DEPARTMENT OF DESIGN AND CONSTRUCTION

CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 2ND FLOOR
HONOLULU, HAWAII 96813
PHONE: (808) 523-4564 • FAX: (808) 523-4567

JEREMY HARRIS
MAYOR

GARY Q.L. YEE, AIA
ACTING DIRECTOR

ROLAND D. LIBBY, JR., AIA
DEPUTY DIRECTOR

CL-60

February 9, 2000

Ms. Genevieve Salmonson, Director
State of Hawaii
Office of Environmental Quality Control
State Office Tower
235 South Beretania Street, 7th Floor
Honolulu, Hawaii 96813-2437

Dear Ms. Salmonson:

Subject: Final Environmental Assessment/Finding of No Significant Impact (FONSI), Halawa Corporation Yard Industrial Park
Tax Map Key: 9-9-73:23 and 27
Aiea, Oahu, Hawaii

The City and County of Honolulu, Department of Design and Construction, issued the Draft Environmental Assessment (EA), Halawa Corporation Yard project, Halawa Industrial Park, Tax Map Key: 9-9-73:23 and 27, Aiea, Oahu, Hawaii. During the Draft EA review period, eight substantive comments were made to the Draft EA.

As such, the City and County of Honolulu, Department of Design and Construction, has made a determination of a Finding of No Significant Impact (FONSI) for the Halawa Corporation Yard project. The basis of this determination is attached and follows the significance criteria set forth in Hawaii Administrative Rules, Title 11, State of Hawaii, Department of Health, Chapter 200, Environmental Impact Statement Rules, Section 12.

Please publish the notice of the Final Environmental Assessment and Finding of No Significant Impact (FEA/FONSI) for the Halawa Corporation Yard project in the February 23, 2000 issue of the Environmental Notice.

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Should there be any questions, please call Mr. Clifford Lau of our office at 527-6373 or Mr. John Sakaguchi of Wilson Okamoto & Associates, Inc. at 946-2277.

Very truly yours,

GARY Q.L. YEE, AIA
Acting Director

GQLY:li
Attach.

FINDING OF NO SIGNIFICANT IMPACT (FONSI) DETERMINATION
Halawa Corporation Yard, Halawa Industrial Park
Tax Map Key: 9-9-73: 23 and 27
Aiea, Oahu, Hawaii

Short-term construction impacts include disruption of traffic near the project site, decline in air quality from construction activities, and increase in noise levels. Once construction has been completed, the short-term adverse impacts will no longer occur.

Based on analysis of the anticipated impacts, a Finding of No Significant Impact (FONSI) is determined for the proposed Corporation Yard project. The significance criteria to make this determination are set forth below and in Hawaii Administrative Rules Title 11, State of Hawaii Department of Health, Chapter 200, Environmental Impact Statement Rules.

1) *Involve an irrevocable commitment to loss or destruction of any natural or cultural resources*;

The Corporation Yard project site does not provide habitat for Federal or State of Hawaii listed or candidate threatened or endangered species of flora or fauna. The Phase II portion of the project site has been fully developed and used for maintenance and bus parking purposes for a number years. Thus, the Corporation Yard will not result in the loss or destruction of natural resources.

The State of Hawaii Department of Land and Natural Resources Historic Preservation Division has indicated development of the Corporation Yard will have "no effect" on historic sites.

2) *Curtail the range of beneficial uses of the environment*;

About one-half of the approximately 23-acre Corporation Yard project site has been developed for bus maintenance and parking purposes. The Phase I portion of the project, along the other portions of Halawa Industrial Park, is intended for industrial uses. Construction of the Corporation Yard is consistent with the intended use of the industrial park. Thus, the Corporation Yard will not curtail the beneficial uses of the environment.

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

The Corporation Yard project will not involve actions or activities which would adversely affect natural resources of the project site. The Corporation Yard project will be consistent with the guidelines of Chapter 344, HRS, as it will

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provide a public facility to support the maintenance functions assigned to the City and County of Honolulu agencies to be assigned to the site. As such, the Corporation Yard will not conflict with the State's long-term environmental policies or goals as expressed in Chapter 344, HRS.

4) *Substantially affect the economic or social welfare of the community or state*;

The Corporation Yard will be used by City and County of Honolulu agencies to maintain vehicles and equipment which are needed to provide efficient and well-maintained public roads and related systems on Oahu, to provide Honolulu Police Department officers with vehicles and equipment to enforce public laws, and to provide City employees with vehicles and equipment to maintain the health and welfare of the community.

5) *Substantially affect public health*;

Efficient and well-maintained vehicles and equipment are needed to protect the public health of the residents and visitors on Oahu. The Corporation Yard will serve as a facility for the City and County of Honolulu agencies to conduct their assigned functions. Thus, the Corporation Yard project will not have an adverse effect on public health.

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

The Corporation Yard is a public facility which will be used to maintain vehicles and equipment assigned to City and County of Honolulu agencies. The Corporation Yard will replace existing facilities located in other areas of Oahu. The City and County of Honolulu workers to be assigned to the Corporation Yard already reside on Oahu. Thus, construction of the Corporation Yard will not create secondary impacts, such as population changes or effects on public facilities.

7) *Involve a substantial degradation of environmental quality*;

The Corporation Yard is anticipated to result in short-term impacts to noise, air quality and traffic in the immediate vicinity of the project site. The Corporation Yard project site does not contain Federal or State listed or candidate threatened or endangered species of flora or fauna. Further, the State of Hawaii

Department of Land and Natural Resources Historic Preservation Division has indicated the Corporation Yard project will have "no effect" on historic sites. Thus, there will be no loss or destruction of cultural resources. As a result, the Corporation Yard project will not result in a substantial degradation of environmental quality.

8) *Have a cumulative effect upon the environment or involves a commitment for larger actions*;

The Corporation Yard does not involve a commitment to further actions to other City and County of Honolulu related projects. As a result, the Corporation Yard will not have a cumulative effect upon the environment.

9) *Affect a rare, threatened or endangered species*;

The Corporation Yard project site does not contain Federal or State listed or candidate threatened or endangered species of flora or fauna. Thus, the Corporation Yard project will not affect a threatened or endangered species.

10) *Detrimentally affect air or water quality or ambient noise levels*;

Operation of construction equipment would increase noise and exhaust emission levels in the immediate vicinity of the Corporation Yard project site. Operation of the Corporation Yard will contribute low levels of additional noise to the area. However, the Corporation Yard is located in industrial zoned lands, which normally allow higher ambient noise levels than in residential or commercial areas.

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

According to the Flood Insurance Rate Map (FIRM), the Corporation Yard is located in Zone X which is not designated as a hazardous floodplain or tsunami zone. The Corporation Yard site is also not within the City and County of Honolulu Special Management Area. In addition, the Corporation Yard is not within the coastal shoreline area. Thus, the Corporation Yard project site is not located in an environmentally sensitive area.

FINDING OF NO SIGNIFICANT IMPACT (FONSI) DETERMINATION
Halawa Corporation Yard, Halawa Industrial Park
Tax Map Key: 9-9-73: 23 and 27
Aiea, Oahu, Hawaii

12) *Substantially affect scenic vistas and viewplanes identified in county or state plans or studies*;

The Corporation Yard will include maintenance buildings and yard areas to park vehicles and equipment and to store materials. Phase II of the Corporation Yard will use an existing facility and yard area. Thus, there will be no change to the visual setting of this area of Oahu for Phase II. Phase I will require construction of new facility and yard areas. However, to minimize the affect on viewplanes, the Phase I buildings and facilities have been planned and designed to be below the heights of the existing buildings located along Iwaena Street.

13) *Require substantial energy consumption.*

The Corporation Yard facilities are replacement facilities for existing functions which are located in other areas of Oahu. Thus, the Corporation Yard will not create a substantial increase in energy consumption over existing levels of usage.

Based on these findings and the assessment of potential impacts from the Corporation Yard project, a Finding of No Significant Impact (FONSI) is determined for the Halawa Corporation Yard project.

2000-02-23-OA-FEA-

FINAL
ENVIRONMENTAL ASSESSMENT
(HALAWA CORPORATION YARD)

Halawa Industrial Park
Aiea, Oahu, Hawaii

Prepared for:

CITY AND COUNTY OF HONOLULU
DEPARTMENT OF DESIGN AND CONSTRUCTION

Prepared by:

Wilson Okamoto & Associates, Inc.

February 2000

FINAL
ENVIRONMENTAL ASSESSMENT

HALAWA CORPORATION YARD

Halawa Industrial Park
Tax Map Key: 9-9-73: 23 and 27
Aiea, Oahu, Hawaii

Prepared for:
CITY AND COUNTY OF HONOLULU
DEPARTMENT OF DESIGN AND CONSTRUCTION
Facilities Design and Engineering Division
650 South King Street
Honolulu, Oahu, Hawaii 96813
Contract No. F-64329

Prepared by:
Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
WOA: 6139-01

February 2000

SUMMARY

Proposing Agency:	City and County of Honolulu Department of Design and Construction 650 South King Street Honolulu, Hawaii 96813
Accepting Agency:	City and County of Honolulu Department of Design and Construction 650 South King Street Honolulu, Hawaii 96813
EA Preparer:	Wilson Okamoto & Associates, Inc. 1907 South Beretania Street, Suite 400 Honolulu, Hawaii 96826 Contact: John L. Sakaguchi, Senior Planner Tel: (808) 946.2277; Fax: (808) 946.2253
Project Location:	Halawa, Aiea, Hawaii
Recorded Fee Owner:	City and County of Honolulu/Queen Emma Foundation
Tax Map Key:	9-9-73: 23 and 27. (New TMK pending for TMK 9-9-73: 23.)
Area:	23.54 acres (approximately)
State Land Use Classification:	Urban
County Zoning:	I-2 Intensive Industrial
Proposed Action:	Construction of facilities for vehicle maintenance, trades shops, operations, administration, and material storage for the City and County Honolulu Department of Facility Maintenance (Automotive Equipment Services Division and Division of Road Maintenance), the Honolulu Police Department (Vehicle Maintenance) and the Department of Transportation Services (Handi-Van).
Impacts:	No significant impacts are anticipated from construction and operation of the Halawa Corporation Yard.

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PREFACE

Chapter 343, Hawaii Revised Statues (HRS), as amended, Environmental Impact Statements, requires that a government agency or a private developer proposing to undertake a project consider the potential environmental impacts of the proposed project by preparing an assessment. Among the criteria set forth in Chapter 343, HRS for preparation of an environmental assessment is the use of public funds for a project. The Halawa Corporation Yard will be constructed and operated with funds provided by the City and County of Honolulu.

This Environmental Assessment (EA) has been prepared to meet the requirements of Chapter 343, HRS, as amended, and *Hawaii Administrative* Rules Title 11, State of Hawaii Department of Health, Chapter 200, Environmental Impact Statement Rules. A Finding of No Significant Impact (FONSI) has been determined for this project as shown in Chapter 5.

1. INTRODUCTION

1.1 Project Background

Since the late 1980s, the City and County of Honolulu has planned to relocate its various maintenance, trades, storage, and operational functions from the Kewalo basin area to other site(s). A consolidated yard (the Honolulu Corporation Yard) was considered on Sand Island, adjacent to the City's Sand Island Wastewater Treatment Plant, on lands set aside by a State of Hawaii executive order. This area encompassed 25.878 acres and was to include facilities for a number of City maintenance, trades, and operational functions from the Kewalo basin area and other locations in urban Honolulu. The initial plan for the Honolulu Corporation Yard included the following City department/functions: former Department of Public Works (Refuse Collection Division, Division of Road Maintenance, Automotive Equipment Services (AES) Division, and Engineering Division), Department of Parks and Recreation (Maintenance Support Services and Automotive Services), Department of Transportation Services (DTS) (Electrical Maintenance Service), former Department of Wastewater Management (Collection System Maintenance); Honolulu Fire Department (Vehicle Maintenance), and Honolulu Police Department (Vehicle Maintenance and Radio Shop). The Final Environmental Impact Statement for the Honolulu Corporation Yard was accepted by the Governor on October 2, 1989.

Starting in February 1994, major planning, architectural and engineering design, debris and hazardous waste site clearance, and site preparation work was re-initiated to facilitate this relocation. However, due to a variety of factors including those related to the need for various City Council approvals, the cost of development, and the need to construct improvements for about 45 acres of land for the continuation of Sand Island State Park, no action was undertaken to effectuate the relocation to the Sand Island site. (It should be noted that the executive order that set aside the land for the Honolulu Corporation Yard at Sand Island required the City to vacate the Kewalo basin lands and occupy the Sand Island site within two years.) At this time, since the two-year time period has lapsed, the Sand Island site is no longer available to the City for a corporation

yard. In December 1995, at the time the planning and design work ended, architectural and engineering plans had been completed, reviewed, and approved by the users to approximately 35 percent.

Subsequently, the Department of Parks and Recreation (DPR) has undertaken development of its own facilities at the City's Manana properties and the Honolulu Fire Department has relocated to facilities in Waipahu. Further, at this time, the Department of Transportation Services Traffic Signal Field Operations and other operations currently located at the Koula Street facility intend to relocate to an area near the DPR at the City's Manana properties and the Department of Environmental Services plans to move to lands within the Sand Island Wastewater Treatment Plant. Lastly, the Department of Environmental Services Refuse Collection Branch has selected a site near the City's Keehi transfer station to relocate their Honolulu District operations.

As a result of these actions, it became necessary to locate a site for the Department of Facility Maintenance (Automotive Equipment Services Division and Division of Road Maintenance) and the Honolulu Police Department (Vehicle Maintenance). The selected site for these functions is the City's Halawa bus maintenance facility and the adjacent property owned by Queen Emma Foundation and leased to Crazy Shirts, Inc.

Lastly, based on the decision to relocate the bus maintenance facilities from Halawa to the City's Manana properties, it became necessary to relocate the existing DTS, Oahu Transit Services Handi-Van operations, administration, and vehicle maintenance facilities from the future bus maintenance site at Manana. Thus, after an interim relocation to the City's bus repair facilities on Middle Street, the Handi-Van functions will collocate with AES to the former bus facilities in the Halawa Corporation Yard.

1.2 Project Site Location

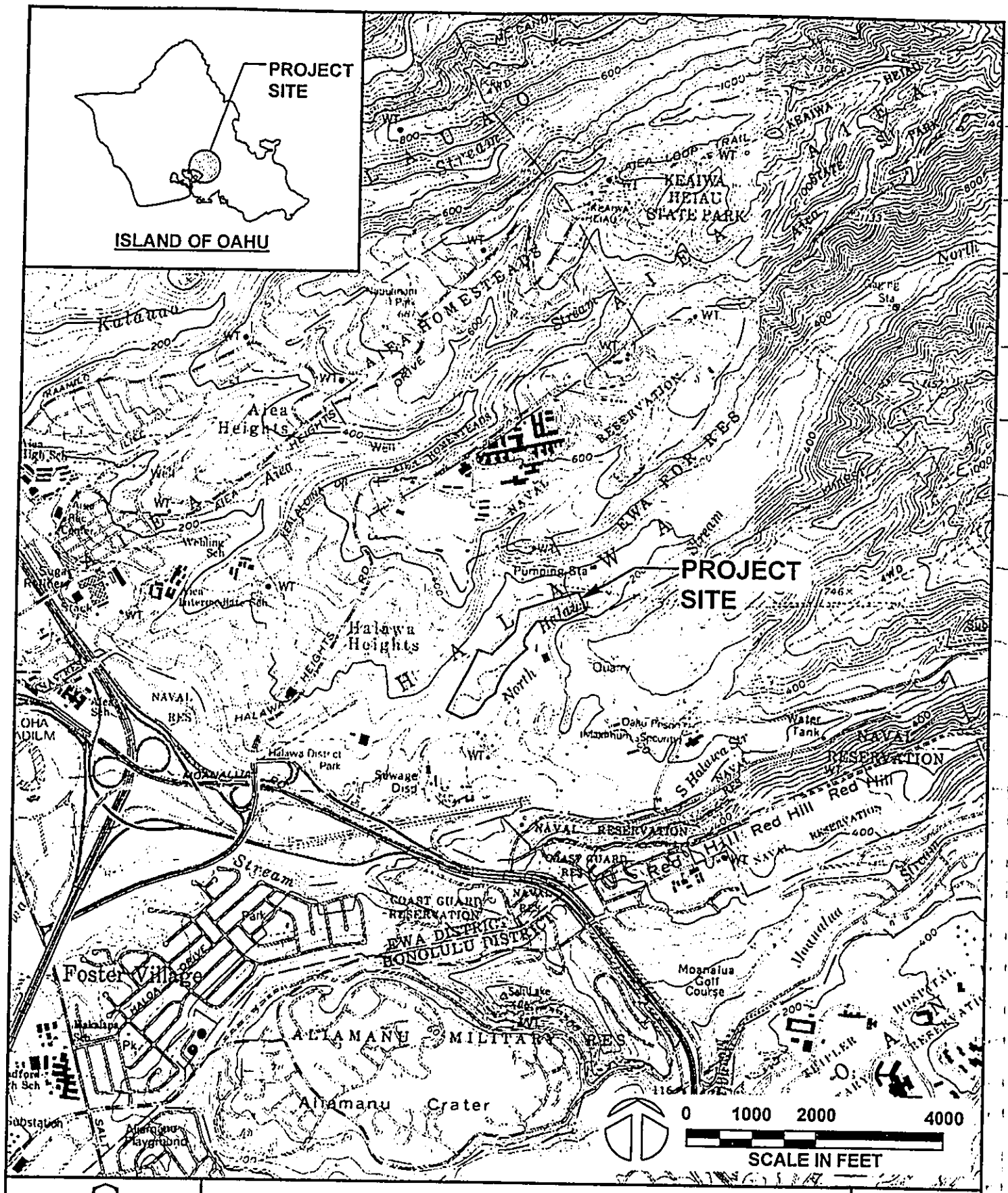
The Halawa Corporation Yard project site is located between Iwaena Street and North Halawa Stream/ H-3 Freeway in Halawa Valley and contains 23.54 acres

on two parcels, Tax Map Key (TMK): 9-9-73: 27, Halawa bus facility, 10.656 acres and TMK: 9-9-73: 23, Crazy Shirts, 12.891 acres. Note, TMK: 9-9-73: 23 is the current designation for the parcel owned by the Queen Emma Foundation and leased to Crazy Shirts Inc. The State of Hawaii Department of Transportation has yet to file land records related to the lands used for the H-3 Freeway and the new property boundaries. Prior to State use, the original Crazy Shirts parcel contained 15.739 acres. The City is in process of acquiring the Crazy Shirts parcel. After acquisition, the City intends to consolidate both parcels (TMK: 9-9-73: 27 and 9-9-73: 23) into one parcel to facilitate development. Figure 1.1 shows the project location map. Figure 1.2 shows the project site map. Figures 1.3 and 1.4 show site photographs.

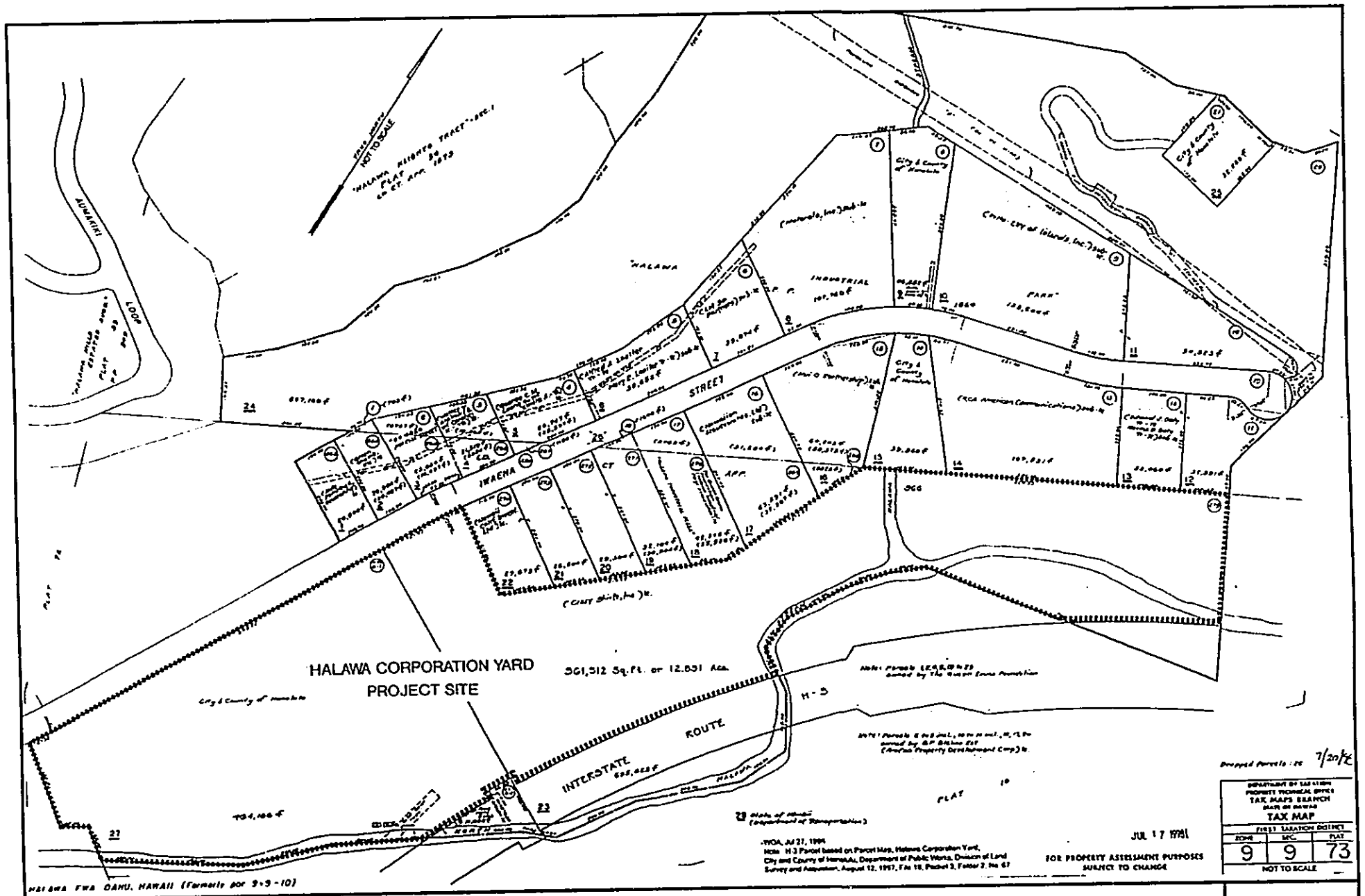
Parcel TMK: 9-9-73: 15 adjoins the Crazy Shirts parcel to the northeast and is also owned by the City and County of Honolulu. This parcel is 0.908 acres and contains a City-owned drainage structure. This land is not included in the area planned for development as part of the Halawa Corporation Yard. However, an existing concrete driveway located on the City parcel provides access from the Crazy Shirts parcel to Iwaena Street and can be used as a secondary access, if needed for emergency purposes.

Parcel TMK: 9-9-73: 27 is fully developed with the City's Halawa bus facility which contains an 84,000 square-foot (SF) bus maintenance building, fueling and bus washing facilities, and a large paved bus parking lot. Parcel TMK: 9-9-73: 24 is primarily undeveloped, although the remnants of a parking lot and access road remain on the site. The upper (mauka) portion contains an open, flat area which extends on both sides of North Halawa Stream. Except for an area used for exterior storage of materials, this upper area would not be developed.

As previously stated, the total area for the Crazy Shirts parcel TMK: 9-9-73: 23 is 12.891 acres. However, based on an analysis of the existing topographic conditions and the biological survey, the usable area of Phase I is about 8.358 acres, leaving approximately 4.57 acres not for development. The usable area



WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS	HALAWA CORPORATION YARD LOCATION MAP	FIGURE 1.1



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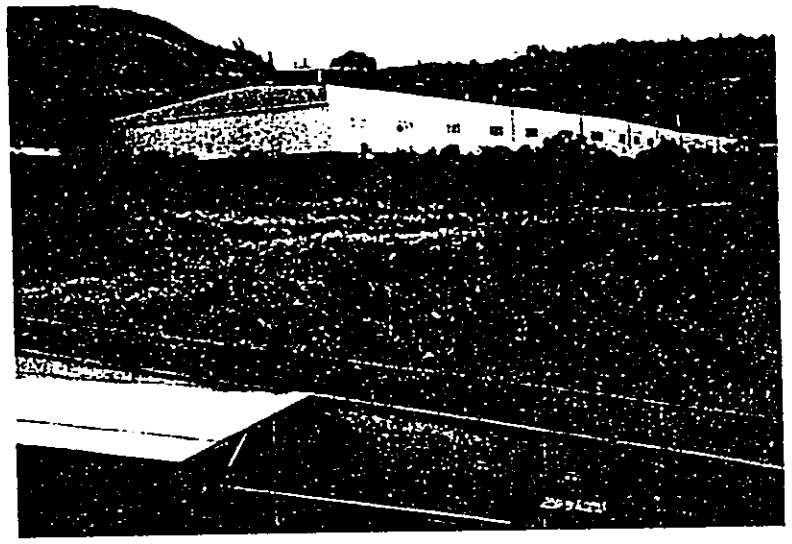
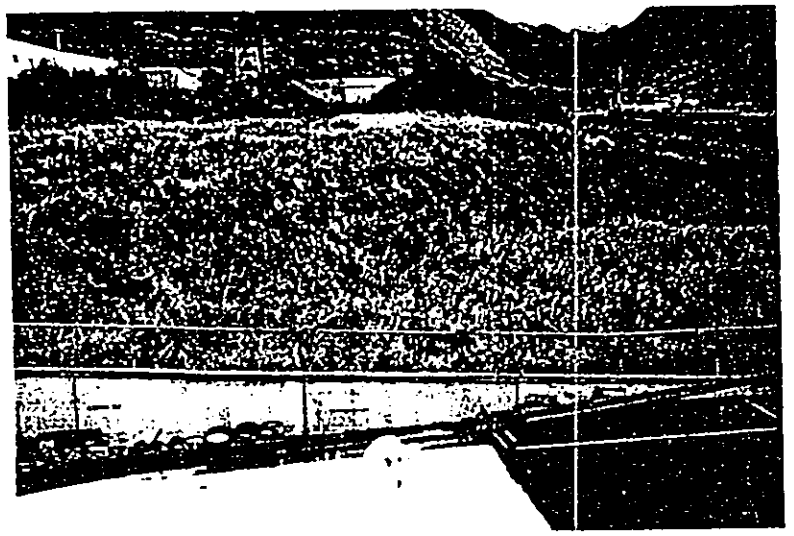
ENGINEERS - PLANNERS

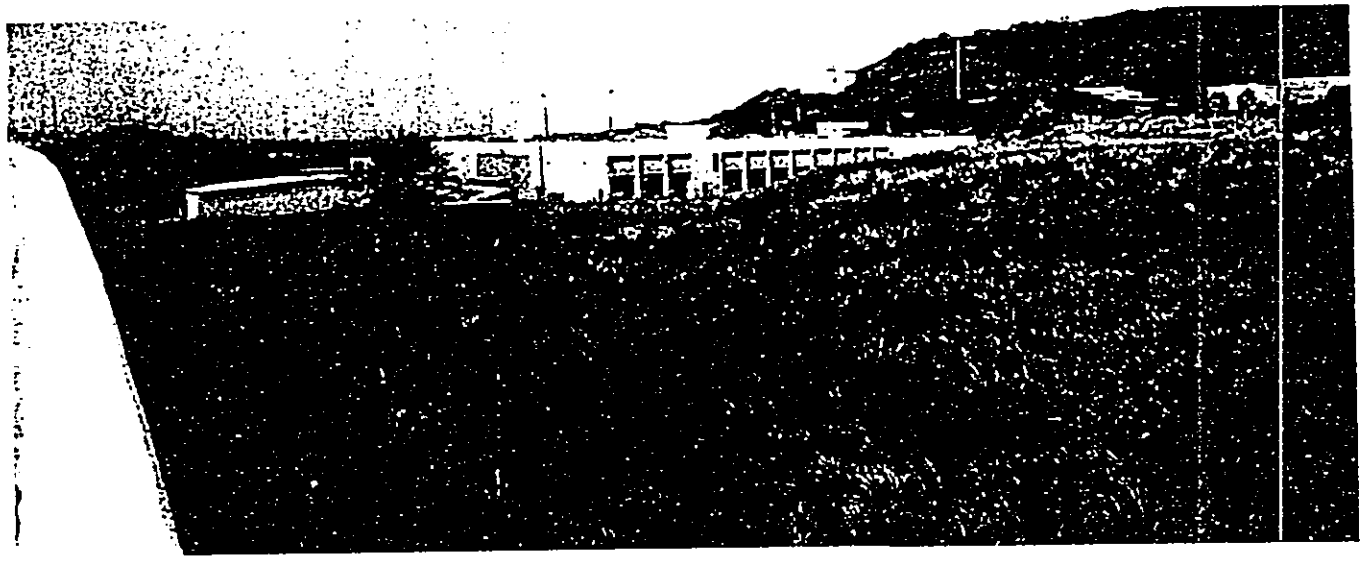
HALAWA CORPORATION YARD

TAX MAP KEY: 9-9-73:23 & 27

FIGURE 1.2







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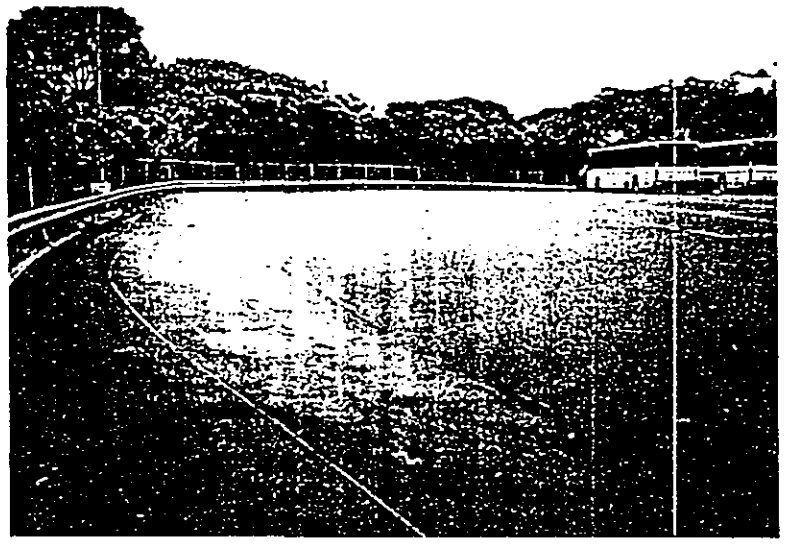
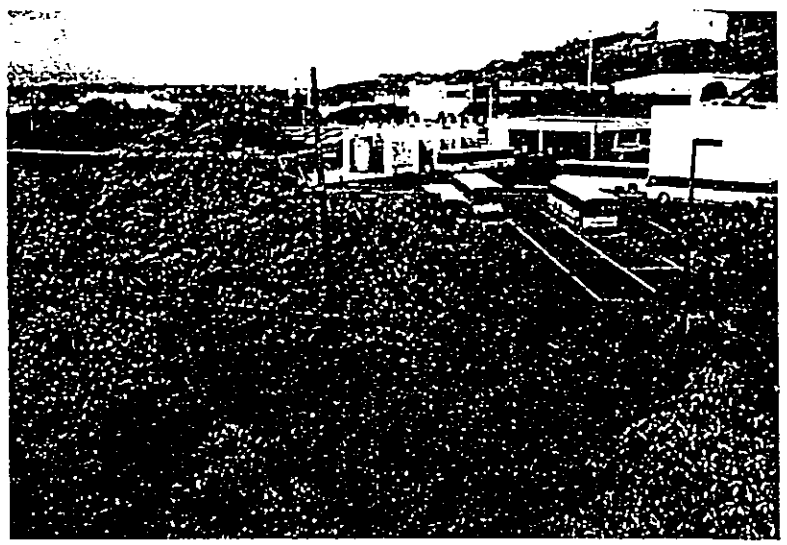
HALAWA CORPORATION YARD

PHASE I, CRAZY SHIRTS PARCEL PROJECT SITE

FIGURE
1.3





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HALAWA CORPORATION YARD

PHASE II, HALAWA BUS FACILITY PROJECT SITE

FIGURE
1.4

includes the employee parking lot and the building and yard areas for AES, HPD, and the Division of Road Maintenance. The area not included for development includes the upper-most portion containing a low-lying area which is part of North Halawa Stream. The topographic survey also shows portions of what appears to be rock walls on this upper portion.

The City is currently working with the State of Hawaii Department of Transportation to use the areas under the piers of H-3 Freeway. As shown in the site plan, these areas would be secured and used for material storage or for parking vehicles.

1.3 Project Need

The Department of Facility Maintenance currently has two functions (AES Administration, Service and Lubrication, Repair and Maintenance, and Division of Road Maintenance) located near Kewalo basin within the State of Hawaii, Hawaii Community Development Authority (HCDA) Makai Area. These facilities have been occupied by the City since sometime in the 1950s and are no longer adequate for their intended use. Since the facilities lack adequate space for their assigned functions, some work tasks must take place in the open which exposes City employees, equipment, tools, and materials to heat from the sun and to wet conditions from the rain. The facilities also have poor functional layouts which results in inefficient working conditions and adds to the time and effort required for City employees to perform assigned tasks. Lastly, some of the facilities were designed for other functions and have been converted for use as a maintenance facility.

Relocation to the Halawa Corporation Yard would provide the AES, the Handi-Van, the HPD, and the Division of Road Maintenance with modern facilities designed for their specific intended uses. This would improve operational efficiency and effectiveness in providing City services to various users.

Lastly, relocation from the existing locations would provide other agencies with land to proceed with their planned uses. The HCDA has planned future

development of the area currently occupied by the Department of Facility Maintenance in the Kewalo basin area. Relocation to Halawa would provide the necessary land for future developments planned by HCDA. The HPD facilities at the Pawaa Annex need to be relocated so that future development of this area can proceed. Lastly, the Handi-Van function must be relocated from their current site at the City's Manana property so that the new Pearl City bus facilities can be constructed.

1.4 Project Description

1.4.1 Development Phases

The Halawa Corporation Yard is to be developed in two phases. Phase I will develop the Crazy Shirts parcel as discussed below. Phase II will develop the adjacent Halawa bus facility site after the existing bus maintenance and dispatch operations have been relocated to the Pearl City Bus Facility on the City's Manana properties. Phase II will involve rehabilitation of the bus facility for joint use by the Department of Facility Maintenance Automotive Equipment Services (AES) and Department of Transportation Services, Oahu Transit Services Handi-Van for dispatch/operations and vehicle maintenance functions. The Development Phases Plan is shown in Figure 1.5.

1.4.2 Phase I Site Users

1.4.2.1 Department of Facility Maintenance Automotive Equipment Services, Construction Equipment Shop (Building A)

Analysis indicated the existing Halawa bus facility did not contain sufficient space to accommodate all of the AES and Handi-Van vehicle maintenance operations. Thus, the AES construction equipment shop, currently located in Manana, is included in Phase I. The construction equipment shop maintains the City's fleet of off-road equipment, which includes equipment such bulldozers, track loaders, front-end loaders, cranes, rollers, and paving machines. Figure 1.6 shows the Site Development Plan.

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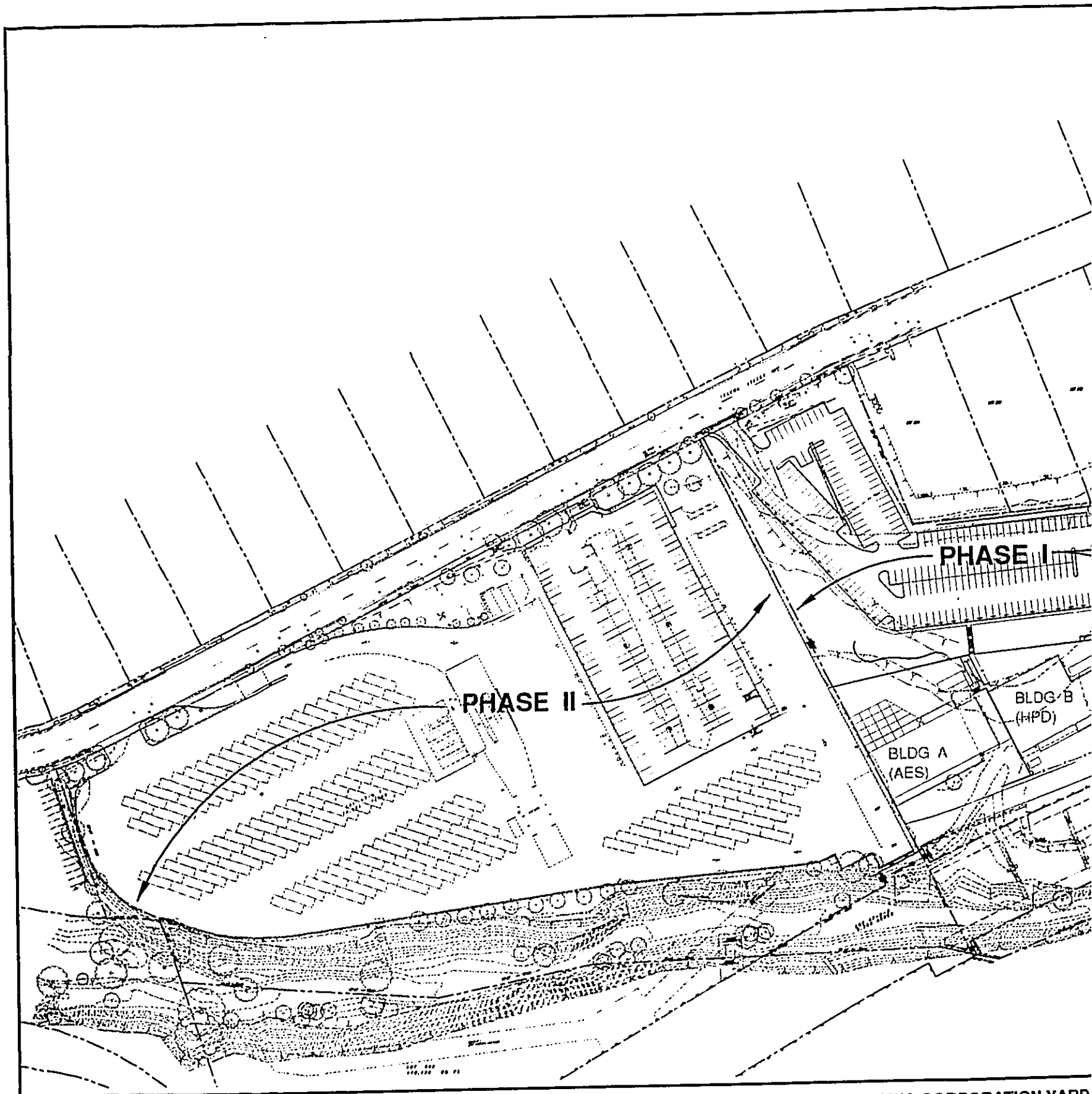

HALAWA CORPORATION YARD

DEVELOPMENT PHASES

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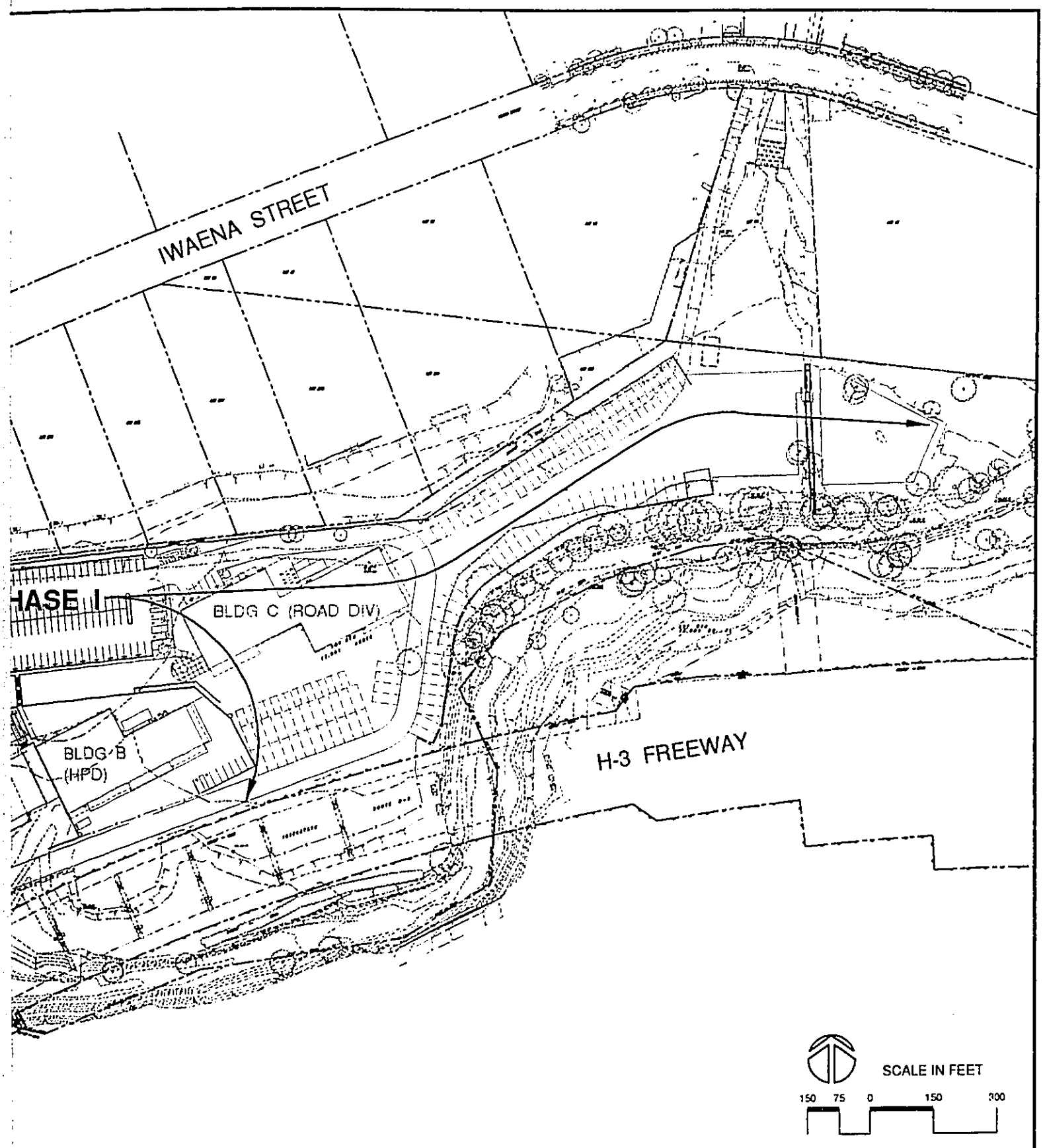


ORATION YARD

PHASES PLAN

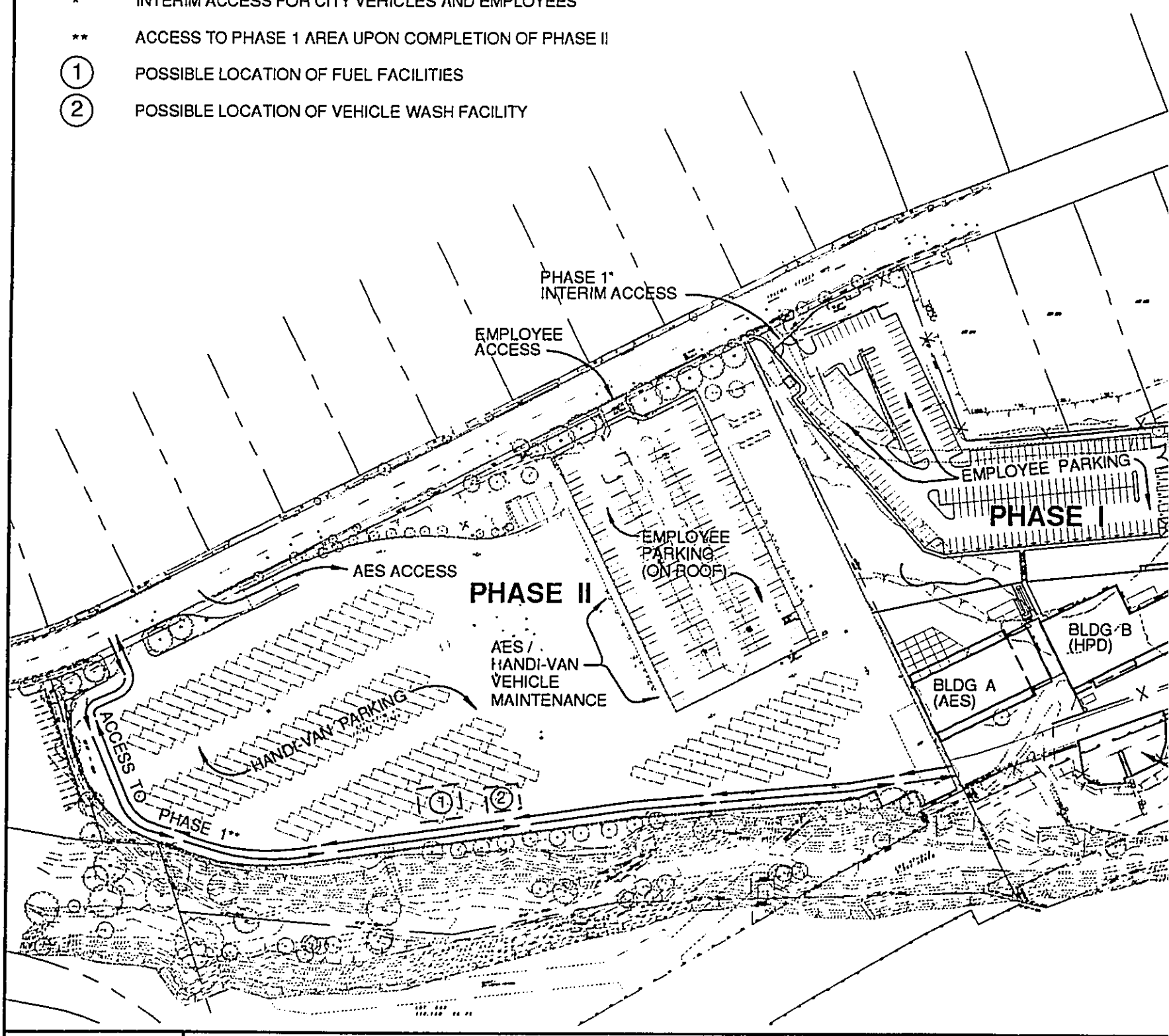
FIGURE
1.5

* INTERIM ACCESS FOR CITY VEHICLES AND EMPLOYEES

** ACCESS TO PHASE 1 AREA UPON COMPLETION OF PHASE II

(1) POSSIBLE LOCATION OF FUEL FACILITIES

(2) POSSIBLE LOCATION OF VEHICLE WASH FACILITY



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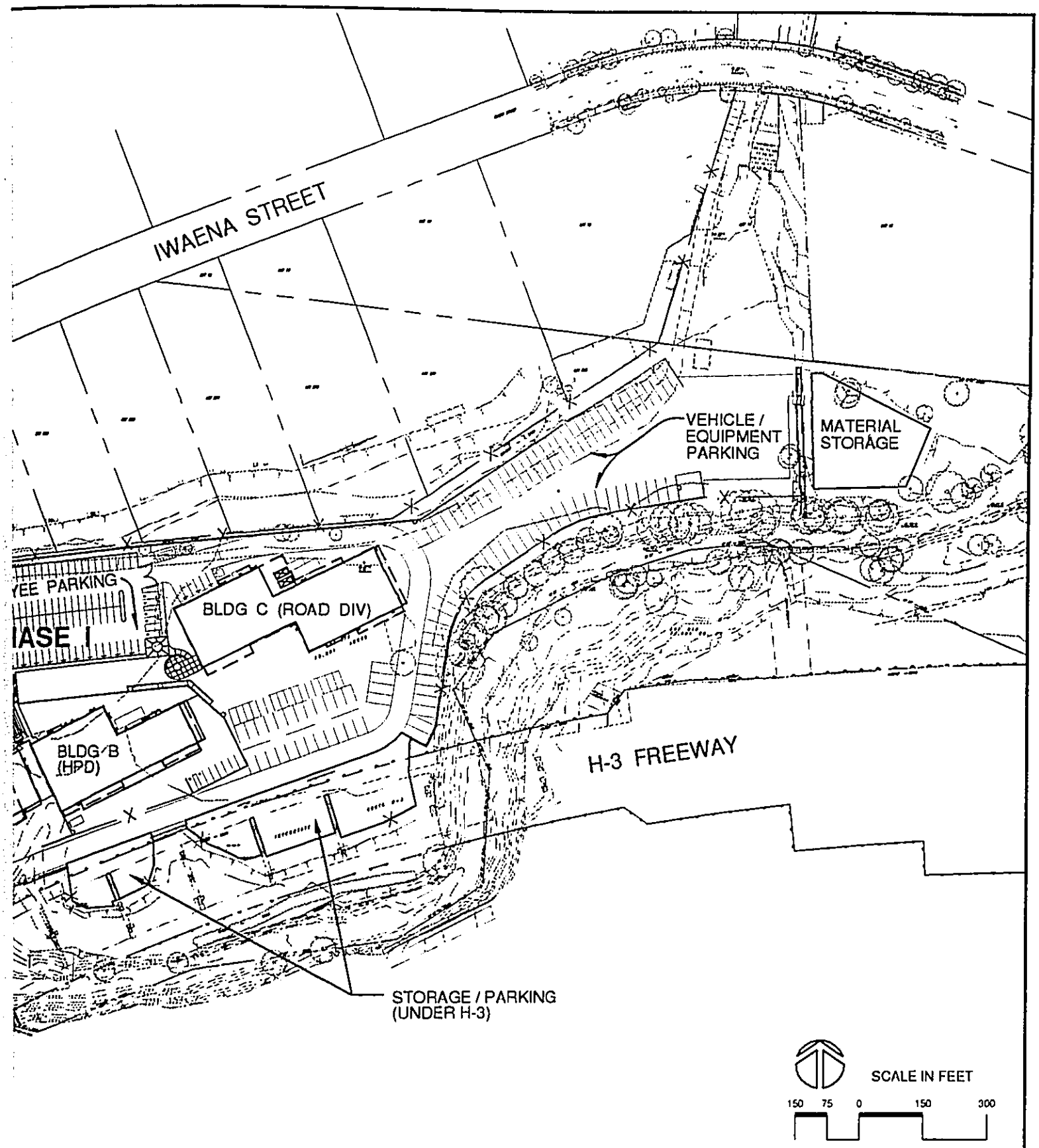
HALAWA CORPORATION YARD

SITE PLAN



)RATION YARD

PLAN

FIGURE 1.6

Building (Bldg) A would include work bays for maintaining the large pieces of equipment owned by the various other City agencies and departments, including the Department of Environmental Services Division of Refuse Collection and Disposal, the Department of Parks and Recreation Services. An overhead crane would allow personnel to move and service large equipment, and to remove parts from the equipment. Bldg A would include office and storage spaces for equipment, parts, and tools.

A total of 15 AES positions, (one supervisor, one lead mechanic, and 13 mechanics), are assigned to the heavy construction equipment shop. Currently the construction equipment shop operates with one shift. This is expected to continue upon relocation to the Halawa site.

Since the personnel assigned to the construction equipment shop are part of AES, to minimize construction costs and due to the siting of Bldg A, support functions such as meeting rooms, lockers and showers would be located in the HPD shop, Bldg B. Stairs and ramps would be used to provide access between Bldg A and Bldg B.

1.4.2.2 Honolulu Police Department (Building B)

The HPD vehicle maintenance shop will relocate from the HPD Alapai Headquarters and Pawaa Annex as part of Phase I. The Alapai vehicle maintenance facility, located on the basement-level of the parking garage in the HPD Headquarters, will be retained primarily for preventive maintenance (PM) functions, as was originally designed. The outlying functions at Wahiawa, Pearl City, Kaneohe, Kalihi, and Waianae will also be retained without change in operations.

The Halawa Corporation Yard will be the center of maintenance operations for City-owned HPD patrol vehicles, solo motorcycles, 3-wheeled Cushmans and GO-4s, trucks, support vehicles, and undercover vehicles which are primarily light trucks and automobiles. Major maintenance, including engine repair, brake repair, and transmission work, will occur at the Halawa Corporation Yard. In

addition, lubrication, tire repair and replacement, air conditioning work, and battery replacement will occur at the Halawa Corporation Yard. The Halawa Corporation Yard will not provide maintenance or support for officer subsidized vehicles as each officer with a subsidized vehicle is responsible for its maintenance.

Bldg B will contain six vehicle repair bays and six motorcycle/3-wheeled Cushman repair bays, wheel and tire and general maintenance shops, and parts and equipment storage areas. In addition, Bldg B will contain an office area for the superintendent, supervisors and other administrative staff, a break room, and a conference room. The locker/shower area will be shared by HPD and AES personnel, as previously stated. See Figure 1.6.

A total of 24 personnel will be assigned to Bldg B, including two personnel on the 1st watch (10:30 pm to 7:15 am) and 3 personnel on the 3rd watch (3:00 pm to 11:45 pm).

1.4.2.3 Department of Facility Maintenance Division of Road Maintenance (Building C)

The DFM Division of Road Maintenance is responsible for maintenance of public roads and streets under the jurisdiction of the City and County of Honolulu. In addition, the Division of Road Maintenance is responsible for maintaining City-owned streams, channels, ditches, and other flood control and storm drainage systems. The Division services the litter containers located at bus stops, malls, and other locations on Oahu. The Division of Road Maintenance is also responsible for emergency work related to these City-owned properties. The Honolulu District is the largest of the eight districts which comprise the Division of Road Maintenance. The seven rural districts include Kailua, Kaneohe, Ewa, Laie, Haleiwa, Wahiawa, and Waianae.

In addition, due to its resources and equipment, and capabilities to perform varied work, the Division is often called upon to provide support and assistance to other City agencies and departments in special situations and emergencies.

These support services are provided to the Department of Transportation Services, the Board of Water Supply, and Oahu Transit Services (OTS).

The Division of Road Maintenance will occupy Bldg C which will contain approximately 18,000 SF. About 9,000 SF will be used for offices, conference rooms, storage, lockers, showers, and toilets. The remaining 9,000 SF will be used for shops, including carpentry, small tool repair, signs and marking, and storage. A covered area for crew assembly/waiting and dispatch will also be provided as part of Bldg C. See Figure 1.6.

The Honolulu District is organized into eight major sections: Roadside; Storm Drain and Stream Cleaning; Street Sweeping; Road Pavement Maintenance and Repairs; Masonry and Carpentry (Trades); Equipment Pool; Signs and Marking; and Clean Team. Note, the Clean Team was formed with personnel from the DFM, the DPR, and the Department of Design and Construction to provide daily maintenance to the downtown and Chinatown areas. These personnel are now all assigned to the Division of Road Maintenance, including eight personnel who report directly to Fort Street Mall as part of the Clean Team. A total of 230 personnel (29 office and 201 field) are assigned to the Division of Road Maintenance at the Halawa Corporation Yard.

The Division of Road Maintenance Honolulu District personnel are shown in the following table:

	No. of Personnel		
Unit	Office	Field	Total
Administration (1)	10	1	11
Trades (2)	3	30	33
Roadside	3	31	34
Road Repair	2	42	44
Equipment	3	27	30
Clean Team (3)	1	22	23
Street Sweeping (4)	2	27	29
Signs & Marking (5)	5	29	34
SUBTOTAL	*29*	*209*	*238*
Less: Assigned to FSM	0	8	8
TOTAL at Halawa	29	201	230

Notes: (1) Superintendent; Assistant Superintendent; Clerk Typist; Dispatcher; 3 Planners; Storekeepers; Janitor.
(2) Masonry and Carpentry.
(3) Includes 8 personnel reporting to Fort Street Mall (FSM).
(4) Day shift 22; evening shift 7.
(5) Includes 3 for morning coning; 3 for afternoon coning.

Vehicles and equipment assigned to the Division of Road Maintenance are maintained by AES. With a few exceptions, personnel assigned to Division functions report to the Yard in the morning, receive work orders, pick up vehicles, equipment, tools and material, then leave the Yard for the project site. Thus, except for some of the administrative personnel, most personnel are not at the Yard during the day.

Street sweeping occurs five days per week on two shifts. The day shift works from 4:00 am to 12:30 pm, Monday to Friday and the evening shift works from 9:00 pm to 5:30 am, Sunday to Thursday. Litter from containers, streets, and sidewalks are picked up by one crew from the Street Sweeping Section six days per week.

1.4.3 Phase II Site Users

1.4.3.1 Division of Automotive Equipment Services (AES)

The Department of Facility Maintenance (DFM) Division of Automotive Equipment Services (AES) is responsible for planning, directing, coordinating, and administering programs, activities, and affairs required for the maintenance and repair of the automotive, heavy vehicle, and construction equipment fleet for the City. The exceptions are the Police Department, the Fire Department, and the Board of Water Supply which maintain their own fleets.

Currently, AES has four functional units: Administration, Storekeeping, Service and Lubrication, and Repair and Maintenance. Recently, as had been planned since the late 1980s, the DPR automotive maintenance function has been consolidated into AES. The Honolulu District, which will relocate to the Halawa site from Kewalo basin, is the largest of the three AES districts. The other two districts have AES facilities located in Pearl City and near the Kapaa quarry.

The major portion of AES's activities will be part of Phase II when the vehicle maintenance function will be relocated into the existing Halawa bus facility along with the Handi-Van maintenance operations. Phase II AES functions will include Service and Lubrication which provides fueling, tire repair and maintenance, lubrication and cleaning for the equipment supported by AES. Phase II will also include AES's main function, Repair and Maintenance. The Automotive Shop provides repair and maintenance for the City vehicle fleet.

The AES would also be responsible for the fueling and vehicle wash functions which would be located within the Phase II area. The fueling facilities would consist of above-ground tanks for unleaded gasoline, diesel fuel and propane, which are used by some of the vehicles in the City fleet, and pump dispensers. The fueling facility would be similar to commercial service stations found throughout the Honolulu area. The fueling system could be either an automated system operated by cards similar to credit cards or a manual system with an AES attendant. In either case, fueling will be done by persons instructed as to

the proper procedures to prevent accidental spills and will be supervised by an AES staff assigned to the fueling facilities. Figure 1.6 shows a possible location for the fuel facilities.

The above-ground fuel storage tanks and fuel dispensing facilities would comply with applicable U.S. Environmental Protection Agency (EPA) and City and County of Honolulu Fire Department requirements.

The fueling facilities will be accessible 24-hours per day. Most of the fueling for the City vehicles based at the Corporation Yard will occur between 8:00 am and 10:00 am. Fueling for the Handi-Vans will occur at night, after about 9:00 pm.

The AES will also be responsible for the vehicle washing function. At this time, both a manual washing and automated system are being considered. In either case, the facilities and systems will be designed with appropriate oil-water separators and will use a closed water recycle system. The recycle system will rely on retaining the wash water in the system by sloping the washing surface to the center of the pad to prevent the release of wash water to nearby areas including to North Halawa Stream. Figure 1.6 shows a possible location for the vehicle wash facility.

A total of 91 AES personnel (27 office and 64 shop) will be assigned to the Halawa Corporation Yard. The majority of the personnel (72 personnel) would be assigned to the 6:30 am to 3:00 pm shift. Other shifts include 10 personnel working from 2:30 pm to 11:00 pm and 9 personnel from 10:30 pm to 7:00 am. The AES maintenance functions will generate waste oil from engine crankcases, transmissions and differentials, waste brake fluid, and spent solvent used to clean parts. These waste products will be stored in tanks or drums according to procedures established for these types of materials. A contractor under contract to the City will pick up the materials for proper disposal.

1.4.3.2 Handi-Van

The City's Department of Transportation Services operates the Handi-Van through contracts with Oahu Transit Services, Inc., a private management company. The Handi-Van provides paratransit (curb to curb) service to eligible persons who, due to a disability, are unable to use the regular bus system.

The Handi-Van administration/operations and vehicle maintenance functions are currently located in the City-owned Manana properties. These functions are located within the site which has been selected for the future Pearl City bus dispatch and maintenance facility. The Handi-Van functions must be relocated to accommodate the new bus operations which will relocate from the Halawa site once the new facilities have been constructed.

The Handi-Van is currently organized into nine functional areas: accounting; customer services; reservations; scheduling; dispatch; safety training; administration; operations; and vehicle maintenance. Except for vehicle maintenance, the functions are primarily office functions. Drivers report to the operations area for routing and pick-up information and then depart for their assigned routes.

The Handi-Van currently provides service from 5:00 am to 12:00 midnight on weekdays and from 6:00 am to 12:00 midnight on weekends and holidays. Drivers and other personnel are assigned to one of six, 8-hour shifts during this period. Handi-Van currently has a fleet of approximately 110 vans which are used to provide their service.

The Handi-Van vehicle maintenance function is responsible for the maintenance, repair, washing, cleaning, and fueling the vans. Most vehicle maintenance functions occur during the day. Engine, transmission, brakes, and other systems are maintained and repaired by mechanics assigned to the maintenance function.

During the evening and at night, the vans are cleaned, washed, and fueled by crews assigned to these shifts. Fueling and wash facilities will be shared with the AES.

1.5 Site Access

The Halawa Corporation Yard is located east of Iwaena Street which is the only access to this portion of Halawa Valley. Site access will be provided from four existing driveways on Iwaena Street. Three driveways are on the Halawa bus facility parcel and one on the Crazy Shirts parcel. The southern Halawa bus facility driveway will be the primary City-vehicle access to the Phase I area upon completion of Phase II. This driveway will be connected to a stripped roadway along the eastern (stream-side) perimeter of the bus-parking yard until it reaches the Phase I site. The center Halawa bus facility driveway will be used for customers to access the main AES maintenance facility. The roof top driveway will be retained for employee parking.

The existing Crazy Shirts driveway will be retained for access to the employee parking lot and as an interim access for City vehicles to the Phase I area until completion of Phase II. Once the Phase II facilities and the new access have been completed, the Crazy Shirts driveway will be used for access to the employee parking lot only.

The existing driveway on the City-owned parcel (TMK: 9-9-73: 15) can also be used for emergency access.

1.6 Employee Parking

Employee parking will be provided at two locations, the existing roof top lot on the bus repair facility and a new lot on the Crazy Shirts parcel. Upon completion of Phase II, there will be no direct access for privately-owned employee vehicles to the Yard areas from either parking lot. City-owned vehicles assigned to the various functions will park within the Corporation Yard.

A total of 531 employee positions will be assigned to the Phase I and Phase II functions. Based on the shift assignments, and assuming one employee per vehicle and an 88 percent usage factor (to account for vacations, sick leave, and other absences), a total 405 employee parking spaces will be needed between 4:00 am – 3:30 pm for Phase I and Phase II. Since the existing bus roof top lot contains 200 parking spaces, the Phase I employee parking lot is sized at 205 spaces, as summarized below:

Parking Summary	No.
Total assigned employees (1)	531
Total employees 4:00 am – 3:30 pm	460
Total parking (2)	405
Parking spaces on bus facility	200
Total required parking Phase I	205

(1) Phase I and Phase II employees.
(2) Based on 88% of 4:00 am – 3:30 pm.

It should be noted that during discussions with the Central Park Community Association as part of the Development Plan Public Facilities (DPPF) Map amendment, provisions for sufficient off-street parking for City employees was a major consideration. Iwaena Street is highly developed with a variety of businesses and very little, to almost no on-street parking available. Providing off-street parking for City employees was a key issue. The DPPF Map was amended by Ordinance 98-23 on June 8, 1998. Appendix A contains DPPF Map documents.

1.7 Site Utility Plans

1.7.1 Potable Water System

For Phase I, the on site potable water system will be connected to the City and County of Honolulu Broad of Water Supply (BWS) system located along Iwaena

Street. For Phase II, the existing system serving the Halawa bus facility will be retained. Figure 1.7 shows the water system.

1.7.2 Sewer System

For Phase I, wastewater from the facilities will be collected by an on site system which will be connected to an existing lateral located along Iwaena Street. The lateral is connected to the City and County of Honolulu wastewater collection system. For Phase II, the existing wastewater collection system and connections to the City and County's system will be retained. Figure 1.7 shows the sewer system.

1.7.3 Drainage System

For Phase I, an on site drainage system will collect runoff from operational areas and the employee parking lot. The system will be connected to oil/water separators and then to lines to dispose the flow to North Halawa Stream. The use of oil/water separators will minimize runoff of contaminants to North Halawa Stream. Figure 1.8 shows the drainage and oil/water separators systems. For Phase II, the existing system will continue to the used.

1.7.4 Electrical System

Primary electrical service for this area of the Halawa Industrial Park is from a Hawaiian Electric Company (HECO) primary underground 12KV circuit located along Iwaena Street. This circuit is sufficient to meet the needs of users along Iwaena Street.

1.8 Traffic Signal

As previously noted, a meeting was held with the Central Park Community Association to discuss the Halawa Corporation Yard project and to present the findings of the Traffic Impact Analysis for the project. In addition to concerns about parking, as previously noted, there was also discussion about the need to mitigate traffic conditions on streets and intersections near the project site. The

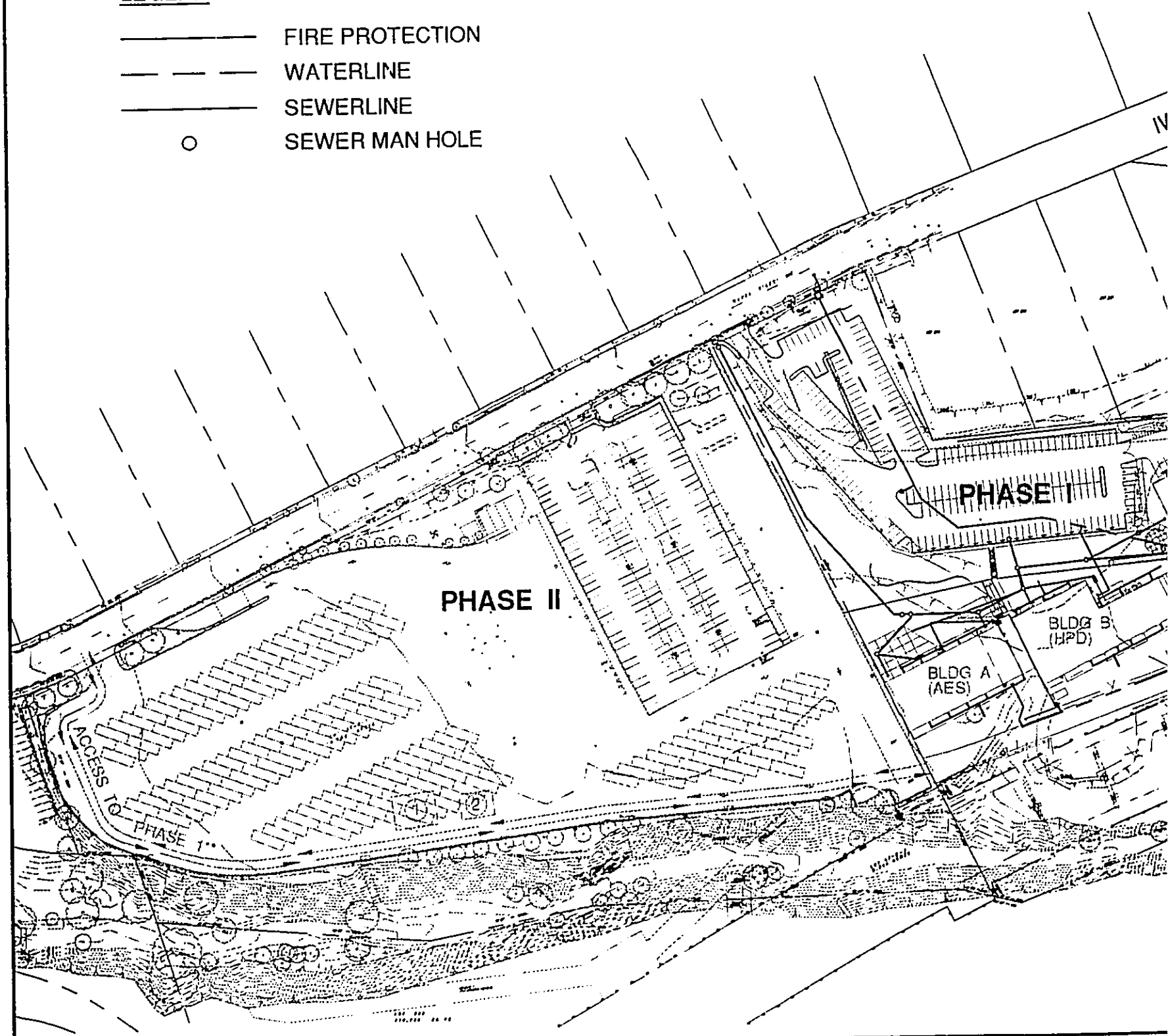
LEGEND

FIRE PROTECTION

WATERLINE

SEWERLINE

SEWER MAN HOLE



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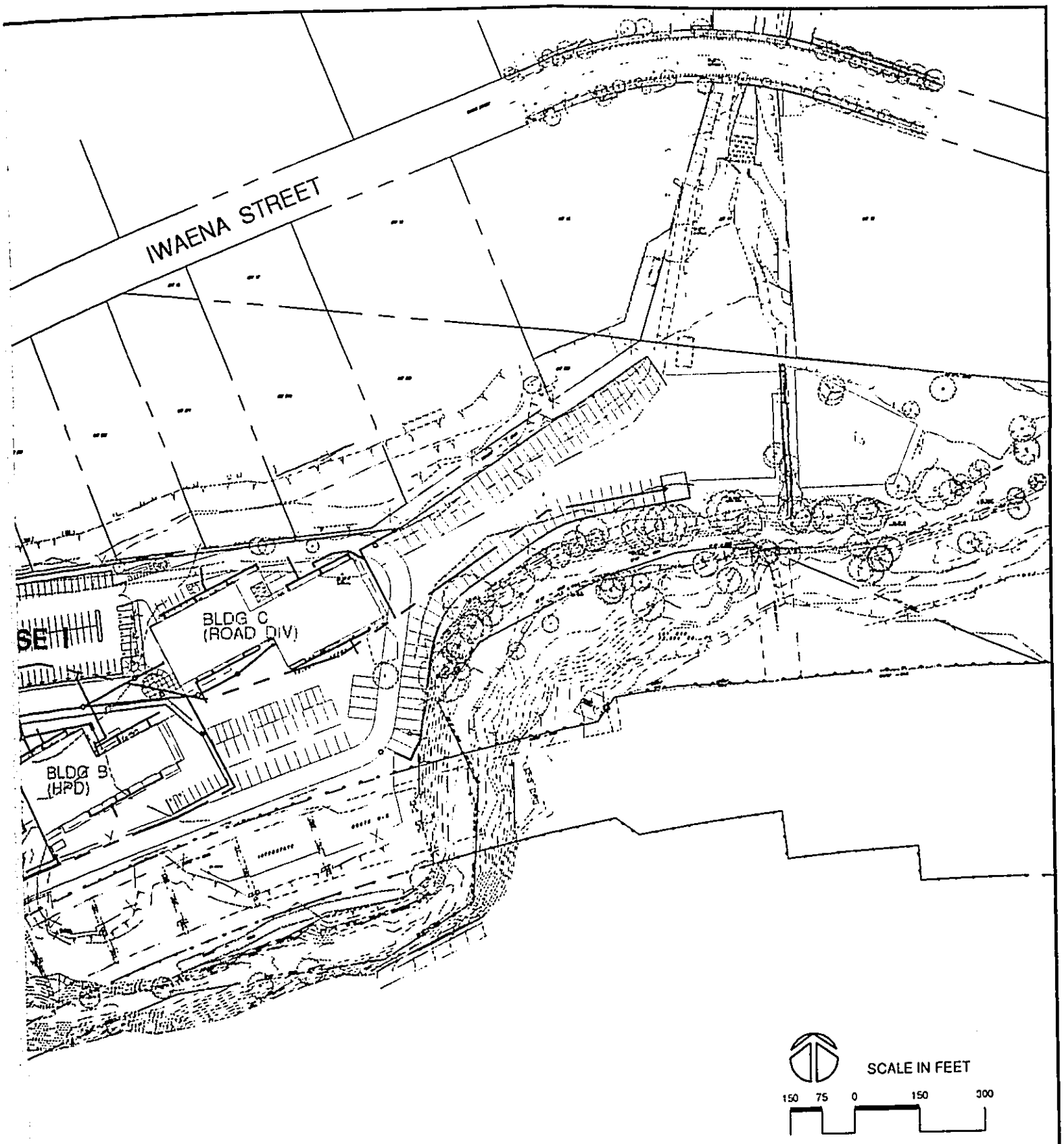
HALAWA CORPORATION YARD

SITE UTIITY PLAN



ORATION YARD

TY PLAN

FIGURE
1.7

LEGEND

DRAINLINE

DRAIN INLET

PHASE II

PHASE I

BLDG B (HPD)

BLDG A (AES)

ACCESS TO PHASE I

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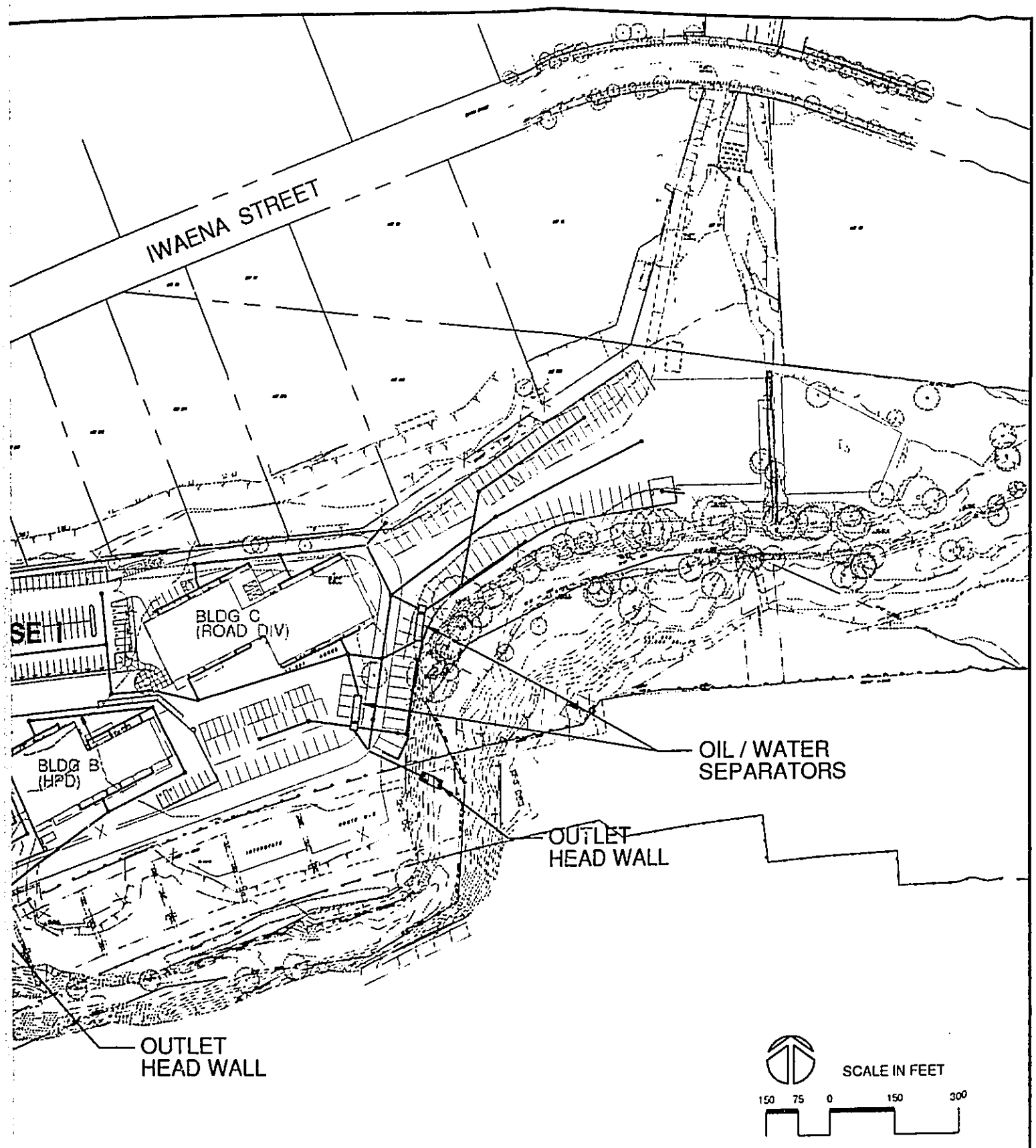
HALAWA CORPORATION YARD

STORM DRAINAGE & OIL / WATER SYSTEM PLAN



ORATION YARD

/ WATER SEPARATOR
M PLAN

FIGURE
1.8

specific concern was traffic at the Iwaena Street and Iwaiwa Street intersection and at the Iwaiwa Street and Halawa Crusher Road intersection.

It was noted that traffic conditions especially during the PM peak period causes delays at the Iwaiwa Street and Halawa Crusher Road intersection which then creates delays at the Iwaena Street and Iwaiwa Street intersection. As a result of these concerns, the City and County of Honolulu will install a traffic signal at the intersection of Iwaiwa Street and Halawa Crusher Road as part of Phase II for the Halawa Corporation Yard project. Further discussion of traffic is included in the Traffic Section 2.6.

1.9 Project Operation

The Halawa Corporation Yard will operate primarily during the day-time hours (7:00 am to 3:30 pm), five days per week. However, to accommodate certain maintenance functions and emergency needs, the Corporation Yard will be used on a 24-hours per day, seven days per week basis.

The two major activities at the Corporation Yard will be vehicle and equipment maintenance functions and trades/shops functions. The majority of both of these functions will occur during the day-time hours, 7:00 am to 3:30 pm.

The vehicle and equipment maintenance functions assigned to the Corporation Yard will involve garage-type activities associated with servicing and maintaining vehicles and equipment such as:

- Preventative maintenance (oil changes and lubrication);
- Service (tune-ups, brake work, wheel alignment, tire repair); and,
- Major repair (engine overhaul, transmission rebuilding, paint and body work).

The majority of the personnel assigned to the trades shops will report to the Corporation Yard about 7:00 am. Field personnel will receive their assignments, pick-up tools, equipment, and materials, then depart for the project site between 7:30 to 8:30 am in City-owned vehicles. Field personnel will return to the

Corporation Yard around 2:30 to 3:00 pm to check in City-owned vehicles and equipment prior to leaving for home at around 3:30 pm. Office personnel and some of the supervisors will spend most of the day in the Corporation Yard.

1.10 Preliminary Cost Estimate

The preliminary cost estimate for Phase I is approximately $10.5 million, excluding acquisition of the Crazy Shirts parcel. Cost estimates for Phase II have yet to be developed. However, based on a preliminary budget for planning, Phase II is expected to cost about $ 6 million.

1.11 Project Schedule

The project schedule is to start construction around mid 2000 for Phase I. Start of construction for Phase II will depend on completion of the Pearl City bus facility. Once the bus operation has been completed, construction for Phase II can proceed which is expected to be around mid 2001.

2. DESCRIPTION OF EXISTING ENVIRONMENT, IMPACTS AND MITIGATION MEASURES

2.1 Geology and Soils

2.1.1 Existing Environment

The island of Oahu is a volcanic doublet formed by the Waianae Range to the west and the younger Koolau Range to the east. Both are remnants of great shield volcanoes, but the term "range" indicates that they have lost most of the original shield outlines and are now long narrow ridges shaped largely by erosion. Typical of the southwest side of the Koolau Range, North Halawa Valley is an amphitheater headed valley formed by stream erosion. The lower portion of the valley is relatively flat and overlays ancient marine sediments from a time when the oceans were much higher.

An investigation of subsurface conditions at the project site was undertaken by GEOLABS-HAWAII. The field exploration program consisted of drilling and sampling 22 borings extending to depths ranging from about 10.5 to 51.5 feet below the existing ground surface. The investigation revealed that the project site is generally underlain by a surficial layer of fill materials overlying alluvial deposits and saprolitic materials at greater depths. The majority of the materials encountered consisted of stiff to very stiff clayey silts and silty clays with varying amounts of cobbles and boulders throughout the depths and in localized areas.

2.1.2 Impacts and Mitigation Measures

The construction of the Halawa Corporation Yard, including the excavation required for the foundations and footings of the proposed buildings, will not adversely impact the geology and soils of the project site or surrounding areas.

2.2 Drainage and Flood Hazard

2.2.1 Existing Environment

According to the U.S. Federal Emergency Management Agency (FEMA), Flood Insurance Rate Map (FIRM), Community Panel Number 150001 0135C revised September 28, 1990, the majority of the project site is located within Zone X which is defined by FEMA as areas determined to be outside the 500-year flood plain. The northeast portion of the site is designated Zone D, areas in which flood hazards are undetermined. A portion of the southwestern boundary follows along North Halawa Stream which is designated Zone AE defined as special flood hazard areas inundated by 100-year flood, base flood elevations determined (see Figure 2.1).

2.2.2 Impacts and Mitigation Measures

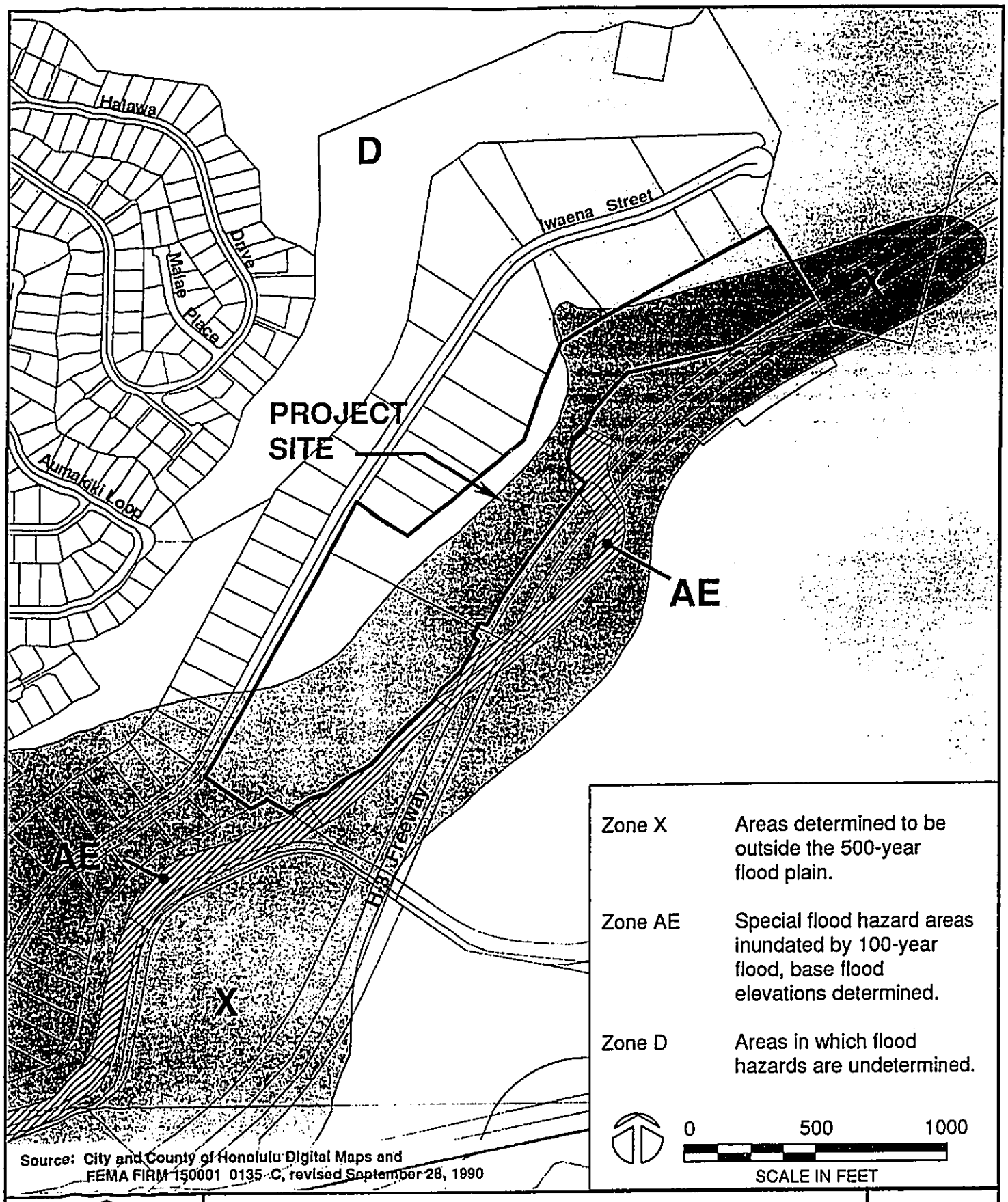
The Corporation Yard buildings will be constructed on the portion of the project site that is designated Zone X, areas outside the 500-year flood plain. Construction will not take place along the southwestern property boundary. Since development will not take place within the flood hazard area, the proposed project is not expected to impact, or be affected by flooding.

For Phase I, an on site drainage system will collect runoff from operational areas and the employee parking lot. The system will be connected to oil/water separators and then to lines to dispose the flow to North Halawa Stream. The use of oil/water separators will minimize runoff of contaminants to North Halawa Stream. See Figure 1.8. For Phase II, the existing drainage system will continue to be used.

2.3 Hazardous Waste

2.3.1 Existing Environment

In October 1998, a Phase I Environmental Site Assessment (ESA) was conducted on the Phase I Crazy Shirts parcel to investigate the presence, or



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HALAWA CORPORATION YARD

FLOOD MAP

FIGURE 2.1

likely presence of materials considered hazardous to human health and the environment. The Phase I investigation was performed in general accordance with the American Society for Testing and Materials (ASTM) "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process". The Phase I ESA was conducted by Masa Fujioka and Associates, Aiea, Hawaii and is on file with the City and County of Honolulu Department of Design and Construction (DDC). A copy of the Phase I ESA can be reviewed at the DDC office.

Past and current uses of the Crazy Shirts parcel (TMK: 9-9-73:23) were investigated as part of the Phase I (ESA). In addition, U.S. Environmental Protection Agency (EPA) and State of Hawaii DOH databases were searched for relevant information. A site reconnaissance was also conducted to determine field conditions. The records search, site reconnaissance, and other investigations indicated no evidence of recognized environmentally hazardous conditions on the Phase I project site.

The existing Halawa bus facility has been conducting vehicle maintenance activities on the Phase II portion of the project site for a number of years. As part of the maintenance function, buses are fueled at a fuel facility on the project site using underground tanks and dispensers located on the above-ground pump islands. Buses and support vehicles are fueled using gasoline and diesel fuel. A total of 13 underground storage tanks (USTs) are located within the Halawa bus facility. Information about site conditions relative to the USTs on the Phase II area are documented in a report entitled Long-Term Release Response Report for Halawa Bus Facility (Long-Term Release Report), January 25, 1999, prepared by Kimura International which is on file with DDC. A copy of the Long-Term Release report can be reviewed at the DDC office.

According to the Long-Term Release Report, in May 1998, during excavation activities to replace piping near the fuel facility, petroleum was observed seeping into a newly excavated piping trench. After excavating a total of 30 linear feet of gasoline piping, it was determined that overexcavation could not remove all of the suspected contamination. The State of Hawaii Department of Health (DOH) was notified of the release.

In June 1998, additional excavations were made to remove diesel piping from the UST. At that time, visual and olfactory observations indicated a release of diesel contamination into the subsurface. The DOH was notified of the second release.

In November 1998, a total of 29 soil borings were made as part of a subsurface investigation. Soil samples from the borings were collected at various depths in the contamination area and from the perimeter areas to delineate the horizontal, and vertical extent of any contamination. The collected samples were analyzed for: total petroleum hydrocarbons (TPH) as gasoline; TPH as diesel; TPH as oil; benzene, toluene, ethylbenzene, and xylenes (BETX); polynuclear aromatic hydrocarbons (PAH); and total lead. See the Long-Term Release Report.

The results of the analytical test indicated TPH as diesel, benzene, and ethylbenzene concentrations exceeded DOH Tier 1 soil action levels in the samples collected from three of the 29 soil borings. The remaining constituents were not detected above the reporting limits or the DOH soil action levels. The results of the soil samples indicated that the vertical and horizontal extent of the contamination had been delineated.

When contamination is detected on a site, the DOH identifies three remedial options: 1) conduct a risk assessment; 2) proceed with remedial investigation and feasibility studies and/or remedial actions to clean up the contamination; and/or 3) conduct exposure prevention management with determination of the depth of groundwater.

The Long-Term Release Report recommended that, since the source of contamination was removed through the removal of the piping and grossly contaminated soil, a risk assessment be performed to determine the acceptable site-specific levels for the contaminants of concern. After this has been completed, further appropriate remedial actions can be determined. See the Long-Term Release Report.

Prior to installation of the piping, tank tightness tests were performed for three of the USTs on the project site. All three tanks passed tank tightness tests.

In addition to the Long-Term Release Report, in October 1998, an Asbestos and Lead-Based Paint survey was conducted in the existing Halawa bus facility to identify areas with asbestos-containing material (ACM) and lead-based paint (LBP). For the asbestos survey, areas with suspected ACM were initially visually inspected. Suspected materials were then sampled and analyzed for asbestos. A total of 41 samples of ACM were collected for analysis. The results showed the vinyl floor tile on the first and second floors (a total of about 9,400 square feet) had ACM. In addition, ACM was found in three other areas of the Phase II facilities. These areas were the patching compound used on the fuel facility canopy roof, the stairwell to the main building roof, and the fire exit stairwell to the main building roof.

The LBP survey consisted of a visual survey of the bus building, sample collection from suspected areas, and laboratory analysis of the samples. A total of 12 paint chip samples were collected from facilities on the Phase II project site. The analysis of the samples indicate lead was detected on the yellow and blue painted steel doors, on the red concrete stairwell floor, and on the brown drywall walls on the second floor hall. However, the lead concentrations were below 0.5 percent. Therefore, the tested paints are not considered lead-based paint.

2.3.2 Impacts and Mitigation Measures

The AES and HPD maintenance shops to be relocated to the Halawa Corporation Yard are currently operating at other locations under Federal and state rules and regulations related to solid and hazardous wastes. Upon relocation, the maintenance shops would be required to continue to follow applicable Federal and state hazardous waste rules and regulations during operations of their facilities.

As documented in the Long-Term Release Report (January 1999), approximately 200 tons of soil was excavated during the release response activities (May and June 1998) at the existing Halawa bus facility. According to the Long-Term Release Report, the excavated soil was stockpiled and eventually disposed of at the Nanakuli Reclamation Soil Facility operated by PVT Land Company, Ltd., Waipahu, Oahu, Hawaii.

The Long-Term Release Report recommended a risk assessment be conducted to determine the necessary remediation actions.

As the past user of the Phase II site, the City and County of Honolulu Department of Transportation Services (DTS) is responsible for remediation of the hazardous waste on the bus facility site. To date, DTS has not undertaken a project to remove or remediate any contamination which might remain from the existing fuel system. Once funds have been appropriated and a specific plan for the remediation has been developed, the City intends to remediate the contamination at the project site. Once the remediation has been completed, there should no longer be the potential for adverse environmental effects. In addition, if the Phase II construction occurs prior to completion of the remediation, construction activities will be planned so as not to adversely impact environmental investigations or remediation actions.

The ACM will be removed prior to the start of any demolition or renovation work. The removal will be accomplished with properly qualified contractors and in accordance with methods and procedures which have been established to protect workers and the surrounding environment. Thus, there should be no adverse environmental effects from the removal of ACM.

Phase II will include the installation of above-ground fuel tanks and dispensers for diesel fuel, natural gas, and gasoline. These tanks will meet the applicable U.S. EPA, DOH, and City and County of Honolulu Fire Department requirements for installation of above-ground fuel tanks. The fuel tanks and dispensers will be designed with the necessary spill containment measures to prevent adverse impacts to the environment. In addition, as previously discussed, fueling of vehicles and equipment will be done by persons instructed as to the proper procedures to prevent spills.

2.4 Flora and Fauna

2.4.1 Existing Environment

Flora

As part of the documentation for the Environmental Assessment, a botanical/biological survey has been completed for the Crazy Shirts parcel. The primary vegetation type found on the Crazy Shirts parcel is Koa haole/Guinea grass Wasteland which is made up of scattered, scrub koa haole bushes ranging from 18 inches to about 12 feet tall. The ground layer is dry, matted Guinea grass. A variety of weedy forbs can be found in this scrub vegetation. See Appendix B.

The Crazy Shirts parcel also contains Riverine Vegetation on both sides of Halawa Stream. This vegetation is characterized by large trees, the most common being the Java plum, kukui, fern, banyans, and monkey pod. Note, no development is proposed for this area of the parcel.

The existing bus facility is fully developed with facilities, or has been paved for parking and maintaining the bus fleet. A landscaped area near Iwaena Street contains planted material.

The botanical survey found no U.S. Department of the Interior Fish and Wildlife Service or State of Hawaii Department of Land and Natural Resources listed or candidate threatened or endangered botanical species on the Crazy Shirts parcel. See Appendix B.

Fauna

A biological survey was also conducted at the Crazy Shirts parcel. This survey found a total of 11 bird species, with only one of the species, the migratory golden plover, classified as native. Other common species on the Crazy Shirts parcel included the Japanese white eye, Java sparrow, and House sparrow.

Although the survey found a number of species, the number of birds was low. See Appendix B.

The biological survey found no U.S. Department of the Interior Fish and Wildlife Service or State of Hawaii Department of Land and Natural Resources listed or candidate threatened or endangered avifauna species on the Crazy Shirts parcel.

A survey of North Halawa Stream has also been completed. This survey found no U.S. Department of the Interior Fish and Wildlife Service or State of Hawaii Department of Land and Natural Resources listed or candidate threatened or endangered species in North Halawa Stream. The stream survey is included in Appendix C.

2.4.2 Impacts and Mitigation Measures

Flora

Development of the Corporation Yard will require removal of the Koa haole/Guinea grass Wasteland and construction of the various facilities, vehicle and equipment parking areas, and employee parking lot on the Crazy Shirts parcel. The removal of the vegetation will permanently alter the character of the Crazy Shirts parcel.

None of the flora on the Crazy Shirts parcel is a U.S. Department of the Interior Fish and Wildlife Service or State of Hawaii Department of Land and Natural Resources listed or candidate threatened or endangered botanical species. Thus, construction of the Halawa Corporation Yard will not have a significant adverse effect to the botanical character of this area of Oahu.

Fauna

Removal of the vegetation will also remove habitat for resident bird species. This will displace the species to other sites. Overall, construction of the Corporation Yard may affect the species on the site. However, the removal of

the vegetation and construction of the Corporation Yard is not likely to adversely effect the species.

2.5 Climate

2.5.1 Existing Environment

The project site and surrounding areas are characterized by moderate temperatures and rainfall. Average high and low temperatures range between a low of about 60° F to a high of around 85 - 88° F over the course of a year. Median annual rainfall is approximately 45 inches per year in the upper reaches of Halawa Valley near the Koolau Mountain Range.

2.5.2 Impacts and Mitigation Measures

Construction of the Halawa Corporation yard will be confined to the approximately 23-acre project site. Operations will involve activities related to the maintenance of vehicles and equipment and to other related activities such as carpentry and small-scale masonry work. The level of activity and the scale of the project site will not create adverse affects to the climate of this area of Oahu.

2.6 Traffic

2.6.1 Existing Environment

Field investigations were conducted in February and March 1998 to document traffic conditions near the project site. The field investigations consisted of manual turning movement traffic count surveys at four intersections near the project site in the mornings between 6:00 am to 8:00 am and in the afternoons from 3:00 pm to 6:00 pm. The four intersections were:

- Iwaena Street and Iwaiwa Street;
- Halawa Crusher Road and Iwaiwa Street;

- o Halawa Crusher Road and Ulune Street Extension; and
- o Ulune Street/Ulune Street Extension and Kahuapaani Street.

The traffic count data and procedures in the "Highway Capacity Manual" from the Transportation Research Board (1994) and the "Highway Capacity Software" developed by the Federal Highway Administration were used to develop the traffic impact analysis. Based on the information from the traffic counts and the additional traffic impact analysis, in March 1999, a Traffic Impact Report for the Halawa Corporation Yard was submitted for review and comment to the State of Hawaii Department of Transportation (DOT) and the City and County of Honolulu Department of Transportation Services (DTS). Subsequently, the DOT and the DTS provided comments. Appendix D contains the Traffic Impact Report which incorporates the comments from the DOT and the DTS.

The Traffic Impact Report states that level of service (LOS) is a quantitative and qualitative assessment of traffic operations used in traffic impact analysis. Levels of Service are defined by LOS "A" through "F", with LOS "A" representing an ideal operating condition and LOS "F" the worst operating condition. The DOT and the DTS generally concur that LOS "C" or better is acceptable for most traffic operations on Oahu.

The traffic survey count data showed the following existing AM peak conditions for the critical movements at the four studied intersections by lane group:

Intersection	Lane Group	AM Peak Existing	PM Peak Existing
Iwaena St and Iwaiwa St	Westbound (LT & RT)	B	D
Iwaiwa St and Halawa Crusher Rd	Southbound (LT)	E	E
Halawa Crusher Rd and Ulune Extension	Eastbound (LT)	A	D
	Southbound (TH)	C	D
Ulune St and Kahuapaani St	Eastbound (LT & TH)	E	E
	Northbound (LT)	D	E
	Northbound (TH)	C	D
	Southbound (LT)	D	F
	Southbound (TH & RT)	C	D

The traffic survey count data also showed the existing PM peak conditions for the critical movements at the four studied intersections as shown above. The table shows that when compared to the existing AM peak period, the four intersections operate at the same or lower LOS during the existing PM peak period.

2.6.2 Impacts and Mitigation Measures

A traffic impact analysis was conducted to determine the effect of the Halawa Corporation Yard activities on these four nearby intersections. This analysis considered both conditions with and without the Halawa Corporation Yard project. (Development of an industrial use for the Crazy Shirts portion of the project site was used as the without project condition.)

The traffic impact analysis indicated that for the AM peak period, except for the Iwaiwa Street and Halawa Crusher Road intersection, the LOS would deteriorate or remain unchanged from existing conditions. The AM peak critical movement LOS at the Iwaiwa Street and Halawa Crusher Road intersection would improve from LOS "F" without the project to LOS "B" with the project. This improvement results from installation of the traffic signal at this intersection as part of Phase II of the Halawa Corporation Yard project.

In the PM peak period, with the Halawa Corporation Yard project, compared to existing conditions, the LOS critical movement would remain unchanged at two intersections and would improve at two intersections. With the Halawa Corporation Yard project, the Iwaiwa Street and Halawa Crusher Road intersection critical movement would improve from LOS "E" to LOS "B" due to installation of the traffic signal at the intersection as part of the Phase II project. The Iwaena Street and Iwaiwa Street intersection critical movement would improve from LOS "D" to LOS "C". The lower volume of traffic for the Corporation Yard compared to the existing Halawa bus facility would cause the improvement of the LOS. See the table below.

Intersection	Lane Group	AM Peak			PM Peak		
		Existing	Year 2002 w/out Project	Year 2002 with Project	Existing	Year 2002 w/out Project	Year 2002 with Project
Iwaena St and Iwaiwa St	West-bound (LT & RT)	B	B	C	D	F	C
Iwaiwa St and Halawa Crusher Rd	South-bound (LT)	E	F	B	E	E	B
Halawa Crusher Rd And Ulune Extension	East-Bound (LT)	C	C	C	D	D	D
	South-bound (TH)	C	C	D	D	D	C
Ulune St and Kahuapaani St	East-bound (LT & TH)	E	F	E	E	E	E
	North-bound (LT)	D	D	D	E	E	E
	North-bound (TH)	C	C	C	D	D	D
	South-bound (LT)	D	D	D	F	F	F
	South-bound (TH & RT)	C	C	C	D	D	D

Based on the results of the Traffic Impact Study, the LOS at nearby critical intersections would improve or remain unchanged as a result of the Halawa Corporation Yard project. Thus, overall the Halawa Corporation Yard project should not have an adverse impact to traffic conditions at nearby critical intersections.

Most afternoon traffic from the Halawa Corporation Yard would occur before the pm peak hours, from around 2:30 pm to 3:30 pm when City employees would be returning to the Yard and then departing for their homes. The traffic count data showed the afternoon peak generally occurs between 4:00 pm to 5:00 pm, or after the expected Corporation Yard peak, at the four study intersections. Thus, the Corporation Yard should not adversely affect afternoon traffic in this area of Halawa Valley, including late afternoon events held at Halawa District Park located north of the intersection of Iwaiwa Street and Iwaena Street.

2.7 Air Quality

2.7.1 Existing Environment

Air quality in the vicinity of the project site is affected primarily by emissions from vehicular traffic along Iwaena Street and H-3 Freeway. However, as traffic operates generally well along these roadways throughout the day, the associated vehicular emissions do not significantly affect ambient air quality in the area. The project site is located in an industrial area and not in the immediate vicinity of sensitive receptor locations (residential areas).

The Department of Health operates a network of air quality monitoring stations located at various sites around the State. The Pearl City monitoring station, located atop the Leeward Medical Center is the nearest station to the project site. In 1996, the average particulate matter concentration was approximately 14 micrograms per cubic meter ($\mu g/m^3$) at the Pearl City Station, significantly below the 50 $\mu g/m^3$ State standard. Air quality monitoring at the Downtown Honolulu station which samples particulate matter, carbon monoxide, sulfur dioxide and lead particulates, showed measurements well within the State Ambient Air Quality Standards.

2.7.2 Impacts and Mitigation Measures

Potential short-term adverse air-quality impacts during the construction phase include: 1) generation of fugitive dust from vehicle movement and soil excavation; and 2) exhaust emissions from on-site construction equipment and

from construction workers' vehicles traveling to and from the project site. These adverse impacts will be short-term during the period of construction.

Construction activities must comply with provisions of Chapter 11-60.1, Hawaii Administrative Rules (DOH), "Air Pollution Control" and, with respect to fugitive dust, Section 11-60.1-33. It is expected that the contractor will comply with State regulations and provide adequate means to control dust during the various phases of construction.

Once construction has been completed, operation of the Corporation Yard will involve the movement of vehicles and equipment within the project site, as well as trips to and from the project site. It is anticipated that the Corporation Yard will generate lower traffic volumes than the existing bus operations. Since air quality in the area is primarily affected by vehicular traffic emissions, the lower traffic volumes from the Corporation Yard would indicate that the slight degradation in air quality is not expected to have any significant impacts on the area.

2.8 Noise

2.8.1 Existing Environment

The Halawa Corporation Yard is located in an industrial area of Honolulu. As such ambient noise levels would be affected primarily by vehicle traffic and large-scale outdoor industrial uses. The area near the Halawa Corporation Yard contains several sources of noise including the H-3 Freeway and a large-scale quarry located less than one mile east of the project site. In addition, Iwaena Street contains a number of industrial and commercial businesses which involve use of tractor-trailers to move goods and material to their sites. The last major source of noise would be from bus traffic to and from the Halawa bus facility. All of these sources would create noise in the area near the Halawa Corporation Yard.

2.8.2 Impacts and Mitigation Measures

The Halawa Corporation Yard would include movement of City-owned vehicles and equipment to and from the project site. In addition, there would be vehicles by City employees as they travel to and from the project site. The movement of vehicles and equipment would create noise as they travel on streets approaching the Corporation Yard.

As shown in the traffic analysis, the Halawa Corporation Yard would generate lower traffic volumes than the existing bus operations. Since vehicle traffic is one of the major sources of noise, the lower traffic volumes from the Corporation Yard would indicate some decrease in the noise levels which would affect nearby areas. However, it should be noted, that the areas surrounding the project site are zoned I-2, Intensive Industrial. Further, the primary access roads to the project site (Iwaiwa Street and Iwaena Street) contain industrial and commercial businesses on both sides of the streets. Typically, higher noise levels can be expected in industrial areas.

In addition to vehicle and equipment traffic, noise would be created from the various types of equipment used for maintenance of vehicles and equipment. This noise would primarily be confined to the interior of the maintenance buildings as they have been sized to accommodate the necessary functions in the work bays and shops inside the buildings, although some inspection and minor repair could occur outside of the buildings. The overall noise generated by the Corporation Yard maintenance functions should be the same or lower than the existing bus maintenance activities. Thus, accounting for vehicle and maintenance noise sources, the noise levels from the Halawa Corporation Yard should not be greater than existing ambient noise levels.

2.9 Archaeological and Historic Resources

2.9.1 Existing Environment

Documentation from the State of Hawaii Department of Land Natural Resources State Historic Preservation Division (SHPD) shows that there are no historic sites on the two parcels. See Appendix E.

2.9.2 Impacts and Mitigation Measures

The SHPD has concluded development of the Corporation Yard will have "no effect" on historic sites. Thus, the Corporation Yard will have no adverse impacts to historic sites. See Appendix E. The SHPD restated this conclusion as a comment to the Draft EA. See Appendix G.

2.10 Infrastructure

2.10.1 Water

Existing Conditions

Potable water and fire protection for the Halawa Corporation Yard will be provided from a City and County of Honolulu Board of Water Supply (BWS) 16-inch line located along Iwaena Street. This 16-inch line also provides water to the other businesses located in this area of the Halawa Industrial Park. Currently, the capacity of this line is sufficient to meet the domestic and fire flow needs of the users along Iwaena Street.

Impacts and Mitigation Measures

Potable water for Phase I of the Corporation Yard will be provided via an existing meter and lateral line located near the driveway to the Crazy Shirts parcel. Potable water will be provided to the Phase I buildings and yard areas using 4-inch or smaller lines located in the employee parking lot and in the yard areas.

Fire protection for Phase I will be provided using a new 10-inch line from Iwaena Street. Fire protection will be provided to building interiors using fire sprinkler systems and to the yard areas using fire hydrants. The existing BWS system has the capacity to meet these requirements.

The existing water system on the City's bus facility will be used for Phase II. The total demand for Phase II should not differ significantly from the current usage. Thus, the existing BWS system should be able to accommodate the Phase II needs. As a comment to the Draft EA, the BWS stated the existing system is adequate to handle the Corporation Yard project. See Appendix G.

2.10.2 Sewer System

Existing Conditions

The existing City and County of Honolulu wastewater collection system is located along Iwaena Street.

Impacts and Mitigation Measures

For Phase I, wastewater from the facilities will be collected by an on site system which will be connected to an existing lateral located along Iwaena Street. The lateral is connected to the City and County of Honolulu wastewater collection system. For Phase II, the existing wastewater collection system and connections to the City and County's system will be retained. See Figure 1.7.

Wastewater from the Iwaena Street collection system gravity flows to the Halawa Wastewater Pump Station from where it eventually is treated at the Honouliuli Wastewater Treatment Plant (WWTP). The average daily dry weather design treatment capacity of the WWTP is about 38 million gallons per day (mgd) for primary treatment . The existing average daily dry weather flow is about 26 mgd. The City is planning to increase the WWTP average daily dry weather treatment capacity to about 52 mgd.

Based on factors set forth in the City and County of Honolulu Department of Wastewater Management Design Standards, Volume I, July 1993, the average daily flow of wastewater is estimated to be approximately 5,000 gallons per day (gpd) for Phase I and about 7,800 gpd for Phase II. Similarly, based on the Design Standards, the peak design flow is estimated to be approximately 40,500 gpd for Phase I and about 53,000 gpd for Phase II. Thus, Honouliuli WWTP should be able to treat flows from the Corporation Yard without significant adverse effect to the WWTP.

2.10.3 Drainage

See Section 2.2, Drainage and Flood Hazard.

2.10.4 Electrical

Existing Conditions

Primary electrical service for this area of the Halawa Industrial Park is from a Hawaiian Electric Company (HECO) primary underground 12KV circuit located along Iwaena Street. This circuit is sufficient to meet the needs of users along Iwaena Street.

Impacts and Mitigation Measures

For Phase I, primary electrical services for the Corporation Yard will be provided via a 12.47KV transformer served from HECO's primary underground 12 KV circuit located along Iwaena Street. The HECO primary feeder will be routed via two new 4-inch underground ductlines to new HECO pad-mounted switchgear and transformers. HECO pad-mounted transformers will provide 480Y/277V, 3-phase, 4-wire for secondary service to a separate meter in each building for interior lighting purposes. In addition, lighting will be provided to City vehicle and equipment parking areas, as needed, and the employee parking lot. The existing HECO system is adequate to meet the needs of Phase I.

The existing service to the bus facility will be used for the Phase II. This service is adequate for current service to the maintenance facility. The Phase II improvements should not result in a significant increase in electrical demand over the current usage of the bus facility.

The Corporation Yard will increase electrical demand as both Phase I and Phase II are developed. The Phase I and Phase II improvements will require service for both building interiors and yard exteriors. This load can be accommodated by the existing HECO system.

2.10.5 Solid Waste

Existing Conditions

Refuse from the Halawa bus facility is currently collected by the City and County of Honolulu Department of Environmental Services Refuse Collection and Disposal Division. The Phase I parcel is currently unoccupied.

Impacts and Mitigation Measures

Refuse from the Halawa Corporation Yard (Phase I and Phase II) will be collected by the City and County of Honolulu Department of Environmental Services Refuse Collection and Disposal Division which services City-owned facilities.

The City functions relocating to the Halawa Corporation Yard have established operations at other locations in Honolulu. These functions have practices regarding recycling materials depending on their type and condition, as practicable. Also, the other materials such as hazardous waste are separated and disposed as required. These practices will continue upon relocation to the Halawa Corporation Yard.

3. RELATIONSHIP TO PLANS, POLICIES AND CONTROLS

3.1 Hawaii State Plan

The Hawaii State Plan, adopted in 1978 and revised in 1988, establishes the overall theme, goals, objectives, and priority guidelines to guide the future long-range development of the State. The Corporation Yard supports and is consistent with the following State Plan objectives and policies:

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

> *(b) (6) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.*

The Halawa Corporation Yard will involve construction of new facilities at a new site. The Corporation Yard will increase the level of construction activity on Oahu during the period of construction.

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

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

The Corporation Yard is located in the Halawa Industrial Park. A portion of the Corporation Yard project site has been used for bus maintenance facilities for a number of years. The facilities to be constructed have been designed to take into account the existing topographic conditions on the project site to minimize excavation or grading.

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

(b) (7) Encourage urban developments in close proximity to existing services and facilities.

The Halawa Corporation Yard is located within the Halawa Industrial Park, a well developed area with other industrial-type businesses and public services which can support the existing level of development. Construction of the Corporation Yard in this location will be consistent with the developed status of the area.

3.2 Land Use Plans and Policies

3.2.1 State Land Use District

The Hawaii Land Use Law of Chapter 205, Hawaii Revised Statutes, classifies all land in the State into four land use districts: Urban, Agriculture, Conservation, and Rural. The Halawa Corporation Yard project site is located in the Urban District classification. The Halawa Corporation Yard is consistent with the Urban classification.

3.2.2 City and County of Honolulu General Plan

The City and County of Honolulu General Plan (adopted 1977) was amended by the City Council in 1992. The plan is a statement of long-range social, economic, environmental and design objectives for the general welfare and prosperity of the people of Oahu. The plan is also a statement of broad policies which facilitate the attainment of the objectives of the plan. Eleven subject areas provide the framework for the City's expression of public policy concerning the needs of the people and the functions of government. These areas include population; economic activity; the natural environment; housing; transportation and utilities; energy; physical development and urban design; public safety; health and education; culture and recreation; and government operations and

fiscal management. The relationship of the proposed project to the relevant objectives and policies of the General Plan are as follows:

VII. Physical Development and Urban Design

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

Policy 6 Encourage the clustering of developments to reduce the cost of providing utilities and other public services.

The Halawa Corporation Yard is located within the Halawa Industrial Park, a well-developed area with other industrial-type businesses and public services which can support the existing level of development. Construction of the Corporation Yard in this location will be consistent with the developed status of the area.

XI. Government Operations and Fiscal Management

Objective A To promote increased efficiency, effectiveness, and responsiveness in the provision of government services by the City and County of Honolulu.

Policy 1 Promote consolidation of State and City and County functions whenever more efficient and effective delivery of government programs and services can be achieved.

The Corporation Yard will consolidate the common facilities and functions needed to support the various City agencies at a site reasonably close to the Honolulu District. The consolidation of functions and facilities will result in a reduction in management costs and access to additional storage areas and specialized facilities.

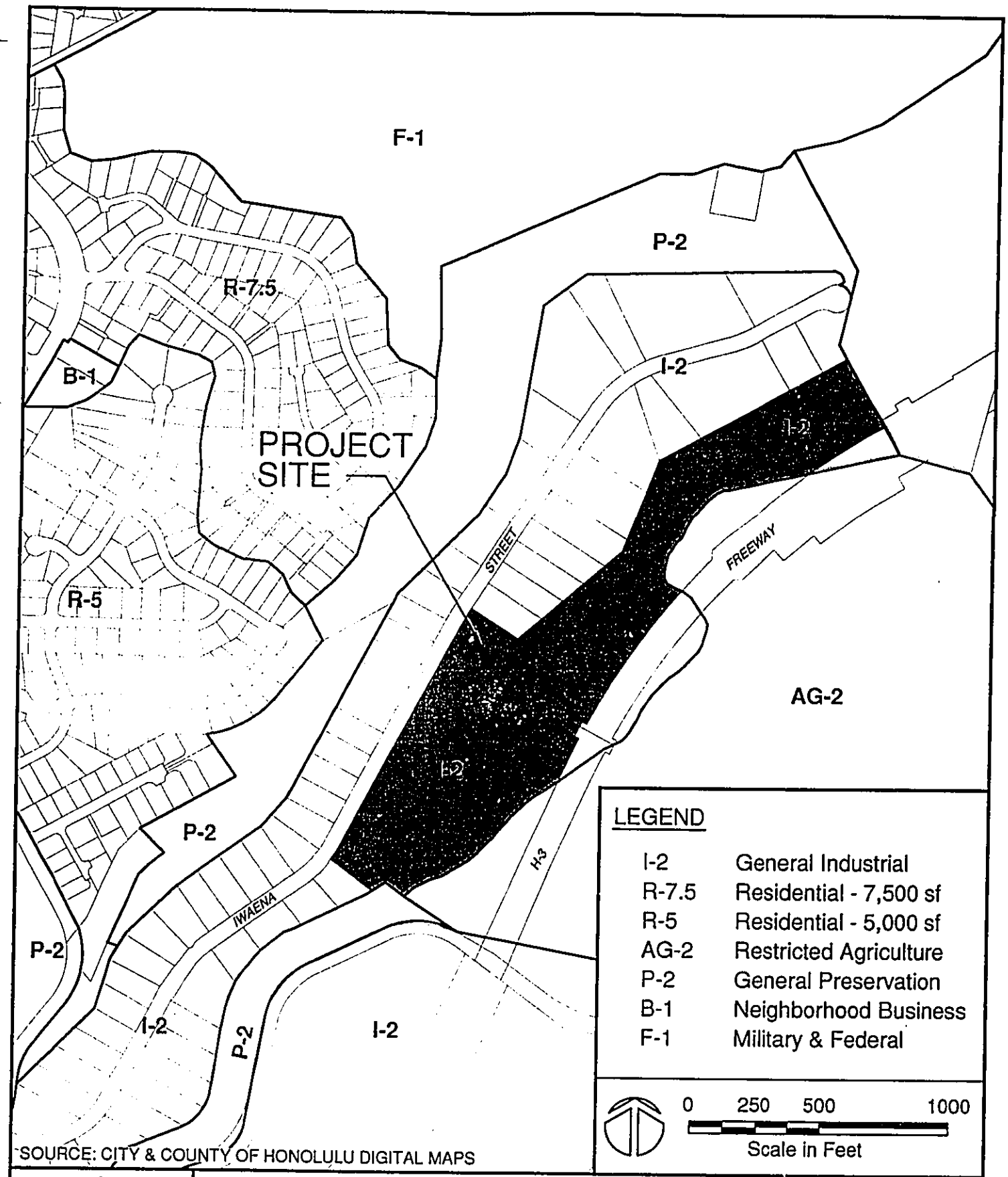
3.2.3 City and County of Honolulu Development Plan Public Facilities Map

Phase I of the Halawa Corporation Yard required an amendment to the Primary Urban Center Development Plan Public Facilities (DPPF) Map to add a publicly funded corporation yard modification/expansion symbol. On March 7, 1997, the Planning Department recommended the DPPF Map be amended as set forth in 97/PUC-1001C. On June 18, 1998, Ordinance 98-23 was approved by the City Council to amend the Primary Urban Center DPPF Map. Appendix A contains the relevant information.

As part of DPPF Map amendment process, on April 28,1998 a public informational meeting was held with the Central Park Community Association to discuss issues raised regarding the Halawa Corporation Yard project and to present the findings from the analysis of traffic impacts. Subsequent to the public informational meeting, the Central Park Community Association wrote to the City indicating it appeared the City was addressing the Association's concerns and issues. A draft of the Traffic Impact Report has been circulated to the State of Hawaii Department of Transportation and to the City and County of Honolulu Department of Transportation Services for review and comment. Necessary revisions have been made to the document which is in Appendix D.

3.2.4 City and County of Honolulu Zoning

The zoning designation for the project site is I-2, Intensive Industrial. The intent of the I-2, Intensive Industrial District is to set aside areas for the full range of industrial uses to support the City. It is intended for areas with necessary supporting public infrastructure, near major transportation systems with other locational characteristics necessary to support industrial centers. I-2 districts are to be located in areas away from residential communities (see Figure 3.1).



WILSON OKAMOTO & ASSOCIATES, INC.
ENGINEERS · PLANNERS

HALAWA CORPORATION YARD

ZONING

FIGURE 3.1

3.2.5 City and County of Honolulu Special Management Area

The Coastal Zone Management Act contains the general objectives and policies upon which all counties within the State have structured specific legislation which created Special Management Areas (SMA). Any development within the Special Management Area boundary requires a SMA Use permit which is administered by the City Council. The project site is not located within the City's SMA.

4. ALTERNATIVES TO THE PROPOSED ACTION

4.1 No Action Alternative

The No Action alternative would continue the corporation yard functions at Pawaa Annex, Manana, and the area near Kewalo basin. City functions would have to continue to use facilities that lack adequate space for their assigned functions and would continue to perform work tasks in the open exposing City employees, equipment, and tools to heat from the sun and to wet conditions from the rain. City employees would have to continue to use facilities with poor functional layouts which results in inefficient working conditions and adds to the time and effort required for City employees to perform assigned tasks.

The No Action alternative would also preclude the use of the existing sites for their planned future uses as envisioned by the State of Hawaii, Hawaii Community Development Authority (HCDA) for the Kewalo basin area and the City and County of Honolulu for the Pawaa Annex. Further, the Hand-Van operations and maintenance facilities are located on lands to be used for the new bus maintenance facilities. Since these planned uses are intended to create better land uses than current City maintenance functions, the No Action alternative would continue the current low level of use of the land. Given the limited land area on Oahu for development of appropriate land uses, the No Action alternative is not a reasonable alternative.

4.2 Honolulu Corporation Yard at Sand Island

As previously discussed, the Honolulu Corporation Yard was proposed for State-owned land on Sand Island, adjacent to Sand Island State Park. The Honolulu Corporation Yard was to have provided space for a number of City agencies including AES, the Division of Road Maintenance, and the HPD, plus several other City agencies. New facilities similar to those proposed at the Halawa Corporation Yard would have been constructed at the Honolulu Corporation Yard site. In addition, to meet the requirements set forth by the State, City funds

would have been used to construct a 45-acre extension to the Sand Island State Park.

The Honolulu Corporation Yard was intended to consolidate the maintenance and shop functions for a number of City agencies into a single location to reduce redundancy of material purchases and storage and to improve efficiency of operations. However, this meant the City would have to fund construction of a number of new facilities at one time and, given the terms of the Executive Order, develop 45 acres of Sand Island State Park. Based on these considerations and the lack of the City funding, the Honolulu Corporation Yard is not a feasible alternative to meet the needs for a maintenance facility.

5. ANTICIPATED DETERMINATION

Short-term construction impacts include disruption of traffic near the project site, decline in air quality from construction activities, and increase in noise levels. Once construction has been completed, the short-term adverse impacts will no longer occur.

Based on analysis of the anticipated impacts, a Finding of No Significant Impact (FONSI) is determined for the proposed Corporation Yard project. The significance criteria to make this determination are set forth below and in Hawaii Administrative Rules Title 11, State of Hawaii Department of Health, Chapter 200, Environmental Impact Statement Rules.

1) *Involve an irrevocable commitment to loss or destruction of any natural or cultural resources*;

The Corporation Yard project site does not provide habitat for Federal or State of Hawaii listed or candidate threatened or endangered species of flora or fauna. The Phase II portion of the project site has been fully developed and used for maintenance and bus parking purposes for a number years. Thus, the Corporation Yard will not result in the loss or destruction of natural resources.

The State of Hawaii Department of Land and Natural Resources Historic Preservation Division has indicated development of the Corporation Yard will have "no effect" on historic sites.

2) *Curtail the range of beneficial uses of the environment*;

About one-half of the approximately 23-acre Corporation Yard project site has been developed for bus maintenance and parking purposes. The Phase I portion of the project, along the other portions of Halawa Industrial Park, is intended for industrial uses. Construction of the Corporation Yard is consistent with the intended use of the industrial park. Thus, the Corporation Yard will not curtail the beneficial uses of the environment.

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

The Corporation Yard project will not involve actions or activities which would adversely affect natural resources of the project site. The Corporation Yard project will be consistent with the guidelines of Chapter 344, HRS, as it will provide a public facility to support the maintenance functions assigned to the City and County of Honolulu agencies to be assigned to the site. As such, the Corporation Yard will not conflict with the State's long-term environmental policies or goals as expressed in Chapter 344, HRS.

4) *Substantially affect the economic or social welfare of the community or state*;

The Corporation Yard will be used by City and County of Honolulu agencies to maintain vehicles and equipment which are needed to provide efficient and well-maintained public roads and related systems on Oahu, to provide HPD officers with vehicles and equipment to enforce public laws, and to provide City employees with vehicles and equipment to maintain the health and welfare of the community.

5) *Substantially affect public health*;

Efficient and well-maintained vehicles and equipment are needed to protect the public health of the residents and visitors on Oahu. The Corporation Yard will serve as a facility for the City and County of Honolulu agencies to conduct their assigned functions. Thus, the Corporation Yard project will not have an adverse effect on public health.

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

The Corporation Yard is a public facility which will be used to maintain vehicles and equipment assigned to City and County of Honolulu agencies. The Corporation Yard will replace existing facilities located in other areas of Oahu. The City and County of Honolulu workers to be assigned to the Corporation Yard already reside on Oahu. Thus, construction of the Corporation Yard will not create secondary impacts, such as population changes or effects on public facilities.

7) *Involve a substantial degradation of environmental quality*;

The Corporation Yard is anticipated to result in short-term impacts to noise, air quality and traffic in the immediate vicinity of the project site. The Corporation Yard project site does not contain Federal or State listed or candidate threatened or endangered species of flora or fauna. Further, the State of Hawaii Department of Land and Natural Resources Historic Preservation Division has indicated the Corporation Yard project will have "no effect" on historic sites. Thus, there will be no loss or destruction of cultural resources. As a result, the Corporation Yard project will not result in a substantial degradation of environmental quality.

8) *Have a cumulative effect upon the environment or involves a commitment for larger actions*;

The Corporation Yard does not involve a commitment to further actions to other City and County of Honolulu related projects. As a result, the Corporation Yard will not have a cumulative effect upon the environment.

9) *Affect a rare, threatened or endangered species*;

The Corporation Yard project site does not contain Federal or State listed or candidate threatened or endangered species of flora or fauna. Thus, the Corporation Yard project will not affect a threatened or endangered species.

10) *Detrimentally affect air or water quality or ambient noise levels*;

Operation of construction equipment would increase noise and exhaust emission levels in the immediate vicinity of the Corporation Yard project site. Operation of the Corporation Yard will contribute low levels of additional noise to the area. However, the Corporation Yard is located in industrial zoned lands, which normally allow higher ambient noise levels than in residential or commercial areas.

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

According to the Flood Insurance Rate Map (FIRM), the Corporation Yard is located in Zone X which is not designated as a hazardous floodplain or tsunami zone. The Corporation Yard site is also not within the City and County of Honolulu Special Management Area. In addition, the Corporation Yard is not within the coastal shoreline area. Thus, the Corporation Yard project site is not located in an environmentally sensitive area.

12) *Substantially affect scenic vistas and viewplanes identified in county or state plans or studies*;

The Corporation Yard will include maintenance buildings and yard areas to park vehicles and equipment and to store materials. Phase II of the Corporation Yard will use an existing facility and yard area. Thus, there will be no change to the visual setting of this area of Oahu for Phase II. Phase I will require construction

of new facility and yard areas. However, to minimize the affect on viewplanes, the Phase I buildings and facilities have been planned and designed to be below the heights of the existing buildings located along Iwaena Street.

13) *Require substantial energy consumption.*

The Corporation Yard facilities are replacement facilities for existing functions which are located in other areas of Oahu. Thus, the Corporation Yard will not create a substantial increase in energy consumption over existing levels of usage.

Based on these findings and the assessment of potential impacts from the Corporation Yard project, a Finding of No Significant Impact (FONSI) is determined for the Halawa Corporation Yard project.

6. CONSULTED PARTIES

6.1 Pre-Assessment Consultation

The following agencies were consulted during the pre-assessment phase of the Draft Environmental Assessment. Each agency was sent a copy of a project summary and a request for their written comments on the project. All written comments and responses are reproduced in Appendix F.

City and County of Honolulu Department of Planning and Permitting

6.2 Agencies and Organizations to be Consulted on the Draft EA

The following is a list of agencies and organizations that were consulted during the preparation of the Draft Environmental Assessment. A total of 15 comments were received on the Draft EA, as shown by (*). Of these comments, there were eight substantive comments, as shown by (**). Copies of the comments and responses received during the review period are included in Appendix G.

Federal

U.S. Department of Agriculture Natural Resource Conservation Service
** U.S. Army Corps of Engineers Pacific Ocean Division
*(a) U.S. Department of the Interior Fish and Wildlife Service
* U.S. Department of the Interior Geological Survey
Federal Emergency Management Agency, Region IX

State Agencies

* Department of Accounting and General Services
Department of Agriculture
* Department of Business, Economic Development and Tourism

* (a) No comment via telephone call January 5, 2000.

** DBED&T - State Energy Office
Department of Hawaiian Home Lands
Department of Land and Natural Resources
* Department of Land and Natural Resources - State Historic Preservation Division
** Department of Land and Natural Resources - Water Resource Management
** Department of Health
Department of Health - Environmental Management Division
University of Hawaii Water Resources Research Center
University of Hawaii Environmental Center
Aiea Public Library
** Office of Environmental Quality Control

City and County of Honolulu Agencies

Department of Customer Services
** Department Planning and Permitting
** Department of Parks and Recreation
** Department of Environmental Services
Department of Transportation Services
Department of Facility Maintenance
* Board of Water Supply

Organizations

* Hawaiian Electric Company
Queen Emma Foundation
Central Park Community Association

Other

Councilmember Mufi Hannemann
* (b) Aiea Neighborhood Board No. 20

* (b) No comment via public presentation to Neighborhood Board No. 20 on January 10, 2000.

7. REFERENCES

Draft Asbestos and Lead-Based Paint Survey – Proposed Halawa Corporation Yard – Halawa Bus Facility. Masa Fujioka & Associates. October 1998.

Draft Phase I Environmental Site Assessment - Proposed Halawa Corporation Yard. Masa Fujioka & Associates. October 1998.

Final Environmental Impact Statement for Proposed Honolulu Corporation Yard, Sand Island and Sand Island Park Extension. City and County of Honolulu Building Department. July 1989.

Land Use Ordinance. City and County of Honolulu Department of Land Utilization. August 1997.

Long Term Release Response Report for Halawa Bus Facility. Kimura International, Inc. January 1999.

Master Plan Honolulu Corporation Yard, Volume 1, Sand Island. City and County of Honolulu Building Department. May 1989.

Master Plan Sand Island Park Extension, Volume 2, Sand Island. City and County of Honolulu Building Department. July 1993.

Master Plan Update Honolulu Corporation Yard, Sand Island. City and County of Honolulu Department of Public Works. August 1994.

Revised Final Environmental Impact Statement for Halawa Medium Security Facility. State of Hawaii Department of Accounting and General Services. June 1983.

Underground Storage Tank Closure Report for Halawa Bus Depot. The Fuel Oil Polishing Company of Hawaii, Inc. February 1999.

Underground Storage Tank (UST) Short Term Release Response Report for MLT Halawa Bus Facility. Kimura International, Inc. July 1998.

APPENDIX A

6139-01

cc: DDC, 3/4/99

PLANNING DEPARTMENT
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET
HONOLULU, HAWAII 96813

JEREMY HARRIS
MAYOR

PATRICK T. ONISHI
CHIEF PLANNING OFFICER
DONA L. HANAIKE
DEPUTY CHIEF PLANNING OFFICER

ET

March 7, 1997

Authorization [illegible]
Advertisement 2/28/97
Public Hearing 3/12/97

MEMORANDUM

TO: THOMAS N. YAMABE II, CHAIR
AND MEMBERS OF THE PLANNING COMMISSION

FROM: PATRICK T. ONISHI, ACTING CHIEF PLANNING OFFICER
PLANNING DEPARTMENT

SUBJECT: REVIEW AND RECOMMENDATION REGARDING AN AMENDMENT TO THE PRIMARY URBAN CENTER DEVELOPMENT PLAN PUBLIC FACILITIES MAP, TO ADD A PUBLICLY FUNDED CORPORATION YARD MODIFICATION/EXPANSION SYMBOL, SITE DETERMINED, WITHIN SIX YEARS, 97/PUC-1001(IC), HALAWA CORPORATION YARD, OAHU

GENERAL INFORMATION

Applicant:	Building Department
Ownership:	TMK: 9-9-73: 15, 0.9 acres, vacant TMK: 9-9-73: 27, 10.6 acres, Halawa Bus Facility City and County of Honolulu TMK: 9-9-73: 23, 13 acres, vacant Lessor: Queen Emma Foundation Lessee: Crazy Shirts, Inc.
Location:	The proposed project site is located within the Halawa Industrial Park. Between the H-3 Freeway and Iwaena Street.
DP Land Use Map Designation:	Industrial
DP Public Facilities Map Designation:	None

CITY AGENCIES	COMMENTS/*ANALYSIS*
Department of Land Utilization	Stated that the parcels are located in the I-2 district and the proposed uses are permitted in the I-2 district. *PD Analysis: None*
Honolulu Police Department	Commented that the they have no objections to the proposed amendment. They also expected to be co-located in the project. *PD Analysis: None*

Community and Private Organization Comments/Concerns

Solicitations for comments on this proposed amendment were forwarded to a number of private individuals and community and private organizations. No comments from these organizations were received by the Planning Department prior to writing this report.

Hawaiian Electric Company (HECO) commented that the proposed project may require additional distribution and substation facilities to their system. The Building Department will work with HECO during the design process for the proposed corporation yard project.

Any written comments received by the Department after the writing of this report will be forwarded to the Commission through a separate transmittal.

REVISED PROJECT COST

The proposed project cost was revised from $10 million to $43 million. The initial $10 million cost was a preliminary first phase project cost estimate. The revised project cost of $43 million is the estimated cost for the entire project.

ANALYSIS

The Building Department is proposing to establish a new corporation yard for the City Departments of Public Works (DPW), Transportation Services (DTS), Parks and Recreation (DPR), and Honolulu Police Department (HPD) within the Halawa Industrial Park. This project involves the relocation of the existing Halawa Bus Facility to Manana, the modification of the existing bus facility, acquisition of an adjacent 13 acre (approximately) parcel, construction of automotive equipment repair shops, equipment and materials storage facilities, parking, landscaping, irrigation system, and other related improvements.

They lack adequate space to perform their assigned tasks and have poor functional layouts. Relocation to Halawa would allow the City to vacate the Kewalo Basin and Pawaa lands, permit the State and City to proceed with their plans and provide more modern facilities needed to improve operational efficiency and effectiveness.

With the planned relocation of several City corporation yards in the Honolulu District extending from Halawa to Hawaii Kai, a new corporation yard is needed to support the various city agencies servicing the area. The proposed Halawa Corporation Yard would provide a site reasonably close in the Honolulu District to locate the automotive equipment services, refuse, streetlight, and road divisions of the Department of Public Works, and the maintenance shops of the other departments, and thereby allow the potential consolidation of common facilities.

The option to locate a corporation yard on 26 acres at Sand Island is still available but is being reconsidered because of higher development costs, park development costs agreed upon with the State for Sand Island Park extension, and concerns regarding industrial use in proximity to the shoreline.

The cost of this project is estimated to be $43 million for land acquisition, planning, engineering, design, construction, and inspection. The proposed project is estimated to cost $5 to $10 million less than the proposed Honolulu Corporation Yard at Sand Island.

RECOMMENDATION

Based on the foregoing analysis, I recommend that this Development Plan Public Facilities Map amendment be approved.

A description of the proposed amendment, Location, Zoning, Existing Land Use, Development Plan Land Use and Public Facilities Maps are provided in Attachment A. The draft bill for an ordinance and map are provided in Attachment B.

Please review this proposed amendment and forward it, together with your findings and recommendation, through the Mayor to the City Council.

PATRICK T. ONISHI
Acting Chief Planning Officer

PTO:lh

Attachments

cc: Managing Director
Building Department

PD Ref. No.: 97/PUC-1001(IC)
NB Area: Aiea NB No. 20
Area: Approximately 24.5 acres
TMKs: 9-9-73: 15, 23, & 27

DEVELOPMENT PLAN PUBLIC FACILITIES AMENDMENT
INDEPENDENT CONSIDERATION

Project Title: Halawa Corporation Yard Modification and Expansion

Request: To amend the Primary Urban Center Development Plan Public Facilities Map by adding a publicly funded corporation yard modification/expansion symbol, site determined, within six years.

Requested By: Building Department

Description of Project: Construction of a corporation yard for the Department of Public Works, Department of Transportation Services, Department of Parks and Recreation, and the Honolulu Police Department. This project involves the relocation of the existing Halawa Bus Facility to Manana, the modification of the existing facility, acquisition of an adjacent 13 acre (approximately) parcel, construction of automotive equipment repair shops, equipment and materials storage facilities, parking, landscaping, irrigation system, and other related improvements.

Project Cost: $ 43 million (Land acquisition, planning, engineering, design, construction, and inspection)

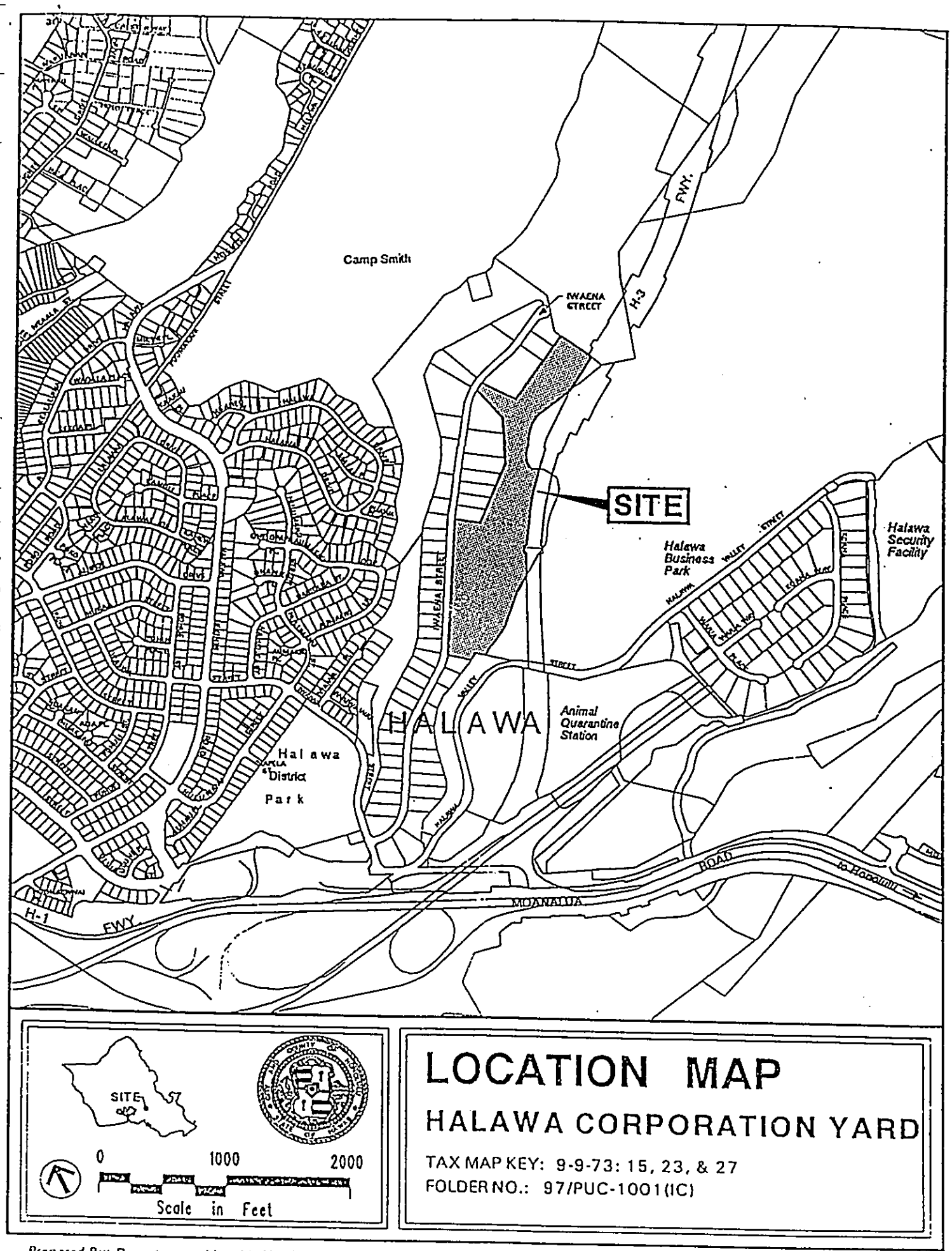
Project Location: The proposed project site is located within the Halawa Industrial Park. Between the H-3 Freeway and Iwaena Street.

Land Ownership:
TMK: 9-9-73: 15
City and County of Honolulu

TMK: 9-9-73: 23
Lessor: Queen Emma Foundation
Lessee: Crazy Shirts, Inc.

TMK: 9-9-73: 27
City and County of Honolulu

Basis for Request: With the planned consolidation/relocation of several City corporation yards in the Honolulu district, a new corporation yard is needed to support the various city agencies servicing the area. The proposed Halawa Corporation Yard would provide a site reasonably close to the Honolulu District to locate the automotive equipment services, refuse collection and disposal and road maintenance divisions of the Department of Public Works and the maintenance shops of other departments, and thereby allow the potential consolidation of common facilities.



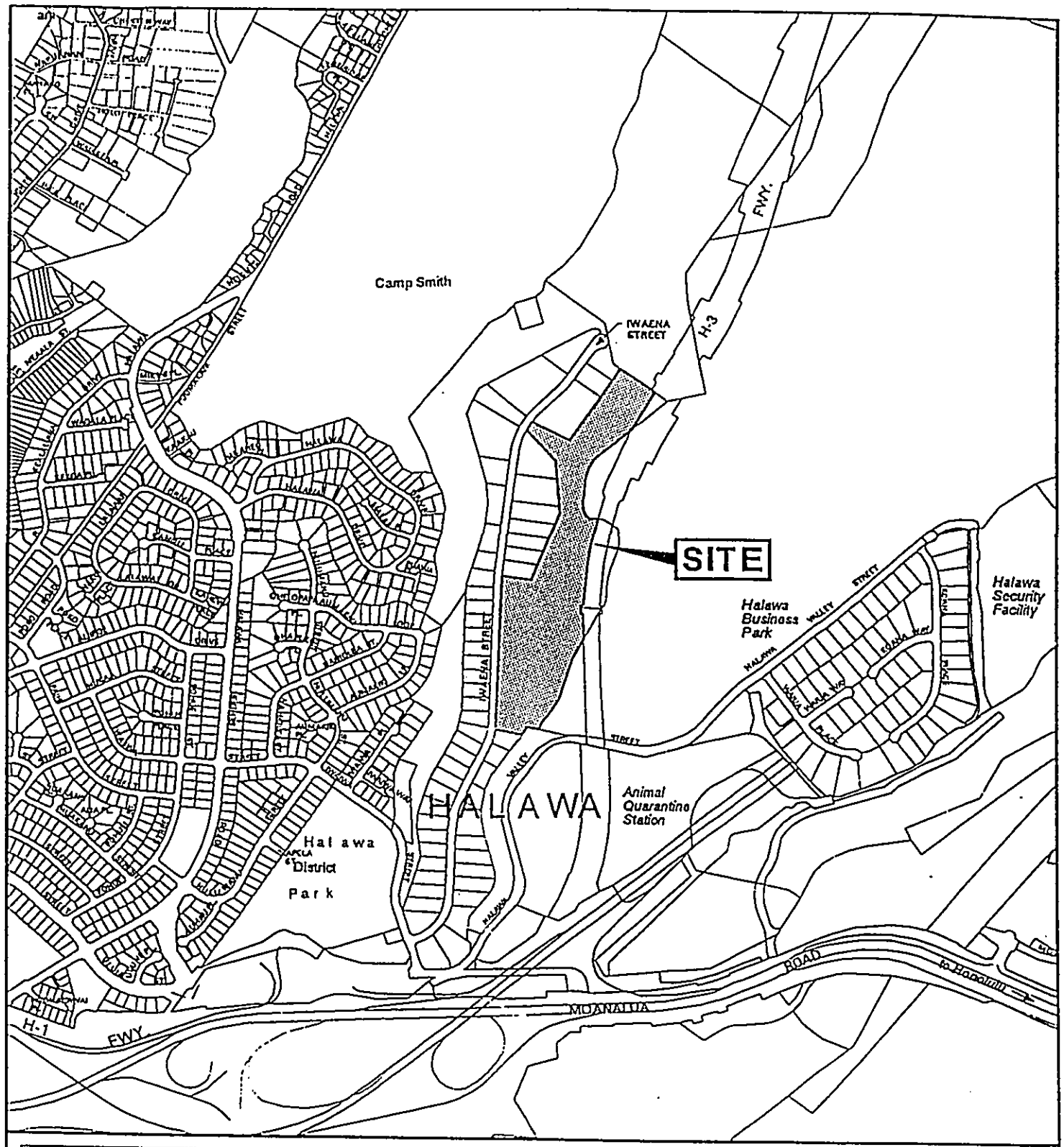
LOCATION MAP

HALAWA CORPORATION YARD

TAX MAP KEY: 9-9-73: 15, 23, & 27
FOLDER NO.: 97/PUC-1001(IC)

Prepared By: Department of Land Utilization
City and County of Honolulu

Date Prepared: February 1997



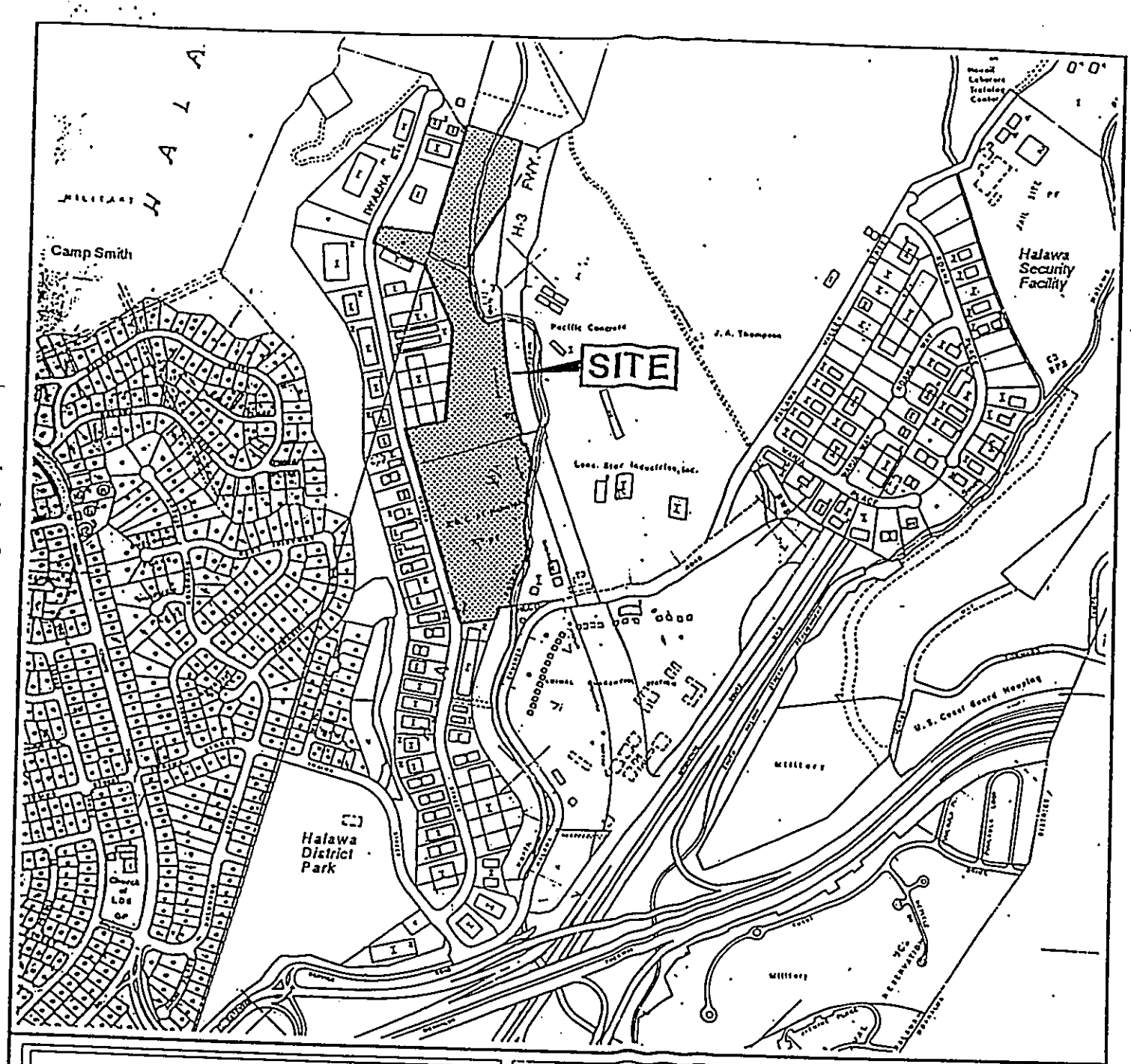
LOCATION MAP

HALAWA CORPORATION YARD

TAX MAP KEY: 9-9-73: 15, 23, & 27
FOLDER NO.: 97/PUC-1001(IC)

Prepared By: Department of Land Utilization

Date Prepared: February 1997



LEGEND

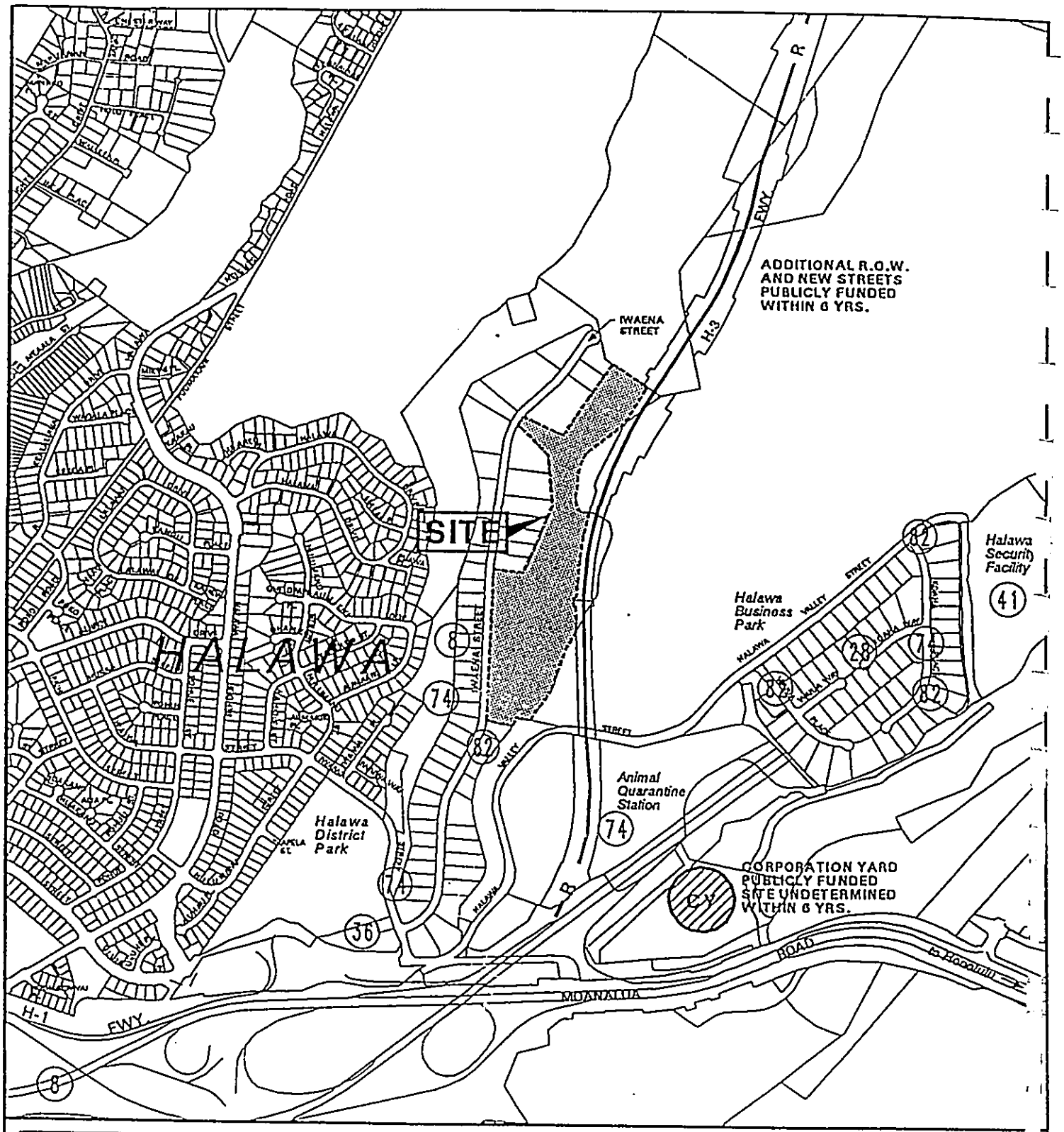
	RESIDENTIAL		
•	SINGLE-FAMILY	QP	QUASI-PUBLIC FACILITIES
✓	TWO-FAMILY	P	PARKS & RECREATION
Ⓜ	MULTI-FAMILY	+ CEM.	CEMETERY
52	MOTEL & HOTEL		TRANSPORTATION
C	COMMERCIAL		UTILITIES
I	INDUSTRIAL		MILITARY
	AGRICULTURAL	V	VACANT
PF	PUBLIC FACILITIES	UC	UNDER CONSTRUCTION

PORTION OF WAIAWA-HALAWA
EXISTING LAND USE MAP

TAX MAP KEY: 9-8-73: 15, 23, & 27
FOLDER NO.: 97/PUC-1001(IC)

0 800 1600
Scale in Feet

DATA COMPILED BY: DEPARTMENT OF GENERAL PLANNING
MAP PREPARED BY: DEPARTMENT OF LAND UTILIZATION
CITY AND COUNTY OF HONOLULU
DATE OF DATA: JUNE 1994
DATE PREPARED: FEBRUARY 1997



PORTION OF PUC
DEVELOPMENT PLAN
PUBLIC FACILITIES MAP
HALAWA CORPORATION YARD

TAX MAP KEY: 9-9-73: 15, 23, & 27
FOLDER NO.: 97/PUC-1001(IC)

Prepared By: Department of Land Utilization

Date Prepared: February 199

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE _____

BILL _____

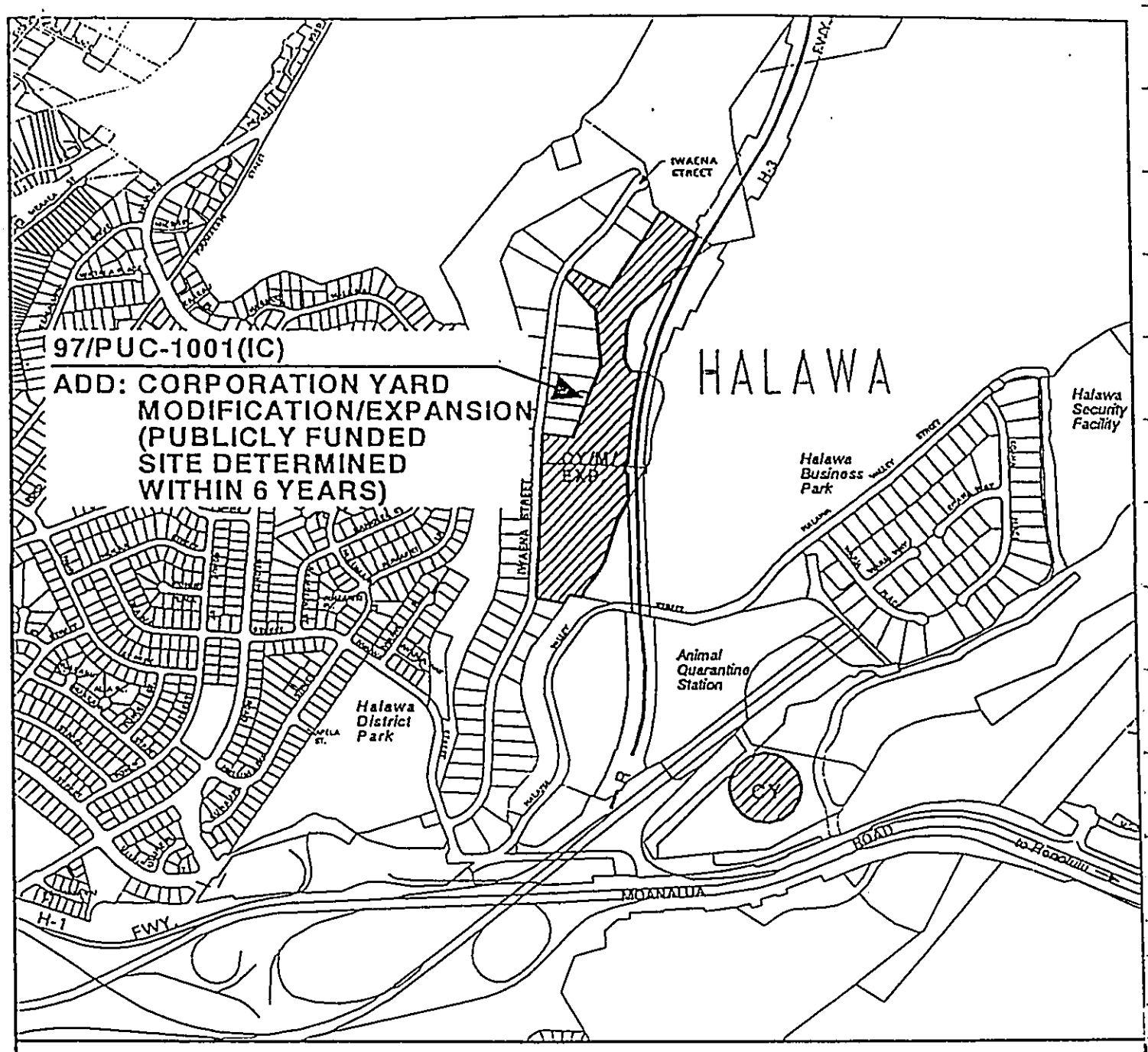
A BILL FOR AN ORDINANCE

A BILL FOR AN ORDINANCE TO AMEND PORTION OF THE DEVELOPMENT PLAN PUBLIC FACILITIES MAP FOR THE PRIMARY URBAN CENTER TO ADD A PUBLICLY FUNDED CORPORATION YARD MODIFICATION/EXPANSION SYMBOL, SITE DETERMINED, WITHIN SIX YEARS, OAHU, HAWAII.

BE IT ORDAINED by the People of the City and County of Honolulu:

SECTION I. Portion of the Development Plan Public Facilities Map for the Primary Urban Center area is hereby amended by adding a publicly funded corporation yard modification/expansion symbol, site determined, within six years, as shown on the map attached hereto, marked Exhibit A, and by reference made a part hereof.

SECTION II. This public facilities map symbol shall be deleted from the Public Facilities Map by administrative procedure once completion of the facility has been certified in writing by the applicant/agency to the Planning Department and the City Council.



PORTION OF

DEVELOPMENT PLAN PUBLIC FACILITIES MAP
PRIMARY URBAN CENTER

PROJECT NAME:	HALAWA CORPORATION YARD
APPLICANT:	BUILDING DEPARTMENT
TAX MAP KEY:	9-9-73: 15, 23, and 27
FOLDER NO.:	97/PUC-1001(IC)
LAND AREA:	24.5 ACRES
PREPARED FOR:	PLANNING DEPARTMENT
PREPARED BY:	DEPARTMENT OF LAND UTILIZATION CITY AND COUNTY OF HONOLULU
PUBLIC HEARING:	PLANNING COMMISSION CITY COUNCIL

ORD. NO.

97/PF-4

EFF. DATE:

EXHIBIT A

BILL

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

6/98-1188 (6139-01)

ORDINANCE 98-23

BILL 47 (1997)

A BILL FOR AN ORDINANCE

A BILL FOR AN ORDINANCE TO AMEND PORTION OF THE DEVELOPMENT PLAN PUBLIC FACILITIES MAP FOR THE PRIMARY URBAN CENTER TO ADD A PUBLICLY FUNDED CORPORATION YARD MODIFICATION/EXPANSION SYMBOL, SITE DETERMINED, WITHIN SIX YEARS, OAHU, HAWAII.

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DGPPU1001.B97

cc: DDC, 3/4/99

EDPT
(D-337, 1997)

98-23

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

ORDINANCE 98-23

BILL 47

Section III. This Ordinance shall take effect upon its approval.

INTRODUCED BY:

DATE OF INTRODUCTION:

April 7, 1997
Honolulu, Hawaii

APPROVED AS TO FORM AND LEGALITY:

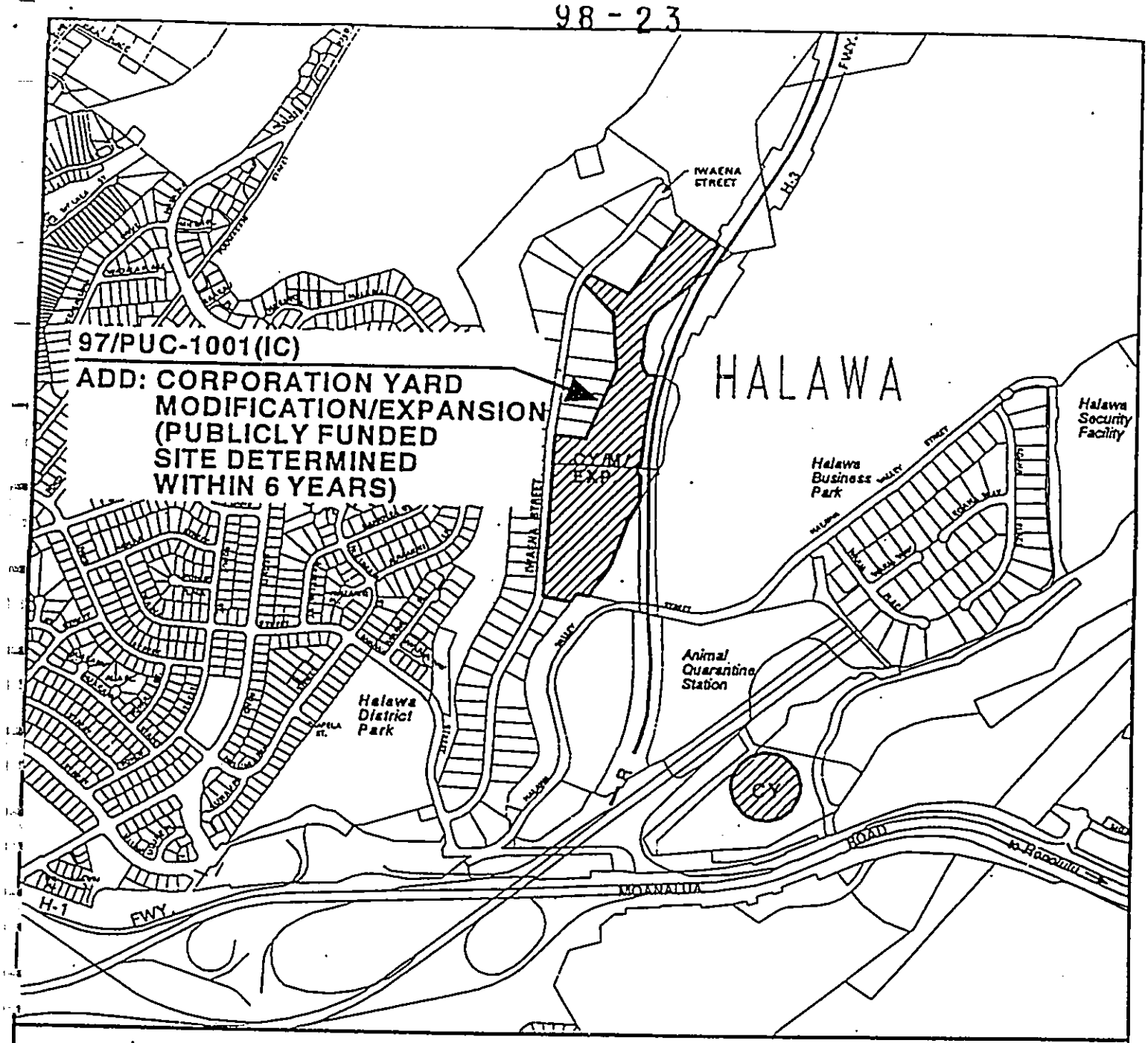
Councilmembers

Deputy Corporation Counsel

Approved this 4th day of June, 1998

JEREMY HARRIS, MAYOR
City and County of Honolulu

98-23



PORTION OF

DEVELOPMENT PLAN PUBLIC FACILITIES MAP
PRIMARY URBAN CENTER

PROJECT NAME:	HALAWA CORPORATION YARD
APPLICANT:	BUILDING DEPARTMENT
TAX MAP KEY:	9-9-73: 15, 23, and 27
FOLDER NO.:	97/PUC-1001(IC)
LAND AREA:	24.5 ACRES
PREPARED FOR:	PLANNING DEPARTMENT
PREPARED BY:	DEPARTMENT OF LAND UTILIZATION CITY AND COUNTY OF HONOLULU
PUBLIC HEARING:	PLANNING COMMISSION 3/12/97 CITY COUNCIL 5/7/97

ORD. NO. 98-23

EFF. DATE: 5/9/98

97/PF-4

EXHIBIT A

BILL 47 1997

CITY COUNCIL
CITY AND COUNTY OF HONOLULU
HONOLULU, HAWAII

CERTIFICATE

ORDINANCE 98-23

BILL 47 (1997)

INTRODUCTION DATE: APRIL 7, 1997

INTRODUCED BY: CHAIR DESOTO/BR

1ST READING DATE: 4/16/97

REMARKS: Felix/Holmes - Bill passed 1st rdng. & ref'd. to EDPT. - 8.
Absent: Mirikitani. - 1.

	AYE	NO	A/E
BAINUM	X		
FELIX	X		
HANNEMANN	X		
HOLMES	X		
KIM	X		
MANSHO	X		
MIRIKITANI			A
YOSHIMURA	X		
DeSOTO	X		
TOTAL	8	0	1

2ND READING DATE: 5/7/97 PUBLICATION DATE: 5/17/97

DRAFT:

COMMITTEE REPORT: EDPTCR-261

PUBLIC HEARING DATE: 5/7/97 PUBLICATION DATE: 4/26/97

REMARKS: Hannemann/Felix - Bill passed 2nd reading. - 9.

Public hearing held concurrently, closed and referred to EDPT.

	AYE	NO	A/E
BAINUM	X		
FELIX	X		
HANNEMANN	X		
HOLMES	X		
KIM	X		
MANSHO	X		
MIRIKITANI	X		
YOSHIMURA	X		
DeSOTO	X		
TOTAL	9	0	0

3RD READING DATE: 5/27/98

DRAFT:

COMMITTEE REPORT: EDPTCR-267

REMARKS: 5/28/97 - Hannemann/Felix - CR-295 & Bill recommitted to EDPT. - 8.
Noes: Holmes. - 1.

5/27/98 - Felix/Mansho - Bill passed 3rd reading and Findings of Fact approved. - 9.

	AYE	NO	A/E
BAINUM	X		
DeSOTO	X		
FELIX	X		
HOLMES	X		
KIM	X		
MANSHO	X		
MIRIKITANI	X		
YOSHIMURA	X		
HANNEMANN	X		
TOTAL	9	0	0

ORDINANCE PUBLICATION DATE: 6/18/98

Referred to: EDPT
Reference: D-337, 1997

I hereby certify that the above is a true record of action by the Council of the City and County of Honolulu on this BILL.

Genevieve G. Wong

GENEVIEVE G. WONG, CITY CLERK

Mufi Hannemann

MUFI HANNEMANN, CHAIR AND PRESIDING OFFICER

APPENDIX B

FLORA/FAUNA SURVEY REPORTS FOR THE PROPOSED HALAWA CORPORATION YARD (TMK 9-9-73:23)

FOR

WILSON OKAMOTO & ASSOCIATES
1907 SOUTH BERETANIA STREET, SUITE 400
HONOLULU, HAWAII 98626

BY
EVANGELINE J. FUNK, PH.D.
BOTANICAL CONSULTANTS
HONOLULU, HAWAII

TABLE OF CONTENTS

INTRODUCTION

A flora survey of the proposed Halawa Corporation Yard Site (TMK 9-9-73:23) was carried out on September 22, 1998. The fauna survey for the site was carried out on September 22 and September 26, 1998. Data which were collected during these surveys will be presented here.

BOTANICAL SURVEY INTRODUCTION

The proposed Halawa Corporation Yard Site is located in a light industrial area. It is completely bounded on the north by a group of small business sites, on the west by the Halawa Bus Maintenance Facility, on the east by the City of Honolulu Xerophytic Garden, and Halawa Stream makes up most of the southern boundary.

BOTANICAL HISTORY OF THE SITE

The botanical history of this site is fairly meager. Of the ten environmental impact statements prepared for projects in the area, eight have been negative declarations. The other two only make mention of the flora. In 1987 the United States Department of Transportation and the State of Hawaii Department of Transportation prepared a Third Supplement to the Interstate Route H-3 Halawa to Halekou Interchange EIS (Report FHWA-H1-EIS-87-01-D(S), 1987) in which the following is noted, "The United States Fish and Wildlife Service (USFWS) has determined that the construction of H-3 will not jeopardize the continued existence of any listed or proposed endangered or threatened species of animals or plants."

A second environmental impact statement for a project in the area was for the Halawa Medium Security Facility (Wilson Okamoto & Associates 1983). In this document the following statement is to be found, "No significant species of flora or fauna

CORRECTION

THE PRECEDING DOCUMENT(S) HAS
BEEN REPHOTOGRAPHED TO ASSURE
LEGIBILITY
SEE FRAME(S)
IMMEDIATELY FOLLOWING

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A second environmental impact statement for a project in the area was for the Halawa Medium Security Facility (Wilson Okamoto & Associates 1983). In this document the following statement is to be found, "No significant species of flora or fauna

have been identified on the site".

The absence of significant flora on any of these sites is undoubtedly due to the many years that lower Halawa Valley was used to grow sugar cane.

VEGETATION TYPES

Two vegetation types were found on the site, Koa haole/Guinea grass Wasteland and Riverine Vegetation. Koa haole (*Leucaena leucocephala* (Lam.) de Wit)/Guinea grass Wasteland (*Panicum maximum* Jacq.) is found on all of the site northwest of Halawa Stream except for a small wedge of land near the Xerophytic Garden where the flood plain widens and Riverine Vegetation is found.

Koa haole/Guinea grass Wasteland is made up of scattered, scrub koa haole bushes from one half meter to four meters in height. The ground layer is dry, matted Guinea grass. Within this scrub vegetation can be found a wide variety of weedy forbs such as sensitive plant (*Mimosa pudica* L.), Chinese violet (*Asystasia gangetica* (L.) T . Anderson), dog tail (*Buddleia asiatica* Lour.), at least two species of passion vine (*Passiflora* spp.) and several species of grasses. Some weed trees and shrubs are beginning to become established on the site including gun powder tree (*Trema orientalis* (L.) Blume) Manila tamarind (*Pithecellobium dulce* (Roxb.) Benth.), Christmas berry (*Schinus terebinthifolius* Raddi), klu (*Acacia farnesiana* (L.) Willd.), and Swamp mahogany (*Eucalyptus robusta* Sm.).

Riverine Vegetation can be found along Halawa Stream and on the broadened flood plain at the northeast end of the site. This vegetation type is characterized by the large number of big trees that line the waterway and shade the flood plain.. The most common trees are Java plum (*Syzygium cumini* (L.) Skeels), kukui (*Aleurites moluccana*

(L.) Willd.), fern tree (*Filicium decipiens* (Wight & Arnott) Thwaites ex J. D. Hook.), banyans (*Ficus microcarpa* L. fil. and *F.elastica* Roxb.), monkey pod (*Samanea saman* (Jacq.) Merr.), and white shower tree (*Cassia* sp.).

The understory includes laua'e fern (*Polypodium scolopendrium* Burm. F.) Palmgrass (Setaria palmifolia (J.Konig) Stapf), basket grass (*Oplismenus hirtellus* (L.) P Beauv.), shampoo ginger (*Zingiber zerumbet* (L.) Sm.), and large numbers of tree seedlings. The stream vegetation includes job's tears (*Coix lachryma-jobi* L.), California grass (*Brachiaria mutica* (Forssk.) Stapf.), Primrose willow (*Ludwigia octovalvis* (Jacq.) Raven) and Koster's curse (*Clidemia hirta* (L.) D. Don)..

The names of all taxa found during this survey can be found in the species list.

ENDANGERED SPECIES

No candidate, proposed, or listed threatened or endangered species as set forth in the Endangered Species Act of 1973, as amended (16 U.S.C. 1531-1543) are known from this site and none were found during this survey.

SPECIES LIST OF THE PLANTS FOUND ON THE HALAWA CORPORATION YARD SITE

The plant families in the following species list have been alphabetically arranged within three groups, Ferns and Fern Allies, Monocotyledons, and Dicotyledons. The genera and species are arranged alphabetically within families. The taxonomy and nomenclature follow that of Wagner, Herbst, and Sohmer (1990). For each taxon the following information is provided:

1. An asterisk before the plant name indicates a plant introduced to the Hawaiian Islands since Cook or by the aborigines.
2. The scientific name of the plant.
3. The Hawaiian name or the most widely used common name of the plant.
4. Abundance ratings are for this site only and they have the following meanings:
   Uncommon = a plant that was found less than fine times.
   Occasional = a plant that was found between five and ten times.
   Common = a plant considered an important part of the vegetation.
   Locally abundant = plants found in large numbers over a limited area. For example the plants found in grassy patches.

This species list is the result of an extensive survey of this site during the hot summer season (September 1998) and it reflects the vegetation composition of the flora during a single season. Minor changes in the vegetation will occur due to introductions and losses and a slightly different species list would result from a survey conducted during a different growing season.

Scientific Name	Common Name	Abundance
FERNS AND FERN ALLIES		
POLYPODIACEAE - Common Fern Family		
**Dryopteris dentata* (Forsk.) C. Chr.	Oak leaf fern	Uncommon
**Polypodium scolopendrium* Burm. F.	Laua'e	Locally abundant
MONOCOTYLEDONS		
AGAVACEAE – Agave Family		
**Cordyline fruticosa* (L.) A. Chev.	Ti	Uncommon
**Sansevieria trifasciata* Prain	Mother-in-law's tongue	Common
ARECACEAE - Palm Family		
**Areca catechu* L.	Betel nut palm	Locally abundant
**Cocos nucifera* L.	Coconut palm	Uncommon
**Prichardia* sp.	Fan palm	Uncommon
COMMELINACEAE - Spiderwort Family		
**Commelina diffusa* N. L. Burm.	Honohono	Locally abundant
COSTACEAE – Costus Family		
**Costus speciosus* (J. Konig) Sm.	Crepe ginger	Locally abundant
CYPERACEAE - Sedge Family		
**Cyperus rotundus* L.	Nut grass	Occasional
DIOSCOREACEAE – Yam Family		
**Dioscorea bulbifera* L.	Bitter yam	Occasional
POACEAE - Grass Family		
**Brachiaria mutica* (Forssk.) Stapf.	California grass	Common
**Cenchrus echinatus* L.	Common sandbur	Occasional
**Chloris barbata* (L.) Sw.	Swollen fingergrass	Common

Scientific Name	Common Name	Abundance
POACEAE – Grass Family con't		
**Chloris divaricata* R. Br.	Star grass	Locally abundant
**Coix lachryma-jobi* L.	Job's tears	Occasional
**Dactyloctenium aegyptium*, (L.) Willd.	Beach grass	Uncommon
**Digitaria insularis* (L.) Mez. Ex Ekman	Sourgrass	Uncommon
**Eleusine indica* (L.) Gaertn.	Wiregrass	Locally abundant
**Eragrostis tenella* (L.) Roem. & Schult.	Love grass	Locally abundant
**Oplismenus hirtellus* (L.) P. Beauv.	Basketgrass	Locally abundant
**Panicum maximum* Jacq.	Guinea grass	Common
**Paspalum conjugatum* Bergius	Hilo grass	Locally abundant
**Setaria palmifolia* (J. Konig) Stapf	Palm grass	Common
ZINGIBERACEAE – Ginger Family		
**Zingiber zerumbet* (L.) Sm.	Shampoo ginger	Locally abundant
DICOTYLEDONES		
ACANTHACEAE – Acanthus Family		
**Asystasia gangetica* (L.) T. Anderson	Chinese violet	Locally abundant
**Ruellia prostrata* Poir.		Occasional
AMARANTHACEAE – Amaranth Family		
**Amaranthus spinosus* L.	Spiny amaranth	Occasional
ANACARDIACEAE – Mango Family		
**Mangifera indica* L.	Mango	Uncommon
**Schinus terebinthifolius* Raddi	Christmas berry	Occasional
ARALIACEAE – Ginseng Family		
**Schefflera actinophylla* (Endl.) Harms	Octopus tree	Uncommon
ASTERACEAE – Sunflower Family		
**Bidens alba* (L.) DC		Occasional
**Bidens cynapiifolia* Kunth		Locally abundant
*Conyza bonariensis (L.)	Hairy horseweed	Occasional
*Eclipta alba (L.) Hassk.	False daisy	Uncommon

Scientific Name	Common Name	Abundance
ASTERACEAE – Sunflower Family con't		
**Emilia sonchifolia* (L.) DC	Flora's paintbrush	Occasional
**Pluchea indica* (L.) Less.	Indian fleabane	Occasional
**Pluchea symphytifolia* (Mill.) Gillis	Sourbush	Common
**Tridax procumbens* L.	Coat buttons	Locally abundant
BORAGINACEAE – Borage Family		
**Heliotropium procumbens* Mill.		Occasional
BUDDLEIACEAE – Butterfly bush Family		
*Buddleia asiatica Lour.	Dog tail	Occasional
CONVOLVULACEAE – Morning glory Family		
**Ipomoea obscura* (L.) Ker-Gawl.		Occasional
**Ipomoea indica* (J. Burm.) Merr.)		Occasional
**Ipomoea triloba* L.	Little bell	Occasional
**Merremia tuberosa* (L.) Rendle	Wood rose	Uncommon
CUCURBITACEAE – Gourd Family		
**Coccinia grandis* (L.) Voight	Ivy gourd	Common
EUPHORBIACEAE – Spurge Family		
**Aleurites moluccana* (L.) Willd	Kukui	Locally abundant
**Chamaesyce hirta* (L.) Millsp.	Hairy spurge	Occasional
**Chamaesyce hypericifolia* (L.) Millsp.	Graceful spruge	Occasional
**Ricinus communis* L.	Castor bean	Occasional
FABACEAE – Bean Family		
**Acacia farnesiana* (L.) Willd.	Klu	Occasional
**Alysicarpus vaginalis* (L.) DC		Uncommon
**Cassia* sp.	White shower tree	Uncommon
**Chamaecrista nictitans* (L.) Moench	Partridge pea	Occasional
**Crotalaria incana* L.	Fuzzy rattlepod	Occasional
**Crotalaria* sp.		Occasional

Scientific Name	Common Name	Abundance
FABACEAE – Bean Family con't		
**Desmanthus virgatus* (L.) Willd.	Slender mimosa	Uncommon
**Desmodium incanum* DC	Spanish clover	Occasional
**Desmodium tortuosum* (Sw.) DC	Florida beggarweed	Occasional
**Erythrina* sp.	Wiliwili	Uncommon
**Glycine wightii* (Wight & Arnott) Verdc.		Locally abundant
**Indigofera spicata* Forssk.	Creeping indigo	Occasional
**Indigofera suffruticosa* Mill.	'Iniko	Common
**Leucaena leucocephala* (Lam.) de Wit	Koa haole	Common
**Mimosa pudica* L.	Sensitive plant	Common
**Pithecellobium dulce* (Roxb.) Benth.	'Opiuma	Occasional
**Samanea saman* (Jacq.) Merr.	Monkey pod	Occasional
**Senna pendula* H. Irwin & Barneby		Occasional
MALVACEAE – Mallow Family		
Hibiscus tiliaceus L.	Hau	Locally abundant
**Malvastrum coromandelianum* (L.) Garcke	False mallow	Occasional
**Sida rhombifolia* L.		Occasional
**Sida spinosa* L.	Prickly sida	Occasional
MELASTOMATACEAE – Melastoma Family		
**Clidemia hirta* (L.) D. Don	Koster's curse	Common
MORACEAE – FIG Family		
**Ficus microcarpa* L. fil.	Chinese banyan	Common
*Ficus *elastica* Roxb	Rubber tree	Common
MYRTACEAE – Myrtle Family		
**Eucalyptus robusta* Sm.	Swamp mahogany	Occasional
**Syzygium cumini* (L.) Skeels	Java plum	Common
ONAGRACEAE – Evening Primrose Family		
**Ludwigia octovalvis* (Jacq.) Raven	Primrose willow	Locally abundant

Scientific Name	Common Name	Abundance
PASSIFLORACEAE – Passion Flower Family		
**Passiflora edulis* Sims	Passion fruit	Uncommon
**Passiflora foetida* L.	Love-in-a-mist	Common
PITTOSPORACEAE – Pittosporum Family		
**Pittosporum pentandrum* (Blanco) Merr.		Uncommon
PORTULACACEAE – Purslane Family		
**Portulaca oleracea* L.	Pig weed	Common
RUBIACEAE – Coffee Family		
**Paederia scandens* (Lour.) Merr.	Maile pilau	Common
RUTACEAE – Rue Family		
**Myrraya paniculata* (L.) Jack	Mock orange	Occasional
SAPINDACEAE – Soapberry Family		
**Filicium decipiens* (Wight & Arnott) Hook	Fern tree	Common
SOLANACEAE – Nightshade Family		
**Nicotiana glauca* R. C. Graham	Tree tobacco	Occasional
STERCULIACEAE Cacao Family		
Waltheria indica L.	ʻUhaloa	Common
ULMACEAE – Elm Family		
**Trema orientalis* (L.) Blume	Gunpowder tree	Occasional
VERBENACEAE – Verbena Family		
**Stachytarpheta jamaicensis* (L.) Vahl	Vervain	Occasional

FAUNA SURVEY REPORT FOR THE PROPOSED HALAWA CORPORATION YARD SITE

INTRODUCTION AND METHODS

This report summarizes the results of fauna surveys of the proposed Halawa Corporation Yard site located in lower Halawa Valley, Honolulu, Hawaii. These surveys were carried out on September 22 and 26, 1998 during the early morning hours to take advantage of the higher activity levels of both birds and mammals during cooler parts of the day.

The study site consists of approximately twelve acres of land. The greater part of which is covered by Koa haole/Guinea grass Wasteland which at this time of year had shed most of its seed and offered little forage for seed eating birds after the long, dry summer. Riverine Vegetation is found along Halawa Stream which forms the south and southeastern boundary of the site. This vegetation type is not favored by the small, seed eating birds that usually inhabit disturbed, low land sites such as this.

To document the presence of the avifauna and mammals, three fixed station observation points of from fifteen to thirty minutes duration were carried out.

RESULTS

No native vegetation was found on this site and the scrub, wasteland type vegetation which is most common and that usually attracts many introduced, seed eating birds was past the seed bearing stage. Therefore although there was a variety of bird species, the numbers were low.

MAMMALS

House Mouse (*Mus musculus*). Mice were not seen during this survey. But they are assumed to be present because of the abundant water and fruit found on the property.

The house mouse is usually six to seven inches long, including its tail, and weighs approximately one ounce. It varies in color depending on its home location.

Like the house mouse, the black rat (Rattus rattus) is presumed to be present on this site due to the many food sources, Java plum and passion fruit as well as ample water. No rats were seen during the survey.

The Indian mongoose (*Herpestes auropunctatus auropunctatus*) is a small, grayish brown or golden colored mammal. It weighs one to three pounds and is a member of the cat family. Because of the food and water available on the site, the mongoose can be expected to inhabit the area although none were seen during the survey.

AVIFAUNA

The most rewarding observation station was the one in the central part of the site where the tall grass had been mowed. Observations made from the Xeroscape Garden were also rewarding. A total of eleven bird species were observed. Only one, the migratory golden plover can be classed as native.

Family Zosteropidae: White-eyes

Zosterops japonicus (Japanese white-eyes). White-eyes are one of the most widespread, introduced bird species in Hawaii. They appeared to be well adapted to this site and were common in the trees and especially in the koa haole.

Family Estrildidae: Waxbills, Mannikins, and Parrotfinches

Padda oryzivora (Java sparrow)

The Java sparrow is a brightly colored, tiny bird. Its head is black, its cheeks are pure white and its big bill is pink. It has gray wings and breast, a black tail, and a white vent. Many Java sparrows were seen gathering nest material in the tall grass.

Lonchura malacca (Chestnut mannikin)

These are tiny, dark brown, little birds with large grayish bills. Usually seen in flocks. Several were seen on the fence on the north side of the site.

Family Passeridae: Old World Sparrows

Passer domesticus (House sparrow)

The streaky brown and gray house sparrow is a familiar commensal species and is often referred to a flying mouse. Many of these little birds were seen in the central open part of the site near the big trees.

Family Emberizidae: Emberizine Finches

Cardinalis cardinalis (Northern cardinal)

The male northern cardinal is a very bright, red bird with a distinctive call. The female is much darker, but has the samc call. Several pairs of cardinals inhabit this site and appear to favor a gun powder tree near Halawa Stream.

Family Pycnonotidae: Bulbuls

Pycnonotus cafer (Red-vented bulbul)

Large, raucous birds, red-vented bulbuls, were seen in all parts of the site. These fruit eaters appear to be spreading ivy gourd seeds around the site, especially along the stream.

Family Columbidae: Pigeons and Dove

Streptopelia chinensis (Spotted Dove)

The spotted dove is a large, gray brown bird with rosy blushed breast feathers. At the sides and back of its neck is a patch of black and white spots. Spotted doves were seen on the powerlines near H-3, in the trees, in flight, and on the ground. They are very

common on this site

Geopelia striata (Zebra Dove)

Smaller and usually more abundant than the spotted dove, ground dwelling zebra doves were seen in trees and along the dirt tract that traverses this site. They were few in number.

Family Sturnidae: Starlings and Mynas

Acridotheres tristis (Common Mynas)

The ubiquitous myna is a plump, brown bird with a black head and tail. It has a white belly, tail and wing patches, and bright yellow legs, feet, bill, and eyeliners. Mynas were seen along the dirt track, on the fence, on powerlines, and in the neighboring garden.

Family Charadriidae: Plovers and Dotterels

Pluvialis dominica (Lesser Golden-plover)

This migratory, nonbreeding, large bird was seen in central part of the site. It was dark brown above with mottled gold and buff. The breast was buff. A single bird was seen.

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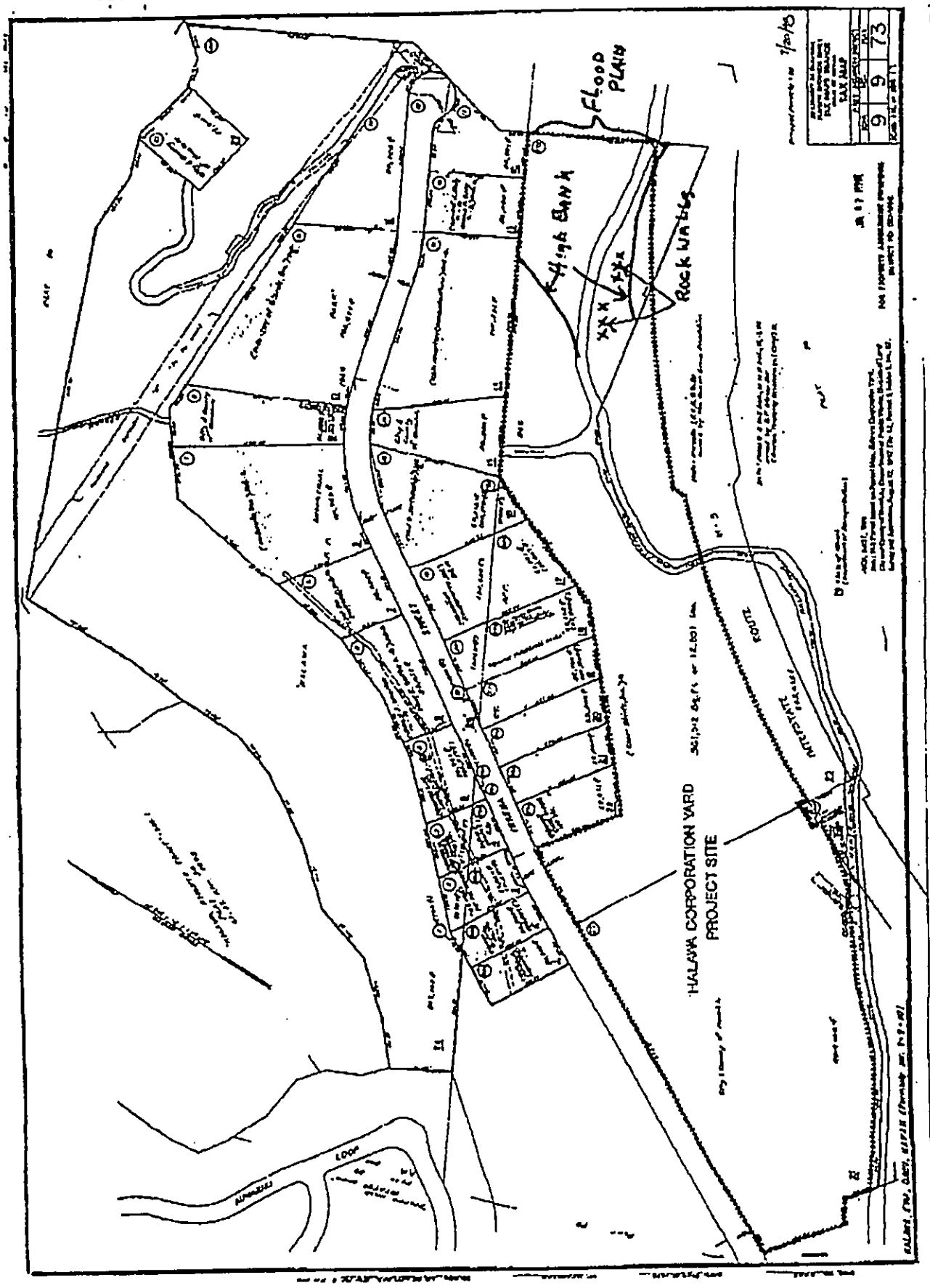

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APPENDIX C

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11/10/99

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Biological reconnaissance survey of North Halawa Stream for the City & County of Honolulu Base Yard Expansion Project[1]

November 1, 1999 *AECOS* No. 907

Eric B. Guinther and S. Allen Cattell
AECOS, Inc. 970 N. Kalaheo Ave., Suite C311
Kailua, Hawai'i 96734
Phone: (808) 254-5884 Fax: (808) 254-3029 Email: guinther@aecos.com

Introduction

This report describes North Halawa Stream at the upper end of the light industrial area offIwaena Street in the Red Hill area of the Island ofO`ahu. The purpose of the report is to assess biological and water quality impacts of proposed expansion of the City & County of Honolulubase yard on Iwaena Street. The project is located on previously graded land adjacent to Halawa Stream. A reconnaissance survey of the site was conducted by *AECOS* biologists Eric Guinther and Rodger Douglas on March 10, 1999. Water quality samples were collected and biological observations made along the stream segment between the Board of Water Supply property (BWSXeriscape Garden) and the point where Halawa Stream flows under the H-3 freeway. Representative specimens of aquatic biota that could not be readily identified in the field were collected.

Stream Description

North Halawa Stream drains a relatively large, amphitheater-headed valley transecting the leeward face of Ko`olau mountain onO`ahu (Figure 1). The valley opens on the north side of Red Hill. It is comparable in size to nearby Moanalua Valley, but somewhat smaller than the large valleys of Kalihi, Nu`uanu, and Manoa located behind the central part of Honolulu. It's stream arises from multiple branches draining the very crest of the mountain, in an area unknown to mostO`ahu residents until recently when a trans-Ko`olau freeway (H-3) was opened through the valley. This stream is shown on the USGS topographic maps (7.5-Minute Series, Kaneohe,Waipahu, and Pearl Harbor quadrangles, 1980-81) as continuous flowing at all elevations except the segment between about 40 m (130 ft) and 55 m (180 ft). This particular segment is partly within the project area,

[1] Report prepared for Wilson Okamoto & Associates, Inc. for their project: "Halawa Corporation Yard Environmental Assessment." This report will become part of the public record.

representing the stream above the confluence of a drainage ditch (shown on the topographic map as a perennial stream) entering from the direction of Iwaena Street) and a point somewhere above the BWS Xeriscape Garden. The stream is inventoried as a perennial stream, State code number 3-4-02 (Hawaii Cooperative Park Service Unit, 1990). Total acreage of the Halawa watershed is 3821 ha (9,442 acres; Geographic Decision Systems International & Dashiell, 1994)

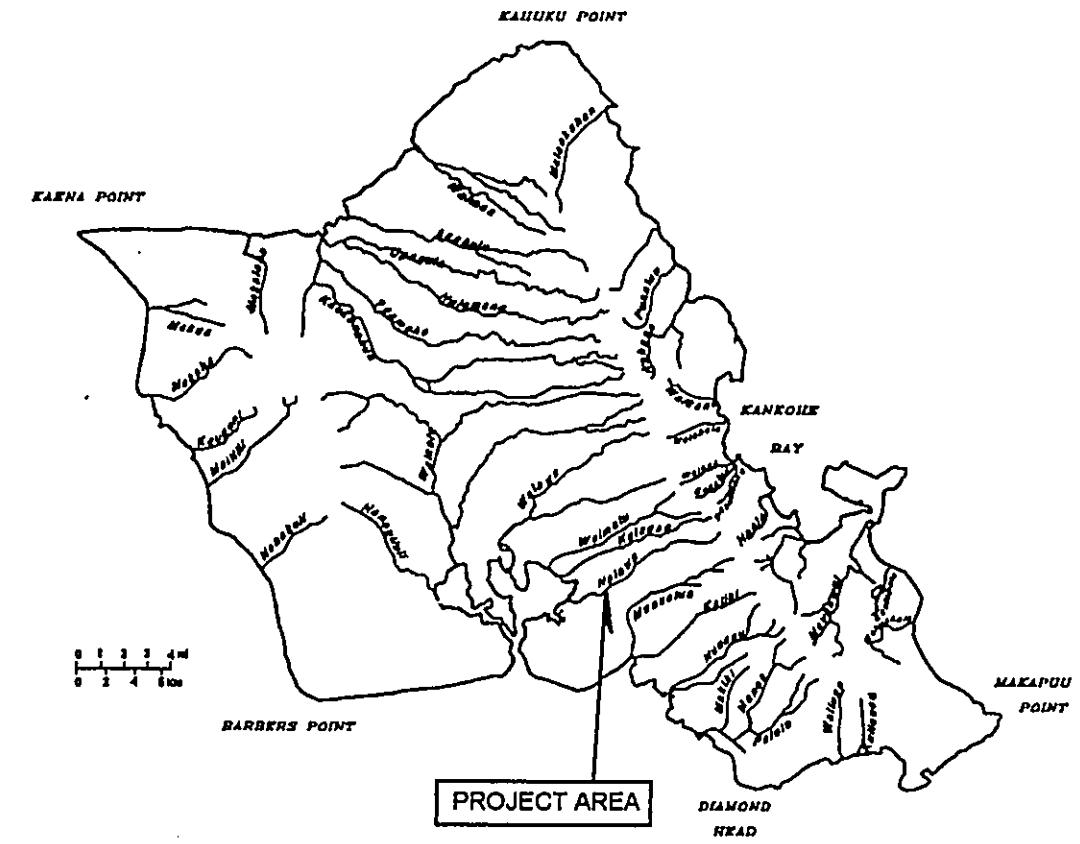

Figure 1. Location of Halawa Stream on O`ahu

The tributary known as South Halawa Stream is smaller, draining a long narrow valley that opens on the south side of Red Hill. South Halawa Stream joins North Halawa Stream in the general area of the highway interchange between Moanalua Freeway (State Route 78) and H-3. Below the confluence, Halawa Stream flows under the Aloha Stadium parking lot to an estuary that opens onto East Loch of Pearl Harbor.

North Halawa Stream runs more or less diagonally across the eastern end of the proposed Halawa Corporation Yard parcel (Figure 2), and forms the southern boundary of the remainder of the parcel except where the H-3 right-of-way forms the southern boundary. The stream crosses under the freeway viaduct and back. The stream bed in the project area is up to 12 m across and of mixed

basalt rock outcrops and rounded boulders. At the time of the survey, the water surface was generally 2 to 3 m across, ranging in depth from a few centimeters to 30 cm. Numerous, mostly shallow pools and connecting riffle areas are present. Thin deposits of silt are evident in the stream bed. Banks of the stream are mostly soil, 2 to 5m high and steep, probably representing fill slopes. At the eastern end of the parcel, where the stream crosses from the east property boundary to the north boundary, the stream banks are less steep and only 1-2 m high. In this area, the stream bed is filled with rounded boulders and water is present in several scattered pools. Under the freeway viaduct, the stream bed is mostly a silty-sand and gravel with scattered large boulders.

Throughout most of the survey area, the stream is well shaded by a riparian zone of moderate-sized to large trees, mostly Moreton Bay figs (*Ficus macrophylla*), and including Java plum (*Syzigium cumingi*), kukui (*Aleurites moluccana*), albizia (*Paraserianthes falcataria*), and Christmasberry (*Schinus terebinthifolius*). Riparian areas receiving more direct sunlight (not shaded by the tree crown) are crowded with Guinea grass (*Panicum maximum*), koa-haole (*Leucaena leucocephala*), and juvenile Java plums. The riparian zone is dominated by grass andkoa-haole within the highway right-of-way as this area was very likely cleared when the viaduct was constructed. Also present here are herbaceous aquatic plants like primrose willow (*Ludwigiaoctovalvis*) and Job's tears (*Coix lachryma-jobi*). Scarlet-fruited gourd (*Coccinia grandis*) is plentiful where there is little shading. No mosses are seen on rocks in the stream bed, although some are present on rocks high on the banks.

Water Quality

Three water quality sampling stations (Figure 2) in the project area were visited on March 10, 1999. Some parameters were measured by field meter (see Table 1) and others in samples collected in appropriate containers and taken to the *AECOS* Laboratory on Windward O`ahu. Station 1 was located at the upstream end of the parcel adjacent to the BWSXeriscape Garden, in the uppermost semi-isolated pool in the otherwise dry stream bed. Water may have been flowing beneath the loose rock bed. Station 2 was located near the middle of the parcel, immediately downstream of the drainage ditch entering on the right bank. Water was flowing in the stream in this area. Station 3 was located just beyond the downstream parcel boundary, beneath the H-3 Freeway viaduct. Water was also flowing here on March 10. Table 1 lists the instruments and analytical methods used on these samples.

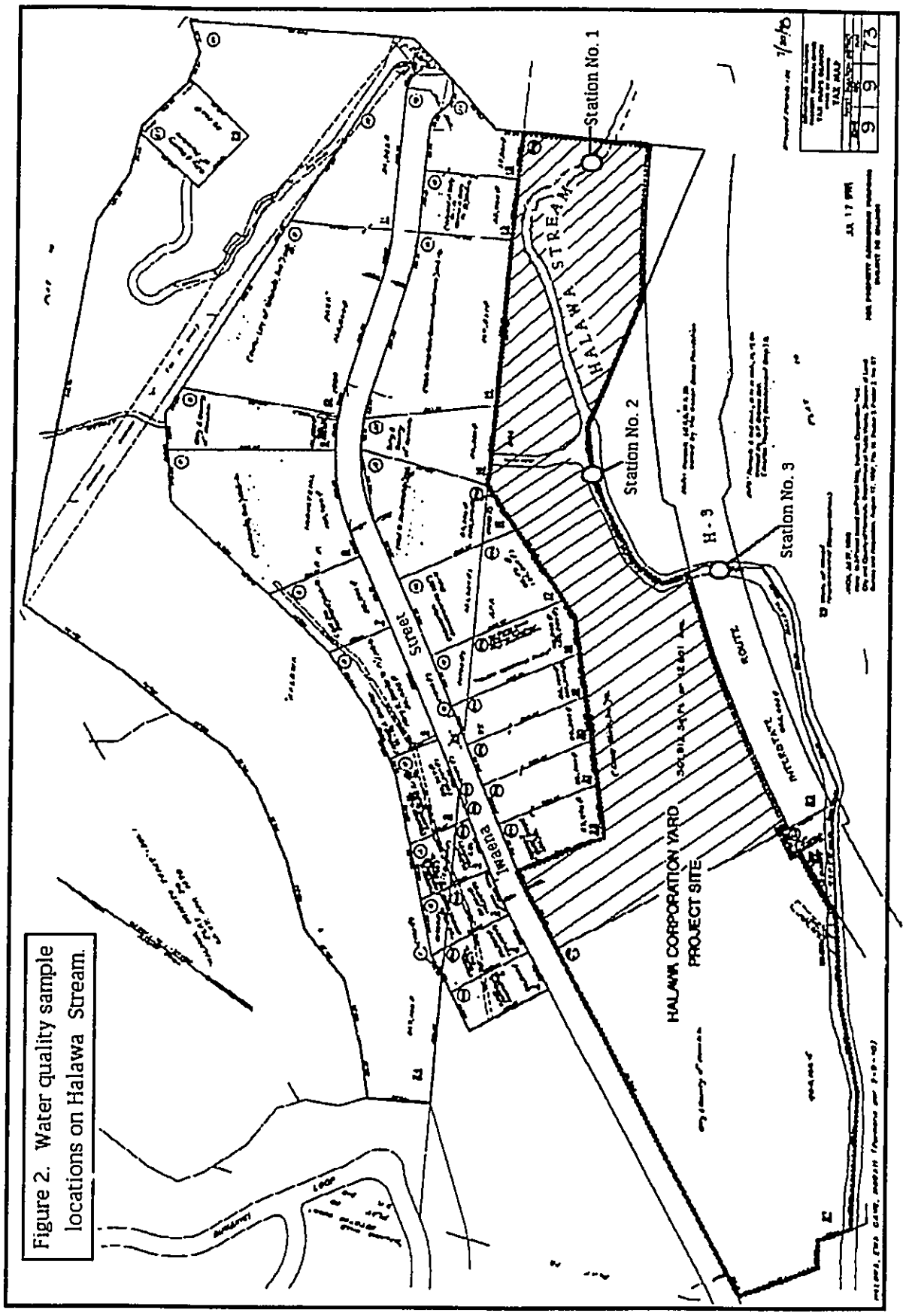

Figure 2. Water quality sample locations on Halawa Stream.

Table 1. Analytical methods and instruments used for the March 10, 1999 water quality sampling in Halawa Stream, O`ahu.

Analyses List	Method	Reference	Instrument
Ammonia	alkaline phenol	Koroleff in Grasshoff et al. (1986)	Technicon AutoAnalyzer II
Conductivity	Method 2510B (EPA 120.1)	Standard Methods 18th Edition (1992); EPA (1979)	Hydach pH/conductivity meter
Dissolved Oxygen	EPA 360.1	EPA (1979)	YSI Model 85 DO meter
Nitrate + Nitrite	EPA 353.2	EPA (1993)	Technicon AutoAnalyzer II
PH	EPA 150.1	EPA (1979)	Orion SA 250 pH meter / Ross combination electrode
Temperature	thermister calibrated to NBS cert. Thermometer (EPA 170.1)	EPA (1979)	YSI Model 85 DO meter
Total Nitrogen	persulfate digestion /EPA 353.2	D'Elia et al. (1977) / EPA (1993)	Technicon AutoAnalyzer II
Total Phosphorus	persulfate digestion /EPA 365.1	Koroleff in Grasshoff et al. (1986) / EPA (1993)	Technicon AutoAnalyzer II
Total Suspended Solids	Method 2540D (EPA 160.2)	Standard Methods 18th Edition (1992); EPA (1979)	Mettler H31 balance
Turbidity	Method 2130B (EPA 180.1)	Standard Methods 18th Edition (1992); EPA (1993)	Hach 2100P Turbidimeter

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The results of the water quality analyses are shown in Table 2. Measurements were also intended to be made of oil & grease in the stream to assess if runoff from the recently opened H-3 Freeway were adding contaminants to the stream that could be detected by this method. These samples were not taken because of a lack of runoff producing rainfall at the time, or over the next several months.

Table 2. Water quality characteristics of Halawa Stream sampled on March 10, 1999.

	Time sampled	Temp. (°C)	DO (mg/l)	DO Sat. (%)	Cond. (µmhos/cm)	pH (pH units)
03-10-99						
Sta. 1	1235	25.1	4.81	59	296	6.98
Sta. 2	1155	22.4	8.25	95	391	7.41
Sta. 3	1210	21.9	8.15	93	374	7.42

		Turbidity (ntu)	TSS (mg/l)	Ammonia (µg N/l)	Nitrate + nitrite (µg N/l)	Total N (µg N/l)	Total P (µg P/l)
03-10-99							
Sta. 1	1235	0.68	0.5	25	7	110	9
Sta. 2	1155	0.64	0.7	15	58	137	6
Sta. 3	1210	0.78	0.6	5	20	99	7

Water quality in the semi-isolated pool at the upstream station (Station 1) is distinctive in several regards. First of all, temperature is elevated here due to reduced water flow. The DO level is low because there is no turbulent flow to mix atmospheric oxygen into the water column. Also, biological respiration and the microbial decay of organic matter have resulted in acidic conditions (i.e., low pH) at this site and further reduction in DO. Ammonia occurs in aquatic environment primarily as an intermediate breakdown product of organic nitrogen and is often found in relatively high concentration in stagnant fresh water environments.

Water quality conditions in the flowing waters at Stations 2 and 3 are influenced primarily by ground water influxes as surface flow is interrupted above Station 2- at least on the date sampled. As a result, temperatures are lower at the downstream stations. DO levels are high due to turbulent mixing of the flowing stream waters and basic pH levels (i.e., pH > 7) prevail here. Ammonia levels are lower at Stations 2 and 3, when compared with Station 1, while nitrate + nitrite levels are higher.

There was little difference in particulate (turbidity and TSS) concentrations at any of the stations. Particulate levels were low indicating that there had probably been little surface runoff from storms in the days preceding the sampling event.

Water quality criteria established for streams (Table 3) are different for Hawaii's wet and dry seasons, because runoff from heavy rainfall events, which vary seasonally, can contribute greater concentrations of constituents in receiving waters. Standards for temperature and pH are related to ambient conditions and criteria relate to deviations, presumably from long-term mean or baseline

values. Water quality criteria for all other listed parameters for both streams and estuaries are determined by a set of values that are not to be exceeded at specified frequencies (i.e., a specified percentage of the time).

Table 3. State of Hawaii water quality criteria for streams (HAR §11-54-05.2)

Parameter	Geometric Mean value not to exceed this value	Value not to be exceeded more than 10% of the time	Value not to be exceeded more than 2% of the time
Total Nitrogen (µg N/l)	250.0 *180.0*	520.0 *380.0*	800.0 *600.0*
Nitrate + Nitrite (µg N/l)	70.0 *30.0*	180.0 *90.0*	300.0 *170.0*
Total Phosphorus (µg P/l)	50.0 *30.0*	100.0 *60.0*	150.0 *80.0*
Total Suspended Solids (mg/l)	20.0 *10.0*	50.0 *30.0*	80.0 *55.0*
Turbidity (NTU)	5.0 *2.0*	15.0 *5.5*	25.0 *10.0*

Two values: upper, "wet" criteria apply during the rainy season (November 1 through April 30); lower, "dry" (italicized) criteria apply during the dry season (May 1 through October 31).

Other "standards":

- pH units shall not deviate more than 0.5 units from ambient conditions and shall not be lower than 5.5 nor higher than 8.0.
- Dissolved oxygen shall not decrease below 80% of saturation.
- Temperature shall not vary more than 1 C° from ambient conditions.
- Specific conductance shall not exceed 300 µmhos/cm.

Water quality at the selected sampling stations in North Halawa Stream appear to be in compliance with the State water quality criteria with the following exceptions: (1) DO saturation was less than the 80% specified in the regulations at Station 1, due primarily to the low flow of water at this location; and (2) the specific conductance criterion of 300µmhos/cm was exceed at Stations 2 and 3, perhaps because of the ground water influences in this portion of the stream. All other measured parameters indicate compliance with State criteria, although many more measurements over time would be required to establish this fact.

Biota

A taxonomic listing of aquatic organisms observed and/or collected in Halawa Stream is given as Table 3. In the lower part of the survey area, characterized by an open riparian vegetation, the

stream is choked with algae, mostly a filamentous green alga (*Spirogyra* sp.). In partly shaded areas, a filamentous diatom (*Hydrosere whampoensis*) is very abundant. Also seen here is a coarse green alga (*Cladophora* sp.), a blue-green alga (*Phormidium* sp.), and numerous, small diatoms. In the upper part of the survey area, rust-colored slime from iron bacteria is prominent on the bottom, particularly in somewhat stagnant pools.

The fish fauna is dominated by two introduced species: rainbowfish or guppy (*Poecilia reticulata*) and Mexican mollie (*Poecilia mexicana*). Tadpoles of the marine toad (*Bufo marinus*) and bullfrog (*Rana catesbeiana*) are both present, as are thiarid snails (*Melanoides tuberculata*) and two species of pond snails (*Pseudosuccinea columella* and *Physa virgata*), none in great numbers. Most abundant in this part of the stream, however, are flatworms (Planarians; *Dugesia* sp.) and leeches (indet.). The former, many up to 1 and 2 cm long, can be observed gliding over algae covered rocks, while the latter are more cryptic, located by turning over small boulders. Several aquatic insects were observed. Especially common is the introduced damselfly, *Ischnurposita*. A crane fly (Indet.) was collected and a dragonfly (*Pantala flavescens*) observed.

At the upper end of the property, the stream bed contains a large deposit of rounded boulders, and flow appears to be occurring beneath this deposit. Several small (~ 1 m diameter) pools are present in low areas, and these harbor Mexican mollie, guppy, and pond snail. These aquatic organisms may be remnant populations from the wet season when stream flow connected the pools together above the dry bed; or gaps between the coarse stones may permit movement of small aquatic organisms to occur between the pools and surface flow downstream. Above the property line, the bed continues as a boulder deposit, but no additional visible surface water was present behind the BWS Xeriscape Garden (mauka adjacent property).

Rodger Douglas (*AECOS* field technician) recalls observing Pacific prawn (*Macrobrachiumlar*) in Halawa Stream in the vicinity of the BWS Xeriscape Garden when collecting water samples as part of an H-3 water quality monitoring project. A person approached working on the property in the vicinity of our Station 2 related that he had seen these prawns in the area of the survey, but only after freshets (storm generated high flow events).

Table 3. Checklist of aquatic biota observed or reported from Halawa Stream.

Species	Common name	Status	QC Code	Abundance
ALGAE				
CYANOPHYTA, HORMOGONALES	(blue green algae)			
OSCILLATORIACEAE				
Phormidium sp.		?ind	20	U
RHODOPHYTA, ACROCHAETIALES	(red algae)			
ACROCHAETIACEAE				
Audouinella cf. *pygmaea*		ind.	20	R
CHLOROPHYTA, CLADOPHORALES	(green algae)			
CLADOPHORACEAE				
Cladophora sp.		?nat.	20	C
CHLOROPHYTA, ZYGNEMATALES	(green algae)			
ZYGNEMATACEAE				
Spirogyra sp.		?nat.	20	A
BACILLARIOPHYTA	(diatoms)			
BACILLARIOPHYCEA				
Hydrosere whampoensis		ind.	20	A
Melosira sp.			20	P
Synedra sp.			20	P
INVERTEBRATES				
TURBELLARIA, TRICLADIDA	flatworms			
PLANARIIDAE				
Dugesia cf. dorotocephala		nat	20	R
ANNELIDA, HIRUDINEA	leeches			
indet.				
Indet.		nat	21	C
MOLLUSCA, GASTROPODA				
LYMNAEIDAE				
Pseudosuccinea columella		nat	20	R
PHYSIDAE				
Physa virgata		nat	20	R
THIARDAE				
Melanoides tuberculata (Muller)		nat	10	R
ARTHROPODA, CRUSTACEA				
CAMBARIDAE				
Procambarus clarki (Girard)	American crayfish	nat	01	
PALAEMONIDAE				
Microbrachium lar (Fabricius)	Pacific island prawn	nat	01	

Table 3 (continued).

Species	Common name	Status	QC Code	Abundance
ARTHROPODA, INSECTA				
DIPTERA, TIPULIDAE				
Indet.	crane fly	nat	21	P
ODONATA, COENAGRIONIDAE				
Ischnura posita (Hagen)	damselfly	nat	20	C
ODONATA, LIBELLULIDAE				
Pantala flavescens (Fabr.)	globe skimmer, adult	nat	10	U
VERTEBRATES				
VERTEBRATA, PICES	fishes			
POECILIIDAE				
Poecilia reticulata Peters	guppy	nat	10	A
Poecilia mexicana (Steindachner)	Mexican mollie	nat	10	A
VERTEBRATA, AMPHIBIA	amphibians			
BUFONIDAE				
Bufo marinus	marine toad tadpole	nat	10	U
RANIDAE				
Rana catesbeiana Shaw	American bullfrog tadpole	nat	10	R

KEY TO SYMBOLS USED:

Status:

nat. - naturalized. An introduced or exotic species.
ind. - indigenous. A native species also found elsewhere in the Pacific.
end. - endemic - A native species found only in the Hawaiian Islands.

QC Code:

01 - Reported elsewhere (e.g., Timbol & Maciolek, 1978).
10 - Observed and identified in the field on March 10, 1999.
20 - Collected; identified in the laboratory; specimen(s) not saved.
21 - Collected; identified in the laboratory; voucher specimen(s) saved.

Abundance at survey locations:

P - present; not common, but unable to assess abundance.
R - rare; only one or two individuals seen.
U - uncommon; several individuals seen, in some habitat places visited.
C - common; numerous individuals seen, or seen in most habitat places visited.
A - abundant; numerous in most habitat places visited

Assessment

In general, while this part of Halawa Stream retains a more or less natural character, the aquatic flora and fauna is uninteresting. An exception, would be the number of leeches in the stream, which exceeded anything seen elsewhere in Hawai`i by the field team. None of the animal species observed or collected on March 10 are native aquatic species. The stream appears to be perennial in

the segment surveyed, but clearly intermittent upstream of this segment. However, this observation does not rule out that other perennial segments exist much further up in the valley. The part of the stream that flows through the highway exchange where Moanalua, H-1, and H-3 freeways interconnect is concrete lined. Despite the poor habitat that such channeled stream environment represents, the author has occasionally observed ae`o or Hawaiian stilt (*Himantopus mexicanus knudseni*), an endangered species, feeding in these open concrete channels.

Water quality characteristics of Halawa Stream as determined on March 10, 1999 are good. Surface runoff from any alteration of the adjacent terrestrial environment could result in degradation of this section of Halawa Stream, its downstream waters, and the receiving basin (Pearl Harbor). Of special concern would be the runoff of sedimentary material (i.e., particulates) which could clog the stream bed and reduce water clarity. Primary impacts associated with such runoff would include destruction of stream habitat, increase in stream nutrient levels, and lowering of DO levels.

Although their observations are reported for only one location on South Halawa Stream where that tributary is intermittent, Timbol and Maciolek (1978) recorded only one aquatic organisms (the crayfish, *Procambarus clarki*). State DLNR surveys (last done in 1989), did not provide sufficient data to rank Halawa Stream for aquatic resource value. However, it is given a low "limited" ranking in the summary section of the Hawaii Stream Assessment (Hawaii Cooperative Park Service Unit, 1990). Results summarized in the State report simply indicate one exotic species present (perhaps the crayfish). The report further indicates that only about 10% of the Halawa Stream system is in native forest (presumably at much higher elevation than the project site) and mangrove, hau, and California grass are pest species in the riparian zone (none in the project area).

No rare, threatened, or endangered species (as listed by USFWS, 1994) are known from aquatic environments in the project area, and the stream habitat is of marginal value. Native species might be supported with somewhat higher and more regular water flow, but restoration of downstream stream segments now compromised by channelization, would also be required. Native, diadromous fishes moving through the project segment, in an attempt to reach more suitable habitat further up the valley (if such exists), would be preyed upon by the abundant fish leeches present. The population of these leeches in this middle reach of North Halawa Stream is a detriment to habitation of North Halawa Stream by native gobioid fishes (*`o`opu*).

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APPENDIX D

TRAFFIC IMPACT REPORT

FOR THE

HALAWA CORPORATION YARD

Prepared for:

CITY AND COUNTY OF HONOLULU
Department of Design and Construction
Public Building Planning and Construction Division

Prepared By:

Wilson Okamoto and Associates, Inc.

October 1999

TRAFFIC IMPACT REPORT

FOR THE

HALAWA CORPORATION YARD

Prepared for:

City and County of Honolulu
Department of Design and Construction
Public Building Planning and Construction Division
650 South King Street
Honolulu, Hawaii 96813

Prepared by:

Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826
WOA: 6139-01

October 1999

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LIST OF EXHIBITS

I. INTRODUCTION

A. Purpose of Study

The purpose of this study is to identify and assess the traffic impacts from the proposed Halawa Corporation Yard project and to set forth mitigation measures to alleviate traffic impacts, where appropriate. The Halawa Corporation Yard will be located on the east side of Iwaena Street in the Central Park area of Halawa Valley on the island of Oahu.

B. Scope of Study

The major tasks of the traffic study include:

1. Conduct traffic counts at key intersections.
2. Evaluate existing roadway and traffic operations in the vicinity.
3. Analyze future roadway and traffic conditions without the proposed project.
4. Analyze and develop trip generation characteristics for the proposed project.
5. Conduct traffic impact analysis by superimposing site-generated traffic over future traffic conditions.
6. Identify and analyze traffic impacts resulting from the proposed project.
7. Recommend improvements, if appropriate, to mitigate the traffic impacts resulting from the proposed project

In March 1999, a draft of this Traffic Impact Report was submitted for review and comment to the State of Hawaii Department of Transportation (DOT) and the City and County of Honolulu Department of Transportation Services (DTS). This report incorporates the DOT ad DTS comments.

II. PROJECT DESCRIPTION

A. Location

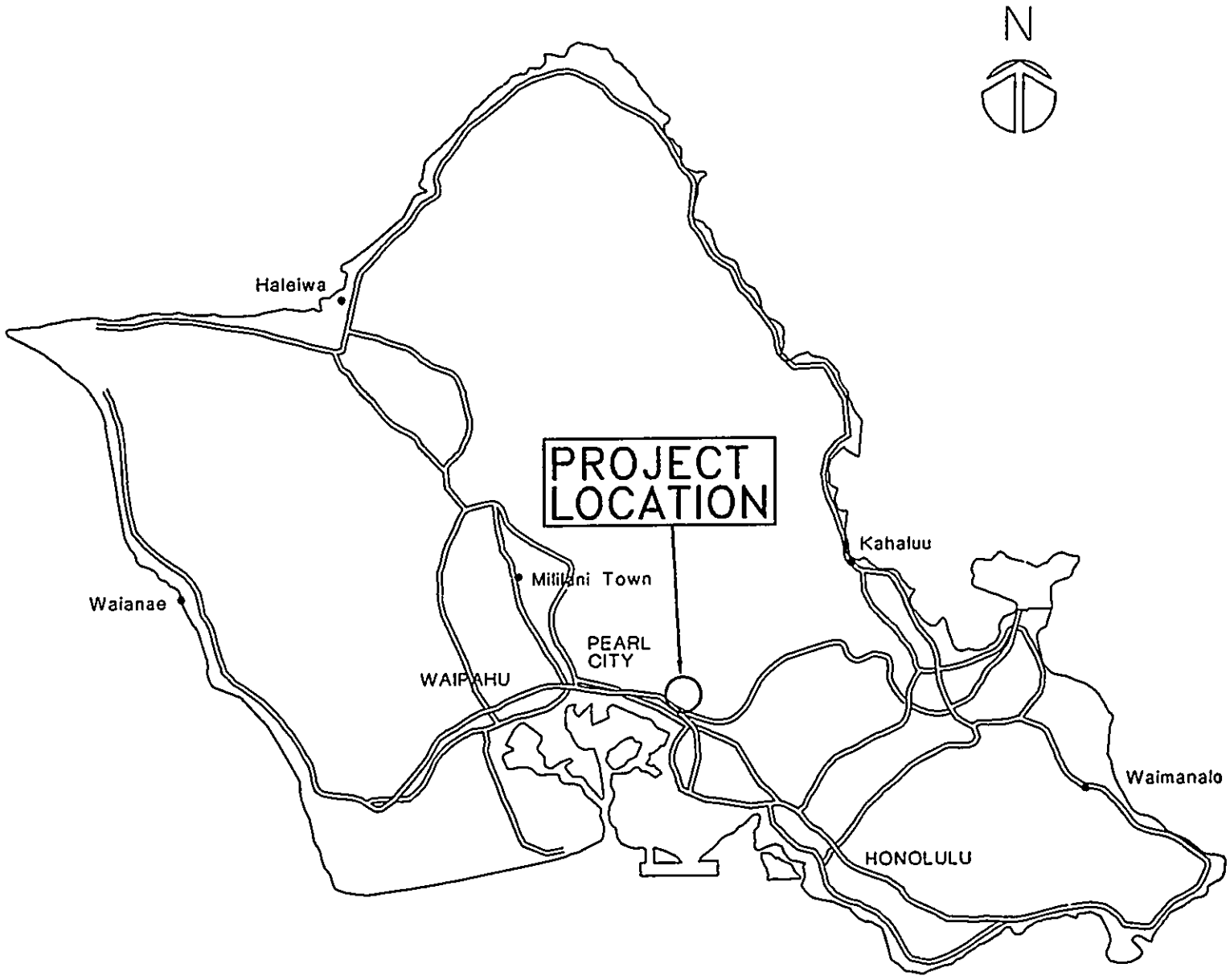
The Halawa Corporation Yard project site is located on Iwaena Street approximately 1700 feet (1/3 mile) northeast of the Iwaena Street and Iwaiwa Street intersection in the Central Park area of Halawa Valley, as shown in Exhibits 1 and 2. The project site occupies approximately 23.5 acres and encompasses two parcels, Tax Map Key: 9-9-73: 23 (12.89 acres) and TMK: 9-9-73: 27 (10.65 acres). Access to the project site will be via driveways located on Iwaena Street for each parcel.

B. Project Characteristics

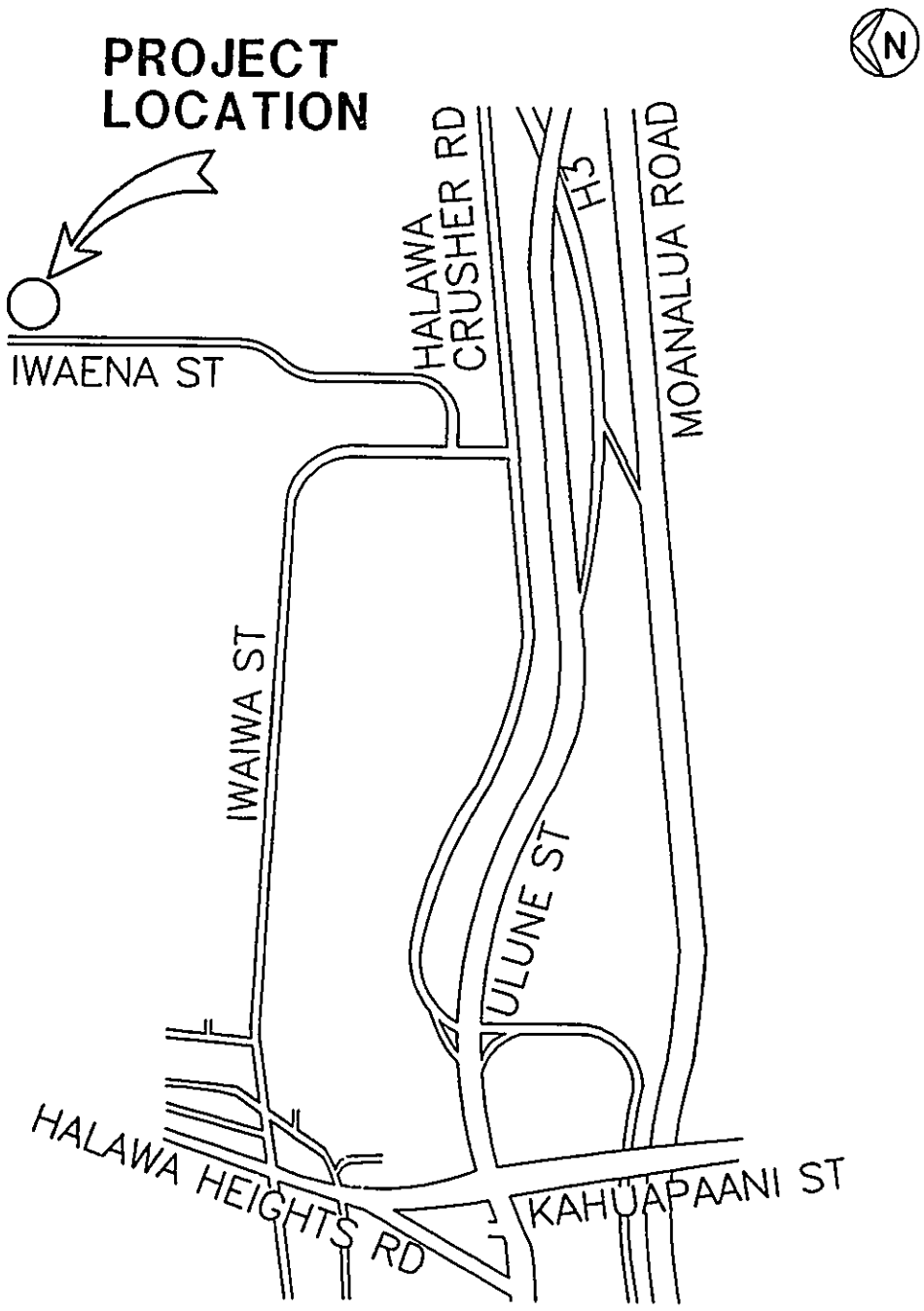
The Halawa Corporation Yard project will renovate and rehabilitate the existing City and County of Honolulu Halawa Bus Maintenance Facility, TMK: 9-9-73: 27, and will construct new facilities on the vacant Crazy Shirts Inc. parcel, TMK: 9-9-73: 23. The Halawa Corporation Yard is intended to provide replacement facilities for functions currently located in the Kewalo Basin area, in Paawa Annex, and in the City-owned Manana properties.

As currently planned, the renovation and new construction are expected to be completed and the facilities occupied by 2002. The Corporation Yard will provide vehicle maintenance shops, vehicle dispatching operations, trade shops and storage facilities, office spaces, City-owned vehicle parking, and employee vehicle parking. It will serve the following functions:

- Department of Facility Maintenance (DFM)
  - Automotive Equipment Services (AES) Division
  - Road Maintenance Division (includes a portion of the former Department of Transportation Services, Electrical and Maintenance Services Division.)
- Honolulu Police Department (HPD)
  - Vehicle Maintenance Section



WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS 1907 S. BERETANIA STREET HONOLULU, HAWAII 96826	HALAWA CORPORATION YARD LOCATION MAP	EXHIBIT 1



WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS 1907 S. BERETANIA STREET HONOLULU, HAWAII 96826	HALAWA CORPORATION YARD VICINITY MAP	EXHIBIT 2

- Handi-Van
  - Maintenance
  - Dispatch

Based on preliminary plans, AES and Handi-van maintenance and operations would occupy the existing bus maintenance facility, the AES Heavy Equipment Shop, and the Road Maintenance Division, HPD Vehicle Maintenance Section, and employee parking would occupy the adjacent Crazy Shirts Inc. parcel.

The project site plan is shown in Exhibit 3.

The Corporation Yard would house approximately 343 City-owned vehicles, including 129 light vehicles, 79 trucks and heavy vehicles, and 135 Handivans. In addition, the Corporation Yard would provide parking for approximately 527 employees. The facility will be operational 24 hours a day, 7 days a week with each department/division having its own shift times. However, the primary shift would be from 6:30 AM to 3:00 PM. The following table shows the City-owned vehicles and City personnel for each activity.

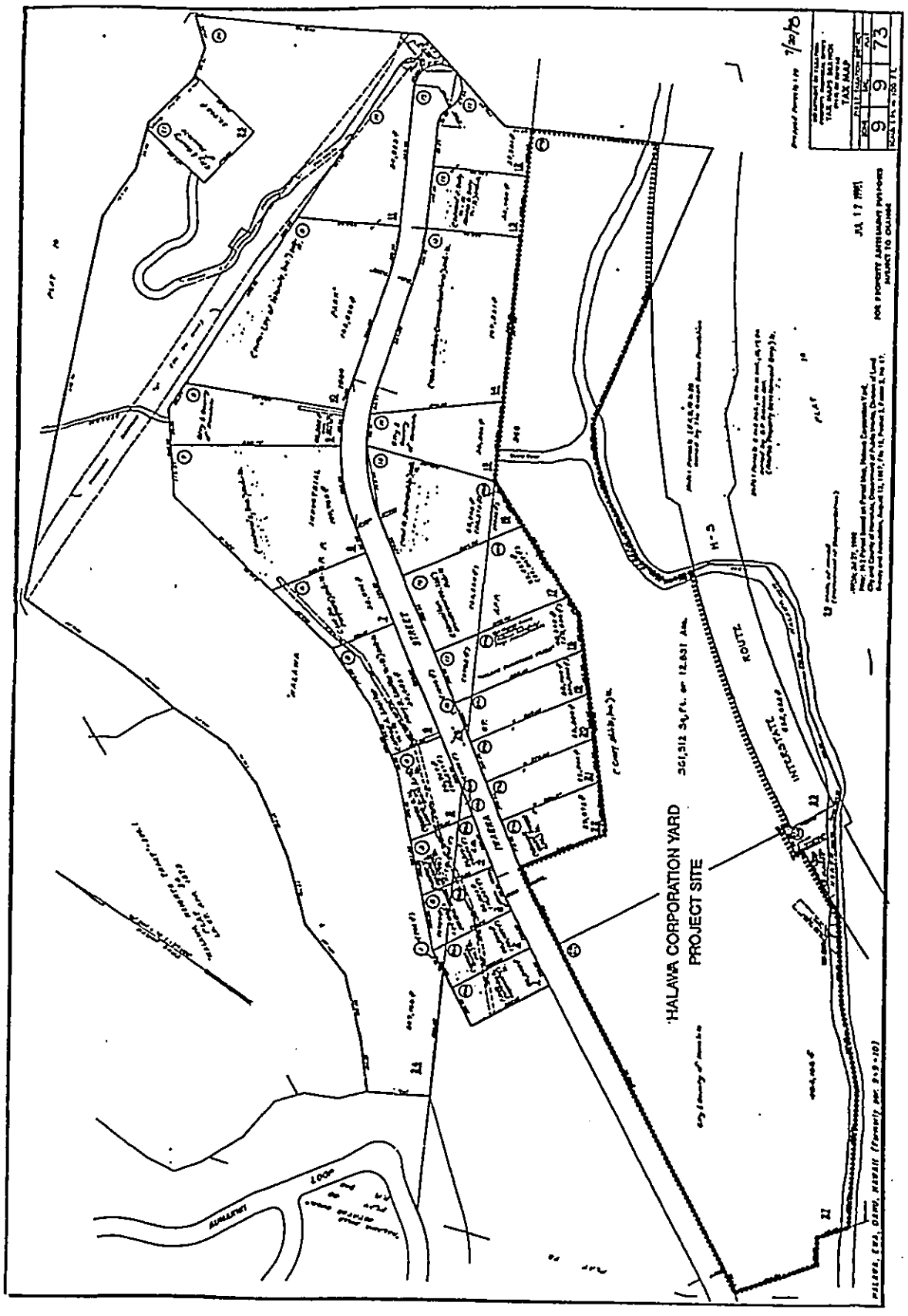
	Light Vehicles (1)	Heavy Vehicles (1)	Employees (2)
AES Division	29	4	91
Road Maintenance Division	77	63	234
HPD Vehicle Maintenance Section	18	5	24
Handi-Van Maintenance and Dispatch	140	7	178
TOTALS	264	79	527

(1) Based at Halawa Corporation Yard.

(2) Total assigned employees.

Typically, most employees would arrive at the Corporation Yard at around 6:30 AM. Employees assigned to the field would receive their work orders, load necessary equipment, material, and supplies onto City-owned vehicles, and then depart to work sites at around 7:30 to 8:00 AM.

Employees associated with the Handi-Van operations would arrive at the Corporation Yard at various times of the day, with an anticipated peak occurring



WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS 1907 S. BERETANIA STREET HONOLULU, HAWAII 96826	HALAWA CORPORATION YARD PROJECT SITE	EXHIBIT 3

at around 12:30 to 1:00 PM. Typically, Handi-Van drivers would arrive at the Corporation Yard, receive their assignments, then depart onto their assigned routes.

III. EXISTING CONDITIONS

A. General

The Central Park area of Halawa Valley contains light industrial businesses. Access to the Central Park area is via Halawa Crusher Road which connects directly to nearby Moanalua Road (Freeway). The traffic volumes on the freeway have increased steadily over the years due to increased development on the Ewa side of Oahu.

B. Area Roadway System

1. Iwaena Street

Iwaena Street is a two-lane, two-way City and County of Honolulu road fronting the Halawa Corporation Yard project site. Approximately 1700 feet southwest of the project site, Iwaena Street forms a T-intersection with Iwaiwa Street which provides left-turn and right-turn traffic movements.

Parking is heavily utilized on both sides of Iwaena Street between the Corporation Yard project site and the T-intersection. Light industrial businesses occupy both sides of the road along this section of Iwaena Street. On occasions, parking and delivery truck maneuvers impede traffic flow along Iwaena Street.

2. Iwaiwa Street

At the intersection with Iwaena Street, Iwaiwa Street is primarily a two-lane, two-way City and County of Honolulu roadway. The Iwaiwa Street northbound and southbound approaches to the intersection serve all turning and through traffic movements. Approximately 200 feet to the south of the T-intersection, Iwaiwa Street forms a T-intersection with Halawa Crusher Road. A portion of Iwaiwa Street at Halawa Crusher Road is under state jurisdiction. At this T-intersection, Iwaiwa Street is a two-way, three-lane roadway that serves right-turn and left-turn traffic movements.

3. Halawa Crusher Road

Halawa Crusher Road is a two-way state facility at the intersection with Iwaiwa Street. The eastbound approach of the intersection is a four-lane roadway that serves through and left-turn traffic movements. The westbound approach is a two-way roadway that serves through and right-turn traffic movements. Approximately 750 feet to the west is the intersection with the Moanalua Road off-ramp, Moanalua Road on-ramp, and the Ulune Street Extension. At this intersection, Halawa Crusher Road is a two-way, three-lane roadway that serves through and right-turn traffic movements.

4. Moanalua Road Off-Ramp

The Moanalua Road off-ramp comprises the westbound approach of the intersection of Halawa Crusher Road and the Ulune Street Extension. This approach is a one-way, four-lane roadway that serves through, right-turn, and left-turn traffic movements.

5. Ulune Street/Ulune Street Extension

At the intersection with Halawa Crusher Road, the Ulune Street Extension is a two-way, five-lane roadway that serves right-turn and left-turn traffic movements. Approximately 625 feet to the west is the intersection with Kahuapaani Street. At this intersection, Ulune Street/Ulune Street Extension, is a two-way, four-lane roadway that serves all traffic movements.

6. Kahuapaani Street

At the intersection with Ulune Street/Ulune Street Extension, Kahuapaani Street is a two-way State of Hawaii roadway. The northbound approach of the intersection is a six-lane roadway that serves through, right-turn, and left-turn traffic movements. The southbound approach is a five-lane roadway that also serves all traffic movements.

C. Traffic Volumes and Conditions

1. General

a. Field Investigations

Field investigations were conducted on February 26, (Thursday) March 3 and 4, 1998 (Tuesday and Wednesday) and consisted of manual turning movement traffic count surveys. The traffic count surveys were conducted between the morning hours of 6:00 AM to 8:00 AM, and afternoon hours of 3:00 PM to 6:00 PM at the following intersections:

- Iwaena Street and Iwaiwa Street;
- Halawa Crusher Road and Iwaiwa Street;
- Halawa Crusher Road and Ulune Street Extension; and
- Ulune Street/Ulune Street Extension and Kahuapaani Street.

Appendix A includes the existing traffic count data.

b. Capacity Analysis Methodology

The highway capacity analysis performed for this study is based upon procedures presented in the "Highway Capacity Manual", Special Report 209, Transportation Research Board, Third Edition, 1994, and the "Highway Capacity Software", developed by the Federal Highway Administration. The Highway Capacity Manual procedures are accepted for traffic impact analysis by the State of Hawaii Department of Transportation (DOT) and the City and County of Honolulu Department of Transportation Services (DTS).

Level of Service (LOS) is a quantitative and qualitative assessment of traffic operations used in traffic impact analysis. Levels of Service are defined by LOS "A" through "F"; with LOS "A" representing ideal an operating condition and LOS "F" the worst operating condition. The State DOT and the City and County of Honolulu DTS generally concur that LOS "C" or better is acceptable for most traffic operations on Oahu. The LOS definitions are included in Appendix B.

"Volume-to-Capacity" (v/c) ratio for signalized intersections is another measure indicating the relative traffic demand to the intersection operating capacity. A v/c ratio of one (1.00) indicates that the intersection is operating at capacity. A v/c ratio of greater than 1.00 indicates that the projected traffic demand exceeds the intersection's carrying capacity.

2. Existing Peak Hour Traffic

a. General

The traffic count data show the AM peak hour of traffic generally occurs between 7:00 AM and 8:00 AM and the PM peak hour generally occurs between 4:00 PM and 5:00 PM at the four study intersections. These peak hours were used to identify the traffic impacts resulting from the proposed Corporation Yard. Exhibits 4 and 5 show the existing AM and PM peak hour traffic volumes and operating conditions.

Calculations are in Appendix C.

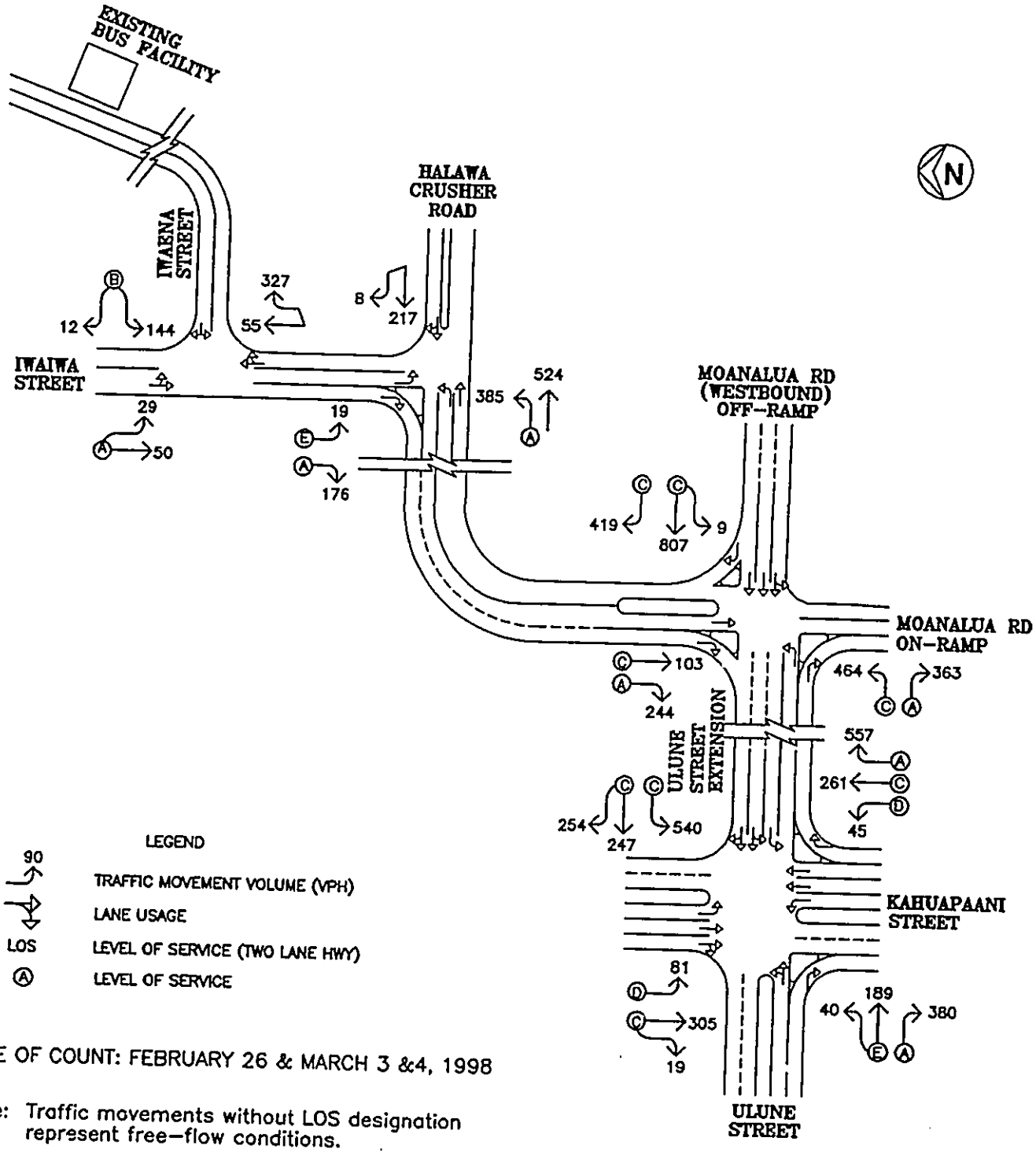
b. AM Peak Hour

i. Iwaena Street and Iwaiwa Street

At the Iwaena Street and Iwaiwa Street intersection during the AM peak hour of traffic, the Iwaena Street approach carries a total of 156 vehicles. The Iwaiwa Street approaches carry a total of 461 vehicles, 382 vehicles northbound and 79 vehicles southbound. The intersection operates at an overall LOS "A".

ii. Iwaiwa Street and Halawa Crusher Road

At the Iwaiwa Street and Halawa Crusher Road intersection during the AM peak hour of traffic, the Iwaiwa Street approach carries a total of 195 vehicles. The Halawa Crusher Road approaches carry a total of 1,134 vehicles, 909 vehicles eastbound and 225 vehicles westbound. The intersection operates at an overall LOS "A". The critical movement of this intersection is the left-turn lane group of the southbound approach which operates at a LOS "E".



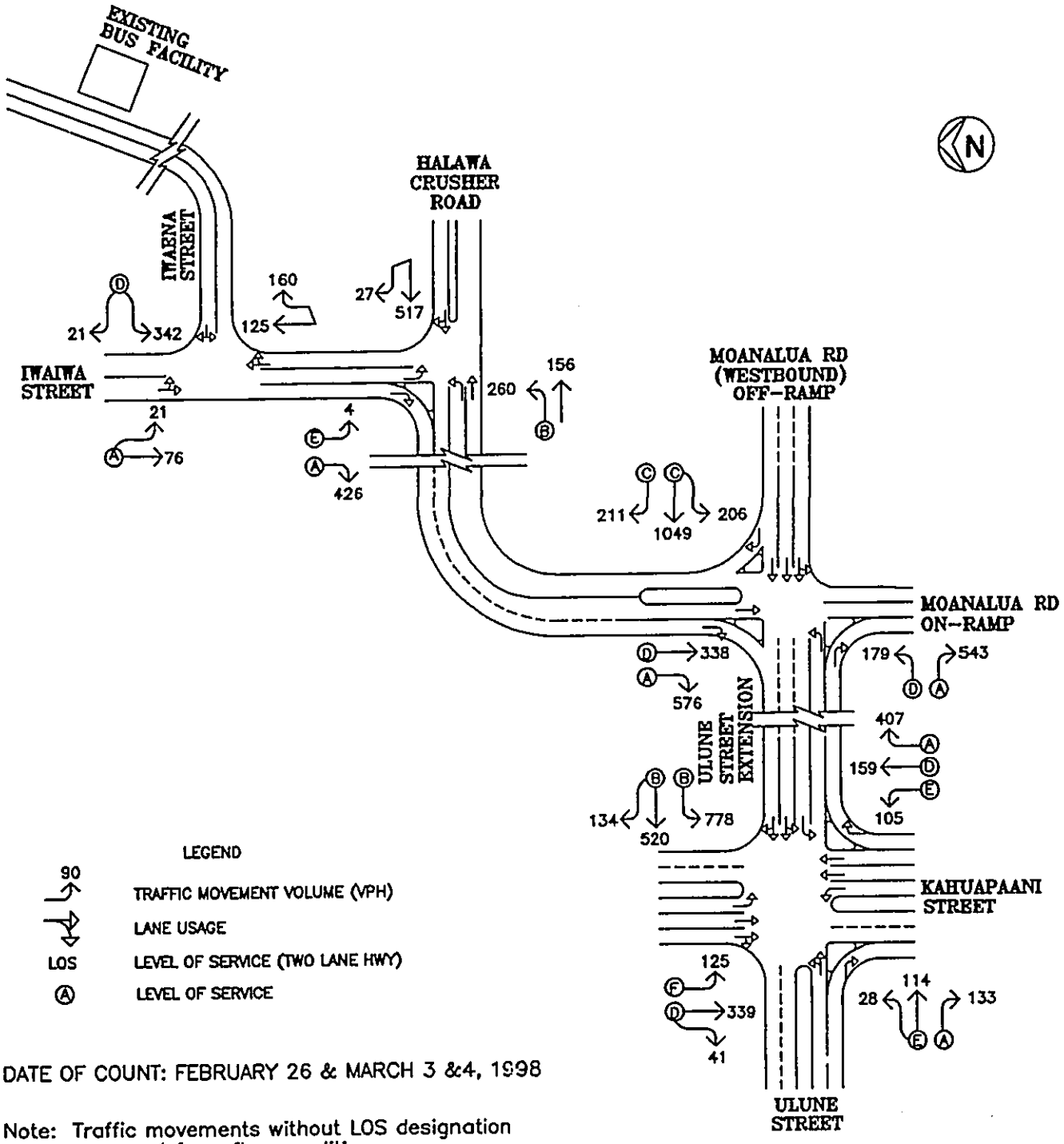
LEGEND

90	TRAFFIC MOVEMENT VOLUME (VPH)
	LANE USAGE
LOS	LEVEL OF SERVICE (TWO LANE HWY)
Ⓐ	LEVEL OF SERVICE

DATE OF COUNT: FEBRUARY 26 & MARCH 3 &4, 1998

Note: Traffic movements without LOS designation represent free-flow conditions.

WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS 1907 S. BERETANIA STREET HONOLULU, HAWAII 96826	HALAWA CORPORATION YARD EXISTING AM PEAK HOUR TRAFFIC	EXHIBIT 4



LEGEND

90	TRAFFIC MOVEMENT VOLUME (VPH)
	LANE USAGE
LOS	LEVEL OF SERVICE (TWO LANE HWY)
Ⓐ	LEVEL OF SERVICE

DATE OF COUNT: FEBRUARY 26 & MARCH 3 &4, 1998

Note: Traffic movements without LOS designation represent free-flow conditions.

WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS 907 S. BERETANIA STREET HONOLULU, HAWAII 96826	HALAWA CORPORATION YARD EXISTING PM PEAK HOUR TRAFFIC	EXHIBIT 5

iii. Halawa Crusher Road and Ulune Street Extension

At the Halawa Crusher Road and Ulune Street Extension intersection during the AM peak hour of traffic, the Halawa Crusher Road approach carries 347 vehicles. The Ulune Street Extension approach carries 827 vehicles eastbound and the Moanalua Road off-ramp approach carries 1,235 vehicles westbound. The intersection operates at an overall LOS "B" with a v/c of 0.62.

iv. Ulune Street/Ulune Street Extension and Kahuapaani Street

At the Ulune Street/Ulune Street Extension and Kahuapaani Street intersection during the AM peak hour of traffic, the Ulune Street and Ulune Street Extension approaches carry a total of 1,650 vehicles, 609 vehicles eastbound and 1,041 vehicles westbound. Kahuapaani Street carries 1,267 vehicles, 863 vehicles northbound and 404 vehicles southbound. The intersection operates at an overall LOS "C" with a v/c of 0.59. The critical movements of this intersection are included in the following table:

Approach	Lane Group	Level of Service
Eastbound	Left-turn & Through	E
Northbound	Left-turn	D
Southbound	Left-turn	D

c. PM Peak Hour

i. Iwaena Street and Iwaiwa Street

At the Iwaena Street and Iwaiwa Street intersection during the PM peak hour of traffic, the Iwaena Street approach carries a total of 363 vehicles. The Iwaiwa Street approaches carry a total of 382 vehicles, 285 vehicles northbound and 97 vehicles southbound. The intersection operates at an overall LOS "B". The critical movement of this intersection is the left-turn and right-turn traffic lane group which operates at a LOS "D".

ii. Iwaiwa Street and Halawa Crusher Road

At the Iwaiwa Street and Halawa Crusher Road intersection during the PM peak hour of traffic, Iwaiwa Street carries a total of 430 vehicles. The Halawa Crusher

Road approaches carry a total of 960 vehicles, 416 vehicles eastbound and 544 vehicles westbound. The intersection operates at an overall LOS "A". The critical movement of this intersection is the left-turn lane group of the southbound approach which operates at a LOS "E".

iii. Halawa Crusher Road and Ulune Street Extension

At the Halawa Crusher Road and Ulune Street Extension intersection during the PM peak hour of traffic, the Halawa Crusher Road approach carries 914 vehicles. The Ulune Street Extension approach carries 722 vehicles eastbound and the Moanalua Road off-ramp approach carries 1,466 vehicles westbound. The intersection operates at an overall LOS "C" with a v/c of 0.69. The critical movements of this intersection are the left-turn lane group of the eastbound approach and the through movement lane group of the southbound approach. Both of these lane groups operate at a LOS "D".

iv. Ulune Street/Ulune Street Extension and Kahuapaani Street

At the Ulune Street/Ulune Street Extension and Kahuapaani Street intersection during the PM peak hour of traffic, the Ulune Street and Ulune Street Extension approaches carry a total of 1,964 vehicles, 320 vehicles eastbound and 1,644 vehicles westbound. The Kahuapaani Street approaches carry a total of 1,391 vehicles, 773 vehicles northbound and 618 vehicles southbound. The intersection operates at an overall LOS "D" with a v/c of 0.75. The critical movements of this intersection are included in the following table:

Approach	Lane Group	Level of Service
Eastbound	Left-turn & Through	E
Northbound	Left-turn	E
	Through	D
Southbound	Left-turn	F
	Through & Right-turn	D

IV. PROJECTED TRAFFIC CONDITIONS

A. Site-Generated Traffic

1. Trip Generation Methodology

Two trip generation methodologies were used to project traffic impacts. The first methodology projected traffic conditions for Halawa Valley in 2002 without the Halawa Corporation Yard project on the Crazy Shirts parcel. Without the Corporation Yard project, it was assumed light industrial development would occur on the Crazy Shirts parcel and the existing Halawa Bus Maintenance facility would continue its present operation. The second methodology is used to project the traffic conditions in 2002 with the Corporation Yard project which would replace the bus maintenance and dispatch functions and involve construction of facilities on the Crazy Shirts parcel.

a. Light Industrial Development in Place of Project

The trip generation methodology used for a Light Industrial Development is based upon generally accepted techniques developed by the Institute of Transportation Engineers (ITE) and published in "Trip Generation, 5th Edition", 1991. The ITE trip rates are developed empirically, by correlating the vehicle trip generation data with land use characteristics, such as the total number of vehicle trips generated per acre of development.

The following table shows a summary of the vehicle trip generation without the project.

Independent Variable:	Acres Of Development Projected:	13 Acres
		Projected Trip Ends
AM Peak Period	Enter	157
	Exit	17
	Total	174
PM Peak Period	Enter	25
	Exit	154
	Total	179

b. Corporation Yard

The trips generated by the proposed Halawa Corporation Yard were determined by evaluating the proposed number of employees and corresponding work shifts. Based upon this information which incorporates overlapping shifts, anticipated vehicle trips were projected for the AM and PM peak hours of traffic at the study intersections. Subtracted from this projection were the number of vehicle trips associated with the existing Bus Facility which would be replaced by the Corporation Yard. The following table shows the project site traffic generation characteristics applied to the AM (7:00 AM to 8:00 AM) and PM (4:00 PM to 5:00 PM) peak hours of traffic at the study intersections to measure the impact resulting from the proposed Halawa Corporation Yard.

Function		AM Peak Period		PM Peak Period	
		Arrive	Depart	Arrive	Depart
Auto	Employees	9	--	--	--
Equipment Services	City Vehicles	--	8	--	--
Road Maintenance Division	Employees	--	--	--	--
	City Vehicles	--	107	--	20
Handi-Van	Employees	11	--	--	5
	Vehicles	--	7	8	--
Honolulu Police Department	Employees	5	2	--	5
	Vehicles	--	15	15	--
	Subtotal	16	148	8	10
The Bus	Vehicles	(11)	(1)	(3)	(33)
TOTAL		**5**	**147**	**5**	**(23)**

Throughout the 24-hour day, the trip generation characteristics of the proposed Corporation Yard would involve vehicle trips entering and exiting the yard during off-peak periods. For the purpose of this study, only the trips generated during the study peak hours were identified.

2. Trip Distribution

There is currently only one access route in and out of Halawa Valley. All vehicular trips entering/exiting the project site is assumed to follow that route. For the purpose of this study, it is assumed that the directional distribution of traffic generated by the proposed project would remain the same as existing at all study intersections. Although traffic volumes are expected to increase, the

distribution of traffic throughout the road network should remain similar to existing conditions.

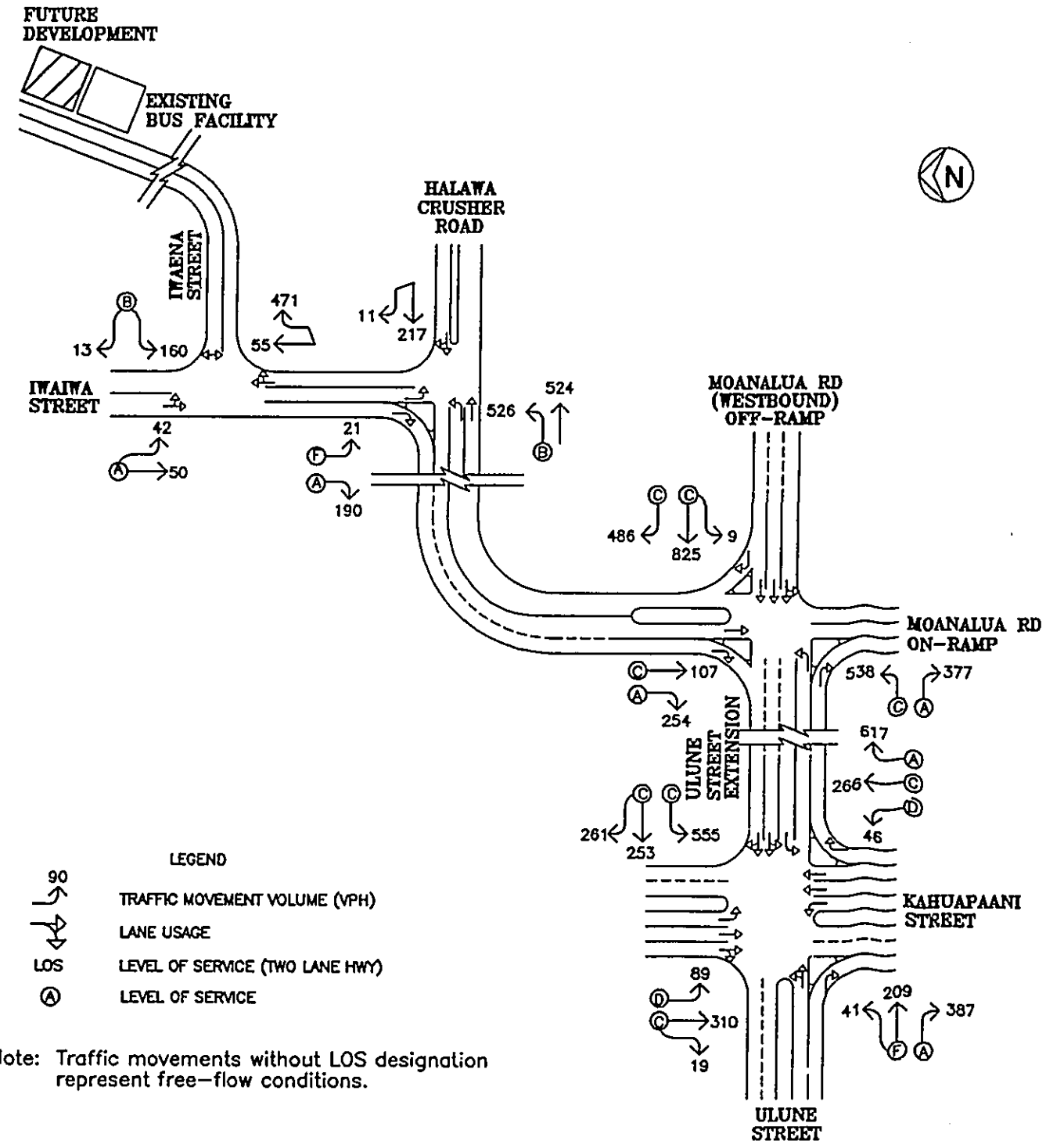
B. Through Traffic Forecasting Methodology

The travel forecast is based upon historical traffic count data obtained from the State Department of Transportation (DOT) at a survey station at the Kahuapaani Street and Ulune Street intersection. The historical data were analyzed by linear regression techniques to obtain an average annual growth rate of approximately 1.76% for the intersection, using 1994 as the Base Year. A growth factor of 1.0176 was applied to existing traffic demands at the intersection for each successive year to the Year 2002.

C. Total Traffic Volumes Without Project

Exhibits 6 and 7 show the Year 2002 cumulative AM and PM peak hour traffic conditions without the development of the Halawa Corporation Yard. The cumulative volumes consist of traffic due to light industrial development superimposed over Year 2002 projected traffic demands. The Levels of Service for the primary movements at the four study intersections are included in the following table. The actual calculations are included in Appendix D.

Intersection	Lane Group	AM Peak		PM Peak	
		Existing	Year 2002 without Project	Existing	Year 2002 without Project
Iwaena St and Iwaiwa St	Westbound (LT & RT)	B	B	D	F
Iwaiwa St and Halawa Crusher Rd	Southbound (LT)	E	F	E	E
Halawa Crusher Rd and Ulune Extension	Eastbound (LT)	C	C	D	D
	Southbound (TH)	C	C	D	D
Ulune St and Kahuapaani St	Eastbound (LT & TH)	E	F	E	E
	Northbound (LT)	D	D	E	E
Ulune St and Kahuapaani St	Northbound (TH)	C	C	D	D
	Southbound (LT)	D	D	F	F
	Southbound (TH & RT)	C	C	D	D

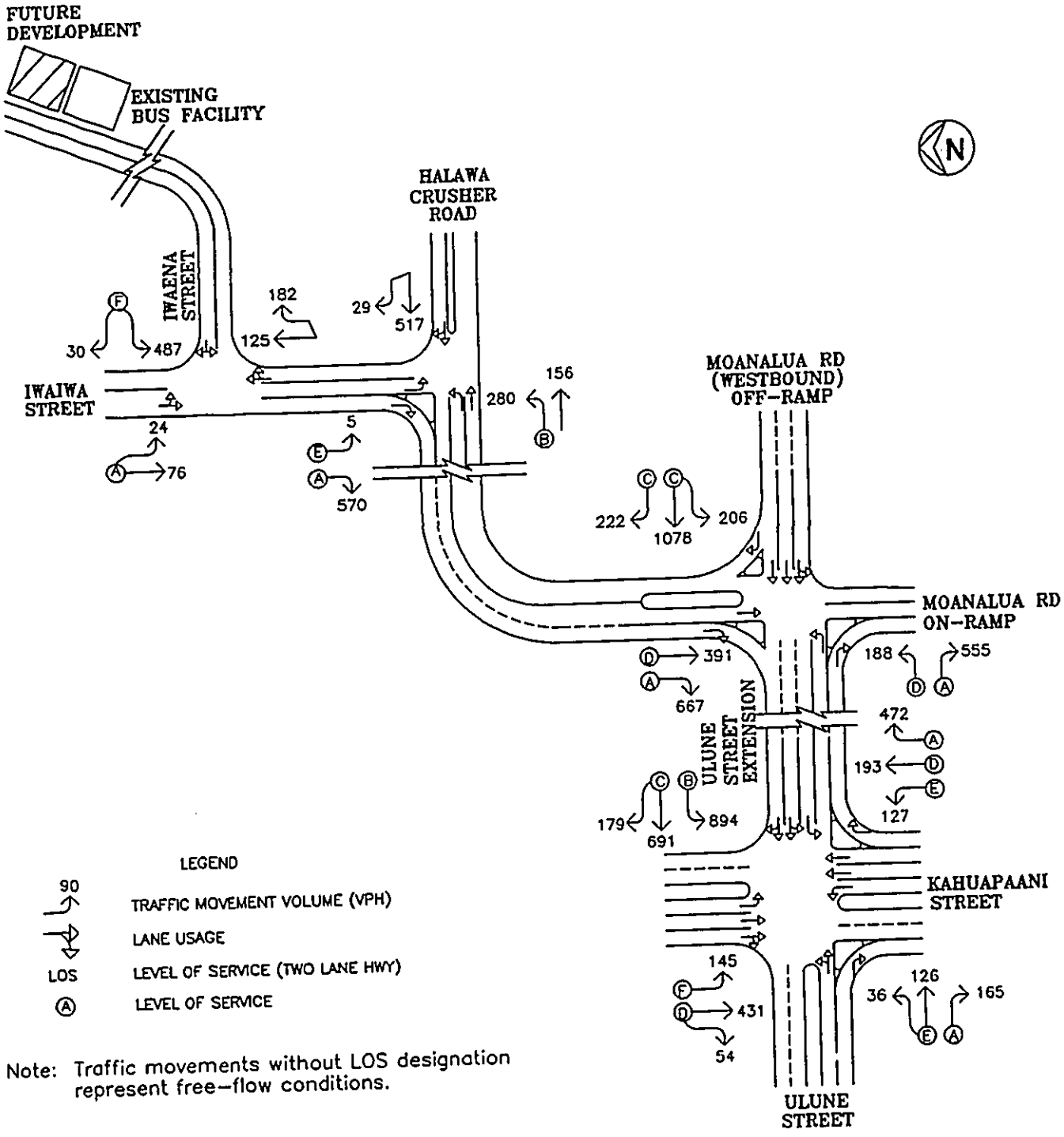


LEGEND

90	TRAFFIC MOVEMENT VOLUME (VPH)
	LANE USAGE
LOS	LEVEL OF SERVICE (TWO LANE HWY)
Ⓐ	LEVEL OF SERVICE

Note: Traffic movements without LOS designation represent free–flow conditions.

WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS 1907 S. BERETANIA STREET HONOLULU, HAWAII 96826	HALAWA CORPORATION YARD YEAR 2002 AM PEAK HOUR TRAFFIC WITHOUT PROJECT	EXHIBIT 6



Note: Traffic movements without LOS designation represent free-flow conditions.

WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS 1907 S. BERETANIA STREET HONOLULU, HAWAII 96826	HALAWA CORPORATION YARD YEAR 2002 PM PEAK HOUR TRAFFIC WITHOUT PROJECT	EXHIBIT 7

Traffic operations at the study intersections are projected to steadily increase until the Year 2002 even without the development of the Halawa Corporation Yard. Excessive delays on the minor streets at the study intersections are expected to worsen as development in the vicinity increases. Intersection traffic signalization at the intersection of Iwaiwa Street and Halawa Crusher Road may be required to mitigate impacts resulting from projected traffic demands expected by Year 2002.

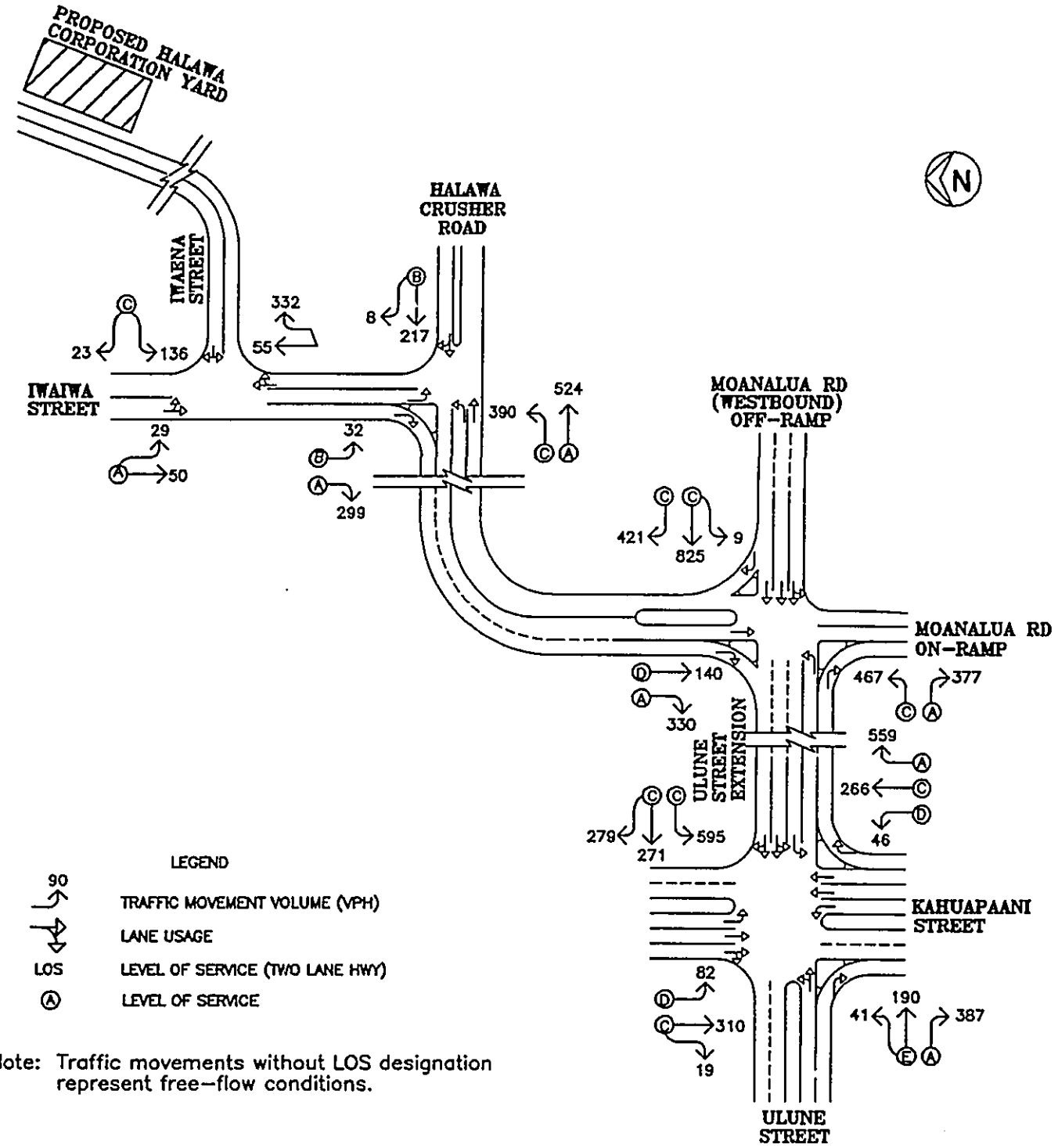
D. Total Traffic Volumes With Project

Exhibits 8 and 9 show the Year 2002 cumulative AM and PM peak hour traffic conditions resulting from the projected external traffic and the development of the Halawa Corporation Yard. The cumulative volumes consist of site-generated traffic superimposed over Year 2002 projected traffic demands. A partial review of a traffic signal warrant analysis and the traffic impacts resulting from the Halawa Corporation Yard are addressed in the following sections.

V. TRAFFIC SIGNAL WARRANT

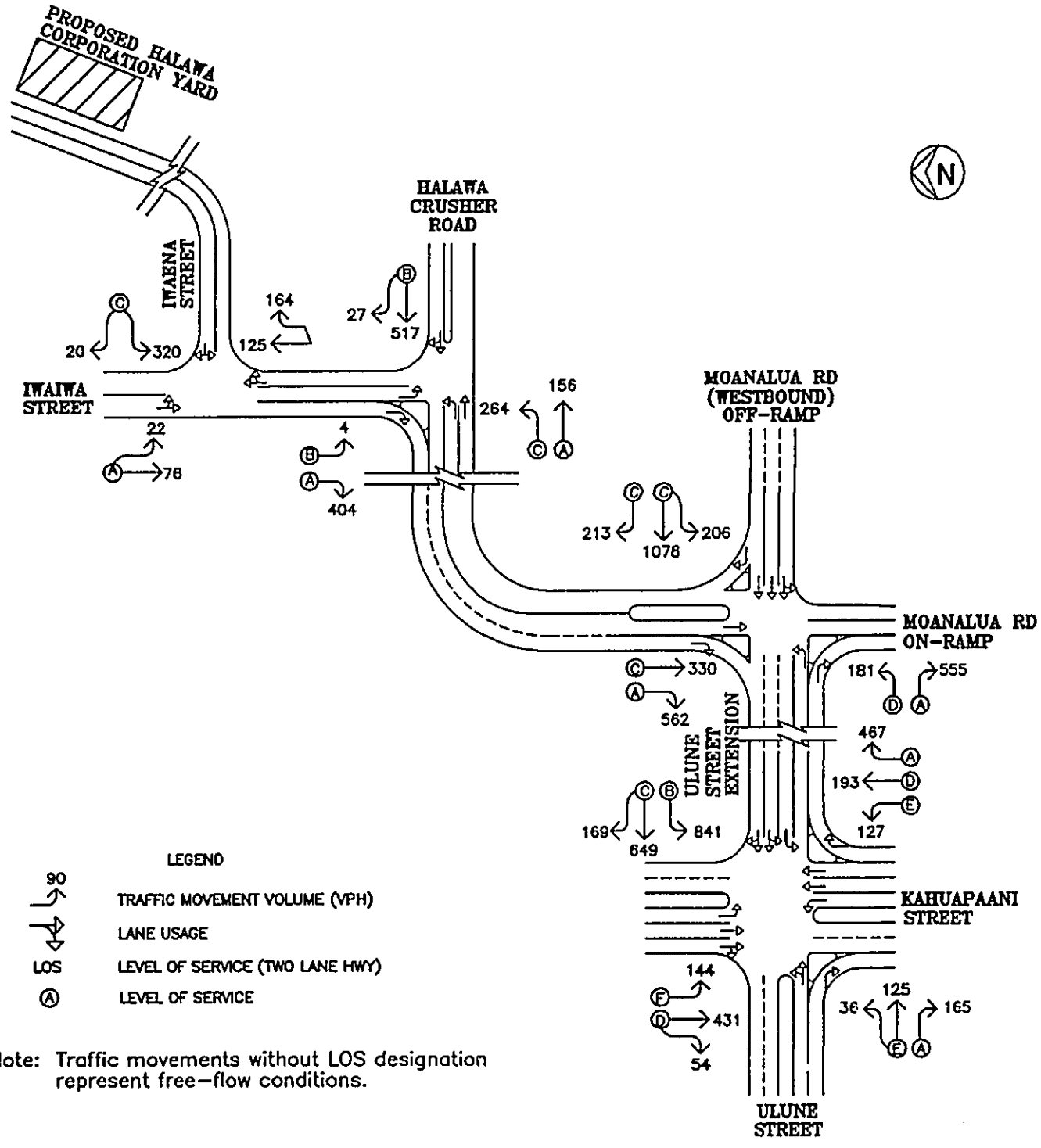
The installation of a traffic signal may be justified by one or more of the eleven warrants outlined in the "Manual on Uniform Traffic Control Devices for Streets and Highways", 1988 Edition (MUTCD). Signal Warrant No. 11, the "Peak Hour Volume Warrant", consists of several conditions which could justify the installation of a traffic signal at an intersection where vehicles experience high traffic delay and impaired safety during the peak hour periods.

Under projected Year 2002 without project conditions, the projected traffic volume entering the Iwaiwa Street and Halawa Crusher Road intersection satisfies Signal Warrant No. 11 (Peak Hour Volume Warrant) for intersection traffic signalization. The "Peak Hour Volume Warrant" is based on minor street traffic volumes relative to major street traffic. The AM peak hour traffic volumes are near the minimum volume for the minor street approach with two lanes for high through traffic volumes on the major street as shown on Figure 4.5 in the MUTCD. However, the PM peak hour volumes for the Year 2002 without project conditions are above the minimum threshold and therefore satisfy Warrant 11. This intersection may also satisfy the remaining warrants for traffic signal consideration which take into account factors other than peak hour volumes such as delays, pedestrians, accidents, and volumes throughout the day. Therefore, for the purpose of this study, the intersection of Iwaiwa Street and



Note: Traffic movements without LOS designation represent free-flow conditions.

WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS 1907 S. BERETANIA STREET HONOLULU, HAWAII 96826	HALAWA CORPORATION YARD YEAR 2002 AM PEAK HOUR TRAFFIC WITH PROJECT	EXHIBIT 8



LEGEND

90	TRAFFIC MOVEMENT VOLUME (VPH)
	LANE USAGE
LOS	LEVEL OF SERVICE (TWO LANE HWY)
Ⓐ	LEVEL OF SERVICE

Note: Traffic movements without LOS designation represent free-flow conditions.

WILSON OKAMOTO & ASSOCIATES, INC. ENGINEERS - PLANNERS 1907 S. BERETANIA STREET HONOLULU, HAWAII 96826	HALAWA CORPORATION YARD YEAR 2002 PM PEAK HOUR TRAFFIC WITH PROJECT	EXHIBIT 9

Halawa Crusher Road is hereinafter assumed to be signalized. It should be noted, however, that these warrants are used as a guide to consider traffic signalization and do not necessarily impose a requirement. Further inspection and analysis of traffic conditions would be required to establish these additional warrants.

VI. TRAFFIC IMPACT ANALYSIS

The Year 2002 cumulative AM and PM peak hour traffic conditions without the development of the Halawa Corporation Yard consist of site-generated traffic superimposed over Year 2002 projected traffic demands. Vehicle delays and intersection Levels of Service calculations are included in Appendix E and summarized in the following table:

Intersection	Lane Group	AM Peak			PM Peak		
		Existing	Year 2002 w/out Project	Year 2002 with Project	Existing	Year 2002 w/out Project	Year 2002 with Project
Iwaena St and Iwaiwa St	West-bound (LT & RT)	B	B	C	D	F	C
Iwaiwa St and Halawa Crusher Rd	South-bound (LT)	E	F	B	E	E	B
Halawa Crusher Rd and Ulune Extension	East-bound (LT)	C	C	C	D	D	D
	South-bound (TH)	C	C	D	D	D	C
Ulune St and Kahuapaani St	East-bound (LT & TH)	E	F	E	E	E	E
	North-bound (LT)	D	D	D	E	E	E
	North-bound (TH)	C	C	C	D	D	D
	South-bound (LT)	D	D	D	F	F	F
	South-bound (TH & RT)	C	C	C	D	D	D

The Level of Service improvement at several of the study intersections is attributed to a decrease in site-generated traffic volumes due to the removal of the Bus Facility currently located on the project site. The number of vehicle trips resulting from the proposed Halawa Corporation Yard is projected to be less than those trips resulting from the Bus Facility and any light industrial development. The decrease in the LOS of the Iwaiwa Street/Halawa Crusher Road intersection is a result of the installation of a traffic signal by the Year 2002 to accommodate external traffic growth. Even without development of the Halawa Corporation Yard, the intersection may warrant the installation of traffic signals by the Year 2002

Modification of the traffic signal phasing and timing may further improve the existing operating traffic conditions at the Ulune Street and Kahuapaani Street, and Ulune Street Extension and Halawa Crusher Road intersections. These improvements, however, are not required as part of the proposed project, but are improvements intended for consideration to improve the overall traffic operation in the vicinity. Sample revised signal phasing and LOS calculations for the intersections are included in Appendix F for convenience.

VII. RECOMMENDATIONS

1. Install a traffic signal system at the intersection of Iwaiwa Street with Halawa Crusher Road to improve projected traffic conditions. It is recommended that a traffic signal warrant study be conducted for verification. The City Department of Transportation Services (DTS) has commented that a traffic signal warrant study should be conducted as part of this project. The State Department of Transportation (DOT) also commented that the traffic operations at the intersection should be monitored and a traffic signal system installed when warranted. The DTS and DOT comments to the draft of this report are included in Appendix G.

2. Maintain sufficient sight distances for motorists to safely enter and exit the project access driveways.

3. Provide sufficient driveway width to accommodate safe vehicle ingress and egress.

4. Provide adequate on-site parking for employees to prevent on-street parking. DTS has also commented that adequate off-street parking should be provided.

VIII. CONCLUSIONS

By implementing the above recommendations, the proposed Halawa Corporation Yard would not have a significant impact on traffic operations in the vicinity. Much of the vehicular activity at the project site would occur during off-peak hours.

The removal of the existing Bus Facility and operations would improve projected traffic conditions during peak hours. Projected traffic conditions could also be improved with the installation of a traffic signal system at the intersection of Iwaiwa Street and Halawa Crusher Road.

It should be noted that the anticipated work shifts and number of personnel assigned to each shift used as the basis of this study, and the expected completion date of Year 2002, were furnished by the Honolulu Police Department, Oahu Transit Services, and Department of Public Works.

APPENDIX A

EXISTING TRAFFIC COUNT DATA

Weather : CLEAR
Counter : 01-0525/01-0527
ted by: RICK/JEFF

JAMAR Technologies, Inc.
Traffic Counting Equipment & Supplies
2031 Stout Drive, Suite 4
Ivyland, PA 18974

Site Code : 00000004
Start Date: 02/26/98
File I.D. : IWAIWAA
Page : 1

Vehicle group 1

	IWAIWA ST Southbound			IWAENA ST Westbound			IWAIWA ST Northbound			
	Left	Thru	Other	Left	Right	Other	Thru	Right	Other	Total
Date 02/26/98										
06:00	3	6	0	39	0	0	7	64	0	119
06:15	2	12	0	31	1	0	8	62	0	116
06:30	7	14	0	38	1	0	14	58	0	132
06:45	4	10	0	33	0	0	6	85	0	138
Hr Total	16	42	0	141	2	0	35	269	0	505
07:00	5	17	0	38	1	0	14	81	0	156
07:15	3	16	0	36	2	0	13	78	0	148
07:30	4	12	0	32	3	0	14	83	0	148
07:45	17	5	0	38	6	0	14	85	0	165
Hr Total	29	50	0	144	12	0	55	327	0	617
TOTAL	45	92	0	285	14	0	90	596	0	1122

Peak Hour Analysis By Individual Approach for the Period: 06:00 to 08:00 on 02/26/98

Peak start	07:00			07:00			07:00		
Volume	29	50	0	144	12	0	55	327	0
Percent	37%	63%	0%	92%	8%	0%	14%	86%	0%
Pk total	79			156			382		
Highest	07:00			07:45			07:45		
Volume	5	17	0	38	6	0	14	85	0
Hi total	22			44			99		
PHF	.90			.89			.96		

Peak Hour Analysis By Entire Intersection for the Period: 06:00 to 08:00 on 02/26/98

Peak start	07:00			07:00			07:00		
Volume	29	50	0	144	12	0	55	327	0
Percent	37%	63%	0%	92%	8%	0%	14%	86%	0%
Pk total	79			156			382		
Highest	07:00			07:45			07:45		
Volume	5	17	0	38	6	0	14	85	0
Hi total	22			44			99		
PHF	.90			.89			.96		

Weather : CLEAR
Counter : D1-0525/D1-0527
Counted by: RICK/JEFF

JAMAR Technologies, Inc.
Traffic Counting Equipment & Supplies
2031 Stout Drive, Suite 4
Ivyland, PA 18974

Site Code : 00000004
Start Date: 02/26/98
File I.D. : IWAIWAP1
Page : 1

Vehicle group 1

	IWAIWA ST Southbound			IWAENA ST Westbound			IWAIWA ST Northbound			
	Left	Thru	OTHER	Left	Right	OTHER	Thru	Right	OTHER	Total
Date 02/26/98										
16:00	4	24	0	89	6	0	36	38	0	197
16:15	3	15	0	75	4	0	33	46	0	176
16:30	6	21	0	117	8	0	29	34	0	215
16:45	8	16	0	61	3	0	27	42	0	157
Hr Total	21	76	0	342	21	0	125	160	0	745
17:00	2	20	0	108	6	0	19	42	0	197
17:15	2	18	0	79	10	0	33	31	0	173
17:30	3	10	0	73	1	0	23	33	0	143
17:45	3	19	0	57	3	0	32	28	0	142
Total	10	67	0	317	20	0	107	134	0	655
TOTAL	31	143	0	659	41	0	232	294	0	1400

Peak Hour Analysis By Individual Approach for the Period: 16:00 to 18:00 on 02/26/98

Peak start	16:00			16:30			16:00		
Volume	21	76	0	365	27	0	125	160	0
Percent	22%	78%	0%	93%	7%	0%	44%	56%	0%
Pk total	97			392			285		
Highest	16:00			16:30			16:15		
Volume	4	24	0	117	8	0	33	46	0
Hi total	28			125			79		
PHF	.87			.78			.90		

Peak Hour Analysis By Entire Intersection for the Period: 16:00 to 18:00 on 02/26/98

Peak start	16:15			16:15			16:15		
Volume	19	72	0	361	21	0	108	164	0
Percent	21%	79%	0%	95%	5%	0%	40%	60%	0%
Pk total	91			382			272		
Highest	16:30			16:30			16:15		
Volume	6	21	0	117	8	0	33	46	0
Hi total	27			125			79		
PHF	.84			.76			.86		

Weather : CLEAR
Counter : D1-0526/D1-0528
Counted by: MISAKO/CATHY

JAMAR Technologies, Inc.
Traffic Counting Equipment & Supplies
2031 Stout Drive, Suite 4
Ivyland, PA 18974

Site Code : 00000001
Start Date: 02/26/98
File I.D. : HALIWAA1
Page : 1

Vehicle group 1

	IWAIWA ST Southbound			HALAWA VALLEY RD Westbound			HALAWA VALLEY RD Eastbound			
Date 02/26/98	Left	Right	OTHER	Thru	Right	OTHER	Left	Thru	OTHER	Total
06:00	7	39	0	38	1	0	69	85	0	239
06:15	4	39	0	30	3	0	68	78	0	222
06:30	7	47	0	47	9	0	62	105	0	277
06:45	6	37	0	54	3	0	88	114	0	302
Hr Total	24	162	0	169	16	0	287	382	0	1040
07:00	2	52	0	56	2	0	88	104	0	304
07:15	12	41	0	56	3	0	93	122	0	327
07:30	2	42	0	53	1	0	91	137	0	326
07:45	3	41	0	52	2	0	113	161	0	372
Total	19	176	0	217	8	0	385	524	0	1329
TOTAL	43	338	0	386	24	0	672	906	0	2369

Peak Hour Analysis By Individual Approach for the Period: 06:00 to 08:00 on 02/26/98

Peak start	06:30			06:30			07:00		
Volume	27	177	0	213	17	0	385	524	0
Percent	13%	87%	0%	93%	7%	0%	42%	58%	0%
Pk total	204			230			909		
Highest	06:30			07:15			07:45		
Volume	7	47	0	56	3	0	113	161	0
Hi total	54			59			274		
PHF	.94			.97			.83		

Peak Hour Analysis By Entire Intersection for the Period: 06:00 to 08:00 on 02/26/98

Peak start	07:00			07:00			07:00		
Volume	19	176	0	217	8	0	385	524	0
Percent	10%	90%	0%	96%	4%	0%	42%	58%	0%
Pk total	195			225			909		
Highest	07:00			07:15			07:45		
Volume	2	52	0	56	3	0	113	161	0
Hi total	54			59			274		
PHF	.90			.95			.83		

Weather : CLEAR
Counter : D1-0526/D1-0528
Counted by: ROGER/CATHY

JAMAR Technologies, Inc.
Traffic Counting Equipment & Supplies
2031 Stout Drive, Suite 4
Ivyland, PA 18974

Site Code : 00000001
Start Date: 02/26/98
File I.D. : HALIWAP
Page : 1

Vehicle group 1

	IWAIWA ST Southbound			HALAWA VALLEY RD Westbound			HALAWA VALLEY RD Eastbound			
	Left	Right	OTHER	Thru	Right	OTHER	Left	Thru	OTHER	Total
Date 02/26/98										
16:00	0	116	0	135	8	0	68	59	0	386
16:15	1	93	0	102	5	0	71	32	0	304
16:30	1	142	0	179	10	0	58	29	0	419
16:45	2	75	0	101	4	0	63	36	0	281
Hr Total	4	426	0	517	27.	0	260	156	0	1390
17:00	3	124	0	130	2	0	59	29	0	347
17:15	0	99	0	69	1	0	67	25	0	261
17:30	1	89	0	87	4	0	54	25	0	260
17:45	2	72	0	47	1	0	60	12	0	194
Total	6	384	0	333	8	0	240	91	0	1062
TOTAL	10	810	0	850	35	0	500	247	0	2452

Peak Hour Analysis By Individual Approach for the Period: 16:00 to 18:00 on 02/26/98

Peak start	16:30			16:00			16:00			
Volume	6	440	0	517	27	0	260	156	0	
Percent	1%	99%	0%	95%	5%	0%	62%	38%	0%	
Pk total	446			544			416			
Highest	16:30			16:30			16:00			
Volume	1	142	0	179	10	0	68	59	0	
Hi total	143			189			127			
PHF	.78			.72			.82			

Peak Hour Analysis By Entire Intersection for the Period: 16:00 to 18:00 on 02/26/98

Peak start	16:00			16:00			16:00			
Volume	4	426	0	517	27	0	260	156	0	
Percent	1%	99%	0%	95%	5%	0%	62%	38%	0%	
Pk total	430			544			416			
Highest	16:30			16:30			16:00			
Volume	1	142	0	179	10	0	68	59	0	
Hi total	143			189			127			
PHF	.75			.72			.82			

Weather : CLEAR
Counter : D1-0526/D1-0528
Counted by: MISAKO/CATHY

JAMAR Technologies, Inc.
Traffic Counting Equipment & Supplies
2031 Stout Drive, Suite 4
Ivyland, PA 18974

Site Code : 00000002
Start Date: 03/04/98
File I.D. : ULUHALA
Page : 1

Vehicle group 1

	HALAWA VALLEY RD Southbound				H-1 OFF-RAMP Westbound				H-1 ON-RAMP Northbound				ULUNE EXTENSION Eastbound				
Date 03/04/98	Left	Thru	Right	Other	Left	Thru	Right	Other	Left	Thru	Right	Other	Left	Thru	Right	Other	Total
06:00	0	34	59	26	0	127	66	4	0	0	0	0	100	0	60	1	477
06:15	0	23	60	28	0	198	85	6	0	0	0	0	71	0	61	4	536
06:30	0	25	66	23	2	181	75	8	0	0	0	0	88	0	79	1	548
06:45	0	21	53	22	3	228	111	13	0	0	0	0	110	0	68	2	631
Hr Total	0	103	238	99	5	734	337	31	0	0	0	0	369	0	268	8	2192
07:00	0	30	47	22	1	224	77	12	0	0	0	0	102	0	93	5	613
07:15	0	23	67	22	4	205	99	19	0	0	0	0	110	0	82	4	635
07:30	0	28	59	21	3	187	108	20	0	0	0	0	91	0	109	5	631
07:45	0	22	71	34	1	191	135	20	0	0	0	0	161	0	79	4	718
Total	0	103	244	99	9	807	419	71	0	0	0	0	464	0	363	18	2597
TOTAL	0	206	482	198	14	1541	756	102	0	0	0	0	833	0	631	26	4789

Peak Hour Analysis By Individual Approach for the Period: 06:00 to 08:00 on 03/04/98

Peak start	07:00				06:45				07:00				07:00				
Volume	0	103	244	99	11	844	395	64	0	0	0	0	464	0	363	18	
Percent	0%	23%	55%	22%	1%	64%	30%	5%	0%	0%	0%	0%	55%	0%	43%	2%	
Pk total	446				1314				0				845				
Highest	07:45				06:45				06:00				07:45				
Volume	0	22	71	34	3	228	111	13	0	0	0	0	161	0	79	4	
Hi total	127				355				0				244				
PHF	.88				.93				.0				.87				

Peak Hour Analysis By Entire Intersection for the Period: 06:00 to 08:00 on 03/04/98

Peak start	07:00				07:00				07:00				07:00				
Volume	0	103	244	99	9	807	419	71	0	0	0	0	464	0	363	18	
Percent	0%	23%	55%	22%	1%	62%	32%	5%	0%	0%	0%	0%	55%	0%	43%	2%	
Pk total	446				1306				0				845				
Highest	07:45				07:45				06:00				07:45				
Volume	0	22	71	34	1	191	135	20	0	0	0	0	161	0	79	4	
Hi total	127				347				0				244				
PHF	.88				.94				.0				.87				

Weather : CLEAR
Counter : 01-0526/01-0528
Counted by: MISAKO/CATHY

JAMAR Technologies, Inc.
Traffic Counting Equipment & Supplies
2031 Stout Drive, Suite 4
Ivyland, PA 18974

Site Code : 00000002
Start Date: 03/03/98
File I.D. : ULUHALP1
Page : 1

Vehicle group 1

	HALAWA VALLEY RD Southbound				H-1 OFF-RAMP Westbound				H-1 ON-RAMP Northbound				ULUNE EXTENSION Eastbound				
Date 03/03/98	Left	Thru	Right	Other	Left	Thru	Right	Other	Left	Thru	Right	Other	Left	Thru	Right	Other	Total
16:00	0	89	150	0	71	233	58	0	0	0	0	0	47	0	139	0	787
16:15	0	68	118	0	41	257	46	0	0	0	0	0	52	0	142	0	724
16:30	0	103	203	0	43	257	51	0	0	0	0	0	44	0	146	0	847
16:45	0	78	105	0	51	302	56	0	0	0	0	0	36	0	116	0	744
Hr Total	0	338	576	0	206	1049	211	0	0	0	0	0	179	0	543	0	3102
17:00	0	92	174	0	60	284	53	0	0	0	0	0	36	0	140	0	839
17:15	0	65	112	0	66	313	46	0	0	0	0	0	44	0	115	0	761
17:30	0	54	118	0	55	193	44	0	0	0	0	0	34	0	131	0	629
17:45	0	39	85	0	33	222	40	0	0	0	0	0	30	0	114	0	563
Total	0	250	489	0	214	1012	183	0	0	0	0	0	144	0	500	0	2792
TOTAL	0	588	1065	0	420	2061	394	0	0	0	0	0	323	0	1043	0	5894

Peak Hour Analysis By Individual Approach for the Period: 16:00 to 18:00 on 03/03/98

Peak start	16:15				16:30				17:00				16:00				
Volume	0	341	600	0	220	1156	206	0	0	0	0	0	179	0	543	0	
Percent	0%	36%	64%	0%	14%	73%	13%	0%	0%	0%	0%	0%	25%	0%	75%	0%	
Pk total	941				1582				0				722				
Highest	16:30				17:15				16:00				16:15				
Volume	0	103	203	0	66	313	46	0	0	0	0	0	52	0	142	0	
Hi total	306				425				0				194				
PHF	.77				.93				.0				.93				

Peak Hour Analysis By Entire Intersection for the Period: 16:00 to 18:00 on 03/03/98

Peak start	16:30				16:30				16:30				16:30				
Volume	0	338	594	0	220	1156	206	0	0	0	0	0	160	0	517	0	
Percent	0%	36%	64%	0%	14%	73%	13%	0%	0%	0%	0%	0%	24%	0%	76%	0%	
Pk total	932				1582				0				677				
Highest	16:30				17:15				16:00				16:30				
Volume	0	103	203	0	66	313	46	0	0	0	0	0	44	0	146	0	
Hi total	306				425				0				190				
PHF	.76				.93				.0				.89				

Weather : CLEAR
Counter : D1-0525/D1-0527
Counted by: RICK/JEFF

JAMAR Technologies, Inc.
Traffic Counting Equipment & Supplies
2031 Stout Drive, Suite 4
Ivyland, PA 18974

Site Code : 00000003
Start Date: 03/04/98
File I.D. : ULUKAHA
Page : 1

Vehicle group 1

	KAHUAPAANI ST Southbound				ULUNE EXTENSION Westbound				KAHUAPAANI ST Northbound				ULUNE ST Eastbound				
	Left	Thru	Right	Other	Left	Thru	Right	Other	Left	Thru	Right	Other	Left	Thru	Right	Other	Total
Date 03/04/98																	
06:00	13	79	2	0	121	32	38	0	4	47	101	0	4	46	75	0	562
06:15	10	71	4	0	142	42	56	0	3	62	93	0	8	29	100	0	620
06:30	16	115	2	0	130	34	92	0	3	73	103	0	5	48	139	0	760
06:45	15	104	11	0	147	52	82	0	4	60	120	0	14	43	128	0	780
Hr Total	54	369	19	0	540	160	268	0	14	242	417	0	31	166	442	0	2722
07:00	17	87	2	0	144	52	73	0	5	61	125	0	12	53	127	0	758
07:15	23	61	5	0	139	66	80	0	9	75	124	0	13	45	100	0	740
07:30	20	79	7	0	121	66	52	0	15	76	140	0	7	40	67	0	690
07:45	21	78	5	0	136	63	49	0	16	49	168	0	8	51	86	0	730
Total	81	305	19	0	540	247	254	0	45	261	557	0	40	189	380	0	2918
TOTAL	135	674	38	0	1080	407	522	0	59	503	974	0	71	355	822	0	5640

Peak Hour Analysis By Individual Approach for the Period: 06:00 to 08:00 on 03/04/98

Peak start	06:30				06:30				07:00				06:30			
Volume	71	367	20	0	560	204	327	0	45	261	557	0	44	189	494	0
Percent	16%	80%	4%	0%	51%	19%	30%	0%	5%	30%	65%	0%	6%	26%	68%	0%
Pk total	458				1091				863				727			
Highest	06:30				07:15				07:45				06:30			
Volume	16	115	2	0	139	66	80	0	16	49	168	0	5	48	139	0
Hi total	133				285				233				192			
PHF	.86				.96				.93				.95			

Peak Hour Analysis By Entire Intersection for the Period: 06:00 to 08:00 on 03/04/98

Peak start	06:30				06:30				06:30				06:30			
Volume	71	367	20	0	560	204	327	0	21	269	472	0	44	189	494	0
Percent	16%	80%	4%	0%	51%	19%	30%	0%	3%	35%	62%	0%	6%	26%	68%	0%
Pk total	458				1091				762				727			
Highest	06:30				07:15				07:15				06:30			
Volume	16	115	2	0	139	66	80	0	9	75	124	0	5	48	139	0
Hi total	133				285				208				192			
PHF	.86				.96				.92				.95			

Weather : CLEAR
Counter : D1-0525/D1-0527
Counted by: RICK/JEFF

JAMAR Technologies, Inc.
Traffic Counting Equipment & Supplies
2031 Stout Drive, Suite 4
Ivyland, PA 18974

Site Code : 00000003
Start Date: 03/03/98
File I.D. : ULUKAHP
Page : 1

Vehicle group 1

	KAHUAPAANI ST Southbound				ULUNE EXTENSION Westbound				KAHUAPAANI ST Northbound				ULUNE ST Eastbound				
	Left	Thru	Right	Other	Left	Thru	Right	Other	Left	Thru	Right	Other	Left	Thru	Right	Other	Total
Date 03/03/98																	
16:00	39	104	16	0	204	131	24	0	34	49	113	0	7	34	45	0	800
16:15	29	98	8	0	193	160	46	0	30	46	134	0	7	31	54	0	836
16:30	38	104	13	0	232	159	49	0	31	53	117	0	7	35	23	0	861
16:45	35	118	16	0	204	194	48	0	30	42	94	0	14	23	40	0	858
Hr Total	141	424	53	0	833	644	167	0	125	190	458	0	35	123	162	0	3355
17:00	32	97	7	0	205	164	30	0	34	35	106	0	2	38	53	0	803
17:15	40	93	11	0	183	198	43	0	20	51	92	0	9	27	46	0	813
17:30	27	112	8	0	152	155	38	0	20	40	108	0	7	30	52	0	749
17:45	29	81	14	0	138	129	35	0	17	40	99	0	5	16	44	0	647
Total	128	383	40	0	678	646	146	0	91	166	405	0	23	111	195	0	3012
TOTAL	269	807	93	0	1511	1290	313	0	216	356	863	0	58	234	357	0	6367

Peak Hour Analysis By Individual Approach for the Period: 16:00 to 18:00 on 03/03/98

Peak start	16:00				16:30				16:00				16:45				
Volume	141	424	53	0	824	715	170	0	125	190	458	0	32	118	191	0	
Percent	23%	69%	9%	0%	48%	42%	10%	0%	16%	25%	59%	0%	9%	35%	56%	0%	
Pk total	618				1709				773				341				
Highest	16:45				16:45				16:15				17:00				
Volume	35	118	16	0	204	194	48	0	30	46	134	0	2	38	53	0	
Hi total	169				446				210				93				
PHF	.91				.96				.92				.92				

Peak Hour Analysis By Entire Intersection for the Period: 16:00 to 18:00 on 03/03/98

Peak start	16:15				16:15				16:15				16:15				
Volume	134	417	44	0	834	677	173	0	125	176	451	0	30	127	170	0	
Percent	23%	70%	7%	0%	50%	40%	10%	0%	17%	23%	60%	0%	9%	39%	52%	0%	
Pk total	595				1684				752				327				
Highest	16:45				16:45				16:15				17:00				
Volume	35	118	16	0	204	194	48	0	30	46	134	0	2	38	53	0	
Hi total	169				446				210				93				
PHF	.88				.94				.90				.88				

APPENDIX B

LEVEL OF SERVICE DEFINITIONS

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR UNSIGNALIZED INTERSECTIONS

Level of Service (LOS) criteria are given in Table 1. As used here, total delay is defined as the total elapsed time from when a vehicle stops at the end of the queue until the vehicle departs from the stop line; this time includes the time required for the vehicle to travel from the last-in-queue position to the first-in-queue position.

The average total delay for any particular minor movement is a function of the service rate or capacity of the approach and the degree of saturation. In situations where the degree of saturation is greater than about 0.9, the amount of average total delay is also dependent on the length of the analysis period.

Table 1: Level-of-Service Criteria for Unsignalized Intersections

Level of Service	Average Total Delay (Sec/Veh)
A	≤5.0
B	>5.0 and ≤1.0
C	>10.0 and ≤20.0
D	>20.0 and ≤30.0
E	>30.0 and ≤45.0
F	>45.0

"Highway Capacity Manual," Special Report 209, Transportation Research Board, Third Edition, 1994.

LEVEL OF SERVICE DEFINITIONS

LEVEL-OF-SERVICE CRITERIA FOR SIGNALIZED INTERSECTIONS

Level of Service (LOS) for signalized intersections is defined in terms of delay, which is a measure of driver discomfort and frustration, fuel consumption, and lost travel time. Specifically, level-of-service (LOS) criteria are stated in terms of the average stopped delay per vehicle for a 15-min analysis period. The criteria are given in the following table.

Table 1: Level-of-Service Criteria for Signalized Intersections

Level of Service	Stopped Delay for Vehicle (SEC)
A	≤5.0
B	>5.0 and ≤15.0
C	>15.0 and ≤25.0
D	>25.0 and ≤40.0
E	>40.0 and ≤60.0
F	>60.0

Delay is a complex measure and is dependent upon a number of variables, including the quality of progression, the cycle length, the green ratio, and the v/c ratio for the lane group in question.

Level of Service A describes operations with very low delay, up to 5 sec per vehicle. This level of service occurs when progression is extremely favorable and most vehicles arrive during the green phase. Most vehicles do not stop at all. Short cycle lengths may also contribute to low delay.

Level of Service B describes operations with delay greater than 5 and up to 15 sec per vehicle. This level generally occurs with good progression, short cycle lengths, or both. More vehicles stop than which LOS A, causing higher levels of average delay.

Level of Service C describes operations with delay greater than 15 and up to 25 sec per vehicle. These higher delays may result from fair progression, longer cycle lengths, or both. Individual cycle failures may begin to appear at this level, though many still pass through the intersection without stopping.

Level of Service D describes operations with delay greater than 25 and up to 40 sec per vehicle. At level D, the influence of congestion becomes more noticeable. Longer delays may result from some combination of unfavorable progression, long cycle lengths, or high v/c ratios. Many vehicles stop, and the proportion of vehicles not stopping declines. Individual cycle failures are noticeable.

"Highway Capacity Manual," Special Report 209, Transportation Research Board, Third Edition, 1994.

Level of Service E describes operation with delay greater than 40 and up to 60 sec per vehicle. This level is considered by many agencies to be the limit of acceptable delay. These high delay values generally indicate poor progression, long cycle lengths, and high v/c ratios. Individual cycle failures are frequent occurrences.

Level of Service F describes operations with delay in excess of 60 sec per vehicle. This level, considered to be unacceptable to most drivers, often occurs with oversaturation, that is, when arrival flow rates exceed the capacity of the intersection. It may also occur at high v/c ratios below 1.0 with many individual cycle failures. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

"Highway Capacity Manual," Special Report 209, Transportation Research Board, Third Edition, 1994.

APPENDIX C

LEVEL OF SERVICE ANALYSES
EXISTING CONDITIONS

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) IWAENA ST
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....AM PEAK PERIOD (IWAIWAA)
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 < 0		0 > 1		0	0	0	0	0 > 0		< 0
Stop/Yield			N			N						
Volumes		55	327	29	50					144		12
PHF		.96	.96	.9	.9					.89		.89
Grade		0			0						0	
MC's (%)				0						0		
SU/RV's (%)				0						30		
CV's (%)				0						0		
PCE's				1.00						1.15		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	228	
Potential Capacity: (pcph)	1061	
Movement Capacity: (pcph)	1061	
Prob. of Queue-Free State:	0.99	

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	398	
Potential Capacity: (pcph)	1108	
Movement Capacity: (pcph)	1108	
Prob. of Queue-Free State:	0.97	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.97	

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	316	
Potential Capacity: (pcph)	695	
Major LT, Minor TH Impedance Factor:	0.97	
Adjusted Impedance Factor:	0.97	
Capacity Adjustment Factor due to Impeding Movements	0.97	
Movement Capacity: (pcph)	674	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB L	186	674 >	692	7.3	1.4	B	7.3
WB R	14	1061 >					
SB L	32	1108		3.3	0.0	A	1.2

Intersection Delay = 2.0 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) IWAENA ST
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....PM PEAK PERIOD (IWAIWAP)
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1	< 0	0	> 1	0	0	0	0	0	> 0	< 0
Stop/Yield			N			N						
Volumes		125	160	21	76					342		21
PHF		.86	.86	.84	.84					.76		.76
Grade		0			0						0	
MC's (%)				0						0		
SU/RV's (%)				0						9		
CV's (%)				0						0		
PCE's				1.00						1.04		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	238	
Potential Capacity: (pcph)	1049	
Movement Capacity: (pcph)	1049	
Prob. of Queue-Free State:	0.97	

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	331	
Potential Capacity: (pcph)	1192	
Movement Capacity: (pcph)	1192	
Prob. of Queue-Free State:	0.98	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.98	

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	353	
Potential Capacity: (pcph)	661	
Major LT, Minor TH Impedance Factor:	0.98	
Adjusted Impedance Factor:	0.98	
Capacity Adjustment Factor due to Impeding Movements	0.98	
Movement Capacity: (pcph)	646	

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB	L	468	646 >	662	21.5	8.4	D	21.5
WB	R	31	1049 >					
SB	L	25	1192		3.1	0.0	A	0.7

Intersection Delay = 10.6 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) HALAWA VALLEY RD
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....AM PEAK PERIOD (HALIWAA)
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	< 0	0	0	0	1	0	1
Stop/Yield			N			N						
Volumes	385	524			217	8				19		0
PHF	.83	.83			.95	.95				.9		.9
Grade		0			0						0	
MC's (%)	0											0
SU/RV's (%)	18											20
CV's (%)	0											0
PCE's	1.09									1.10		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		232
Potential Capacity: (pcph)		1056
Movement Capacity: (pcph)		1056
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		236
Potential Capacity: (pcph)		1323
Movement Capacity: (pcph)		1323
Prob. of Queue-Free State:		0.62

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		1327
Potential Capacity: (pcph)		180
Major LT, Minor TH Impedance Factor:		0.62
Adjusted Impedance Factor:		0.62
Capacity Adjustment Factor due to Impeding Movements		0.62
Movement Capacity: (pcph)		111

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB L	23	111		40.9	0.8	E	40.9
SB R	0	1056		3.4	0.0	A	
EB L	506	1323		4.4	2.1	A	1.9

Intersection Delay = 2.1 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) HALAWA VALLEY RD
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....PM PEAK PERIOD (HALIWAP)
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	< 0	0	0	0	1	0	1
Stop/Yield			N			N						
Volumes	260	156			517	27				4		0
PHF	.82	.82			.72	.72				.75		.75
Grade		0			0						0	
MC's (%)	0											0
SU/RV's (%)	5											8
CV's (%)	0											0
PCE's	1.02									1.10		1.04

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		736
Potential Capacity: (pcph)		587
Movement Capacity: (pcph)		587
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		755
Potential Capacity: (pcph)		749
Movement Capacity: (pcph)		749
Prob. of Queue-Free State:		0.57

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		1244
Potential Capacity: (pcph)		202
Major LT, Minor TH Impedance Factor:		0.57
Adjusted Impedance Factor:		0.57
Capacity Adjustment Factor due to Impeding Movements		0.57
Movement Capacity: (pcph)		115

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB L	6	115		33.0	0.0	E	33.0
SB R	0	587		6.1	0.0	B	
EB L	323	749		8.4	2.5	B	5.3

Intersection Delay = 2.4 sec/veh

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-07-1998
Center For Microcomputers In Transportation

Streets: (E-W) HALAWA VALLEY RD (N-S) ULUPE EXTENSION
Analyst: CK File Name: ULUHALA.HC9
Area Type: Other 3-4-98 6-8 AM

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	> 3	1	0	0	0	0	1	1
Volumes	464		363	9	807	419					103	244
Lane W (ft)	12.0		12.0		12.0	12.0					12.0	12.0
RTOR Vols			0			209						180
Lost Time	3.00		3.00	3.00	3.00	3.00					3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*							
Thru								
Right	*	*						
Peds								
WB Left		*						
Thru		*						
Right		*						
Peds								
NB Right		*						
SB Right	*	*						
Green	40.0A	28.0P						
Yellow/AR	4.0	4.0						

NB	Left			
	Thru			
	Right			
	Peds			
SB	Left			
	Thru	*		
	Right	*		
	Peds			
EB	Right	*		
WB	Right			
Green		15.0A		
Yellow/AR		4.0		

Cycle Length: 95 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	749	1736	0.721	0.432	16.8	C	9.4	B
	R	1490	1538	0.283	0.968	0.1	A		
WB	LT	1672	5478	0.572	0.305	18.3	C	18.3	C
	R	444	1455	0.504	0.305	18.3	C		
SB	T	242	1439	0.458	0.168	24.0	C	14.9	B
	R	1251	1292	0.054	0.968	0.0	A		

Intersection Delay = 14.4 sec/veh Intersection LOS = B

Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.622

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-07-1998
Center For Microcomputers In Transportation

Streets: (E-W) HALAWA VALLEY RD (N-S) ULUPE EXTENSION
Analyst: CK File Name: ULUHALP.HC9
Area Type: Other 3-3-98 4-6 PM

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	> 3	1	0	0	0	0	1	1
Volumes	179		543	206	1049	211					338	576
Lane W (ft)	12.0		12.0		12.0	12.0					12.0	12.0
RTOR Vols			0			105						430
Lost Time	3.00		3.00	3.00	3.00	3.00					3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*				NB Left			
Thru					Thru			
Right	*	*			Right			
Peds					Peds			
WB Left		*			SB Left			
Thru		*			Thru	*		
Right		*			Right	*		
Peds		*			Peds			
NB Right					EB Right	*		
SB Right	*	*			WB Right			
Green	23.0A	45.0P			Green	40.0A		
Yellow/AR	4.0	4.0			Yellow/AR	4.0		

Cycle Length: 120 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

Lane Group:		Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
Mvmts	Cap							
EB	L	344	1719	0.558	0.200	29.5	D	7.4	B
	R	1544	1583	0.378	0.975	0.1	A		
WB	LT	2146	5598	0.715	0.383	21.1	C	20.8	C
	R	563	1468	0.208	0.383	16.0	C		
SB	T	618	1810	0.729	0.342	25.4	D	17.7	C
	R	1529	1568	0.128	0.975	0.0	A		

Intersection Delay = 16.8 sec/veh Intersection LOS = C
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.687

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-10-1998
Center For Microcomputers In Transportation

Streets: (E-W) ULUNE ST/ULUNE EXT (N-S) KAHUAPAANI ST
Analyst: CK File Name: ULUKAHA.HC9
Area Type: Other 3-4-98 6-8 AM

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	1	> 2	< 0	1	2	0	1	2	< 0
Volumes	40	189		540	247	254	45	261		81	305	19
Lane W (ft)		12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			380			125			557			2
Lost Time	3.00	3.00		3.00	3.00	3.00	3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left *			
Thru		*			Thru	*		
Right		*			Right	*		
Peds					Peds			
WB Left	*				SB Left *			
Thru	*				Thru	*		
Right	*				Right	*		
Peds	*				Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	30.0A	15.0A			Green	9.0A	25.0A	
Yellow/AR	4.0	4.0			Yellow/AR	4.0	4.0	

Cycle Length: 95 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	311	1847	0.932	0.168	49.4	E	49.4	E
WB	L	530	1625	0.534	0.326	17.7	C	18.5	C
	LTR	1143	3504	0.664	0.326	18.8	C		
NB	L	188	1787	0.255	0.105	25.4	D	18.7	C
	T	1030	3762	0.287	0.274	17.6	C		
SB	L	192	1823	0.438	0.105	26.8	D	19.6	C
	TR	1042	3807	0.339	0.274	17.9	C		

Intersection Delay = 23.0 sec/veh Intersection LOS = C

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.587

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-10-1998
Center For Microcomputers In Transportation

Streets: (E-W) ULUNE ST/ULUNE EXT (N-S) KAHUAPAANI ST
Analyst: CK File Name: ULUKAHP.HC9
Area Type: Other 3-4-98 4-6 PM

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	1	> 2	< 0	1	2	0	1	2	< 0
Volumes	35	123		833	644	167	125	190		141	424	53
Lane W (ft)		12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			162			82			458			5
Lost Time	3.00	3.00		3.00	3.00	3.00	3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left	*		
Thru		*			Thru		*	
Right		*			Right		*	
Peds					Peds		*	
WB Left	*				SB Left	*		
Thru	*				Thru		*	
Right	*				Right		*	
Peds	*				Peds		*	
NB Right					EB Right			
SB Right					WB Right			
Green	60.0A	14.0A			Green	10.0A	20.0A	
Yellow/AR	4.0	4.0			Yellow/AR	4.0	4.0	

Cycle Length: 120 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	228	1825	0.793	0.125	44.6	E	44.6	E
WB	L	882	1735	0.593	0.508	14.2	B	14.8	B
	LTR	1823	3586	0.677	0.508	15.0	B		
NB	L	164	1787	0.830	0.092	53.9	E	38.0	D
	T	658	3762	0.330	0.175	28.1	D		
SB	L	158	1720	0.983	0.092	85.2	F	47.4	E
	TR	661	3779	0.824	0.175	36.7	D		

Intersection Delay = 27.0 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.753

APPENDIX D

LEVEL OF SERVICE ANALYSES FOR YEAR 2002 WITH LIGHT INDUSTRIAL DEVELOPMENT IN PLACE OF THE CORPORATION YARD

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) IWAENA ST
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....AM PEAK PERIOD WITHOUT PROJ (IWAIWAAP)
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 < 0		0	> 1	0	0	0	0	0	> 0	< 0
Stop/Yield			N			N						
Volumes		55	471	42	50					160		13
PHF		.96	.96	.9	.9					.89		.89
Grade		0			0						0	
MC's (%)				0						0		
SU/RV's (%)				0						30		
CV's (%)				0						0		
PCE's				1.00						1.15		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	302	
Potential Capacity: (pcph)	973	
Movement Capacity: (pcph)	973	
Prob. of Queue-Free State:	0.98	

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	548	
Potential Capacity: (pcph)	940	
Movement Capacity: (pcph)	940	
Prob. of Queue-Free State:	0.95	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.95	

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	406	
Potential Capacity: (pcph)	616	
Major LT, Minor TH Impedance Factor:	0.95	
Adjusted Impedance Factor:	0.95	
Capacity Adjustment Factor due to Impeding Movements	0.95	
Movement Capacity: (pcph)	584	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB L	207	584 >	602	9.5	2.0	B	9.5
WB R	17	973 >					
SB L	47	940		4.0	0.0	A	1.8

Intersection Delay = 2.3 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) IWAENA ST
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....PM PEAK PERIOD WITHOUT PROJ (IWAIWAPP)
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 < 0		0	> 1	0	0	0	0	0	> 0 < 0	
Stop/Yield			N			N						
Volumes		125	182	24	76					487		30
PHF		.86	.86	.84	.84					.76		.76
Grade		0			0						0	
MC's (%)				0						0		
SU/RV's (%)				0						9		
CV's (%)				0						0		
PCE's				1.00						1.04		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	251	
Potential Capacity: (pcph)	1033	
Movement Capacity: (pcph)	1033	
Prob. of Queue-Free State:	0.96	

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	357	
Potential Capacity: (pcph)	1159	
Movement Capacity: (pcph)	1159	
Prob. of Queue-Free State:	0.97	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.97	

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	370	
Potential Capacity: (pcph)	647	
Major LT, Minor TH Impedance Factor:	0.97	
Adjusted Impedance Factor:	0.97	
Capacity Adjustment Factor due to Impeding Movements	0.97	
Movement Capacity: (pcph)	630	

Intersection Performance Summary

Movement		Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB	L	667	630 >	645	235.1	50.7	F	235.1
WB	R	43	1033 >					
SB	L	29	1159		3.2	0.0	A	0.8

Intersection Delay = 131.7 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) HALAWA VALLEY RD
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....AM PEAK PERIOD WITHOUT PROJ.(HALIWAAP)
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	< 0	0	0	0	1	0	1
Stop/Yield			N			N						
Volumes	526	524			217	11				21		0
PHF	.83	.83			.95	.95				.9		.9
Grade		0			0						0	
MC's (%)	0											0
SU/RV's (%)	18											20
CV's (%)	0											0
PCE's	1.09									1.10		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		234
Potential Capacity: (pcph)		1054
Movement Capacity: (pcph)		1054
Prob. of Queue-Free State:		1.00
Step 2: LT from Major Street	**WB**	**EB**
Conflicting Flows: (vph)		240
Potential Capacity: (pcph)		1317
Movement Capacity: (pcph)		1317
Prob. of Queue-Free State:		0.48
Step 4: LT from Minor Street	**NB**	**SB**
Conflicting Flows: (vph)		1499
Potential Capacity: (pcph)		143
Major LT, Minor TH Impedance Factor:		0.48
Adjusted Impedance Factor:		0.48
Capacity Adjustment Factor due to Impeding Movements		0.48
Movement Capacity: (pcph)		68

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB L	25	68		82.9	1.6	F	
SB R	0	1054		3.4	0.0	A	82.9
EB L	691	1317		5.7	3.6	B	2.9

Intersection Delay = 3.7 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) HALAWA VALLEY RD
Major Street Direction.... EW
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....PM PEAK PERIOD WITHOUT PROJ(HALIWAPP)
Two-way Stop-controlled Intersection

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1	< 0	0	0	0	1	0	1
Stop/Yield			N			N						
Volumes	280	156			517	29				5		0
PHF	.82	.82			.72	.72				.75		.75
Grade		0			0						0	
MC's (%)	0											0
SU/RV's (%)	5											8
CV's (%)	0											0
PCE's	1.02									1.10		1.04

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	NB	SB
Conflicting Flows: (vph)		738
Potential Capacity: (pcph)		585
Movement Capacity: (pcph)		585
Prob. of Queue-Free State:		1.00

Step 2: LT from Major Street	WB	EB
Conflicting Flows: (vph)		758
Potential Capacity: (pcph)		746
Movement Capacity: (pcph)		746
Prob. of Queue-Free State:		0.53

Step 4: LT from Minor Street	NB	SB
Conflicting Flows: (vph)		1269
Potential Capacity: (pcph)		195
Major LT, Minor TH Impedance Factor:		0.53
Adjusted Impedance Factor:		0.53
Capacity Adjustment Factor due to Impeding Movements		0.53
Movement Capacity: (pcph)		104

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
SB L	8	104		37.5	0.2	E	37.5
SB R	0	585		6.2	0.0	B	
EB L	348	746		9.0	2.8	B	5.8

Intersection Delay = 2.8 sec/veh

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-07-1998
Center For Microcomputers In Transportation

Streets: (E-W) HALAWA VALLEY RD (N-S) ULUPE EXTENSION
Analyst: CK File Name: ULUHA-AP.HC9
Area Type: Other 3-4-98 AM PEAK
Comment: PROJECTED TO YEAR 2002 WITHOUT PROJECT

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	> 3	1	0	0	0	0	1	1
Volumes	538		377	9	825	486					107	254
Lane W (ft)	12.0		12.0		12.0	12.0					12.0	12.0
RTOR Vols			0			243						180
Lost Time	3.00		3.00	3.00	3.00	3.00					3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*							
Thru								
Right	*	*						
Peds								
WB Left		*						
Thru		*						
Right		*						
Peds		*						
NB Right								
SB Right	*	*						
Green	40.0A	28.0P						
Yellow/AR	4.0	4.0						

NB Left					
Thru					
Right					
Peds					
SB Left					
Thru	*				
Right	*				
Peds					
EB Right	*				
WB Right					
Green	15.0A				
Yellow/AR	4.0				

Cycle Length: 95 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	749	1736	0.836	0.432	21.2	C	12.5	B
	R	1490	1538	0.294	0.968	0.1	A		
WB	LT	1672	5478	0.584	0.305	18.4	C	18.6	C
	R	444	1455	0.581	0.305	19.4	C		
SB	T	242	1439	0.474	0.168	24.2	C	14.4	B
	R	1251	1292	0.063	0.968	0.0	A		

Intersection Delay = 15.7 sec/veh Intersection LOS = C
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.684

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-07-1998
Center For Microcomputers In Transportation

Streets: (E-W) HALAWA VALLEY RD (N-S) ULUPE EXTENSION
Analyst: CK File Name: ULUHA-PP.HC9
Area Type: Other 3-3-98 PM PEAK
Comment: PROJECTED TO YEAR 2002 WITHOUT PROJECT (4-5 PM)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	> 3	1	0	0	0	0	1	1
Volumes	188		555	206	1078	222					391	667
Lane W (ft)	12.0		12.0		12.0	12.0					12.0	12.0
RTOR Vols			0			105						430
Lost Time	3.00		3.00	3.00	3.00	3.00					3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*							
Thru								
Right	*	*						
Peds								
WB Left		*						
Thru		*						
Right		*						
Peds		*						
NB Right								
SB Right	*	*						
Green	23.0A	45.0P						
Yellow/AR	4.0	4.0						

NB Left								
Thru								
Right								
Peds								
SB Left								
Thru	*							
Right	*							
Peds								
EB Right	*							
WB Right								
Green	40.0A							
Yellow/AR	4.0							

Cycle Length: 120 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	344	1719	0.588	0.200	30.0	D	7.7	B
	R	1544	1583	0.387	0.975	0.1	A		
WB	LT	2146	5599	0.732	0.383	21.4	C	21.0	C
	R	563	1468	0.231	0.383	16.2	C		
SB	T	618	1810	0.843	0.342	30.8	D	19.2	C
	R	1529	1568	0.207	0.975	0.0	A		

Intersection Delay = 17.4 sec/veh Intersection LOS = C
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.741

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-10-1998
Center For Microcomputers In Transportation

Streets: (E-W) ULUNE ST/ULUNE EXT (N-S) KAHUAPAANI ST
Analyst: CK File Name: ULUKAHAP.HC9
Area Type: Other 3-4-98 AM PEAK
Comment: PROJECTED TO YEAR 2002 WITHOUT PROJECT

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	1	> 2	< 0	1	2	0	1	2	< 0
Volumes	41	209		555	253	261	46	266		89	310	19
Lane W (ft)		12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			387			130			617			2
Lost Time	3.00	3.00		3.00	3.00	3.00	3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination		1	2	3	4			5	6	7	8
EB	Left		*			NB	Left	*			
	Thru		*				Thru		*		
	Right		*				Right		*		
	Peds						Peds		*		
WB	Left	*				SB	Left	*			
	Thru	*					Thru		*		
	Right	*					Right		*		
	Peds	*					Peds		*		
NB	Right					EB	Right				
SB	Right					WB	Right				
Green		30.0A	15.0A			Green		9.0A	25.0A		
Yellow/AR		4.0	4.0			Yellow/AR		4.0	4.0		

Cycle Length: 95 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	311	1848	1.018	0.168	70.0	F	70.0	F
WB	L	530	1625	0.549	0.326	17.9	C	18.7	C
	LTR	1144	3505	0.680	0.326	19.1	C		
NB	L	188	1787	0.260	0.105	25.4	D	18.7	C
	T	1030	3762	0.291	0.274	17.6	C		
SB	L	192	1823	0.485	0.105	27.4	D	19.9	C
	TR	1042	3808	0.344	0.274	17.9	C		

Intersection Delay = 26.4 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.616

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-24-1998
Center For Microcomputers In Transportation

Streets: (E-W) ULUNE ST/ULUNE EXT (N-S) KAHUAPAANI ST
Analyst: CK File Name: ULUKAHPP.HC9
Area Type: Other 3-4-98 PM PEAK
Comment: PROJECTED TO YEAR 2002 WITHOUT PROJECT (4-5PM)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	1	> 2	< 0	1	2	0	1	2	< 0
Volumes	36	126		894	691	179	127	193		145	431	54
Lane W (ft)		12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			165			88			472			5
Lost Time	3.00	3.00		3.00	3.00	3.00	3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left	*		
Thru		*			Thru		*	
Right		*			Right		*	
Peds					Peds		*	
WB Left	*				SB Left	*		
Thru	*				Thru		*	
Right	*				Right		*	
Peds	*				Peds		*	
NB Right					EB Right			
SB Right					WB Right			
Green	60.0A	14.0A			Green	10.0A	20.0A	
Yellow/AR	4.0	4.0			Yellow/AR	4.0	4.0	

Cycle Length: 120 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Group: Mvmts	Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	228	1825	0.815	0.125	46.6	E	46.6	E
WB	L	882	1735	0.637	0.508	15.0	B	15.6	C
	LTR	1823	3586	0.726	0.508	15.9	C		
NB	L	164	1787	0.842	0.092	55.5	E	38.7	D
	T	658	3762	0.334	0.175	28.1	D		
SB	L	158	1720	1.008	0.092	93.0	F	49.8	E
	TR	661	3779	0.838	0.175	37.4	D		

Intersection Delay = 27.8 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.789

APPENDIX E

LEVEL OF SERVICE ANALYSES FOR YEAR 2002 WITH PROPOSED HALAWA CORPORATION YARD

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) IWAENA ST
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....AM PEAK PERIOD W/PROJECT (IWAIWAAW)
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 < 0		0 > 1		0	0	0	0	0 > 0		< 0
Stop/Yield			N			N						
Volumes		55	332	29	50					280		23
PHF		.96	.96	.9	.9					.89		.89
Grade		0			0						0	
MC's (%)				0						0		
SU/RV's (%)				0						30		
CV's (%)				0						0		
PCE's				1.00						1.15		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	230	
Potential Capacity: (pcph)	1059	
Movement Capacity: (pcph)	1059	
Prob. of Queue-Free State:	0.97	

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	403	
Potential Capacity: (pcph)	1102	
Movement Capacity: (pcph)	1102	
Prob. of Queue-Free State:	0.97	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.97	

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	318	
Potential Capacity: (pcph)	693	
Major LT, Minor TH Impedance Factor:	0.97	
Adjusted Impedance Factor:	0.97	
Capacity Adjustment Factor due to Impeding Movements	0.97	
Movement Capacity: (pcph)	672	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB L	362	672 >	691	11.9	4.1	C	11.9
WB R	29	1059 >					
SB L	32	1102		3.4	0.0	A	1.2

Intersection Delay = 4.8 sec/veh

Center For Microcomputers In Transportation
University of Florida
512 Weil Hall
Gainesville, FL 32611-6585
Ph: (352) 392-0378

Streets: (N-S) IWAIWA ST (E-W) IWAENA ST
Major Street Direction.... NS
Length of Time Analyzed... 60 (min)
Analyst..... CK
Date of Analysis..... 2/26/98
Other Information.....PM PEAK PERIOD W/PROJECT (IWAIWAPW)
Two-way Stop-controlled Intersection

	Northbound			Southbound			Eastbound			Westbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	1 < 0		0 > 1		0	0	0	0	0 > 0		< 0
Stop/Yield			N			N						
Volumes		125	164	22	76					320		20
PHF		.86	.86	.84	.84					.76		.76
Grade		0			0						0	
MC's (%)				0						0		
SU/RV's (%)				0						9		
CV's (%)				0						0		
PCE's				1.00						1.04		1.10

Adjustment Factors

Vehicle Maneuver	Critical Gap (tg)	Follow-up Time (tf)
Left Turn Major Road	5.00	2.10
Right Turn Minor Road	5.50	2.60
Through Traffic Minor Road	6.00	3.30
Left Turn Minor Road	6.50	3.40

Worksheet for TWSC Intersection

Step 1: RT from Minor Street	WB	EB
Conflicting Flows: (vph)	240	
Potential Capacity: (pcph)	1046	
Movement Capacity: (pcph)	1046	
Prob. of Queue-Free State:	0.97	

Step 2: LT from Major Street	SB	NB
Conflicting Flows: (vph)	336	
Potential Capacity: (pcph)	1186	
Movement Capacity: (pcph)	1186	
Prob. of Queue-Free State:	0.98	
TH Saturation Flow Rate: (pcphpl)	1700	
RT Saturation Flow Rate: (pcphpl)		
Major LT Shared Lane Prob. of Queue-Free State:	0.98	

Step 4: LT from Minor Street	WB	EB
Conflicting Flows: (vph)	356	
Potential Capacity: (pcph)	659	
Major LT, Minor TH Impedance Factor:	0.98	
Adjusted Impedance Factor:	0.98	
Capacity Adjustment Factor due to Impeding Movements	0.98	
Movement Capacity: (pcph)	644	

Intersection Performance Summary

Movement	Flow Rate (pcph)	Move Cap (pcph)	Shared Cap (pcph)	Avg. Total Delay (sec/veh)	95% Queue Length (veh)	LOS	Approach Delay (sec/veh)
WB L	438	644 >	660	18.3	7.0	C	18.3
WB R	29	1046 >					
SB L	26	1186		3.1	0.0	A	0.7

Intersection Delay = 8.7 sec/veh

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-10-1998
Center For Microcomputers In Transportation

Streets: (E-W) HALAWA VALLEY RD (N-S) IWAIWA ST
Analyst: CK File Name: HALI-AWI.HC9
Area Type: Other 4-22-98 AM PEAK
Comment: AM PEAK PERIOD W/PROJECT W/IMPROV (HALI-AWI)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1 <	0	0	0	0	1	0	0
Volumes	390	524			217	8				32		
Lane W (ft)	12.0	12.0			12.0					12.0		
RTOR Vols			0			4						299
Lost Time	3.00	3.00			3.00	3.00				3.00		

Signal Operations

Phase Combination	1	2	3	4		5	6	7	8
EB Left	*				NB Left				
Thru	*	*			Thru				
Right					Right				
Peds					Peds				
WB Left					SB Left	*			
Thru		*			Thru				
Right		*			Right	*			
Peds					Peds				
NB Right					EB Right				
SB Right					WB Right				
Green	22.0P	19.0P			Green	11.0P			
Yellow/AR	0.0	4.0			Yellow/AR	4.0			

Cycle Length: 60 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	560	1770	0.839	0.317	22.1	C	11.3	B
	T	1304	1863	0.484	0.700	3.3	A		
WB	TR	557	1672	0.416	0.333	12.1	B	12.1	B
SB	L	354	1770	0.102	0.200	14.9	B	14.9	B

Intersection Delay = 11.6 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.500

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-10-1998
Center For Microcomputers In Transportation

Streets: (E-W) HALAWA CRUSHER RD (N-S) IWAIWA ST
Analyst: CK File Name: HALI-PWI.HC9
Area Type: Other 4-22-98 AM PEAK
Comment: 4-5 PM PEAK PERIOD W/PROJECT W/IMPROV (HALI-PWI)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	1	0	0	1 <	0	0	0	0	1	0	0
Volumes	264	156			517	27				4		
Lane W (ft)	12.0	12.0			12.0					12.0		
RTOR Vols			0			13						404
Lost Time	2.00	2.00			2.00	2.00				2.00		

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*							
Thru	*	*						
Right								
Peds								
WB Left								
Thru		*						
Right		*						
Peds								
NB Right								
SB Right								
Green	17.0P	25.0P						
Yellow/AR	0.0	4.0						
NB Left					*			
Thru								
Right								
Peds								
SB Left					*			
Thru								
Right					*			
Peds								
EB Right								
WB Right								
Green					10.0P			
Yellow/AR					4.0			

Cycle Length: 60 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	442	1770	0.719	0.250	19.5	C	12.9	B
	T	1366	1863	0.138	0.733	1.8	A		
WB	TR	752	1670	0.742	0.450	13.1	B	13.1	B
SB	L	354	1770	0.011	0.200	14.6	B	14.6	B

Intersection Delay = 13.0 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 6.0 sec Critical v/c(x) = 0.573

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-07-1998
Center For Microcomputers In Transportation

Streets: (E-W) HALAWA VALLEY RD (N-S) ULUPE EXTENSION
Analyst: CK File Name: ULUHA-AW.HC9
Area Type: Other 3-4-98 AM PEAK
Comment: PROJECTED TO YEAR 2002 WITH PROJECT

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	> 3	1	0	0	0	0	1	1
Volumes	467		377	9	825	421					140	330
Lane W (ft)	12.0		12.0		12.0	12.0					12.0	12.0
RTOR Vols			0			217						180
Lost Time	3.00		3.00	3.00	3.00	3.00					3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*							
Thru								
Right	*	*						
Peds								
WB Left		*						
Thru		*						
Right		*						
Peds		*						
NB Right								
SB Right	*	*						
Green	40.0A	28.0P			15.0A			
Yellow/AR	4.0	4.0			4.0			

Cycle Length: 95 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	749	1736	0.725	0.432	16.9	C	9.4	B
	R	1490	1538	0.294	0.968	0.1	A		
WB	LT	1672	5478	0.584	0.305	18.4	C	18.4	C
	R	444	1455	0.489	0.305	18.1	C		
SB	T	242	1439	0.623	0.168	27.1	D	13.2	B
	R	1251	1292	0.129	0.968	0.0	A		

Intersection Delay = 14.2 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.659

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-07-1998
Center For Microcomputers In Transportation

Streets: (E-W) HALAWA VALLEY RD (N-S) ULUPE EXTENSION
Analyst: CK File Name: ULUHA-PW.HC9
Area Type: Other 3-3-98 PM PEAK
Comment: PROJECTED TO YEAR 2002 WITH PROJECT (4-5 PM)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	> 3	1	0	0	0	0	1	1
Volumes	181		555	206	1078	213					330	562
Lane W (ft)	12.0		12.0		12.0	12.0					12.0	12.0
RTOR Vols			0			107						430
Lost Time	3.00		3.00	3.00	3.00	3.00					3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*							
Thru								
Right	*	*						
Peds								
WB Left		*						
Thru		*						
Right		*						
Peds		*						
NB Right								
SB Right	*	*						
Green	23.0A	45.0P						
Yellow/AR	4.0	4.0						

	5
NB Left	
Thru	
Right	
Peds	
SB Left	
Thru	*
Right	*
Peds	
EB Right	*
WB Right	
Green	40.0A
Yellow/AR	4.0

Cycle Length: 120 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	344	1719	0.567	0.200	29.6	D	7.4	B
	R	1544	1583	0.387	0.975	0.1	A		
WB	LT	2146	5599	0.732	0.383	21.4	C	21.0	C
	R	563	1468	0.210	0.383	16.1	C		
SB	T	618	1810	0.712	0.342	24.9	C	17.8	C
	R	1529	1568	0.115	0.975	0.0	A		

Intersection Delay = 16.9 sec/veh Intersection LOS = C
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.689

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-10-1998
Center For Microcomputers In Transportation

Streets: (E-W) ULUNE ST/ULUNE EXT (N-S) KAHUAPAANI ST
Analyst: CK File Name: ULUKAHAW.HC9
Area Type: Other 3-4-98 AM PEAK
Comment: PROJECTED TO YEAR 2002 WITH PROJECT

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	1	> 2	< 0	1	2	0	1	2	< 0
Volumes	41	190		595	271	279	46	266		82	310	19
Lane W (ft)		12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			387			125			559			2
Lost Time	3.00	3.00		3.00	3.00	3.00	3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left *			
Thru		*			Thru	*		
Right		*			Right	*		
Peds					Peds	*		
WB Left	*				SB Left *			
Thru	*				Thru	*		
Right	*				Right	*		
Peds	*				Peds	*		
NB Right					EB Right			
SB Right					WB Right			
Green	30.0A	15.0A			Green	9.0A	25.0A	
Yellow/AR	4.0	4.0			Yellow/AR	4.0	4.0	

Cycle Length: 95 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	311	1847	0.942	0.168	51.2	E	51.2	E
WB	L	530	1625	0.588	0.326	18.5	C	19.8	C
	LTR	1141	3498	0.745	0.326	20.3	C		
NB	L	188	1787	0.260	0.105	25.4	D	18.7	C
	T	1030	3762	0.291	0.274	17.6	C		
SB	L	192	1823	0.443	0.105	26.9	D	19.7	C
	TR	1042	3808	0.344	0.274	17.9	C		

Intersection Delay = 23.7 sec/veh Intersection LOS = C
Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.621

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-10-1998
Center For Microcomputers In Transportation

Streets: (E-W) ULUNE ST/ULUNE EXT (N-S) KAHUAPAANI ST
Analyst: CK File Name: ULUKAHPW.HC9
Area Type: Other 3-4-98 PM PEAK
Comment: PROJECTED TO YEAR 2002 WITH PROJECT (4-5 PM)

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	1	> 2	< 0	1	2	0	1	2	< 0
Volumes	36	125		841	649	169	127	193		144	431	54
Lane W (ft)		12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			165			80			467			5
Lost Time	3.00	3.00		3.00	3.00	3.00	3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left	*		
Thru		*			Thru		*	
Right		*			Right		*	
Peds					Peds		*	
WB Left	*				SB Left	*		
Thru	*				Thru		*	
Right	*				Right		*	
Peds	*				Peds		*	
NB Right					EB Right			
SB Right					WB Right			
Green	60.0A	14.0A			Green	10.0A	20.0A	
Yellow/AR	4.0	4.0			Yellow/AR	4.0	4.0	

Cycle Length: 120 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	228	1825	0.811	0.125	46.1	E	46.1	E
WB	L	882	1735	0.599	0.508	14.3	B	14.9	B
	LTR	1822	3585	0.684	0.508	15.1	C		
NB	L	164	1787	0.842	0.092	55.5	E	38.7	D
	T	658	3762	0.334	0.175	28.1	D		
SB	L	158	1720	1.002	0.092	91.0	F	49.3	E
	TR	661	3779	0.838	0.175	37.4	D		

Intersection Delay = 27.7 sec/veh Intersection LOS = D

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.764

APPENDIX F

LEVEL OF SERVICE ANALYSES FOR YEAR 2002 WITH PROPOSED HALAWA CORPORATION YARD AND IMPROVEMENTS

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-24-1998
Center For Microcomputers In Transportation

Streets: (E-W) HALAWA VALLEY RD (N-S) ULUPE EXTENSION
Analyst: CK File Name: ULUHA-WI.HC9
Area Type: Other 3-4-98 AM PEAK
Comment: PROJECTED TO YEAR 2002 WITH PROJECT W/ IMPROVEMENTS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	1	0	1	0	> 3	1	0	0	0	0	1	1
Volumes	467		377	9	825	421					140	330
Lane W (ft)	12.0		12.0		12.0	12.0					12.0	12.0
RTOR Vols			0			217						180
Lost Time	3.00		3.00	3.00	3.00	3.00					3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left	*							
Thru								
Right	*	*						
Peds								
WB Left		*						
Thru		*						
Right		*						
Peds		*						
NB Right								
SB Right	*	*						
Green	40.0A	26.0A						
Yellow/AR	4.0	4.0						

NB Left								
Thru								
Right								
Peds								
SB Left								
Thru	*							
Right	*							
Peds								
EB Right	*							
WB Right								
Green	17.0A							
Yellow/AR	4.0							

Cycle Length: 95 secs Phase combination order: #1 #2 #5

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	L	749	1736	0.725	0.432	16.9	C	9.4	B
	R	1489	1538	0.294	0.968	0.1	A		
WB	LT	1557	5478	0.628	0.284	19.7	C	19.7	C
	R	414	1455	0.525	0.284	19.5	C		
SB	T	273	1439	0.554	0.189	24.4	C	11.8	B
	R	1251	1292	0.129	0.968	0.0	A		

Intersection Delay = 14.6 sec/veh Intersection LOS = B
Lost Time/Cycle, L = 9.0 sec Critical v/c(x) = 0.658

@bfont3; HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-10-1998
Center For Microcomputers In Transportation

Streets: (E-W) ULUNE ST/ULUNE EXT (N-S) KAHUAPAANI ST
Analyst: CK File Name: ULUKA-WI.HC9
Area Type: Other 3-4-98 AM PEAK
Comment: PROJECTED TO YEAR 2002 WITH PROJECT W/ IMPROVEMENTS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	1	> 2	< 0	1	2	0	1	2	< 0
Volumes	41	190		595	271	279	46	266		82	310	19
Lane W (ft)		12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			387			125			559			2
Lost Time	3.00	3.00		3.00	3.00	3.00	3.00	3.00		3.00	3.00	3.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left	*		
Thru		*			Thru		*	
Right		*			Right		*	
Peds					Peds		*	
WB Left		*			SB Left	*		
Thru		*			Thru		*	
Right		*			Right		*	
Peds		*			Peds		*	
NB Right					EB Right			
SB Right					WB Right			
Green		34.0A	22.0A		Green	8.0A	15.0A	
Yellow/AR		4.0	4.0		Yellow/AR	4.0	4.0	

Cycle Length: 95 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	447	1847	0.655	0.242	23.4	C	23.4	C
WB	L	599	1625	0.521	0.368	15.8	C	16.7	C
	LTR	1289	3498	0.660	0.368	17.1	C		
NB	L	169	1787	0.289	0.095	26.1	D	23.9	C
	T	634	3762	0.473	0.168	23.5	C		
SB	L	173	1823	0.492	0.095	28.2	D	25.0	C
	TR	641	3808	0.558	0.168	24.3	C		

Intersection Delay = 20.3 sec/veh Intersection LOS = C

Lost Time/Cycle, L = 12.0 sec Critical v/c(x) = 0.621

HCM: SIGNALIZED INTERSECTION SUMMARY Version 2.4f 07-10-1998
Center For Microcomputers In Transportation

Streets: (E-W) ULUNE ST/ULUNE EXT (N-S) KAHUAPAANI ST
Analyst: CK File Name: ULUKP-WI.HC9
Area Type: Other 3-4-98 PM PEAK
Comment: PROJECTED TO YEAR 2002 WITH PROJECT (4-5 PM) W/ IMPROVEMENTS

	Eastbound			Westbound			Northbound			Southbound		
	L	T	R	L	T	R	L	T	R	L	T	R
No. Lanes	0	> 1	0	1	> 2	< 0	1	2	0	1	2	< 0
Volumes	36	125		841	649	169	127	193		144	431	54
Lane W (ft)		12.0		12.0	12.0		12.0	12.0		12.0	12.0	
RTOR Vols			165			0			467			5
Lost Time	2.00	2.00		2.00	2.00	2.00	2.00	2.00		2.00	2.00	2.00

Signal Operations

Phase Combination	1	2	3	4	5	6	7	8
EB Left		*			NB Left	*		
Thru		*			Thru		*	
Right		*			Right	*	*	
Peds					Peds			
WB Left	*				SB Left	*		
Thru	*				Thru		*	
Right	*				Right		*	
Peds					Peds			
NB Right					EB Right			
SB Right					WB Right			
Green	54.0A	15.0A			Green	13.0A	22.0A	
Yellow/AR	4.0	4.0			Yellow/AR	4.0	4.0	

Cycle Length: 120 secs Phase combination order: #1 #2 #5 #6

Intersection Performance Summary

	Lane Mvmts	Group: Cap	Adj Sat Flow	v/c Ratio	g/C Ratio	Delay	LOS	Approach: Delay	LOS
EB	LT	259	1825	0.716	0.142	37.9	D	37.9	D
WB	L	810	1735	0.652	0.467	17.2	C	19.1	C
	LTR	1659	3555	0.807	0.467	19.9	C		
NB	L	223	1787	0.618	0.125	35.7	D	30.0	D
	T	752	3762	0.292	0.200	26.4	D		
SB	L	215	1720	0.735	0.125	40.9	E	33.7	D
	TR	756	3779	0.733	0.200	31.6	D		

Intersection Delay = 24.8 sec/veh Intersection LOS = C
Lost Time/Cycle, L = 8.0 sec Critical v/c(x) = 0.768

APPENDIX G

STATE DEPARTMENT OF TRANSPORTATION
AND
CITY DEPARTMENT OF TRANSPORTATION SERVICES
COMMENT LETTERS

BENJAMIN J. CAYETANO
GOVERNOR

6139-01

KAZU HAYASHIDA
DIRECTOR

DEPUTY DIRECTORS
BRIAN K. MINAAI
GLENN M. OKIMOTO

PP
FILE

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

IN REPLY REFER TO:
HWY-PS
2.3611

MAY 3 1999

cc: DDC, C LAU
5/5/99

Mr. John L. Sakaguchi
Senior Planner
Wilson Okamoto & Associates
1907 S. Beretania Street
Honolulu, Hawaii 96826

RECEIVED
MAY 04 1999
WILSON OKAMOTO & ASSOC, INC

Dear Mr. Sakaguchi:

Subject: Traffic Impact Report for Halawa Corporation Yard
Aiea, Oahu, TMK: 9-9-73: 27

Thank you for your transmittal of March 16, 1999, requesting our review and comments regarding the above subject.

We have the following comments:

1. Applicant should monitor the traffic and install, at his cost, the traffic signal at the intersection of Iwaiwa Street with Halawa Crusher Road when it is warranted.

2. The report should evaluate other roadway mitigation measures besides modification of existing traffic signal phasing and timing at the intersection of (a) Ulune Street and Kahuapaani Street and (b) Ulune Street Extension and Halawa Crusher Road.

3. Plans must be submitted to us for review and approval for all work done within our State rights-of-way.

Very truly yours,

Kazu Hayashida

KAZU HAYASHIDA
Director of Transportation

L139-01
JS
5/3/99

oc: DDC, C LAU
VIA FAX

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
PACIFIC PARK PLAZA • 711 KAPIOLANI BOULEVARD, SUITE 1200 • HONOLULU, HAWAII 96813
PHONE: (808) 523-4529 • FAX: (808) 523-4730

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

JOSEPH M. MAGALDI, JR.
DEPUTY DIRECTOR

April 26, 1999

TPD3/99-01345R

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto & Associates, Inc.
1907 S. Beretania Street
Honolulu, Hawaii 96826

APR 28 1999

Dear Mr. Sakaguchi:

Subject: Halawa Corporation Yard

In response to your March 16, 1999 letter, the traffic impact report for the subject project was reviewed. The following comments are the result of this review:

1. Adequate off-street parking, at a minimum complying with the requirements of the Land Use Ordinance, should be provided.

2. A traffic signal warrant study should be conducted as part of this project and submitted to the City for review. If it is found that traffic signals are warranted, the installation of these signals should be included as part of the project and the related costs borne by the project.

Should you have any questions regarding these comments, please contact Faith Miyamoto of the Transportation Planning Division at 527-6976.

Sincerely,

Cheryl D. Soon

CHERYL D. SOON
Director

APPENDIX E

6139-01

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

MICHAEL D. WILSON, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES

DEPUTIES 9/17

GILBERT COLOMA-AGARAN

AQUACULTURE DEVELOPMENT PROGRAM
AQUATIC RESOURCES
CONSERVATION AND RESOURCES ENFORCEMENT
CONVEYANCES
FORESTRY AND WILDLIFE
HISTORIC PRESERVATION DIVISION
LAND DIVISION
STATE PARKS
WATER AND LAND DEVELOPMENT

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

STATE HISTORIC PRESERVATION DIVISION
33 SOUTH KING STREET, 6TH FLOOR
HONOLULU, HAWAII 96813

cc: C LAU, BLDG
VIA FAX

September 9, 1997

RECEIVED
SEP 15 1997
WILSON OKAMOTO & ASSOC. INC

John Sakaguchi
Wilson Okamoto & Associates
1907 S. Beretania Street
Honolulu, Hawaii 96826

LOG NO: 20096
DOC NO: 9709EJ05

Dear Mr. Sakaguchi:

SUBJECT: **Chapter 6E-8 Historic Preservation Review -- Halawa Corporation Yard**
Halawa, 'Ewa, O'ahu
TMK: 9-9-73:23 and 27

A review of our records shows that there are no known historic sites at either of these two parcels. Aerial photos taken in the late 1970s show that these parcels had been graded. More recently, parcel 27 has been fully developed and portions of the parcel are now under the H-3 viaduct. It is highly unlikely that significant historic sites remain in area. Therefore, we believe that this project will have "no effect" on such sites.

If you have any questions please call Elaine Jourdane at 587-0015.

Aloha,

Don Hibbard, Administrator
Historic Preservation Division

EJ:jk

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS

1907 S. BERETANIA STREET
HONOLULU, HAWAII 96826
PH: (808) 946-2277
FAX: (808) 946-2253

Mailing address:
P. O. Box 3530
Honolulu, Hawaii 96811

6139-01
August 27, 1997

Ms. Muffet Jourdan, Archeologist
Historic Preservation Office
Department of Land and Natural Resources
State of Hawaii
33 South King Street
Honolulu, Hawaii 96183

FAX: 587-0018

Subject: Halawa Corporation Yard; Archeological Surveys
Tax Map Key: 9-9-73: 23

Dear Ms. Jourdan:

This letter is to follow-up our telephone conversation regarding archeological surveys for TMK: 9-9-73: 23. Wilson Okamoto & Associates, Inc. will be preparing an Environmental Assessment for the Halawa Corporation Yard for the City and County of Honolulu. The project site includes two adjacent parcels TMK: 9-9-73: 27 (currently fully developed as the Halawa Bus Maintenance Facility) and TMK: 9-9-73: 23 (the undeveloped adjacent parcel).

This letter is request that the State identify concerns regrading development of the TMK: 9-9-73: 23 as a corporation yard. Note, a portion of this parcel is located under the H-3 Freeway viaduct. The attached tax map shows the approximate right-of-way for the H-3 Freeway.

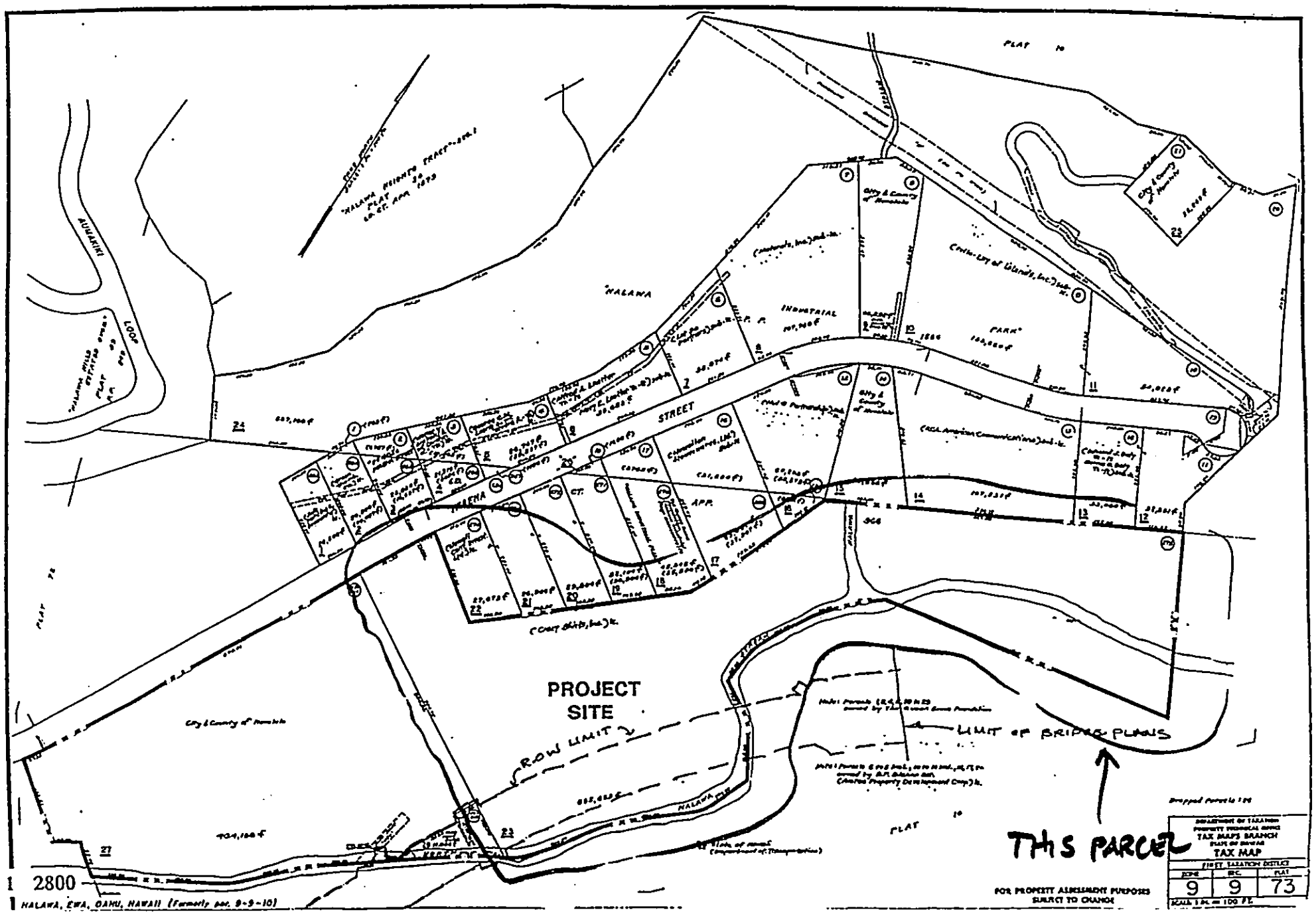
We would appreciate your response so we can identify the needed archeological work.

If you have any questions, please call me at 947-2277 or fax to 946-2253.

Sincerely,

John L. Sakaguchi, Senior Planner

Attachment


PLAT 10
HALAWA
STREET
PROJECT SITE
ROW LIMIT
LIMIT OF BRIDGE PLANS
THIS PARCEL
City & County of Honolulu
PARK
INDUSTRIAL
TAX MAPS BRANCH
TAX MAP
FIRST TAXATION DISTRICT
ZONE 9
SEC. 9
PLAT 73
2800
HALAWA, EWA, OAHU, HAWAII (Formerly por. 9-9-10)
FOR PROPERTY ASSESSMENT PURPOSES
SUBJECT TO CHANGE

APPENDIX F

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743

6139-01
10/18/99

CC: DOC, C Lau, VIA FAX 10/18/99

JEREMY HARRIS
MAYOR

JAN NAOE SULLIVAN
DIRECTOR

LORETTA K.C. CHEE
DEPUTY DIRECTOR

1999/CLOG-6678(DT)

October 15, 1999

Mr. John L. Sakaguchi
Wilson Okamoto & Associates, Inc.
1907 S. Beretania Street, Suite 400
Honolulu, Hawaii 96826

OCT 18 1999
WILSON OKAMOTO & ASSOC., INC.

Dear Mr. Sakaguchi:

Preliminary Consultation
Halawa Corporation Yard
Tax Map Keys: 9-9-73: 23 and 27

According to the "Project Summary Sheet," the Department of Facility Maintenance (Automotive Equipment Services Division and Road Maintenance Division), the Honolulu Police Department (Vehicle Maintenance) and the Department of Transportation Services (Handi-Van) propose to relocate certain maintenance and operational functions to the site referenced above.

Although our department has no comments at this time, we would like to review the Draft Environmental Assessment (EA) when it becomes available. Please send four copies of the EA to this department for any future review. In 1998, City departments were reorganized and three additional permitting and project review branches, Civil Engineering, Traffic Review and Wastewater, are now part of our department.

Should you have any questions regarding this letter, please call Ms. Dana Teramoto of our staff at 523-4648.

Very truly yours,

Barbara A Moore
for JAN NAOE SULLIVAN
Director of Planning and Permitting

JNS:fm
clog6678
posse document 10903

APPENDIX G

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

REPLY TO ATTENTION OF

December 23, 1999

6139-01 JS

cc: DOC, VIA FAX 1/5/99

Civil Works Technical Branch

DEC 29 1999

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto and Associates
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Thank you for the opportunity to review and comment on the Draft Environmental Assessment (DEA) for the Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu (TMK 9-9-73: 23 and 27). The following comments are provided in accordance with Corps of Engineers authorities to provide flood hazard information and to issue Department of the Army (DA) permits.

a. Any work involving discharge of dredged or fill material below the ordinary high water mark of Halawa Stream may require a DA permit. For further information, please contact Mr. Peter Galloway of our Regulatory Section at 438-8416 and refer to file number 200000050.

b. The flood hazard information provided on page 2-2 of the DEA is correct.

Sincerely,

James L. Bersson, P.E.
Chief, Engineering and
Construction Division

6139-01
February 4, 2000

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS
1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH: (808)946-2277
FAX: (808)946-2253

Mr. James L. Bersson, P.E., Chief, Engineering and Construction Division
Department of the Army
U.S. Army Engineer District, Honolulu
FT. Shafter, Hawaii 96858-5440

Attention: Civil Works Technical Branch

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii

Dear: Mr. Bersson:

Thank you for your letter of December 23, 1999 (No. 200000050) on the Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii.

The Halawa Corporation project will not involve the discharge of dredged or fill material to North Halawa Stream below the ordinary high water mark.

Thank you for your participation in the Environmental Assessment process. If you have any questions, please call me at 946.2277.

Sincerely,

John L. Sakaguchi, Senior Planner

JLS/ry

cc: C. Lau, DDC

United States Department of the Interior

U.S. GEOLOGICAL SURVEY
WATER RESOURCES DIVISION
677 Ala Moana Boulevard, Suite 415
Honolulu, Hawaii 96813

December 22, 1999

6139-01
12/29/99
cc: DDC, C Lau
VIA FAX

RECEIVED
DEC 28 1999
WILSON OKAMOTO & ASSOC, INC.

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto & Associates, Inc.
Engineers/Planners
1907 S. Beretania St., Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment (DEA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii

Thank you for forwarding the subject DEA/FONSI for review and comment by the staff of the U.S. Geological Survey, Water Resources Division, Hawaii District Office. We regret however, that due to prior commitments and lack of available staff, we are unable to review this document. We are returning it for your future use.

We appreciate the opportunity to participate in the review process.

Sincerely,

Gordon W. Tribble
District Chief

Enclosure

BENJAMIN J. CAYETANO
GOVERNOR

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

6139-0
RECEIVED
DEC 23 1999 12/29/99
WILSON OKAMOTO & ASSOC., INC.
LETTER NO. (P) 1869

DEC 21 1999

Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Attention: Mr. John Sakaguchi

Gentlemen:

Subject: Halawa Corporation Yard
Halawa Industrial Park
Aiea, Oahu, Hawaii
Draft Environmental Assessment/FONSI

Thank you for the opportunity to review the subject document. The proposed project does not impact any of our facilities. Therefore, we have no comments.

If there are any questions regarding the above, please have your staff call Mr. Ralph Yukumoto of the Planning Branch at 586-0488.

Sincerely,

GORDON MATSUOKA
Public Works Administrator

RY:jk
c: C. Lau, Department of Design and Construction

(6139-01) JS

DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

OFFICE OF PLANNING
235 South Beretania Street, 6th Floor, Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Ref. No. P-8343

Telephone: (808) 587-2846
Fax: (808) 587-2824

12/29/99

December 23, 1999

cc: DOC
C LAU
VIA FAX

WILSON OKAMOTO & ASSOC, INC.

Dear Project Manager:

Subject: Environmental Assessment and Environmental Impact Statement Reviews

For your information, the Hawaii Coastal Zone Management (CZM) Program is no longer routinely reviewing environmental assessment and environmental impact statement reports. If there are any questions, please call John Nakagawa of our CZM Program at (808) 587-2878.

Sincerely,

David W. Blane
Director
Office of Planning

DEPARTMENT OF BUSINESS,
ECONOMIC DEVELOPMENT & TOURISM

BENJAMIN J. CAYETANO
GOVERNOR
SEIICHI F. NAYA
DIRECTOR
DEPUTY DIRECTOR

ENERGY, RESOURCES, AND TECHNOLOGY DIVISION
235 South Beretania St., 5th Flr., Honolulu, Hawaii 96813
Mailing Address: P.O. Box 2359, Honolulu, Hawaii 96804

Tel.: (808) 587-3807
Fax: (808) 586-2536

JS
6139-01
12/29/99

December 23, 1999

RECEIVED
DEC 27 1999
WILSON OKAMOTO & ASSOC., INC.

Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, HI 96826

Attn: John L. Sakaguchi, Senior Planner

Subject: Draft Environmental Assessment (DEA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii

Thank you for the opportunity to comment on the DEA for the Halawa Corporation Yard. Our comments are addressed to (l) State energy conservation goals, (2) energy saving design practices and technologies, and (3) recycling and recycled-content products.

(l) Energy conservation goals. Project buildings, activities, and site grounds should be designed with energy saving considerations. The mandate for such consideration is found in Chapter 344, HRS ("State Environmental Policy") and Chapter 226 ("Hawaii State Planning Act"). In particular, we would like to call to your attention HRS 226 18(c)(4) which includes a State objective of promoting all cost-effective energy conservation through adoption of energy-efficient practices and technologies.

The City & County of Honolulu has adopted an Energy Code and we would suggest that you consider that in implementing your project. Hawaiian Electric Co., Inc. may also have demand-side management programs that offer rebates for installation of energy efficient technologies.

(2) Energy saving design practices and technologies. We recommend that you specifically address energy efficient design practices and technologies in this project. Some of the methods and technologies that could be considered during the design phase of the project include:

a. Use of site shading, orientation, and use of naturally ventilated areas to reduce cooling load;
b. Maximum use of day lighting;
c. Use of high efficiency compact fluorescent lighting;
d. Use of high pressure sodium lighting for parking lots and security;

e. Exceed Energy Code requirements; and
f. Use of technologies such as solar water heating systems, roof insulation, radiant barriers, and energy efficient windows.

(3) Recycling and recycled-content products.
a. Develop a job-site recycling plan for the construction phase of the project and recycle as much construction and demolition waste as possible;
b. Incorporate provisions for recycling into the built project – a collection system and space for bins for recyclable;
c. Specify and use products with recycled-content such as: steel, concrete aggregate fill, drywall, carpet and glass tile; and
d. Specify and use locally produced products such as plastic lumber, hydromulch, soil amendment and glass tile.

Sincerely,

Maurice H. Kaya
Energy, Resources, and Technology
Program Administrator

c: OEQC
C. Laui, DDC
Wilson Okamoto & Associates

6139-01
February 7, 2000

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS
1907 S. BERETANIA ST
SUITE 400
HONOLULU, HI 96826
PH (808)946-2277
FAX (808)946-2253

Mr. Maurice H. Kaya
Energy, Resources, and Technology Program Administrator
Department of Business, Economic Development & Tourism
State of Hawaii
P.O. Box 2359
Honolulu, Hawaii 96804

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard
Halawa Industrial Park, Aiea, Oahu Hawaii
TMK: 9-9-73: 23 and 27

Dear Mr. Kaya:

Thank you for your letter of December 23, 1999 on the Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu Hawaii; TMK: 9-9-73: 23 and 27. Our responses are set forth below:

(1) The design of the facilities, buildings, and other improvements will meet the requirements of the City and County of Honolulu Energy Code, especially as applied to electrical and mechanical systems.

(2) a. The buildings have been designed with the maximum practical roof overhangs to provide shading for the interior spaces. Air conditioning has been included in the design of most office spaces and other interior working areas. The shop and storage areas will rely on natural ventilation.

b. The working hours for most functions are from about 7:00 a.m. to 3:30 p.m., or during daylight hours, for the majority of City functions and employees assigned to the Corporation Yard. These hours are established by the functions to be located at the Corporation Yard to meet their assigned missions.

c. and d. See (1) above.

(3) a. The selected construction contractor will be responsible for developing any job-site recycling program during the construction phase.

b. The functions relocating to the Halawa Corporation Yard have established operations at other locations in Honolulu. These functions have practices regarding recycling materials depending on their type and condition, as practicable. Also, the other materials such as hazardous waste are separated and disposed as required.

c. The recycled-content of the products used for construction of the Corporation Yard facilities and buildings will depend upon the specifications set for that particular item of material. Generally, the specifications, including the recycle contents, are set by the designer based on the item and its related cost to the City.

d. See c above.

Sincerely,

John L. Sakaguchi, Senior Planner

cc: C. Lau, DDC

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

EJ:lm

6139-01

TIMOTHY E. JOHNS, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DEPUTIES
JANET E. KAWELO
LAWRENCE H. MIIKE

cc: DOC VIA FAX 1/5/99

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

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

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

December 21, 1999

RECEIVED
JAN 04 2000
WILSON OKAMOTO & ASSOC, INC.

LOG NO: 24621 ✓
DOC NO: 9912EJ15

JS

John Sakaguchi
Wilson Okamoto & Associates
1907 S. Beretania Street
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

SUBJECT: Chapter 6E-8 Historic Preservation Review -- Draft Environmental Assessment (DEA) Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard
Halawa, 'Ewa, O'ahu
TMK: 9-9-73:23 and 27

The DEA correctly incorporates our earlier comments that a review of our records indicates that it is highly unlikely that significant historic sites remain in area and that we believe that this project will have "no effect" on such sites. Our full "no effect" comments are included in Appendix E

If you have any questions please call Elaine Jourdane at 587-0015.

Aloha,

Don Hibbard, Administrator
Historic Preservation Division

EJ:lm

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT
P.O. BOX 621
HONOLULU, HAWAII 96809

TIMOTHY E. JOHNS
CHAIRPERSON

BRUCE S. ANDERSON
ROBERT G. GIRALD
BRIAN C. NISHIDA
DAVID A. NOBRIGA
HERBERT M. RICHARDS, JR.

LINNEL T. NISHIOKA
DEPUTY DIRECTOR

139-01
12/21/1999

December 16, 1999

RECEIVED
DEC 20 1999
WILSON OKAMOTO & ASSOC., INC.

cc: DOC, C LAU
VIA FAX

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Draft Environmental Assessment (DEA), Halawa Corporation Yard
Halawa Industrial Park, Aiea, Oahu, Hawaii

Thank you for the opportunity to review the subject document. Our comments related to water resources are marked below.

In general, the CWRM strongly promotes the efficient use of our water resources through conservation measures and use of alternative non-potable water resources whenever available, feasible, and there are no harmful effects to the ecosystem. Also, the CWRM encourages the protection of water recharge areas, which are important for the maintenance of streams and the replenishment of aquifers.

[X] We recommend coordination with the county government to incorporate this project into the county's Water Use and Development Plan.

[ ] We recommend coordination with the Land Division of the State Department of Land and Natural Resources to incorporate this project into the State Water Projects Plan.

[ ] We are concerned about the potential for ground or surface water degradation/contamination and recommend that approvals for this project be conditioned upon a review by the State Department of Health and the developer's acceptance of any resulting requirements related to water quality.

[ ] A Well Construction Permit and/or a Pump Installation Permit from the Commission would be required before ground water is developed as a source of supply for the project.

[ ] The proposed water supply source for the project is located in a designated water management area, and a Water Use Permit from the Commission would be required prior to use of this source.

[ ] Groundwater withdrawals from this project may affect streamflows, which may require an instream flow standard amendment.

[ ] We recommend that no development take place affecting highly erodible slopes which drain into streams within or adjacent to the project.

[ ] If the proposed project includes construction of a stream diversion, the project may require a stream diversion works permit and amend the instream flow standard for the affected stream(s).

[ ] If the proposed project alters the bed and banks of a stream channel, the project may require a stream channel alteration permit.

[ ] OTHER:

If there are any questions, please contact Lenore Nakama of the Commission staff at 587-0218.

Sincerely,

LINNEL T. NISHIOKA
Deputy Director

LN:ss

6139-01
February 4, 2000

WILSON OKAMOTO & ASSOCIATES, INC.
ENGINEERS
PLANNERS
1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX: (808)946-2253

Ms. Linnel T. Nishioka, Deputy Director
Commission on Water Resources Management
State of Hawaii
Department of Land and Natural Resources
P.O. Box. 621
Honolulu, Hawaii 96809

Attention: Ms. Lenore Nakama

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii

Dear: Ms. Nishioka:

Thank you for your letter of December 16, 1999 on the Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii. Please note, we have circulated the Draft EA to the City and County of Honolulu Department of Planning and the City and County of Honolulu Board of Water Supply for their comments. Both agencies have also reviewed the construction plans for the project.

Thank you for your participation in the Environmental Assessment process. If you have any questions, please call me at 946.2277.

Sincerely,

John L. Sakaguchi, Senior Planner

JLS/ry

cc: C. Lau, DDC

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

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

BRUCE S. ANDERSON, Ph.D.
DIRECTOR OF HEALTH

In reply, please refer to:
File:

6139-01

cc: DOC, VIA FAX 2/4/00

January 25, 2000

92-260B/epo

JS

JAN 26 ...

Mr. John L. Sakaguchi
Senior Planner
Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment (DEA)
Halawa Corporation Yard
Halawa Industrial Park
Aiea, Hawaii

Thank you for allowing us to review and comment on the subject project. In addition to the comments that we made to the City and County's Planning Department dated March 19, 1997 (enclosed), we have the following comments to make on this DEA:

Solid Waste

The Department of Health encourages the applicant to maximize waste reduction and recycling opportunities during the construction and operation of the facility. Greenwaste generated from land clearing activities should be directed to a permitted greenwaste recycling facility.

In addition, Hawaii Revised Statutes (HRS), Chapter 103D-407 stipulates that all highway and road construction and improvement projects funded by the State or a county or roadways that are to be accepted by the State or a county as public roads shall utilize a minimum of ten per cent crushed glass aggregate as specified by the Department of Transportation in all basecourse (treated or untreated) and subbase when the glass is available to the quarry or contractor at a price no greater than that of the equivalent aggregate.

The applicant shall further ensure that all solid waste generated during the project's construction shall be directed to permitted solid waste disposal, processing or recycling facilities.

Please contact Mr. Lane Otsu of the Office of Solid Waste Management at 586-4240 with any questions regarding these comments.

Hazardous Waste

The former MTL, Inc. now called Oahu Transit Services, Inc. (OTS) was cited for exceeding storage of hazardous waste at 99-999 Iwaena Street, Aiea, Hawaii. As a result, a closure plan was developed and implemented. No unacceptable contaminated soil was found. Subsequently, the storage area was closed according to federal regulations in April 1995.

In general, maintenance shops would need to follow applicable hazardous waste regulations found in federal and state regulations.

Any questions on these comments should be directed to Mr. Paul Kalaiwaa of the Hazardous Waste Section of the Solid and Hazardous Waste Branch at 586-4237.

Underground Storage Tanks (USTs)

1. Although the Draft Environmental Assessment does not mention it, the proposed relocation of the Division of Automotive Equipment Services (AES) and the Honolulu Police Department's (HPD) vehicle maintenance shop may require underground storage tanks (USTs) to store vehicular fuel, used motor oil, emergency power generator fuel, or other types of petroleum or hazardous substances. USTs are subject to federal and state requirements. Owners of newly installed USTs must notify our Solid and Hazardous Waste Branch, Underground Storage Tank Section of the existence of such USTs within 30 days of installation. In addition, our Underground Storage Tank Section is developing new state administrative rules on USTs which, when finalized, will require permits for all new USTs. Finally, permits must be obtained from the applicable building and fire safety authorities before installation of any USTs.

2. As mentioned in section 2.3.1 Existing Environment of the DEA, there are existing USTs at the Halawa Bus Facility

(I.D. #9-200151), which must comply with federal and state UST requirements.

3. The Halawa Bus Facility currently has two UST release sites; UST Release ID numbers 990045 and 980246. Construction activities should be planned so as not to adversely impact any environmental investigation or remediation activities associated with these releases.

Should you have any questions regarding these comments, please contact Mr. Shaobin Li of the Solid and Hazardous Waste Branch, Underground Storage Tank Section at 586-4226.

Wastewater

We reiterate our comments made in the March 19, 1997 letter that wastewater must be disposed through the City's sewer system. We would like to see this mentioned in the Final Environmental Assessment, as there was no wastewater discussion in the DEA.

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

Should you have any questions on this matter, please contact the Planning/Design Section of the Wastewater Branch at 586-4294.

Sincerely,

GARY GILL
Deputy Director for
Environmental Health

Enclosure

c: SHWB
OSWM
WWB
OEQC

ENCLOSURE

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

LAWRENCE MIKE
DIRECTOR OF HEALTH

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

In reply, please refer

March 19, 1997

92-260A
~~97-030~~/epo

Mr. Patrick Onishi
Chief Planning Officer
Planning Department
City & County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Mr. Onishi:

Subject: DEVELOPMENT PLAN PUBLIC FACILITIES MAP AMENDMENT FOR THE PRIMARY URBAN CENTER [97/PUC-1001(IC)]
Project: Halawa Corporation Yard
Location: Halawa Industrial Park, Aiea, Oahu
TMK: 9-9-73: 15, 23, 27

Thank you for allowing us to review and comment on the subject amendment. We have the following comments to offer:

The City and County of Honolulu, Building Department, has prepared a request to amend the Primary Urban Center Development Plan Public Facilities Map by including a publicly funded corporation yard. The proposed amendment was initiated by the building department as a result of the planned consolidation of several city corporation yards in the Honolulu district. The subject project proposes to construct a centralized corporation yard utilizing the existing Halawa Bus Facility site, with the intent of relocating the existing bus facility to Manana. The project also includes the acquisition of an adjacent 13 acre parcel. When completed, the proposed project would provide automotive equipment repair shops, equipment and material storage facilities and parking for the following agencies which provide service in the area: Department of Public Works, Department of Transportation Services, Department of Parks and Recreation, and the Honolulu Police Department.

Control of Fugitive Dust:

Since activities associated with the project may at times occur in close proximity to existing business establishments, there is

92-260A
~~97-030~~/epo

a significant potential for fugitive dust emissions to be generated and to impact occupants during the clearing and removal of debris, grading, excavation, and other construction activities. It is suggested that a dust control management plan be developed which identifies and addresses activities having the potential to generate fugitive dust. Implementation of adequate dust control measures during all phases of the project is warranted. Construction activities must comply with provisions of Hawaii Administrative Rules, Chapter 11-60.1, "Air Pollution Control," Section 11-60.1-33, on Fugitive Dust.

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

a. planning the different phases of construction, focusing on minimizing the amount of dust-generating materials and activities, centralizing material transfer points and on-site vehicular traffic routes, and locating potentially dusty equipment in areas of the least impact;

b. providing an adequate water source at site prior to startup of construction activities;

c. landscaping and rapid covering of bare areas, including slopes, starting from the initial grading phase;

d. control of dust from shoulders, project entrances, and access roads; and

e. providing adequate dust control measures during weekends, after hours, and prior to daily startup of construction activities.

Should you have any questions regarding fugitive dust, please call Mr. Timothy Carvalho of the Clean Air Branch at 586-4200.

Hazardous Waste:

The planned public facility, the Halawa Corporation Yard, indicates there may be some operations that will generate hazardous waste. For instance, the storage of hazardous materials (spills may be considered hazardous waste) and vehicle maintenance (used solvent) may be concerns. If there are hazardous waste activities, then the following may apply:

92-260A
~~97-030~~/epo

1. Applicable state hazardous waste rules can be found in Hawaii Administrative Rules (HAR), Chapters 11-260 to 280. In particular, rules on generators of hazardous waste can be found in Chapter 11-262.

2. If the facility generates solid waste as defined in HAR, Chapter 11-261, Section 11-261-2, they must determine if that waste is a hazardous waste as defined in Section 11-261-3.

3. A facility that generates and/or transports hazardous waste must notify the Environmental Protection Agency (EPA) Region IX of their hazardous waste activities and obtain an EPA Identification number. The facility will be subject to HAR, Title 11, Chapters 262, 263, 265 and 268.

4. A facility that intends to treat, store or dispose of hazardous waste is subject to the Resource Conservation and Recovery Act (RCRA) Section 3005, USC 6925, 40 CFR and HAR 11, Parts 264 and 270.

If you have any questions regarding these comments, please contact Mr. Paul Kalaiwaa of the Solid and Hazardous Waste Branch, Hazardous Waste Section at 586-4237.

Underground Storage Tanks

The underground storage tanks (UST) that are indicated in the report may be regulated in accordance with the technical regulations of 40 CFR Part 280. These federal regulations include requirements for:

a. Design, construction, installation, and notification;
b. General operating requirements;
c. Release detection;
d. Release reporting, investigation, and confirmation;
e. Release response and corrective action; and
f. Changes-in-service and closure

New UST installations are also subject to the technical requirements of 40 CFR Part 280. Owners of newly installed USTs must notify our Underground Storage Tank Section of the existence of such USTs within 30 days of installation. Also, building and fire permits, as appropriate, must be obtained from the applicable building and fire safety authorities before the installation of any USTs.

92-260A
~~97-030~~/epo

Finally, the Department of Health has developed a guidance document, "The Technical Guidance Manual for Underground Storage Tank Closure and Release Response." This manual documents recommended approaches for properly closing USTs and also for investigating and remediation of petroleum contaminated sites as required by the federal UST regulations found in 40 CFR Part 280.

If you have any questions concerning underground storage tanks, please contact Ms. Roxanne Kwan of the Solid and Hazardous Waste Branch, UST Section at 586-4226.

Wastewater:

The subject project is located within the City and County of Honolulu's sewer service system. We have no objections to the proposed amendment, *provided that the project is connected to the public sewers.*

The development of the facility needs to be coordinated with the County to assure the availability of additional treatment capacity and adequacy for the project. Non-availability of treatment capacity will not be an acceptable justification for use of any private treatment works.

Should you have any questions regarding these comments, please contact Ms. Lori Kajiwara of the Wastewater Branch at 586-4294.

Noise Concerns:

1. Potential noise problems may occur from activities associated with automotive equipment repair and may result in negative environmental impacts to the residential community to the west of the site. In addition, stationary equipment such as generators or compressors may also cause disturbances. Mitigative measures towards minimizing these impacts should be implemented to comply with Hawaii Administrative Rules, Chapter 11-46, "Community Noise Control."

2. Construction activities must comply with the provisions of Hawaii Administrative Rules, Chapter 11-46, "Community Noise Control."

Should there be any questions concerning these comments, please call Mr. Jerry haruno, Environmental Health Program Manager, of the Noise, Radiation and Indoor Air Quality Branch at 586-4801.

92-260A
~~97-030~~/epo

Solid Waste:

1. Extreme care must be taken to protect the major groundwater supply in this area (Pearl Harbor Watershed) during both construction and operation of the facility.

2. The project must have facilities for the proper management and disposal of used oil, antifreeze, cholorfluorocarbons (CFCs), and tires.

Any questions regarding these comments should be directed to Mr. John Harder, Office of Solid Waste Management at 586-4240.

General Comments

Due to preliminary plans being the sole source of discussion, we reserve the right to impose future environmental restrictions on the project when more detailed information is submitted to the Department of Health.

Sincerely,

Bruce S. Anderson

BRUCE S. ANDERSON, Ph.D.
Deputy Director for Environmental Health

c: CAB
SHWB
WWB
NRB
OSWM

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS
1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH (808)946-2277
FAX (808)946-2253

6139-01
February 8, 2000

Mr. Gary Gill, Deputy Director for Environmental Health
Department of Health
State of Hawaii
P.O. Box 3378
Honolulu, Hawaii 96801

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Tax Map Key: 9-9-73: 23 and 27, Aiea, Oahu, Hawaii

Dear Mr. Gill:

Thank you for your letter of January 25, 2000 on the Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii. Our responses are set forth below:

Solid Waste

The construction contractor will be responsible for waste reduction and for the proper disposal of solid waste during construction. The recycled-content of the products used for construction of the Corporation Yard facilities and buildings will depend upon the specifications set for that particular item of material. Generally, the specifications, including the recycle contents, are set by the designer based on the item and its related cost to the City.

Hazardous Waste

The Final EA will note that the maintenance shops to be relocated to the Halawa Corporation Yard are currently operating at other locations under Federal and state rules and regulations. Upon relocation, the maintenance shop would be required to follow applicable Federal and state hazardous waste rules and regulations during operations of their facilities.

Underground Storage Tanks

1) As stated in the Draft EA, the fueling facilities will be part of Phase II and will include above-ground fuel storage tanks designed to meet applicable U.S. Environmental Protection Agency and City and County of Honolulu Fire Department requirements.

2) Until relocation, the existing bus Halawa bus facility will comply with Federal and state underground storage tanks requirements.

3) The Final EA will note construction activities for Phase II should be planned so as not to adversely impact any environmental investigations of remediation activities associated with the existing underground storage tanks.

Wastewater

The Final EA will include a discussion that, for Phase 1, there will be an on-site sewer collection system which will be connected to the City and County of Honolulu wastewater collection system located along Iwaena Street.

Thank you for your participation in the Environmental Assessment process. If you have any questions, please call me at 946.2277.

Sincerely,

John L. Sakaguchi, Senior Planner

JLS/ry

cc: C. Lau, DDC

BENJAMIN J. CAYETANO
GOVERNOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
235 SOUTH BERETANIA STREET
SUITE 702
HONOLULU, HAWAII 96813
TELEPHONE (808) 586-4185
FACSIMILE (808) 586-4186

GENEVIEVE SALMONSON
DIRECTOR

6139-01

RECEIVED
1/14/00
JAN 10 2000
WILSON OKAMOTO & ASSOC, INC.

January 7, 2000

The Honorable Randall Fujiki, Director
Department of Design and Construction
City and County of Honolulu
650 South King Street, 2nd Floor
Honolulu, Hawai'i 96813-2437

Dear Mr. Fujiki:

We have reviewed the December 1999, draft environmental assessment for the Halawa Corporation Yard and offer the following comments for your consideration.

1. The location of the vehicle washing facility near to the Halawa stream may pose future discharge and water quality problems in the stream and waters downgradient from the facility. Please consult with the Clean Water Branch of the Department of Health and discuss the potential impacts of siting the vehicle washing facility near the stream and what mitigative measures the City will undertake to prevent water quality degradation to Halawa Stream.

Thank you for the opportunity to comment. If you have any questions, please call Mr. Leslie Segundo of my staff at 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director

c: Mr. John Sakaguchi, Wilson Okamoto and Associates, Inc.

6139-01
February 4, 2000

WILSON
OKAMOTO
& ASSOCIATES, INC.
ENGINEERS
PLANNERS
1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH (808)946-2277
FAX (808)946-2253

Ms. Genevieve Salmonson, Director
State of Hawaii
Office of Environmental Quality Control
State Office Tower
235 South Beretania Street, 7th Floor
Honolulu, Hawaii 96813-2437

Attention: Leslie Segundo

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii

Dear Ms. Salmonson:

Thank you for your letter of January 7, 2000 on the Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii. Our responses are set forth below:

The vehicle wash facility will be included in Phase II. Although the facility is not yet designed, the City intends to specify a system that will use a closed water recycling system. The recycle system will rely on retaining the wash water in the system by sloping the washing surface to the center of the pad this will release of wash water to nearby areas, including to North Halawa Stream.

Thank you for your participation in the Environmental Assessment process. If you have any questions, please call me at 946.2277.

Sincerely,

John L. Sakaguchi, Senior Planner

JLS/ry

cc: C. Lau, DDC

DEPARTMENT OF PLANNING AND PERMITTING
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4414 • FAX: (808) 527-6743

JEREMY HARRIS
MAYOR

RANDALL K. FUJIKI, AIA
ACTING DIRECTOR

LORETTA K. C. CHEE
DEPUTY DIRECTOR

6139-01

cc: DOC, C LAU VIA FAX

1999/CLOG-7925(DT)

January 4, 2000

RECEIVED JS
JAN 05 2000
WILSON OKAMOTO & ASSOC, INC.

Mr. John L. Sakaguchi
Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Draft Environmental Assessment (EA)
Halawa Corporation Yard
Tax Map Key 9-9-73: 23 and 27

We have reviewed the above Draft EA and have the following comments:

Zoning Regulations and Permits

1. The Long-Term Release Report mentioned on Page 2-5 of the EA seems to be missing. The EA makes a reference to see this report, but the report does not appear to be in the EA. The report should be included in the EA.

2. The EA mentions that a site reconnaissance and an Environmental Site Assessment (ESA) were conducted on the site. The EA states that these investigations indicated no evidence of recognized environmentally hazardous conditions on the Phase I project site. Yet another section of the EA mentions that soil on the site was contaminated after petroleum seeped into a newly excavated piping trench. Where is this site in relation to the Site Utility Plan? Due to the soil contamination, the results of the site reconnaissance and ESA should be included in the EA. Also, what type of remedial plans will the City undertake to remove the contaminated soil on the site?

3. The site reconnaissance and ESA were only for Phase I. What about for Phase II?

4. The types of Best Management Practices to be implemented during grading and construction should be included in the Final EA.

Wastewater Branch

5. The total wastewater flow may not exceed the property's current allotment, which is approximately 20,000 gallons per day (gpd) average flow or 100,000 gpd peak flow. The existing conditions and impacts on the wastewater infrastructure should be addressed in the EA.

6. In order to decrease wastewater discharge, we recommend utilizing a recycling system for the vehicle washing facilities.

Traffic Review Branch

7. The narrative states that traffic signals will be warranted at the intersection of Iwaiwa Street and Halawa Crusher Road. The installation of the signals, in relation to the opening of the new uses of the various facilities at the site, should continue to be coordinated with the Division of Traffic Signal and Technology of the Department of Transportation Services.

8. Driveways to the yard must be constructed as standard City dropped driveways. The driveway grade must not exceed 5 percent for a minimum distance of 25 feet from the property line at Iwaena Street. Adequate vehicular sight to pedestrians and other vehicles must be provided and maintained at all driveway locations. The width of the driveways should accommodate the anticipated types of vehicles expected to access the site.

9. Adequate on-site parking to account for employees, visitors and maintenance vehicles should be provided to minimize the need for any additional use of the existing on-street parking.

10. Construction plans for work within the City's road right-of-way should be submitted for review. Traffic control plans during construction for work on City streets should be submitted for review and approval, as required.

If you have any questions regarding this letter, please call Ms. Dana Teramoto of our staff at 523-4648.

Very truly yours,

RANDALL K. FUJIKI, AIA
Acting Director of Planning
and Permitting

RKF:am

halawa.djt
post at no.:

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS
1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808)946-2277
FAX. (808)946-2253

6139-01
February 10, 2000

Mr. Randall K. Fujiki, AIA
Acting Director of Planning and Permitting
Department of Planning and Permitting
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attention: Ms. Dana Teramoto

Subject: Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard
Halawa Industrial Park, Tax Map Key: 9-9-73: 23 and 27
Aiea, Oahu, Hawaii

Dear Mr. Fujiki:

Thank you for your letter of January 4, 2000 on the Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii. Our responses are set forth below:

Zoning Regulations and Permits

1. The Long-Term Release Report, which covers the Phase II area, is on file with the City and County of Honolulu Department of Design and Construction and can be reviewed there. This will be stated in the Final EA.

2. As stated the Draft EA, an Environmental Site Assessment was conducted for the Phase I site. This document is also on file with Department and Design and Construction and can be reviewed there. The area covered by these two investigations will be clarified in the Final EA. As the past user of the Phase II site, the City and County of Honolulu Department of Transportation Services (DTS) is responsible for remediation of the hazardous waste on the bus facility site. A remediation plan will be developed prior to construction of the Phase II facilities.

3. See response 1.

4. The Best Management Practices for grading and construction will be developed by the construction contractor after selection has been made.

Wastewater Branch

5. Based on factors set forth in the City and County of Honolulu Department of Wastewater Management Design Standards, Volume I, July 1993, the average daily low of wastewater is estimated to be approximately 5,000 gallons per day (gpd) for Phase I and about 7,800 gpd for Phase II. These figures are below the 20,000 gpd average flow allotment indicated in your letter. Similarly, based on the Design Standards, the peak design flow is estimated to be approximately 40,500 gpd for Phase I and about 53,000 gpd for Phase II. These figures are below the 100,000 gpd peak flow stated in your letter.

6. The vehicle wash facility will be included in Phase II. Although the facility is not yet designed, the City intends to specify a system that will use a closed water recycling system. The recycle system will rely on retaining the wash water in the system by sloping the washing surface and will not discharge any water to nearby areas, including to North Halawa Stream. Use of the recycle system will decrease discharge.

Traffic Review Branch

7. The traffic signal will be part of the Phase II design and construction. The analysis of the traffic signal will be coordinated with the Department of Transportation Services Division of Traffic Signal and Technology, as appropriate.

8. The design of the driveways will meet the City's standards and will be subject to review during the design stage.

9. As stated in the Draft EA, the City employee parking lots have been sized to provide adequate parking spaces for each shift including those that overlap. The Draft EA also noted there is almost no on-street parking near the Corporation Yard site.

10. The construction plans will be submitted for review, as required.

Thank you for your participation in the Environmental Assessment process. If you have any questions, please call me at 946.2277.

Sincerely,

John L. Sakaguchi, Senior Planner

JLS/jm

cc: C. Lau, DDC

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 10TH FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 523-4182 • FAX: 523-4054

JEREMY HARRIS
MAYOR

WILLIAM D. BALFOUR, JR.
DIRECTOR

MICHAEL
DEPUTY DIRECTOR

3F 6139-01

cc: DDC, C LAU VIA FAX

JS

December 30, 1999

RECEIVED
JAN 05 2000
WILSON OKAMOTO & ASSOC., INC.

Mr. John L. Sakaguchi, Senior Planner
Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment (DEA)
Anticipated Finding of No Significant
Impact (FONSI), Halawa Corporation Yard,
Halawa Industrial Park, Aiea, Oahu, Hawaii

We have reviewed the above-referenced document and concur with its findings. However, the study did not take into consideration the impact of traffic due to sporting events at nearby Halawa District Park.

Halawa District Park is heavily used for Little League and Pop Warner leagues. Most of the activities are conducted in the late afternoon and on weekends which may not conflict with traffic generated by the corporation yard.

Several times a month, the parking lot at Halawa District Park overflows onto Iwaiwa Street. Recreation participants departing the park generally exit through Iwaiwa Street past Iwaena Street and Halawa Crusher Road intersections.

Thank you for the opportunity to comment on the referenced DEA. Should you need further information, please contact Mr. Norman Morikuni, West Honolulu District Manager, at 522-7070.

Sincerely,

W. D. Balfour

WILLIAM D. BALFOUR, JR.
Director

WDB:cu
(99-320GT)

WILSON
OKAMOTO
& ASSOCIATES, INC.

ENGINEERS
PLANNERS
1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH (808) 946-2277
FAX: (808) 946-2253

6139-01
February 4, 2000

Mr. William D. Balfour, Jr., Director
Department of Parks and Recreation
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96183

Attention: Norman Morikuni, West Hawaii District Manager

Subject: Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii.

Dear Mr. Balfour:

Thank you for your letter of December 30, 1999 on the Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Aiea, Oahu, Hawaii. The Traffic Study included as Appendix D in the Draft EA analyzed traffic impacts during the peak am hours (7:00 am to 8:00 am) and peak pm hours (4:00 pm to 5:00 pm). The Draft EA also noted most afternoon traffic from the Halawa Corporation Yard would occur before the pm peak hours, from around 2:30 pm to 3:30 pm when City employees would be returning to the Yard and then departing for their homes.

The Draft EA also stated the City would be installing a traffic signal at the intersection of Iwaena Street and Halawa Crusher Road was part of the Halawa Corporation Yard project.

Thank you for your participation in the Environmental Assessment process. If you have any questions, please call me at 946.2277.

Sincerely,

John L. Sakaguchi, Senior Planner

JLS/ry

cc: C. Lau, DDC

DEPARTMENT OF ENVIRONMENTAL SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
PHONE: (808) 527-6663 • FAX: (808) 527-5675 • Website: www.co.honolulu.hi.us

JEREMY HARRIS
Mayor

KENNETH E. SPRAGUE, P.E., Ph.D.
Director

BARRY FUKUNAGA
Deputy Director

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DEC 21 1999
WILSON OKAMOTO & ASSOC., INC.

6139-01 JS

ENV 99-129
12/29/99

cc: DDC, C. LAU
VIA FAX

DEC 20 1999

Mr. John L. Sakaguchi
Senior Planner
Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, HI 96826

Dear Mr. Sakaguchi:

Subject: Draft Environmental Assessment (DEA)
Halawa Corporation Yard
TMK: 9-9-73: 23 and 27

We have reviewed the subject DEA and have the following comments:

Page 1-1 1.1 Project Background, ninth line: Delete "Department of Facility Maintenance" and replace with "the former Department of Public Works". Also in the fourteenth line: Add "The former" before "Department of Wastewater Management".

Page 2-6 2.3.2 Impacts and Mitigation Measures: Please identify the location of the PVT Landfill.

Page 2-16 2.10 Infrastructure: Please address issues relating to wastewater, drainage and refuse collection services.

In addition, the DEA should address:

1. Applying Best Management Practices (BMPs) during construction to control and reduce discharge of pollutants.
2. Whether a stormwater NPDES permit relating to construction dewatering will be required.
3. Surface runoff which should be diverted from parking areas to either landscaping area or into water quality control inlets.

Should you have any questions, please contact Alex Ho at 523-4150.

Sincerely,

KENNETH E. SPRAGUE
Director

WILSON
OKAMOTO
& ASSOCIATES, INC.
ENGINEERS
PLANNERS
1907 S. BERETANIA ST.
SUITE 400
HONOLULU, HI 96826
PH. (808) 946-2277
FAX: (808) 946-2253

6139-01
February 10, 2000

Mr. Kenneth E. Sprague, Director
Department of Environmental Services
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Attention: Mr. Alex Ho

Subject: Draft Environmental Assessment/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard
Halawa Industrial Park, Tax Map Key: 9-9-73: 23 and 27
Alea, Oahu, Hawaii

Dear Mr. Sprague:

Thank you for your letter of December 20, 1999 on the Draft Environmental Assessment (EA)/Anticipated Finding of No Significant Impact (FONSI), Halawa Corporation Yard, Halawa Industrial Park, Alea, Oahu, Hawaii. Our responses are set forth below:

Page 1-1 The suggested revisions will be incorporated into Final EA.

Page 2-6 The Final EA will note that, the soil excavated in May and June 1998 from the Halawa bus facility (Phase II area) was disposed at the Nanakuli Soil Reclamation Facility operated by PVT Land Company, Ltd. Waipahu, Oahu, Hawaii.

Page 2-16 The Final EA will indicate the Phase I on-site wastewater system will be connected to the City and County of Honolulu wastewater collection system. The Phase II system will retain the current method of collection and connection to the City system. As shown in the Draft EA, on-site drainage system for Phase I operational areas and the employee parking lot will be connected to oil water separators the to lines to dispose the flow to North Halawa Stream. The existing Phase II area drainage system will be retained. Refuse from the Halawa Corporation Yard (Phase I and Phase II) will be collected by the City and County of Honolulu Department of Environmental Services Refuse Collection and Disposal Division.

1. The Best Management Practices for grading and construction will be developed by the construction contractor after selection has been made.

2. See 1 above.

3. See Page 2-16 response.

Thank you for your participation in the Environmental Assessment process. If you have any questions, please call me at 946-2277.

Sincerely,

John L. Sakaguchi, Senior Planner

JLS/jm

cc: C. Lau, DDC

BOARD OF WATER SUPPLY

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

6139-01

JEREMY HARRIS, Mayor

EDDIE FLORES, JR., Chairman
CHARLES A. STED, Vice Chairman
JAN M.L.Y. AHN
HERBERT S.K. KAOPUA, SR.
BARBARA KIM STANTON

KAZU HAYASHIDA, Ex-Officio
ROSS S. SASAMURA, Ex-Officio

CLIFFORD S. JAMILE
Manager and Chief Engineer

January 21, 2000

Wilson Okamoto and Associates, Inc.
1907 South Beretania Street, Suite 400
Honolulu, Hawaii 96826

Attention: John L. Sakaguchi

Gentlemen:

Subject: Your Transmittal of December 7, 1999 of the Draft Environmental Assessment for the City and County Halawa Corporation Yard, Aiea, Oahu, TMK: 9-9-73: 23, 27

Thank you for the opportunity to review the document for the proposed project. We have the following comments to offer:

1. The existing off-site water system is presently adequate to accommodate the proposed maintenance facility.

2. The availability of water will be determined when the Building Permit Applications are submitted for our review and approval. If water is made available, the applicant will be required to pay the applicable Water System Facilities Charges for resource development, transmission and daily storage.

3. There are three (3) existing water services to the project site. Two (one fire and one domestic) are active and serve TMK: 9-9-73: 27. The other service is for TMK: 9-9-73: 23 and has been inactive and ordered off since March 27, 1996.

4. If an additional three-inch or larger water meter is required, the construction drawings showing the installation of the meter should be submitted for our review and approval.

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

6. Board of Water Supply approved Reduced Pressure Principle Backflow Prevention Assemblies are required to be installed immediately after all water meters serving the site.

If you have any questions, please contact Rian Adachi at 527-5245.

Very truly yours,

CLIFFORD S. JAMILE
Manager and Chief Engineer

cc: Department of Design and Construction
Office of Environmental Quality Control

Hawaiian Electric Company, Inc. • PO Box 2750 • Honolulu, HI 96840-00

6139-01

1/5/99

cc: DOC, VIA FAX
1/5/99

Scott W.H. Seu, P.E.
Manager
Environmental Department

December 30, 1999

RECEIVED
JAN 04 2000
WILSON OKAMOTO & ASSOC, INC.

Wilson Okamoto & Associates, Inc.
1907 South Beretania Street, Suite 4000
Honolulu, Hawaii 96826

Attention: John L. Sakaguchi, Senior Planner

Subject: **Halawa Corporation Yard**

Thank you for the opportunity to comment on your December 1999 Draft EA for the Halawa Corporation Yard, as proposed by the City and County of Honolulu, Department of Design and Construction. We have reviewed the subject document and have no comments at this time.

HECO shall reserve further comments pertaining to the protection of existing powerlines bordering the project area until construction plans are finalized. Again, thank you for the opportunity to comment on this DEA.

Sincerely,

cc: OEQC

6139-01
2/8/00 JS
cc: DDC, VIA FAX

HALAWA CORPORATION YARD-DRAFT ENVIRONMENTAL ASSESSMENT: Clifford Lau, Department of design and Construction, informed the Board that the project is located at the current Halawa Bus facility. The project consists of two phases. Phase one is to develop the underdeveloped part of the property, and phase two is to redevelop the current Halawa bus facility. Lau informed the Board that a new bus yard is being built in Pearl City and once completed, the current bus facility located in Halawa would be moved to Pearl City. Lau stated that the estimated start of phase one would be summer of 2000 and completion would be early 2001. Phase two construction would begin summer of 2001, and completion is estimated to be Spring 2002. Lau informed the Board that the purpose of the project is to relocate the central city facility located next to Kewalo Basin. This facility would include the refuse operation, main automotive equipment services, main operation for road repairs division including heavy equipment storage for these repairs, Honolulu Police Department vehicle maintenance operation, and TheHandi-Van operation.

At this time Lau introduced John Sakaguchi, project consultant. Sakaguchi stated that phase one of the project would be just under 12 acres, and phase one is the existing 10 acres. Sakaguchi presented to the Board a map of the area, and a summary of where certain divisions are currently located, and where future facilities will be located. Sakaguchi also informed that the State Department of Transportation and the City Department of Transportation Services will be doing a traffic study on the area. Sakaguchi anticipated the filing of the Environmental Assessment will be the end of January.

Questions, comments and concerns followed. Sakaguchi informed the public that there would be approximately 500 employees transferred to the site. Miura concerned that the Board should have been given the details of the facility earlier in the development stage. Ancheta expressed concerns of the length of time the bus yard and maintenance yard will be acting together. Sakaguchi noted that the bus and maintenance yard will be together for less than a one year period. Naylon expressed concern about noise of the refuse trucks. Sakaguchi assured that the refuse trucks will only be maintained at the facility, not dispatched. Concern was expressed about runoff of wash water. Sakaguchi informed that the water will be contained, monitored and treated.

Miura moved, seconded by Ancheta that the Board support the Environmental Assessment with a condotion that local, non-business residents concerns of traffic and noise be addressed. Motion carried 11-0-1. Arakaki abstained.