producers	✓	
Paradise Inn Hawaiʻi	✓	
Pasha's Hawaiʻi	✓	
Sea Engineering, Inc.	✓	
Seafood Hawaiʻi, Inc.	✓	
United Fishing Agency	✓	
Y Fukunaga Products	✓	

6.0 COMPLIANCE WITH CHAPTER 343, HAWAIʻI REVISED STATUTES

The Significance Criteria in HAR Title 11, Section 200-12 for environmental impacts were reviewed and the proposed project was assessed for significant impacts. The evaluation included all phases of the proposed action, both direct and indirect impacts and short-term and long-term effects, and the cumulative effects. Short-term is considered to be construction phase and long-term is the operational phase in the discussion below. Each of the significance criteria listed below is followed by the evaluation.

6.1 SIGNIFICANCE CRITERIA

1. Involves an irrevocable commitment or loss of or destruction of natural or cultural resources.

No significant natural, cultural, historical, or archaeological resources are anticipated to be found within the project site, and the project would not impact historic properties or traditional cultural properties or practices. The existing project site was modified when the existing piers were developed. The subject property does not contain any known natural or cultural resources. The proposed activity involves the renovation and expansion of an existing facility, improvement of the site pavement and wharf area, and utility upgrades. Should archaeological or cultural features be discovered during the demolition, construction, or renovation phases of work, SHPD would be notified and work in the vicinity of the discovered features would be halted until the site has been evaluated for significance.

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

The proposed action would not curtail the beneficial uses of the environment. The proposed action involves improvements to an existing facility, wharf, and surface area. The existing use of the project area would be modified to optimize UHMC operations at the site. The improvements proposed would continue to support harbor-related uses and therefore other non-harbor related uses would continue to be curtailed. Construction is of limited duration, and BMPs would be implemented to minimize erosion and other potential impacts.

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 action is consistent with the state's long-term environmental policies and guidelines specified in Chapter 344, HRS, as demonstrated in Section 3.1.

4. Substantially affects the economic welfare, social welfare, and cultural practices of the community or state.

The proposed action would not result in a noticeable direct economic benefit but would have an indirect benefit. Construction and renovation would employ workers. The UHMC relocation would have substantial indirect economic benefits. Relocating the UHMC would provide upgraded facilities to meet present and future needs of the UHMC. This would allow continued program excellence resulting in marine research that brings economic benefits to the state. Second, the relocation would accommodate the construction of the KMR cargo terminal to increase the cargo capacity of Honolulu Harbor. This would have significant direct and indirect economic benefits. KMR would provide a more efficient resource to the maritime industry, which provides for almost all of the consumer goods imported into the State of Hawai‘i.

The proposed action would not adversely affect the social welfare or cultural practices of the community or state, or create environmental health and safety risks that may disproportionately affect children, minority, or disadvantaged populations. The proposed action would not impact cultural resources or practices.

5. Substantially affects public health.

No public health concerns related to the proposed action's construction or operations are anticipated. No long-term impacts to air, soil, or water quality are anticipated. Short-term impacts to noise and air quality (dust and odors) as a result of construction are not anticipated to be significant and would be limited to the construction phase in the immediate construction area. Construction and operation would be compliant with federal, state, and county regulations.

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

The proposed action would not have substantial secondary impacts, such as to induce population growth or adversely impact public infrastructure. There would be minimal increase in commuter traffic associated with the work force at the site. The proposed action would not have secondary impacts on the neighboring communities or other parts of O‘ahu.

7. Involves a substantial degradation of environmental quality.

The proposed project does not involve a substantial impact to environmental quality. Short-term impacts to noise levels and air and water quality would be minimal and transitory, and the use of erosion control measures would minimize anticipated short-term impacts to geology, soils, and water resources. There would be no long-term impacts to any resource area. Mitigation measures would be employed as practicable to minimize potential effects from construction activities, such as dust and noise. Hazardous and regulated materials used onsite would be managed in accordance with applicable regulations. Implementation of the proposed action and the associated BMPs would mitigate any increase in incidental presence of petroleum, oil, or lubricants.

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

The cumulative impacts associated with the proposed action would likely not have a significant effect upon the environment. The UHMC is an existing and accounted for activity in Honolulu Harbor. The relocation of the UHMC from Snug Harbor to Piers 34 and 35 and its localized impacts are evaluated in previous sections of this chapter. Cumulative impacts from other past, present, and reasonably foreseeable future impacts could theoretically occur on most of the resources evaluated, such as climate, air quality, hydrology, water quality, flora and fauna, marine biology, noise, cultural resources, traffic, infrastructure, and fire, police, and medical services. However, based on the inconsequential incremental impacts of the proposed action and the already urbanized and planned for activity in Honolulu Harbor, such impacts would not contribute to significant cumulative impacts.

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

The project site has been previously disturbed and developed. There are no known rare, threatened or endangered species or habitat for such species at the project site.

No threatened, endangered, or candidate listed animal or plant species protected by federal or state regulations would be impacted by the proposed action. However, the project site is within the range of federally-listed endangered bird species.

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

The proposed project would not detrimentally affect air or water quality or ambient noise levels beyond the construction period. Ground or surface water quality and aquifer recharge potential would not be significantly impacted. Mitigation measures and BMPs proposed during the construction period would mitigate temporary air, water and noise pollution. The proposed action would comply with federal, state, and local regulations and standards.

During the construction phase, there would be short-term air quality and ambient noise impacts. To minimize air quality impacts during construction, dust control measures would be implemented to minimize wind-blown emissions. Noise impacts from construction would be minimized by limiting construction activities to daylight hours and by following all applicable regulations. During operations, there would be minimal impacts to air and noise and these impacts are unlikely to be noticeable beyond the property boundary.

No storm water would leave the site during construction or operation. BMPs would be implemented as part of permit conditions to protect water resources. Storm water would be routed through existing storm water outfalls onsite. Construction storm water would be managed in accordance with the regulations of the DOH Clean Water Branch NPDES permit program and state water quality standards, specifically HAR § 11-54 Water Quality Standards and HAR § 11-55 Water Pollution Control.

While there are a number of construction projects proposed in Honolulu Harbor and the Iwilei area, it is unlikely they would occur concurrently in the same vicinity. No detrimental construction phase cumulative impacts on air, water or noise are anticipated. The proposed action would have no additive adverse cumulative impacts during the operational phase. Refer to Sections 2.2, 2.6 and 2.13 for more discussion on the potential impacts to air, water quality and ambient noise, respectively.

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

The proposed site is located within a tsunami zone, but otherwise it is not located in flood plain, beach, erosion-prone area, geologically hazardous lands, estuary, or fresh water. As noted in Section 2.7.3, the FEMA designates the site as Zone X – areas determined to be outside the 500-year floodplain and no habitable structures are associated with the project.

A tsunami event is unpreventable and unpredictable. The proposed project facilities would be designed, constructed, and operated in accordance with potential for tsunami flood inundation.

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

The proposed action would not directly or indirectly affect any identified scenic views or view planes identified in state or county plans or studies, as described in Section 2.17. The improvements proposed would be at or near existing grades and therefore would not directly impact views or vistas directly. No cumulative impacts to visual resources are anticipated.

13. Requires substantial energy consumption.

Construction of the project would require the consumption of energy in the form of petroleum products to operate construction machinery. Operations of the completed pier improvements would also require the consumption of energy (fuel) for its daily research and van handling operations, oceangoing vessels, and power required for facility operations and lighting. These impacts already occur at the present location of the UHMC. The relocation would increase operational efficiency, thereby reducing long-term energy consumption.

6.2 FINDINGS AND REASONS SUPPORTING THE ANTICIPATED DETERMINATION

In accordance with the provisions set forth in Chapter 343, HRS, and the significance criteria in HAR § 11-200-12 (1996), it is anticipated that the project will have no significant adverse impacts to air quality, water quality, noise levels, social welfare, historic sites, or wildlife habitat. Anticipated short-term impacts will cease upon project construction completion and will not cause significant impacts to the environmental quality of the area. The mitigation measures described in this document will further minimize short-term impacts.

The proposed action would have no significant short-term or long-term direct, secondary, or cumulative adverse impacts on the environment. Long-term and secondary impacts of the UHMC relocation are anticipated to be beneficial, leading to increased operational efficiencies in Honolulu Harbor. Therefore, it is anticipated that an EIS will not be required, and that a FONSI will be issued.

7.0 DRAFT EA DISTRIBUTION

The agencies and organizations listed in Table 7-1 received copies of the Draft EA and will receive notification of availability of the Final EA as part of the Chapter 343, HRS review process.

Table 7-1. Agencies and Organizations Receiving Copies of the Draft EA

Department / Division
Federal Agencies
Federal Aviation Administration
National Marine Fisheries Service
Naval Facilities Engineering, Command
NOAA
USACE
U.S. Coast Guard
USFWS
State Agencies
Dept. of Agriculture
Dept. of Accounting and General Services
DBEDT OP
DBEDT OP, CZM Program
DBEDT Energy Division
Dept. of Defense
Dept. of Education
DOH Clean Air Branch
DOH Clean Water Branch
DOH Environmental Planning Office
DOH Hazard Evaluation and Emergency Response Office
Hawai‘i Community Development Authority (HCDA)
Dept. of Human Services
Dept. of Labor and Industrial Relations
DLNR Division of Aquatic Resources (DAR)
DLNR Land Division
DLNR SHPD
DLNR Division of Forestry and Wildlife (DOFAW)
DLNR O‘ahu Island Burial Council
DOT Statewide Transportation Planning (Including Director and Deputy Director)
DOT Harbors
DOT Airports
DOT Highways
UH Environmental Center
Hawai‘i State Library and regional libraries
Housing Finance and Development Corporation
Office of Hawaiian Affairs
CCH Agencies
Board of Water Supply
Dept. of Design and Construction
Dept. of Design and Construction – Wastewater Division

Department / Division
Dept. of Environmental Services
Dept. of Facility Maintenance
Dept. of Parks and Recreation
Dept. of community Services
DPP
Fire Dept.
Police Dept.
Political Representatives
Romy M. Cachola, City Council Representative, District 7
Suzanne Chun Oakland, State Senator, District 13 (Sand Island, Kalihi, Liliha, Nuʻuanu, Pauoa, Puʻunui)
Glenn Wakai, State Senator, District 15 (Kalihi, Māpunapuna, Airport, Salt Lake, Āliamanu, Foster Village, Hickam, Pearl Harbor)
Joey Manahan, State Representative, District 29 (Sand Island, Mokauea, Kalihi Kai, Kapālama)
Karl Rhoads, State Representative, District 28 (Pālama, Downtown, Chinatown, Sheridan)
Kalihi-Pālama Neighborhood Board #15
Private Organizations / Individuals / Utilities
Aʻala Ship Services
Chevron Fueling Station
Clean Islands Council
E Noa Tours
Fishing Village Association
Fresh Island Fish
Hawaii Gas (formerly The Gas Company)
Hawaii Harbors Users Group
Hawaii Stevedores
Hawaiian Ice
HECO
Honolulu Freight Warehouse
Horizon Lines
Iwilei District Participating Parties, LLC (IDPP)
JFC International
Kem's Inc.
Marine Spill Response Corporation (MSRC)
Matson Navigation Co.
Nico's at Pier 38
P & R Water Taxi
Pacific Commercial Services
Pacific Fishing & Supply
Pacific Ocean Producers
Paradise Inn Hawaiʻi
Pasha's Hawaiʻi
Sea Engineering, Inc.
Seafood Hawaiʻi, Inc.
United Fishing Agency
Y Fukunaga Products
Young Brothers, Ltd.

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9.0 LIST OF PREPARERS

This report was prepared for DOT Harbors Division by Cardno TEC Inc. Members of the Cardno TEC, Inc. professional staff are listed below.

Project Management

- Rick Adkisson, *B.S., Environmental Science & M.P.H., Master of Public Health*
- Scott Glenn, *B.A., Archaeology* & *M.A., Urban and Regional Planning*
- Amber Guillory, *M.A., Applied Anthropology*

Quality Assurance

- George Krasnick, *B.S., Biology & M.S., Biological Oceanography*
- Boyd Dixon, *Ph.D., Anthropology*
- Kerry Wells, *B.S., Physics*

Graphic Design

- Kerry Wells, *B.S., Physics*

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Appendix A

Early Consultation Communications

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1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Wayne Yoshioka
Director
Hawaii Department of Transportation Services
City & County of Honolulu
650 South King Street, 3rd Floor
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Yoshioka:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

Please provide your written comments to Mr. Rick Adkisson or Mr. Scott Glenn via:

Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR
HONOLULU, HAWAII 96813
Phone: (808) 768-8305 • Fax: (808) 768-4730 • Internet: www.honolulu.gov

PETER B. CARLISLE
MAYOR

WAYNE Y. YOSHIOKA
ACTING DIRECTOR

KAI NANI KRAUT, P.E.
DEPUTY DIRECTOR

KENNETH TORU HAMAYASU, P.E.
DEPUTY DIRECTOR

TP2/11-403728R

February 22, 2011

Mr. Rick Adkisson
Project Manager
TEC, Inc.
1003 Bishop Street, Suite 1550
Honolulu, Hawaii 96813

Dear Mr. Adkisson:

Subject: Environmental Assessment for the Relocation of the University of Hawaii Marine Center to Piers 34 and 35, Honolulu Harbor, Oahu

This responds to your letter of February 11, 2011, requesting our comments concerning this project.

We wish to reserve our comments pending the publication of the Draft Environmental Assessment's Traffic Impact Analysis Report (TIAR).

Thank you for the opportunity to review this matter. Should you have any further questions, please contact Michael Murphy of my staff at 768-8359.

Very truly yours,

WAYNE Y. YOSHIOKA
Acting Director

cc: Hawaii State DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Ms. Lynette Kawaoka
Planner
Hawaii Department of Transportation Airports Division
Planning Section
Honolulu International Airport
400 Rodgers Blvd, Ste 700
Honolulu, HI 96819-1880

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Ms. Kawaoka:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

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Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Alec Wong
Branch Chief
Hawaii State Department of Health
Clean Water Branch
919 Ala Moana Blvd, # 301
Honolulu, HI 96814-4920

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Wong:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Clyde Namuo
CEO
Office of Hawaiian Affairs
711 Kapi'olani Blvd, Ste 500
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Namuo:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

Please provide your written comments to Mr. Rick Adkisson or Mr. Scott Glenn via:

Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

Glenn, Scott J.

From: Keola Lindsey <keolal@oha.org>
Sent: Thursday, February 24, 2011 3:34 PM
To: Glenn, Scott J.
Subject: FW: University of Hawaii Marine Center relocation pre-DEA consultation

Aloha Rick Adkisson and Scott Glenn:

The Office of Hawaiian Affairs (OHA) is in receipt of your February 11, 2011 letter which provides notification of your intent to prepare a draft environmental assessment (DEA) on behalf of your client, the State of Hawai'i-Department of Transportation-Harbors Division for the proposed re-location of the University of Hawaii Marine Center to Piers 34 and 35 in Honolulu Harbor.

OHA has no specific comments at this time. We look forward to reviewing the DEA. Thank you for initiating consultation at this early stage. Should you have any questions, please feel free to contact me.

Thank you, Keola Lindsey

Keola Lindsey
Office of Hawaiian Affairs
Compliance Monitoring Program
711 Kapiolani Boulevard
Honolulu, Hawaii 96813
keolal@oha.org (email)
(808) 594-0244 (office)

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Collins Lam
Director
Hawaii Dept. of Design and Construction
650 South King Street, 11th Flr
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Lam:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

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

PETER B. CARLISLE
MAYOR

COLLINS D LAM, P.E.
DIRECTOR

LORITA M. KAHIKINA, P.E.
DEPUTY DIRECTOR

March 14, 2011

Mr. Rick Adkisson
Project Manager
TEC, Inc.
1003 Bishop Street, Suite 1550
Honolulu, Hawaii 96813

Dear Mr. Adkisson:

Subject: Environmental Assessment for the Relocation of the University of Hawaii Marine Center to Piers 34 and 35, Honolulu Harbor, Oahu

Thank you for inviting us to review the above Environmental Assessment. The Department of Design and Construction does not have any comments to offer at this time.

Should you have any questions, please contact me at 768-8480.

Very truly yours,

for Collins D. Lam, P.E.
Director

CL:pg(403780)

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Matt Derrenbacher
LCBR, Division Chief
U.S. Coast Guard
Incident Management Division
400 Sand Island Access Road
Honolulu, HI 96819-4326

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI‘I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Derrenbacher:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai‘i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

Please provide your written comments to Mr. Rick Adkisson or Mr. Scott Glenn via:

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

Glenn, Scott J.

From: Ryan.G.Erpelding@uscg.mil on behalf of Erpelding, Ryan MST2 <Ryan.G.Erpelding@uscg.mil>
Sent: Wednesday, February 23, 2011 1:05 PM
To: Adkisson, Richard K.; Glenn, Scott J.
Cc: Derrenbacher, Matthew LCDR
Subject: University of Hawai'i Marine Center pier 34 & 35

Follow Up Flag: Follow up
Flag Status: Flagged

Mr. Scott Glenn,

The only concerns the US Coast Guard Incident Management Department(IMD) has with the movement of the University of Hawai'i Marine Center are regarding the requirements of the Maritime Transportation Security Act(MTSA). Currently the MTSA requirements of the Marine Center have been deactivated. If the facility receives a vessel applicable to the MTSA regulations in 33 Code of Federal Regulations(CFR) part 101-105, then the MTSA requirements will activate. At that time access control to the facilities secure and restricted areas will have to be maintained. Again these requirements are only applicable if the facility decides to receive a MTSA applicable vessel in the future. If you have any questions I can be reached at the contact information listed below.

On behalf of LCDR Derrenbacher,
v/r
MST2 Ryan G. Erpelding
Sector Honolulu IMD
400 Sand Island Parkway
Honolulu, HI 96819
Office: (808) 842-2672
Desk: (808) 842-2681
Fax: (808) 842-2690

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. William Pickering
Special Agent in Charge
Department of Commerce NMFS/OLE
1601 Kapiolani Blvd, Ste 950
Honolulu, HI 96814

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Pickering:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

Please provide your written comments to Mr. Rick Adkisson or Mr. Scott Glenn via:

Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Dr. Loyal Mehrhoff
Field Supervisor
U.S. Fish and Wildlife
300 Ala Moana Blvd, Rm 3-122
Honolulu, HI 96850

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Dr. Mehrhoff:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Wayne Hashiro
Manager and Chief Engineer
Board of Water Supply
630 S. Beretania Street
Honolulu, HI 96843

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Hashiro:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

BOARD OF WATER SUPPLY

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

February 25, 2011

Mr. Rick Adkisson
TEC, Incorporated
1003 Bishop Street, Suite 1550
Honolulu, Hawaii 96813

Dear Mr. Adkisson:

Subject: Your Letter Dated February 11, 2011 Requesting Comments for the Environmental Assessment Pre-Consultation for the Relocation of the University of Hawaii Marine Center to Piers 34 and 35, Honolulu Harbor, TMK: 1-5-34: 4, 8, 10, 13, 14, 16, 17, 19, 20, 22, 27, 28, 32, 1-5-36: 1, 2, 10, 1-5-42: 5

Thank you for your letter on the proposed relocation of the University of Hawaii Marine Center to Piers 34 and 35.

The existing water system is presently adequate to accommodate the proposed University of Hawaii Marine Center at Piers 34 and 35. 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 your 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.

The on-site fire protection requirements should be coordinated with the Fire Prevention Bureau of the Honolulu Fire Department.

We have existing 8-inch and 6-inch waterlines going through these parcels. The construction drawings should be submitted for our approval.

The proposed project is subject to Board of Water Supply Cross-Connection Control and Backflow Prevention requirements prior to the issuance of the Building Permit Applications.

If you have any questions, please contact Robert Chun at 748-5443.

Very truly yours,

PAUL S. KIKUCHI
Chief Financial Officer
Customer Care Division

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. David Tanoue
Director
Honolulu Planning & Permitting
650 S. King Street, 7th Floor
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Tanoue:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

Please provide your written comments to Mr. Rick Adkisson or Mr. Scott Glenn via:

Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 7TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 768-8000 • FAX: (808) 768-6041
DEPT. WEB SITE: www.honoluludpp.org • CITY WEB SITE: www.honolulu.gov

PETER B. CARLISLE
MAYOR

DAVID K. TANOUE
DIRECTOR

JIRO A. SUMADA
DEPUTY DIRECTOR

2011/ELOG-370(st)

February 24, 2011

Mr. Rick Adkisson
Project Manager
TEC, Inc.
1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813

Dear Mr. Adkisson:

Subject: Early Consultation for an Environmental Assessment (EA)
University of Hawaii Marine Center Relocation from Snug Harbor
To Piers 34 and 35 - Iwilei
Tax Map Key 1-5-34: Por. of 4, 8, 10, 13, 14, 16, 17, 19, 20, 22, 27, 28, and 32;
1-5-36: Portions of 1, 2, and 10; and
1-5-42: Por. 5

We have reviewed the early consultation information transmitted by your letter dated February 11, 2011, for the proposed relocation of the above referenced facility and find:

1. Both the existing University of Hawaii Marine Center and proposed relocation site are not within the Special Management Area established by Chapter 25, Revised Ordinances of Honolulu. Therefore, the notation in the consultation summary that the project is exempt from County approval (Section 266-2(b), Hawaii Revised Statutes), is not applicable.

2. We presume that a separate environmental assessment will be prepared for the development of the domestic overseas container terminal on the site of the current UH Marine Research Center.

We look forward to reviewing the Draft EA when it becomes available. Should you have any questions, please contact Steve Tagawa our staff at 768-8024.

Very truly yours,

Elizabeth Ch

for David K. Tanoue, Director
Department of Planning and Permitting

DKT:nw
cc: Harbors Division, SDOT

G:SteveT\EDs\eUHMarCtr.doc

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. George Miyamoto
Acting Director
Department of Facility Maintenance
1000 Ulu'ohia Street, Ste 215
Kapolei, HI 96707

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Miyamoto:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

Please provide your written comments to Mr. Rick Adkisson or Mr. Scott Glenn via:

Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

DEPARTMENT OF FACILITY MAINTENANCE

CITY AND COUNTY OF HONOLULU

1000 Uluohia Street, Suite 215, Kapolei, Hawaii 96707
Phone: (808) 768-3343 • Fax: (808) 768-3381
Website: www.honolulu.gov

PETER B. CARLISLE
MAYOR

WESTLEY K.C. CHUN, Ph.D., P.E., BCEE
ACTING DIRECTOR & CHIEF ENGINEER

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

IN REPLY REFER TO:
DRM 11-134

March 3, 2011

Mr. Rick Adkisson
TEC, Inc.
1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813

Subject: Environmental Assessment for the Relocation of the University of Hawaii Marine Center (UHMC) to Piers 34 and 35, Honolulu Harbor, Oahu

Thank you for the opportunity to provide consultation comments for the preparation of the Draft Environmental Assessment for the possible relocation of the UHMC from its present location to Piers 34 and 35.

The proposed relocation will be within properties under the jurisdiction of the State of Hawaii and will have negligible impact on our facilities and maintenance operations.

However, there is a Drainage Easement in favor of the City and County of Honolulu located across the makai portion of the piers. The easement contains two underground 36-inch diameter storm drain pipes. We request that any improvements to the piers do not interfere with the City's use of the easement area for the operation, maintenance and repair to the drainage pipes.

Should you have any questions, please call Charles Pignataro of the Division of Road Maintenance, at 768-3697.

Sincerely,

Westley K.C. Chun, Ph.D., P.E., BCEE
Acting Director & Chief Engineer

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Kenneth Silva
Office of the Fire Chief
Honolulu Fire Department
636 South Street
Honolulu, HI 69813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI‘I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Silva:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai‘i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

Please provide your written comments to Mr. Rick Adkisson or Mr. Scott Glenn via:

Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

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

PETER B. CARLISLE
MAYOR

KENNETH G. SILVA
FIRE CHIEF

ROLLAND J. HARVEST
DEPUTY FIRE CHIEF

March 3, 2011

Mr. Rick Adkisson
Project Manager
TEC, Inc.
Pauahi Tower, Suite 1550
1003 Bishop Street
Honolulu, Hawaii 96813

Subject: Draft Environmental Assessment
Relocation of University of Hawaii Marine Center to Piers 34 and 35
Honolulu Harbor, Oahu
Tax Map Keys: 1-5-034: 004, 008, 010, 013, 014, 016, 017, 019, 020, 022, 027, 028, and 032; 1-5-036: 001, 002, and 010; and 1-5-042: 005

In response to your letter of February 11, 2011, regarding the above-mentioned subject, the Honolulu Fire Department (HFD) reviewed the material provided and requires that the following be complied with:

1. Fire department access roads shall be provided such that any portion of the facility or any portion of an exterior wall of the first story of the building is located not more than 150 feet (46 m) from fire department access roads as measured by an approved route around the exterior of the building or facility. (National Fire Protection Association [NFPA] 1; Uniform Fire Code [UFC]™, 2006 Edition, Section 18.2.3.2.2.)

   A fire department access road shall extend to within 50 ft (15 m) of at least one exterior door that can be opened from the outside and that provides access to the interior of the building. (NFPA 1; UFC™, 2006 Edition, Section 18.2.3.2.1.)

2. A water supply approved by the county, capable of supplying the required fire flow for fire protection, shall be provided to all premises upon which facilities or buildings, or portions thereof, are hereafter

constructed, or moved into or within the county. When any portion of the facility or building is in excess of 150 feet (45 720 mm) from a water supply on a fire apparatus access road, as measured by an approved route around the exterior of the facility or building, on-site fire hydrants and mains capable of supplying the required fire flow shall be provided when required by the AHJ [Authority Having Jurisdiction]. (NFPA 1; UFC™, 2006 Edition, Section 18.3.1, as amended.)

3. Submit civil drawings to the HFD for review and approval.

Should you have any questions, please call Acting Battalion Chief Gary Lum of our Fire Prevention Bureau at 723-7152.

Sincerely,

ROLLAND J. HARVEST
Acting Fire Chief

RJH/KM:bh

cc: Carter Luke, State of Hawaii, Department of Transportation

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Louis Kealoha
Chief of Police
Honolulu Police Department
801 South Beretania Street
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Kealoha:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

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Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET · HONOLULU, HAWAII 96813
TELEPHONE: (808) 529-3111 · INTERNET: www.honolulupd.org

PETER B. CARLISLE
MAYOR

LOUIS M. KEALOHA
CHIEF

DELBERT T. TATSUYAMA
RANDAL K. MACADANGDANG
DEPUTY CHIEFS

OUR REFERENCE DMK-LS

February 22, 2011

RECEIVED FEB 2 2 2011

Mr. Rick Adkisson, Project Manager
TEC, Inc.
1003 Bishop Street, Suite 1550
Honolulu, Hawaii 96813

Dear Mr. Adkisson:

This is in response to your letter of February 11, 2011, requesting comments on a Draft Environmental Assessment for the relocation of the University of Hawai'i Marine Center to Piers 34 and 35 at Honolulu Harbor.

During the construction phase, this project will have a negative impact on the services provided by the Honolulu Police Department. In spite of mitigation measures, construction-related dust, noise, traffic, and odors would likely cause an increase in calls for police service to the area. However, once completed, there should be no impact on the facilities or operations of the Honolulu Police Department.

Please note that the project site is under the jurisdiction of the Harbors Division, State Department of Transportation.

If there are any questions, please call Major William Chur of District 5 (Kalihi) at 723-8207.

Sincerely,

LOUIS M. KEALOHA
Chief of Police

By Dave Kajihiro
DAVE M. KAJIHIRO
Assistant Chief of Police
Support Services Bureau

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Councilman Romy Cachola
City Council Representative, District 7
530 South King Street, Rm 202
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Councilman Cachola:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Senator Suzanne Chun Oakland
State Senator
Hawaii State Senator
415 S. Beretania Street, Rm 226
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Senator Chun Oakland:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Senator Brickwood Galuteria
State Senator
Hawaii State Senator
415 S. Beretania Street, Rm 221
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Senator Galuteria:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Representative Joey Manahan
State Representative
State Representative, District 29
415 South Beretania St, RM 421
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Representative Manahan:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

Please provide your written comments to Mr. Rick Adkisson or Mr. Scott Glenn via:

Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Representative Karl Rhoads
State Representative
State Representative, District 28
415 South Beretania St, Rm 326
Honolulu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Representative Rhoads:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Donald Guerrero
Chair
Kalihi-Palama No. 15
1015 N. School St., A-103
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Guerrero:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

TEC inc

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Ms. Stephanie Ackerman
Public Policy & Communications
The Gas Company
515 Kamakee Street
Honolulu, HI 96814

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Ms. Ackerman:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

Glenn, Scott J.

From: Adkisson, Richard K.
Sent: Monday, March 07, 2011 9:06 AM
To: Glenn, Scott J.
Subject: FW: Send data from GHADMXXPTR-1 03/03/2011 14:53

Scott,

FYI.

Rick Adkisson
TEC Inc.
1003 Bishop Street, Pauahi Tower, Suite 1550 Honolulu, HI 96813
Cell: 865-742-2181
Phone: 808-528-1445
Fax: 808-528-0768

-----Original Message-----
From: Kita, Michael [mailto:mkita@hawaiigas.com]
Sent: Monday, March 07, 2011 8:55 AM
To: Adkisson, Richard K.
Cc: Ackerman, Stephanie
Subject: RE: Send data from GHADMXXPTR-1 03/03/2011 14:53

Mr. Adkisson,

Thank you for informing us and giving us an opportunity to comment on the proposed development at piers 34 and 35. After reviewing the attachment and consulting with my reports, we do not see any impacts or concerns to our operations at pier 38.

I really appreciate your consideration for including us as one of your notification addressees.

Mahalo and best regards,

Michael Kita
The Gas Company
Director, Supply & Logistics
Office: 808 673-4810
Mobile: 808 351-5170
Fax: 808 673-4822
e-mail: mkita@hawaiigas.com

-----Original Message-----
From: Ackerman, Stephanie
Sent: Thursday, March 03, 2011 3:17 PM
To: Kita, Michael
Cc: Young, Thomas; Furuta, Craig
Subject: FW: Send data from GHADMXXPTR-1 03/03/2011 14:53
Importance: High

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Hawaiian Electric Company
PO Box 2750
Honolulu, HI 968490

Attn: Environmental Department

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Sir/Madame:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Jeffrey LaDouce
Director
National Weather Service
Pacific Guardian Center, Mauka Twr
737 Bishop Street, Suite 2200
Honolulu, HI 96813-3213

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. LaDouce:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

From: Adkisson, Richard K.
Sent: Friday, February 18, 2011 7:06 AM
To: Glenn, Scott J.
Subject: FW: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAII MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Scott,

FYI.

Rick Adkisson
TEC Inc.
1003 Bishop Street, Pauahi Tower, Suite 1550 Honolulu, HI 96813
Cell: 865-742-2181
Phone: 808-528-1445
Fax: 808-528-0768

-----Original Message-----
From: Jeff LaDouce [mailto:Jeff.Ladouce@noaa.gov]
Sent: Thursday, February 17, 2011 1:46 PM
To: Adkisson, Richard K.
Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAII MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Mr. Adkisson,

The National Weather Service has no comments regarding the subject environmental assessment. However, if you are planning any environmental measuring instrumentation (Wind, Temperature, etc.) we would be happy to consult with you on types and siting of such equipment and possible availability of data to the Honolulu Forecast Office.

Jeff LaDouce
Director, NWS Pacific Region
808-532-6416

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Jingbo Chang
Owner
Pacific Commercial Services LLC
5 Sand Island Access Rd Bldg 931
Honolulu, HI 96819

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Chang:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

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Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Neal Otani
President
Y Fukunaga Products
5 Sand Island Access Rd, #906
Honolulu, HI 96819-4905

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Otani:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Darren Lee
Pasha's Hawaii Transport Lines
677 Ala Moana Blvd, #700
Honoluu, HI 96813

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Lee:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Fax: (808) 528-0768

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Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

Glenn, Scott J.

From: Darren Lee <Darren_Lee@pashanet.com>
Sent: Tuesday, February 22, 2011 9:47 AM
To: Adkisson, Richard K.; Glenn, Scott J.
Subject: Pasha Hawaii

Follow Up Flag: Follow up
Flag Status: Flagged

Aloha Mr. Adkisson and Mr. Glenn

This is in regards to your letter that I received on 11 February concerning the movement of UH to Piers 34/35.
When this project was first introduced to us about 2 years ago the only concern we had was the exit gate for our customers. Currently we utilize the pier 34/35 exit gate during our delivery days which occur 4 days after our ship arrives twice a month. This is needed to avoid the congestion on Nimitz Hwy if our customers had to exit the regular 31/34 gate heading east and then turning around at Hilo Hatties to go west. 95% of our customers to west from our terminal.
It was agreed upon that there would be a easement made behind your property to exit the Alakawa Rd. and Nimitz light? I don't see anything mentioned about this additional roadway in your plans? Please advise.

Thanks
Darren Lee
Operations Manager
Pasha Hawaii Transport Lines
Cell: (808)590-3617

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Phillip MacDougall
General Manager
Hawaii Stevedores, Inc.
965 N. Nimitz Hwy
Honoluu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. MacDougall:

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Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 14, 2011

Marine Spill Response Corporation
179 Sand Island Access Rd, #A
Honolulu, HI 96819-4936

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

To Whom It May Concern:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Fax: (808) 528-0768

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Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Hawaiian Ice Co.
1125 North Nimitz Hwy
Honolulu, HI 96817

Attn: General Manager

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Sir/Madame:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Arlen Walsten
VP of S&M and Safety Officer
POP Fishing & Marine
1133 North Nimitz Hwy
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Walsten:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

United Fishing Agency Ltd.
1131 North Nimitz Hwy
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Sir/Madame:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Ken Cho
Terminal Manager
Honolulu Freight Service
933 A North Nimitz Hwy
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Cho:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

On behalf of the DOT Harbors, TEC, Inc. is beginning the consultation process to notify and consult with agencies, individuals, and interested parties to identify any issues that should be considered in our environmental review. Enclosed for your review and comment is a project summary that provides an overview of the proposed action.

Please provide your written comments to Mr. Rick Adkisson or Mr. Scott Glenn via:

Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

TEC inc

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Ms. Rae Miyasaki
Office Clerk
JFC International
887 North Nimitz Hwy
Honolulu, HI 96817-4517

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Ms. Miyasaki:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

Scott for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Rodney Tamamoto
President & CEO
Aala Ship Services
869 North Nimitz Hwy
Honolulu, HI 96817-4517

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Tamamoto:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Maki Kuroda
President
E Noa Corp.
3015 Koapaka St, #G
Honolulu, HI 96819-1936

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Kuroda:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Arlen Walsten
VP of S&M and Safety Officer
POP Fishing & Marine
1133 North Nimitz Hwy
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Walsten:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
Fax: (808) 528-0768

We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Tim Sawyer
Captain
Clean Islands Council
Pier 35, Berth 1
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Sawyer:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Kems Kewalo
965 North Nimitz Hwy, #A4
Honolulu, HI 96817-4572

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI‘I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Sir/Madame:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai‘i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com
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Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Bruce Johnson
CEO
Fresh Island Fish
Uncle's
1135 North Nimitz Hwy
Honolulu, HI 96817-4522

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Johnson:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Fax: (808) 528-0768

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Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Steve Rudolph
Vice President
Seafood Hawaii Inc.
875 Waimanu St, #634
Honolulu, HI 96813-5265

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Rudolph:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Ms. Lorene Godfrey
Office Manger
Sea Engineering, Inc.
863 North Nimitz Hwy
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Ms. Godfrey:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Fax: (808) 528-0768

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Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 11, 2011

Mr. Roger Dang
General Manager
Pacific Fishing & Supply Inc.
504 North Nimitz Hwy
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Dang:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

Scott Glenn
for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 15, 2011

Ms. Sandy Pires
Office Manager
P & R Water Taxi
PO Box 2851
Honolulu, HI 86803

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAIʻI MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Ms. Pires:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawaiʻi Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 16, 2011

Mr. Dennis Morgan
Terminal Manager
Chevron Terminal Transportation
933 North Nimitz Hwy
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Morgan:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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Sincerely,

Scott for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

February 16, 2011

Todd Osterberg
Health & Environmental Specialist
Chevron Terminal Marine
933 North Nimitz Hwy
Honolulu, HI 96817

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI'I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Osterberg:

The Department of Transportation, Harbors Division (DOT Harbors) is undertaking the preparation of a Draft Environmental Assessment (EA) for the possible relocation of the University of Hawai'i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements to accommodate this relocation include renovating and expanding the existing landside facilities to accommodate the UHMC's marine science research programs, operations, and vessels.

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We would like to receive these comments no later than February 23, 2011. Thank you for your time and participation in the consultation phase.

Sincerely,

for

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

1003 Bishop Street
Pauahi Tower, Suite 1550
Honolulu, Hawaii 96813
(808) 528-1445 • fax (808) 528-0768

March 24, 2011

George Young, P.E.
Regulatory Branch
Army Corps of Engineers
Building 230
Ft. Shafter, Hawaii 96858-5440

Subject: ENVIRONMENTAL ASSESSMENT FOR THE RELOCATION OF THE UNIVERSITY OF HAWAI‘I MARINE CENTER TO PIERS 34 AND 35, HONOLULU HARBOR, OAHU

Dear Mr. Young:

TEC, Inc. is undertaking the preparation of a Draft Environmental Assessment (EA) on behalf of the Department of Transportation, Harbors Division, for the possible relocation in Honolulu Harbor of the University of Hawai‘i Marine Center (UHMC) from its current location at Snug Harbor to Piers 34 and 35. This relocation would facilitate the redevelopment of the Kapālama Military Reservation into a new domestic overseas container terminal. The proposed improvements would consist of renovating 50,000 square feet of the existing structure; upgrading 100,000 square feet of paved surface for parking, including possibly covering an open drainage canal; and upgrades to utilities and other infrastructure at Piers 34 and 35, including possible installation of sewer lines to the edge of the piers. Enclosed for your review and comment is a project summary that provides an overview of the proposed action. TEC is requesting a jurisdictional determination regarding:

1. the proposed conversion of an open drainage canal into a box culvert on the subject property; and
2. possible installation of sewer lines at the edge of the pier.

In addition, TEC requests information on the level of NEPA review that may be required for these actions.

Please reply to Mr. Rick Adkisson or Mr. Scott Glenn as follows:
Postal mail: TEC, Inc., 1003 Bishop Street, Suite 1550, Honolulu, HI 96813
E-mail: rkadkisson@tecinc.com or sjglenn@tecinc.com

Thank you for your time and consideration.

Sincerely,

Rick Adkisson
Project Manager
TEC, Inc.

Enclosure: Project Summary

cc: DOT Harbors Engineering

Appendix B

Traffic Impact Assessment Report

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Draft University of Hawaii Marine Center (UHMC) Transportation Study

Honolulu, Hawaii

June 2011

Prepared For
Hawaii Department of Transportation
Harbors Division

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APPENDICES

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EXECUTIVE SUMMARY

This report serves as support for the transportation section of the Environmental Assessment (EA) for the proposed relocation of the University of Hawaii Marine Center (UHMC) facilities to Piers 34/35, located in Honolulu, Oahu, Hawaii (herein referred to as the proposed project). The main objectives of this transportation study were:

- To identify potential transportation impacts associated with the proposed project;
- To develop mitigation and improvement measures to relieve project-related transportation impacts, if any; and
- To identify the preferred egress route for Pasha Hawaii Transport Lines (Pasha Auto) traffic leaving Piers 34/35 after the implementation of the proposed project.

The potential impacts of the proposed project were evaluated in accordance with the thresholds of significance reviewed and approved by the Hawaii Department of Transportation (HDOT). As part of this transportation study, three signalized intersections (Nimitz Highway/Alakawa Street, Eastbound Nimitz Highway/Pacific Street, and Westbound Nimitz Highway/Pacific Street) and three unsignalized intersections (Nimitz Highway/Japan Food Access Way/Lowe's Driveway, Eastbound Nimitz Highway/Pier 33 Access Way, and Eastbound Nimitz Highway/Kukahi Street) located in the vicinity of the proposed project were evaluated under Existing Conditions and Existing plus Project Conditions. Traffic impacts due to the proposed project were determined based on the AM and PM peak hour intersection operations. Also, queuing analysis was performed to report queue lengths at each of the study intersections. In addition, other transportation analysis performed and reported as part of this study includes the following:

- Traffic signal warrant analysis to determine if the proposed project would warrant a traffic signal at the unsignalized study intersections;
- Determination of the most feasible alternate exit routes for Pasha Auto Hawaii Lines (Pasha Auto) vehicles after the proposed project is relocated to the Piers 34/35 area;
- Collision analysis using the most recent accident data available from HDOT to determine if project-related traffic would result in any traffic safety issues at the study intersections;
- Pedestrian safety analysis to determine if project-related traffic would result in pedestrian safety issues at the intersection of Nimitz Highway and Alakawa Street; and
- Evaluation of sight distance for project-related traffic at the intersection of Nimitz Highway and Alakawa Street, and along Sumner Street connecting Eastbound Nimitz Highway with Westbound Nimitz Highway.

E.1 Project Trip Generation and Distribution

The number of trips generated by the proposed project was estimated based on the information provided by UHMC, including the number of employees who would be transferred to the proposed project site and peak period vehicle trips to/from the existing UHMC site located at Snug Harbor. The proposed project would generate a total of 186 daily vehicle trips, 44 inbound trips and 1 outbound trip, during the AM peak hour, and 1 inbound trip and 22 outbound trips during the PM peak hour.

Additionally, the proposed project would generate about 30 transit-based trips and 5 bicycle-based trips during each of the AM and PM peak hours.

The project trip distribution was identified based on an approximate trip distribution of employees at the existing UHMC facility.

E.2 Intersection Analysis and Project-Related Impacts

Study intersections were evaluated using the Highway Capacity Manual 2000 (HCM 2000) methodologies. Analysis suggested that the following three study intersections would operate at level of service (LOS) E or worse under Existing Conditions as well as Existing plus Project Conditions:

- Nimitz Highway/Alakawa Street (PM peak hour)
- Nimitz Highway/Japan Food Access Way/Lowe's Driveway (PM Peak Hour)
- Eastbound Nimitz Highway/Pier 33 Access Way (AM Peak Hour)

The remaining study intersections would operate at LOS D or better under Existing Conditions and Existing plus Project Conditions. However, the proposed project would deteriorate traffic operations of the northbound right-turn movement at the Eastbound Nimitz Highway/Pier 33 Access Way intersection from LOS D to LOS E during the existing AM peak hour. Hence, the proposed project would cause a substantial impact to the northbound right-turn movement at the intersection of Eastbound Nimitz Highway and Pier 33 Access Way during the AM peak hour. The proposed project would not substantially worsen the traffic operations of the study area in the PM peak hour, though.

E.3 Proposed Mitigation Measures

As a potential improvement measure to mitigate the project-related traffic impact at the intersection of Eastbound Nimitz Highway and Pier 33 Access Way, installation of a traffic signal at this intersection was evaluated using the methodology suggested by the Manual on Uniform Traffic Control Devices (MUTCD), 2009. However, installation of a traffic signal at this intersection is not recommended since it does not satisfy the Peak Hour, Pedestrian Volume, Coordinated Signal, and Crash Experience signal warrants. Due to the lack of any feasible mitigation measures, the project-related traffic impact to the northbound right-turn movement at the intersection of Eastbound Nimitz Highway and Pier 33 Access Way is considered to be unavoidable.

E.4 Analysis Conclusions

The following can be concluded from this transportation study:

- The proposed project would cause a substantial impact to the northbound right-turn movement at the intersection of Eastbound Nimitz Highway and Pier 33 Access Way; however, this impact would occur only during the AM peak period (from 6 AM to 8:30 AM), but not during the PM peak period (from 3 PM to 6:30 PM);
- The proposed project would not result in any parking, transit, pedestrian, and bicycle-related impacts;
- The proposed project would not warrant signalization of any of the unsignalized study intersections, since none of them satisfy the MUTCD's Peak Hour signal warrant;

- The proposed project would not have a substantial effect on the collision rates of the study intersections, since it would increase the traffic at those intersections by a negligible percentage;
- Pedestrian safety at the intersection of Nimitz Highway and Alakawa Street is neither currently an issue, nor would be an issue with the relocation of the UHMC site to the Piers 34/35 area;
- An analysis of the two alternate exit routes considered for the Pasha Auto traffic using the AutoTurn simulation software indicated that Alternative 2 (Pier 33 Access Way) is the most feasible route after the relocation of UHMC to the Piers 34/35 area; and
- The project-related traffic would have adequate stopping distances at the intersection of Nimitz Highway and Alakawa Street, and along Sumner Street to perform U-turn.

E.5 Recommendations

The following recommendations are suggested to improve traffic operations after the relocation of UHMC site:

- As part of the proposed egress route for Pasha Auto vehicles, northbound and westbound Pasha Auto traffic is recommended to make a U-turn at Sumner Street to access outbound Nimitz Highway. Due to the presence of heavy traffic volumes, short storage lengths, and the limited turning radius for large trucks, outbound Pasha Auto vehicles are not recommended to use northbound Pacific Street to access outbound (westbound) Nimitz Highway. Hence, to avoid Pasha Auto traffic from using Pacific Street to access outbound Nimitz Highway, it is recommended that Pasha Auto drivers be educated to utilize the Sumner Street U-turn to reverse their direction of travel instead of Pacific Street.
- To avoid vehicles parking on unmarked paved areas, it is recommended that an additional 10 marked parking spaces be provided at the project site to have a total of 97 parking spaces, 90 for the UHMC personnel and seven (7) for UHMC visitors.
- Approximately five (5) bicycle trips are anticipated to be generated by the proposed project. The Basis of Design Report did not indicate provision of any bicycle facilities within the project site. However, to accommodate the bicycle-related trips and improve the safety of bicyclists, it is recommended that a secured bicycle parking facility be provided within the proposed project site.
- It is recommended that Pasha Auto consider scheduling of exiting traffic so as to minimize the number of oversize vehicle trips during the AM peak period from 6 AM to 8 AM. This would not only limit travel delays during the AM peak period, but also allow outbound trucks to take advantage of the better traffic operating conditions along Nimitz Highway during the rest of the day.
- To avoid confusion, improve pedestrian safety, and to meet the minimum stopping distance recommended by the AASTHO Green Book, it is suggested that a speed limit of 15 mph be posted by HDOT along Sumner Street connecting eastbound and westbound Nimitz Highway.

Chapter 1 Introduction

This report serves as support for the transportation section of the Environmental Assessment (EA) for the proposed relocation of the University of Hawaii Marine Center (UHMC) facilities to Piers 34/35, located in Honolulu, Oahu, Hawaii (herein referred to as the proposed project). The main objectives of this transportation study were:

- To identify potential transportation impacts associated with the proposed project;
- To develop mitigation and improvement measures to relieve project-related transportation impacts, if any; and
- To identify the preferred egress route for Pasha Hawaii Transport Lines (Pasha Auto) traffic leaving Piers 34/35 after the implementation of the proposed project.

1.1 Project Description and Location

The UHMC facilities are proposed to be relocated within Honolulu Harbor to accommodate the proposed deep draft wharf development at the Kapalama container terminal. The Hawaii Department of Transportation (HDOT) Harbors Division will relocate UHMC to two new sites located at Sand Island and Piers 34/35. The proposed site at Sand Island is located south of the existing UHMC site, just across the access bridge along State Route 64 (Sand Island Access Road). The new site at Piers 34/35 is located to the east of the existing UHMC site and can be accessed using the intersection of Nimitz Highway and Alakawa Street. The existing and proposed locations of the UHMC facilities are shown in **Figure 1-1**.

The proposed project site at Piers 34/35 is currently occupied by multiple tenants of the HDOT-Harbors Division, including Marine Spill Response Corporation (MSRC) and Hawaii Stevedores. Several businesses, including Pasha Auto, Honolulu Freight Services, and Japan Food Hawaii Inc. also currently utilize adjacent piers for their freight loading and unloading activities. As part of the proposed project, UHMC will be relocated to the building located in the Pier 34/35 area by vacating the current tenant, Hawaii Stevedores. Recently, another tenant, Hawaiian Ice, relocated from the Pier 34/35 area, while Hawaii Stevedores is scheduled to leave the property in the near future.

Figure 1-1 **Existing and Proposed Locations of UHMC Facility**

1.2 Study Area

The proposed project site is located on the island of Oahu, within the city of Honolulu, along State Highway 92 (Nimitz Highway). The project site is bounded by Nimitz Highway to the north, Honolulu Freight Services property to the east, Pier 33 to the south, and Honolulu Harbor to the west. The study area for this project consists of the following six intersections located in the vicinity of the project site:

1. Nimitz Highway/Alakawa Street
2. Eastbound Nimitz Highway/Japan Food Access Way/Lowe's Driveway
3. Eastbound Nimitz Highway/Pier 33 Access Way
4. Eastbound Nimitz Highway/Pacific Street
5. Westbound Nimitz Highway/Pacific Street
6. Eastbound Nimitz Highway/Kukahi Street

Three of the study intersections (Nimitz Highway/Alakawa Street, Eastbound Nimitz Highway/Pacific Street, and Westbound Nimitz Highway/Pacific Street) are signalized intersections. The remaining three intersections are two-way stop-controlled intersections. The location of the project site and the study intersections are exhibited in **Figure 1-2**.

1.3 Study Scope and Approach

The study area operations were evaluated under two scenarios. These scenarios are described below:

1. Existing Conditions – This scenario represents existing conditions without the proposed project.
2. Existing plus Project Conditions – This scenario represents existing conditions with the proposed project.

In addition to traffic operations at the study intersections, parking conditions were examined within the project site. A comprehensive evaluation of nearby transit, bicycle, and pedestrian facilities located in the vicinity of the project site is included in the report. Also, results of traffic signal warrant analysis, traffic safety analysis, pedestrian safety analysis, evaluation of stopping sight distance, and evaluation of alternate egress routes for Pasha Auto traffic are discussed in this report.

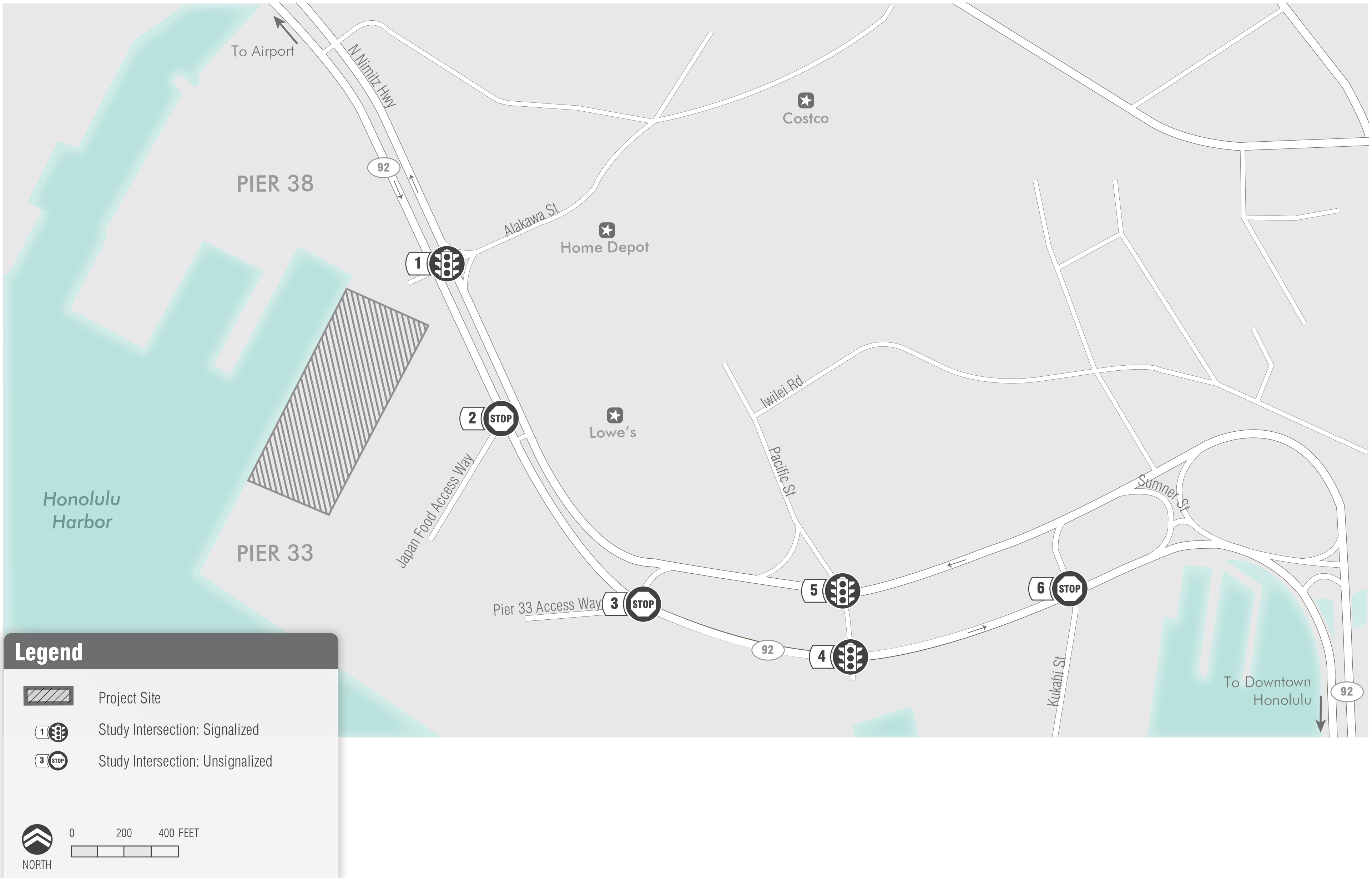

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Figure 1-2 **Project Site / Study Intersections**

Chapter 2 Existing Conditions

A description of the transportation network located near the project site, methodology adopted to analyze the study intersections, evaluation of intersection operations, and analysis of other transportation conditions under Existing Conditions are discussed in this chapter.

2.1 Regional Access Roadways

A description of the roadways providing regional access to and from the project site is provided below.

Interstate H-1 (H-1) is primarily an east-west freeway located approximately 0.9 miles northeast of the project site. The freeway traverses through the southern portion of the entire island of Oahu, connecting various cities, neighborhoods, local attractions, and other key facilities throughout the island. West of the project site, H-1 has five travel lanes in each direction with one lane in each direction designated as a High Occupancy Vehicle (HOV) lane for vehicles with two or more occupants, during the peak commute periods. Additionally, an express "zipper" lane is provided for vehicles with three or more occupants along eastbound H-1 during the AM peak period. Between the Pali Highway and Palama Street interchanges the freeway provides three lanes in each direction. The project site is accessible to H-1 via Nimitz Highway to the west, the Houghtailing Street/Waiakamilo Road interchange to the northeast, and Pali Highway to the east.

Nimitz Highway (State Route 92) extends between H-1 and downtown Honolulu. Beyond downtown Honolulu, State Route 92 continues as Ala Moana Boulevard toward Waikiki. The highway is directly north of the project site and is located generally parallel to H-1. It provides three lanes in the outbound (westbound) direction from River Street to the H-1 interchange, and four lanes between the Pier 33 Access Way and Sumner Street. In the inbound (eastbound) direction, it has three lanes from H-1 to Pier 33 Access Way, and four lanes from Pier 33 Access Way to downtown Honolulu. During the morning commute period, an additional contraflow lane is provided in the inbound direction for vehicles with three or more occupants, reducing the number of lanes in the outbound direction to two lanes. The contraflow lane is provided for approximately 1.5 miles between the H-1 interchange and west of Pacific Street. Nimitz Highway is divided from the intersection with Japan Food Access Way to Kekaulike Street. It provides direct access to the project site via the Alakawa Street intersection. Bicycle lanes and sidewalks are provided in both directions along Nimitz Highway.

2.2 Local Access Roadways

A description of the roadways providing local access in the vicinity of the project site is provided below.

Alakawa Street is a northeast-southwest roadway extending between Nimitz Highway and Dillingham Boulevard. It serves as the primary entrance to the project site, via its intersection with Nimitz Highway. In the vicinity of the project site, Alakawa Street has two travel lanes in each direction for its entire length, connecting various retail and commercial facilities with Nimitz Highway and Dillingham Boulevard.

Japan Food Access Way is a short northeast-southwest roadway that connects Nimitz Highway with several industrial and freight facilities located within Honolulu Harbor. At its intersection with Nimitz

Highway, Japan Food Access Way allows right-in/right-out movements only. This roadway includes one travel lane in each direction.

Pier 33 Access Way is an east-west roadway that provides harbor access from Pier 33 to Nimitz Highway, while connecting various industrial and freight facilities. Prior to reaching Pier 33, the roadway becomes secured and only authorized personnel and visitors are allowed. This roadway includes one travel lane in each direction.

Pacific Street is a north-south local roadway extending from inbound (eastbound) Nimitz Highway to north of Iwilei Road. Various retail and office land uses are predominantly located along Pacific Street. The roadway provides two travel lanes in each direction between its intersections with inbound and outbound Nimitz Highway, and one travel lane in each direction north of its intersection with outbound Nimitz Highway.

Kukahi Street is a north-south local roadway that provides harbor access from Pier 21 to Nimitz Highway, connecting industrial and freight facilities. Prior to reaching Pier 21, the roadway becomes secured and only authorized personnel and visitors are allowed. This roadway includes one travel lane in each direction makai of Nimitz Highway. Between the inbound and outbound sections of Nimitz Highway, Kukahi Street operates only in the southbound direction toward the harbor.

Sumner Street is a north-south local roadway that extends from north of Pine Street to Nimitz Highway. The roadway includes one travel lane in each direction along its entire length.

Iwilei Road is an east-west local roadway that connects King Street with Pacific Street, connecting various industrial, office, and retail facilities. This roadway includes one travel lane in each direction along its entire length.

2.3 Intersection Operating Conditions

2.3.1 Methodology

Study intersection operations were analyzed based on the Highway Capacity Manual 2000 (HCM 2000) methodologies. This method defines Level of Service (LOS) in terms of delay, or more specifically, average stopped delay per vehicle. Delay is a measure of driver and/or passenger discomfort, frustration, fuel consumption, and lost travel time. This technique uses 1,900 vehicles per hour per lane (vphpl) as the maximum saturation volume of an intersection. This saturation volume is adjusted to account for lane width, on-street parking, pedestrians, traffic composition (i.e., percentage trucks), and shared lane movements (i.e., through and right-turn movements originating from the same lane).

For signalized and four-way stop-controlled intersections, HCM methodology determines the capacity of each lane group approaching the intersection. The LOS is then based on average delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average delay and LOS are presented for the intersection. For unsignalized intersections, the average delay and LOS values are calculated by approach (e.g., northbound) and movement (e.g., northbound left-turn), for those movements that are subject to delay. The HCM guidelines for LOS criteria at signalized and unsignalized intersections are presented in **Table 2-1**.

Table 2-1: Level of Service Criteria – Signalized and Unsignalized Intersections

Level of Service	Average Delay		Description of Operations
	Signalized	Unsignalized	
A	≤ 10.0	≤ 10.0	Operations with very low delay occurring with favorable progression and/or short cycle length.
B	10.1 – 20.0	10.1 – 15.0	Operations with low delay occurring with good progression and/or short cycle lengths.
C	20.1 – 35.0	15.1 – 25.0	Operations with average delays resulting from fair progression and/or longer cycle lengths. Individual cycle failures begin to appear.
D	35.1 – 55.0	25.1 – 35.0	Operations with longer delays due to a combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop and individual cycle failures are noticeable.
E	55.1 – 80.0	35.1 – 50.0	Operations with high delay values indicating poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences. This is considered to be the limit of acceptable delay.
F	≥ 80.1	≥ 50.1	Operation with delays unacceptable to most drivers occurring due to over saturation, poor progression, or very long cycle lengths.

Source: Highway Capacity Manual, Transportation Research Board, 2000
Notes:
Delay presented in seconds per vehicle.
Delay, LOS, and v/c ratio values are presented for the worst operating movement at a two-way stop-controlled intersection.

Assessment of study intersections was performed using Synchro 7.0 software. To determine the effect of project-related traffic on the study intersections, analysis of vehicle queuing was also performed. The queuing analysis was performed using SimTraffic software. This software uses Synchro traffic analysis data and output files to perform visual simulations of traffic operations. The visual simulations use driver behavior parameters and vehicle operational factors combined with random number generation to simulate traffic operations. For the purposes of this project, five (5) simulations were run for each study scenario.

The traffic analysis methodology submitted to HDOT is provided in **Appendix A**.

2.3.2 Traffic Volumes

Traffic counts at the study intersections were collected on April 28, 2011 during the morning (from 6:00 AM to 8:30 AM) and evening (from 3:00 PM to 6:30 PM) peak periods. April 28th was selected for traffic data collection because of the following reasons:

- It avoided state furlough days or holidays;
- The project site is located near Pasha Auto, which has shipments arranged on particular days. On the cargo delivery days there is an increase in traffic at the project site, with the peak delivery day occurring on the Thursday of the delivery week. Pasha Auto had a cargo arrival on April 25th (Monday). April 28th being a Thursday, data collection on that day accounted for the peak cargo delivery trips.
- The Lowe's Iwilei store located in the vicinity of the project site opened on April 22nd. Therefore, data collection on April 28th accounted for the traffic accessing this store.

- The University of Hawaii - Honolulu Community College's spring semester ended on May 4th. Data collection on April 28th accounted for traffic accessing this college as well.

The Lowe's store grand opening sale was scheduled on April 28th. To identify the effect of this sale event on traffic counts collected at the study intersections, additional traffic counts were collected at the Lowe's store driveways on April 27th (non-sale day) and April 28th (sale day). Driveway counts collected on the sale and non-sale days were similar, suggesting that the sale event did not have a substantial increase in the traffic along Nimitz Highway and other nearby streets. Hence, no adjustment factors, to account for the Lowe's store sale, were applied to the turning movement counts collected at the study intersections.

Existing peak hour traffic volumes and lane geometries at the study intersections are summarized in **Figure 2-1.** Traffic counts collected during the peak periods, including Lowe's driveway counts, are included in **Appendix B**.

2.3.3 Intersection Operations

Using the turning movement volumes shown in **Figure 2-1**, existing intersection operating conditions were analyzed for the six study intersections. Intersection operations during the existing AM peak hour are shown in **Table 2-2**, while those during the existing PM peak hour are exhibited in **Table 2-3**.

Table 2-2: Existing AM Peak Hour Intersection Operations

#	Intersection	Traffic Control	Delay (sec)	V/C Ratio [2]	LOS
1	Nimitz Highway/Alakawa Street	Signal	36.4	0.91	D
2	Nimitz Highway/Japan Food Access Way/Lowe's Driveway	TWSC [1]	24.9 (WBR)	0.31 (WBR)	C
3	EB Nimitz Highway/Pier 33 Access Way	TWSC	102.9 (SBT)	0.12 (SBT)	**F**
4	EB Nimitz Highway/Pacific Street	Signal	31.5	0.92	C
5	WB Nimitz Highway/Pacific Street	Signal	13.9	0.50	B
6	EB Nimitz Highway/Kukahi Street	TWSC	62.1 (SBT)	0.16 (SBT)	**F**

Notes:
1. TWSC – Two-way stop-control.
2. V/C Ratio – Volume-to-Capacity Ratio
WBR – westbound right-turn, SBT – southbound through.
Delay, LOS, and v/c ratio values are presented for the worst operating movement at a two-way stop-controlled intersection.
Bold indicates intersection is operating at LOS E or F.

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Figure 2-1 **Intersection Volumes and Geometrics - Existing Conditions**

Table 2-3: Existing PM Peak Hour Intersection Operations

#	Intersection	Traffic Control	Delay (sec)	V/C Ratio [2]	LOS
1	Nimitz Highway/Alakawa Street	Signal	57.7	0.98	**E**
2	Nimitz Highway/Japan Food Access Way/Lowe's Driveway	TWSC [1]	67.9 (WBR)	0.80 (WBR)	**F**
3	EB Nimitz Highway/Pier 33 Access Way	TWSC	49.9 (SBT)	0.03 (SBT)	**E**
4	EB Nimitz Highway/Pacific Street	Signal	26.2	0.84	C
5	WB Nimitz Highway/Pacific Street	Signal	15.0	0.69	B
6	EB Nimitz Highway/Kukahi Street	TWSC	13.5 (SBL)	0.17 (SBL)	B

Notes:
1. TWSC – Two-way stop-control.
2. V/C Ratio – Volume-to-Capacity Ratio
WBR – westbound right-turn, SBT – southbound through, SBL – southbound left-turn.
Delay, LOS, and v/c ratio values are presented for the worst operating movement at a two-way stop-controlled intersection.
Bold indicates intersection is operating at LOS E or F.

During the existing AM peak hour, all study intersections operate at LOS D or better, except the Eastbound Nimitz Highway/Pier 33 Access Way and Eastbound Nimitz Highway/Kukahi Street intersections. The southbound through movement of the Eastbound Nimitz Highway/Pier 33 Access Way intersection operates at LOS F, with a volume-to-capacity ratio (v/c ratio) of 0.12 and an average vehicle delay of about 103 seconds. Similarly, the southbound through movement of the Eastbound Nimitz Highway/Kukahi Street intersection operates at LOS F, with a volume-to-capacity ratio (v/c ratio) of 0.16 and an average vehicle delay of about 62 seconds.

During the existing PM peak hour, three of the six study intersections (Nimitz Highway/Alakawa Street, Nimitz Highway/Japan Food Access Way/Lowe's Driveway, and Eastbound Nimitz Highway/Pier 33 Access Way) operate at LOS E or F. The Nimitz Highway/Alakawa Street intersection operates at LOS E, with a v/c ratio of 0.98 and an average vehicle delay of about 58 seconds. The westbound right-turn movement at the Nimitz Highway/Japan Food Access Way/Lowe's Driveway intersection operates at LOS F (v/c ratio - 0.80 and approximate average vehicle delay - 68 seconds), while the southbound through movement for the Eastbound Nimitz Highway/Pier 33 Access Way intersection operates at LOS E (v/c ratio - 0.03 and approximate average vehicle delay - 50 seconds). The remaining three intersections, Eastbound Nimitz Highway/Pacific Street, Westbound Nimitz Highway/Pacific Street, and Eastbound Nimitz Highway/Kukahi Street operate at LOS C or better.

Relevant Synchro outputs and calculations are included in **Appendix C**.

SimTraffic simulations were conducted to estimate the existing queue lengths within the study area during both the AM and PM peak hours. The AM and PM peak hour queuing analysis results are included in **Tables 2-4** and **2-5**.

Table 2-4: Existing AM Peak Hour Queuing Analysis

#	Intersection	Eastbound Approach L	Eastbound Approach T	Eastbound Approach R	Westbound Approach L	Westbound Approach T	Westbound Approach R	Northbound Approach L	Northbound Approach T	Northbound Approach R	Southbound Approach L	Southbound Approach T	Southbound Approach R
1	Nimitz Highway/Alakawa Street	From Pier 34			Alakawa Street			Nimitz Highway			Nimitz Highway		
	Average queue length	74	74	12	158	184	118	-	390	132	106	626	641
	95th percentile queue length	162	162	70	319	358	305	-	719	373	254	**970**	**970**
	Approximate available storage length	350	350	100	>1500	>1500	425	-	>1000	400	500	950	950
2	Nimitz Highway/Japan Food Access Way/ Lowe's Driveway	Japan Food Access Way			Lowe's Store Driveway			Nimitz Highway			Nimitz Highway		
	Average queue length	-	-	2	-	-	48	-	68	3	-	299	297
	95th percentile queue length	-	-	21	-	-	95	-	206	42	-	**754**	**748**
	Approximate available storage length	-	-	600	-	-	100	-	>1000	250	-	700	700
3	EB Nimitz Highway/Pier 33 Access Way	Nimitz Highway			Nimitz Highway			Pier 33 Access Way					
	Average queue length	-	284	284	-	-	-	-	-	85	7	5	-
	95th percentile queue length	-	576	581	-	-	-	-	-	240	30	23	-
	Approximate available storage length	-	750	750	-	-	-	-	-	550	50	100	-
4	EB Nimitz Highway/Pacific Street	Nimitz Highway			Nimitz Highway			Pacific Street			Pacific Street		
	Average queue length	730	733	737	-	-	-	-	26	26	76	25	-
	95th percentile queue length	**945**	**953**	**928**	-	-	-	-	75	75	138	71	-
	Approximate available storage length	800	800	800	-	-	-	-	500	500	150	150	-
5	WB Nimitz Highway/Pacific Street	Nimitz Highway			Nimitz Highway			Pacific Street			Pacific Street		
	Average queue length	-	-	-	113	228	99	**151**	59	-	-	22	<200
	95th percentile queue length	-	-	-	204	324	208	**180**	**155**	-	-	56	<200
	Approximate available storage length	-	-	-	800	800	800	150	150	-	-	300	200
6	EB Nimitz Highway/Kukahi Street	Nimitz Highway			Nimitz Highway			Kukahi Street			Kukahi Street		
	Average queue length	-	73	34	-	-	-	-	-	9	12	9	-
	95th percentile queue length	-	457	180	-	-	-	-	-	31	37	36	-
	Approximate available storage length	-	800	800	-	-	-	-	-	300	200	200	-

Notes:
1. All queue and storage lengths are in feet.
L – Left-turn movement, T – Through movement, R – Right-turn movement
Bold represents queue length exceeding the available storage capacity.

Table 2-5: Existing PM Peak Hour Queuing Analysis

#	Intersection	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach		
		L	T	R	L	T	R	L	T	R	L	T	R
1	Nimitz Highway/Alakawa Street	From Pier 34			Alakawa Street			Nimitz Highway			Nimitz Highway		
	Average queue length	51	51	4	316	735	427	21	537	248	219	640	641
	95th percentile queue length	117	117	39	757	1258	**517**	70	824	**483**	419	**1027**	**1008**
	Approximate available storage length	350	350	100	>1500	>1500	425	220	>1000	400	500	950	950
2	Nimitz Highway/Japan Food Access Way/ Lowe's Driveway	Japan Food Access Way			Lowe's Store Driveway			Nimitz Highway			Nimitz Highway		
	Average queue length	-	-	19	-	-	101	-	160	35	-	45	32
	95th percentile queue length	-	-	67	-	-	121	-	312	162	-	171	135
	Approximate available storage length	-	-	600	-	-	100	-	>1000	250	-	700	700
3	EB Nimitz Highway/Pier 33 Access Way	Nimitz Highway			Nimitz Highway			Pier 33 Access Way					
	Average queue length	-	18	9	-	-	-	-	-	10	18	3	-
	95th percentile queue length	-	98	52	-	-	-	-	-	34	49	17	-
	Approximate available storage length	-	750	750	-	-	-	-	-	550	50	100	-
4	EB Nimitz Highway/Pacific Street	Nimitz Highway			Nimitz Highway			Pacific Street			Pacific Street		
	Average queue length	393	381	393	-	-	-	-	47	47	113	3	-
	95th percentile queue length	709	688	623	-	-	-	-	124	124	**182**	15	-
	Approximate available storage length	800	800	800	-	-	-	-	500	500	150	150	-
5	WB Nimitz Highway/Pacific Street	Nimitz Highway			Nimitz Highway			Pacific Street			Pacific Street		
	Average queue length	-	-	-	215	416	484	142	41	-	-	77	<200
	95th percentile queue length	-	-	-	360	617	676	**187**	134	-	-	163	<200
	Approximate available storage length	-	-	-	800	800	800	150	150	-	-	300	200
6	EB Nimitz Highway/Kukahi Street	Nimitz Highway			Nimitz Highway			Kukahi Street			Kukahi Street		
	Average queue length	-	49	18	-	-	-	-	-	3	26	-	-
	95th percentile queue length	-	367	94	-	-	-	-	-	14	57	-	-
	Approximate available storage length	-	800	800	-	-	-	-	-	300	200	200	-

Notes:
1. All queue and storage lengths are in feet.
L – Left-turn movement, T – Through movement, R – Right-turn movement
Bold represents queue length exceeding the available storage capacity.

The peak hour queuing analysis indicates that queues at the study intersections, in general, do not exceed the available storage lengths.

During the AM peak hour, 95^{th} percentile queue lengths of through movements along eastbound Nimitz Highway exceed the available storage capacities at Alakawa Street, Japan Food Access Way, and eastbound Pacific Street. This is expected, as inbound (eastbound) Nimitz Highway experiences high traffic volumes during the AM peak hour. Additionally, 95^{th} percentile queue lengths of left-turn and through movements along northbound Pacific Street exceed the available storage capacity at outbound (westbound) Nimitz Highway. This can be explained due to the small storage lengths available for these turning movements.

During the PM peak hour, 95^{th} percentile queue lengths of through movement along inbound (eastbound) Nimitz Highway exceed the available storage capacity at Alakawa Street. While volumes along inbound Nimitz Highway are lower than along outbound Nimitz Highway during the PM peak hour, the absence of a contraflow lane in the PM peak hour results in reduced corridor capacity; hence, resultant queues develop. In addition, 95^{th} percentile queue lengths of right-turn movements along Alakawa Street and outbound Nimitz Highway exceed their available storage capacities at the Nimitz Highway/Alakawa Street intersection. This is expected due to heavy traffic along outbound Nimitz Highway during the PM peak period. Also, 95^{th} percentile queue lengths of left-turn movements from northbound Pacific Street to westbound Nimitz Highway and southbound Pacific Street to eastbound Nimitz Highway exceed their available storage capacities. As mentioned earlier, this can be explained due to the small storage lengths available for these turning movements.

SimTraffic outputs under Existing Conditions are included in **Appendix D**.

2.4 Parking Conditions

The project site is currently served by several off-street parking lots that front the existing Hawaii Stevedores facility. A small 15-space parking lot is located directly in front of the building; it contains two (2) handicapped parking spaces. A larger parking lot of 47 marked spaces is located along Pier 34 and Honolulu Harbor along the side of the building; toward the rear and side of the project site away from Nimitz Highway, an unmarked paved area continues from the parking lot. Large trucks and trailers are parked at this location. The 15-space parking lot primarily serves visitors to the project site. The 47-space parking lot is restricted to employees and permitted visitors who have parking permits.

Occupancy counts indicated that 29 and 27 on-site parking spaces were occupied during the AM and PM peak periods, respectively. This indicates that the existing parking supply is sufficient to handle the current parking demand at the project site.

No on-street parking is available in the vicinity of the project site.

2.5 Transit Conditions

The City and County of Honolulu provides TheBus fixed-route transit service on the entire island of Oahu. TheBus provides suburban commute and local routes, urban local routes, and express commuter routes. TheBus operates two lines that serve the project site and its immediate vicinity; these are as follows:

- **Route 19 –** This local route operates between Hickam Air Force Base and Honolulu Zoo, via Waikiki, downtown Honolulu, Kalihi, and Honolulu International Airport. Service is provided between 4:45 AM and 12:00 AM at approximately 30 to 40 minute intervals on weekdays and 30 to 50 minute intervals on weekends. The closest transit stop near the project site is located along Nimitz Highway at Alakawa Street.

- **Route 20 –** This local route operates between Pearlridge Shopping Center and Honolulu Zoo, via Waikiki, downtown Honolulu, Kalihi, and Honolulu International Airport. Service is provided from 5:15 AM to 6:15 PM at approximately 40 minute intervals during the weekday, and from 5:45 AM to 5:45 PM, at approximately 50 minute intervals during the weekend. The closest transit stop near the project site is located along Nimitz Highway at Alakawa Street.

Service frequencies of TheBus routes serving the project site are provided in **Table 2-6**.

Table 2-6: Existing Transit Service Nearby the Project Site

Route	Service Type	Weekday Frequency (minutes)	Weekend Frequency (minutes)	Hours of Operation	Streets Served Near Project Site
19	Local	30-40	30-50	4:45 AM – 12:00 AM[1] 5:25 AM – 12:00 AM[2]	Nimitz Highway, Pacific Street, Iwilei Road
20	Local	40	50	5:15 AM – 6:15 PM[1] 5:45 AM – 5:45 PM[2]	Nimitz Highway, Pacific Street, Iwilei Road

Source: TheBus – 2011
Notes:
1. Weekday operations
2. Weekend operations

The project site is also located approximately 0.8 miles west of downtown Honolulu, which is served by up to 24 TheBus routes.

2.6 Pedestrian Conditions

Within the study area, pedestrian facilities are provided along the majority of the roadways. These facilities include sidewalks, marked crosswalks, warning signs at pedestrian crosswalks, and pedestrian countdown timers at signalized intersections.

Along Nimitz Highway, sidewalks and a number of mid-intersection crosswalks are provided for pedestrians. Mid-intersection crosswalks along the Nimitz Highway corridor are properly marked and appropriate signage is provided to warn for the presence of pedestrians. While heavy traffic along Nimitz Highway is a deterrent to the usage of these crosswalks, the presence of traffic signals upstream of these crosswalks effectively meter and provide crossing time relief for pedestrians to cross Nimitz Highway with little difficulty.

In general, pedestrian activity within the study area is low. This is due to the type of land uses neighboring the project site, which are primarily industrial and large commercial shopping facilities. Due to the absence of residential developments in the neighborhoods, users of these land uses typically arrive by private vehicle and/or public transportation.

2.7 Bicycle Conditions

Bicycle facilities are provided along parts of the study area. As part of the City of Honolulu's bicycle route network, Nimitz Highway has a marked bicycle lane in both the inbound and outbound directions.

Bicycle activity along Nimitz Highway is low. Most land uses in the vicinity of the project site do not provide bicycle racks or amenities. Within the project site, no bicycle facilities were observed.

Chapter 3 Travel Demand Estimation

Travel demand refers to new vehicle, transit, pedestrian and other trips that would be generated by the proposed project. This chapter discusses the trip generation, trip distribution, mode split, and trip assignment associated with the proposed project.

3.1 Project Trip Generation

Trip generation for the proposed project was estimated based on the information provided by UHMC, including the number of personnel who would be transferred to the proposed project site and peak period vehicle trips to/from the existing UHMC site located at Snug Harbor, and mode split of those existing peak period trips. The information provided by UHMC is as follows:

- All personnel located at the existing UHMC site will be relocated to the proposed project site at Piers 34/35;
- The core number of personnel at the UHMC site is 56; however, the number of personnel varies between 71 and 139, depending on the number of UHMC ships docked at the piers;
- Of the 139 UHMC personnel accessing the UHMC site, about 85 personnel travel by vehicles, 30 personnel travel by transit, 5 personnel travel by bicycle, and the remaining 25 to 30 personnel stay onboard the ships;
- The number of personnel vehicles accessing the project site would vary as follows – about 50 vehicles for one-third of a year, about 60 vehicles for another one-third of a year, and about 85 vehicles for the remainder of the year;
- The core working hours of UHMC personnel is from 8 AM to 2 PM; however, due to flextime, personnel arrive anytime from 6 AM to 8 AM and depart anytime from 2:30 PM to 4:30 PM; and
- Approximately one delivery truck per hour or about eight delivery trucks per day would access the UHMC site.

To be conservative, project trip generation was developed based on the following assumptions:

- Maximum number of UHMC personnel and their vehicles access the project site; and
- One inbound and outbound trip for delivery trucks occurs during the AM and PM peak hours.

Table 3-1 exhibits the trips that would be generated by the proposed project during the AM and PM peak hours of neighboring street traffic.

Table 3-1: Project Trip Generation

Type of Vehicle	Total Number	Total Number of Trips				
		Daily	AM Peak Hour		PM Peak Hour	
			Inbound	Outbound	Inbound	Outbound
Personnel vehicle	85	170	43	0	0	21
Delivery truck	8	16	1	1	1	1
Total	93	186	44	1	1	22

Source: UHMC, Wilbur Smith Associates - May 2011

The proposed project would generate a total of 186 daily vehicle trips. During the AM peak hour, the proposed project would have 44 inbound trips and 1 outbound trip, while during the PM peak hour it would have 1 inbound trip and 22 outbound trips. Based on traffic counts, the AM and PM peak hours of neighboring street traffic were identified to be from 6:45 AM to 7:45 AM and 4:30 PM to 5:30 PM. Since the UHMC personnel arrival times extend from 6 AM to 8 AM, it was estimated that 50 percent of those personnel would access the project site during the AM peak hour (from 6:45 AM to 7:45 AM). Even though UHMC personnel departure times typically extend only until 4:30 PM, to be conservative it was assumed that 25 percent of UHMC personnel would depart during the PM peak hour (from 4:30 PM to 5:30 PM).

Additionally, the proposed project would generate about 30 transit-based trips and 5 bicycle-based trips during each of the AM and PM peak hours.

3.2 Project Trip Distribution and Assignment

To identify the trip distribution of employees at the proposed UHMC site, an approximate trip distribution of employees at the existing UHMC facility was obtained from UHMC. The following project trip distribution was developed based on the UHMC employee information:

- To/from North (East Oahu, Kaneohe, and Kailua) – 38%
- To/from East (Honolulu) – 31%
- To/from West (Aiea, Waianae, and Ewa Beach) – 31%

As part of the contra-flow lanes operating along Nimitz Highway during the AM peak period, the northbound left–turn movement from outbound Nimitz Highway to Pier 35 Driveway is prohibited at the Nimitz Highway/Alakawa Street intersection. As such, trip assignment for UHMC employees within the neighboring circulation network would vary during the AM and PM peak periods. **Figures 3-1** and **3-2** exhibit the expected trip assignment of inbound and outbound project-related trips during the AM and PM peak hours.

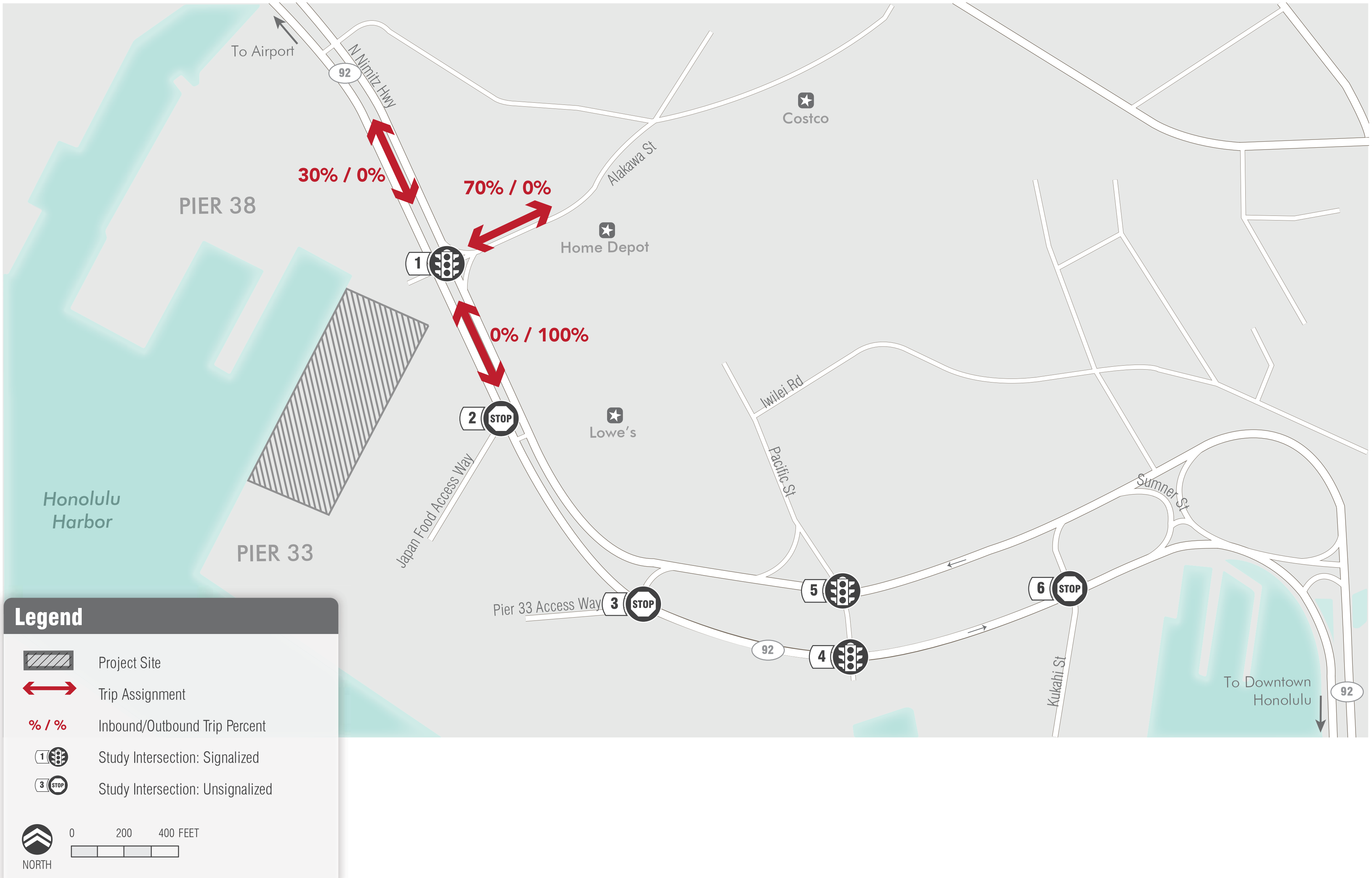

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Figure 3-1 **Project Trip Assignment - AM Peak Hour**

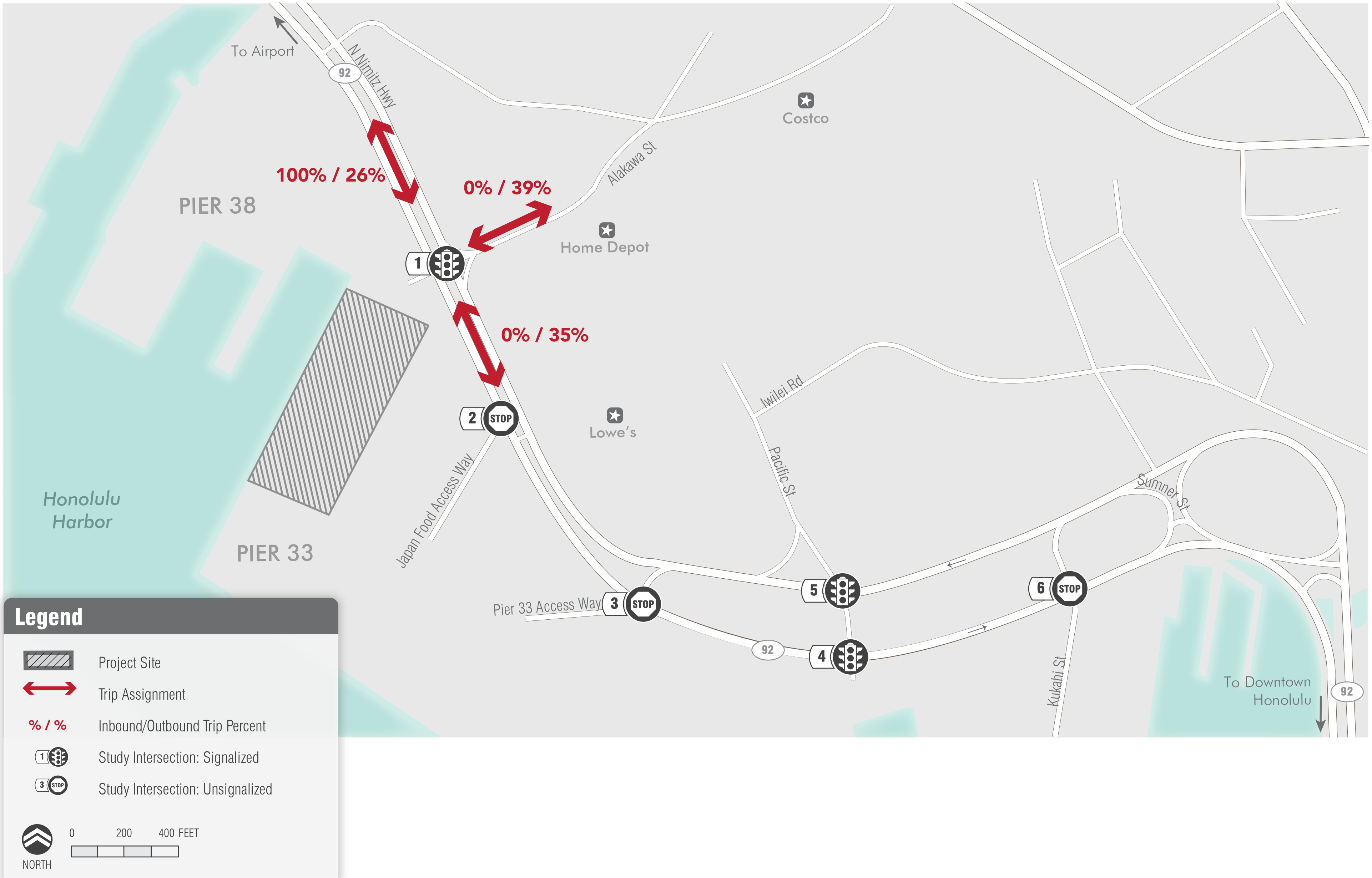

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Figure 3-2 **Project Trip Assignment - PM Peak Hour**

3.3 Parking Demand

The project-generated parking demand was determined based on the information provided by UHMC. In addition to personnel vehicles, UHMC-owned vehicles (one van, one car, and one pickup truck) would be parked at the project site when not in use. **Table 3-2** shows the expected parking demand at the project site.

Table 3-2: Project Parking Demand – Weekday Conditions

Category	Parking Demand
UHMC personnel	85
UHMC owned vehicles	3
Total	**88**

The proposed project would have a parking demand of 88 parking spaces, 85 spaces for UHMC personnel and 3 spaces for UHMC-owned vehicles.

Chapter 4 Existing plus Project Conditions

The following chapter describes the traffic operations of the study area under Existing plus Project Conditions.

4.1 Thresholds of Evaluation

Currently, since neither the City and County of Honolulu nor the State of Hawaii have established guidelines or standards of significance to identify transportation impacts associated with a project, the following LOS thresholds criteria, as reviewed and approved by HDOT, was used to determine the project-related transportation impacts in this study. A project-related transportation impact at an intersection was considered substantial if the proposed project would result in any of the following:

1. Deterioration of an intersection from LOS D or better to LOS E or F under project conditions;
2. Increasing the v/c ratio of an intersection operating at LOS E or F by more than 10 percent; or
3. Satisfying the peak hour signal warrant criteria due to the addition of project traffic.

The technical memorandum detailing the thresholds of evaluation to identify project-related transportation impacts that was reviewed and approved by HDOT for use in this study is included in **Appendix A**.

4.2 Evaluation of Exit Routes for Pasha Auto Vehicles

Currently, Pasha Auto vehicles use the secured gate located at the intersection of Nimitz Highway and Alakawa Street, via the access way fronting Piers 34/35 for their egress activities from their loading/ unloading dock at Pier 33. The relocation of UHMC to the project site would close the access way located in front of Piers 34/35; hence, alternate routes were evaluated to identify the best exit route for Pasha Auto vehicles.

Based on the Basis of Design Report, prepared by AECOM in May 2009 for the UHMC Relocation project (herein referred to as the Basis of Design Report), the following two preliminary options were proposed as potential alternative exit routes for the Pasha Auto vehicles:

- Alternative 1 – Proposed easement area located between the planned UHMC building and current Honolulu Freight Services buildings; and
- Alternative 2 – Pier 33 Access Way.

The proposed alternative exit routes, along with the existing egress route for Pasha Auto vehicles are shown in **Figure 4-1**.

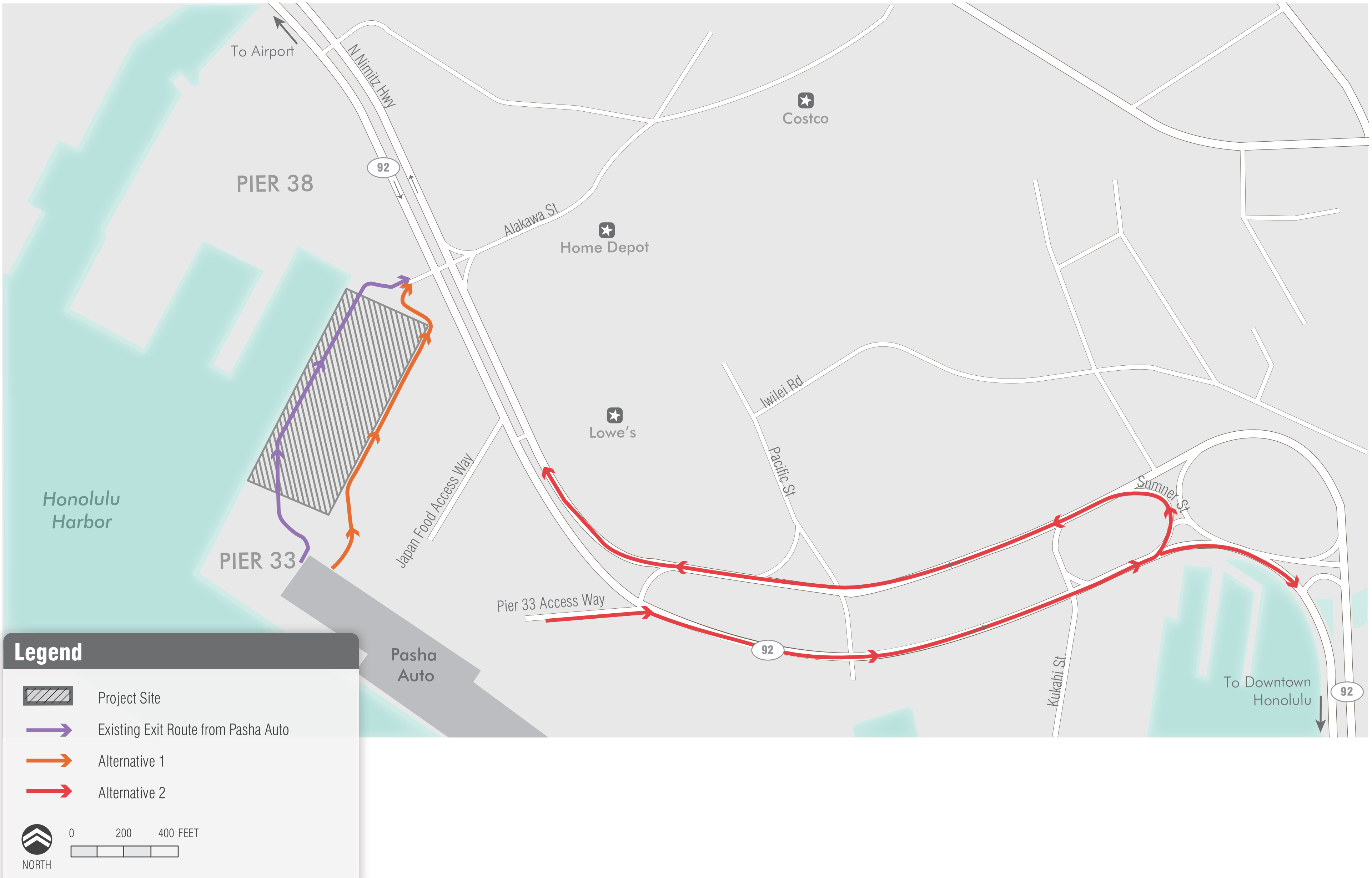

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Figure 4-1 **Proposed Alternatives for Pasha Vehicle Exit Routes**

Of the two alternatives, Alternative 1 is nearer to the existing Pasha Auto egress route. It is proposed to be located between the project site and Honolulu Freight Services building, along a strip of existing asphalt which is currently used by Honolulu Freight Services for employee parking and to provide access to/from loading areas located at the rear end of their site. As part of this alternative, the existing employee parking lot located along this route is proposed to be relocated. North of the employee parking lot, the proposed easement would connect back to the secured gate located at the Nimitz Highway/Alakawa Street intersection. However, this alternative poses three major issues for vehicular travel as follows:

- It has narrow width between the project site and current Honolulu Freight Services building;
- It has a sharp left-turn at the northeast corner of the proposed project site; and
- It has a sharp right-turn just south of the Nimitz Highway/Alakawa Street intersection.

According to Pasha Auto, a WB-62 design truck is the largest vehicle that typically accesses their site. The WB-62 truck is a 48-foot-long trailer attached to a standard truck cab, totaling 62 feet for the wheelbase. To determine the feasibility of Alternative 1 in accommodating a WB-62 truck, analysis was conducted using AutoTurn software. AutoTurn is a CAD-based program that is used to evaluate vehicle maneuvers based on vehicle swept path analysis. According to this analysis, Alternative 1 does not have sufficient right-of-way to handle a WB-62 truck. While the width of the proposed easement is sufficient to accommodate a WB-62 truck throughout the length of the corridor, the proposed easement area is not wide enough to perform the sharp right-turn at the Nimitz Highway/Alakawa Street intersection, immediately after performing the sharp left-turn at the northeast corner of the proposed project site.

According to Alternative 2, Pasha Auto vehicles would egress using the Eastbound Nimitz Highway/Pier 33 Access Way intersection, via Pier 33 Access Way. Since only a right-turn is permitted from Pier 33 Access Way to Eastbound Nimitz Highway, vehicles bound towards north and west Oahu would have to perform a U-turn at Sumner Street to access westbound Nimitz Highway. Currently, inbound vehicles access the Pasha Auto's loading/unloading dock using this intersection. Similar to Alternative 1, AutoTurn analysis was performed for Alternative 2 to identify the feasibility of a WB-62 truck to perform the following turning maneuvers:

- Right-turn from Pier 33 Access Way to eastbound Nimitz Highway;
- U-turn from eastbound Nimitz Highway to westbound Nimitz Highway at Sumner Street; and
- Right-turn from eastbound Nimitz Highway to Pier 33 Access Way.

According to AutoTurn analysis, a WB-62 truck can perform all of the three turning maneuvers mentioned above; however, while performing the right-turn from eastbound Nimitz Highway to Pier 33 Access Way, a WB-62 truck would sweep through the outbound lane along Pier 33 Access Way. Additionally, large trucks were observed to perform the three maneuvers mentioned above in the field. Therefore, Alternative 2 was identified as the most suitable exit route for Pasha Auto vehicles, since it posed no operational and right-of-way issues for egressing vehicles from Pasha Auto.

AutoTurn software outputs for both alternatives are included in **Appendix E**.

4.3 Intersection Operations

The proposed project would result in 44 inbound vehicle trips and 1 outbound vehicle trip during the weekday AM peak hour, and 1 inbound vehicle trip and 22 outbound vehicle trips during the weekday PM peak hour. In total, 78 project-related vehicle trips would be generated during both peak hours.

The proposed peak hour project-related trips were distributed to the study area using the trip distribution and assignment discussed in Section 3.2. Additionally, outbound vehicle trips associated with the Pasha Auto traffic were redistributed using the alternate exit route recommended as part of Alternative 2. The changes in traffic volumes at the study intersections associated with the proposed project are exhibited in **Figure 4-2.** Traffic volumes shown in **Figure 4-2** were then added to the existing intersection volumes to obtain traffic volumes at the study intersections under Existing plus Project Conditions. The AM and PM peak hour intersection volumes under Existing plus Project Conditions are exhibited in **Figure 4-3**.

A comparison of the intersection operations under Existing and Existing plus Project conditions during the AM and PM peak hours are presented in **Tables 4-1** and **4-2**.

Table 4-1: Comparison of Intersection Operations – AM Peak Hour

#	Intersection	Existing			Existing plus Project			% Increase in V/C Ratio	Project Impact?
		Delay (sec)	V/C Ratio[1]	LOS	Delay (sec)	V/C Ratio	LOS		
1	Nimitz Highway/Alakawa Street	36.4	0.91	D	33.4	0.90	C	0%	No
2	Nimitz Highway/Japan Food Access Way/Lowe's Driveway	24.9 (WBR)[2]	0.31 (WBR)	C	25.5 (WBR)[2]	0.32 (WBR)	D	3%	No
3	EB Nimitz Highway/Pier 33 Access Way	102.9 (SBT)[3]	0.12 (SBT)	**F**	101.8 (SBT)[3]	0.12 (SBT)	**F**	0%	No
		32.4 (NBR)[4]	0.14 (NBR)	D	49.1 (NBR)[4]	0.49 (NBR)	**E**	71%	Yes
4	EB Nimitz Highway/Pacific Street	31.5	0.92	C	30.9	0.92	C	0%	No
5	WB Nimitz Highway/Pacific Street	13.9	0.50	B	13.9	0.51	B	2%	No
6	EB Nimitz Highway/Kukahi Street	62.1 (SBT)[2]	0.16 (SBT)	**F**	70.3 (SBT)[2]	0.17 (SBT)	**F**	6%	No

Notes:
1. V/C Ratio – Volume-to-Capacity Ratio
2. Represents the worst operating and most affected movement.
3. Represents the worst operating movement.
4. Represents the most affected movement.

WBR – westbound right-turn, NBR – northbound right-turn, SBT – southbound through.
Delay, LOS, and v/c ratio values are presented for the worst operating and most affected movements at a two-way stop-controlled intersection.
Bold indicates intersection is operating at LOS E or F.

Figure 4-2 **Net Change in Intersection Volumes due to the Proposed Project**

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Figure 4-3 **Intersection Volumes - Existing plus Project Conditions**

Table 4-2: Comparison of Intersection Operations – PM Peak Hour

#	Intersection	Existing			Existing plus Project			% Increase in V/C Ratio	Project Impact?
		Delay (sec)	V/C Ratio[1]	LOS	Delay (sec)	V/C Ratio	LOS		
1	Nimitz Highway/Alakawa Street	57.7	0.98	**E**	59.6	1.00	**E**	1%	No
2	Nimitz Highway/Japan Food Access Way/Lowe's Driveway	67.9 (WBR)[2]	0.80 (WBR)	**F**	68.6 (WBR)[2]	0.80 (WBR)	**F**	0%	No
3	EB Nimitz Highway/Pier 33 Access Way	49.9 (SBT)[3]	0.03 (SBT)	**E**	50.0 (SBT)[3]	0.03 (SBT)	**E**	0%	No
		21.2 (NBR)[4]	0.05 (NBR)	C	22.3 (NBR)[4]	0.11 (NBR)	C	120%	No
4	EB Nimitz Highway/Pacific Street	26.2	0.84	C	27.0	0.84	C	0%	No
5	WB Nimitz Highway/Pacific Street	15.0	0.69	B	15.0	0.70	B	1%	No
6	EB Nimitz Highway/Kukahi Street	13.5 (SBL)[2]	0.17 (SBL)	B	13.6 (SBL)[2]	0.17 (SBL)	B	0%	No

Notes:
1. V/C Ratio – Volume-to-Capacity Ratio
2. Represents the worst operating and most affected movement.
3. Represents the worst operating movement.
4. Represents the most affected movement.
WBR – westbound right-turn, NBR – northbound right-turn, SBL – southbound left-turn.
Delay, LOS, and v/c ratio values are presented for the worst operating and most affected movements at a two-way stop-controlled intersection.
Bold indicates intersection is operating at LOS E or F.

Similar to Existing Conditions, all study intersections would continue to operate at LOS D or better during the AM peak hour of Existing plus Project Conditions, except for the Eastbound Nimitz Highway/Pier 33 Access Way and Eastbound Nimitz Highway/Kukahi Street intersections. The southbound through movement for the Eastbound Nimitz Highway/Kukahi Street intersection continues to operate at LOS F, with a v/c ratio of 0.17 and an approximate average vehicle delay of about 70 seconds. Since the increase in v/c ratio at this intersection under Existing plus Project Conditions would be less than 10 percent, the proposed project is not considered to cause a substantial impact to the operations of this intersection. Also, the southbound through movement of the Eastbound Nimitz Highway/Pier 33 Access Way intersection would continue to operate at LOS F, with a v/c ratio of 0.12 and an approximate average vehicle delay of about 103 seconds. However, due to the addition of outbound Pasha Auto traffic, the northbound right-turn movement at this intersection would worsen from LOS D (v/c ratio – 0.14 and approximate average vehicle delay – 32 seconds) under Existing Conditions to LOS E (v/c ratio – 0.49 and approximate average vehicle delay – 49 seconds) under Existing plus Project Conditions. Since this movement would deteriorate from LOS D to LOS E under Existing plus Project Conditions, the proposed project would be considered to cause a substantial impact to the northbound right-turn movement at this intersection during the AM peak hour.

During the PM peak hour, all study intersections would continue to operate at the same LOS as under Existing Conditions. Three of the study intersections, the Nimitz Highway/Alakawa Street, Nimitz Highway/Japan Food Access Way/Lowe's Driveway, and Eastbound Nimitz Highway/Pier 33 Access Way intersections would operate at LOS E or worse under Existing plus Project Conditions; however, the average v/c ratios of the signalized intersection (Nimitz Highway/Alakawa Street) and the v/c ratios of the worst operating movements at the unsignalized intersections (Nimitz Highway/Japan Food Access Way/Lowe's Driveway and Eastbound Nimitz Highway/Pier 33 Access Way) would increase by less than 10 percent due to the proposed project. Even though the proposed project would increase the v/c ratio of the northbound right-turn movement at the Eastbound Nimitz Highway/Pier 33 Access Way intersection by more than 10 percent, this movement would continue to operate at LOS C under Existing plus Project Conditions. As a result, the proposed project would not cause a substantial impact to operating conditions of any of the study intersections during the PM peak hour.

The relevant Synchro outputs for the study intersections are provided in **Appendix C**.

Similar to Existing Conditions, SimTraffic analysis was conducted under Existing plus Project Conditions to estimate queue lengths within the study area during both the AM and PM peak hours. Results of the queuing analysis under Existing plus Project Conditions are summarized in **Tables 4-3** and **4-4**.

Table 4-3: Existing plus Project AM Peak Hour Queuing Analysis

#	Intersection	Eastbound Approach			Westbound Approach			Northbound Approach			Southbound Approach		
		L	T	R	L	T	R	L	T	R	L	T	R
1	Nimitz Highway/Alakawa Street	From Pier 34			Alakawa Street			Nimitz Highway			Nimitz Highway		
	Average queue length	34	34	5	199	239	140	-	341	138	108	551	571
	95th percentile queue length	83	83	44	416	472	339	-	695	377	250	**958**	**961**
	Approximate available storage length	350	350	100	>1500	>1500	425	-	>1000	400	500	950	950
2	Nimitz Highway/Japan Food Access Way/ Lowe's Driveway	Japan Food Access Way			From Lowe's store			Nimitz Highway			Nimitz Highway		
	Average queue length	-	-	4	-	-	52	-	59	7	-	229	222
	95th percentile queue length	-	-	29	-	-	103	-	193	68	-	674	665
	Approximate available storage length	-	-	600	-	-	100	-	>1000	250	-	700	700
3	EB Nimitz Highway/Pier 33 Access Way	Nimitz Highway			Nimitz Highway			Pier 33 Access Way					
	Average queue length	-	238	251	-	-	-	-	-	338	8	7	-
	95th percentile queue length	-	542	553	-	-	-	-	-	**643**	35	30	-
	Approximate available storage length	-	750	750	-	-	-	-	-	550	50	100	-
4	EB Nimitz Highway/Pacific Street	Nimitz Highway			Nimitz Highway			Pacific Street			Pacific Street		
	Average queue length	718	718	728	-	-	-	-	32	32	73	26	-
	95th percentile queue length	**956**	**956**	**917**	-	-	-	-	81	81	130	69	-
	Approximate available storage length	800	800	800	-	-	-	-	500	500	150	150	-
5	WB Nimitz Highway/Pacific Street	Nimitz Highway			Nimitz Highway			Pacific Street			Pacific Street		
-	Average queue length	-	-	-	109	226	97	**153**	62	-	-	20	<200
	95th percentile queue length	-	-	-	197	342	200	**183**	**158**	-	-	55	<200
	Approximate available storage length	-	-	-	800	800	800	150	150	-	-	300	200
6	EB Nimitz Highway/Kukahi Street	Nimitz Highway			Nimitz Highway			Kukahi Street			Kukahi Street		
	Average queue length	-	46	38	-	-	-	-	-	9	13	10	-
	95th percentile queue length	-	346	168	-	-	-	-	-	36	39	36	-
	Approximate available storage length	-	800	800	-	-	-	-	-	300	200	200	-

Notes:
1. All queue and storage lengths are in feet.
L – Left-turn movement, T – Through movement, R – Right-turn movement
Bold represents queue length exceeding the available storage capacity.

Table 4-4: Existing plus Project PM Peak Hour Queuing Analysis

#	Intersection	Eastbound Approach L	Eastbound Approach T	Eastbound Approach R	Westbound Approach L	Westbound Approach T	Westbound Approach R	Northbound Approach L	Northbound Approach T	Northbound Approach R	Southbound Approach L	Southbound Approach T	Southbound Approach R
1	Nimitz Highway/Alakawa Street	From Pier 34			Alakawa Street			Nimitz Highway			Nimitz Highway		
	Average queue length	62	62	8	352	738	431	19	536	243	224	632	637
	95th percentile queue length	132	132	56	886	1298	**506**	55	831	**471**	434	**1041**	**1037**
	Approximate available storage length	350	350	100	>1500	>1500	425	220	>1000	400	500	950	950
2	Nimitz Highway/Japan Food Access Way/ Lowe's Driveway	Japan Food Access Way			From Lowe's store			Nimitz Highway			Nimitz Highway		
	Average queue length	-	-	14	-	-	102	-	157	25	-	47	37
	95th percentile queue length	-	-	59	-	-	118	-	305	136	-	186	167
	Approximate available storage length	-	-	600	-	-	100	-	>1000	250	-	700	700
3	EB Nimitz Highway/Pier 33 Access Way	Nimitz Highway			Nimitz Highway			Pier 33 Access Way					
	Average queue length	-	25	13	-	-	-	-	-	18	20	4	-
	95th percentile queue length	-	121	63	-	-	-	-	-	54	54	19	-
	Approximate available storage length	-	750	750	-	-	-	-	-	550	50	100	-
4	EB Nimitz Highway/Pacific Street	Nimitz Highway			Nimitz Highway			Pacific Street			Pacific Street		
	Average queue length	395	381	400	-	-	-	-	62	62	108	2	-
	95th percentile queue length	736	701	645	-	-	-	-	184	184	**177**	15	-
	Approximate available storage length	800	800	800	-	-	-	-	500	500	150	150	-
5	WB Nimitz Highway/Pacific Street	Nimitz Highway			Nimitz Highway			Pacific Street			Pacific Street		
	Average queue length	-	-	-	186	389	451	140	39	-	-	75	<200
	95th percentile queue length	-	-	-	305	554	615	**188**	134	-	-	149	<200
	Approximate available storage length	-	-	-	800	800	800	150	150	-	-	300	200
6	EB Nimitz Highway/Kukahi Street	Nimitz Highway			Nimitz Highway			Kukahi Street			Kukahi Street		
	Average queue length	-	45	19	-	-	-	-	-	3	25	-	-
	95th percentile queue length	-	344	100	-	-	-	-	-	17	53	-	-
	Approximate available storage length	-	800	800	-	-	-	-	-	300	200	200	-

Notes:
1. All queue and storage lengths are in feet.
L – Left-turn movement, T – Through movement, R – Right-turn movement
Bold represents queue length exceeding the available storage capacity.

Similar to Existing Conditions, queues at the study intersections, in general, do not exceed the available storage capacities under Existing plus Project Conditions. Queuing analysis indicates that queue lengths at the study intersections would remain similar under Existing Conditions and Existing plus Project Conditions during both the AM and PM peak hours. The same movements that have their 95th percentile queue lengths greater than the available storage capacities under Existing Conditions would continue to have their queue lengths exceed the storage capacities under Existing plus Project Conditions, as well. Due to the redistribution of outbound Pasha Auto traffic to Pier 33 Access Way as part of the proposed project, the 95th percentile queue length of the right-turn movement from Pier 33 Access Way to eastbound Nimitz Highway would exceed the available storage capacity by about 90 feet during the AM peak hour. However, the average queue length of this movement would still be less than the available storage capacity. Therefore, the queue length would exceed the available storage capacity along Pier 33 Access Way only for about five percent of the time during the AM peak period. This issue would not occur during the PM peak period.

The SimTraffic queuing analysis outputs under Existing plus Project Conditions are included in **Appendix D**.

4.4 Parking Operations

Parking facilities at the project site would be modified as part of the proposed project. According to the Basis of Design Report, a fence would be constructed surrounding the project site to restrict vehicular movements within the property. As a result of these new security controls, on-site parking would be updated to provide 80 marked spaces within the fence for UHMC personnel. Additionally, seven (7) parking spaces would be provided in the public access way fronting UHMC for visitor use. This would result in a total of 87 marked on-site parking spaces for UHMC personnel and visitors.

As mentioned in Section 3.3, the maximum parking demand at the project site would be 88 parking spaces. Therefore, the maximum employee parking demand of 88 spaces would exceed the available employee parking supply (80 spaces) by a narrow margin. However, the additional demand of 8 spaces is expected to be absorbed by unmarked paved areas available within the project site. This is consistent with parking operations at the existing UHMC site. During maximum parking demand at the existing site, UHMC personnel park their vehicles at the unmarked paved areas available within the UHMC site. UHMC personnel would be expected to continue using these unmarked paved areas to park when no marked spaces are vacant. Additionally, the project site would have the maximum parking demand of 88 spaces only for about four months out of any given year. For the rest of the year, parking demand at the project site would vary between 53 and 63 spaces. During that period, parking supply provided at the project site would be sufficient to handle the parking demand.

Since all project-related vehicles would be able to park within the project site, the proposed project would not cause any parking impacts.

4.5 Transit Operations

As mentioned in Section 3.1, the proposed project would generate about 30 transit-based trips during the employee arrival (from 6:00 AM to 8:00 AM) and departure (from 2:30 PM to 4:30 PM) periods. During the morning arrival period, approximately 13 buses for TheBus Routes 19 and 20 serve the project site; whereas, during the evening departure period, about 12 buses for TheBus Routes 19 and 20 serve the project site. As such, the proposed project would result in less than five additional personnel trips per bus during the morning arrival and evening departure periods. Since the proposed project would add only a few trips per bus line, it would not cause any substantial impact to transit operations within the study area.

4.6 Pedestrian Operations

As mentioned in Section 3.1, the proposed project is not expected to generate any pedestrian-only trips. However, the proposed project would generate about 30 transit-based trips during the morning arrival and evening departure periods. These transit-based trips would convert to transit-based pedestrian trips in the vicinity of the project site, in order to access nearby transit stops. As such, the proposed project would result in about 30 transit-based pedestrian trips during the morning arrival and evening departure periods, or about 15 transit-based pedestrian trips during morning and evening peak hours.

As mentioned in Section 2.6, pedestrian activity is low within the study area during existing AM and PM peak periods. Also, the proposed project would generate only a few transit-based pedestrian trips during the morning and evening peak hours; therefore, the proposed project would not cause any substantial impacts to pedestrian operations within the study area.

4.7 Bicycle Operations

The proposed project would generate about five (5) bicycle-based trips during the morning arrival and evening departure peak periods. As mentioned in Section 2.7, bicycle activity is low within the study area under existing AM and PM peak periods. Also, the proposed project would generate only a few bicycle-based trips during the morning and evening peak hours; therefore, the proposed project would not cause any substantial impact to bicycle operations.

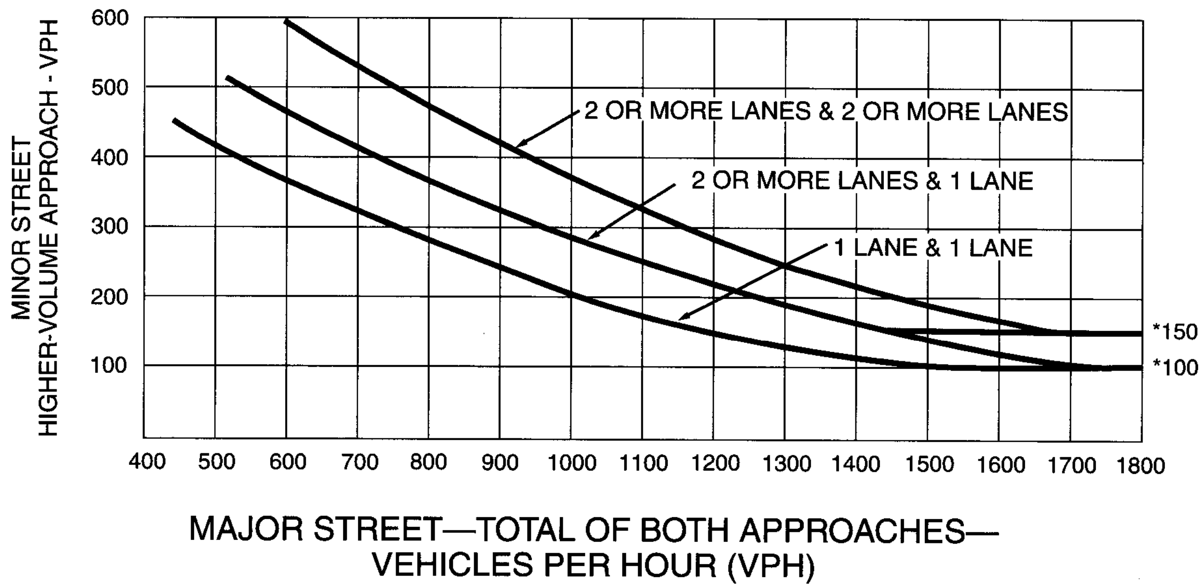
Chapter 5 Additional Transportation Analysis

5.1 Traffic Signal Warrant Analysis

Traffic signal warrant analysis is one of the criteria used to determine if an intersection should be signalized. To verify if the proposed project would warrant a traffic signal at any of the three unsignalized study intersections (Nimitz Highway/ Japan Food Access Way/ Lowe's Driveway, Eastbound Nimitz Highway/Pier 33 Access Way, and Eastbound Nimitz Highway/Kukahi Street), traffic signal warrant analysis was performed at those locations.

Using the methodology recommended by the Manual on Uniform Traffic Control Devices (MUTCD), 2009, Peak Hour signal warrant analysis was performed at the unsignalized study intersections. The schematic representation of the graph proposed by the MUTCD to conduct Peak Hour signal warrant analysis is shown in **Figure 5-1**.

Figure 5-1: Traffic Volumes to Satisfy Peak Hour Signal Warrant



*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Source: Manual on Uniform Traffic Control Devices, 2009

According to the MUTCD, a traffic signal is required at an intersection if the plotted point representing the traffic on the major street and the corresponding traffic on the higher-volume minor-street approach for one hour of an average day falls above the curve shown in **Figure 5-1** for the existing combination of approach lanes.

The results of the traffic signal warrant analysis are shown in **Table 5-1**, while the corresponding worksheets used to perform the signal warrant analysis are included in **Appendix F**.

Table 5-1: Traffic Signal Warrant Analysis under Existing plus Project Conditions

Study Intersection	Traffic Signal Warrant Satisfied?
Nimitz Highway/Japan Food Access Way/Lowe's Driveway	No
Eastbound Nimitz Highway/Pier 33 Access Way	No
Eastbound Nimitz Highway/Kukahi Street	No

Peak Hour signal warrant analysis suggests that none of the unsignalized study intersections satisfies the traffic signal warrant; thereby suggesting that a traffic signal is not warranted at any of these intersections under Existing plus Project Conditions.

5.2 Traffic Safety Analysis

The most recent collision data available from HDOT for the six study intersections is shown in **Table 5-2**. This collision data was obtained from the traffic safety study conducted by HDOT under its Highway Safety Improvement Program (HSIP) for the five-year period between 2004 and 2008.

Table 5-2: Collision Analysis of Study Intersections

Study Intersection	Category	2004	2005	2006	2007	2008	Total	Yearly Average
Nimitz Highway/Alakawa Street	Collisions	2	3	5	1	3	14	2.8
	Fatalities	0	0	0	0	0	0	0.0
Nimitz Highway/Japan Food Access Way/Lowe's Driveway	Collisions	0	0	0	0	2	2	0.4
	Fatalities	0	0	0	0	0	0	0.0
Eastbound Nimitz Highway/Pier 33 Access Way	Collisions	0	0	0	0	0	0	0.0
	Fatalities	0	0	0	0	0	0	0.0
Eastbound Nimitz Highway/Pacific Street	Collisions	5	0	2	0	0	7	1.4
	Fatalities	0	0	0	0	0	0	0.0
Westbound Nimitz Highway/Pacific Street	Collisions	4	9	6	1	2	22	4.4
	Fatalities	0	0	0	0	0	0	0.0
Eastbound Nimitz Highway/Kukahi Street	Collisions	0	0	0	0	1	1	0.2
	Fatalities	0	0	0	0	0	0	0.0
Total	Collisions	11	12	13	2	8	46	9.2
	Fatalities	0	0	0	0	0	0	0.0

Source: Hawaii Department of Transportation

A total of 46 collisions and zero (0) fatalities occurred within the study area from 2004 to 2008. Approximately 50 percent of the collisions occurred at the Westbound Nimitz Highway/Pacific Street intersection, 30 percent occurred at the Nimitz Highway/Alakawa Street intersection, 15 percent occurred at the Eastbound Nimitz Highway/Pacific Street intersection, and 5 percent occurred at the Nimitz Highway/Japan Food Access Way/Lowe's Driveway and Eastbound Nimitz Highway/Kukahi Street intersections. No collisions occurred at the intersection of Eastbound Nimitz Highway and Pier 33 Access Way. Hence, the majority of the collisions (about 95 percent) occurred at the signalized study intersections; very few or no collisions occurred at the unsignalized study intersections.

The type of collisions occurring at the signalized study intersections between 2004 and 2008 are provided in **Table 5-3**.

Table 5-3: Type of Collisions at Signalized Study Intersections between 2004 and 2008

	Number of Collisions			
Type of Collision	**Nimitz Hwy./ Alakawa St.**	**EB Nimitz Hwy./ Pacific St.**	**WB Nimitz Hwy./ Pacific St.**	**Total**
Collisions Involving Motor-Vehicles				
Head On	0	0	4	4
Read End	10	1	5	16
Sideswipe	1	0	1	2
Angle – Same Direction	1	0	0	1
Angle – Opposite Direction	0	0	5	5
Broadside	1	3	4	8
Collisions Not Involving Motor-Vehicles				
Collisions with Object	0	2	3	5
Collisions with Bicycle/Moped	1	1	0	2
Total	**14**	**7**	**22**	**43**

Source: Hawaii Department of Transportation

Of the 43 collisions occurring at the signalized study intersections, 36 collisions involved other motor vehicles, five (5) involved fixed objects, and two (2) involved bicycles or mopeds. Rear end and broadside collisions are the major type of the collisions involving other motor vehicles; they are responsible for about two-thirds of those collisions.

Collision analysis results for the study area indicate that the majority of the accidents occurred at signalized intersections. Additionally, broadside and rear end collisions are involved in about 65 percent of the accidents occurring at the signalized study intersections. This indicates that the accidents occurring at the study intersections are mostly due to high traffic volumes.

A summary of the percent increase in traffic at the study intersections during the AM and PM peak hours due to the proposed project is exhibited in **Table 5-4**.

Table 5-4: Increase in Traffic at Study Intersections due to the Proposed Project

Study Intersection	Existing Intersection Volumes		Increase in Traffic Due to Proposed Project [2]		Percent Increase in Traffic	
	AM [1]	PM [1]	AM	PM	AM	PM
Nimitz Highway/Alakawa Street	6,828	7,472	35	23	0.5%	0.3%
Nimitz Highway/Japan Food Access Way/Lowe's Driveway	6,524	7,094	17	13	0.3%	0.2%
Eastbound Nimitz Highway/Pier 33 Access Way	4,572	3,734	27	15	0.6%	0.4%
Eastbound Nimitz Highway/Pacific Street	4,721	3,932	27	15	0.6%	0.4%
Westbound Nimitz Highway/Pacific Street	2,369	3,609	26	7	1.1%	0.2%
Eastbound Nimitz Highway/Kukahi Street	4,349	3,705	27	15	0.6%	0.4%

Notes:
1. AM and PM represent AM and PM peak hours.
2. Includes variations in the number trips due to the relocation of UHMC site and redistribution of Pasha Auto traffic.

During the existing AM and PM peak hours, the proposed project would result in a negligible increase in traffic at the study intersections, by less than one (1) percent, except at the intersection of Westbound Nimitz Highway/ Pacific Street. At this location the proposed project would increase the traffic by about one (1) percent during the AM peak hour, although in the non-peak commute direction. Therefore, even though collision analysis suggests that the majority of the collisions at the study intersections are due to high traffic volumes, the proposed project would not have a substantial effect on the collision rates of those intersections, since it would only increase traffic volumes at those intersections by a negligible percentage.

5.3 Pedestrian Safety Analysis at Nimitz Highway/Alakawa Street Intersection

Field observations indicate that low-to-moderate pedestrian activity occurs at the intersection of Nimitz Highway and Alakawa Street during the midday peak period. This is due to its proximity to restaurants, fast-food centers, and retail outlets. Due to the absence of residential developments in the study area, the majority of the trips to/from the facilities located in the vicinity of this intersection would be auto-based during the morning and evening peak periods. As such, pedestrian activity at this intersection is low during the morning and evening peak periods.

Pedestrian facilities available at this intersection include approximately 10-foot-wide crosswalks at three locations, one across Nimitz Highway on the northwest side of the intersection and two across Alakawa Street on either side of Nimitz Highway. These crosswalks are clearly marked and have pedestrian countdown timers, with sufficient crossing time provided for each crosswalk. As such, adequate pedestrian facilities are provided at this intersection. Also, there are no sight obstructions at this intersection.

As shown in **Table 5-3**, the most recent collision data available at this intersection (from 2004 to 2008) indicates that there were no pedestrian-related collisions during the five-year period. Hence, even though high traffic volumes access the intersection of Nimitz Highway and Alakawa Street, pedestrian safety at this intersection is not currently an issue. Additionally, the proposed project would generate only about 30 transit-based pedestrian trips during the morning arrival and evening departure periods. Due to the low pedestrian activity during those periods and the availability of sufficient pedestrian facilities at the intersection of Nimitz Highway and Alakawa Street, the proposed project would not cause any pedestrian safety issues at this intersection.

5.4 Sight Distance Evaluation

This section discusses the available sight distance for project-related traffic at the intersection of Nimitz Highway and Alakawa Street, and along Sumner Street connecting Eastbound Nimitz Highway with Westbound Nimitz Highway.

5.4.1 Nimitz Highway/ Alakawa Street Intersection

According to A Policy on Geometric Design of Highways and Streets, 5th Edition (Green Book), developed by the American Association of State Highway and Transportation Officials (AASHTO), the following requirements should be satisfied to have adequate sight distance at a signalized intersection:

- Condition 1 – The first vehicle stopped on one approach should be visible to the driver of the first vehicle stopped on each of the other approaches; and
- Condition 2 – Left-turning vehicles should have sufficient sight distance to select gaps in oncoming traffic and complete left turns.

At the signalized intersection of Nimitz Highway and Alakawa Street, the following AASHTO Green Book requirements are applicable:

- Condition 1 is satisfied, since field observations suggest that there are no obstructions to sight at this intersection. As such, the first vehicle stopped on each approach should be visible to the first vehicle stopped on each of the other approaches; and
- Condition 2 is satisfied, since the left-turns from Nimitz Highway are protected phases; while, traffic accessing from Alakawa Street and Pier 34 Driveway have split phases. This eliminates the need for left-turning vehicles to select gaps in oncoming traffic at this intersection.

Therefore, per AASHTO Green Book guidelines, this intersection has adequate sight distance for the project-related traffic.

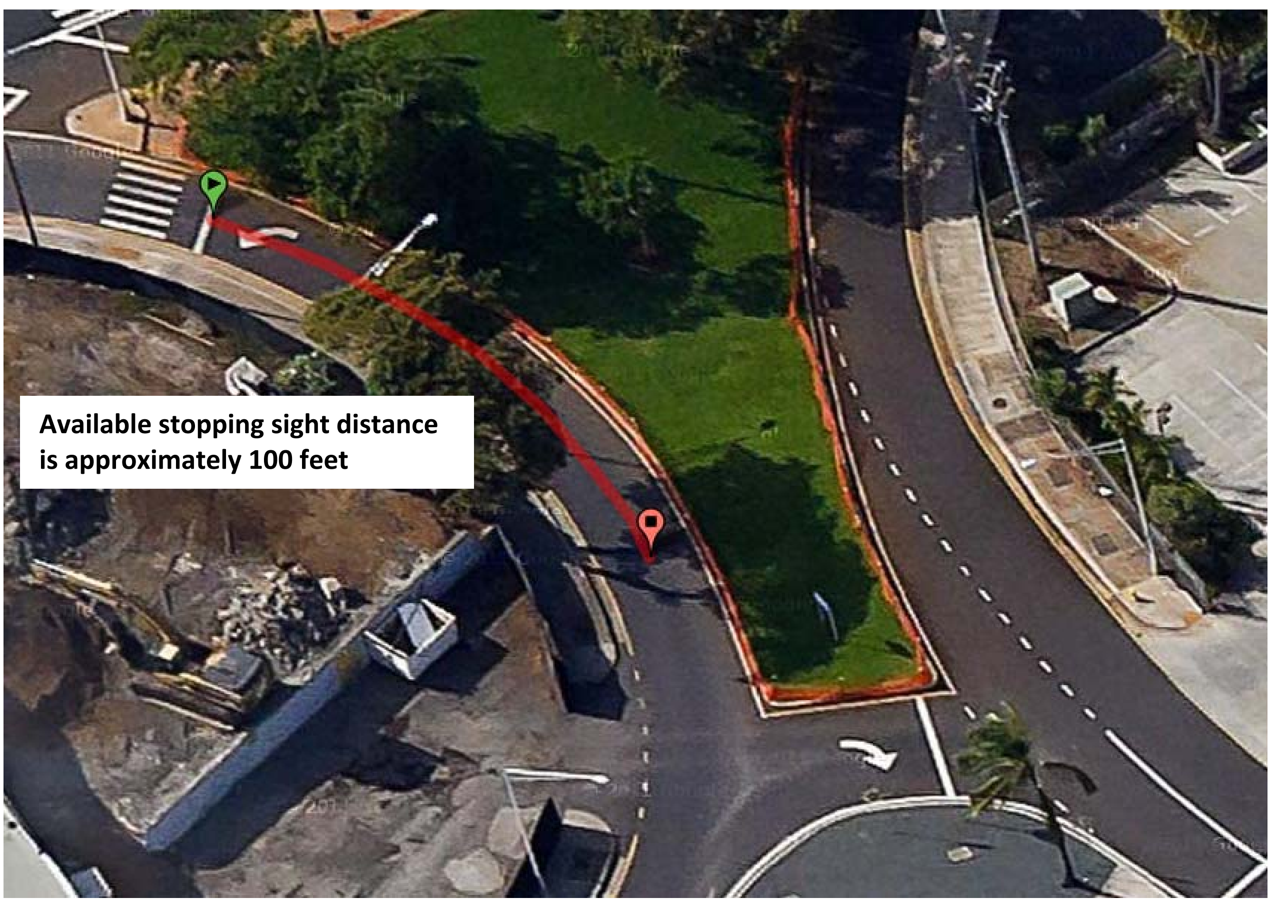
5.4.2 Sumner Street Connecting Eastbound Nimitz Highway with Westbound Nimitz Highway

As mentioned in Section 4.2, outbound Pasha Auto traffic would egress using Pier 33 Access Way. As part of this alternative, northbound and westbound Pasha Auto traffic is recommended to make a U-turn at Sumner Street to access outbound Nimitz Highway. As such, traffic analysis was conducted to determine whether Pasha Auto traffic would have adequate sight distance along Sumner Street.

Field observations suggest that there are no obstructions to sight along the Sumner Street segment that connects inbound Nimitz Highway with outbound Nimitz Highway. However, this roadway segment has a stop sign just before it merges with outbound Nimitz Highway. This stop sign is provided to accommodate pedestrian crossing across Sumner Street. The available stopping sight distance at this location is approximately 100 feet. According to the AASHTO Green Book, the minimum stopping sight distance required is approximately 77 feet for a 15 mph speed limit and 115 feet for a 20 mph speed limit. Currently, the inbound Nimitz Highway segment located upstream of Sumner Street has a posted speed limit of 35 mph; while no speed limit is posted along Sumner Street connecting inbound and outbound Nimitz Highway. Therefore, to avoid confusion, improve pedestrian safety, and to meet the minimum stopping distance recommended by the AASTHO Green Book, it is suggested that a speed limit of 15 mph be posted by HDOT along Sumner Street connecting inbound and outbound Nimitz Highway. No other sight distance issues were observed along Sumner Street.

The location of the pedestrian crossing across Sumner Street and the available stopping sight distance along it are exhibited in **Figure 5-2**.

Figure 5-2: Stopping Sight Distance Available along Sumner Street



Source: Google Maps

Chapter 6 Project Impacts and Mitigation Measures

6.1 Project Impacts

As mentioned in Section 4.3, the proposed project would cause a substantial impact to the traffic operations of the northbound right-turn movement at the intersection of Eastbound Nimitz Highway and Pier 33 Access Way. Under Existing Conditions, the northbound right-turn movement of this intersection operates at LOS D (approximate average delay of 32 seconds and v/c ratio of 0.14) during the AM peak hour and LOS C (approximate average delay of 21 seconds and v/c ratio of 0.05) during the PM peak hour. Under Existing plus Project Conditions, this movement would worsen to LOS E (approximate average delay of 49 seconds and v/c ratio of 0.49) during the AM peak hour, but would continue to operate at LOS C (approximate average delay of 22 seconds and v/c ratio of 0.11) during the PM peak hour. Since the proposed project would deteriorate the operating conditions of the northbound right-turn movement at this intersection from LOS D to LOS E during the AM peak hour, a transportation impact would occur. The primary contributor of forecast delays along the northbound right-turn movement is the increase in traffic along Pier 33 Access Way due to the redistribution of Pasha Auto outbound traffic.

6.2 Mitigation Measures

As a potential improvement measure to mitigate the project-related traffic impact at the intersection of Eastbound Nimitz Highway and Pier 33 Access Way, installation of a traffic signal at this intersection was evaluated. However, installation of a traffic signal at this intersection is not recommended due to the following reasons:

- As mentioned in Section 5.1, this intersection does not satisfy the Peak Hour signal warrant;
- There are no pedestrian crosswalks across Eastbound Nimitz Highway at this intersection. Therefore, this intersection does not satisfy the Pedestrian Volume signal warrant, which is intended for application where traffic volume on a major street is so heavy that pedestrians experience excessive delay in crossing the major street (Nimitz Highway);
- The distance between this intersection and the immediate downstream signalized intersection (Eastbound Nimitz Highway/Pacific Street) is approximately 850 feet. This intersection does not satisfy the Coordinated Signal System signal warrant, since according to the MUTCD, the Coordinated Signal System signal warrant should not be applied where the resultant spacing of traffic control signals would be less than 1,000 feet;
- As mentioned in Section 5.2, no collisions occurred at this intersection during the five-year period from 2004 to 2008. Hence, this intersection does not satisfy the Crash Experience signal warrant, which is intended for the installation of a traffic signal at locations with severe and frequent crashes;

A summary of the traffic operations at the Eastbound Nimitz Highway/Pier 33 Access Way intersection under Existing and Existing plus Project Conditions are shown in **Table 6-1**.

Table 6-1: Traffic Operations at Eastbound Nimitz Highway/Pier 33 Access Way

Approach	Existing		Existing plus Project		Difference in Delay per Vehicle (sec)
	Number of Vehicles	Delay per vehicle (sec)	Number of Vehicles	Delay per vehicle (sec)	
AM Peak Hour					
Northbound	14	32.4	50	49.1	16.7
Southbound	8	72.1	8	88.2	16.1
PM Peak Hour					
Northbound	8	21.2	17	22.3	1.1
Southbound	23	30	23	32.3	2.3

Notes:
Delay per vehicle represents average delay per vehicle.

During the AM peak hour, the proposed project would result in increasing the average delay of 58 vehicles by approximately 16 seconds. While during the PM peak hour, the proposed project would increase the average delay of 40 vehicles by only about two (2) seconds. This further supports that an installation of a traffic signal is not recommended at this location, since it would reduce the delay of about 60 vehicles per hour (vph) using the minor street (Pier 33 Access Way), but would cause travel delays to about 4,500 vph using the major street (eastbound Nimitz Highway).

Due to the lack of any feasible mitigation measures, the project-related traffic impact to the northbound right-turn movement at the intersection of Eastbound Nimitz Highway and Pier 33 Access Way is considered to be unavoidable.

Chapter 7 Conclusions and Recommendations

7.1 Report Conclusions

This transportation study evaluated the operations of circulation network neighboring the proposed project site, including intersection operations, pedestrian operations, parking operations, bicycle operations, and transit operations under with and without the proposed project conditions. Also, additional transportation analyses, including evaluation of alternate routes for outbound Pasha Auto traffic, collision analysis at study intersections, pedestrian safety analysis at the Nimitz Highway/Alakawa Street intersection, and evaluation of available sight distance for project-related traffic at the Nimitz Highway/Alakawa Street intersection and along Sumner Street have been performed as part of this study. The following can be concluded from the transportation analysis discussed in this report:

- The proposed project would cause substantial impact to the northbound right-turn movement at the intersection of Eastbound Nimitz Highway and Pier 33 Access Way; however, this impact would occur only during the AM peak period (from 6 AM to 8:30 AM), but not during the PM peak period (from 3 PM to 6:30 PM);
- The proposed project would not result in any parking, transit, pedestrian, and bicycle-related impacts;
- The proposed project would not warrant signalization of any of the unsignalized study intersections;
- The proposed project would not have a substantial effect on the collision rates of the study intersections, since it would increase the traffic at those intersections by a negligible percentage;
- Pedestrian safety at the intersection of Nimitz Highway and Alakawa Street is neither currently an issue, nor would be an issue with the relocation of the UHMC site to the Piers 34/35 area;
- An analysis of the two alternate exit routes considered for Pasha Auto traffic using AutoTurn simulation software indicated that Alternative 2 (Pier 33 Access Way) is the most feasible route after the relocation of UHMC to the Piers 34/35 area; and
- Project-related traffic would have adequate stopping distances at the intersection of Nimitz Highway and Alakawa Street, and along Sumner Street to perform the recommended U-turn movement.

7.2 Recommendations

The following recommendations are suggested to improve traffic operations after the relocation of UHMC site:

- As part of the proposed egress route for Pasha Auto vehicles, northbound and westbound Pasha Auto traffic is recommended to make a U-turn at Sumner Street to access outbound Nimitz Highway. Due to the presence of heavy traffic volumes, short storage lengths, and the limited turning radius for large trucks, outbound Pasha Auto vehicles are not recommended to use northbound Pacific Street to access outbound (westbound) Nimitz Highway. Hence, to avoid Pasha Auto traffic from using Pacific Street to access outbound Nimitz Highway, it is recommended that Pasha Auto drivers be educated to utilize the Sumner Street U-turn to reverse their direction of travel instead of Pacific Street.

- To avoid vehicles parking on unmarked paved areas, it is recommended that an additional 10 marked parking spaces be provided at the project site to have a total of 97 parking spaces, 90 for UHMC personnel and seven (7) for UHMC visitors.
- Approximately five (5) bicycle trips are anticipated to be generated by the proposed project. The Basis of Design Report did not indicate provision of any bicycle facilities within the project site. However, to accommodate the bicycle-related trips and improve the safety of bicyclists, it is recommended that a secured bicycle parking facility be provided within the proposed project site.
- It is recommended that Pasha Auto consider scheduling of exiting traffic so as to minimize the number of oversize vehicle trips during the AM peak period from 6 AM to 8 AM. This would not only limit travel delays during the AM peak period, but also allow outbound trucks to take advantage of the better traffic operating conditions along Nimitz Highway during the rest of the day.
- To avoid confusion, improve pedestrian safety, and to meet the minimum stopping distance recommended by the AASTHO Green Book, it is suggested that a speed limit of 15 mph be posted by HDOT along Sumner Street connecting eastbound and westbound Nimitz Highway.

APPENDIX

APPENDIX A

BACKGROUND REPORTS

Traffic Analysis Methodology

Prepared by Wilbur Smith Associates

MEMO

To: Richard K. Adkisson, TEC Inc.

C: Dana Yoshimura, Marshall Ando and Sharilyn Ikeda – DOT, Harbors

Date: November 9, 2010

From: Shruti Malik, PE, PMP and Bhanu Kala, PE

Subject: Transportation Analysis for the Relocation of UH Marine Center - Traffic Analysis Methodology

Wilbur Smith Associates (WSA) is working with TEC Incorporation to conduct transportation analysis for the relocation of University of Hawaii's Marine Center (UHMC) in Honolulu Harbor, Hawaii. This technical memorandum is prepared and submitted to the Client as part of the transportation analysis. Included in this memorandum is a discussion on the methodology to perform traffic analysis for the proposed project, including methodologies for traffic data collection, travel demand estimation, traffic analysis, parking analysis, and impact analysis.

The analysis methodologies described in the following sections are based on the data requested from the Client in the Traffic and Land Use Data Requirements memorandum submitted on November 4, 2010.

1. Traffic Data Collection

WSA will collect morning and evening peak hour intersection counts at the following two study intersections located in the vicinity of Piers 34/35 in Honolulu Harbor:

- Nimitz Highway/Alakawa Street
- Nimitz Highway/Japan Foods Access Way

Traffic counts will be collected between Tuesday and Thursday of a typical week. 15-minute interval turning movement counts will be collected during the morning and evening peak periods. Typically, the traffic peak period during morning is from 6:00 AM to 8:00 AM and during evening is from 3:00 PM to 5:00 PM. However, the duration of these peak periods will be confirmed with the Hawaii Department of Transportation (HDOT) before collecting the traffic counts. Additionally, traffic data collection will be conducted on a typical weekday, avoiding holidays and non-shipping days of the Pasha Auto Handling Vehicle Storage and Repair.

2. Travel Demand Estimation

WSA will estimate the peak period travel demand of the new UHMC site at Piers 34/35 based on the peak period vehicle trips to the existing UHMC site at Snug Harbor. The ratio of the proposed number of employees at the new UHMC site at Piers 34/35 to the number of employees at the existing UHMC facility (referred to as the Piers 34/35 Employee Ratio) will be calculated. This employee ratio will be applied to the peak period vehicle trips accessing the existing UHMC facility to estimate the peak period travel demand at the new UHMC site as follows:

Piers 34/35 Site Travel Demand = Piers 34/35 Employee Ratio x Existing UHMC Site Travel Demand

Based on the traffic counts collected at the intersection of Nimitz Highway and Alakawa Street, WSA will identify the peak period vehicle trips to the existing land uses at Piers 34/35. These existing peak period trips will be subtracted from the Piers 34/35 site travel demand calculated above to identify the net new vehicle trips accessing the new UHMC site at Piers 34/35. To identify the trip distribution of the proposed UHMC site, WSA will obtain an approximate trip distribution of employees at the existing UHMC facility from the Client. In the absence of this information, it would be assumed that 50 percent of the vehicle trips would be coming from West of the UHMC facility and the remaining 50 percent from east of the facility.

WSA assumes that the peak period travel demand at the existing UHMC site, number of employees at the existing UHMC facility, the proposed number of employees at the new UHMC facility at Piers 34/35, and trip distribution of employees at the existing UHMC facility will be provided.

3. Traffic Analysis

The traffic analysis for this project will be performed under the following two scenarios:

- Existing Conditions
- Existing plus Proposed Project

The study intersections will be analyzed using the Synchro 7 software package. Volume-to-capacity ratio (V/C ratio), average vehicle delay, and level of service (LOS) values will be reported at each intersection to measure operational conditions. As part of the traffic analysis, WSA will determine the level of service (LOS) and volume-to-capacity ratios of each study intersection using appropriate threshold criteria acceptable to Hawaii Department of Transportation (HDOT), and City and County of Honolulu. Since, both these agencies do not have published threshold criteria currently, WSA would contact these agencies prior to the commencement of the traffic analysis and establish the criteria acceptable to them. WSA believes that this step is imperative for the timely and orderly completion of the project.

4. Parking Analysis

WSA will identify the adequacy of parking spaces at the new UHMC site and perform a detailed parking analysis. Similar to travel demand, parking demand at the new UHMC site at Piers 34/35 will be estimated as follows:

Piers 34/35 Site Parking Demand = Piers 34/35 Employee Ratio x Existing UHMC Site Parking Demand

This parking demand will be compared to the available parking supply to identify any parking-related impacts. WSA assumes that the parking demand at the existing UHMC site will be provided by the Client.

5. Impact Analysis

Potential transportation impacts associated with the proposed project will be identified using appropriate threshold criteria acceptable to HDOT, and City and County of Honolulu. WSA will then develop mitigation measures that would reduce the transportation impacts, if any, to less-than-significant level. Mitigation measures will include any planned improvements at the study intersections.

LOS Thresholds Criteria Memorandum

Prepared by Wilbur Smith Associates

MEMO **To:** Ken Tatsuguchi, Hawaii Department of Transportation

C: Richard Adkisson, TEC Inc.

Date: April 27, 2011

From: William E. Hurrell and Bhanu Kala, Wilbur Smith Associates

Subject: Transportation Analysis for the Relocation of UH Marine Center – Level of Service Thresholds for Intersection Operating Conditions

Wilbur Smith Associates (WSA) is working with TEC Incorporation to conduct transportation analysis for the relocation of University of Hawaii's Marine Center (UHMC) in Honolulu Harbor, Hawaii. As part of this project, WSA will be evaluating the following five intersections that are located in the vicinity of the project site:

- Nimitz Highway/Alakawa Street
- Nimitz Highway/Japan Foods Access Way
- Eastbound Nimitz Highway/Pacific Street
- Westbound Nimitz Highway/Pacific Street
- Eastbound Nimitz Highway/Kukahi Street

Currently, since none of the jurisdictions governing the study area have established standards of significance, WSA is compiling this technical memorandum listing the level of service (LOS) thresholds criteria that it proposes to use for identifying the potential project-related intersection impacts. WSA is submitting this technical memorandum to the Hawaii Department of Transportation (HDOT) for their review, comment, and approval.

Thresholds of Evaluation

At the study intersections, WSA proposes to use the following guidelines to identify project-related transportation impacts. A project-related impact is considered significant if the proposed project would result in any of the following:

1. Deterioration of an intersection from LOS D or better to LOS E or F under project conditions;

2. Increasing the volume-to-capacity ratio (v/c ratio) of an intersection operating at LOS E or F by more than 10 percent; and
3. Satisfying the peak hour signal warrant criteria due to the addition of project traffic.

APPENDIX B

TRAFFIC COUNTS

AM Peak Period

Intersection:	Alakawa Street / Nimitz Highway	Date:	April 28, 2011 Thursday
Direction	N / S E / W		
Time Period:	6 - 8:30am	Project:	104942

INPUTS

From Pier 34 — No lefts allowed - EB contraflow lane

Labels =>	D	E	F	Apprh PHF	J	K	L	Apprh PHF	A	B	C	Apprh PHF	G	H	I	Apprh PHF
	Northbound				Southbound				Eastbound				Westbound			
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
6:15	16	11	9		30	12	16		7	392	5		0	254	29	
6:30	2	5	1		26	10	35		9	730	18		0	256	40	
6:45	3	7	1		46	8	20		4	720	15		0	260	37	
7:00	6	1	1		42	16	25		35	1057	25		0	359	56	
7:15	3	5	11		67	7	40		22	1036	44		0	392	61	
7:30	7	11	2		46	7	25		29	1053	35		0	416	65	
7:45	9	5	3		58	8	22		25	1024	21		0	296	66	
8:00	9	5	2		47	9	39		16	837	23		0	415	80	
8:15	24	6	3		88	7	43		9	764	26		0	412	75	
8:30	7	5	3		54	8	50		9	734	31		0	386	96	

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
6 :15	16	11	9	36	30	12	16	58	7	392	5	404	0	254	29	283	781		6 :15
6 :30	2	5	1	8	26	10	35	71	9	730	18	757	0	256	40	296	1132		6 :30
6 :45	3	7	1	11	46	8	20	74	4	720	15	739	0	260	37	297	1121		6 :45
7 :00	6	1	1	8	42	16	25	83	35	1057	25	1117	0	359	56	415	1623	4657	7 :00
7 :15	3	5	11	19	67	7	40	114	22	1036	44	1102	0	392	61	453	1688	5564	7 :15
7 :30	7	11	2	20	46	7	25	78	29	1053	35	1117	0	416	65	481	1696	6128	7 :30
7 :45	9	5	3	17	58	8	22	88	25	1024	21	1070	0	296	66	362	1537	6544	7 :45
8 :00	9	5	2	15	47	9	39	112	16	837	23	876	0	415	80	495	1482	6403	8 :00
8 :15	24	6	3	33	88	7	43	138	9	764	26	799	0	412	75	487	1457	6172	8 :15
8 :30	7	5	3	16	54	8	50	95	9	734	31	774	0	386	96	482	1383	5859	8 :30
	25	22	17		213	38	112		111	4170	125		0	1463	248			Peak Hour	
PEAK => HOUR TOTAL	25	22	17		213	38	112		111	4170	125		0	1463	248			6544 Total Intersection Vol	

7 :45

WHOLE INTERSECTION

PEAK HR VOL	6,544	6 :45 Peak Period Starting at	7 :45 Peak Period Ending at
PEAK 15 MIN VOL	1,696		
PEAK HR FACTOR (PI	0.96		

-

BY APPROACH

PEAK HR VOL	64	363	4,406	1,711
PEAK 15 MIN VOL	20	114	1,117	481
PEAK HR FACTOR (PI	0.80	0.80	0.99	0.89
	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	-	CAUTION : PHF below 0.9

WilburSmith ASSOCIATES

Intersection: Japan Foods Access Way / Nimitz Highway
Direction: N / S E / W
Time Period: 6 - 8:30am

Date: April 28, 2011 Thursday
Project: 104942

INPUTS

Labels =>			C	Apprh PHF				Apprh PHF		A	B	Apprh PHF				Apprh PHF
	Northbound				Southbound				Eastbound				Westbound			
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
6 :15			3							687	10					
6 :30			3							744	4					
6 :45			0							1120	6					
7 :00			8							1192	13					
7 :15			3							1206	9					
7 :30			5							957	9					
7 :45			5							1104	5					
8 :00			5							946	5					
8 :15			6							693	4					
8 :30			5							836	3					

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
6 :15	0	0	3	3	0	0	0	0	0	687	10	697	0	0	0	0	700		6 :15
6 :30	0	0	3	3	0	0	0	0	0	744	4	748	0	0	0	0	751		6 :30
6 :45	0	0	0	0	0	0	0	0	0	1120	6	1126	0	0	0	0	1126		6 :45
7 :00	0	0	8	8	0	0	0	0	0	1192	13	1205	0	0	0	0	1213	3790	7 :00
7 :15	0	0	3	3	0	0	0	0	0	1206	9	1215	0	0	0	0	1218	4308	7 :15
7 :30	0	0	5	5	0	0	0	0	0	957	9	966	0	0	0	0	971	4528	7 :30
7 :45	0	0	5	5	0	0	0	0	0	1104	5	1109	0	0	0	0	1114	4516	7 :45
8 :00	0	0	5	5	0	0	0	0	0	946	5	951	0	0	0	0	956	4259	8 :00
8 :15	0	0	6	6	0	0	0	0	0	693	4	697	0	0	0	0	703	3744	8 :15
8 :30	0	0	5	5	0	0	0	0	0	836	3	839	0	0	0	0	844	3617	8 :30
	0	0	16		0	0	0		0	4475	37		0	0	0			Peak Hour	
PEAK => HOUR TOTAL	0	0	16		0	0	0		0	4475	37		0	0	0			4528 Total Intersection Vol	

7 :30

WHOLE INTERSECTION

6 :30 Peak Period Starting at
7 :30 Peak Period Ending at

PEAK HR VOL	4,528
PEAK 15 MIN VOL	1,218
PEAK HR FACTOR (PI	0.93
-	

BY APPROACH

PEAK HR VOL	16	-	4,512	-
PEAK 15 MIN VOL	8	-	1,215	-
PEAK HR FACTOR (PI	0.50	-	0.93	-
	CAUTION : PHF below 0.9	-	-	-

WilburSmith ASSOCIATES

Intersection:	Pier 33 Access Way /	EB Nimitz Highway	Date:	May 11, 2011 Wednesday
Direction	N / S	E / W		
Time Period:	6:45 - 7:45 am		Project:	104942

INPUTS

Labels =>	D	E	F	Apprh	J	K	L	Apprh	A	B	C	Apprh	G	H	I	Apprh
	Northbound			PHF	Southbound			PHF	Eastbound			PHF	Westbound			PHF
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
6 :15																
6 :30																
6 :45																
7 :00			3		0	4					11					
7 :15			7		1	0					3					
7 :30			0		1	0					2					
7 :45			4		2	0					7					
8 :00																
8 :15																
8 :30																

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
6 :15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6 :15
6 :30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6 :30
6 :45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		6 :45
7 :00	0	0	3	3	0	4	0	4	0	0	11	11	0	0	0	0	18	18	7 :00
7 :15	0	0	7	7	1	0	0	1	0	0	3	3	0	0	0	0	11	29	7 :15
7 :30	0	0	0	0	1	0	0	1	0	0	2	2	0	0	0	0	3	32	7 :30
7 :45	0	0	4	4	2	0	0	2	0	0	7	7	0	0	0	0	13	45	7 :45
8 :00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	27	8 :00
8 :15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16	8 :15
8 :30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	13	8 :30
	0	0	14		4	4	0		0	0	23		0	0	0			Peak Hour	
PEAK => HOUR TOTAL	0	0	14		4	4	0		0	0	23		0	0	0			45 Total Intersection Vol	

7 :45

WHOLE INTERSECTION

PEAK HR VOL 45
PEAK 15 MIN VOL 18
PEAK HR FACTOR (PH 0.63
CAUTION : PHF below 0.9

6 :45 Peak Period Starting at

7 :45 Peak Period Ending at

BY APPROACH

PEAK HR VOL	14	8	23	-
PEAK 15 MIN VOL	7	4	11	-
PEAK HR FACTOR (PH	0.50	0.50	0.52	-
	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	-

WilburSmith ASSOCIATES

Intersection:	Pacific Street / EB Nimitz Highway	Date:	April 28, 2011 Thursday
Direction	N / S E / W		
Time Period:	6 - 8:30am	Project:	104942

INPUTS

EB L includes turns into Zippy's

Labels =>	D	E	F	Apprh	J	K	L	Apprh	A	B	C	Apprh	G	H	I	Apprh
	Northbound			PHF	Southbound			PHF	Eastbound			PHF	Westbound			PHF
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
6:15	0	1	1		17	3	0		41	526	7					
6:30	0	5	2		16	5	0		62	624	13					
6:45	0	4	0		14	7	0		65	909	6					
7:00	0	5	3		15	5	0		75	1015	10					
7:15	0	7	2		16	5	0		50	1067	14					
7:30	0	15	3		19	6	0		60	1086	9					
7:45	0	7	2		24	6	0		63	1062	6					
8:00	0	9	1		20	3	0		76	945	5					
8:15	0	7	1		27	4	0		88	750	7					
8:30	0	10	2		29	6	0		71	742	10					

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
6 :15	0	1	1	2	17	3	0	20	41	526	7	574	0	0	0	0	596		6 :15
6 :30	0	5	2	7	16	5	0	21	62	624	13	699	0	0	0	0	727		6 :30
6 :45	0	4	0	4	14	7	0	21	65	909	6	980	0	0	0	0	1005		6 :45
7 :00	0	5	3	8	15	5	0	20	75	1015	10	1100	0	0	0	0	1128	3456	7 :00
7 :15	0	7	2	9	16	5	0	21	50	1067	14	1131	0	0	0	0	1161	4021	7 :15
7 :30	0	15	3	18	19	6	0	25	60	1086	9	1155	0	0	0	0	1198	4492	7 :30
7 :45	0	7	2	9	24	6	0	30	63	1062	6	1131	0	0	0	0	1170	4657	7 :45
8 :00	0	9	1	12	20	3	0	35	76	945	5	1026	0	0	0	0	1059	4588	8 :00
8 :15	0	7	1	8	27	4	0	31	88	750	7	845	0	0	0	0	884	4311	8 :15
8 :30	0	10	2	10	29	6	0	23	71	742	10	823	0	0	0	0	870	3983	8 :30
	0	34	10		74	22	0		248	4230	39		0	0	0			Peak Hour	
PEAK => HOUR TOTAL	0	34	10		74	22	0		248	4230	39		0	0	0			4657 Total Intersection Vol	

7 :45

WHOLE INTERSECTION

PEAK HR VOL	4,657	6 :45 Peak Period Starting at	7 :45 Peak Period Ending at
PEAK 15 MIN VOL	1,198		
PEAK HR FACTOR (PI	0.97		
-			

BY APPROACH

PEAK HR VOL	44	96	4,517	-
PEAK 15 MIN VOL	18	30	1,155	-
PEAK HR FACTOR (PI	0.61	0.80	0.98	-
	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	-	-

WilburSmith ASSOCIATES

Intersection:	Pacific Street / WB Nimitz Highway	Date:	April 28, 2011 Thursday
Direction	N / S — E / W		
Time Period:	6 - 8:30am	Project:	104942

INPUTS

Labels =>	D	E	F	Apprh	J	K	L	Apprh	A	B	C	Apprh	G	H	I	Apprh
	Northbound			PHF	Southbound			PHF	Eastbound			PHF	Westbound			PHF
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
6 :15	10	31	0		0	6	0		0	0	0		13	303	12	
6 :30	17	36	0		0	6	0		0	0	0		6	306	22	
6 :45	19	37	0		0	6	0		0	0	0		24	353	21	
7 :00	15	51	0		0	5	0		0	0	0		19	390	20	
7 :15	25	38	1		0	8	0		0	0	0		15	425	33	
7 :30	21	56	0		0	14	0		0	0	0		17	424	33	
7 :45	19	53	0		0	13	0		0	0	0		19	452	31	
8 :00	24	64	0		0	12	0		0	0	0		18	405	33	
8 :15	21	57	0		0	13	0		0	0	0		21	418	44	
8 :30	22	50	0		0	16	0		0	0	0		28	385	37	

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
6 :15	10	31	0	41	0	6	0	6	0	0	0	0	13	303	12	328	375		6 :15
6 :30	17	36	0	53	0	6	0	6	0	0	0	0	6	306	22	334	393		6 :30
6 :45	19	37	0	56	0	6	0	6	0	0	0	0	24	353	21	398	460		6 :45
7 :00	15	51	0	66	0	5	0	5	0	0	0	0	19	390	20	429	500	1728	7 :00
7 :15	25	38	1	64	0	8	0	8	0	0	0	0	15	425	33	473	545	1898	7 :15
7 :30	21	56	0	77	0	14	0	14	0	0	0	0	17	424	33	474	565	2070	7 :30
7 :45	19	53	0	72	0	13	0	13	0	0	0	0	19	452	31	502	587	2197	7 :45
8 :00	24	64	0	72	0	12	0	16	0	0	0	0	18	405	33	456	556	2253	8 :00
8 :15	21	57	0	78	0	13	0	13	0	0	0	0	21	418	44	483	574	2282	8 :15
8 :30	22	50	0	88	0	16	0	12	0	0	0	0	28	385	37	450	538	2255	8 :30
	85	230	0		0	52	0		0	0	0		75	1699	141			Peak Hour	
PEAK => HOUR TOTAL	85	230	0		0	52	0		0	0	0		75	1699	141			2282 Total Intersection Vol	

8 :15

WHOLE INTERSECTION

PEAK HR VOL	2,282	7 :15 Peak Period Starting at	8 :15 Peak Period Ending at
PEAK 15 MIN VOL	587		
PEAK HR FACTOR (PI	0.97		

-

BY APPROACH

PEAK HR VOL	315	52	-	1,915
PEAK 15 MIN VOL	78	16	-	502
PEAK HR FACTOR (PI	1.01	0.81	-	0.95
-		CAUTION : PHF below 0.9	-	-

WilburSmith ASSOCIATES

Intersection: Kukahi Street / EB Nimitz Highway
Direction: N / S — E / W
Time Period: 6 - 8:30am

Date: April 28, 2011 Thursday
Project: 104942

INPUTS

Labels =>	D	E	F	Apprh	J	K	L	Apprh	A	B	C	Apprh	G	H	I	Apprh
	Northbound			PHF	Southbound			PHF	Eastbound			PHF	Westbound			PHF
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
6 :15	0	0	2		3	4	0		0	468	6		0	0	0	
6 :30	0	0	0		4	6	0		0	675	4		0	0	0	
6 :45	0	0	0		0	2	0		0	913	10		0	0	0	
7 :00	0	0	1		1	5	0		0	968	5		0	0	0	
7 :15	0	0	2		4	1	0		0	1045	7		0	0	0	
7 :30	0	0	3		3	0	0		0	1043	7		0	0	0	
7 :45	0	0	5		4	2	0		0	933	4		0	0	0	
8 :00	0	0	6		3	2	0		0	977	5		0	0	0	
8 :15	0	0	6		4	1	0		0	734	5		0	0	0	
8 :30	0	0	7		6	5	0		0	714	6		0	0	0	

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
6 :15	0	0	2	2	3	4	0	7	0	468	6	474	0	0	0	0	483		6 :15
6 :30	0	0	0	0	4	6	0	10	0	675	4	679	0	0	0	0	689		6 :30
6 :45	0	0	0	0	0	2	0	2	0	913	10	923	0	0	0	0	925		6 :45
7 :00	0	0	1	1	1	5	0	6	0	968	5	973	0	0	0	0	980	3077	7 :00
7 :15	0	0	2	2	4	1	0	5	0	1045	7	1052	0	0	0	0	1059	3653	7 :15
7 :30	0	0	3	3	3	0	0	3	0	1043	7	1050	0	0	0	0	1056	4020	7 :30
7 :45	0	0	5	5	4	2	0	6	0	933	4	937	0	0	0	0	948	4043	7 :45
8 :00	0	0	6	7	3	2	0	11	0	977	5	982	0	0	0	0	993	4056	8 :00
8 :15	0	0	6	6	4	1	0	5	0	734	5	739	0	0	0	0	750	3747	8 :15
8 :30	0	0	7	6	6	5	0	5	0	714	6	720	0	0	0	0	738	3429	8 :30
	0	0	16		14	5	0		0	3998	23		0	0	0			Peak Hour	
PEAK => HOUR TOTAL	0	0	16		14	5	0		0	3998	23		0	0	0			4056 Total Intersection Vol	

8 :00

WHOLE INTERSECTION

PEAK HR VOL 4,056
PEAK 15 MIN VOL 1,059
PEAK HR FACTOR (PI 0.96
-

7 :00 Peak Period Starting at
8 :00 Peak Period Ending at

BY APPROACH

PEAK HR VOL	16	19	4,021	-
PEAK 15 MIN VOL	7	11	1,052	-
PEAK HR FACTOR (PI	0.57	0.43	0.96	-
	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	-	-

WilburSmith ASSOCIATES

PM Peak Period

Intersection: Alakawa Street / Nimitz Highway   Date: April 28, 2011 Thursday
Direction N / S   E / W
Time Period: 3 - 6:30 pm   Project: 104942

INPUTS

Labels =>	D	E	F	Apprh PHF	J	K	L	Apprh PHF	A	B	C	Apprh PHF	G	H	I	Apprh PHF
	Northbound				Southbound				Eastbound				Westbound			
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
3 :15	7	6	4		101	5	81		86	727	6		10	550	115	
3 :30	10	3	1		85	2	51		35	538	8		3	588	115	
3 :45	5	7	1		115	4	63		41	716	7		11	642	119	
4 :00	4	0	0		52	3	73		58	722	10		7	654	113	
4 :15	4	9	6		86	4	87		52	780	11		5	596	108	
4 :30	2	1	6		67	3	55		64	795	4		3	706	118	
4 :45	10	4	3		73	2	60		67	787	4		4	695	120	
5 :00	2	4	1		72	3	62		60	778	4		4	541	104	
5 :15	3	7	0		87	3	84		54	712	5		3	803	137	
5 :30	1	3	2		56	1	57		58	747	4		2	582	145	
5 :45	3	3	4		73	4	61		52	625	3		7	568	128	
6 :00	3	6	2		73	3	45		41	480	1		5	562	118	
6 :15	0	0	8		57	0	78		55	529	2		8	549	102	
6 :30	1	4	4		46	0	67		58	421	3		3	518	96	

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
3 :15	7	6	4	17	101	5	81	187	86	727	6	819	10	550	115	675	1698		3 :15
3 :30	10	3	1	14	85	2	51	138	35	538	8	581	3	588	115	706	1439		3 :30
3 :45	5	7	1	13	115	4	63	182	41	716	7	764	11	642	119	772	1731		3 :45
4 :00	4	0	0	4	52	3	73	128	58	722	10	790	7	654	113	774	1696	6564	4 :00
4 :15	4	9	6	19	86	4	87	177	52	780	11	843	5	596	108	709	1748	6614	4 :15
4 :30	2	1	6	9	67	3	55	125	64	795	4	863	3	706	118	827	1824	6999	4 :30
4 :45	10	4	3	17	73	2	60	135	67	787	4	858	4	695	120	819	1829	7097	4 :45
5 :00	2	4	1	7	72	3	62	137	60	778	4	842	4	541	104	649	1635	7036	5 :00
5 :15	3	7	0	10	87	3	84	174	54	712	5	771	3	803	137	943	1898	7186	5 :15
5 :30	1	3	2	6	56	1	57	114	58	747	4	809	2	582	145	729	1658	7020	5 :30
5 :45	3	3	4	10	73	4	61	138	52	625	3	680	7	568	128	703	1531	6722	5 :45
6 :00	3	6	2	11	73	3	45	121	41	480	1	522	5	562	118	685	1339	6426	6 :00
6 :15	0	0	8	8	57	0	78	135	55	529	2	586	8	549	102	659	1388	5916	6 :15
6 :30	1	4	4	9	46	0	67	113	58	421	3	482	3	518	96	617	1221	5479	6 :30
	17	16	10		299	11	261		245	3072	17		14	2745	479			Peak Hour	
PEAK => HOUR TOTAL	17	16	10		299	11	261		245	3072	17		14	2745	479			7186 Total Intersection Vol	

WHOLE INTERSECTION

PEAK HR VOL 7,186
PEAK 15 MIN VOL 1,898
PEAK HR FACTOR (PH 0.95
-

4 :15 Peak Period Starting at

5 :15 Peak Period Ending at

BY APPROACH

PEAK HR VOL	43	571	3,334	3,238
PEAK 15 MIN VOL	17	174	863	943
PEAK HR FACTOR (PH	0.63	0.82	0.97	0.86
	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	-	CAUTION : PHF below 0.9

WilburSmith ASSOCIATES

Intersection:	Japan Foods Access Way /	Nimitz Highway	Date:	April 28, 2011	Thursday
Direction	N / S	E / W			
Time Period:	3 - 6:30 pm		Project:	104942	

INPUTS

Labels =>			C							A	B					
	Northbound			Apprh PHF	Southbound			Apprh PHF	Eastbound			Apprh PHF	Westbound			Apprh PHF
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
3 :15			2							696	6					
3 :30			2							894	2					
3 :45			4							910	2					
4 :00			2							862	4					
4 :15			6							889	2					
4 :30			1							705	2					
4 :45			15							1067	2					
5 :00			7							807	1					
5 :15			13							1028	2					
5 :30			6							760	0					
5 :45			1							811	1					
6 :00			2							639	0					
6 :15			0							647	1					
6 :30			2							500	0					

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
3 :15	0	0	2	2	0	0	0	0	0	696	6	702	0	0	0	0	704		3 :15
3 :30	0	0	2	2	0	0	0	0	0	894	2	896	0	0	0	0	898		3 :30
3 :45	0	0	4	4	0	0	0	0	0	910	2	912	0	0	0	0	916		3 :45
4 :00	0	0	2	2	0	0	0	0	0	862	4	866	0	0	0	0	868	3386	4 :00
4 :15	0	0	6	6	0	0	0	0	0	889	2	891	0	0	0	0	897	3579	4 :15
4 :30	0	0	1	1	0	0	0	0	0	705	2	707	0	0	0	0	708	3389	4 :30
4 :45	0	0	15	15	0	0	0	0	0	1067	2	1069	0	0	0	0	1084	3557	4 :45
5 :00	0	0	7	7	0	0	0	0	0	807	1	808	0	0	0	0	815	3504	5 :00
5 :15	0	0	13	13	0	0	0	0	0	1028	2	1030	0	0	0	0	1043	3650	5 :15
5 :30	0	0	6	6	0	0	0	0	0	760	0	760	0	0	0	0	766	3708	5 :30
5 :45	0	0	1	1	0	0	0	0	0	811	1	812	0	0	0	0	813	3437	5 :45
6 :00	0	0	2	2	0	0	0	0	0	639	0	639	0	0	0	0	641	3263	6 :00
6 :15	0	0	0	0	0	0	0	0	0	647	1	648	0	0	0	0	648	2868	6 :15
6 :30	0	0	2	2	0	0	0	0	0	500	0	500	0	0	0	0	502	2604	6 :30
	0	0	41		0	0	0		0	3662	5		0	0	0			Peak Hour	
PEAK => HOUR TOTAL	0	0	41		0	0	0		0	3662	5		0	0	0			3708 Total Intersection Vol	

WHOLE INTERSECTION

PEAK HR VOL	3,708	4 :30 Peak Period Starting at	5 :30 Peak Period Ending at
PEAK 15 MIN VOL	1,084		
PEAK HR FACTOR (PH	0.86		

CAUTION : PHF below 0.9

BY APPROACH

PEAK HR VOL	41	-	3,667	-
PEAK 15 MIN VOL	15	-	1,069	-
PEAK HR FACTOR (PH	0.68	-	0.86	-
	CAUTION : PHF below 0.9	-	CAUTION : PHF below 0.9	-

WilburSmith ASSOCIATES

Intersection:	Pier 33 Access Way / EB Nimitz Highway		Date:	April 28, 2011 Thursday
Direction	N / S	E / W		
Time Period:	3 - 6:30 pm		Project:	104942

INPUTS

Labels =>	D	E	F	Apprh PHF	J	K	L	Apprh PHF	A	B	C	Apprh PHF	G	H	I	Apprh PHF
	Northbound				Southbound				Eastbound				Westbound			
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
3 :15																
3 :30																
3 :45																
4 :00																
4 :15																
4 :30																
4 :45			2		3	0					0					
5 :00			3		7	0					1					
5 :15			3		6	1					2					
5 :30			0		5	1					0					
5 :45																
6 :00																
6 :15																
6 :30																

OUTPUTS

15-min period Ending Time	NB L	NB T	NB R	Apprh PHF	SB L	SB T	SB R	Apprh PHF	EB L	EB T	EB R	Apprh PHF	WB L	WB T	WB R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
3 :15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		3 :15
3 :30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		3 :30
3 :45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0		3 :45
4 :00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4 :00
4 :15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4 :15
4 :30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4 :30
4 :45	0	0	2	2	3	0	0	3	0	0	0	0	0	0	0	0	5	5	4 :45
5 :00	0	0	3	3	7	0	0	7	0	0	1	1	0	0	0	0	11	16	5 :00
5 :15	0	0	3	3	6	1	0	7	0	0	2	2	0	0	0	0	12	28	5 :15
5 :30	0	0	0	0	5	1	0	6	0	0	0	0	0	0	0	0	6	34	5 :30
5 :45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	29	5 :45
6 :00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	18	6 :00
6 :15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	6 :15
6 :30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6 :30
	0	0	8		21	2	0		0	0	3		0	0	0			Peak Hour	
PEAK => HOUR TOTAL	0	0	8		21	2	0		0	0	3		0	0	0			34 Total Intersection Vol	

WHOLE INTERSECTION

PEAK HR VOL	34	4 :30 Peak Period Starting at	5 :30 Peak Period Ending at
PEAK 15 MIN VOL	12		
PEAK HR FACTOR (PH	0.71		

CAUTION : PHF below 0.9

BY APPROACH

PEAK HR VOL	8	23	3	-
PEAK 15 MIN VOL	3	7	2	-
PEAK HR FACTOR (PH	0.67	0.82	0.38	-
	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	-

WilburSmith ASSOCIATES

Intersection: Pacific Street / EB Nimitz Highway **Date:** April 28, 2011 Thursday
Direction N / S E / W
Time Period: 3 - 6:30 pm **Project:** 104942

INPUTS

EB L includes turns into Zippy's

Labels =>	D	E	F	Apprh	J	K	L	Apprh	A	B	C	Apprh	G	H	I	Apprh
	Northbound			PHF	Southbound			PHF	Eastbound			PHF	Westbound			PHF
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
3 :15	0	17	5		37	2	0		64	644	6		0	0	0	
3 :30	0	16	5		28	4	0		63	833	10		0	0	0	
3 :45	0	8	3		36	3	0		63	851	2		0	0	0	
4 :00	0	9	4		48	0	0		50	790	5		0	0	0	
4 :15	0	16	3		36	3	0		45	827	6		0	0	0	
4 :30	0	12	4		33	1	0		54	824	5		0	0	0	
4 :45	0	8	1		40	1	0		53	848	3		0	0	0	
5 :00	0	9	3		36	1	0		48	895	1		0	0	0	
5 :15	0	6	1		47	0	0		40	841	3		0	0	0	
5 :30	0	7	0		33	1	0		42	845	5		0	0	0	
5 :45	0	4	0		34	0	0		48	730	2		0	0	0	
6 :00	0	5	0		38	0	0		36	589	3		0	0	0	
6 :15	0	0	0		31	0	0		32	570	0		0	0	0	
6 :30	0	1	0		7	0	0		28	488	0		0	0	0	

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
3 :15	0	17	5	22	37	2	0	39	64	644	6	714	0	0	0	0	775		3 :15
3 :30	0	16	5	21	28	4	0	32	63	833	10	906	0	0	0	0	959		3 :30
3 :45	0	8	3	11	36	3	0	39	63	851	2	916	0	0	0	0	966		3 :45
4 :00	0	9	4	13	48	0	0	48	50	790	5	845	0	0	0	0	906	3606	4 :00
4 :15	0	16	3	19	36	3	0	39	45	827	6	878	0	0	0	0	936	3767	4 :15
4 :30	0	12	4	16	33	1	0	34	54	824	5	883	0	0	0	0	933	3741	4 :30
4 :45	0	8	1	9	40	1	0	41	53	848	3	904	0	0	0	0	954	3729	4 :45
5 :00	0	9	3	12	36	1	0	37	48	895	1	944	0	0	0	0	993	3816	5 :00
5 :15	0	6	1	7	47	0	0	47	40	841	3	884	0	0	0	0	938	3818	5 :15
5 :30	0	7	0	7	33	1	0	34	42	845	5	892	0	0	0	0	933	3818	5 :30
5 :45	0	4	0	4	34	0	0	34	48	730	2	780	0	0	0	0	818	3682	5 :45
6 :00	0	5	0	5	38	0	0	38	36	589	3	628	0	0	0	0	671	3360	6 :00
6 :15	0	0	0	0	31	0	0	31	32	570	0	602	0	0	0	0	633	3055	6 :15
6 :30	0	1	0	1	7	0	0	7	28	488	0	516	0	0	0	0	524	2646	6 :30
	0	35	9		156	3	0		195	3408	12		0	0	0			Peak Hour	
PEAK => HOUR TOTAL	0	35	9		156	3	0		195	3408	12		0	0	0			3818 Total Intersection Vol	

WHOLE INTERSECTION

PEAK HR VOL	3,818	4 :15 Peak Period Starting at	5 :15 Peak Period Ending at
PEAK 15 MIN VOL	993		
PEAK HR FACTOR (PH	0.96		
-			

BY APPROACH

PEAK HR VOL	44	159	3,615	-
PEAK 15 MIN VOL	16	47	944	-
PEAK HR FACTOR (PH	0.69	0.85	0.96	-
	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	-	-

WilburSmith ASSOCIATES

Intersection:	**Pacific Street**	/	**WB Nimitz Highway**	**Date:**	**April 28, 2011** / **Thursday**
Direction	**N / S**		**E / W**		
Time Period:	**3 - 6:30 pm**			**Project:**	**104942**

INPUTS

Labels =>	D	E	F	Apprh PHF	J	K	L	Apprh PHF	A	B	C	Apprh PHF	G	H	I	Apprh PHF
	Northbound				Southbound				Eastbound				Westbound			
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
3 :15	36	36	0		0	26	0		0	0	0		15	619	24	
3 :30	35	35	0		0	27	0		0	0	0		13	676	19	
3 :45	31	38	0		0	28	0		0	0	0		15	661	20	
4 :00	24	43	0		0	33	0		0	0	0		11	674	16	
4 :15	31	35	0		0	27	0		0	0	0		11	633	18	
4 :30	28	34	0		0	24	0		0	0	0		7	759	16	
4 :45	28	31	0		0	32	0		0	0	0		8	722	28	
5 :00	29	35	0		0	37	0		0	0	0		6	735	12	
5 :15	28	17	0		0	36	0		0	0	0		9	711	18	
5 :30	25	25	0		0	23	1		0	0	0		9	772	12	
5 :45	24	30	0		0	27	32		0	0	0		9	654	16	
6 :00	16	23	0		0	26	0		0	0	0		6	563	20	
6 :15	14	22	0		0	22	0		0	0	0		8	569	24	
6 :30	11	17	0		0	2	1		0	0	0		4	545	15	

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
3 :15	36	36	0	72	0	26	0	26	0	0	0	0	15	619	24	658	756		3 :15
3 :30	35	35	0	70	0	27	0	27	0	0	0	0	13	676	19	708	805		3 :30
3 :45	31	38	0	69	0	28	0	28	0	0	0	0	15	661	20	696	793		3 :45
4 :00	24	43	0	67	0	33	0	33	0	0	0	0	11	674	16	701	801	3155	4 :00
4 :15	31	35	0	66	0	27	0	27	0	0	0	0	11	633	18	662	755	3154	4 :15
4 :30	28	34	0	62	0	24	0	24	0	0	0	0	7	759	16	782	868	3217	4 :30
4 :45	28	31	0	59	0	32	0	32	0	0	0	0	8	722	28	758	849	3273	4 :45
5 :00	29	35	0	64	0	37	0	37	0	0	0	0	6	735	12	753	854	3326	5 :00
5 :15	28	17	0	45	0	36	0	36	0	0	0	0	9	711	18	738	819	3390	5 :15
5 :30	25	25	0	50	0	23	1	24	0	0	0	0	9	772	12	793	867	3389	5 :30
5 :45	24	30	0	54	0	27	32	59	0	0	0	0	9	654	16	679	792	3332	5 :45
6 :00	16	23	0	39	0	26	0	26	0	0	0	0	6	563	20	589	654	3132	6 :00
6 :15	14	22	0	36	0	22	0	22	0	0	0	0	8	569	24	601	659	2972	6 :15
6 :30	11	17	0	28	0	2	1	3	0	0	0	0	4	545	15	564	595	2700	6 :30
	113	117	0		0	129	0		0	0	0		30	2927	74			Peak Hour	
PEAK => HOUR TOTAL	113	117	0		0	129	0		0	0	0		30	2927	74			3390 Total Intersection Vol	

WHOLE INTERSECTION

PEAK HR VOL	3,390	**4 :15** Peak Period Starting at	**5 :15** Peak Period Ending at
PEAK 15 MIN VOL	868		
PEAK HR FACTOR (PH	0.98		
-			

BY APPROACH

PEAK HR VOL	230	129	-	3,031
PEAK 15 MIN VOL	64	37	-	782
PEAK HR FACTOR (PH	**0.90**	**0.87**	**-**	**0.97**
	CAUTION : PHF below 0.9	**CAUTION : PHF below 0.9**	-	-

WilburSmith ASSOCIATES

Intersection:	Kukahi Street / EB Nimitz Highway		Date:	April 28, 2011 Thursday
Direction	N / S	E / W		
Time Period:	3 - 6:30 pm		Project:	104942

INPUTS

EB L includes turns into Zippy's

Labels =>	D	E	F	Apprh PHF	J	K	L	Apprh PHF	A	B	C	Apprh PHF	G	H	I	Apprh PHF
	Northbound				Southbound				Eastbound				Westbound			
15-min period Ending Time	L	T	R		L	T	R		L	T	R		L	T	R	
3 :15	0	0	8		5	4	0		0	678	1		0	0	0	
3 :30	0	0	4		8	1	0		0	804	2		0	0	0	
3 :45	0	0	5		18	1	0		0	802	2		0	0	0	
4 :00	0	0	4		4	0	0		0	825	2		0	0	0	
4 :15	0	0	2		6	0	0		0	811	3		0	0	0	
4 :30	0	0	2		8	0	0		0	815	4		0	0	0	
4 :45	0	0	4		11	0	0		0	854	2		0	0	0	
5 :00	0	0	2		12	0	0		0	887	0		0	0	0	
5 :15	0	0	6		10	0	0		0	766	1		0	0	0	
5 :30	0	0	1		8	0	0		0	835	0		0	0	0	
5 :45	0	0	4		8	2	0		0	761	0		0	0	0	
6 :00	0	0	2		5	1	0		0	607	3		0	0	0	
6 :15	0	0	3		2	0	0		0	596	1		0	0	0	
6 :30	0	0	1		6	1	0		0	422	2		0	0	0	

OUTPUTS

15-min period Ending Time	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	L	T	R	Apprh PHF	15 min. totals	60 min totals	15-min period Ending Time
3 :15	0	0	8	8	5	4	0	9	0	678	1	679	0	0	0	0	696		3 :15
3 :30	0	0	4	4	8	1	0	9	0	804	2	806	0	0	0	0	819		3 :30
3 :45	0	0	5	5	18	1	0	19	0	802	2	804	0	0	0	0	828		3 :45
4 :00	0	0	4	4	4	0	0	4	0	825	2	827	0	0	0	0	835	3178	4 :00
4 :15	0	0	2	2	6	0	0	6	0	811	3	814	0	0	0	0	822	3304	4 :15
4 :30	0	0	2	2	8	0	0	8	0	815	4	819	0	0	0	0	829	3314	4 :30
4 :45	0	0	4	4	11	0	0	11	0	854	2	856	0	0	0	0	871	3357	4 :45
5 :00	0	0	2	2	12	0	0	12	0	887	0	887	0	0	0	0	901	3423	5 :00
5 :15	0	0	6	6	10	0	0	10	0	766	1	767	0	0	0	0	783	3384	5 :15
5 :30	0	0	1	1	8	0	0	8	0	835	0	835	0	0	0	0	844	3399	5 :30
5 :45	0	0	4	4	8	2	0	10	0	761	0	761	0	0	0	0	775	3303	5 :45
6 :00	0	0	2	2	5	1	0	6	0	607	3	610	0	0	0	0	618	3020	6 :00
6 :15	0	0	3	3	2	0	0	2	0	596	1	597	0	0	0	0	602	2839	6 :15
6 :30	0	0	1	1	6	1	0	7	0	422	2	424	0	0	0	0	432	2427	6 :30
	0	0	10		37	0	0		0	3367	9		0	0	0			Peak Hour	
PEAK => HOUR TOTAL	0	0	10		37	0	0		0	3367	9		0	0	0			3423 Total Intersection Vol	

WHOLE INTERSECTION

PEAK HR VOL	3,423	4 :00 Peak Period Starting at	5 :00 Peak Period Ending at
PEAK 15 MIN VOL	901		
PEAK HR FACTOR (PH	0.95		
-			

BY APPROACH

PEAK HR VOL	10	37	3,376	-
PEAK 15 MIN VOL	4	12	887	-
PEAK HR FACTOR (PH	0.63	0.77	0.95	-
	CAUTION : PHF below 0.9	CAUTION : PHF below 0.9	-	-

WilburSmith ASSOCIATES

APPENDIX C

SYNCHRO OUTPUTS

Existing Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	25	22	17	213	38	112	0	1557	267	111	4341	125
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0		6.0	6.0	5.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00		0.95	1.00	0.97	0.86	
Frpb, ped/bikes		1.00	0.94	1.00	1.00	0.97		1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	
Flt Protected		0.97	1.00	0.95	0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1683	1375	1681	1539	1536		3539	1520	3433	6381	
Flt Permitted		0.97	1.00	0.95	0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1683	1375	1681	1539	1536		3539	1520	3433	6381	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.89	0.89	0.89	0.99	0.99	0.99
Adj. Flow (vph)	31	28	21	266	48	140	0	1749	300	112	4385	126
RTOR Reduction (vph)	0	0	20	0	0	122	0	0	67	0	1	0
Lane Group Flow (vph)	0	59	1	157	157	18	0	1749	233	112	4510	0
Confl. Peds. (#/hr)			10			10			10			
Heavy Vehicles (%)	10%	10%	10%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)					0							
Turn Type	Split		Perm	Split		Perm			Perm	Prot		
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)		13.7	13.7	30.1	30.1	30.1		162.2	162.2	13.0	180.2	
Effective Green, g (s)		13.7	13.7	30.1	30.1	30.1		162.2	162.2	13.0	180.2	
Actuated g/C Ratio		0.06	0.06	0.13	0.13	0.13		0.68	0.68	0.05	0.75	
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0		6.0	6.0	5.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		96	78	211	193	193		2392	1027	186	4791	
v/s Ratio Prot		c0.04		0.09	c0.10			0.49		0.03	c0.71	
v/s Ratio Perm			0.00			0.01			0.15			
v/c Ratio		0.61	0.02	0.74	0.81	0.09		0.73	0.23	0.60	0.94	
Uniform Delay, d1		110.6	106.8	101.2	102.2	92.8		24.9	14.9	111.0	25.4	
Progression Factor		1.00	1.00	1.00	1.00	1.00		0.90	0.56	1.00	1.00	
Incremental Delay, d2		11.1	0.1	13.3	22.4	0.2		1.9	0.5	5.4	5.1	
Delay (s)		121.7	106.9	114.5	124.6	93.1		24.3	8.8	116.4	30.5	
Level of Service		F	F	F	F	F		C	A	F	C	
Approach Delay (s)		117.8			111.4			22.1			32.5	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM Average Control Delay	35.5	HCM Level of Service	D
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	240.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	99.2%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	16	0	0	74	0	1750	113	0	4534	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.50	0.92	0.92	0.92	0.92	0.95	0.95	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	32	0	0	80	0	1842	119	0	4875	40
Pedestrians		10			10			10			10	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											697	
pX, platoon unblocked	0.27	0.27	0.27	0.27	0.27		0.27					
vC, conflicting volume	5917	6757	1259	3081	6737	941	4885			1852		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5690	8816	0	0	8742	941	1854			1852		
tC, single (s)	7.7	6.7	7.1	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	89	100	100	69	100			100		
cM capacity (veh/h)	0	0	280	236	0	260	86			321		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	32	80	921	921	119	1393	1393	1393	736
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	32	80	0	0	119	0	0	0	40
cSH	280	260	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.11	0.31	0.54	0.54	0.07	0.82	0.82	0.82	0.43
Queue Length 95th (ft)	10	32	0	0	0	0	0	0	0
Control Delay (s)	19.5	24.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	C							
Approach Delay (s)	19.5	24.9	0.0			0.0			
Approach LOS	C	C							

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	79.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	14	4	4	0	0	4527	23	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.82	0.82	0.82	0.93	0.93	0.93	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	21	5	5	0	0	4868	25	0	0	0
Pedestrians		10									10	
Lane Width (ft)		12.0									0.0	
Walking Speed (ft/s)		4.0									4.0	
Percent Blockage		1									0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											879	
pX, platoon unblocked												
vC, conflicting volume	4893	4890	1249	1248	4902	0	0			4902		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4893	4890	1249	1248	4902	0	0			4902		
tC, single (s)	7.7	6.7	7.1	7.7	*3.5	7.1	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	100	100	86	95	88	100	100			100		
cM capacity (veh/h)	0	1	152	104	42	1059	1622			18		

Direction, Lane #	NB 1	SB 1	SB 2	SE 1	SE 2	SE 3	SE 4
Volume Total	21	5	5	1391	1391	1391	720
Volume Left	0	5	0	0	0	0	0
Volume Right	21	0	0	0	0	0	25
cSH	152	104	42	1700	1700	1700	1700
Volume to Capacity	0.14	0.05	0.12	0.82	0.82	0.82	0.42
Queue Length 95th (ft)	12	4	9	0	0	0	0
Control Delay (s)	32.4	41.3	102.9	0.0	0.0	0.0	0.0
Lane LOS	D	E	F				
Approach Delay (s)	32.4	72.1		0.0			
Approach LOS	D	F					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		

* User Entered Value

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	276	4230	39	0	0	0	0	39	10	96	31	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0						6.0		6.0	6.0	
Lane Util. Factor		0.86						1.00		1.00	1.00	
Frpb, ped/bikes		1.00						0.99		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		1.00						0.97		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		6378						1671		1770	1727	
Flt Permitted		1.00						1.00		0.70	1.00	
Satd. Flow (perm)		6378						1671		1313	1727	
Peak-hour factor, PHF	0.98	0.98	0.98	0.92	0.92	0.92	0.61	0.61	0.61	0.80	0.80	0.80
Adj. Flow (vph)	282	4316	40	0	0	0	0	64	16	120	39	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	4637	0	0	0	0	0	80	0	120	39	0
Confl. Peds. (#/hr)	10		10						10			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	10%	2%	10%	2%
Turn Type	Split									Perm		
Protected Phases	2	2						8			4	
Permitted Phases										4		
Actuated Green, G (s)		91.0						16.0		16.0	16.0	
Effective Green, g (s)		91.0						16.0		16.0	16.0	
Actuated g/C Ratio		0.76						0.13		0.13	0.13	
Clearance Time (s)		7.0						6.0		6.0	6.0	
Vehicle Extension (s)		5.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		4837						223		175	230	
v/s Ratio Prot		c0.73						0.05			0.02	
v/s Ratio Perm										c0.09		
v/c Ratio		0.96						0.36		0.69	0.17	
Uniform Delay, d1		12.8						47.3		49.6	46.1	
Progression Factor		2.08						1.00		0.89	0.89	
Incremental Delay, d2		3.6						1.0		10.4	0.3	
Delay (s)		30.3						48.3		54.4	41.6	
Level of Service		C						D		D	D	
Approach Delay (s)		30.3			0.0			48.3			51.3	
Approach LOS		C			A			D			D	

Intersection Summary			
HCM Average Control Delay	31.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	89.0%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	75	1745	141	85	230	0	0	52	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			6.0			6.0	6.0
Lane Util. Factor					0.86			0.95			0.95	1.00
Frpb, ped/bikes					1.00			1.00			1.00	0.97
Flpb, ped/bikes					1.00			1.00			1.00	1.00
Frt					0.99			1.00			1.00	0.85
Flt Protected					1.00			0.99			1.00	1.00
Satd. Flow (prot)					6159			3238			3539	1539
Flt Permitted					1.00			0.85			1.00	1.00
Satd. Flow (perm)					6159			2783			3539	1539
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	1.00	1.00	1.00	0.81	0.81	0.81
Adj. Flow (vph)	0	0	0	79	1837	148	85	230	0	0	64	51
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	0	15
Lane Group Flow (vph)	0	0	0	0	2057	0	0	315	0	0	64	36
Confl. Peds. (#/hr)				10		10						10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	10%	2%	2%	2%
Parking (#/hr)					0							
Turn Type				Split			Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases							8					4
Actuated Green, G (s)					88.0			19.0			19.0	19.0
Effective Green, g (s)					88.0			19.0			19.0	19.0
Actuated g/C Ratio					0.73			0.16			0.16	0.16
Clearance Time (s)					7.0			6.0			6.0	6.0
Vehicle Extension (s)					5.0			3.0			3.0	3.0
Lane Grp Cap (vph)					4517			441			560	244
v/s Ratio Prot					c0.33						0.02	
v/s Ratio Perm								c0.11				0.02
v/c Ratio					0.46			0.71			0.11	0.15
Uniform Delay, d1					6.4			47.9			43.3	43.5
Progression Factor					1.00			0.98			1.00	1.00
Incremental Delay, d2					0.3			2.9			0.1	0.3
Delay (s)					6.7			50.0			43.4	43.8
Level of Service					A			D			D	D
Approach Delay (s)		0.0			6.7			50.0			43.6	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.50		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	4283	31	0	0	0	0	0	16	14	5	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.57	0.57	0.57	0.43	0.43	0.43
Hourly flow rate (vph)	0	4461	32	0	0	0	0	0	28	33	12	0
Pedestrians					10			10				
Lane Width (ft)					0.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		906										
pX, platoon unblocked				0.29			0.29	0.29	0.29	0.29	0.29	
vC, conflicting volume	0			4504			4493	4488	1152	1153	4504	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			923			888	868	0	0	923	0
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.1	3.4
p0 queue free %	100			100			100	100	91	88	84	100
cM capacity (veh/h)	1622			215			61	84	309	272	74	1059

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	NB 1	SB 1	SB 2
Volume Total	1275	1275	1275	670	28	33	12
Volume Left	0	0	0	0	0	33	0
Volume Right	0	0	0	32	28	0	0
cSH	1700	1700	1700	1700	309	272	74
Volume to Capacity	0.75	0.75	0.75	0.39	0.09	0.12	0.16
Queue Length 95th (ft)	0	0	0	0	7	10	13
Control Delay (s)	0.0	0.0	0.0	0.0	17.8	20.0	62.1
Lane LOS					C	C	F
Approach Delay (s)	0.0				17.8	31.1	
Approach LOS					C	D	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	17	16	10	299	11	261	14	2745	479	245	3358	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes		1.00	0.89	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1816	1411	1681	1522	1537	1770	5085	1522	3433	5081	
Flt Permitted		0.97	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1816	1411	1681	1522	1537	1770	5085	1522	3433	5081	
Peak-hour factor, PHF	0.63	0.63	0.63	0.80	0.80	0.80	0.86	0.86	0.86	0.97	0.97	0.97
Adj. Flow (vph)	27	25	16	374	14	326	16	3192	557	253	3462	18
RTOR Reduction (vph)	0	0	16	0	0	84	0	0	125	0	0	0
Lane Group Flow (vph)	0	52	0	194	194	242	16	3192	432	253	3480	0
Confl. Peds. (#/hr)			10			10			10			
Parking (#/hr)					0							
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)		7.0	7.0	37.9	37.9	37.9	3.6	145.9	145.9	18.2	160.5	
Effective Green, g (s)		7.0	7.0	37.9	37.9	37.9	3.6	145.9	145.9	18.2	160.5	
Actuated g/C Ratio		0.03	0.03	0.16	0.16	0.16	0.02	0.63	0.63	0.08	0.70	
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		55	43	277	251	253	28	3226	965	272	3546	
v/s Ratio Prot		c0.03		0.12	0.13		0.01	0.63		c0.07	c0.68	
v/s Ratio Perm			0.00			c0.16			0.28			
v/c Ratio		0.95	0.01	0.70	0.77	0.96	0.57	0.99	0.45	0.93	0.98	
Uniform Delay, d1		111.3	108.1	90.7	91.9	95.2	112.4	41.3	21.5	105.3	33.3	
Progression Factor		1.00	1.00	1.00	1.00	1.00	1.00	1.03	1.08	1.00	1.00	
Incremental Delay, d2		100.6	0.1	7.8	13.7	43.9	21.7	12.4	1.3	36.3	11.3	
Delay (s)		211.9	108.2	98.4	105.7	139.1	134.3	54.8	24.5	141.6	44.7	
Level of Service		F	F	F	F	F	F	D	C	F	D	
Approach Delay (s)		187.5			119.0			50.7			51.2	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM Average Control Delay	57.9	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	230.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	41	0	0	155	0	3083	148	0	3662	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.92	0.92	0.92	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	60	0	0	168	0	3178	153	0	3775	5
Pedestrians		10			10			10			10	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											697	
pX, platoon unblocked	0.32	0.32	0.32	0.32	0.32		0.32					
vC, conflicting volume	5026	6976	1281	4457	6974	1079	3785			3188		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	6152	12282	0	4364	12274	1079	2254			3188		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	82	100	100	20	100			100		
cM capacity (veh/h)	0	0	339	0	0	210	71			94		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	60	168	1059	1059	1059	153	1510	1510	760
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	60	168	0	0	0	153	0	0	5
cSH	339	210	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.18	0.80	0.62	0.62	0.62	0.09	0.89	0.89	0.45
Queue Length 95th (ft)	16	144	0	0	0	0	0	0	0
Control Delay (s)	17.9	67.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	F							
Approach Delay (s)	17.9	67.9	0.0				0.0		
Approach LOS	C	F							

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	8	21	2	0	0	3700	3	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.82	0.82	0.82	0.93	0.93	0.93	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	12	26	2	0	0	3978	3	0	0	0
Pedestrians		10									10	
Lane Width (ft)		12.0									0.0	
Walking Speed (ft/s)		4.0									4.0	
Percent Blockage		1									0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											879	
pX, platoon unblocked												
vC, conflicting volume	3991	3990	1016	1017	3992	0	0			3992		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3991	3990	1016	1017	3992	0	0			3992		
tC, single (s)	7.5	6.5	6.9	7.5	*3.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	95	86	97	100	100			100		
cM capacity (veh/h)	1	3	234	181	83	1084	1622			44		

Direction, Lane #	NB 1	SB 1	SB 2	SE 1	SE 2	SE 3	SE 4
Volume Total	12	26	2	1137	1137	1137	572
Volume Left	0	26	0	0	0	0	0
Volume Right	12	0	0	0	0	0	3
cSH	234	181	83	1700	1700	1700	1700
Volume to Capacity	0.05	0.14	0.03	0.67	0.67	0.67	0.34
Queue Length 95th (ft)	4	12	2	0	0	0	0
Control Delay (s)	21.2	28.1	49.9	0.0	0.0	0.0	0.0
Lane LOS	C	D	E				
Approach Delay (s)	21.2	30.0		0.0			
Approach LOS	C	D					

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

* User Entered Value

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	203	3513	13	0	0	0	0	35	9	156	3	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0						5.0		6.0	6.0	
Lane Util. Factor		0.86						1.00		1.00	1.00	
Frpb, ped/bikes		1.00						0.99		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		1.00						0.97		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		6383						1802		1770	1863	
Flt Permitted		1.00						1.00		0.72	1.00	
Satd. Flow (perm)		6383						1802		1332	1863	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.69	0.69	0.69	0.85	0.85	0.85
Adj. Flow (vph)	211	3659	14	0	0	0	0	51	13	184	4	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	3884	0	0	0	0	0	64	0	184	4	0
Confl. Peds. (#/hr)	10		10						10			
Turn Type	Perm									Perm		
Protected Phases		2						8			4	
Permitted Phases	2									4		
Actuated Green, G (s)		82.1						20.9		19.9	19.9	
Effective Green, g (s)		82.1						20.9		19.9	19.9	
Actuated g/C Ratio		0.71						0.18		0.17	0.17	
Clearance Time (s)		7.0						5.0		6.0	6.0	
Vehicle Extension (s)		5.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		4557						327		230	322	
v/s Ratio Prot								0.04			0.00	
v/s Ratio Perm		0.61								c0.14		
v/c Ratio		0.85						0.20		0.80	0.01	
Uniform Delay, d1		12.0						39.9		45.6	39.4	
Progression Factor		2.03						1.00		0.78	0.36	
Incremental Delay, d2		1.0						0.3		17.5	0.0	
Delay (s)		25.4						40.2		53.0	14.1	
Level of Service		C						D		D	B	
Approach Delay (s)		25.4			0.0			40.2			52.2	
Approach LOS		C			A			D			D	

Intersection Summary			
HCM Average Control Delay	26.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	30	3010	74	116	122	0	0	129	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			6.0			6.0	6.0
Lane Util. Factor					0.86			0.95			0.95	1.00
Frpb, ped/bikes					1.00			1.00			1.00	0.97
Flpb, ped/bikes					1.00			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			0.98			1.00	1.00
Satd. Flow (prot)					6219			3455			3539	1540
Flt Permitted					1.00			0.76			1.00	1.00
Satd. Flow (perm)					6219			2681			3539	1540
Peak-hour factor, PHF	0.92	0.92	0.92	0.97	0.97	0.97	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	31	3103	76	129	136	0	0	148	147
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	1
Lane Group Flow (vph)	0	0	0	0	3208	0	0	265	0	0	148	146
Confl. Peds. (#/hr)				10		10						10
Parking (#/hr)					0							
Turn Type				Perm			Perm					Perm
Protected Phases					2			8			4	
Permitted Phases				2			8					4
Actuated Green, G (s)					84.9			17.1			17.1	17.1
Effective Green, g (s)					84.9			17.1			17.1	17.1
Actuated g/C Ratio					0.74			0.15			0.15	0.15
Clearance Time (s)					7.0			6.0			6.0	6.0
Vehicle Extension (s)					5.0			3.0			3.0	3.0
Lane Grp Cap (vph)					4591			399			526	229
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.52			c0.10				0.09
v/c Ratio					0.70			0.66			0.28	0.64
Uniform Delay, d1					8.1			46.2			43.5	46.0
Progression Factor					1.00			1.03			1.00	1.00
Incremental Delay, d2					0.9			2.9			0.3	5.7
Delay (s)					9.0			50.5			43.8	51.8
Level of Service					A			D			D	D
Approach Delay (s)		0.0			9.0			50.5			47.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	79.5%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	3647	11	0	0	0	0	0	10	37	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.57	0.57	0.57	0.43	0.43	0.43
Hourly flow rate (vph)	0	3799	11	0	0	0	0	0	18	86	0	0
Pedestrians					10			10				
Lane Width (ft)					0.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		906										
pX, platoon unblocked				0.52			0.52	0.52	0.52	0.52	0.52	
vC, conflicting volume	0			3820			3815	3815	975	977	3820	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1788			1777	1777	0	0	1788	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	97	83	100	100
cM capacity (veh/h)	1622			176			27	42	556	509	41	1084

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	NB 1	SB 1	SB 2
Volume Total	1085	1085	1085	554	18	86	0
Volume Left	0	0	0	0	0	86	0
Volume Right	0	0	0	11	18	0	0
cSH	1700	1700	1700	1700	556	509	1700
Volume to Capacity	0.64	0.64	0.64	0.33	0.03	0.17	0.00
Queue Length 95th (ft)	0	0	0	0	2	15	0
Control Delay (s)	0.0	0.0	0.0	0.0	11.7	13.5	0.0
Lane LOS					B	B	A
Approach Delay (s)	0.0				11.7	13.5	
Approach LOS					B	B	

Intersection Summary			
Average Delay	0.3		
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

Existing plus Project Conditions

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	11	10	8	213	69	112	0	1571	279	111	4341	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0		6.0	6.0	5.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00		0.95	1.00	0.97	0.86	
Frpb, ped/bikes		1.00	0.90	1.00	1.00	0.97		1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00		1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85		1.00	0.85	1.00	1.00	
Flt Protected		0.97	1.00	0.95	0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1682	1321	1681	1552	1536		3539	1520	3433	6378	
Flt Permitted		0.97	1.00	0.95	0.97	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1682	1321	1681	1552	1536		3539	1520	3433	6378	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.89	0.89	0.89	0.99	0.99	0.99
Adj. Flow (vph)	14	12	10	266	86	140	0	1765	313	112	4385	139
RTOR Reduction (vph)	0	0	10	0	0	120	0	0	68	0	1	0
Lane Group Flow (vph)	0	26	0	173	179	20	0	1765	245	112	4523	0
Confl. Peds. (#/hr)			10			10			10			
Heavy Vehicles (%)	10%	10%	10%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Parking (#/hr)					0							
Turn Type	Split		Perm	Split		Perm			Perm	Prot		
Protected Phases	4	4		8	8			2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)		8.0	8.0	33.5	33.5	33.5		164.3	164.3	13.2	182.5	
Effective Green, g (s)		8.0	8.0	33.5	33.5	33.5		164.3	164.3	13.2	182.5	
Actuated g/C Ratio		0.03	0.03	0.14	0.14	0.14		0.68	0.68	0.05	0.76	
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0		6.0	6.0	5.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0		5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		56	44	235	217	214		2423	1041	189	4850	
v/s Ratio Prot		c0.02		0.10	c0.12			0.50		0.03	c0.71	
v/s Ratio Perm			0.00			0.01			0.16			
v/c Ratio		0.46	0.01	0.74	0.82	0.09		0.73	0.24	0.59	0.93	
Uniform Delay, d1		113.9	112.2	99.0	100.4	90.0		23.8	14.2	110.8	23.7	
Progression Factor		1.00	1.00	1.00	1.00	1.00		0.89	0.55	1.00	1.00	
Incremental Delay, d2		6.0	0.1	11.4	21.8	0.2		1.8	0.5	4.9	4.5	
Delay (s)		119.9	112.2	110.4	122.2	90.2		23.1	8.4	115.7	28.1	
Level of Service		F	F	F	F	F		C	A	F	C	
Approach Delay (s)		117.8			108.9			20.9			30.3	
Approach LOS		F			F			C			C	

Intersection Summary			
HCM Average Control Delay	33.4	HCM Level of Service	C
HCM Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	240.0	Sum of lost time (s)	16.0
Intersection Capacity Utilization	100.0%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	16	0	0	74	0	1776	113	0	4525	37
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.50	0.92	0.92	0.92	0.92	0.95	0.95	0.93	0.93	0.93
Hourly flow rate (vph)	0	0	32	0	0	80	0	1869	119	0	4866	40
Pedestrians		10			10			10			10	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											697	
pX, platoon unblocked	0.26	0.26	0.26	0.26	0.26		0.26					
vC, conflicting volume	5921	6775	1256	3106	6755	955	4876			1879		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	5694	8987	0	0	8910	955	1666			1879		
tC, single (s)	7.7	6.7	7.1	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	88	100	100	68	100			100		
cM capacity (veh/h)	0	0	270	227	0	255	98			313		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	32	80	935	935	119	1390	1390	1390	735
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	32	80	0	0	119	0	0	0	40
cSH	270	255	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.12	0.32	0.55	0.55	0.07	0.82	0.82	0.82	0.43
Queue Length 95th (ft)	10	33	0	0	0	0	0	0	0
Control Delay (s)	20.1	25.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	D							
Approach Delay (s)	20.1	25.5	0.0			0.0			
Approach LOS	C	D							

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	79.0%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	50	4	4	0	0	4515	23	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.82	0.82	0.82	0.93	0.93	0.93	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	75	5	5	0	0	4855	25	0	0	0
Pedestrians		10									10	
Lane Width (ft)		12.0									0.0	
Walking Speed (ft/s)		4.0									4.0	
Percent Blockage		1									0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											879	
pX, platoon unblocked												
vC, conflicting volume	4880	4877	1246	1298	4890	0	0			4890		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	4880	4877	1246	1298	4890	0	0			4890		
tC, single (s)	7.7	6.7	7.1	7.7	*3.5	7.1	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.6	4.1	3.4	3.6	4.1	3.4	2.2			2.2		
p0 queue free %	100	100	51	91	88	100	100			100		
cM capacity (veh/h)	0	1	153	57	42	1059	1622			18		

Direction, Lane #	NB 1	SB 1	SB 2	SE 1	SE 2	SE 3	SE 4
Volume Total	75	5	5	1387	1387	1387	718
Volume Left	0	5	0	0	0	0	0
Volume Right	75	0	0	0	0	0	25
cSH	153	57	42	1700	1700	1700	1700
Volume to Capacity	0.49	0.09	0.12	0.82	0.82	0.82	0.42
Queue Length 95th (ft)	58	7	9	0	0	0	0
Control Delay (s)	49.1	74.6	101.8	0.0	0.0	0.0	0.0
Lane LOS	E	F	F				
Approach Delay (s)	49.1	88.2		0.0			
Approach LOS	E	F					

Intersection Summary			
Average Delay	0.9		
Intersection Capacity Utilization	85.9%	ICU Level of Service	E
Analysis Period (min)	15		

* User Entered Value

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	276	4257	39	0	0	0	0	39	10	96	31	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0						6.0		6.0	6.0	
Lane Util. Factor		0.86						1.00		1.00	1.00	
Frpb, ped/bikes		1.00						0.99		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		1.00						0.97		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		6378						1671		1770	1727	
Flt Permitted		1.00						1.00		0.70	1.00	
Satd. Flow (perm)		6378						1671		1313	1727	
Peak-hour factor, PHF	0.98	0.98	0.98	0.92	0.92	0.92	0.61	0.61	0.61	0.80	0.80	0.80
Adj. Flow (vph)	282	4344	40	0	0	0	0	64	16	120	39	0
RTOR Reduction (vph)	0	1	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	4665	0	0	0	0	0	80	0	120	39	0
Confl. Peds. (#/hr)	10		10						10			
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	10%	2%	10%	2%
Turn Type	Split									Perm		
Protected Phases	2	2						8			4	
Permitted Phases										4		
Actuated Green, G (s)		91.0						16.0		16.0	16.0	
Effective Green, g (s)		91.0						16.0		16.0	16.0	
Actuated g/C Ratio		0.76						0.13		0.13	0.13	
Clearance Time (s)		7.0						6.0		6.0	6.0	
Vehicle Extension (s)		5.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		4837						223		175	230	
v/s Ratio Prot		c0.73						0.05			0.02	
v/s Ratio Perm										c0.09		
v/c Ratio		0.96						0.36		0.69	0.17	
Uniform Delay, d1		13.0						47.3		49.6	46.1	
Progression Factor		1.97						1.00		0.89	0.90	
Incremental Delay, d2		4.1						1.0		10.4	0.3	
Delay (s)		29.9						48.3		54.4	41.8	
Level of Service		C						D		D	D	
Approach Delay (s)		29.9			0.0			48.3			51.4	
Approach LOS		C			A			D			D	

Intersection Summary			
HCM Average Control Delay	30.9	HCM Level of Service	C
HCM Volume to Capacity ratio	0.92		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	89.4%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	75	1773	141	85	230	0	0	52	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			6.0			6.0	6.0
Lane Util. Factor					0.86			0.95			0.95	1.00
Frpb, ped/bikes					1.00			1.00			1.00	0.97
Flpb, ped/bikes					1.00			1.00			1.00	1.00
Frt					0.99			1.00			1.00	0.85
Flt Protected					1.00			0.99			1.00	1.00
Satd. Flow (prot)					6160			3238			3539	1539
Flt Permitted					1.00			0.85			1.00	1.00
Satd. Flow (perm)					6160			2783			3539	1539
Peak-hour factor, PHF	0.92	0.92	0.92	0.95	0.95	0.95	1.00	1.00	1.00	0.81	0.81	0.81
Adj. Flow (vph)	0	0	0	79	1866	148	85	230	0	0	64	51
RTOR Reduction (vph)	0	0	0	0	7	0	0	0	0	0	0	14
Lane Group Flow (vph)	0	0	0	0	2086	0	0	315	0	0	64	37
Confl. Peds. (#/hr)				10		10						10
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	10%	10%	10%	2%	2%	2%
Parking (#/hr)					0							
Turn Type				Split			Perm					Perm
Protected Phases				6	6			8			4	
Permitted Phases							8					4
Actuated Green, G (s)					88.0			19.0			19.0	19.0
Effective Green, g (s)					88.0			19.0			19.0	19.0
Actuated g/C Ratio					0.73			0.16			0.16	0.16
Clearance Time (s)					7.0			6.0			6.0	6.0
Vehicle Extension (s)					5.0			3.0			3.0	3.0
Lane Grp Cap (vph)					4517			441			560	244
v/s Ratio Prot					c0.34						0.02	
v/s Ratio Perm								c0.11				0.02
v/c Ratio					0.46			0.71			0.11	0.15
Uniform Delay, d1					6.5			47.9			43.3	43.5
Progression Factor					1.00			0.98			1.00	1.00
Incremental Delay, d2					0.3			2.9			0.1	0.3
Delay (s)					6.8			50.0			43.4	43.8
Level of Service					A			D			D	D
Approach Delay (s)		0.0			6.8			50.0			43.6	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	13.9	HCM Level of Service	B
HCM Volume to Capacity ratio	0.51		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	64.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	4310	31	0	0	0	0	0	16	14	5	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.57	0.57	0.57	0.43	0.43	0.43
Hourly flow rate (vph)	0	4490	32	0	0	0	0	0	28	33	12	0
Pedestrians					10			10				
Lane Width (ft)					0.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		906										
pX, platoon unblocked				0.29			0.29	0.29	0.29	0.29	0.29	
vC, conflicting volume	0			4532			4522	4516	1159	1160	4532	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1002			966	947	0	0	1002	0
tC, single (s)	4.1			4.1			7.5	6.5	7.1	7.5	6.7	7.1
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.4	3.5	4.1	3.4
p0 queue free %	100			100			100	100	91	88	83	100
cM capacity (veh/h)	1622			200			52	76	308	271	66	1059

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	NB 1	SB 1	SB 2
Volume Total	1283	1283	1283	674	28	33	12
Volume Left	0	0	0	0	0	33	0
Volume Right	0	0	0	32	28	0	0
cSH	1700	1700	1700	1700	308	271	66
Volume to Capacity	0.75	0.75	0.75	0.40	0.09	0.12	0.17
Queue Length 95th (ft)	0	0	0	0	7	10	15
Control Delay (s)	0.0	0.0	0.0	0.0	17.8	20.1	70.3
Lane LOS					C	C	F
Approach Delay (s)	0.0				17.8	33.3	
Approach LOS					C	D	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	82.5%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	20	22	16	299	11	261	14	2749	482	245	3358	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	
Lane Util. Factor		1.00	1.00	0.95	0.95	1.00	1.00	0.91	1.00	0.97	0.91	
Frpb, ped/bikes		1.00	0.89	1.00	1.00	0.97	1.00	1.00	0.96	1.00	1.00	
Flpb, ped/bikes		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Frt		1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	
Flt Protected		0.98	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1819	1411	1681	1522	1537	1770	5085	1522	3433	5081	
Flt Permitted		0.98	1.00	0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (perm)		1819	1411	1681	1522	1537	1770	5085	1522	3433	5081	
Peak-hour factor, PHF	0.63	0.63	0.63	0.80	0.80	0.80	0.86	0.86	0.86	0.97	0.97	0.97
Adj. Flow (vph)	32	35	25	374	14	326	16	3197	560	253	3462	19
RTOR Reduction (vph)	0	0	24	0	0	82	0	0	126	0	0	0
Lane Group Flow (vph)	0	67	1	194	194	244	16	3197	434	253	3481	0
Confl. Peds. (#/hr)			10			10			10			
Parking (#/hr)					0							
Turn Type	Split		Perm	Split		Perm	Prot		Perm	Prot		
Protected Phases	4	4		8	8		5	2		1	6	
Permitted Phases			4			8			2			
Actuated Green, G (s)		7.0	7.0	38.1	38.1	38.1	3.6	145.7	145.7	18.2	160.3	
Effective Green, g (s)		7.0	7.0	38.1	38.1	38.1	3.6	145.7	145.7	18.2	160.3	
Actuated g/C Ratio		0.03	0.03	0.17	0.17	0.17	0.02	0.63	0.63	0.08	0.70	
Clearance Time (s)		5.0	5.0	5.0	5.0	5.0	5.0	6.0	6.0	5.0	6.0	
Vehicle Extension (s)		3.0	3.0	3.0	3.0	3.0	3.0	5.0	5.0	3.0	5.0	
Lane Grp Cap (vph)		55	43	278	252	255	28	3221	964	272	3541	
v/s Ratio Prot		c0.04		0.12	0.13		0.01	0.63		c0.07	c0.69	
v/s Ratio Perm			0.00			c0.16			0.29			
v/c Ratio		1.22	0.02	0.70	0.77	0.96	0.57	0.99	0.45	0.93	0.98	
Uniform Delay, d1		111.5	108.2	90.5	91.8	95.2	112.4	41.6	21.6	105.3	33.5	
Progression Factor		1.00	1.00	1.00	1.00	1.00	0.99	1.03	1.08	1.00	1.00	
Incremental Delay, d2		191.7	0.2	7.4	13.2	44.3	21.7	13.0	1.3	36.3	11.6	
Delay (s)		303.2	108.3	97.9	105.0	139.4	133.4	55.8	24.7	141.6	45.2	
Level of Service		F	F	F	F	F	F	E	C	F	D	
Approach Delay (s)		250.3			118.8			51.5			51.7	
Approach LOS		F			F			D			D	

Intersection Summary			
HCM Average Control Delay	59.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	230.0	Sum of lost time (s)	21.0
Intersection Capacity Utilization	102.9%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	0	41	0	0	155	0	3090	148	0	3668	5
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.68	0.68	0.92	0.92	0.92	0.97	0.97	0.97	0.97	0.97	0.97
Hourly flow rate (vph)	0	0	60	0	0	168	0	3186	153	0	3781	5
Pedestrians		10			10			10			10	
Lane Width (ft)		12.0			12.0			12.0			12.0	
Walking Speed (ft/s)		4.0			4.0			4.0			4.0	
Percent Blockage		1			1			1			1	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											697	
pX, platoon unblocked	0.32	0.32	0.32	0.32	0.32		0.32					
vC, conflicting volume	5034	6990	1283	4466	6987	1082	3791			3196		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	6176	12307	0	4394	12299	1082	2278			3196		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	82	100	100	20	100			100		
cM capacity (veh/h)	0	0	340	0	0	209	70			93		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	NB 4	SB 1	SB 2	SB 3
Volume Total	60	168	1062	1062	1062	153	1513	1513	761
Volume Left	0	0	0	0	0	0	0	0	0
Volume Right	60	168	0	0	0	153	0	0	5
cSH	340	209	1700	1700	1700	1700	1700	1700	1700
Volume to Capacity	0.18	0.80	0.62	0.62	0.62	0.09	0.89	0.89	0.45
Queue Length 95th (ft)	16	145	0	0	0	0	0	0	0
Control Delay (s)	17.9	68.6	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Lane LOS	C	F							
Approach Delay (s)	17.9	68.6	0.0				0.0		
Approach LOS	C	F							

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	84.0%	ICU Level of Service	E
Analysis Period (min)	15		

HCM Unsignalized Intersection Capacity Analysis
3: Pier 33 Access Way & EB Nimitz Hwy

5/26/2011

Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations												
Volume (veh/h)	0	0	17	21	2	0	0	3703	3	0	0	0
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.67	0.67	0.67	0.82	0.82	0.82	0.93	0.93	0.93	0.92	0.92	0.92
Hourly flow rate (vph)	0	0	25	26	2	0	0	3982	3	0	0	0
Pedestrians		10									10	
Lane Width (ft)		12.0									0.0	
Walking Speed (ft/s)		4.0									4.0	
Percent Blockage		1									0	
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											879	
pX, platoon unblocked												
vC, conflicting volume	3995	3993	1017	1031	3995	0	0			3995		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	3995	3993	1017	1031	3995	0	0			3995		
tC, single (s)	7.5	6.5	6.9	7.5	*3.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	100	100	89	85	97	100	100			100		
cM capacity (veh/h)	1	3	233	166	82	1084	1622			44		

Direction, Lane #	NB 1	SB 1	SB 2	SE 1	SE 2	SE 3	SE 4
Volume Total	25	26	2	1138	1138	1138	572
Volume Left	0	26	0	0	0	0	0
Volume Right	25	0	0	0	0	0	3
cSH	233	166	82	1700	1700	1700	1700
Volume to Capacity	0.11	0.15	0.03	0.67	0.67	0.67	0.34
Queue Length 95th (ft)	9	13	2	0	0	0	0
Control Delay (s)	22.3	30.6	50.0	0.0	0.0	0.0	0.0
Lane LOS	C	D	E				
Approach Delay (s)	22.3	32.3		0.0			
Approach LOS	C	D					

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	73.2%	ICU Level of Service	D
Analysis Period (min)	15		

* User Entered Value

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	203	3528	13	0	0	0	0	35	9	156	3	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		7.0						5.0		6.0	6.0	
Lane Util. Factor		0.86						1.00		1.00	1.00	
Frpb, ped/bikes		1.00						0.99		1.00	1.00	
Flpb, ped/bikes		1.00						1.00		1.00	1.00	
Frt		1.00						0.97		1.00	1.00	
Flt Protected		1.00						1.00		0.95	1.00	
Satd. Flow (prot)		6383						1802		1770	1863	
Flt Permitted		1.00						1.00		0.72	1.00	
Satd. Flow (perm)		6383						1802		1332	1863	
Peak-hour factor, PHF	0.96	0.96	0.96	0.92	0.92	0.92	0.69	0.69	0.69	0.85	0.85	0.85
Adj. Flow (vph)	211	3675	14	0	0	0	0	51	13	184	4	0
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	3900	0	0	0	0	0	64	0	184	4	0
Confl. Peds. (#/hr)	10		10						10			
Turn Type	Perm									Perm		
Protected Phases		2						8			4	
Permitted Phases	2									4		
Actuated Green, G (s)		82.1						20.9		19.9	19.9	
Effective Green, g (s)		82.1						20.9		19.9	19.9	
Actuated g/C Ratio		0.71						0.18		0.17	0.17	
Clearance Time (s)		7.0						5.0		6.0	6.0	
Vehicle Extension (s)		5.0						3.0		3.0	3.0	
Lane Grp Cap (vph)		4557						327		230	322	
v/s Ratio Prot								0.04			0.00	
v/s Ratio Perm		0.61								c0.14		
v/c Ratio		0.86						0.20		0.80	0.01	
Uniform Delay, d1		12.1						39.9		45.6	39.4	
Progression Factor		2.03						1.00		0.78	0.36	
Incremental Delay, d2		1.0						0.3		17.5	0.0	
Delay (s)		25.6						40.2		53.0	14.1	
Level of Service		C						D		D	B	
Approach Delay (s)		25.6			0.0			40.2			52.2	
Approach LOS		C			A			D			D	

Intersection Summary			
HCM Average Control Delay	27.0	HCM Level of Service	C
HCM Volume to Capacity ratio	0.84		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	80.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	30	3027	74	116	122	0	0	129	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					7.0			6.0			6.0	6.0
Lane Util. Factor					0.86			0.95			0.95	1.00
Frpb, ped/bikes					1.00			1.00			1.00	0.97
Flpb, ped/bikes					1.00			1.00			1.00	1.00
Frt					1.00			1.00			1.00	0.85
Flt Protected					1.00			0.98			1.00	1.00
Satd. Flow (prot)					6219			3455			3539	1540
Flt Permitted					1.00			0.76			1.00	1.00
Satd. Flow (perm)					6219			2681			3539	1540
Peak-hour factor, PHF	0.92	0.92	0.92	0.97	0.97	0.97	0.90	0.90	0.90	0.87	0.87	0.87
Adj. Flow (vph)	0	0	0	31	3121	76	129	136	0	0	148	147
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	1
Lane Group Flow (vph)	0	0	0	0	3226	0	0	265	0	0	148	146
Confl. Peds. (#/hr)				10		10						10
Parking (#/hr)					0							
Turn Type				Perm			Perm					Perm
Protected Phases					2			8			4	
Permitted Phases				2			8					4
Actuated Green, G (s)					84.9			17.1			17.1	17.1
Effective Green, g (s)					84.9			17.1			17.1	17.1
Actuated g/C Ratio					0.74			0.15			0.15	0.15
Clearance Time (s)					7.0			6.0			6.0	6.0
Vehicle Extension (s)					5.0			3.0			3.0	3.0
Lane Grp Cap (vph)					4591			399			526	229
v/s Ratio Prot											0.04	
v/s Ratio Perm					0.52			c0.10				0.09
v/c Ratio					0.70			0.66			0.28	0.64
Uniform Delay, d1					8.2			46.2			43.5	46.0
Progression Factor					1.00			1.03			1.00	1.00
Incremental Delay, d2					0.9			2.9			0.3	5.7
Delay (s)					9.1			50.5			43.8	51.8
Level of Service					A			D			D	D
Approach Delay (s)		0.0			9.1			50.5			47.8	
Approach LOS		A			A			D			D	

Intersection Summary			
HCM Average Control Delay	15.0	HCM Level of Service	B
HCM Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	115.0	Sum of lost time (s)	13.0
Intersection Capacity Utilization	79.8%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	0	3662	11	0	0	0	0	0	10	37	0	0
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.96	0.96	0.96	0.92	0.92	0.92	0.57	0.57	0.57	0.43	0.43	0.43
Hourly flow rate (vph)	0	3815	11	0	0	0	0	0	18	86	0	0
Pedestrians					10			10				
Lane Width (ft)					0.0			12.0				
Walking Speed (ft/s)					4.0			4.0				
Percent Blockage					0			1				
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)		906										
pX, platoon unblocked				0.51			0.51	0.51	0.51	0.51	0.51	
vC, conflicting volume	0			3836			3830	3830	979	981	3836	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			1763			1752	1752	0	0	1763	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	100			100			100	100	97	83	100	100
cM capacity (veh/h)	1622			177			27	43	549	502	42	1084

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	NB 1	SB 1	SB 2
Volume Total	1090	1090	1090	556	18	86	0
Volume Left	0	0	0	0	0	86	0
Volume Right	0	0	0	11	18	0	0
cSH	1700	1700	1700	1700	549	502	1700
Volume to Capacity	0.64	0.64	0.64	0.33	0.03	0.17	0.00
Queue Length 95th (ft)	0	0	0	0	2	15	0
Control Delay (s)	0.0	0.0	0.0	0.0	11.8	13.6	0.0
Lane LOS					B	B	A
Approach Delay (s)	0.0				11.8	13.6	
Approach LOS					B	B	

Intersection Summary			
Average Delay	0.4		
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

APPENDIX D

SIMTRAFFIC OUTPUTS

Existing Conditions

Intersection: 1: Alakawa St & Nimitz Hwy

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	192	121	382	442	414	646	654	425	216	389	792	802
Average Queue (ft)	74	12	158	184	118	385	390	132	95	106	591	602
95th Queue (ft)	162	70	319	358	305	710	719	373	179	254	970	970
Link Distance (ft)	334		1163	1163		624	624				766	766
Upstream Blk Time (%)						4	5				13	13
Queuing Penalty (veh)						34	42				0	0
Storage Bay Dist (ft)		100			425			400	475	475		
Storage Blk Time (%)	15	1		2	0		13	0		0	17	
Queuing Penalty (veh)	3	1		2	0		36	0		0	19	

Intersection: 1: Alakawa St & Nimitz Hwy

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	785	799
Average Queue (ft)	626	641
95th Queue (ft)	968	970
Link Distance (ft)	766	766
Upstream Blk Time (%)	14	16
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Japan Foods Access Way & Nimitz Hwy

Movement	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	R	R	T	T	R	T	T	T	TR
Maximum Queue (ft)	48	113	236	240	83	638	643	658	642
Average Queue (ft)	2	48	61	68	3	299	295	285	297
95th Queue (ft)	21	95	196	206	42	754	751	724	748
Link Distance (ft)	451	92	220	220		624	624	624	624
Upstream Blk Time (%)		5	2	3	0	5	3	2	3
Queuing Penalty (veh)		0	22	24	0	55	31	28	35
Storage Bay Dist (ft)					250				
Storage Blk Time (%)				3	0				
Queuing Penalty (veh)				3	0				

Intersection: 3: Pier 33 Access Way & EB Nimitz Hwy

Movement	NB	SB	SB	SE	SE	SE	SE	B9	B9	B9	B9
Directions Served	R	L	T	T	T	T	TR	T	T	T	T
Maximum Queue (ft)	236	37	34	423	423	423	426	144	133	149	145
Average Queue (ft)	85	7	5	284	282	278	284	79	73	74	79
95th Queue (ft)	240	30	23	576	572	571	581	181	175	175	178
Link Distance (ft)	529		98	334	334	334	334	69	69	69	69
Upstream Blk Time (%)				23	17	15	16	21	16	14	16
Queuing Penalty (veh)				259	197	167	184	235	185	162	178
Storage Bay Dist (ft)		50									
Storage Blk Time (%)		4	0								
Queuing Penalty (veh)		0	0								

Intersection: 4: EB Nimitz Hwy & Pacific St

Movement	EB	EB	EB	EB	NB	SB	SB
Directions Served	LT	T	T	TR	TR	L	T
Maximum Queue (ft)	806	836	839	818	102	153	118
Average Queue (ft)	730	733	725	737	26	76	25
95th Queue (ft)	945	953	963	928	75	138	71
Link Distance (ft)	782	782	782	782	484	144	144
Upstream Blk Time (%)	21	15	13	13		2	0
Queuing Penalty (veh)	240	165	149	151		1	0
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: WB Nimitz Hwy & Pacific St

Movement	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	T	TR	LT	T	T	T
Maximum Queue (ft)	243	316	343	257	169	138	83	55
Average Queue (ft)	113	177	228	99	151	59	22	10
95th Queue (ft)	204	276	324	208	180	155	56	37
Link Distance (ft)	798	798	798	798	144	144	299	299
Upstream Blk Time (%)					39	1		
Queuing Penalty (veh)					61	1		
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 6: EB Nimitz Hwy & Kukahi St

Movement	EB	EB	EB	EB	NB	SB	SB
Directions Served	T	T	T	TR	R	L	T
Maximum Queue (ft)	861	134	332	352	46	46	54
Average Queue (ft)	73	11	26	34	9	12	9
95th Queue (ft)	457	72	161	180	31	37	36
Link Distance (ft)	779	779	779	779	264	192	192
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Zone Summary

Zone wide Queuing Penalty: 2671

Intersection: 1: Alakawa St & Nimitz Hwy

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	T	R	L	L
Maximum Queue (ft)	142	73	952	1115	450	111	652	658	668	425	298	499
Average Queue (ft)	51	4	316	735	427	21	534	535	537	248	186	219
95th Queue (ft)	117	39	757	1258	517	70	817	811	824	483	293	419
Link Distance (ft)	346		1151	1151			625	625	625			
Upstream Blk Time (%)			0	4			13	13	15			
Queuing Penalty (veh)			0	0			141	144	162			
Storage Bay Dist (ft)		100			425	220				400	475	475
Storage Blk Time (%)	8	0		0	62		27		20	0		0
Queuing Penalty (veh)	1	0		0	100		4		97	4		0

Intersection: 1: Alakawa St & Nimitz Hwy

Movement	SB	SB	SB
Directions Served	T	T	TR
Maximum Queue (ft)	792	796	796
Average Queue (ft)	619	640	641
95th Queue (ft)	1027	1015	1008
Link Distance (ft)	766	766	766
Upstream Blk Time (%)	10	10	12
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)	14		
Queuing Penalty (veh)	35		

Intersection: 2: Japan Foods Access Way & Nimitz Hwy

Movement	EB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	R	R	T	T	T	R	T	T	TR
Maximum Queue (ft)	90	119	237	252	254	211	278	245	241
Average Queue (ft)	19	101	144	151	160	35	45	38	32
95th Queue (ft)	67	121	301	307	312	162	171	149	135
Link Distance (ft)	458	90	219	219	219		625	625	625
Upstream Blk Time (%)		97	8	8	10	0			
Queuing Penalty (veh)		0	82	86	106	0			
Storage Bay Dist (ft)						250			
Storage Blk Time (%)					10	0			
Queuing Penalty (veh)					15	2			

Intersection: 3: Pier 33 Access Way & EB Nimitz Hwy

Movement	NB	SB	SB	SE	SE	SE	SE	B9
Directions Served	R	L	T	T	T	T	TR	T
Maximum Queue (ft)	47	62	30	207	210	103	102	8
Average Queue (ft)	10	18	3	18	15	9	9	0
95th Queue (ft)	34	49	17	98	90	55	52	6
Link Distance (ft)	557		98	334	334	334	334	69
Upstream Blk Time (%)		0						
Queuing Penalty (veh)		0						
Storage Bay Dist (ft)		100						
Storage Blk Time (%)		0						
Queuing Penalty (veh)		0						

Intersection: 4: EB Nimitz Hwy & Pacific St

Movement	EB	EB	EB	EB	NB	SB	SB
Directions Served	LT	T	T	TR	TR	L	T
Maximum Queue (ft)	698	684	606	601	137	162	24
Average Queue (ft)	393	381	365	393	47	113	3
95th Queue (ft)	709	688	628	623	124	182	15
Link Distance (ft)	780	780	780	780	484	144	144
Upstream Blk Time (%)	0	0				18	
Queuing Penalty (veh)	3	0				15	
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: WB Nimitz Hwy & Pacific St

Movement	WB	WB	WB	WB	NB	NB	SB	SB	B15
Directions Served	LT	T	T	TR	LT	T	T	T	T
Maximum Queue (ft)	426	596	692	720	166	138	187	34	10
Average Queue (ft)	215	326	416	484	142	41	77	3	1
95th Queue (ft)	360	519	617	676	187	134	163	20	9
Link Distance (ft)	798	798	798	798	144	144	299	299	250
Upstream Blk Time (%)			0	0	37	1	1		
Queuing Penalty (veh)			0	0	44	1	0		
Storage Bay Dist (ft)									
Storage Blk Time (%)									
Queuing Penalty (veh)									

Intersection: 6: EB Nimitz Hwy & Kukahi St

Movement	EB	EB	EB	EB	NB	SB
Directions Served	T	T	T	TR	R	L
Maximum Queue (ft)	539	112	158	164	31	73
Average Queue (ft)	49	7	11	18	3	26
95th Queue (ft)	367	46	66	94	14	57
Link Distance (ft)	779	779	779	779	264	192
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 1041

Existing plus Project Conditions

Intersection: 1: Alakawa St & Nimitz Hwy

Movement	EB	EB	WB	WB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	LT	R	L	LT	R	T	T	R	L	L	T	T
Maximum Queue (ft)	103	71	500	534	413	650	649	425	207	434	790	788
Average Queue (ft)	34	5	199	239	140	336	341	138	101	108	517	535
95th Queue (ft)	83	44	416	472	339	686	695	377	182	250	938	947
Link Distance (ft)	334		1163	1163		624	624				766	766
Upstream Blk Time (%)						3	4				8	9
Queuing Penalty (veh)						29	34				0	0
Storage Bay Dist (ft)		100			425			400	475	475		
Storage Blk Time (%)	2	3		5	0		10	0		0	13	
Queuing Penalty (veh)	0	1		5	0		28	0		0	14	

Intersection: 1: Alakawa St & Nimitz Hwy

Movement	SB	SB
Directions Served	T	TR
Maximum Queue (ft)	790	789
Average Queue (ft)	551	571
95th Queue (ft)	958	961
Link Distance (ft)	766	766
Upstream Blk Time (%)	9	10
Queuing Penalty (veh)	0	0
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 2: Japan Foods Access Way & Nimitz Hwy

Movement	EB	WB	NB	NB	NB	SB	SB	SB	SB
Directions Served	R	R	T	T	R	T	T	T	TR
Maximum Queue (ft)	56	108	236	217	126	542	524	541	541
Average Queue (ft)	4	52	56	59	7	229	220	219	222
95th Queue (ft)	29	103	183	193	68	674	657	657	665
Link Distance (ft)	451	92	220	220		624	624	624	624
Upstream Blk Time (%)		7	2	2	0	4	3	3	3
Queuing Penalty (veh)		0	17	21	0	47	35	32	29
Storage Bay Dist (ft)					250				
Storage Blk Time (%)				2	0				
Queuing Penalty (veh)				3	0				

Intersection: 3: Pier 33 Access Way & EB Nimitz Hwy

Movement	NB	SB	SB	SE	SE	SE	SE	B9	B9	B9	B9
Directions Served	R	L	T	T	T	T	TR	T	T	T	T
Maximum Queue (ft)	552	35	37	426	409	420	426	144	132	131	137
Average Queue (ft)	338	8	7	230	230	238	251	59	58	57	61
95th Queue (ft)	643	35	30	535	537	542	553	164	161	159	162
Link Distance (ft)	529		98	334	334	334	334	69	69	69	69
Upstream Blk Time (%)	33			17	13	12	12	16	13	11	11
Queuing Penalty (veh)	0			192	152	133	136	178	145	128	130
Storage Bay Dist (ft)		50									
Storage Blk Time (%)		10	3								
Queuing Penalty (veh)		0	0								

Intersection: 4: EB Nimitz Hwy & Pacific St

Movement	EB	EB	EB	EB	NB	SB	SB
Directions Served	LT	T	T	TR	TR	L	T
Maximum Queue (ft)	814	831	812	814	109	149	96
Average Queue (ft)	718	718	718	728	32	73	26
95th Queue (ft)	956	956	930	917	81	130	69
Link Distance (ft)	782	782	782	782	484	144	144
Upstream Blk Time (%)	18	14	12	13		1	
Queuing Penalty (veh)	210	156	132	144		1	
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: WB Nimitz Hwy & Pacific St

Movement	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	T	TR	LT	T	T	T
Maximum Queue (ft)	236	324	382	262	179	137	84	49
Average Queue (ft)	109	181	226	97	153	62	20	10
95th Queue (ft)	197	278	342	200	183	158	55	34
Link Distance (ft)	798	798	798	798	144	144	299	299
Upstream Blk Time (%)					37	1		
Queuing Penalty (veh)					59	1		
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 6: EB Nimitz Hwy & Kukahi St

Movement	EB	EB	EB	EB	NB	SB	SB
Directions Served	T	T	T	TR	R	L	T
Maximum Queue (ft)	708	179	306	311	59	42	52
Average Queue (ft)	46	14	29	38	9	13	10
95th Queue (ft)	346	83	146	168	36	39	36
Link Distance (ft)	779	779	779	779	264	192	192
Upstream Blk Time (%)	0						
Queuing Penalty (veh)	0						
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Zone Summary

Zone wide Queuing Penalty: 2192

Intersection: 1: Alakawa St & Nimitz Hwy

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	NB	SB	SB
Directions Served	LT	R	L	LT	R	L	T	T	T	R	L	L
Maximum Queue (ft)	153	97	1009	1136	450	72	650	664	656	425	350	499
Average Queue (ft)	62	8	352	738	431	19	533	536	532	243	191	224
95th Queue (ft)	132	56	886	1298	506	55	818	828	831	471	333	434
Link Distance (ft)	346		1151	1151			625	625	625			
Upstream Blk Time (%)			1	10			11	12	14			
Queuing Penalty (veh)			0	0			124	130	153			
Storage Bay Dist (ft)		100			425	220				400	475	475
Storage Blk Time (%)	10	0		0	61		27		19	1	0	0
Queuing Penalty (veh)	2	0		1	97		4		91	5	0	0

Intersection: 1: Alakawa St & Nimitz Hwy

Movement	SB	SB	SB
Directions Served	T	T	TR
Maximum Queue (ft)	785	804	798
Average Queue (ft)	618	632	637
95th Queue (ft)	1039	1041	1037
Link Distance (ft)	766	766	766
Upstream Blk Time (%)	12	11	12
Queuing Penalty (veh)	0	0	0
Storage Bay Dist (ft)			
Storage Blk Time (%)	15		
Queuing Penalty (veh)	36		

Intersection: 2: Japan Foods Access Way & Nimitz Hwy

Movement	EB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	R	R	T	T	T	R	T	T	TR
Maximum Queue (ft)	80	118	243	253	251	209	313	334	305
Average Queue (ft)	14	102	136	141	157	25	47	44	37
95th Queue (ft)	59	118	288	292	305	136	186	185	167
Link Distance (ft)	458	90	219	219	219		625	625	625
Upstream Blk Time (%)		98	6	6	8	0			
Queuing Penalty (veh)		0	62	63	84	0			
Storage Bay Dist (ft)						250			
Storage Blk Time (%)					8	0			
Queuing Penalty (veh)					11	1			

Intersection: 3: Pier 33 Access Way & EB Nimitz Hwy

Movement	NB	SB	SB	SE	SE	SE	SE
Directions Served	R	L	T	T	T	T	TR
Maximum Queue (ft)	69	62	24	183	128	107	108
Average Queue (ft)	18	20	4	25	16	14	13
95th Queue (ft)	54	54	19	121	84	70	63
Link Distance (ft)	557		98	334	334	334	334
Upstream Blk Time (%)		0					
Queuing Penalty (veh)		0					
Storage Bay Dist (ft)		100					
Storage Blk Time (%)		0					
Queuing Penalty (veh)		0					

Intersection: 4: EB Nimitz Hwy & Pacific St

Movement	EB	EB	EB	EB	NB	SB	SB
Directions Served	LT	T	T	TR	TR	L	T
Maximum Queue (ft)	644	645	612	623	140	161	28
Average Queue (ft)	395	381	374	400	62	108	2
95th Queue (ft)	736	701	648	645	184	177	15
Link Distance (ft)	780	780	780	780	484	144	144
Upstream Blk Time (%)	1	0	0	0		16	
Queuing Penalty (veh)	6	2	1	1		13	
Storage Bay Dist (ft)							
Storage Blk Time (%)							
Queuing Penalty (veh)							

Intersection: 5: WB Nimitz Hwy & Pacific St

Movement	WB	WB	WB	WB	NB	NB	SB	SB
Directions Served	LT	T	T	TR	LT	T	T	T
Maximum Queue (ft)	333	503	646	704	165	137	182	32
Average Queue (ft)	186	281	389	451	140	39	75	3
95th Queue (ft)	305	432	554	615	188	134	149	18
Link Distance (ft)	798	798	798	798	144	144	299	299
Upstream Blk Time (%)				0	36	0		
Queuing Penalty (veh)				0	43	0		
Storage Bay Dist (ft)								
Storage Blk Time (%)								
Queuing Penalty (veh)								

Intersection: 6: EB Nimitz Hwy & Kukahi St

Movement	EB	EB	EB	EB	NB	SB
Directions Served	T	T	T	TR	R	L
Maximum Queue (ft)	704	132	180	202	35	60
Average Queue (ft)	45	10	15	19	3	25
95th Queue (ft)	344	64	85	100	17	53
Link Distance (ft)	779	779	779	779	264	192
Upstream Blk Time (%)	0					
Queuing Penalty (veh)	0					
Storage Bay Dist (ft)						
Storage Blk Time (%)						
Queuing Penalty (veh)						

Zone Summary

Zone wide Queuing Penalty: 930

APPENDIX E

AUTOTURN OUTPUTS

Figure 1: Easement Area ROW

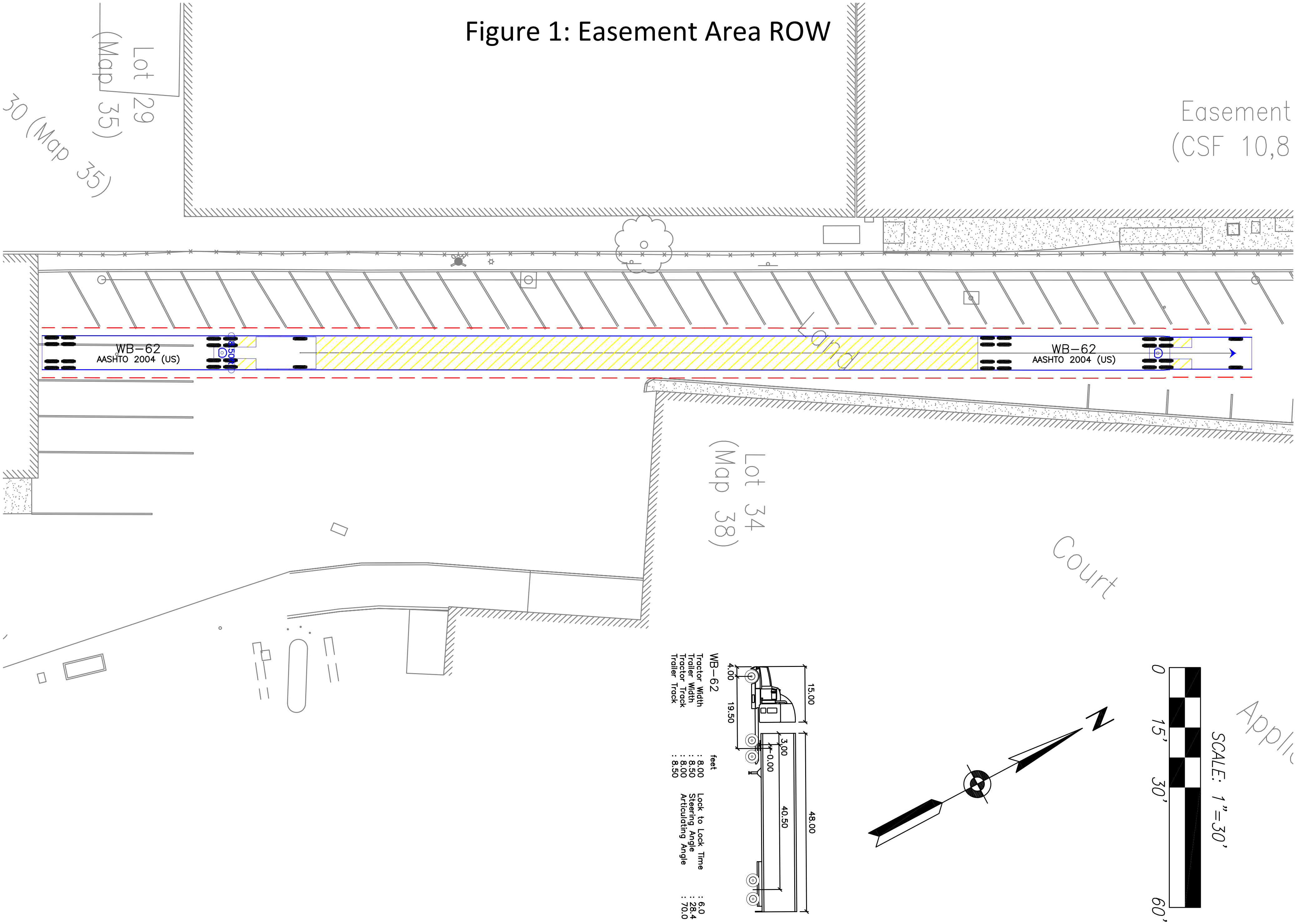


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Figure 2: Easement Turning Maneuvers

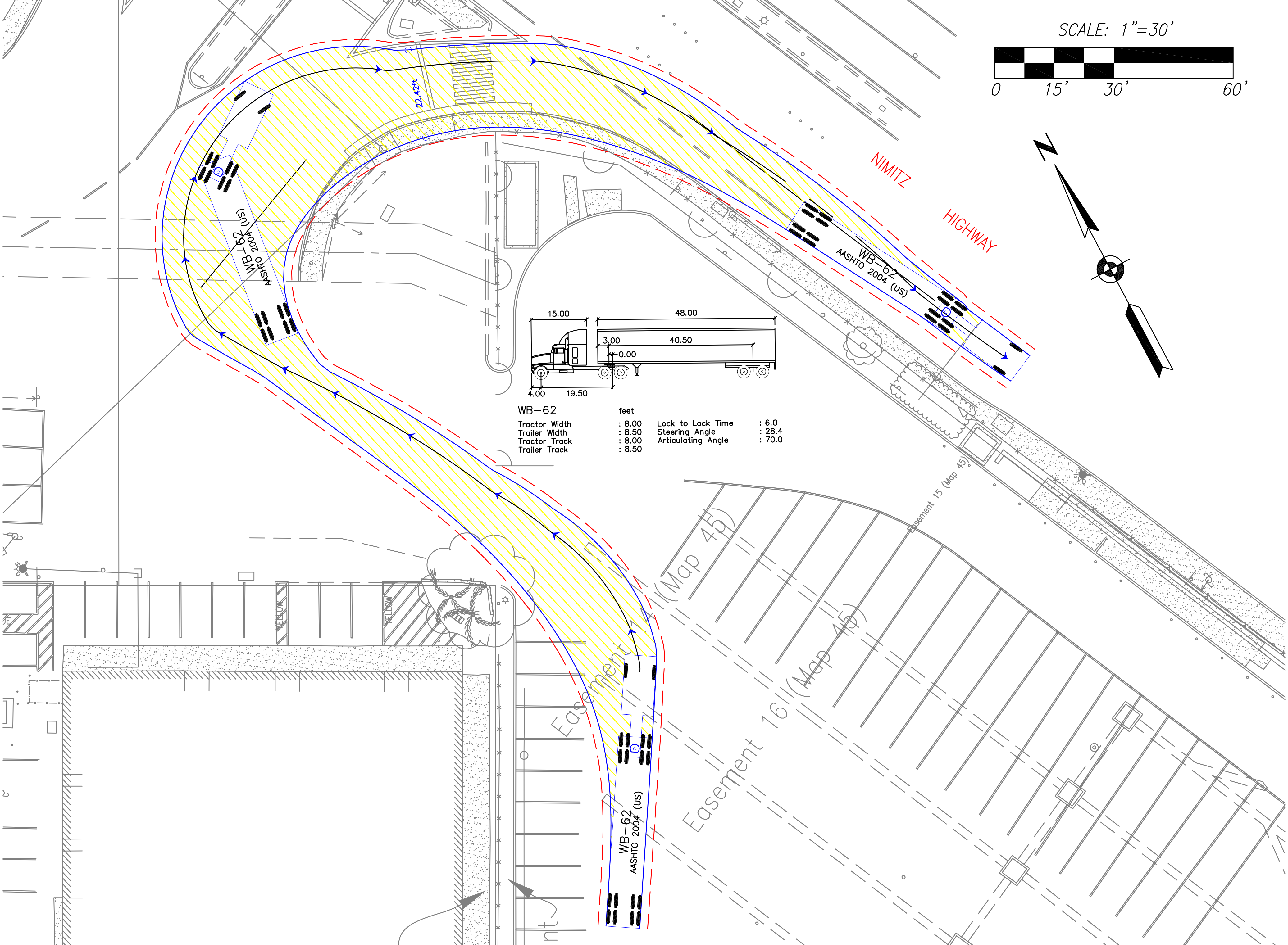

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Figure 3: Sumner Street Turnaround

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Figure 4: Right Turn In at Pier 33 Access Way

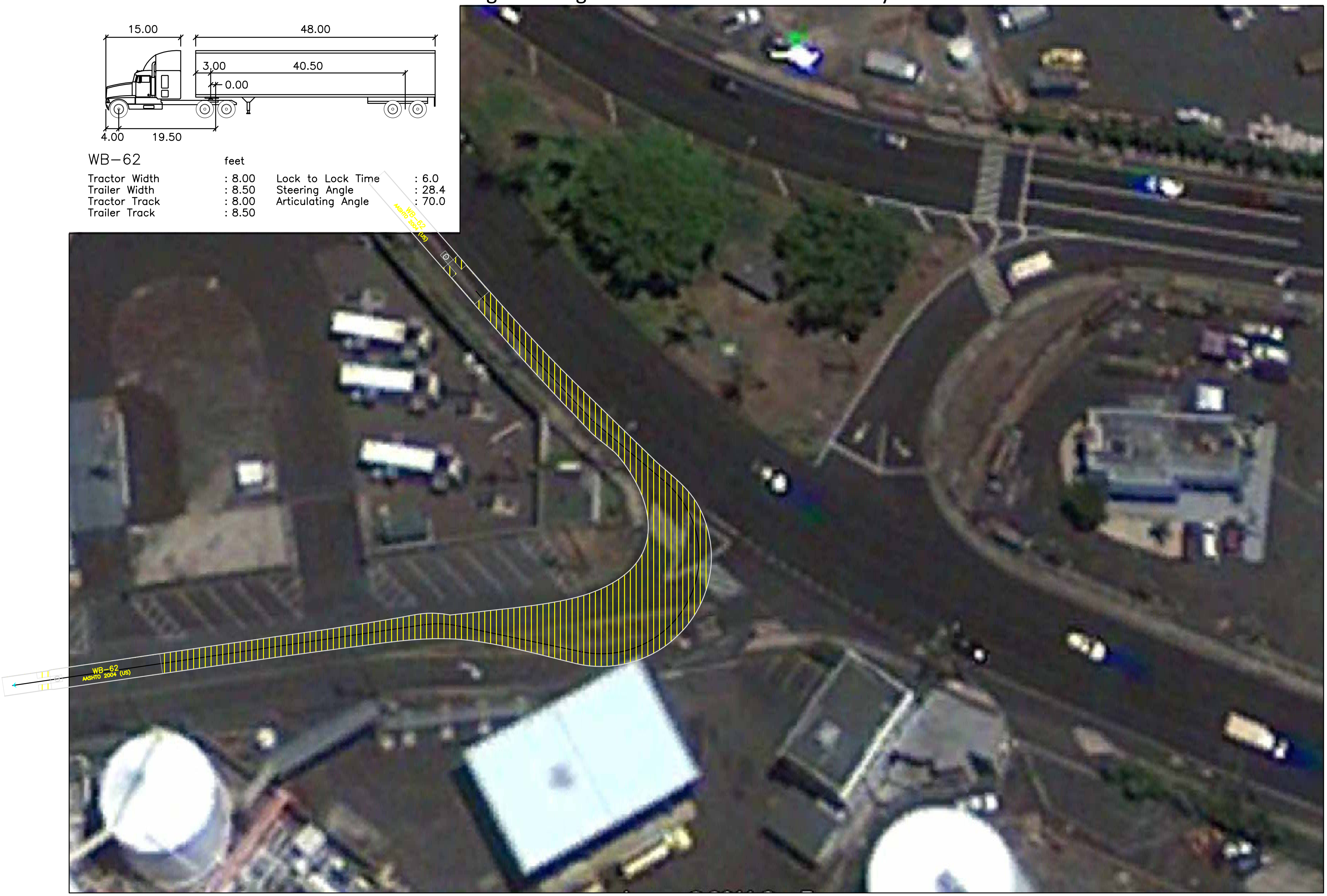

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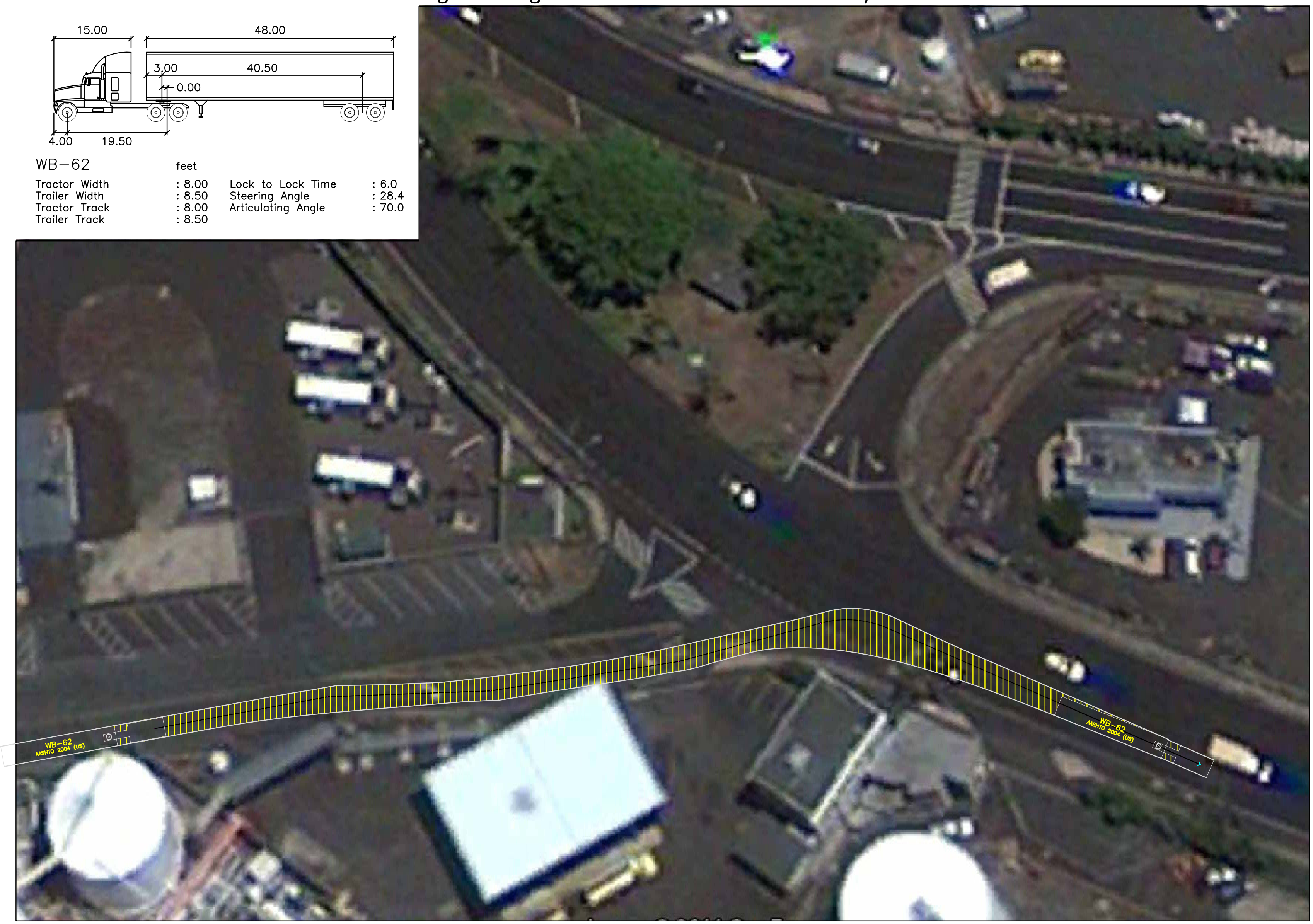
Figure 5: Right Turn Out at Pier 33 Access Way



APPENDIX F

TRAFFIC SIGNAL WARRANT ANALYSIS WORKSHEETS

Figure 4C-101. Traffic Signal Warrants Worksheet (Sheet 1 of 4)

Int. #2

DIST	CO	RTE	KPM
Hawaii	Oahu	SR 92 (Nimitz Hwy)	

CALC: TCH DATE: 5/27/11
CHK ______ DATE ______

Major St: Nimitz Hwy (SR 92) Critical Approach Speed ______ km/h
Minor St: Japan Food Access Way Critical Approach Speed ______ km/h

Critical speed of major street traffic > 64 km/h (40 mph)........ ☐ or } RURAL (R)
In built up area of isolated community of < 10,000 population....... ☐
☒ URBAN (U)

WARRANT 3 - Peak Hour PART A or PART B SATISFIED YES ☐ NO ☒

PART A SATISFIED YES ☐ NO ☒
(All parts 1, 2, and 3 below must be satisfied)

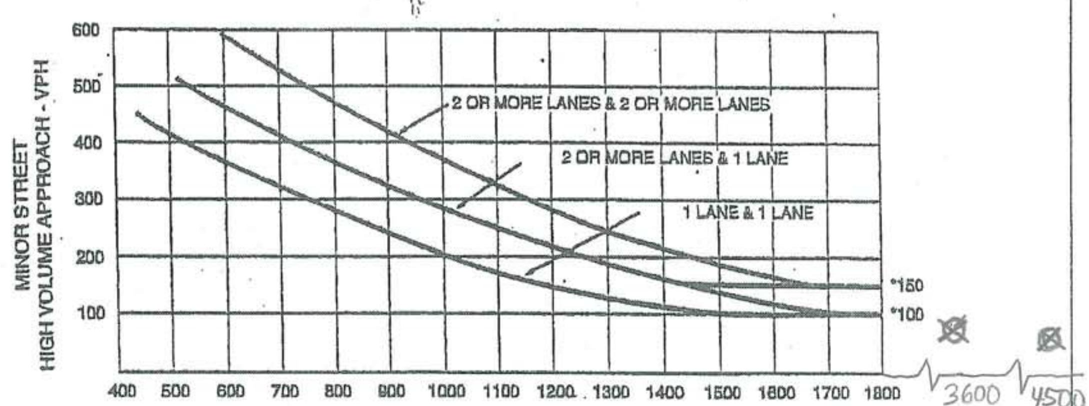
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceedds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — Yes ☐ No ☒
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes ☐ No ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaoches. — Yes ☐ No ☐

PART B SATISFIED YES ☐ NO ☒

APPROACH LANES	AM (~~One~~ ~~2 or More~~)	PM	/	/	/ Hour
Both Approaches - Major Street	4525	3668			
Highest Approaches - Minor Street	16	41			

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume vehicle minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above the applicable curves in MUTCD Figure 4C-3 or 4C-4.

Figure 4C-3. Warrant 3, Peak Hour



MAJOR STREET—TOTAL OF BOTH APPROACHES— VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101. Traffic Signal Warrants Worksheet (Sheet 1 of 4)

Hawaii Oahu SR 92 (Nimitz Hwy)

DIST CO RTE KPM

CALC: TCH DATE 5/24/11

CHK ________ DATE ________

Int. #3

Major St: Nimitz Hwy (SR 92)... Critical Approach Speed 35 mph km/h

Minor St: Pier 33 Access Way Critical Approach Speed km/h

Critical speed of major street traffic > 64 km/h (40 mph) ☐ or In built up area of isolated community of < 10,000 population ☐ } RURAL (R)

☒ URBAN (U)

WARRANT 3 - Peak Hour **PART A or PART B SATISFIED** YES ☐ NO ☒

PART A **SATISFIED** YES ☐ NO ☒

(All parts 1, 2, and 3 below must be satisfied)

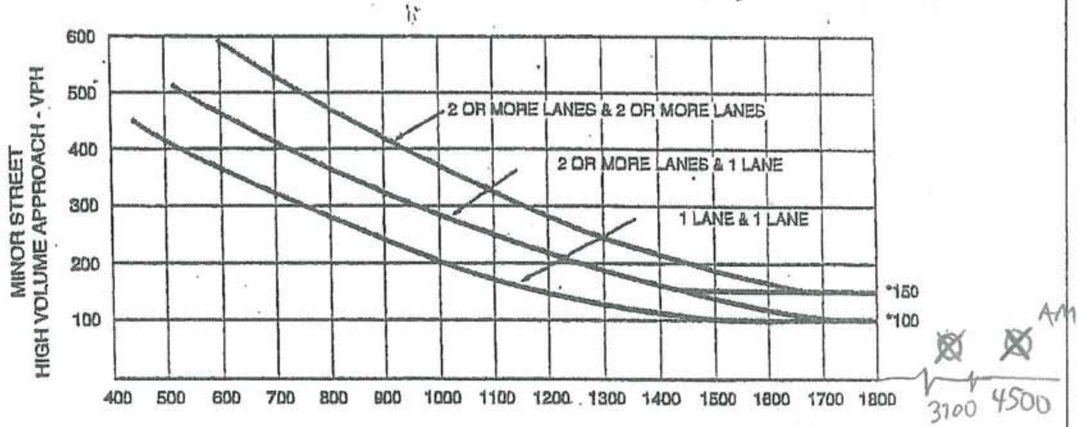
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — Yes ☐ No ☒
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes ☐ No ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. — Yes ☐ No ☐

PART B **SATISFIED** YES ☐ NO ☒

APPROACH LANES	AM	PM			Hour
Both Approaches - Major Street	4515	3703			
Highest Approaches - Minor Street	54	30			

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume vehicle minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above the applicable curves in MUTCD Figure 4C-3 or 4C-4.

Figure 4C-3. Warrant 3, Peak Hour



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Figure 4C-101. Traffic Signal Warrants Worksheet (Sheet 1 of 4)

Hawaii | Oahu | SR 92 (Nimitz Hwy) | CALC: TCH DATE 5/24/11
DIST | CO | RTE | KPM | CHK ________ DATE ________

Int. #6 Major St: Nimitz Hwy (SR 92) Critical Approach Speed 35 mph km/h
Minor St: Kukahi St Critical Approach Speed ________ km/h

Critical speed of major street traffic > 64 km/h (40 mph) ☐ or In built up area of isolated community of < 10,000 population ☐ } RURAL (R)
☒ URBAN (U)

WARRANT 3 - Peak Hour PART A or PART B SATISFIED YES ☐ NO ☒

PART A SATISFIED YES ☐ NO ☒
(All parts 1, 2, and 3 below must be satisfied)

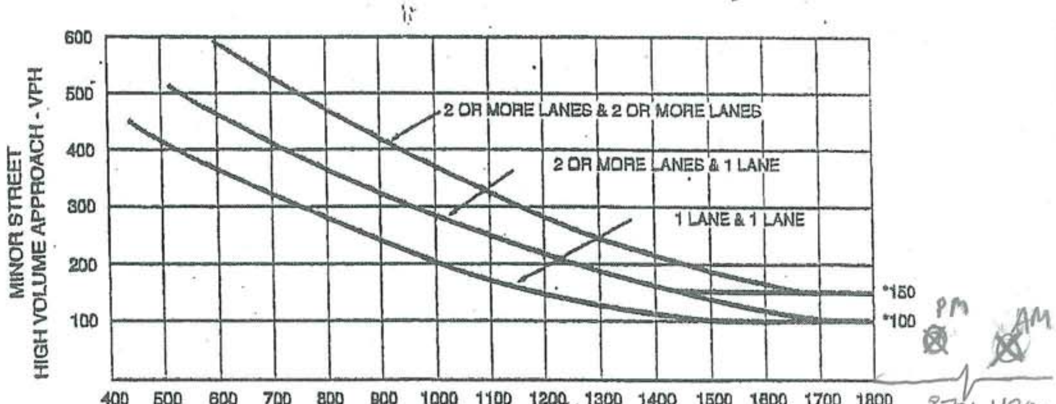
1. The total delay experienced for traffic on one minor street approach controlled by a STOP sign equals or exceeds four vehicle-hours for a one-lane approach and five vehicle-hours for a two-lane approach; AND — Yes ☐ No ☒
2. The volume on the same minor street approach equals or exceeds 100 vph for one moving lane of traffic or 150 vph for two moving lanes; AND — Yes ☐ No ☒
3. The total entering volume serviced during the hour equals or exceeds 800 vph for intersections with four or more approaches or 650 vph for intersections with three approaches. — Yes ☐ No ☐

PART B SATISFIED YES ☐ NO ☒

APPROACH LANES	AM ~~One~~	~~2 or More~~	PM			Hour
Both Approaches - Major Street	4338		3692			
Highest Approaches - Minor Street	19		37			

The plotted points for vehicles per hour on major streets (both approaches) and the corresponding per hour higher volume vehicle minor street approach (one direction only) for one hour (any consecutive 15 minute period) fall above the applicable curves in MUTCD Figure 4C-3 or 4C-4.

Figure 4C-3. Warrant 3, Peak Hour



MAJOR STREET—TOTAL OF BOTH APPROACHES—
VEHICLES PER HOUR (VPH)

*Note: 150 vph applies as the lower threshold volume for a minor-street approach with two or more lanes and 100 vph applies as the lower threshold volume for a minor-street approach with one lane.

Appendix C

Underwater Biological Survey

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Exhibit 1 – Underwater Biological Survey, AECOS, Inc., August 2012

AECOS, Inc.
45-939 Kamehameha Highway, Suite 104◆Kaneohe HI 96744
Telephone: (808)234-7770◆ Fax: (808)234-7775 ◆Email: aecos@aecos.com

August 30, 2012

Attn: Brian Takeda
Planning Project Coordinator
R.M. Towill, Inc.

RE: Pier 34/35 Honolulu Harbor

Mr. Takeda,

This letter is to inform your company of the results of our recent survey of the existing culverts, the location proposed for new culverts, and the nearby pier pilings at Piers 34 and 35 in Honolulu Harbor. Both the existing culverts and the proposed location for new culverts are recessed approximately 15 m (50ft) from the pier face and receive limited ambient light. Conditions are not conducive to scleratinian (hard) coral or macroalgal growth. Most of the biota present consists of filter feeders, like sponges and tunicates.

The hard substratum and pilings beneath Piers 34 and 35 are encrusted with a biofouling community typical of harbors in the main Hawaiian Islands. The most abundant species present include: sponges (*Hyrtios* sp., *Mycale* sp., and *Dysidea* sp.) solitary tunicates (*Herdmania momus, Phallusia nigra*) brown purse shells (*Isognomon perna*), snowflake coral (*Carijoa riisei*), hydroids (including *Pennaria disticha*), and several species of bryozoans, of which the bushy bryozoan (*Amathia distans*) and blue fan bryozoan (*Bugula dentata*) are most conspicuous. The seafloor between pilings is silt with numerous burrows.

The existing culverts (see Figures 1 thru 5) have a limited assortment of biota inhabiting the surface, possibly due to the constantly fluctuating salinity caused by stormwater runoff and tidal changes at the site. A few sponges (*Mycale* sp. and *Hyrtios* sp.; Fig 3) and hydroids are present and a thin layer of silt covers the structures. Sediment and some debris has filled the bottom quarter of the culverts.

The location for the proposed outlet is an area where tidally exposed cobbles and boulders line the shoreline beneath the pier. Little marine life is present though a few bryozoans and purse shells inhabit the boulders. Surprisingly, several banded coral shrimp (*Stenopus hispidus*), a species popular with aquarists were observed throughout the area.

No hard coral colonies are present near either location as coral growth was only observed on the outer row of pier pilings about 14 m (46 ft) away from the existing and proposed culvert locations. Few fish were observed during the survey due to the limited lighting, though a small school of āholehole (*Kuhlia* sp.) was identified near the existing culverts.

Most of the species identified at Pier 34 and 35 are introduced or naturalized species (that is, non-native), and some with invasive tendencies were observed on piling near both locations. Snowflake coral (*Carijoa riisei*), bushy bryozoans, Caribbean rock barnacle (*Chthalmus proteus*), and the orange *Mycale* sponge were the most sighted invasive species throughout the survey.

As expected, no federally or state protected or regulated species were encountered near the proposed or existing culvert locations. Thank you for the opportunity to assist in this matter. Field photographs and a list of species encountered during the survey is attached.

Sincerely,

Chad Linebaugh
Aquatic and Marine Biologist
AECOS Inc.

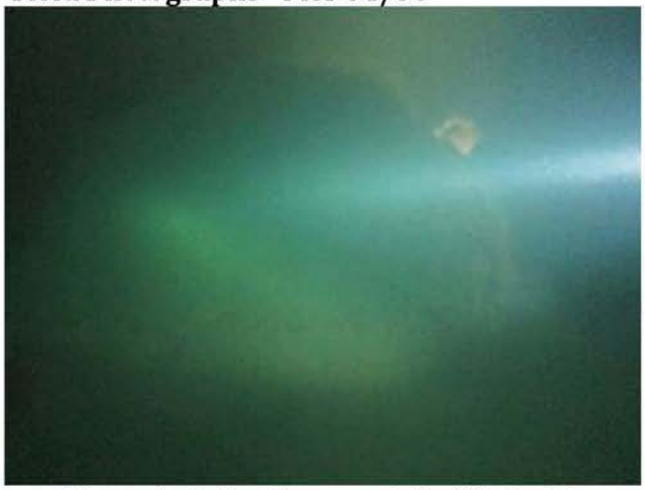

Figure 1. Left culvert partially filled with sediment. Divers hand visible.

Figure 2. Close up-bottom of right culvert partially filled with sediment and debris.

Figure 3. Partial view of both culverts. Orange and yellow sponges visible center frame.

Figure 4. Top half of right culvert with divers hand for scale.

Figure 5. Culvert and pier above waterline.

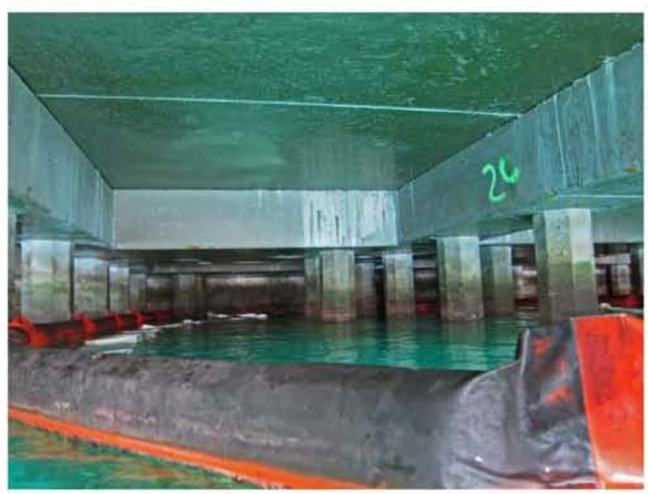

Figure 6. Existing BMP's around culverts.

Figure 7. Pier pilings encrusted with biofouling communities and typical harbor species.

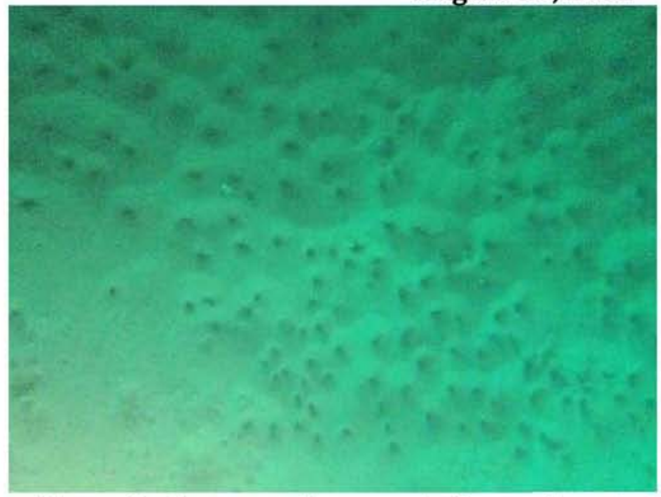

Figure 8. Numerous burrows in fine sediment beneath the pier (4-ft depth).

Figure 9. Area the proposed culvert will reach the harbor beneath Pier 35.

Figure 10. Mixed silt and boulder substratum just off of the proposed culvert outlet.

Figure 11. Cement and limestone boulders line the shoreline at the proposed culvert outlet.

Figure 12. Transition from Pier 35 (left) to Pier 34 (far right) marked by change in shoreline.

PHYLUM, CLASS, ORDER, FAMILY *Genus species*	Common name	Abundance	Status	Location Code
	INVERTEBRATES			
PORIFERA, CALCAREA	SPONGES			
CLATHRINIDA				
LEUCETTIDAE				
Leucetta sp.	pink leucetta	C	Ind	1,2
PORIFERA, DEMOSPONGIAE				
CHALINIDAE				
Sigmadocia sp.	blue sigmadocia	U	Nat	1,2
DESMACELLIDAE				
Biemna fistulosa	tubular biemna	O	Nat	1,2
DYSIDEIDAE				
Dysidea cf. *avara*	acquisitive sponge	O	Ind	1,2
MYCALIDAE				
Mycale sp.	smothering sponge	U	Nat	1,2,3
Stylinos sp.	orange stylinos	U	Nat	1,2
MYXILLIDAE				
Iotrochota protea	staining sponge	O	Ind	
THORECTIDAE				
Hyrtios sp.	yellow hyrtios	C	Ind	1,2,3
CNIDARIA, HYDROZOA,	HYDROIDS			
ANTHOATHECATA				
unid.	indeter. hydroid	R	--	3,4
HALECIIDAE				
Halecium sp.	hydroid	U	Ind	1,2
PENNARIIDAE				
Pennaria disticha	Christmas tree hydroid	O	Nat	1,2
CNIDARIA, ANTHOZOA,	HARD CORALS			
SCELRACTINIA				
ACROPORIDAE				
Montipora capitata	rice coral	R	Ind	1
Montipora patula	sandpaper rice coral	R	End	1
FAVIIDAE				
Leptastrea bewickensis	bewick coral	R	Ind	1
Leptastrea purpurea	crust coral	O	Ind	1
POCILLOPORIDAE				
Pocillopora damicornis	lace coral	O	Ind	1
CNIDARIA, ANTOZOA	SOFT CORALS			
OCTOCORALLIA				
CLAVULARIDAE				
Carijoa riisei	snowflake coral	C	Nat	2

PHYLUM, CLASS, ORDER, FAMILY *Genus species*	Common name	Abundance	Status	Location Code
CNIDARIA, ANTHOZOA, HEXACORALLIA, ACTINIARIA	ANEMONES			
AIPTISIIDAE				
Aiptasia pulchella	glass anemone	O	Ind	1,2
ANNELIDA, POLYCHAETA	WORMS			
CHAETOPTERIDAE				
Chaetopterus sp.	parchment worm	C	Ind	1,2
SABELLIDAE				
Sabellastarte spectabilis	feather duster worm	C	Ind	1,2
SERPULIDAE				
Salmacina dysteri	sea frost	C	Ind	1,2
ECTOPROCTA, GYMNOLAEMATA	BRYOZOANS			
BUGULIDAE				
Bugula dentata	blue fan bryozoan	C	Nat	1,2
RETEPORIDAE				
Reteporellina denticulata	lace bryozoan	C	Ind	1,2
SCHIZOPORELLIDAE				
Schizoporella errata	erratic bryozoan	U	Ind	1,2
VESICULARIDAE				
Amathia distans	bushy bryozoan	O	Nat	1,2,4
Zoobotryon verticillatum		U	Nat	2
MOLLUSCA, GASTROPODA,	GASTROPODS			
CALYPTRAEIDAE				
Crepidula aculeata	spiny slipper shell	R	Nat	1,2
HIPPONICIDAE				
Hipponix imbricatus	shingly hoof shells	O	End	1,2
VERMETIDAE				
Serpulorbis variabilis	variable worm snail	O	Nat	1,2,4
OPISTHOBRANCHIA, NUDIBRANCHIA	NUDIBRANCHS			
POLYCERIDAE				
Tambja morosa	gloomy nudibranch	U	Ind	2
MOLLUSCA,BIVALVIA	BIVALVES			
PTERIIDAE				
Pinctada margaritifera	black-lipped pearl oyster	R	Ind	1,2
ISOGNOMONIDAE				
Isognomon californicum	black purse shells	U	End	
Isognomon perna	brown purse shell	C	Ind	1,2,4
OSTREIDAE				
Dendostrea sandvicensis	Hawaiian oyster	U	End	1,2
ARTHROPODA, CIRRIPEDIA	BARNACLES			
BALANIDAE				
Amphibalanus amphitrite	Amphitrite's barnacle	C	Ind	1,2

PHYLUM, CLASS, ORDER, FAMILY

Genus species	Common name	Abundance	Status	Location Code
CHTHAMALIDAE				
Chthamalus proteus	Caribbean rock barnacle	C	Nat	1,2
ARTHROPODA, MALACOSTRACA, DECOPODA	SHRIMP			
STENOPODIDAE				
Stenopus hispidus	banded coral shrimp	C	Ind	1,2,4
CHORDATA, TUNICATA, ASCIDIIDAE	TUNICATES			
Ascidea sydneiensis	yellow sea squirt	U	Nat	1,2
Phallusia nigra	black sea squirt	U	Nat	1,2
PYURIDAE				
Herdmania momus	Herdman's sea squirt	C	Nat	1,2
	FISHES			
ACANTHURIDAE				
Ctenochaetus strigosus	*kole* goldring surgeonfish	R	Ind	2
KUHLIIDAE				
Kuhlia sp.	*'āholehole*; Hawn. flagtail	U	Ind	2
OSTRACIIDAE				
Ostracion meleagris	spotted boxfish	R	Ind	2
TETRAODONTIDAE				
Canthigaster jactator	Hawaiian whitespotted toby	U	End	2

KEY TO SYMBOLS USED:

Abundance categories:
- R – Rare – only one or two individuals observed.
- U – Uncommon – several to a dozen individuals observed.
- O – Occasional – seen irregularly in small numbers
- C – Common – observed everywhere, although generally not in large numbers.
- A – Abundant – observed in large numbers and widely distributed.

Status categories:
- End – Endemic – species found only in Hawaii
- Ind. – Indigenous – species found in Hawaii and elsewhere
- Nat. – Naturalized – species were introduced to Hawaii intentionally, or accidentally.

Location codes:
- 1 – outer row of pier pilings
- 2 – inner pier pilings
- 3 – existing culvert outlet.
- 4 – proposed culvert outlet location.