DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

October 28, 2003

Ms. Genevieve Salmonson, Director
Office of Environmental Quality Control
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Finding of No Significant Impact (FONSI) for the Mililani Community Transit Center, TMK 9-5-53:por 02, Mililani, Oahu, Hawaii.

The City and County of Honolulu, Department of Transportation Services has reviewed the comments received during the 30-day public comment period, which began on August 23, 2002. The agency has determined that this project will not have significant environmental effects and has issued a FONSI. Please publish this notice in the November 8, 2003, OEQC Environmental Notice.

We have enclosed a completed OEQC Publication Form and four copies of the final EA.

Please call Mr. James Burke, at 523-4445 if you have any questions.

Sincerely,

CHERYL D. SOON
Director

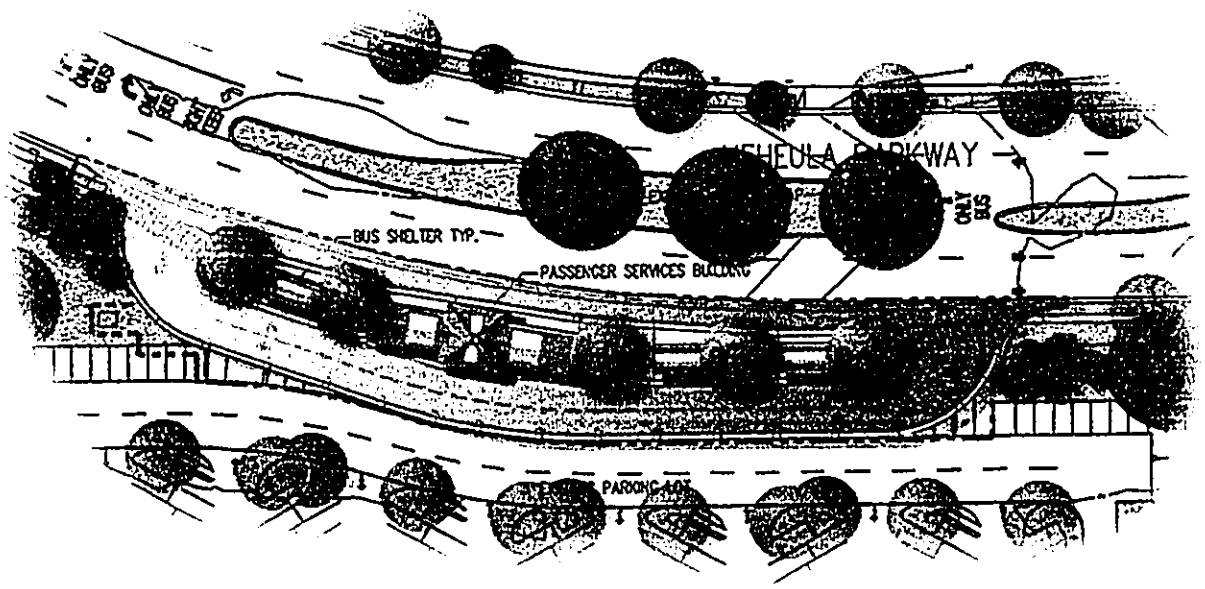
Enclosures

2003-11-08-OA-FEA

MILILANI COMMUNITY TRANSIT CENTER

Final Environmental Assessment

Mililani, Hawaii



Prepared for:

The Department of Transportation Services
City and County of Honolulu

Prepared by:

AM Partners, Inc.

October 2003

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Project Name	Mililani Community Transit Center
Proposing Agency and Accepting Authority	Department of Transportation Services City and County of Honolulu 650 South King Street 3rd Floor Honolulu, Hawaii 96813
Agent	AM Partners, Inc. 1164 Bishop Street, Suite 1000 Honolulu, Hawaii 96813 Contact: Gordon S. Wood Phone: (808) 526-2828 Fax: (808) 538-0027
Tax Map Key	9-5-53: por. 2; portion of street
Land Area	Approximately 0.9 acres
Existing Use	Sidewalk, planting strip, landscaped embankment, and a section of off-street parking
State Land Use District	Urban
Zoning Designation	B-2 Community Business District
Special Management Area (SMA)	Not within the SMA
FEMA FIRM Zone	FIRM Zone X; Areas outside the 500-year plain

The proposed Mililani Community Transit Center is expected to feature up to ten bays for public transit and paratransit vehicles, aesthetically designed shelters, a passenger services building with restrooms and an formational displays, and a community conference room, within easy reach of Mililani's central shopping mall and the surrounding community amenities. The transit center will not function as a park-and-ride, as the existing Mililani Mauka Park-and-Ride facility will continue to operate and provide that service.

1.1 PURPOSE AND OBJECTIVES

The applicant, the Department of Transportation Services of the City and County of Honolulu, proposes to develop a community transit center to accommodate express, trunk, and circulator bus services. This Environmental Assessment (EA) is prepared pursuant to and in accordance with the requirements of Chapter 343 Hawaii Revised Statutes (HRS), and Chapter 200 of Title 11, Department of Health Administrative Rules. The action that triggers this assessment is the use of City & County funds in the planning, design and construction of the community transit center. Federal funds may be used to implement this project; therefore, this EA is intended to satisfy relevant provisions of the National Environmental Policy Act.

The proposed Mililani Community Transit Center is expected to feature up to ten bays for public transit and paratransit vehicles, aesthetically designed shelters, a passenger services building with restrooms and an formational displays, and a community conference room, within easy reach of Mililani's central shopping mall and the surrounding community amenities. The transit center will not function as a park-and-ride, as the existing Mililani Mauka Park-and-Ride facility will continue to operate and provide that service. Users of the transit center will informed of the location of the existing park-and-ride facility through the use of signs and other informational devices; and will be discouraged from using the shopping center parking lot, adjacent to the transit center, as an *ad hoc* park-and-ride facility.

1.2 PROJECT LOCATION

The proposed project is on TMK 9-5-53: por.2 and portions of the adjacent street. It is located on the western boundary of The Town Center of Mililani, which is defined by Meheula Parkway.

The Town Center of Mililani covers an entire block. Two fast food restaurants are located immediately south of the project site, and another restaurant is located on the opposite, northern end. On the west side of Meheula Parkway is Mililani High School. Across Lanikuhana Avenue on the north are the Christ Lutheran Church of Mililani and the Mililani Terrace apartment complex. Across Makaimoimo Street on the south are the Mililani Public Library, the Mililani YMCA and the Mililani Town Center Neighborhood Park. Other blocks surrounding The Town Center of Mililani consist of single-family homes, apartments, parks, schools and similar uses. (Refer to Figure 1, Location and Vicinity Maps; Figure 2, Project Site Map; and Figure 3, Site Map.)

FIGURE 1: LOCATION AND VICINITY MAPS

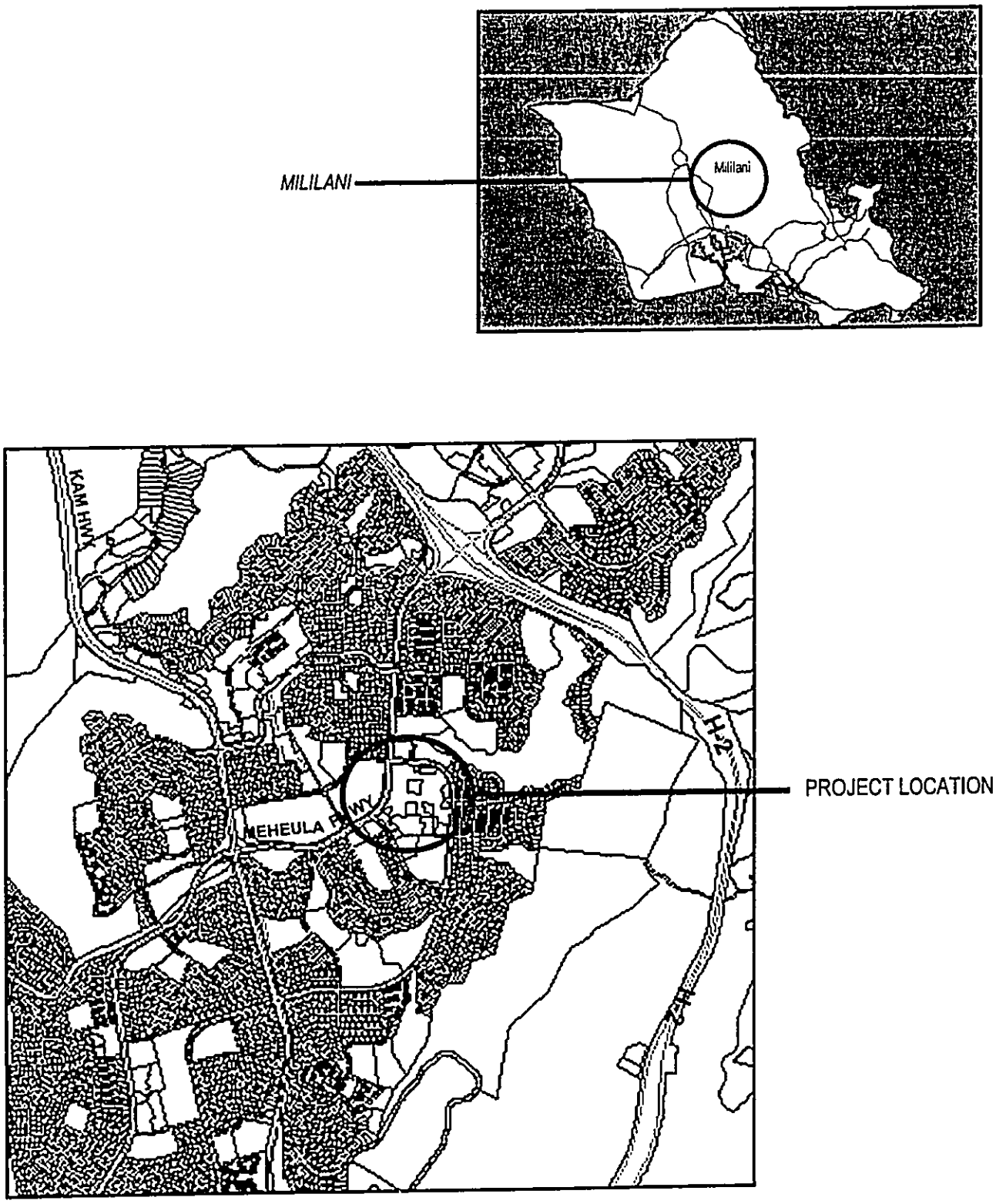


FIGURE 2: PROJECT SITE MAP

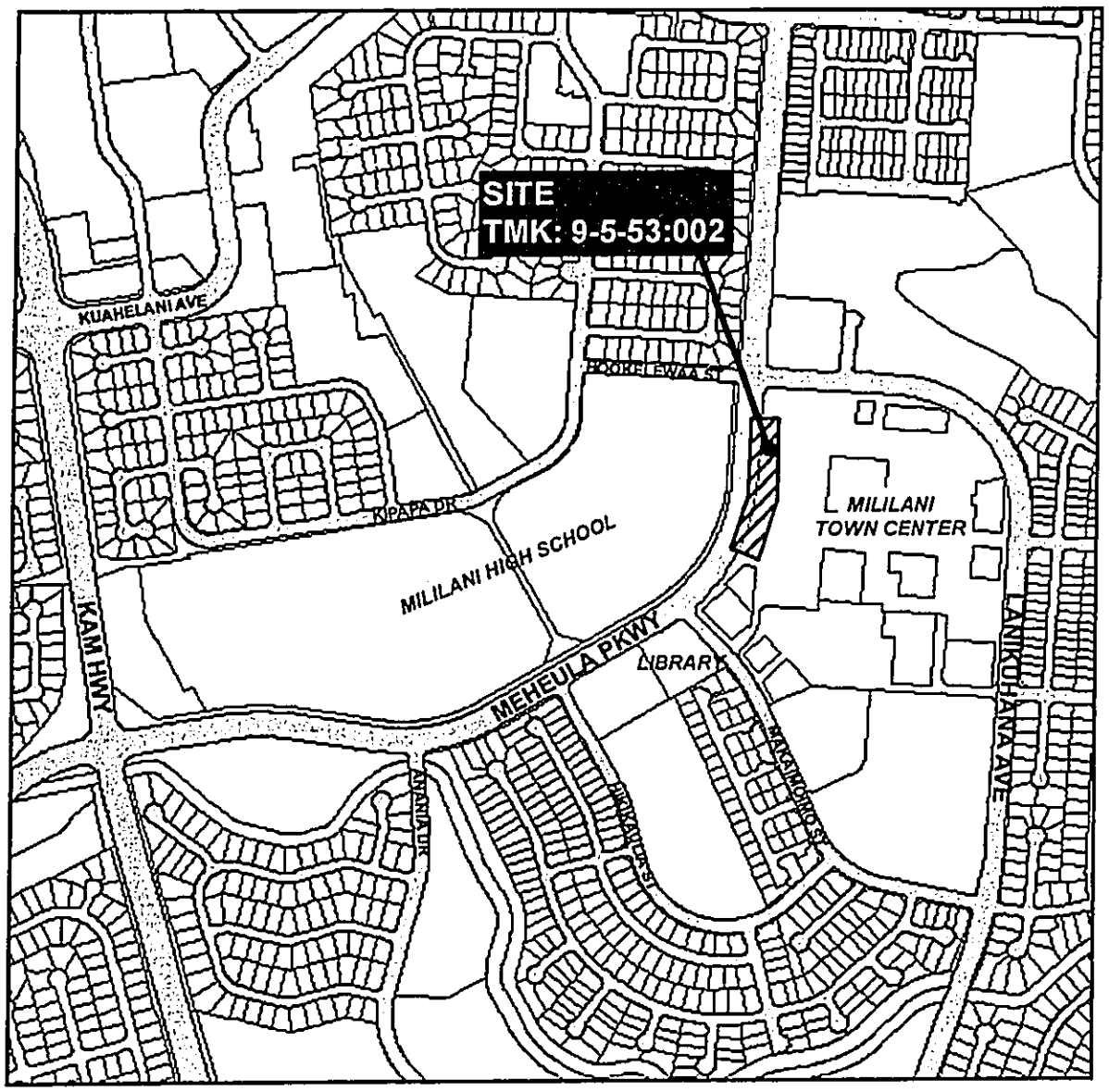
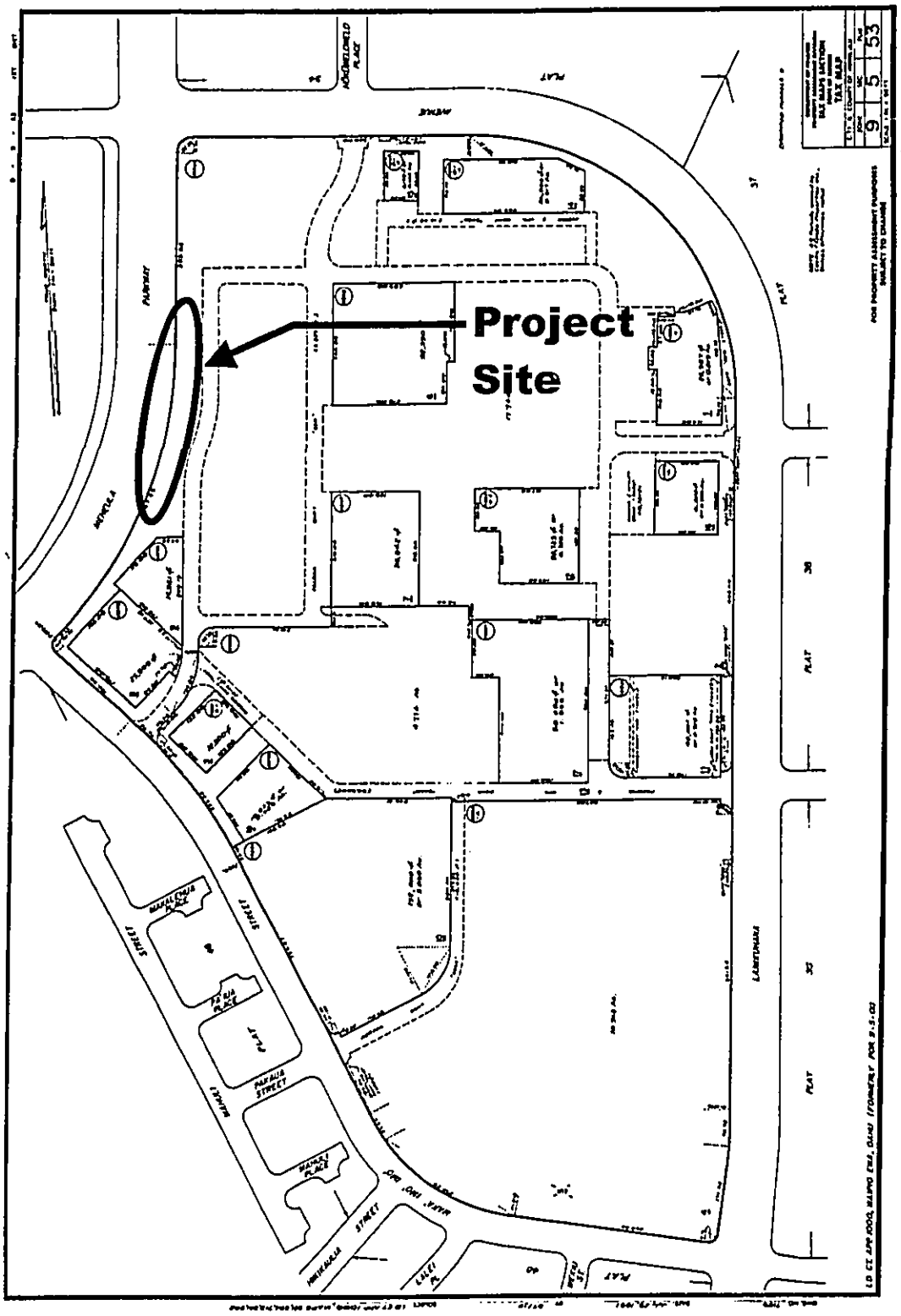


FIGURE 3: TAX MAP



2.1 PROJECT BACKGROUND AND NEED

In September 1998, residents of the City & County of Honolulu were called to action to meet with each other and to define their preferred futures as part of the City and County Vision Process. The transportation component of the vision process became known as **Oahu Trans 2K**. Ideas and needs identified by the nineteen Vision Teams from all over Oahu were brought together into a common framework and articulated in the **Islandwide Mobility Concept Plan** and incorporated into the Oahu Regional Transportation Plan that was updated in 2001.

The Islandwide Mobility Concept Plan identified six major transportation project efforts: Islandwide Traffic Calming, Honolulu Bicycle Masterplan, Sand Island Scenic Parkway, Primary Corridor Transportation Project, Hub-and-Spoke Bus Routes and Transit Centers.

Residents throughout the island wanted transit services that could take them around their neighborhoods, as well as provide faster service to downtown Honolulu. To accommodate this collective vision, a new hub-and-spoke bus route is being phased throughout Oahu. However, the hub-and-spoke system relies on coordinated schedules to make transfers easy and convenient. This is why new transit centers are proposed in 14 communities in Oahu to provide comfortable and attractive places to make these transfers.

2.2 PROJECT DESCRIPTION

Three different types of transit centers are envisioned: neighborhood transit centers, community transit centers and regional transit centers. A community transit center is being planned for Mililani. These are medium sized facilities that will serve several surrounding neighborhoods. Passengers will transfer between different community circulators at these off-street facilities located close to community activity nodes. It will contain multiple bus bays (ten bus bays are proposed for Mililani) around sheltered structures, route information, restrooms, and other small-scale services.

The proposed Mililani Community Transit Center will be the hub that serves the greater Miliani area. Three new circulator routes will be created, greatly expanding the bus service within the communities of Mililani Town, Waipio Acres, Mililani Mauka, and Launani Valley. In addition, two new trunk routes will be added—a CountryExpress! bus service to Ala Moana Shopping Center in central Honolulu and a local bus service providing connections with Kapolei. All trunk line buses are planned to arrive at the transit center at about the same time as the circulator buses to help passengers easily transfer between routes. Maps for the proposed routes are not yet available; maps for existing routes serving the area are available on-line at *http://www.thebus/org*.

The development of a suitable facility such as a community transit center on the proposed site will enhance transit services for Mililani. It will accommodate the transfer of passengers in a location that is in close walking proximity to nearby religious, educational and community facilities, commercial establishments and residential areas and the Mililani Town

Center Neighborhood Park. It will not only serve the current users, but also provide additional incentives for others to utilize public transportation.

The proposed project will be located on an approximately 500 foot long section of land running parallel to Meheula Parkway immediately adjacent to The Town Center of Mililani. It includes both the existing sidewalk area and an adjacent strip of shopping center land that is mostly a landscaped embankment. Due to the grade elevation between Meheula Parkway and the shopping center parking lot, the transit center will utilize airspace above the shopping parking lot. Existing parking spaces will be retained on the lower grade, which is at the same level with the shopping center. Some parking stalls immediately below the proposed development will be reconfigured to accommodate the structural supports of the new facility.

The Mililani Community Transit Center, with its linear form, will consist of a new landscaped street level occupied by ten bus bays, bus shelters, and a passenger services building with restrooms and waiting areas. A stairway and an elevator, located within the passenger services building, will link the lower level shopping center parking lot to the amenities on the street level. In addition, a small conference room for the use of qualified community groups will be provided at the lower level.

The land parcel and airspace designated for the development are owned by Castle & Cooke Commercial Properties. An agreement between the landowner and the City to allow the construction and operation of the transit center at this site has been prepared.

The proposed project will not incorporate a park-and-ride component. Adequate park-and-ride facilities currently exist in Mililani Mauka, and there is no need to augment or duplicate those facilities.

3.1 PROPOSED CONSTRUCTION

The proposed Mililani Community Transit Center will require some grading of the site to accommodate the necessary grade levels. Air space above the Town Center of Mililani parking lot will also be used. The project will be built in a single phase and will consist of the following structures: three identical passenger waiting shelters design specifically for this site; a viaduct-type structure to support the movements of buses in the airspace over the shopping center parking lot; a passenger services building with restrooms, informational displays, service areas, waiting areas, and a stairway and elevator; a lower level with pedestrian link to the shopping center parking lot, a community conference room, and service spaces; landscaping; and remote connections to the traffic signals at Makaimoimo Street and Lanikuhana Avenue, as a means of coordinating the arrival and departure of buses with other traffic movements.. A conceptual site plan for the project is shown in Figure 4; drawings of the proposed shelters and passenger services building are provided in Figures 5 and 6

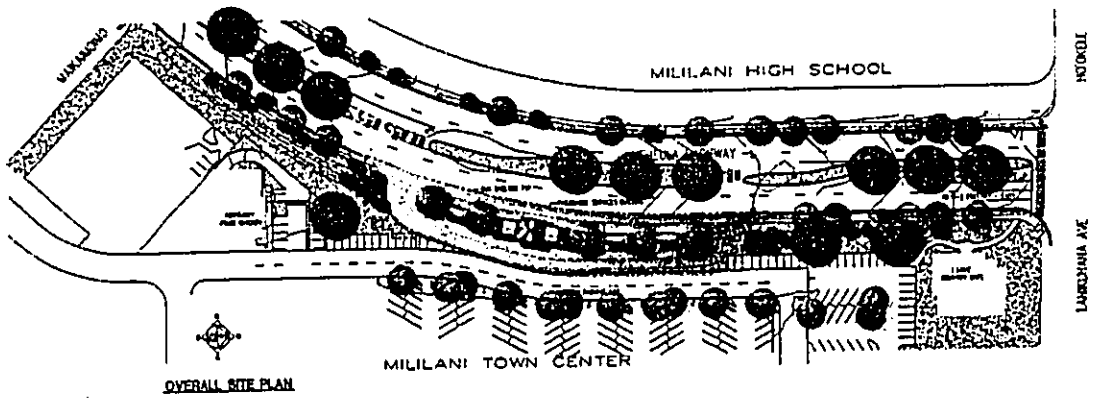
3.2 CONSTRUCTION SCHEDULE

The project is expected to have a construction schedule of eight to twelve months that includes demolition, grading, building construction and landscaping/paving work. Construction will begin once all land use and ownership issues are resolved and building permits are granted. Construction activities will be coordinated to avoid conflicts with holiday shopping traffic within the shopping center site.

3.3 ESTIMATED COST

The project cost is estimated at $3.2 Million, which includes planning, design and construction.

FIGURE 4: CONCEPTUAL SITE PLAN



Conceptual Site Plan: Overview (above); Detail (below)

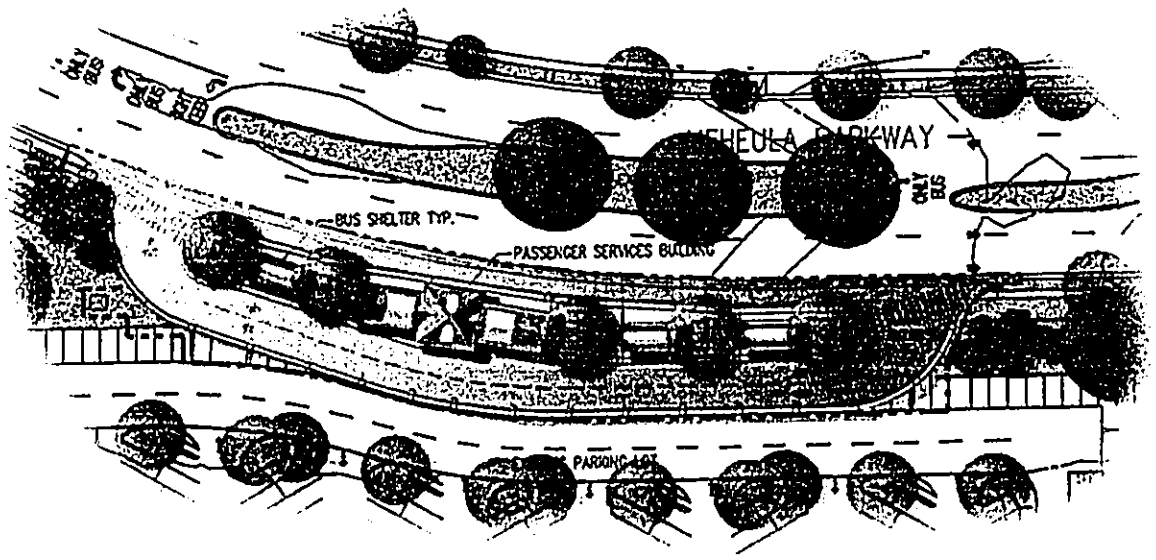
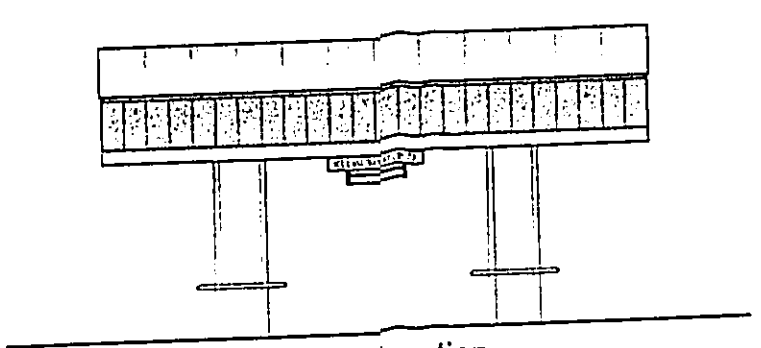
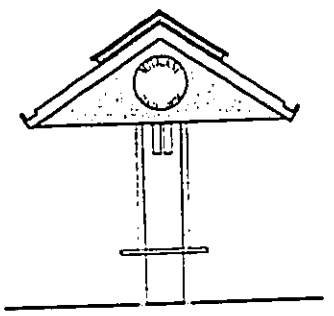


FIGURE 5: PASSENGER WAITING SHELTER (1 OF 3 TYPICAL)



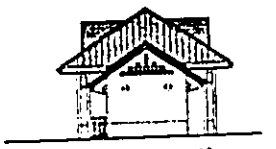
Front Elevation
(Not To Scale)



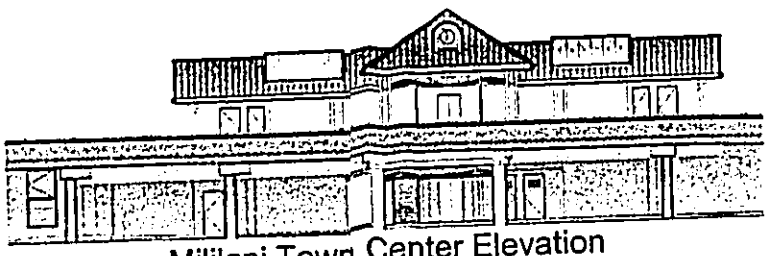
Side Elevation
(Not To Scale)

FIGURE 6: PASSENGER SERVICES BUILDING

Meheula Parkway Elevation
(Not To Scale)



North Elevation
(Not To Scale)



Mililani Town Center Elevation
(Not To Scale)

South Elevation
(Not To Scale)

4.1 Physical Environment

4.1.1 Climate

Like the rest of Hawaii, the area's climate has low day-to-day and month-to-month variability. Average temperatures are moderate, ranging from 68.2 to 75.5 degrees Fahrenheit. The average annual precipitation is 40 inches.

The proposed project will not have a significant effect on the surrounding climate conditions. The project will provide adequate landscaping to assist in the mitigation of any localized increases in temperature due to roadways, parking and related structures.

4.1.2 Topography, Geology, Soils

Mililani Town is located on the Schofield Plateau formed from the lava flows of two volcanoes whose two remnants consist of the Koolau Range and the Waianae Range. Located on this plateau at an elevation of 700 to 800 feet, Mililani Town's terrain is gently undulating. The area generally slopes toward Pearl Harbor at an average grade of three to five percent. Basaltic lava serves as the underlying bedrock for Mililani Town. Predominate soils in the area are of the Manana, Helemano, and Wahiawa series, which are moderately permeable and have only a slight erosion hazard. Based on previous borings on the area, the soils are found to have no significant foundation use limitations. This will be confirmed by soil studies to be conducted during project design.

Surface drainage will be collected by drain inlets and directed towards Meheula Parkway. The proposed drainage system will connect to existing, underground municipal systems already in place around the project's vicinity.

4.1.3 Hydrology

Mililani Town is located adjacent to Kipapa Stream, a tributary to Waikele Stream. Kipapa Stream is located at an elevation of 440 feet, about 360 feet below Mililani Town; therefore, runoff from the site is unlikely to pose a threat to Mililani Town itself. The water quality of the streams, however, is generally poor due to nutrient and sediment loading. Generally, ground water for the area, like the rest of Oahu, consists of basal aquifers and high level dike water. The basal aquifer is essentially a fresh water lens floating on top of salt water, which saturates the highly permeable lavas of the island.

No adverse impacts are expected on surface or ground water. The project is not expected to impact the quality of Kipapa Stream. The project area is located a considerable distance from any large body of water and is not expected to impact marine resources.

4.1.4 Terrestrial Flora and Fauna

Portions of the affected property contain trees and shrubbery introduced during the development of the site. New trees will be added to the development. Mature trees that are impacted due to the development will be relocated or replaced. The project site is urban and surrounded by commercial and public uses that are not conducive to habitat for rare and endangered flora and fauna.

4.1.5 Scenic and Visual Resources

No significant coastal visual resources are in the vicinity. The proposed transit center will not significantly impact views to or from the surrounding areas.

4.1.6 Historical, Cultural and Archaeological Resources

The project site does not contain any known sites of historic or cultural significance and is not listed on either the Hawaii or National Registers of Historic Places. An archaeological and cultural impact evaluation for the proposed project is attached in Appendix A and provides a list of persons, groups and sources referenced for this project. This report notes there will be no adverse impact to historical or cultural resources with implementation of the project.

Should any unidentified archaeological resources be encountered during construction, all work will cease and the State Historic Preservation Division will be contacted for review and approval of mitigation measures. The project will be designed to create an architectural character and quality compatible to the ambience of Mililani Town.

4.1.7 Noise Quality

Potential noise impacts are expected from construction activities and during the operational phase of the transit center. Construction impacts will be temporary and localized, and are the normal result of construction related activity. The State Department of Health administers rules and regulations relating to the hours during which construction is permitted and the noise levels permitted.

Noise generated during the operation of the facility is expected from increased traffic due to convergence of buses at the same time, and from the noise typically generated by people milling about in a public area. The transit center is expected to operate 20 hours per day; however, its use is compatible with existing surrounding uses and noise generated will not pose any negative impact.

4.1.8 Air Quality

The major factor affecting air quality in the area is vehicular traffic. Emission levels will increase with operation of the transit center. According to studies prepared for this project, the resulting increase in air pollution due to bus emissions was found to be relatively smaller than the significant emission rates as defined in the Hawaii Administrative Rules. The study states that it is unlikely that any measurable impacts on air quality will occur. Implementing mitigation measures for long term impacts from the proposed project is unnecessary and unwarranted. Please refer to Appendix C, Air Quality Environmental Assessment Final Report dated June 2002.

4.1.9 Water Quality and Water Services

The project site has waterlines maintained by the Board of Water Supply (BWS), in sizes suitable for delivering required quantities of water for domestic use and fire protection. The specific engineering requirements will be addressed during the design phase of the project. The applicant will be required to obtain a water allocation from Castle and Cooke before the required permits are issued.

Fire protection is provided by fire hydrants along Meheula Parkway. All water connectivity, fire apparatus accessibility and protection plans will be reviewed and approved by BWS, the Fire Department and DPP prior to construction.

The existing off-site water system is adequate to accommodate the proposed project. BWS approved Reduced Pressure Principle Back Flow Prevention Assemblies will be installed where appropriate. No adverse impacts are anticipated on surface water or ground water since the project does not include injection wells or cesspools. Any runoff or wastewater disposal required for the project will be done in full compliance with County, State and Federal guidelines.

4.1.10 Wastewater

Wastewater service for the proposed project will be provided by a new wastewater service line. The engineering details of the new service lines and required laterals will be addressed during the design phase of the project. It is likely that a new Sewer Connection Permit is required and will be submitted for review and approval prior to construction.

The applicant will coordinate with appropriate City and State agencies to obtain review and approval of all plans for the proposed project, including identification and approval of connections to the City's wastewater system. No adverse impacts are anticipated to the existing service.

4.1.11 Hazardous Materials/Hazardous Waste

Hazardous materials or hazardous waste has not been found within the premises of the site. The current use of the site—as part of the Town Center of Mililani—preclude its use as storage for hazardous materials and waste.

4.2 Socio-Economic Environment

4.2.1 Population Data

The State Data Book 2000 lists the population of Mililani Town /Mililani Mauka at 39,868. This corresponds to the 2000 census tracts of 89.06, 89.07, 89.08, 89.09, 89.16, 89.17 and 89.18. According to ESRI Business Information Services, there are 15,255 households with the Mililani zip code and a median income of $52,795 in year 2001.

No significant change in the population size or mix is expected to occur due to this project. However, the median age of the area's population is expected to increase reflecting the trend statewide. Accordingly, the proposed project is expected to provide alternatives to the automobile for the area's aging population.

4.2.2 Surrounding Land Use and Community Character

The project site stretches for about 400 feet along Meheula Parkway at The Town Center of Mililani. It includes both the sidewalk and an adjacent strip of shopping center land that is mostly a steep landscaped embankment. The Town Center of Mililani covers the entire block, with two fast food restaurants immediately south of the project. Mililani High School is located on the western side of the Meheula Parkway, directly across from the project site. Across Lanikuhana Avenue to the north are the Christ Lutheran Church of Mililani and the Mililani Terrace apartment complex. The Mililani Public Library, the Mililani YMCA, an area of homes and the Mililani Town Center Neighborhood Park are located south of the project site, across Makaimoimo Street. Other blocks in this central area of Mililani are covered by homes, townhouses, apartments, parks, schools and related uses.

4.3 Public Facilities and Services

4.3.1 Schools and Recreational Facilities

Mililani has both public and private schools within walking distance from the project site. The students of these schools will benefit significantly from the introduction of a community transit center. The parks and recreational facilities in close proximity to the project site are the Mililani Town Center Neighborhood Park, the Mililani Public Library and the Mililani YMCA. Public use and access to these and other related areas is significantly enhanced by development of the project.

4.3.2 Police and Fire Protection

Substations providing police and fire protection services are relatively near and are adequate to serve the needs of the project. It is expected that fire apparatus, water supply and building construction shall be in conformance to existing codes and standards.

4.3.3 Medical and Health Facilities

The closest medical facility is the Wahiawa General Hospital. The project is not expected to create adverse impacts on the delivery of medical and health services.

4.3.4 Transportation and Accessibility

Meheula Parkway, which has an approximate right-of-way of 89 feet within the vicinity of the project site, is a four-lane divided arterial with a fully improved curb and gutter on each side of the roadway. A grass median 25 feet in width extends throughout the vicinity of the proposed site. The posted speed limit is 25 mph.

Meheula Parkway and Makaimoimo Street form a four-leg signalized intersection to the west of the proposed transit center. East of the project site, another four leg signalized intersection is formed by Meheula Parkway and Lanikuhana Avenue. A Traffic Impact Analysis and Environmental Analysis report prepared for the subject project is enclosed in Appendix B.

According to the above-mentioned report, the completion of the Mililani Community Transit Center is expected to have some operational impacts. However, these impacts can be lessened by some mitigation measures. Two median breaks on Meheula

Parkway are necessary to facilitate transit vehicle access and egress to the transit center. The report recommends that the median break west of Lanikuhana Avenue, which provides access to the transit center, provide for the storage of at least two 40-foot buses, preventing buses from blocking through traffic westbound on Meheula Parkway as they wait for gaps in eastbound traffic.

The existing westbound left-turn bay at Meheula Parkway and Makaimoimo Street will be significantly shortened by the median break that allows for egress from the proposed transit center. Since there are heavy left-turn movements from this lane to the shopping center and Walmart, the report recommends that additional storage capacity be provided to the east of the median break.

The report also recommends that loop detectors be installed in the project driveway to facilitate egress from the transit center. The loops would serve to stop traffic on all approaches at the intersections of Meheula Parkway/Makaimoimo Street and Meheula Parkway/Lanikuhana Avenue or to stop the predominant eastbound/westbound through traffic and allow minor street traffic to proceed. Thus, vehicular/bus conflicts will be minimized and gaps for efficient egress will be created.

4.3.5 Water and Sewer

Water and sewer services are discussed under Section 4.1.9 and 4.1.10 respectively.

4.3.6 Ground Drainage

The existing site has a steep grade but the proposed improvements will be designed to allow surface drainage to be collected by drain inlets and directed towards Meheula Parkway. The proposed drainage system will connect to existing, underground municipal systems.

4.3.7 Solid Waste

No significant amounts of solid waste will be generated by the project once it becomes operational. Solid waste disposal from the site will be handled by the responsible City agency.

4.3.8 Electrical, Telephone and Cable Service

Existing reports show that primary electrical service is available along Meheula Parkway. The exact connection point will be determined during the engineering design phase of the project. Empty conduits with "mule tape" will run underground from the existing Verizon Hawaii telephone company service on Meheula Parkway. If cable service is required, empty conduits with pull-string will be run underground from the existing Oceanic Cable service on Meheula Parkway. No negative impact is expected from the use of these services.

5. Relationship to Federal, State and City & County Land Use Plans and Policies

5.1 FEDERAL

5.1.1 National Environmental Policy Act

The proposed project complies with the intent of the laws and regulations under NEPA and is consistent with the Federal Transit Administration (FTA) environmental policy. Pursuant to Title 23--Highways, of the Code of Federal Regulations, Part 771—Environmental Impact and Related Procedures, Section 771.117 Categorical Exemptions, the scope of this project appears to meet the requirements that qualify it for a categorical exclusion (CE) as defined in 40 CFR 1508.4. Specifically, item (d) states:

> "Additional actions which meet the criteria for a CE in the CEQ regulations (40 CFR 1508.4) and paragraph (a) of this section may be designated as CEs only after Administration approval. The applicant shall submit documentation which demonstrates that the specific conditions or criteria for these CEs are satisfied and that significant environmental effects will not result. Examples of such include but are not limited to: . . . (10) Construction of bus transfer facilities (an open area consisting of passenger shelters, boarding areas, kiosks and related street improvements) when located in a commercial area or other high activity center in which there is adequate street capacity for projected bus traffic."

5.1.2 Americans with Disabilities Act

The Americans with Disabilities Act (ADA) of 1990 provides guidelines for development of accessibility to buildings and facilities by individuals with disabilities. The proposed community transit center will apply these guidelines during the design, construction and operation of the center.

5.2 STATE OF HAWAII

5.2.1 Hawaii State Plan

The Hawaii State Plan (Chapter 226, Hawaii Revised Statutes) provides a guide for the future of Hawaii by setting forth a broad range of goals, objectives, and policies. These serve as guidelines for the growth and development of the State of Hawaii. The proposed project is consistent with the Hawaii State Plan.

> Section 226-13: Physical Environment – Land, Air and Water Quality. The proposed community transit center will achieve the objective of planning for the State's physical environment by pursuing development activities in a manner that is compatible with the surrounding Mililani community and consistent with Federal, State and County regulations.

5.2.2 State Functional Plans

The Hawaii State Functional Plan (Chapter 226) provides a management program that allows judicious use of the State's natural resources to improve current conditions and

attend to various societal issues and trends. The proposed project is generally consistent with the State Functional Plans.

5.2.3 State Land Use Law

The State Land Use Commission classifies the subject property as Urban. The proposed community transit center conforms to the State Urban classification of Chapter 205, Hawaii Revised Statutes and State of Hawaii Land Use Commission Rules (Hawaii Revised Statutes, Chapter 205; Hawaii Administrative Rules, Title 15, Subtitle 3, Chapter 15).

5.2.4 Coastal Zone Management Act

The proposed community transit center is not located on the coastline or shoreline and does not involve coastal resources. In any event, the facility will be designed in a manner consistent with the intent of the Coastal Zone Management Act.

5.3 City & County of Honolulu

5.3.1 General Plan

The City & County General Plan provides a statement of long range social, economic, environmental, and design objectives for the Island of Oahu. It also includes a statement of policies necessary to meet these objectives. The proposed Mililani Community Transit Center is consistent with, and supports the following objective and policies of the General Plan:

Objective A "To create a transportation system which will enable people and goods to move safely, efficiently, and at a reasonable cost; serve all people, including the poor, the elderly, and the physically handicapped; and offer a variety of attractive and convenient modes of travel."

Policy 1: "Develop and maintain an integrated ground transportation system consisting of the following elements and their primary purposes:

a. Public transportation – for travel to and from work, and travel within Central Honolulu;
b. Roads and highways, for commercial traffic and travel in nonurban areas;
c. Bikeways – for recreational activities and trips to work, schools, shopping centers, and community facilities; and
d. Pedestrian walkways – for getting around Downtown and Waikiki, and for trips to schools, parks, and shopping centers."

Policy 3: "Provide transportation services outside Ewa, Central Oahu, and Pearl City-Hawaii Kai corridors primarily through a system of express and feeder buses as well as through the highway system with limited to moderate improvements sufficient to meet the needs of the communities being served."

Policy 9: "Promote programs to reduce the dependence on the use of automobiles."

5.3.2 Central Oahu Plans

5.3.2.1 Central Oahu Sustainable Communities Plan

The Central Oahu Sustainable Communities Plan replaces the Central Oahu Development, and makes the following provision:

> Section 4.1.3.1 "Bus Service" of the proposed Central Oahu Sustainable Communities Plan (February 2002) states that the City is currently in the process of converting its linear bus system into a hub and spoke system. To complement this new system, the City has begun to implement the development of transit centers and park and ride facilities in Central Oahu. These efforts by the City are consistent with the policies articulated in the proposed Central Oahu Sustainable Communities Plan.

6.1 NO-ACTION

The No-Action alternative would result in a lost opportunity to provide an efficient and viable system that encourages use of public bus transport.

6.2 ALTERNATIVE SITES

Mililani residents, through a series of community dialogues, have expressed an overriding preference for the project site due to its accessibility from other community resources and facilities. Alternative sites in general vicinity of Kamehameha Highway were considered, but were evaluated to be too far from any nexus of community activity to adequately serve the intended purpose. Use of the Mililani Mauka park-and-ride lot was also considered, but would have required significant rerouting of buses that would have resulted in reduced services and, thus, would have defeated the purpose of improving transit services to the Mililani community.

6.3 ALTERNATIVE USES

There are no alternative uses for the site except for its existing uses.

6.4 RECOMMENDED ACTION

The recommended action is to proceed with the proposed transit center on the site.

7. Relationship Between Local Short-term Uses and the Maintenance and Enhancement of Long Term Productivity

No short-term exploitation of resources resulting from the proposed transit center will have long term adverse consequences. Major impacts such as the increased bus and pedestrian traffic to the site will increase noise and emission levels. However, recent studies show that no measurable negative impacts on air quality or noise will occur with the proposed project.

Long-term gains will be the increased consumer use for the commercial entities surrounding the site. The convergence of different public services and commercial entities within walking distance to the site increases the accessibility of public services to the community, and the use of public transport is encouraged.

8. IRREVERSIBLE/IRRETRIEVABLE COMMITMENT OF RESOURCES BY THE PROPOSED ACTION

Development of the proposed facility will involve the irretrievable loss of certain environmental and fiscal resources. However the costs associated with the use of these resources should be evaluated in light of the long-term benefits to the Mililani community, the City & County of Honolulu and the State.

9.1 SUMMARY OF IMPACTS

9.1.1 Physical Impacts

No long term negative physical impacts are anticipated as a result of implementation of the proposed action. Short-term construction related impacts are anticipated but should be adequately mitigated through the use of sound construction practices.

Beneficial impacts include the provision of efficient and logical routing and scheduling of public bus transport which encourages less dependence on the personal automobile.

9.1.2 Impacts on Public Facilities and Services

The proposed project will allow greater public accessibility to public facilities and services.

9.1.3 Socio Economic Impacts

No long-term negative impacts are anticipated to the socio-economic environment as a result of the proposed action. A short-term benefit of the project is the creation of employment in the planning, design and construction industries. The long-term benefits are the provision of a community transit center that encourages the use of public transport and reduces the residents' dependence on the automobile.

9.2 NEED FOR AN ENVIRONMENTAL IMPACT STATEMENT (EIS)

Because no long-term adverse impacts are anticipated due to the proposed project, an Environmental Impact Statement is not required.

9.3 SIGNIFICANCE

According to the Department of Health Rules (Chapter 11-200-12), an applicant must determine whether an action may have a significant impact on the environment. These would include (1) all phases of the project; (2) its expected primary and secondary consequences; (3) its cumulative impact with other projects; and (4) its short and long-term effects. The Rules establish Significance Criteria to be used as a basis for identifying whether significant environmental impacts will occur. According to the Rules, an action shall be determined to have a significant impact on the environment if it meets any of the following criteria.

1. *Involves an irrevocable commitment to loss or destruction of any natural or cultural resources.* The project will not require the loss or destruction of any natural or cultural resource, but will encourage conservation of non-renewable resources such as oil-based fuel.

2. *Curtails the range of beneficial uses of the environment.* The project will be built on previously developed land. Therefore, it will not negatively impact other beneficial uses such as for recreation.

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

decisions, or executive orders. The project does not conflict with any long term environmental policies, goals and guidelines.

4. *Substantially affects the economic or social welfare of the community or State.* The project could have a positive effect on the economic welfare of the community by reducing the residents' use of non-renewable fuel sources.

5. *Substantially affects public health.* The project will improve public health by encouraging use of public transport--thus reducing use of private automobiles and the resulting air emissions generated. It will also encourage residents to access public services located around the transit center on foot—which will contribute to a healthier, active lifestyle.

6. *Involves substantial secondary impacts, such as population changes or effects on public facilities.* The project will not have significant adverse secondary impacts on public facilities.

7. *Involves a substantial degradation of environmental quality.* The project will not substantially degrade the environmental quality. Existing trees will be relocated, retained or replaced and the structures on site will adhere to zoning height requirements, thus preserving public view planes.

8. *Is individually limited but cumulatively has considerable effect on the environment, or involves a commitment for larger actions.* The project is part of an islandwide system of transit centers, however, the development will not have a considerable impact on the environment.

9. *Substantially affects a rare, threatened or endangered species or its habitat.* The project will not affect rare, threatened or endangered species or habitat.

10. *Detrimentally affects air or water quality or ambient noise levels.* The project will not detrimentally impact air or water quality.

11. *Affects or is likely to suffer damage by being located in an environmentally sensitive area such as a flood plain, tsunami zone, beach, erosion-prone area, geologically hazardous land, estuary, freshwater or coastal waters.* The project will not be developed in an environmentally sensitive area.

12. *Substantially affects scenic vistas and view planes identified in County or State plans or studies.* The project will not impact any scenic or view planes.

13. *Requires substantial energy consumption.* The project will not require substantial energy consumption to complete. In fact, when in operation, the project will reduce the consumption of non-renewable fuel sources typically used by automobiles.

10.1 FEDERAL

A Federal permit may be required in response to Section 401(a)(1) of the Federal Water Pollution Act commonly known as the Clean Water Act.

10.2 STATE OF HAWAII

The State requires the preparation of an Environmental Assessment. If the state provisions are addressed, the applicant can determine that an Environmental Impact Statement (EIS) will not be required, and can then issue a FONSI (Finding of No Significant Impact) for this project.

10.3 CITY & COUNTY OF HONOLULU

All related development plans have been amended to reflect the proposed action. Prior to obtaining the building permit, it will be necessary to secure all applicable reviews and approval from regulating agencies. The following permits will be required prior to implementation: demolition, grubbing, stockpiling, grading, building and right-of-way.

11. Anticipated Determination

Based on the information described in this document, the proposed project is not expected to result in significant social, economic, cultural, or environmental impacts. Consequently, a finding of no significant impact is anticipated pursuant to Subchapter 6 of Chapter 200, Title 11, Hawaii Administrative Rules of the Department of Health.

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13. Agencies and Parties Consulted in Preparation of the Environmental Assessment

The following persons or agencies were contacted during the preparation of the Environmental Assessment:

1. Board of Water Supply

2. Department of Hawai`ian Homelands

3. Department of Land and Natural Resources
   State Historic Preservation Division
   Division of Boating and Ocean Recreation
   Division of State Parks
   Commission on Water Resource Management
   Division of Forestry & Wildlife
   Land Division Branches
      O`ahu District Land Office

4. Hawai`i State Meteorologist

Pre-consultation responses were received from the following:

Hawaii Department of Health
Hawaii Department of Land & Natural Resources, Historic Preservation & Land Divisions
Hawaii Department of Transportation
C&C Honolulu Department of Transportation Services
C&C Department of Parks & Recreation
C&C Honolulu Fire Department
C&C Board of Water Supply
C&C Police Department

APPENDICES

A. An Archaeological and Cultural Impact Evaluation for the Proposed Mililani Community Transit Center, Waipio *Ahupua`a*, `Ewa District, Island of O`ahu (TMK 9-5-53 por.2), prepared by Cultural Surveys Hawai`i, Inc., June 2002.

B. Traffic Impact Analysis and Environmental Analysis, prepared by Parsons Transportation Group, Inc., June 2002.

C. Air Quality Environmental Assessment Final Report, prepared by The Environmental Company, Inc., June 2002.

D. Pre-Consultation Comment Letters and Responses.

E. Draft Environmental Assessment Comment Letters and Responses.

APPENDIX A

An Archaeological and Cultural Impact Evaluation for the Proposed Mililani Community Transit Center, Waipi`o *Ahupua`a*, Ewa District, O`ahu (TMK 9-5-53 por 2)

Prepared by Cultural Surveys Hawai`i, Inc., June 2002

An Archaeological and Cultural Impact Evaluation for the Proposed Mililani Community Transit Center, Waipi`o *Ahupua`a*, `Ewa District, Island of O`ahu (TMK 9-5-53 por. 2)

by

Hallett H. Hammatt, Ph.D.
Kristina W. Bushnell, B.A.
and
David W. Shideler, M.A.

Prepared for

AM Partners, Inc.

Cultural Surveys Hawai`i, Inc.

June 2002

ABSTRACT

At the request of AM Partners, Inc., Cultural Surveys Hawai`i, Inc. (CSH) conducted an archaeological and cultural impact evaluation of the subject area (TMK 9-5-53: por. 2) in support of the proposed Mililani Transit Center project. The subject lands constitute a portion of the Mehe`ula Parkway and a portion of the Town Center of Mililani, a regional shopping center which may already be the fourth largest of its kind in the state. While the project area is regarded by us as "totally developed" this study nevertheless is a good faith attempt to address any historic preservation or cultural impact issues that might be raised by the proposed Mililani Transit Center project.

The archaeological assessment took the form of a literature review (historic documents and maps and previous archaeological studies) and field check.

The cultural impact evaluation examined the potential impact the proposed project might have on traditional cultural practices: burials, religious sites, archaeological sites, historic properties, pre-historic and historic trails, hunting and gathering for cultural resources.

The study concludes that there will be no adverse impact to historical or cultural resources.

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I. INTRODUCTION

At the request of AM Partners, Inc., Cultural Surveys Hawai`i, Inc. (CSH) conducted an archaeological and cultural impact evaluation of the subject area (TMK 9-5-53: por. 2) in support of the proposed Mililani Transit Center project. The subject lands constitute a portion of the Mehe`ula Parkway and adjacent portion of the Town Center of Mililani a regional shopping center which may already be the fourth largest of its kind in the state. While the project area is regarded by us as "totally developed" this study nevertheless is a good faith attempt to address any historic preservation or cultural impact issues that might be raised by the proposed Mililani Transit Center project.

A. Project Background

This Mililani Community Transportation Center project is administered by the Department of Transportation Services. The site will comprise that portion of the right-of-way of Meheula Parkway adjoining the Mililani Town Center and a portion of the Mililani Town Center along Meheula Parkway. Existing conditions provide a grade difference of approximately 10' to 12' between the existing public sidewalk at Meheula Parkway and the adjacent (lower) parking lot at Mililani Town Center. The proposed transit center will be constructed to deck out over the row of parking stalls nearest Meheula Parkway, to preserve those stalls. The transit center will provide the following:

- Bays for 8-10 city buses
- Parking for paratransit (Handivan) and transit supervisor vehicles
- Passenger waiting shelter(s), information kiosk(s), a comfort station, and perhaps vending facilities
- Provision for at least one ADA compliant pathway from the transit center to the shopping center
- Improvements to the Meheula Parkway median, and
- Landscaping

Subsurface impacts are anticipated to involve primarily structural support for the parking deck.

B. Project Area Description

The project area (Figures 1&2) lies at approximately the 700 foot elevation of the south facing gentle slopes of the Schofield Plateau. "Lava flows from the Ko`olau volcano banked against the already-eroded slope of the Wai`anae volcano to form the gently sloping surface of the Schofield Plateau" (Macdonald and Abbott 1983:420).

The soils underlying the entire project area are classified as Wahiawā silty clay (WaB), 3 to 8 percent slopes which includes small areas of relatively level soil. Run-off is slow and the erosion hazard is slight.

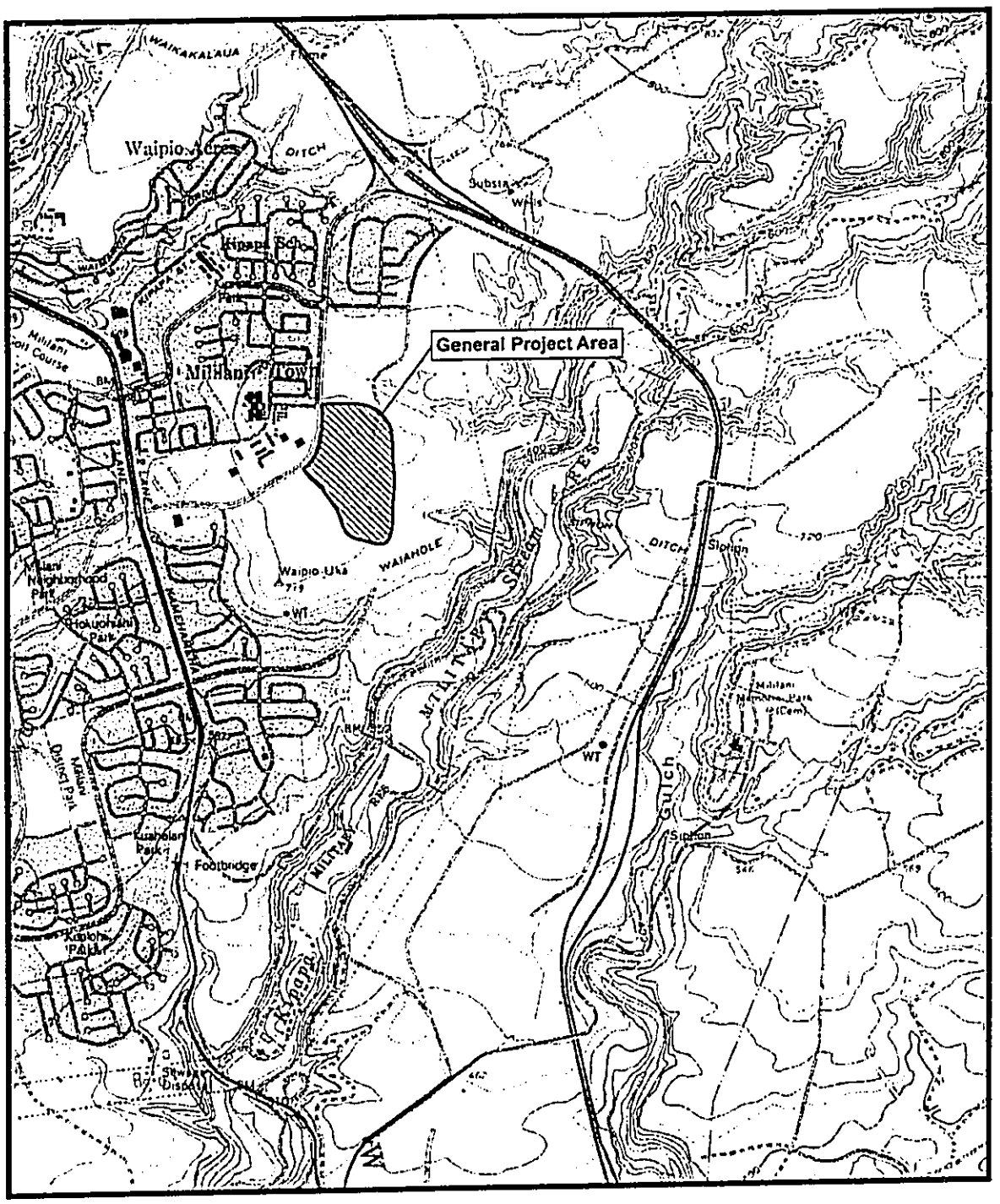

Figure 1 Portions of (1983) USGS Topographial Map (7.5 Minute Series), Waipahu Quad including the location of the project area.

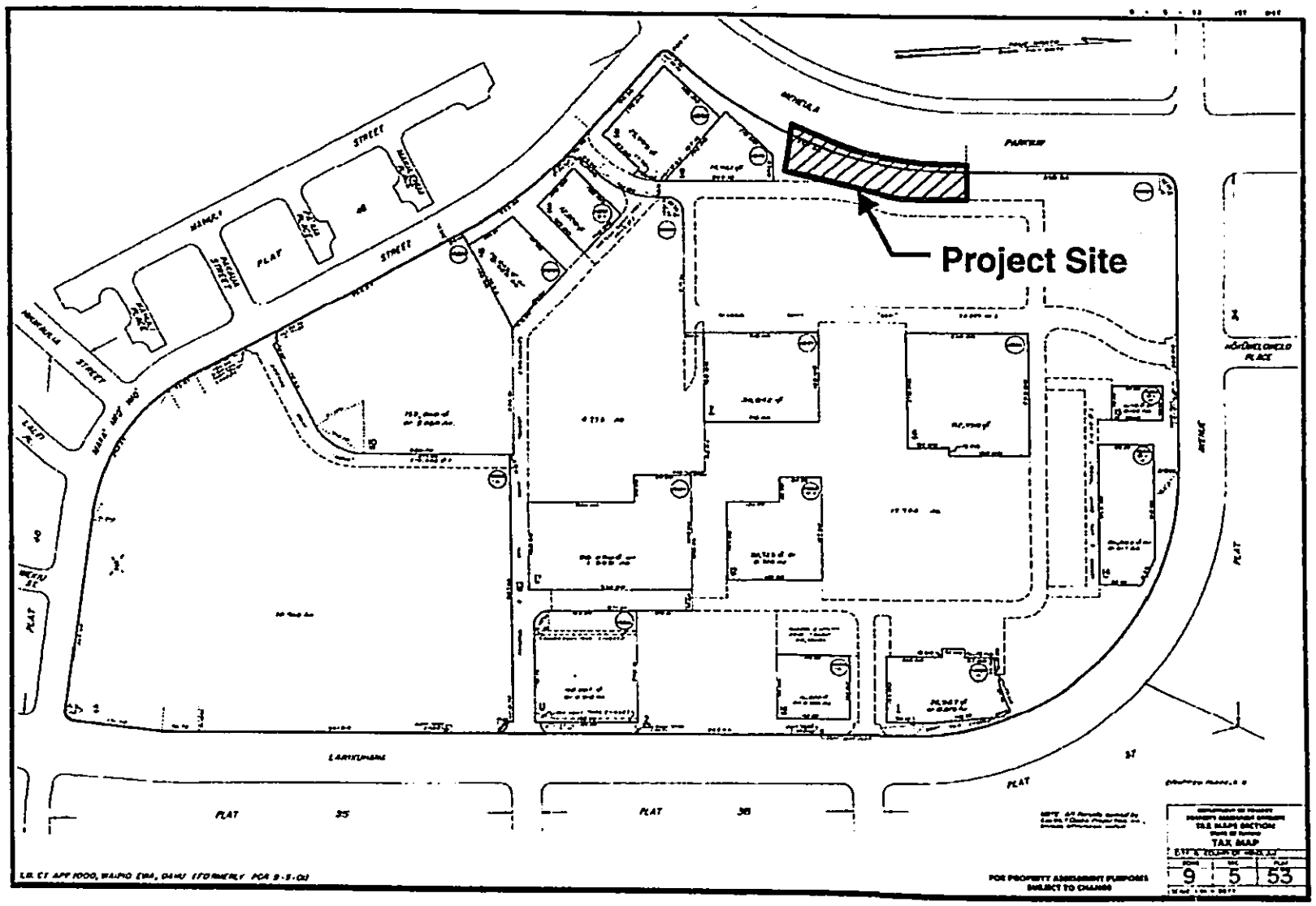

Figure 2 TMK 9-5-53 showing Project Site portion of Mililani Town Center

The only major land-form in the vicinity is Kīpapa Gulch, a tributary of the Waikele Stream. Kīpapa Stream is normally a permanently flowing stream in the "lower section, below the forest, which occasionally dries up after a long drought" (Hosaka 1937:178).

Rainfall in the project area is quite close to 1000 mm (39.4 inches) per year (Giambelluca *et al.* 1986, 1973:138).

Most of the project area consists of the Town Center of Mililani and associated parking and vehicular access. The portion of the project area that is unpaved or not built-up is landscaped with a variety of ornamental shrubs, trees and lawn.

C. Methodology

Historical documents and maps were researched at the Hawai`i State Archives, Hawai`i State Survey Office, the Bernice Pauahi Bishop Museum Archives, and the library of Cultural Surveys Hawai`i.

II. CULTURAL AND HISTORIC BACKGROUND

A. Pre-Contact to 1800 Waipi`o *Ahupua`a*

Waipi`o *Ahupua`a* was a focus of Hawaiian settlement and activity on O`ahu during the centuries preceding western contact. "The populous dwelling place of the *ali`i* was formerly located on an east point of Waipi`o Peninsula known as Lēpau" (McAllister 1933:106). The *ali`i* at Waipi`o were no doubt attracted to the great abundance the region offered.

> The primary reason for `Ewa's prominence in history and as an *ali`i* stronghold was undoubtedly the existence of the great number of fishponds at different points around Pearl Harbor, which was `Ewa territory. Two of the largest were on the [Waipi`o] peninsula, and another was at its northwest corner...(Handy and Handy 1972:470)

Other resources of the `Ewa *ahupua`a*, including Waipi`o, were available to promote their settlement by an expanding population:

> The lowlands, bisected by ample streams, were ideal terrain for the cultivation of irrigated taro. The hinterland consisted of deep valleys running far back into the Ko`olau range. Between the valleys were ridges, with steep sides, but a very gradual increase of altitude. The lower parts of the valley sides were excellent for the culture of yams and bananas. Farther inland grew the *`awa* for which the area was famous. The length or depth of the valleys and the gradual slope of the ridges made the inhabited lowlands much more distant from the *wao*, or upland jungle, than was the case on the windward coast. Yet the *wao* here was more extensive, giving greater opportunity to forage for wild foods in famine time. (Handy and Handy 1972.:469)

The Handys characterize Waipi`o and its peninsula as "an *ali`i* stronghold" and traditions of the *ahupua`a* focus on it as the scene of battles by the *ali`i* from other islands for political control and conquest of O`ahu. Several accounts relate the "Battle of Kīpapa" during the reign of the 15th century *mō`ī* Ma`ilikūkāhi, explaining how the gulch and stream in Waipi`o got their name; according to Abraham Fornander:

> I have before referred to the expedition by some Hawai`i chiefs, Hilo-a-Lakapu, Hilo-a Hilo-Kapuhi, and Punalu`u, joined by Luakoa of Maui, which invaded O`ahu during the reign of Ma`ilikūkāhi. It cannot be considered as a war between the two islands, but rather as a raid by some restless and turbulent Hawai`i chiefs, whom the pacific temper of Ma`ilikūkāhi and the wealthy condition of his island had emboldened to attempt the enterprise, as well as the eclat that would attend them if successful...The invading force landed at first at Waikīkī, but, for reasons not stated in the legend, altered their mind, and proceeded up the `Ewa lagoon and marched inland. At Waikakalaua they met Ma`ilikūkahi with his forces, and a sanguinary battle ensued. The fight continued from there to Kīpapa gulch. The invaders were

> thoroughly defeated, and the gulch is said to have been literally paved with the corpses of the slain, and received its name, "Kīpapa", from this circumstance. Punalu`u was slain on the plain which bears his name, the fugitives were pursued as far as Waimano, and the head of Hilo was cut off and carried in triumph to Honouliuli, and stuck up at a place still called Po`o-Hilo. (Fornander 1969, Volume II: 89)

During the second half of the 18th century, Waipi`o again became a focus of political intrigue and warfare on O`ahu. In 1783, forces of the Maui chief Kahekili gained control of the island of O`ahu by defeating the *mō`ī* Kahahana, "from the powerful `Ewa chiefs' line" (Cordy 1981:207). According to the 19th-century Hawaiian historian Samuel Kamakau, the defeated O`ahu chiefs plotted to kill the Maui chiefs. Waipi`o was given the name Waipi`o *kimopō*, "Waipi`o of secret rebellion" as it became the stage for the plotting (Kamakau, 1961: 138). After the failure of this plot, Kahekili took revenge on the `Ewa and Kona districts:

> ...and when Ka-hekili learned that Elani of `Ewa was one of the plotters, the districts of Kona and `Ewa were attacked and men, women, and children were massacred, until the streams of Makaho and Niuhelewai in Kona and of Kahoa`ai`ai in `Ewa were choked with the bodies of the dead, and their waters became bitter to the taste, as eyewitnesses say, from the brains that turned the water bitter. All the Oahu chiefs were killed and the chiefesses tortured. (Kamakau, 1961:138)

If Kamakau is correct, the population of Waipi`o would have been decimated during the 1780s. "The O`ahu society never rose again" (Cordy 1981:208).

Kahekili and the Maui chiefs retained control of O`ahu until the 1790s. Kahekili died at Waikīkī in 1794. His son, Kalanikūpule, was defeated the following year at the battle of Nu`uanu by Kamehameha, who distributed the O`ahu lands - including Waipi`o *Ahupua`a* among his favorites: "...land belonging to the old chiefs was given to strange chiefs and that of old residents on the land to their companies of soldiers, leaving the old settled families destitute" (Kamakau 1961:376-377).

B. 1800s to 1850

The end of the eighteenth century and beginning of the nineteenth century marked Hawai`i's entry into world trade networks. One of the chief exports at this time was the sandalwood tree (*Santalum* sp.) or *`iliahi* which was prized in China for its unique fragrance and used there in the fabrication of chests, as incense, perfumes and as medicine (St. John, 1947). There is some evidence that the central plains of `Ewa supplied the Hawaiian Kingdom with *`iliahi*. One of the first generation missionaries, Sereno Bishop, described his memories of the Central O`ahu region in the 1830s:

> Our family made repeated trips to the home of Rev. John S. Emerson at Waialua during those years. There was then no road save a foot path across the generally smooth upland. We forded the streams. Beyond Kīpapa gulch the upland was dotted with occasional groves of Koa trees. On the high

> plains the ti plant abounded, often so high as to intercept the view. No cattle then existed to destroy its succulent foliage. According to the statements of the natives, a forest formerly covered the whole of the then nearly naked plains. It was burned off by the natives in search of sandalwood, which they detected by its odor burning. (Bishop in Sterling and Summers, 1978: 89).

The dry forests formerly covering this region probably never came back, particularly considering the harm done to the *`iliahi* seedlings with the introduction of cattle soon thereafter (Judd, 1933).

During much of the 19th century, Waipi`o *Ahupua`a* is associated with John Papa `Ī`ī, a significant figure and chronicler of the Hawaiian Kingdom. In an account of his birth, `Ī`ī records the establishment of his family at Waipi`o after the ascendancy of Kamehameha on O`ahu:

> John Papa `Ī`ī was born in Kumelewai, Waipi`o, in `Ewa, O`ahu, on the third day of August (Hilinehu in the Hawaiian calendar) in 1800, on the land of Papa `Ī`ī, whose namesake he was. Papa [`Ī`ī's uncle] was the owner of the pond of Hanaloa and two other pieces of property, all of which he had received from Kamehameha, as did others who lived on that *ahupua`a*, or land division, after the battle of Nu`uanu. He gave the property to his *kaikuahine*, who was the mother of the aforementioned boy. (`Ī`ī 1959:20)

`Ī`ī's writings, collected in *Fragments of Hawaiian History*, provide glimpses of life within Waipi`o *Ahupua`a* during `Ī`ī's lifetime. `Ī`ī mentions the "family [going] to Kīpapa from Kumelewai by way of upper Waipi`o to make ditches for the farms" (`Ī`ī 1959:28) and recalls that, during the visit to O`ahu by the Kauai chief Kaumuali`i and his entourage, the chief's attendants were provided with gifts: "from Waipi`o in `Ewa and from some lands of Hawai`i came tapa made of *mamaki* bark" (`Ī`ī 1959:83). `Ī`ī notes how a period of famine was managed in Waipi`o and what resources were available during the famine:

> Here is a wonderful thing about the land of Waipi`o. After a famine had raged in that land, the removal of new crops from the taro patches and gardens was prohibited until all of the people had gathered and the farmers had joined in thanks to the gods. This prohibition was called *kapu `ohi`a* because, while the famine was upon the land, the people had lived on mountain apples (*`ōhi`a `ai*), tis, yams, and other upland foods. On the morning of Kane an offering of taro greens and other things was made to remove the *`ōhi`a* prohibition, after which each farmer took of his own crops for the needs of his family. (`Ī`ī 1959:77)

C. Waipi`o Uka and the Māhele

In contrast to the well-populated *makai* lands of Waipi`o, the *mauka* regions were often described in 19th-century accounts as virtually uninhabited. The missionary William Ellis describes the interior regions of `Ewa in 1823-24:

> The plain of Eva is nearly twenty miles in length, from the Pearl River to Waiarua, and in some parts nine or ten miles across. The soil is fertile, and watered by a number of rivulets, which wind their way along the deep water-courses that intersect its surface, and empty themselves into the sea. Though capable of a high state of improvement, a very small portion of it is enclosed or under any kind of culture, and in traveling across it, scarce a habitation is to be seen. (Ellis 1963:7)

Despite Ellis' impression of a desuetude and lack of people in the more *mauka* reaches of `Ewa, there is evidence that the population of Waipi`o during the early 19th century was not focused solely on the fertile coast; Kamakau notes, in an inventory of advances in education during the reign of Kamehameha III (from 1825 to 1854):

> Schools were built in the mountains and in the crowded settlements. *Waipi`o* had school houses near the coast and in the uplands. (Kamakau 1961:424)

The placement of a school "in the uplands" of Waipi`o suggests that some portion of the *ahupua`a*'s population was settled there.

By the late 1840s, approximately 300 persons were listed as living in Waipi`o *Ahupua`a*. This population figure is documented in records of the 1840s for the Great *Māhele*. The Organic acts of 1845 and 1846 initiated the process of the *māhele* - the division of Hawaiian lands - which introduced private property into Hawaiian society. In 1848 the crown and the *ali`i* (royalty) received their land titles. The common people received their *kuleana* (individual parcels) in 1850. It is through records for Land Commission Awards (LCAs) generated at the *māhele* that the first specific documentation of life in Waipi`o *Ahupua`a*, as it had evolved up to the mid-19th century, come to light.

John Papa `Ī`ī was awarded most of the *ahupua`a* of Waipi`o - in LCA 8241 - comprising approximately 20,540 acres. Included in the documentation for `Ī`ī's award is a list of "the people living on the land of Waipi`o `Ewa" in 1848 (Native Register vol.5:512-517).

A substantial award within the *ahupua`a* went to Abenera Pākī, the father of Bernice Pauahi Bishop. Part of LCA 10613 to Pākī comprised the 350 acres of the *`ili* of Hanaloa. Also receiving a land award (LCA 2937) in Waipi`o was William Harbottle who claimed 2 acres at Hanapouli *`ili*.

The remaining land claims - totaling 99 (not all of which were awarded) - documented in the records are for *kuleana* worked and lived upon by the Hawaiians of Waipi`o. Predominant among the claimed land usages in Waipi`o are 312 *lo`i*, irrigated taro patches, of various sizes; and 43 *mo`o* or fields comprising indeterminate numbers of *lo`i*. Clearly, wetland taro cultivation was the primary agricultural pursuit within the

*ahupua`a* at mid-19th century, likely reflecting a long history of taro farming. At the coast, 4 fishponds are claimed. In the more *mauka* reaches of Waipi`o, 53 claims were made for portions of *kula* (pasture land) and 25 for "*okipu*" or *`okipu`u* (forest clearing). The fact that several claims were made in the *mauka* regions suggest that Waipi`o residents had particular locales which they traveled to repeatedly. The land use for these suggest *kula* and *`okipu`u*. *"Kula"* land is a general term for open fields, pastures, uncultivated field or field for cultivation, and upland in distinction from meadow or wetland (Lucas, 1995: 60). *Kula* lands were often used for opportunistic plantings which did not depend heavily on a consistent source of water such as bananas, sugar cane, sweet potatoes, dry land taro, etc... *Okipu`u* is defined as a forest clearing (Lucas, 1995: 82), a place presumably used to gather forest products and medicinal herbs and for parturage.

Historic maps and modern tax maps show the great majority of the awarded land parcels located in the *makai* portions of Waipi`o, at or just above the peninsula. However, there were 19 claims describing land use in upper Waipi`o or "Waipi`o Uka". Eleven of these claims were awarded. All of the awards are located in Kīpapa Gulch. Most claims include *mo`o*, houselots, houses, *kula*, and some mention *okipu*.... The "house lot" and "house" claims indicate that Hawaiians continued to live in *mauka* Waipi`o during the mid-19th century. Also noteworthy are the claims for "*kula*" or pasture land; exact locations of these *kula* have not been identified.

Mahele documents and maps indicate that no *kuleana* claims were made within the vicinity of the present project area.

Cattle grazing was begun in the *mauka* regions of Waipi`o around the 1830s (Bishop, 1901: 87). In 1847, residents living in *kuleana* land in Waipi`o Uka petitioned the Minister of the Interior, John Young, to resolve the problem of stray animals (cited in Hammatt *et. al*, 1996). These stray animals may have been from herds of cattle and goats grazing on the flat *kula* lands of Waipi`o. In addition to the havoc the stray animals were imparting to the residents of Waipi`o Uka, the impact of grazing animals was noted several kilometers away at Pearl Harbor.

> The subsequent occupation of the uplands by cattle denuded the country of herbage, and caused vast quantities of earth to be washed down by storms into the lagoons, shoaling the water for a long distance seaward. (Bishop 1901:87).

Stray cattle probably continued to be a problem until large-scale agriculture was introduced in the early part of the twentieth century.

D. 1850s to 1900

An 1877 map of Waipi`o *Ahupua`a*, compiled by J. F. Brown, shows the *mauka* lands, including the present study parcel, labeled "grassy plain," suggesting suitable areas for the grazing of livestock (Figure 3). After John Papa `Ī`ī's death in 1870, his estate -

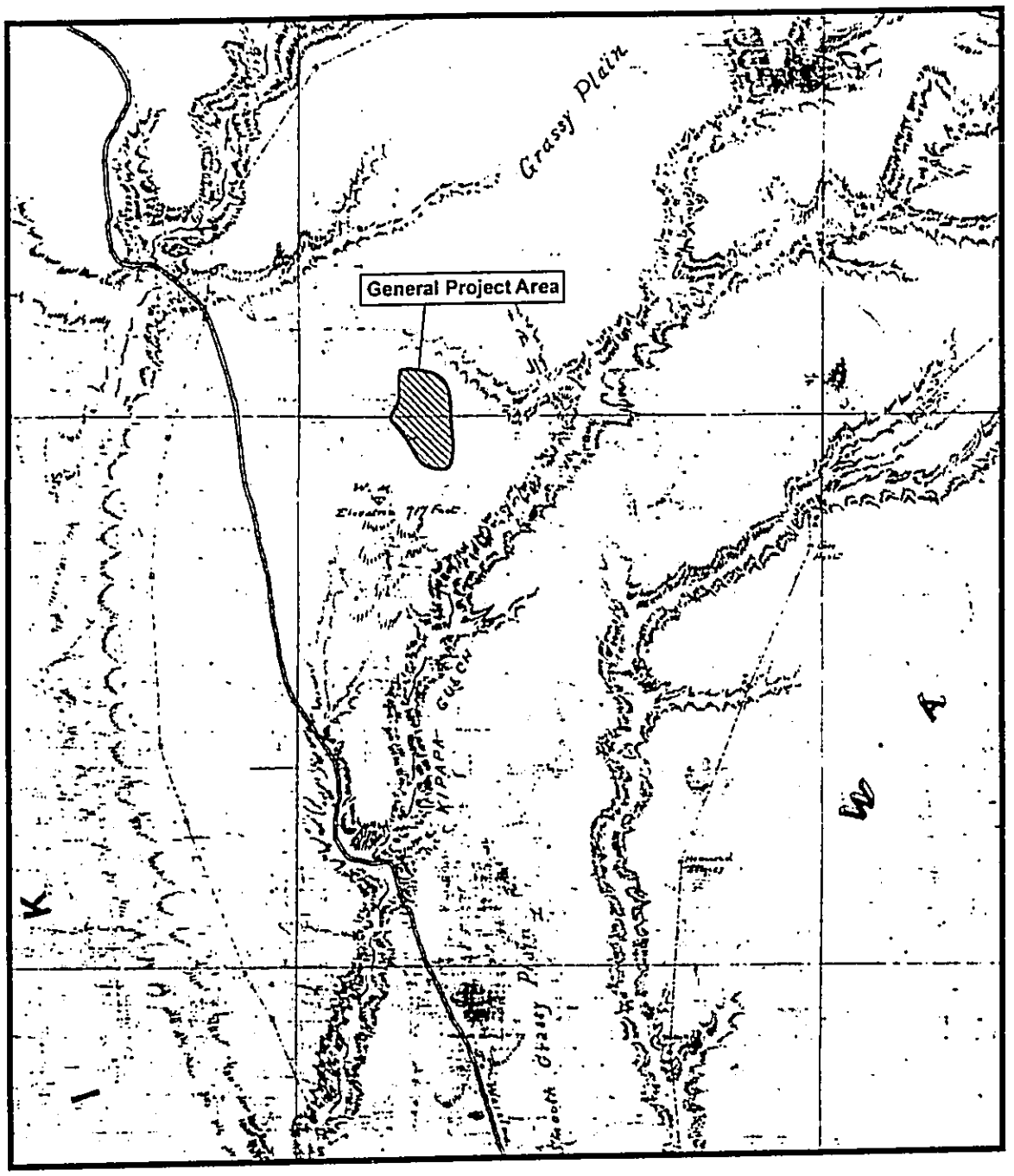

Figure 3 Portion of the 1877 Brown Map of Waipi`o *Ahupua`a* Showing Approximate Location of Present Study Parcel

including the Waipi`o lands - was inherited by his daughter Irene `Ī`ī Brown. Shortly after, small parcels within the *ahupua`a* were sold off, "including a portion to James Robinson and Co. in September 1871" (in Riford 1986:22). It would not be until the late 1890s that large tracts of Waipi`o land would be leased for large-scale commercial agriculture.

The newly organized Oahu Sugar Company, an "annexation plantation, a direct promotion of Benjamin F. Dillingham" (Condé and Best 1973:313), leased 3,400 acres of the *mauka* portion of Waipi`o from the `Ī`ī estate in 1897. A few years earlier, the Oahu Railway and Land Co. (O.R. & L.) had leased a tract through Kīpapa Gulch to transport sugar and pineapple from Wahiawā to Honolulu. The growth of pineapple in Waipi`o would comprise the major transformation of the present study parcel during the 20th century.

E. 1900s to Present

At the start of the century, the U.S. Government commenced acquiring the coastal lands of `Ewa for the development of a naval base at Pearl Harbor. In 1909 the government obtained Waipi`o peninsula by condemnation from the `Ī`ī estate; the land was valued at $10,000.

At the same time, lands in Waipi`o *mauka* were being acquired for pineapple cultivation. An unrecorded lease from the John `Ī`ī Estate, Ltd. to Yoshisuke Tanimoto and Kintaro Izumi in 1908 led to the formation of the Waipio Pineapple Company which cleared and cultivated approximately 223 acres in portions of Kīpapa Gulch (Liber 434: 228-235). This was probably the beginning of pineapple cultivation in the uplands of Waipi`o, just west of the project area. In 1915, Libby McNeill & Libby took over Waipio Pineapple Company's leases and continued to cultivate pineapple in the area. A 1919 map shows commercial cultivation (probably Oahu Sugar Company sugar cane in field # 51) within the project area (Figure 4). By the late 1920's, Dole had arrived and was cultivating pineapple on thousands of acres in the *mauka* area of Waipi`o including in the current project area (Figure 5).

Meanwhile, Oahu Sugar Company was tackling the problem of obtaining sufficient water to cultivate sugar. In 1913 a project began to transport water from the windward side of O`ahu through the Ko`olau Range to irrigate the fields and mill of the Oahu Sugar Company in `Ewa. During the next decade, the *mauka* lands of Waipi`o would be the site of a portion of a major undertaking. The Waiāhole Water Company, a subsidiary of Oahu Sugar, created the Waiāhole Ditch System that was "an engineering feat of epic proportion for those times" (Condé and Best 1973:37). The ditch system, which followed the contour just seaward of the present project area, was completed in 1916, and with some modifications is still in use.

In the 1930s, use of Waipi`o by the U.S. military extended well *mauka* of the peninsula at Pearl Harbor. The military began the appropriation of Kīpapa Gulch around 1938 and during World War II used the rail system (visible in Figure 6) to "haul large quantities of ammunition" (Condé and Best 1973:315). WWII had little impact on the present project area (Figure 6).

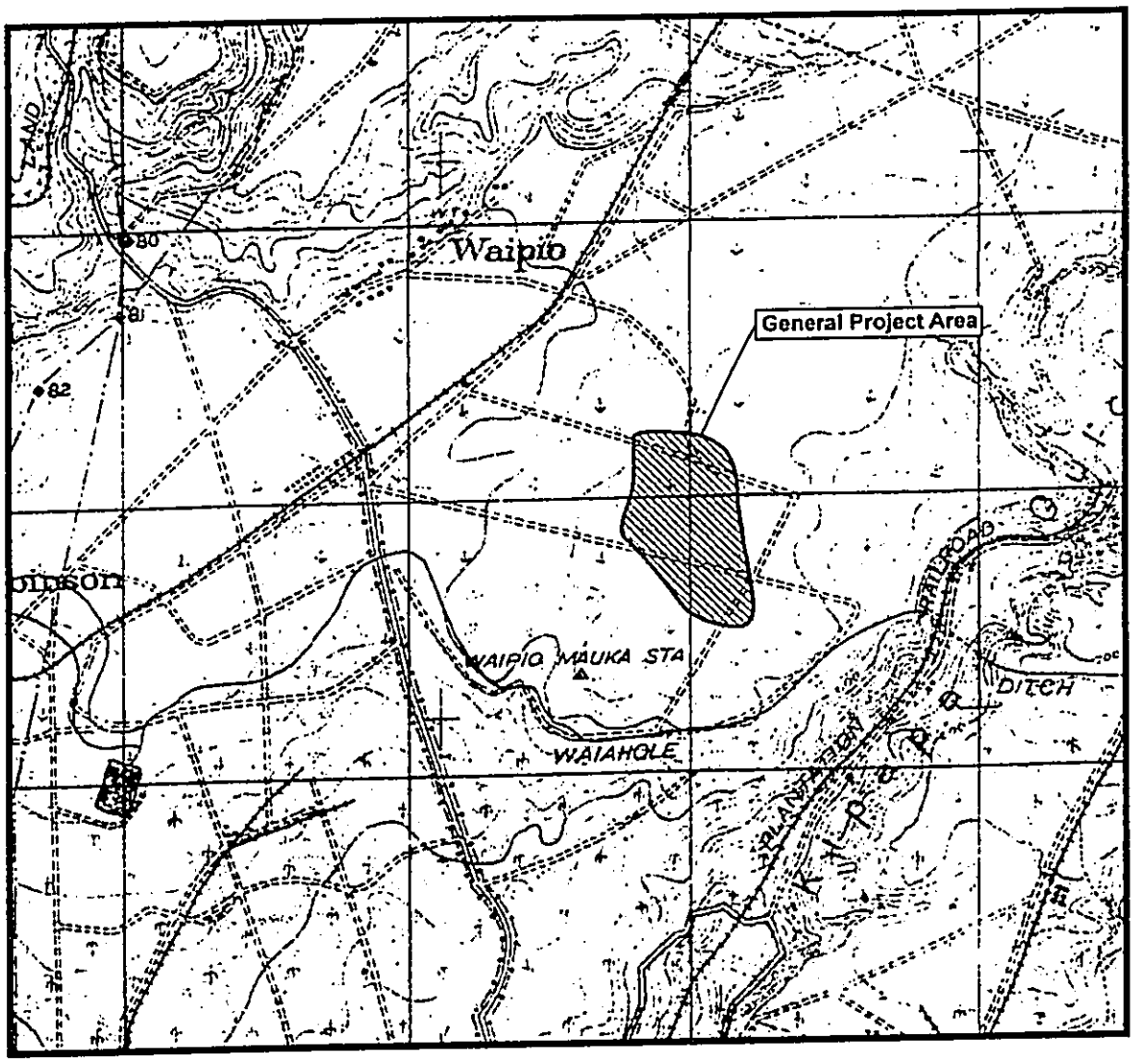

Figure 4 Portion of 1919 War Department Fire Control Wahiawa Quad Showing Commercial Cultivation at the Present Project Area

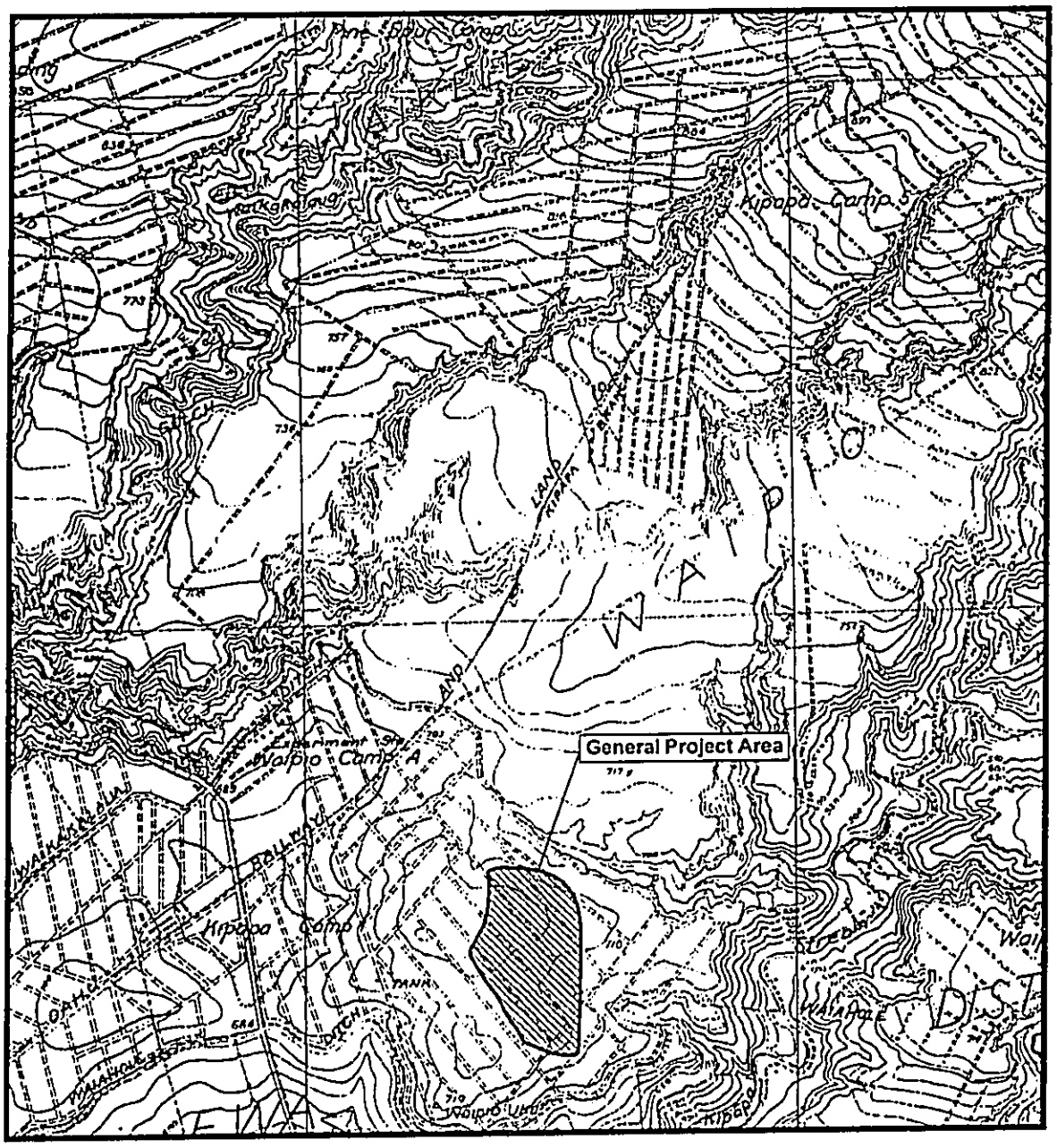

Figure 5 Portion of 1928/1929 USGS Wahiawa Quad Map Showing Pineapple Cultivation within the Present Project Area

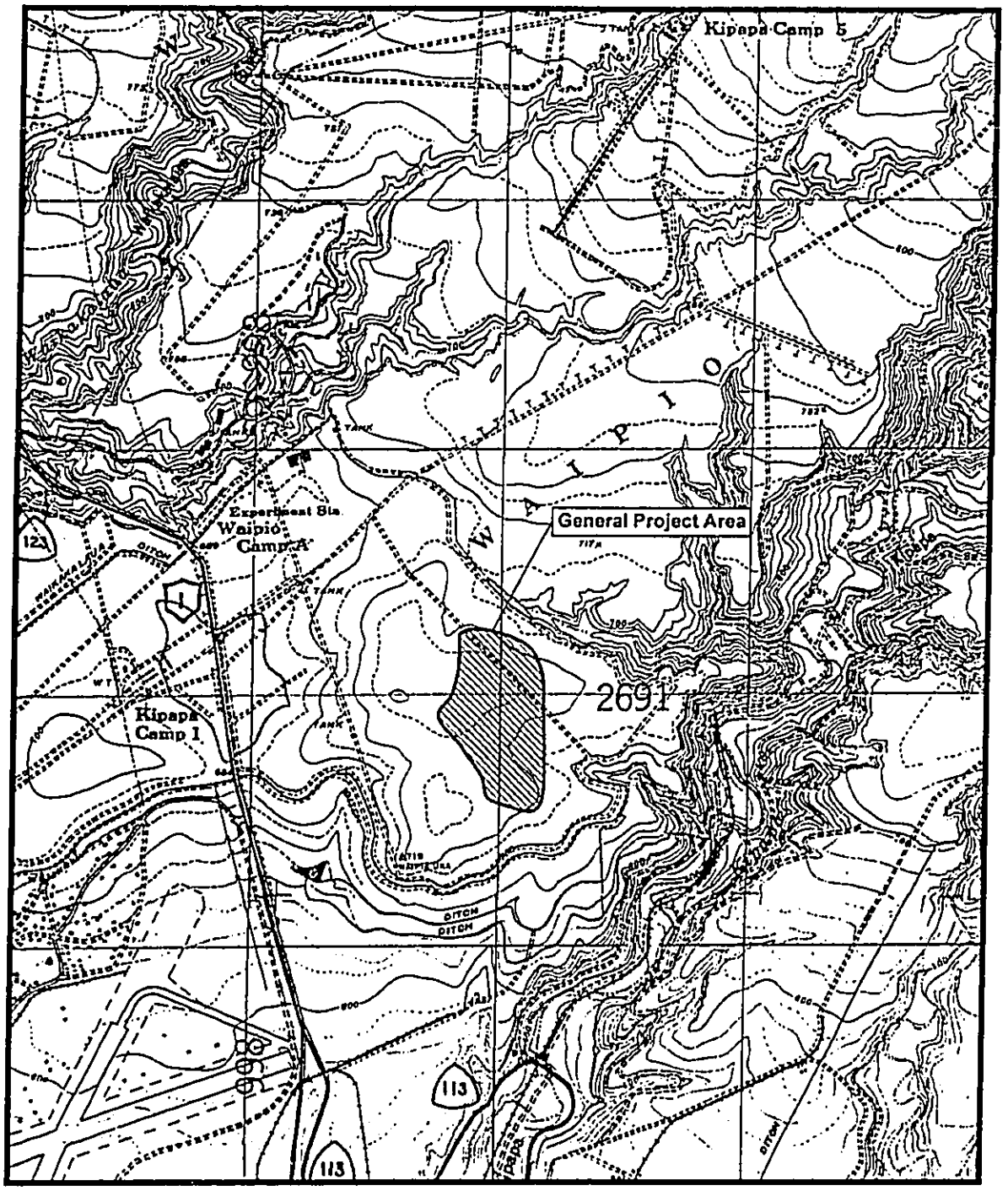

Figure 6 Portion of 1943 War Department map, Kaukonahua Quad, showing present project area

During the second half of the 20th century, growth in Waipi`o *Ahupua`a* focused on the development of Mililani Town by Castle & Cooke, Inc. through its subsidiary, Oceanic Properties, Inc. In 1964, the state Land Use Commission redesignated for urban use 705 acres of agricultural land in Waipi`o. The first increment of Mililani Town opened in June 1968. In 1973 construction began on the H-2 freeway across Waipi`o, connecting Mililani to the H-1 freeway. The Town Center of Mililani is a relatively recent construction dating to the 1990s.

F. Folklore and Mythological Traditions Pertaining to Waipi`o

Many of the legends of Waipi`o pertain to lands *makai* of the project area in the vicinity of Pu`uloa. In Waipi`o, `Ewa, `Ai`ai was said to have established a *pōhaku i`a* (fish stone) at Hanapouli and a *ku`ula* named Ahu`ena (Kawaharada, 1992).

In the legend of Namakaokapao`o, several place names in `Ewa are mentioned including Līhu`e, Honouliuli, Hō`ae`ae and *kula o* Keahumoa (Fornander, 1919: Vol.V, Pt.II). Fornander describes the location of Keahumoa as the "plain before reaching Kipapa gulch" (Fornander, 1919:Vol.V, Pt.II, p. 274). Namakaokapaoo is described as a small, brave child who took a dislike to his stepfather Puali`i and pulled up the sweet potatoes Puali`i planted at their home in Keahumoa. When Puali`i came after Namakaokapaoo with an axe, Namakaokapaoo delivered his death prayer and slew Puali`i hurling his head to a cave Waipouli, near the beach at Honouliuli.

In the *mauka* regions of Waipi`o, legend speaks of Kalelealuaka, who lived during the reign of the O`ahu chief, Kākuhihewa (Thrum, 1998). Kalelealuaka was the son of Kaopele, who was born in Waipi`o, Hawai`i. Kaopele had a tendency to fall into deep trances for months at a time. When he would awaken, he would plant plantations of supernatural proportions. However, he was never able to enjoy the fruits of his labors because Kaopele would fall into deep sleeps. Once, during a deep slumber, he was mistaken for dead and taken to Wailua, Kaua`i to be offered as a sacrifice. Upon awakening, he created a life on Kaua`i and married. On Kaua`i, he had a son Kalelealuaka who he reared in his image. His son was also blessed with supernatural powers and Kaopele instructed the boy in the arts of war and combat, which Kalelealuaka exhibited during two challenges with kings of Kaua`i. One day, Kalelealuaka decides to travel to O`ahu. He takes with him a boy, Kaluhe and paddles to Wai`anae. There, he meets another companion who he later names Keinoho`omanawanui, the sloven. They settle in an old plantation in the *mauka* regions of Waipi`o, formerly planted by Kaopele. This place is called Keahumoe and here they build their mountain house Lelepua after Kalelealuaka's magic arrows.

III. PREVIOUS ARCHAEOLOGICAL STUDIES

The earliest archaeological work in Waipi`o *Ahupua`a* was conducted by J. Gilbert McAllister in the 1930s. He described several sites in Waipi`o, most of them located near the marine resources and the fishponds of Pu`uloa or on the wide coastal plain with the excellent taro lands in proximity to the Waipi`o Peninsula. Those archaeological sites recorded closest to the project area include Sites 130, 131, 132 and 204. Site 130 is documented as Moaula Heiau located on the east side of Kīpapa Gulch and described as being a companion *heiau* to Heiau o Umi (Site 131) located at the bottom of Kīpapa Gulch (McAllister, 1933: 107). McAllister claimed both *heiau* were covered in cane during the time of his survey. In a reconnaissance survey of military lands in Kīpapa Gulch conducted by Bishop Museum, both *heiau* were documented as located inside Kīpapa Gulch and were listed as destroyed sites (Rosendahl, 1977). During a reconnaissance survey and sub-surface testing in Kīpapa Gulch in 1988, Cultural Surveys Hawaii searched for the Moa`ula Heiau and Heiau o Umi. "No actual structure was observed, but a fairly level area, with some *ki* plants, was observed" (Hammatt and Borthwick, 1988: 31).

Site 132 is described as Waikakalaua and Kīpapa Gulches which were made famous by a battle between Hawaii and the then chief of Oahu, *Mailikūkahi* (McAllister, 1933: 107). Site 204 is named O`ahunui and is described as a stone "whose outline is said to resemble that of O`ahu" (McAllister, 1933: 132). The location of the O`ahunui stone is in the gulch near the Ewa-Waialua District boundary, presumably Waikakalaua Gulch.

No archaeological resources were documented in the area for many years. In 1983, an archaeological reconnaissance survey of 300 acres was conducted for the proposed Hawaii High Technology Park (Hommon and Ahlo, 1983). One archaeological site was identified during the survey, Site 50-80-09-3401. This site consisted of a terrace measuring 17m long by 2-4m wide by 0.3-0.6m high with one stacked retaining wall. One interpretation of the terrace was as an agricultural plot used for non-irrigated crops. No further archaeological work was recommended based on the small size of the site, its simple form and the lack of surface artifacts encountered.

The archaeological inventory survey of the final phase of Mililani Town [Mililani Mauka] was completed in 1985 (Barrera, 1985). The lands surveyed include the approximately 100 acres of the current project area. The fieldwork consisted of a brief inspection of the fields which were then cultivated in pineapple and particularly the two shallow gulches in the study parcel (See Figure 1). It was concluded that "if any structural remains of an archaeological or historical nature ever existed on the subject property, pineapple cultivation has long since erased any such evidence (Barrera, 1985: 1). No further archaeological work was recommended.

One site was identified during a 70 acre reconnaissance survey of the Waikakalaua Gulch (Kennedy, 1985). This site was described as "an unirrigated terrace-most likely for the cultivation of dry taro or sweet potato" (Kennedy, 1985: 4). Subsurface testing produced one small piece of *kukui* nut, too small for radiocarbon testing. It was concluded the property needed no additional archaeological work. In 1990, a reassessment of the 70 acres was undertaken because the original survey was considered deficient and failed to "meet the minimum guidelines set by the Historic Preservation Program of the State Department

of Land and Natural Resources" (Sinoto, 1990: 1). Due to lack of site location map, the single terrace recorded during the first survey was not relocated. During the 1990 resurvey, four areas of structural remains were located including areas of historic habitation platforms, retaining walls, water catchments, bridge remains, historic roadbeds and associated retaining walls. Areas 1 and 2 were assigned State site numbers 50-80-08-4662 and 50-80-08-4663 respectively. The structures of Area 2 including historic habitation platforms, retaining walls and excavated catchments were associated with Japanese plantation workers who probably lived at the Pine Spur Camp, a plantation camp functional in the early part of the twentieth century. Recommendations included possible preservation of some features of Site 50-80-08-4662 and further archaeological work on this site.

A survey of the Waikele Branch of the Lualualei Naval Magazine documented five archaeological sites [50-80-08-2919-2923] (Riford and Cleghorn, 1986). This study area consisted of 264 acres along Kīpapa and Waikakalaua streams near their confluence. Twenty-one overhang caves and crawl spaces were identified in Waikakalaua Gulch *including one modified cave and eleven with prehistoric material.* Several historic features were also recorded (though not deemed archaeological sites) in Waikakalaua Valley including cement boulders, portions of an old roadbed, boulder and cobble paving associated with an abandoned railroad berm, scattered boulder mounds and facings connected to historic agricultural clearing activities and boulder rock tailings associated with road construction or ammunition storage facility excavation. In Kīpapa Gulch, three rock shelters were observed as well as segments of a railroad berm, remains of a railroad cane-hauling car and rock tailings. The rock shelters along Waikakalaua Gulch are suggested as temporary habitation sites for a possible travel route from Pu`uloa over Kolekole Pass and into Wai`anae. Many historic references point to a transportation route between the south coast and central and western O`ahu. Site 50-80-08-2922, situated on an intermittent tributary of Waikakalaua Stream, was recorded as a historic basalt rock quarry which may have been used prehistorically. Further archaeological testing was recommended for only one site, Site 50-80-08-2919.

An archaeological reconnaissance survey was conducted for a 2.75 acre parcel of land in Mililani Town, west of Mililani High School (M. Rosendahl, 1987). No archaeological resources were identified and no further archaeological work was recommended.

422 acres of the Waikakalaua Gulch were surveyed during an archaeological reconnaissance of Waikakalaua Ammunition Storage Tunnels Site (Hammatt *et. al*, 1988). Two small agricultural terraces were recorded situated parallel to the stream. The dimensions of the terraces were 12 m long and 0.3 m wide. The two terraces were associated with sugar cane cultivation based on their low height and their location in a former cane field. The land within the study area had been heavily modified due to the grading and filling required during the construction of the 1905 railroad line and with the excavation of the ammunition storage tunnels during the second world war. No further archaeological work was recommended for the area.

The proposed stream clearing of Melemanu Woodlands Phase III was given archaeological clearance in a letter by Joseph Kennedy (March 16, 1992) who stated "it was in our opinion that no further work was necessary on the subject property or, by

extrapolation, any lands mauka here due to topographic conditions (Kennedy, 1992: 1). Kennedy also based his decision on a field inspection of the study parcel by Dr. Dye from the State Historic Preservation Division who maintained 'the depositional environment is inhospitable to the preservation of historic deposits'....'there is no reason to conduct an archaeological survey for this project' (in Kennedy, 1992: 1). No map was included in the letter report and the exact location of the subject property is unknown.

An archaeological inventory survey of the proposed Mililani Summit project area produced three sites (50-80-08-4436-4438) consisting of two historic charcoal ovens linked to Japanese pineapple workers and a complex of World War II military structures (Cleghorn *et. al*, 1992). Large scale land modifications were noted in the subject property commencing with pineapple cultivation, continuing with the military construction of storage facilities during World War II and most recently with lime and lychee orchard activities. The two historic charcoal ovens were considered significant under Criteria A and D of the National Register and would be avoided during development. No further archaeological work was recommended for the study area.

In June 1993, two members of the Waipi`o-Wahiawā communities contacted the State Historic Preservation Division Office and offered to take the SHPD staff archaeologist to the O`ahunui Stone as part of the Waikakalaua Stream Realignment Project blessing ceremony in order for SHPD to record and map its location (Dagher, 1993). During the site visit, the informant was vague about the actual location of the stone and would not disclose its whereabouts. The informant "stated he believed the area was sacred and had spiritual significance" and he was told by SHPD that this claim must be substantiated by the *kūpuna* in order for the site to be given protection status (Dagher, 1993: 2). The second informant also offered to show the SHPD staff archaeologist the O`ahunui Stone, but cancelled when he did not receive permission from the *kūpuna*.

An archaeological inventory survey conducted for the proposed drainage of the Mililani Mauka Subdivision produced no archaeological finds (Stride and Hammatt, 1993). The location of the project area was in a tributary gully of Kīpapa Gulch which showed no signs of inhabitation or agricultural modification in the prehistoric period and seemed to have been utilized only as a drainage for the pineapple fields. No further archaeological work was recommended.

Archaeological investigations were carried out for the Launani Valley Townhouse Development in 1994 (Moore and Kennedy, 1994). This development is situated inside the Waikakalaua Gulch, in close proximity to the current project area. The objective of the study was to gather more information on two documented archaeological sites (Sites 50-80-08-4812-4813) before construction began in the development. Site -4812 consists of 19 *ahu* and a capped stone flume and a terrace. The capped stone flume is associated with historic agricultural modifications. After test excavation in the terrace revealed no cultural material, it was suggested this feature was a historic modification from an old foot trail which led up the Waikakalaua Stream to a horse crossing. The complex of *ahu*, were interpreted as possible historic growing mounds for sweet potatoes and gourds due to their positioning in the ravine optimizing water catchment and soil retention. Site -4813 consists of the collapsed structures and walls associated with a former nursery which is known to have been in use until the 1960's. In addition to the archaeological excavations conducted

during this study, this study briefly addressed community members concerns regarding the O`ahunui Stone. According to this study, members of the community claimed all or portions of Site -4812 constituted the "Oahu-nui Stone" (Moore and Kennedy, 1994: 1). It was concluded that because none of the *ahu* in Site -4812 resembled the shape of O`ahu and the two referenced maps depicted the location of the O`ahunui Stone outside of Waikakalaua Gulch that O`ahunui Stone was probably never located within the Waikakalaua Gulch.

In 1996, an archaeological inventory survey was completed for 1339 acres of Castle and Cooke lands slated for residential development in the *mauka* areas of Waipi`o and Waiawa Ahupua`a (Hammatt *et. al*, 1996). No evidence of historic settlement was found. This was attributed to the fact that the majority of the project area lands had been cultivated in pineapple in the historic to modern periods as well as the settlement patterns for these *ahupua`a*. A portion of the Waiāhole Ditch System (Site 50-80-09-2268) was identified as traversing a part of the project area. Recommendations were made to take appropriate mitigative measures if the site was to be impacted during development. Also, the Kīpapa Ditch Site (50-80-098-9529) is located adjacent to, but outside of the project area.

During an archaeological inventory survey of 162 acres located between H-2 Freeway and Kamehameha Highway on the west side of Waikakalaua Gulch in Waikele *Ahupua`a* (TMK 09-05-02: por. 3), no archaeological sites were located on the plateau portion of the project area. However, in the southwestern portion of the project area where the study parcel extends down into the Waikakalaua gulch, three features were documented. These include a boulder structure which may have served as a possible trestle footing for the O.R. & L. rail line, a road cut and a discontinuous basalt boulder retaining wall which are associated with historic period railway construction and erosion control. The three features were considered sufficiently documented and no further archaeological work was recommended for the study parcel.

IV. FIELD INSPECTION

The Mililani Town Center project area was inspected on May 18, 2001. Field notes and photographs were taken.

The project area comprises entirely a modern commercial shopping complex (Figures 7&8). Development of the complex entailed extensive grading and filling to create a level surface for construction of buildings and parking areas. The most dramatic evidence of grading is along Meheula Parkway where the complex sits twelve feet below the parkway. It is immediately apparent that the ground surface in this parking lot portion of the Mililani Town Center, where the transit center is projected to be located, is an entirely modern construction.

Figure 7 Mililani Town Center parking lot adjacent to, and up to twelve feet below, Meheula Parkway (on left)

Figure 8 View of Mililani Town Center parking lot from Burger King building

V. NATIVE HAWAIIAN CUSTOMS PERTAINING TO THE PROJECT AREA AND POSSIBLE CULTURAL IMPACTS

A. Burials

There are no documented burials in the vicinity of the project area. The project area has been cultivated in pineapple for approximately eighty years (c. 1910-1989), during which time the topsoil has been greatly impacted. If there were once burials in the project area, they probably no longer exist.

B. Hawaiian Trails

In the vicinity of the project area, the Kamehameha Highway follows the general route of a well documented traditional trail, which formerly connected `Ewa to the Waialua District through the Central O`ahu Plains as well as to Wai`anae over Kolekole Pass. The route of the trail is described as such, running from Waialua to `Ewa.:

> Beyond [Kūkaniloko] was Paka Stream and the *maika* field of Kapalauauai, which lay beyond the pond belonging to the village. There the trail met with the one from Kolekole and continued on to the stream of Waikakalaua, Piliamo`o, the plain of Punalu`u, to a rise, then down to Kīpapa and to Kehualele (`Ī`ī, John Papa, 1959: 99).

The Kamehameha Highway is approximately 1.5 kms south of the project area and thus the `Ewa-Waialua Trail was probably about that distance from the study parcel. This trail most likely attracted much traffic through the area. Traditional accounts speak of O`ahu chiefs engaging in battles on the plains of Punalu`u and Kahuamoa. These place names correlate to areas along the `Ewa-Waialua road.

A second trail which may have been located even closer to the project area is also noted by `Ī`ī. The following is a description of the trail:

> A trail ran from this main trail [Waialua-`Ewa] to Kalakoa, O`ahunui, and other places much visited, such as Kukaniloko. From there it extended to the digging place of Kahalo, then went below to Paupalai, thence to Lelepua, and to Kahalepoai, where the legendary characters Kalelealuaka and Keinohoomanawanui lived. Then it reached Kekuolelo, the stone in which the *niho palaoa* was hidden, then went to Pu`unahawele and Pueohulunui, where it met with the Waialua trail (`Ī`ī, John Papa, 1959:99).

The exact route of this trail is unknown, however, it may have existed somewhat *mauka* of the main route given the supposed location of O`ahunui. If this trail did once traverse the plains near the project area, knowledge of its location has been lost.

We have identified no documentation pertaining to any other trails in the project area, though as in the case of the burials, any preexisting trails would have been obliterated with pineapple cultivation practices.

C. Native Hunting Practices

Although modern pig hunting is often not considered a "traditional cultural practice", it is currently associated with sustenance for many Hawaiians. Based on information provided by local pig hunters, most of the hunting grounds of Waipio, both used traditionally and presently are in the *mauka* regions of Waikakalaua and Kīpapa gulches, up the stream valleys. Access to some of these areas was formerly from Mililani Mauka, at the *mauka* edge of the Mililani Mauka Subdivision. When the area was formerly planted in pineapple, access to hunting grounds was not a problem. However, with the growth of Mililani Mauka, all points of access to those *mauka* hunting grounds have been cut off. There is no evidence that the Mililani Town Center parcel was ever associated with any access route to the Waipio pig hunting grounds.

D. Native Gathering Practices for Plant Resources

As has been noted in this assessment, prior to the development of the Mililani subdivision and the Mililani Town Center, the entire area was under cultivation of pineapple for most of the 20th century. No evidence of any former gathering of plant resources within the specific site of the Mililani Town Center remains. Additionally, there is no evidence of any on-going gathering practices.

E. Cultural Sites

The decades-long commercial agriculture and modern urban development within the present project area have so disturbed and altered the original landscape that no surface cultural sites or properties are present.

VI. SUMMARY AND CONCLUSION

Historical records have documented the decades-long commercial cultivation of pineapple within the lands comprising the present Mililani subdivision and the Mililani Town Center. There is no record of any archaeological or historic properties associated with the site of the Mililani Town Center that may have existed prior to the center's construction or to the commencement of pineapple growing.

The area's history of commercial agriculture and urban development have similarly distorted or terminated any native practices, if any, that formerly pertained to the Mililani Town Center parcel. There is no evidence of any native practices – including burials, trails, hunting, gathering, and cultural sites – formerly associated specifically with the parcel, nor is there evidence of any ongoing cultural practices.

As noted during the field inspection, there are no surface historic properties on the town center parcel. Additionally, excavation and grading during construction of the town center, preceded by the decades of commercial agriculture, would have destroyed any subsurface historic properties.

Based on the above findings, this study concludes that there will be no adverse impact to historical or cultural resources by the proposed Mililani Community Transit Center.

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APPENDIX B

Traffic Impact Analysis and Environmental Analysis

Prepared by Parsons Transportation Group, Inc., June 2002

Oahu Transit Centers

Traffic Impact Analysis and Environmental Analysis

Prepared for

City and County of Honolulu
Department of Transportation Services

AM Partners, Inc.

June 2002

Prepared by

PARSONS

Table of Contents

1

Introduction

The project addressed in this report consists of the construction of three transit centers on the Island of Oahu. The transit centers will be constructed as part of the implementation of the City and County of Honolulu's new Hub and Spoke Bus Transit System, which will serve communities outside of Honolulu's primary urban center. The first three communities to be served by these projects are Waianae, Wahiawa and Mililani. The new Hub and Spoke System, when operational, will provide multi-route, interconnecting transfer locations for Honolulu's Public Transit System and will be a key element in the transportation infrastructure for the three communities. The transit centers will provide significant benefits toward increasing the operational efficiency of the system and enhancing the mobility of its users.

Waianae Site and Study Area

The Waianae Coast Community Transit Center site is located at 86–052 Leihoku Street and is immediately east of Farrington Highway/SR-93, adjacent to the Waianae Mall. The approximately 7.69-acre site is partially occupied by a warehouse structure, but is predominantly vacant land. The parcel is currently zoned I–2 (intensive industrial district).

The transit center will provide six to eight bus bays for city-operated buses with adjacent passenger waiting shelters, an additional two to three bus bays for privately operated school buses, a comfort station, a vending kiosk, an information kiosk, and parking for approximately 100 vehicles. The transit facilities will occupy approximately 2.5 to 3.0 acres of the parcel, with the balance of the land potentially supporting future development.

This analysis addresses the traffic impacts on the roadway network and key intersections adjacent to the project site. The study area for the Waianae Coast Community Transit Center consists of the following intersection(s):

- Farrington Highway at Leihoku Street.

Existing Roadways and Key Intersections

The following is a summary of the existing roadway network and key intersections within the project study area.

Farrington Highway/SR-93

Farrington Highway is a four-lane state highway with a right-of-way of approximately 55 feet within the vicinity of the project site. The posted speed limit on Farrington Highway is 35 mph.

Leihoku Street

Leihoku Street is a two-lane roadway in the vicinity of the project site with an approximate right-of-way of 41 feet. The posted speed limit on Leihoku Street is 25 mph.

Farrington Highway at Leihoku Street

Farrington Highway and Leihoku Street form a signalized "T" intersection. The northbound Farrington Highway approach has one through and one shared through/right-turn lane. The southbound approach has one left and two through lanes. The westbound Leihoku Street approach has one left-turn lane and a shared left/right-turn lane. Left turns from and onto Farrington Highway are not protected.

Wahiawa Site and Study Area

The proposed Wahiawa Community Transit Center site, located at 956 California Avenue, is on state-owned property and is currently utilized for parking, providing approximately 45 total spaces. The project site is bounded

by California Avenue to the south, Center Street to the north, Lehua Street to the west and North Cane Street to the east. The parcel is zoned R-5 Residential.

The proposed transit center will provide eight bus bays with adjacent passenger waiting shelters, a comfort station, information kiosks and electronic displays.

As with the Waianae project site, this analysis addresses the traffic impacts on the roadway network and key intersections adjacent to the Wahiawa project site. The study area for the Wahiawa Community Transit Center consists of the following intersections:

- California Avenue at Lehua Street
- California Avenue at North Cane Street

Existing Roadways and Key Intersections

The following is a summary of the existing roadway network and key intersections within the project study area.

California Avenue

California Avenue is a four-lane roadway in the vicinity of the project site with an approximate right-of-way of 66 feet. California Avenue is fully improved with curb and gutter on both sides of the street. The posted speed limit is 25 mph.

North Cane Street

North Cane Street is a two-lane roadway adjacent to the project site that dead ends approximately two blocks away. It has an approximate right-of-way of 80 feet and a posted speed limit of 25 mph.

Lehua Street

Lehua Street is a two-lane roadway parallel to the project site on the west. The approximate right-of-way is 70 feet, with a posted speed limit of 25 mph.

Center Street

Center Street is a two-lane roadway that parallels California Avenue to the north. Center Street has parallel parking on both sides of the street and is fully improved with curb and gutter. The approximate right-of-way is 79 feet.

California Avenue at Lehua Street

California Avenue and Lehua Street form a four-leg intersection with signal control. The eastbound California Avenue approach has one shared left-turn/through lane and one shared right-turn/through lane. The westbound California Avenue approach also has one shared left-turn/through lane and one shared right-turn/through lane. The southbound Lehua Street approach has one shared left-turn/through lane and one right-turn lane at the intersection with California Avenue. The northbound Lehua Street approach has one all-movement lane. The actuated signal provides for permitted left turns on all four approaches.

California Avenue at North Cane Street

California Avenue and North Cane Street form a signalized "T" intersection with actuated control. The eastbound California Avenue approach is striped as a single left-turn and two through lanes. The westbound California Avenue approach is striped as a single through and a shared through/right-turn lane. The southbound North Cane Street approach has a single shared left-turn and right-turn lane at California Avenue. Again, left turn movements occur on permitted phases.

Mililani Site and Study Area

The proposed site for the Mililani Community Transit Center is 1.0 to 1.5 acres on Meheula Parkway between Makaimoimo Street and Lanikuhana Street. The site comprises the area of the sidewalk and planting strip lying within the street right-of-way, as well as the Mililani Town Center's landscape strip and air rights above existing parking spaces. The existing Mililani Town Center parking supply will be reduced to five spaces or fewer to accommodate structural supports at the transit center adjacent to the Meheula Parkway frontage.

The transit center will provide ten bus bays with adjacent passenger waiting shelters, a comfort station, information kiosks and electronic displays. Two new access cuts will be made along the Meheula Parkway median to accommodate left turns by transit vehicles entering and exiting the transit center.

This analysis addresses the traffic impacts on the roadway network and key intersections adjacent to the project site. The study area for the Mililani Community Transit Center consists of the following intersections:

- Meheula Parkway at Makaimoimo Street
- Meheula Parkway at Lanikuhana Street.

Existing Roadways and Key Intersections

The following is a summary of the existing roadway network and key intersections within the project study area.

Meheula Parkway

Meheula Parkway is a wide four-lane divided arterial with an approximate right-of-way of 89 feet within the vicinity of the project site. Meheula Parkway is fully improved with curb and gutter on each side of the roadway. A grass median approximately 25 feet wide extends throughout the vicinity of the proposed site. The posted speed limit is 25 mph during school sessions.

Meheula Parkway at Makaimoimo Street

Meheula Parkway and Makaimoimo Street form a four-leg signalized intersection to the west of the proposed Mililani Transit Center. The eastbound Meheula Parkway approach has one left-turn lane, one through lane and one shared through/right-turn lane. The westbound approach is also striped for one left-turn lane, one through lane and one shared through/right-turn lane. The northbound Makaimoimo Street approach has one wide, 17-foot, all-movement lane that operates as one left-turn lane and one right-turn lane. The southbound approach of Makaimoimo Street serves as an access/egress point for Mililani High School. Left turns are permitted.

Meheula Parkway and Lanikuhana Street

Meheula Parkway and Lanikuhana Street also form a four-leg signalized intersection to the east of the project site. The eastbound approach of Meheula Parkway is striped for two left-turn lanes, one through lane and a shared through/right-turn lane. The westbound approach is striped for one left-turn lane, two through lanes and one shared/right-turn lane. The northbound approach (Lanikuhana Street) has one left-turn, one through and one right-turn lane. The southbound approach (Ho'okelewaa Street) has one shared lane. Left-turn movements are protected.

2

Existing Traffic Volumes and Growth Rate

Traffic Volumes

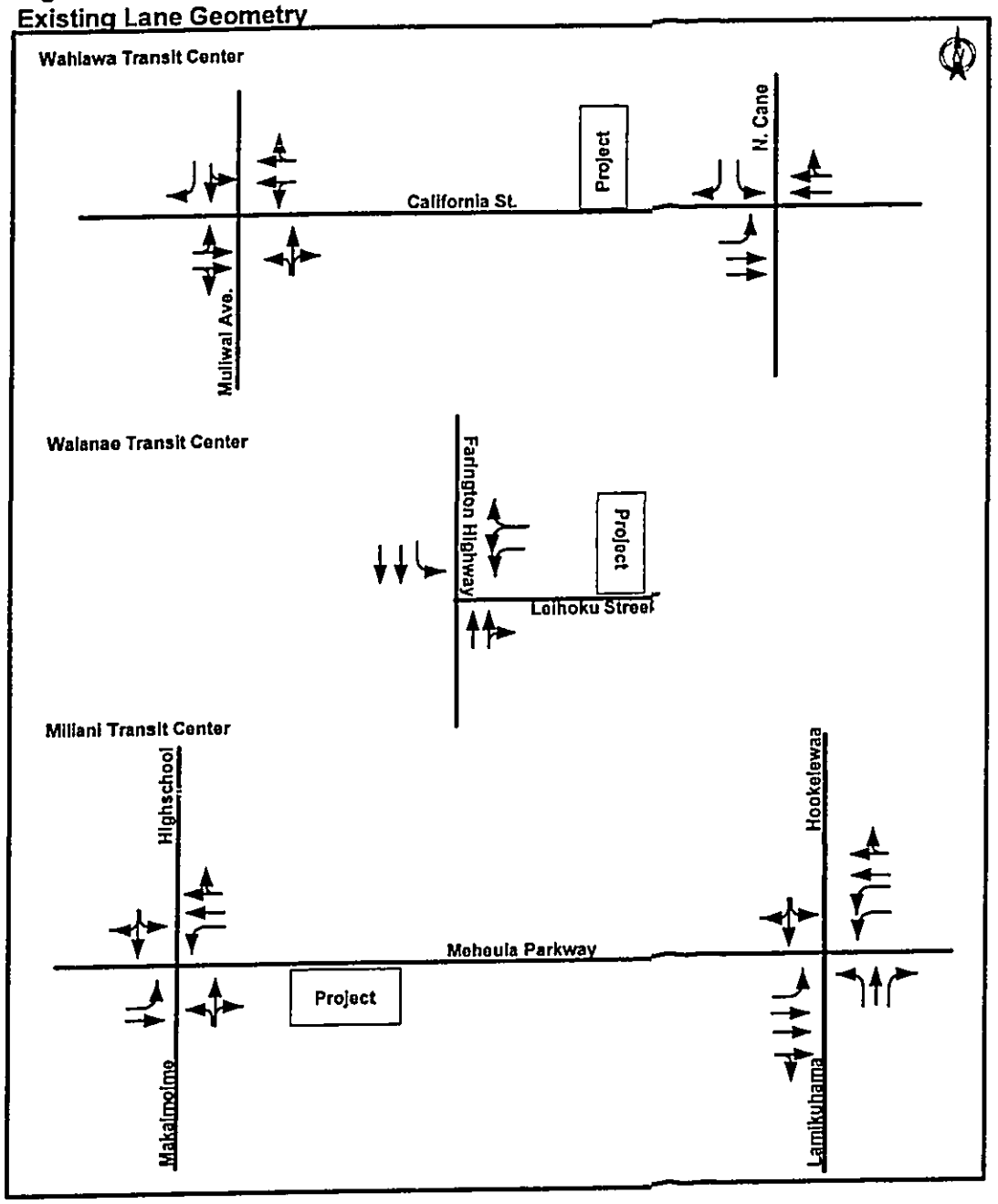
To determine the existing conditions at the five intersections under study, turning movement counts were taken in 15-minute increments from 6:45 A.M. to 8:30 A.M. and from 3:45 P.M. to 5:30 P.M. The peak hour is defined as that one-hour time period in which the highest volume of traffic is experienced. Table 1 displays the study intersections.

Table 1
Study Intersections

Community	Intersection
Waianae	Farrington Highway at Leihoku Street
Wahiawa	California Avenue at North Cane Street
Wahiawa	California Avenue at Lehua Street
Mililani	Meheula Parkway at Makaimoimo Street
Mililani	Meheula Parkway at Lanikuhana Street

The existing lane geometry for the study intersections is displayed in Figure 1. The existing peak hour intersection turning movement volumes, which include a vehicle mix of automobile, truck and bus traffic, are shown in Figures 2 through 4.

Figure 1
Existing Lane Geometry



Background Traffic Data

Background traffic is comprised of existing traffic plus traffic from approved, but not yet completed, developments in the vicinity of the proposed project sites.

In Waianae, an 8,000-square-foot YMCA is proposed directly across Leihoku Street from the proposed Waianae Coast Community Transit Center. In addition, there are potential long-term plans to build additional residential units in the valley, with the main access point being Leihoku Street. Typically, both projects would need to be accounted for; however, their timelines are such that the Waianae Transit Center will be constructed and operational before construction starts on either the YMCA or residential units.

In Mililani, there were no identifiable proposed projects in the immediate vicinity of the project site that would have any significant traffic impact within the timeline identified for completion of the Mililani Community Transit Center.

For the Wahiawa Community Transit Center, the State of Hawaii Judiciary is planning a new courthouse adjacent to the project site; in addition, the State of Hawaii Department of Accounting and General Services plans to provide additional state office space on the land adjacent to the project site. However, it is not anticipated that either of these projects will be approved or completed by the estimated completion date of July 2003 for the Wahiawa site.

Cumulative Growth Factor

Because the three transit center projects are not anticipated to be completed until summer/fall of 2003, a growth factor was applied to existing traffic to account for any natural increase in traffic during the approximate one-year time period. A conservative factor of two percent was applied to all movements to account for potential growth in traffic volume.

Figure 2
Waianae Transit Center

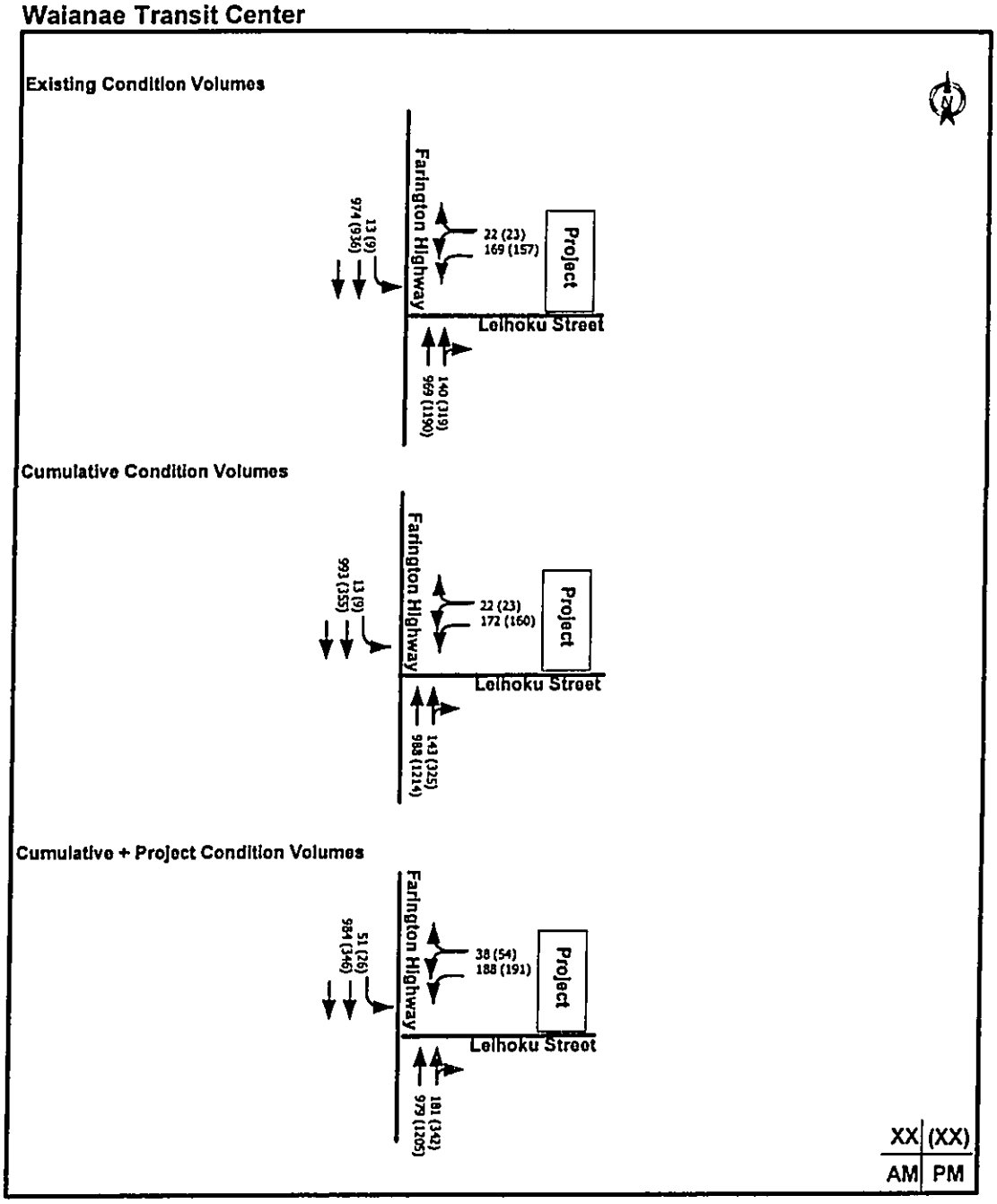


Figure 3
Wahiawa Transit Center

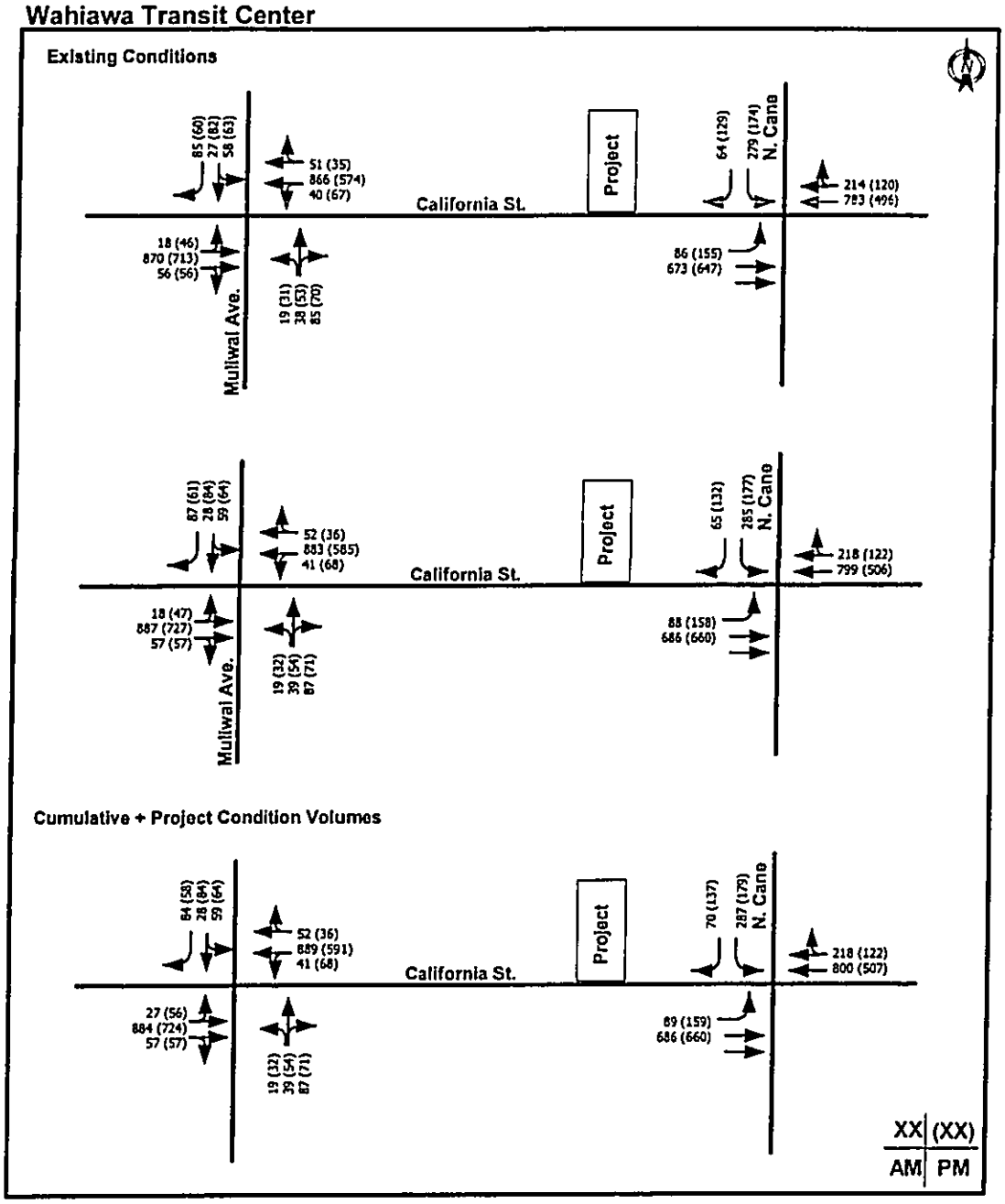
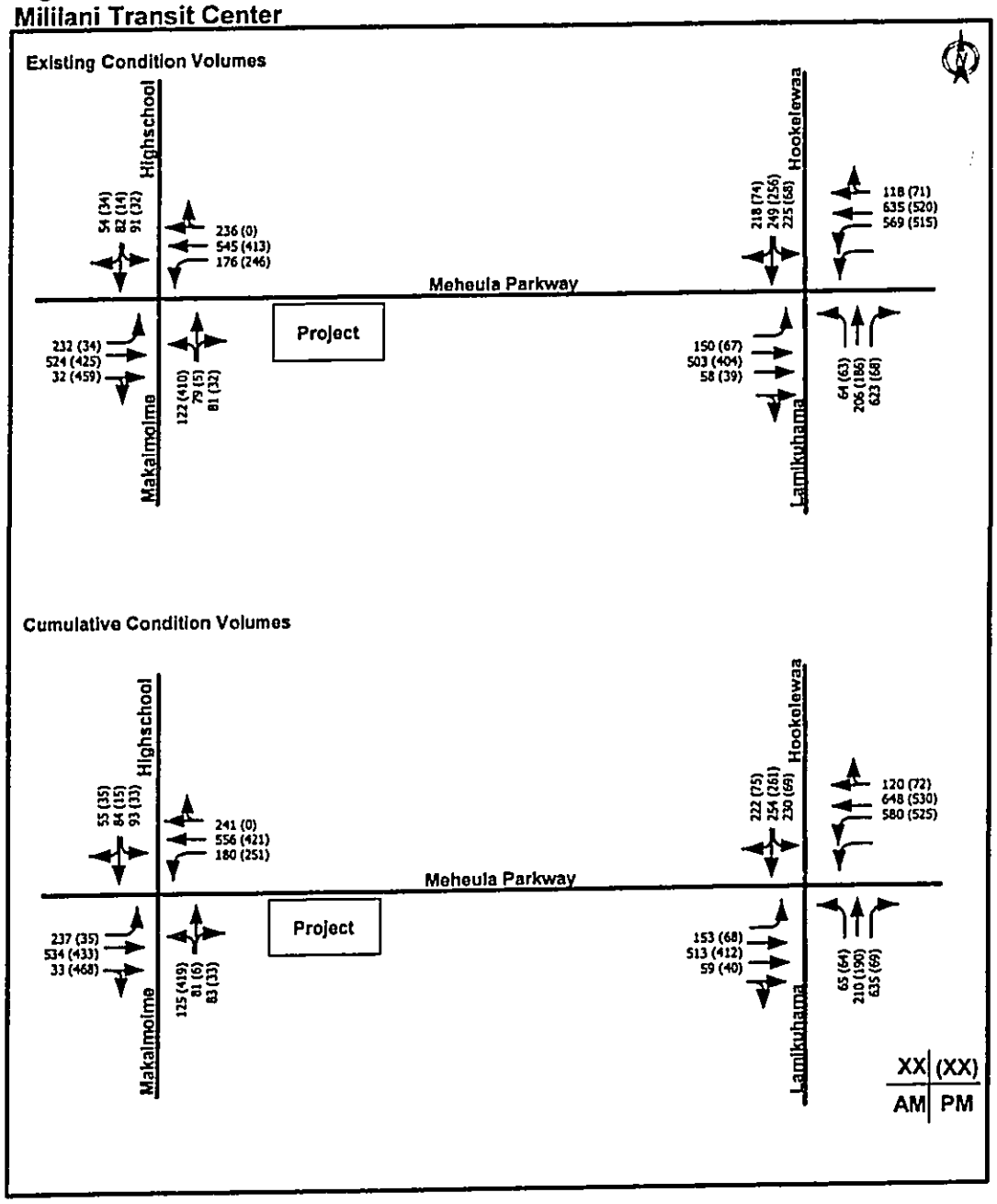


Figure 4
Mililani Transit Center



3

Trip Generation/Distribution/Assignment

Trip Generation

In order to properly determine the magnitude of the traffic impacts for the proposed transit centers on the proposed roadway network, trip generation rates for the project had to be determined. The trip generation rates for the three sites are divided into two elements:

1) Bus traffic

2) Park and ride/dropoffs

Bus Traffic

The trip generation for bus traffic at each of the three transit centers was determined in conjunction with Oahu Transit Services, Inc. and their consultants. They are in the process of implementing a Hub and Spoke Bus Transit System that will serve communities outside of Honolulu's primary urban center.

Service plans developed for each site indicate the routes, headways and number of peak buses for each of the three community transit centers. The specific routes that will operate at each of the three transit centers during the A.M. and P.M. peak hours are listed below in Tables 2 through 4.

Table 2
Waianae Transit Center A.M. and P.M. Peak Hour Bus Routes

Route Number	Existing		Proposed	
	Headway (min)	Buses per Hour	Headway (min)	Buses per Hour
C	30	4	30	4
40/40A	30	4	30	4
93	20	3	20	3
93A	One bus only	1	One bus only	1
401	60	1	60	1
402	60	1	60	1
403	60	1	60	1

Table 3
Wahiawa Transit Center A.M. and P.M. Peak Hour Bus Routes

Route Number	Existing		Proposed	
	Headway (min)	Buses per Hour	Headway (min)	Buses per Hour
52	30	4	30	4
62	30	4	30	4
83	Varies	1	—	—
83A	Varies	1	—	—
CE–E	—	—	30	2
50	—	—	60	1
51	—	—	60	1
511	—	—	60	1
512	—	—	60	1
513	—	—	60	1
514	—	—	60	1

Table 4
Mililani Transit Center A.M. and P.M. Peak Hour Bus Routes

Route Number	Existing		Proposed	
	Headway (min)	Buses per Hour	Headway (min)	Buses per Hour
52	30	4	30	4
83A	Varies	1	—	—
84A	30	4	—	—
CE–E	—	—	30	4
50	—	—	30	4
501A	—	—	30	2
501B	—	—	30	2
502	—	—	30	2
503	60	1	60	1

Park and Ride/Dropoffs

Of the three proposed transit centers, only the Waianae site will provide parking for a traditional park and ride lot. The Waianae Coast Community Transit Center will provide approximately 100 parking spaces for use by transit patrons. The Wahiawa site will provide approximately 45 spaces; however, they will be utilized primarily by state employees working adjacent to the project site. The Mililani site will provide no parking spaces and will displace approximately three to five spaces in the private parking lot for the shopping center.

Referring to the Institute of Transportation Engineers' (ITE) *Trip Generation, Sixth Edition*, the land use category Park and Ride Lot with Bus Service (land use code 090) is most applicable to the Waianae park and ride lot. A Park and Ride Lot with Bus Service is defined by ITE as follows:

> "Park and ride lots with bus service are areas used for the transfer of people between private vehicles and buses. They usually contain a bus passenger shelter, a parking lot and circulation facilities for buses, as well as for private vehicles. In addition to park and ride, there are a significant number of passengers who are dropped off."

The independent variable used to predict the peak hour trips to and from the Waianae Community Coast Transit Center is the number of parking spaces.

Assuming a total of 100 parking spaces, Table 5 illustrates the A.M. and P.M. peak-hour trip generation for the park and ride lot.

Table 5
Park and Ride Lot
A.M. and P.M. Peak Hour Trip Generation

Number of Parking Spaces	Average Trip Generation Rate	A.M. Peak Hour Trips Entering (80%)	Exiting (20%)
100	0.75	60	15

Number of Parking Spaces	Average Trip Generation Rate	P.M. Peak Hour Trips Entering (22%)	Exiting (78%)
100	0.63	14	49

Trip Distribution and Assignment

Trip distribution and assignment is the process that identifies the roadway network used in traveling to and from the project and the percentage of project-generated traffic that will use each roadway. Trip distribution was determined for the same two elements of the project used for trip generation:

1) Bus traffic

2) Park and ride/dropoffs

Bus Traffic

The trip distribution for projected bus traffic at the Waianae Coast Community Transit Center, the Wahiawa Community Transit Center and the Mililani Community Transit Center was determined by Oahu Transit Services, Inc., which operates Oahu's transit service, and their consultants, who developed the Hub and Spoke Transit Center plan.

In Wahiawa, in-bound buses will turn left onto Lehua Street from California Avenue, right on Kilani Avenue, right on North Cane Street, and either proceed into the transit center's driveway or turn right back onto California Avenue and into on-street bus bays.

In Waianae, hub services have already been implemented and will only change by being re-routed to the transit center on Leihoku Street.

In Mililani, routes of ingress and egress have not yet been finalized.

Park and Ride/Dropoffs

The trip distribution for the Waianae Coast Community Transit Center park and ride lot was based on an evaluation of the project vicinity for accessibility to the site. Generally, it was assumed that park and ride lot users' travel patterns would heavily favor Farrington Highway, the primary route used to access the site, with a small percentage destined to or originating from Leihoku Street. Again, note that only the Waianae site will provide park and ride facilities.

4

Traffic Analysis

Level of Service

Level of service (LOS) analysis is based on the methodology presented in the 2000 Highway Capacity Manual (HCM) published by the Transportation Research Board. LOS is based on a scale of six increments corresponding to a range of delay from A to F, where A is free-flowing traffic with almost no delay and F is heavily congested traffic with long delays. LOS and corresponding levels of delay are displayed in Table 6 for signalized intersections.

Table 6
Intersection Level of Service Definitions

LOS	Control Delay per Vehicle(s)
A	≤10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	>80

LOS calculations for this report were prepared using Synchro version 5. Synchro is a traffic analysis software that utilizes the Highway Capacity methodology (2000 HCM*). Synchro LOS output sheets are contained in Appendix A. The City and County of Honolulu have established LOS D as the minimum acceptable threshold for signalized intersections in the A.M. and P.M. peak hours.

*The 2000 HCM (and 1997 HCM) use control delay rather than stopped delay used in the 1994 HCM and Synchro 3.2. Control delay is equal to stopped delay times 1.3. Caution is urged when comparing results from Synchro 3.2 and/or the 1994 method, because of the higher delay thresholds with the 2000 HCM.

Waianae

The intersection of Farrington Highway and Leihoku Street operates at LOS A in the A.M. and P.M. peak hours based on counts taken May 20, 2002. Although there are significant through movements both northbound and southbound on Farrington Highway, there are relatively insignificant volumes from Leihoku Street or turning left onto Leihoku Street from southbound Farrington Highway, resulting in few interruptions or delays for through traffic. The intersection continues to operate at LOS A in the cumulative and cumulative plus project phases.

Table 7
Existing Level of Service Summary—Waianae Transit Center

Intersection		A.M. Peak				P.M. Peak			
		Approach		Intersection		Approach		Intersection	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Farrington Highway/ Leihoku Street	NB	A	4.5	A	5.3	A	3.6	A	5.2
	SB	A	4.7			A	4.7		
	EB	—	—			—	—		
	WB	B	12.1			B	18		

Table 8
Cumulative Level of Service Summary—Waianae Transit Center

Intersection		A.M. Peak				P.M. Peak			
		Approach		Intersection		Approach		Intersection	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Farrington Highway/ Leihoku Street	NB	A	4.7	A	5.3	A	4.8	A	5.3
	SB	A	4.5			A	3.6		
	EB	—	—			—	—		
	WB	B	12.5			B	18.7		

Table 9
Cumulative Project Level of Service Summary—Waianae Transit Center

Intersection		A.M. Peak				P.M. Peak			
		Approach		Intersection		Approach		Intersection	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Farrington Highway/ Leihoku Street	NB	A	4.9	A	5.5	A	4.9	A	5.5
	SB	A	4.7			A	3.7		
	EB	—	—			—	—		
	WB	B	12.5			B	18.4		

Wahiawa

Overall, the intersection of California Avenue and North Cane Street operates at LOS A in the A.M. and P.M. peak hours. In the A.M., queues form southbound on North Cane Street extending upstream to Center Street. Eastbound queues on California Avenue typically extend upstream to the mid-block point. However, all queues are able to clear on one signal cycle.

The intersection of California Avenue and Lehua Street also operates at LOS A in both peak hours. As with the intersection of California Avenue at North Cane Street, there are heavy through volumes both eastbound and westbound. At this intersection, there are relatively minor side street volumes to interrupt the overall flow of traffic on the major street. It should be noted that there are no separate left-turn lanes on either approach of California Avenue. Existing left-turn volumes do not currently dictate the need for exclusive left-turn lanes; however, from an operational perspective, when the Hub and Spoke Plan is implemented in Wahiawa, signal phasing and striping adjustments may be warranted.

Table 10
Existing Level of Service Summary—Wahiawa Transit Center

Intersection		A.M. Peak				P.M. Peak			
		Approach		Intersection		Approach		Intersection	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
California Avenue/ North Cane Street	NB	—	—	A	7.8	—	—	A	6.2
	SB	B	12.2			A	8.5		
	EB	A	7.0			A	6.2		
	WB	A	7.0			A	5.1		
California Avenue/ Lehua Street	NB	A	7.1	A	5.3	A	7.3	A	5.2
	SB	A	9.0			A	9.6		
	EB	A	5.6			A	6.4		
	WB	A	5.8			A	6.3		

Table 11
Cumulative Level of Service Summary—Wahiawa Transit Center

Intersection		A.M. Peak				P.M. Peak			
		Approach		Intersection		Approach		Intersection	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
California Avenue/ North Cane Street	NB	—	—	A	8.0	—	—	A	6.3
	SB	B	12.4			A	8.7		
	EB	A	7.1			A	6.2		
	WB	A	7.1			A	5.1		
California Avenue/ Lehua Street	NB	A	7.4	A	6.1	A	7.4	A	6.9
	SB	A	9.5			A	9.7		
	EB	A	5.6			A	6.5		
	WB	A	5.8			A	6.4		

Mililani

The intersection of Meheula Parkway and Makaimoimo Street operates overall at LOS B and C, respectively, in the A.M. and P.M. peak hours. This intersection provides direct access to the Mililani Town Center, Mililani High School and Walmart. There are significant westbound left-turn movements from Meheula Parkway onto southbound Makaimoimo Street. Left-turn movements on both Meheula Parkway approaches are protected. Northbound and southbound left turns from Makaimoimo Street are not protected.

The intersection of Meheula Parkway and Lanikuhana Street operates overall at LOS D and B, respectively, in the A.M. and P.M. peak hours. This intersection also provides direct access to the Mililani Town Center and Walmart. There are significant left-turn movements that queue in both the A.M. and P.M. peak hours on westbound Meheula Parkway. However, these left turns generally clear on one signal cycle. The southbound approach of Lanikuhana Street, Ho'okelewaa Street also experiences significant queues in the peak periods. Left-turn movements from Meheula Parkway are protected.

Table 12
Existing Level of Service Summary—Mililani Transit Center

Intersection		A.M. Peak				P.M. Peak			
		Approach		Intersection		Approach		Intersection	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
Meheula Parkway/ Makaimoimo Street	NB	B	18.8	B	19.0	C	30.0	C	27.6
	SB	B	15.8			B	10.1		
	EB	B	19.7			C	27.6		
	WB	B	19.2			C	28.1		
Meheula Parkway/ Lanikuhana Street	NB	A	7.7	D	41.7	B	12.7	B	19.0
	SB	E	63.1			B	18.0		
	EB	D	43.0			C	24.0		
	WB	D	52.8			B	18.9		

Table 13
Cumulative Level of Service Summary—Mililani Transit Center

Intersection		A.M. Peak				P.M. Peak			
		Approach		Intersection		Approach		Intersection	
		LOS	Delay	LOS	Delay	LOS	Delay	LOS	Delay
California Avenue/ North Cane Street	NB	B	19.9	B	19.4	C	32.1	C	29.7
	SB	B	16.0			B	10.2		
	EB	C	20.2			C	30.1		
	WB	B	19.4			C	29.7		
California Avenue/ Lehua Street	NB	A	7.8	D	43.4	B	12.9	B	19.4
	SB	E	71.3			B	18.2		
	EB	D	43.8			C	24.5		
	WB	D	52.8			B	19.3		

5

Additional Traffic Analysis

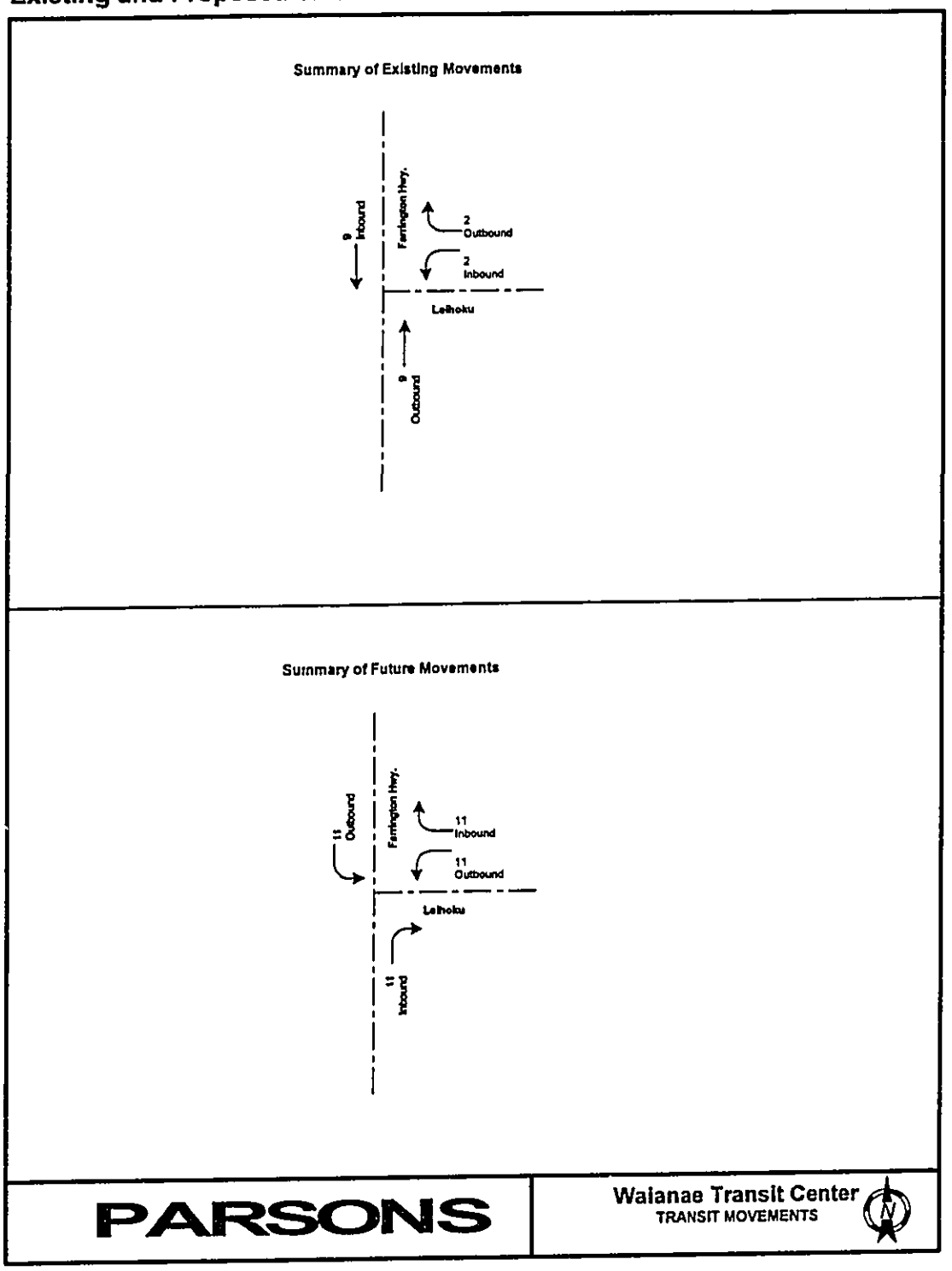
Bus Operational Analysis—Waianae

From an operational perspective, bus service in Waianae will remain relatively unchanged once the Community Transit Center comes on-line. Essentially, the existing schedule also represents the service that will utilize the transit center in the future. The existing service will be re-routed up Leihoku Street to the transit center, where the buses will dwell before pulsing en masse to their destinations.

Although the number of buses passing through the transit center will not change, the turning movements at the intersection of Farrington Avenue and Leihoku Street will differ. In the future, northbound buses on Farrington Highway will turn east onto Leihoku Street and enter the transit center before continuing northbound. This will be facilitated by a right-turn movement from Leihoku Street onto northbound Farrington Highway. Likewise, buses traveling southbound on Farrington Highway will turn left at the intersection before entering the transit center. They will continue their trip by making a left-turn movement from Leihoku Street onto southbound Farrington Highway.

The additional eastbound right turns can be easily accommodated from Farrington Highway onto Leihoku Street, as can the corresponding right turns from Leihoku Street onto eastbound Farrington Highway. There is sufficient storage in the left-turn bay to accommodate the left-turn movements from northbound Farrington Highway onto Leihoku Street and the corresponding left-turn movements from Leihoku Street onto southbound Farrington Highway.

Figure 5
Existing and Proposed Transit Volumes



Bus Operational Analysis—Wahiawa

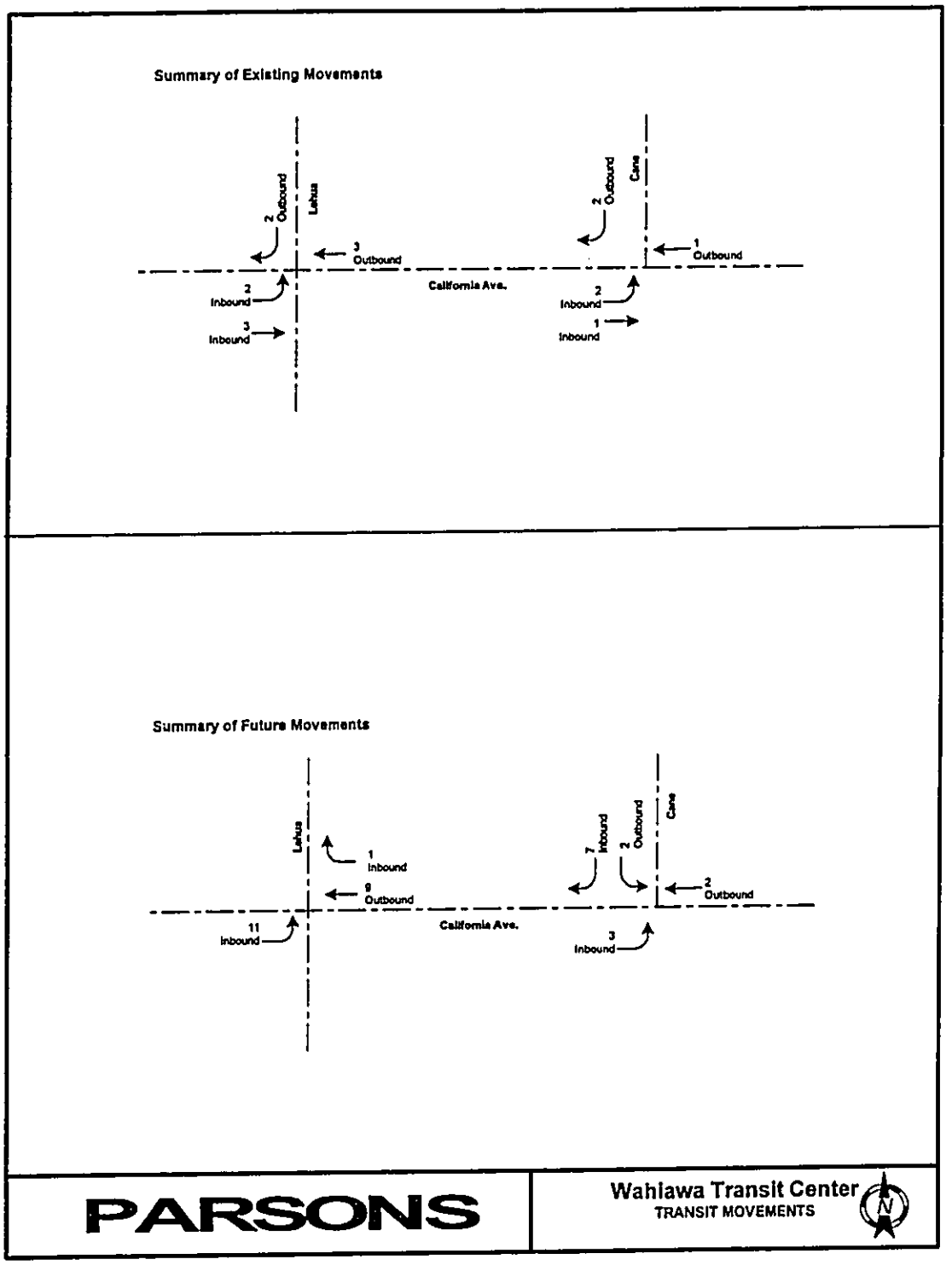
The proposed Wahiawa Hub and Spoke Service Plan reflects an increase in service from what is currently provided by approximately six buses in the A.M. and P.M. peak hours.

The predominant movement at the Wahiawa hub becomes an eastbound left-turn movement from California Avenue onto Lehua Street, a right turn onto Kilani Avenue, a right at North Cane Street, then either a right turn onto Center Street and into the transit center or a right turn onto California Avenue (westbound) adjacent to the center.

Lacking heavy opposing left-turn movements at Lehua Street/Kilani Avenue and Kilani Avenue/North Cane Avenue and with no opposing left-turn movements at California Avenue/North Cane Avenue, the additional right-turn movements can easily be accommodated without any operational impacts.

The predominant left-turn movement, however, must be made from a shared left-turn/through lane on eastbound California Avenue onto northbound Lehua Street. The left turns are not protected and with heavy through movements westbound, queues are likely to form, inhibiting the ability of the buses to make the left-turn movement in one signal cycle.

Figure 6
Existing and Proposed Transit Volumes



Bus Operational Analysis—Mililani

The key component of the proposed Mililani Hub and Spoke Plan is two median breaks on Meheula Parkway between Makaimoimo Street and Lanikuhana Street. These median breaks provide for access to and egress from the Mililani Transit Center located along the frontage of the Mililani Town Center.

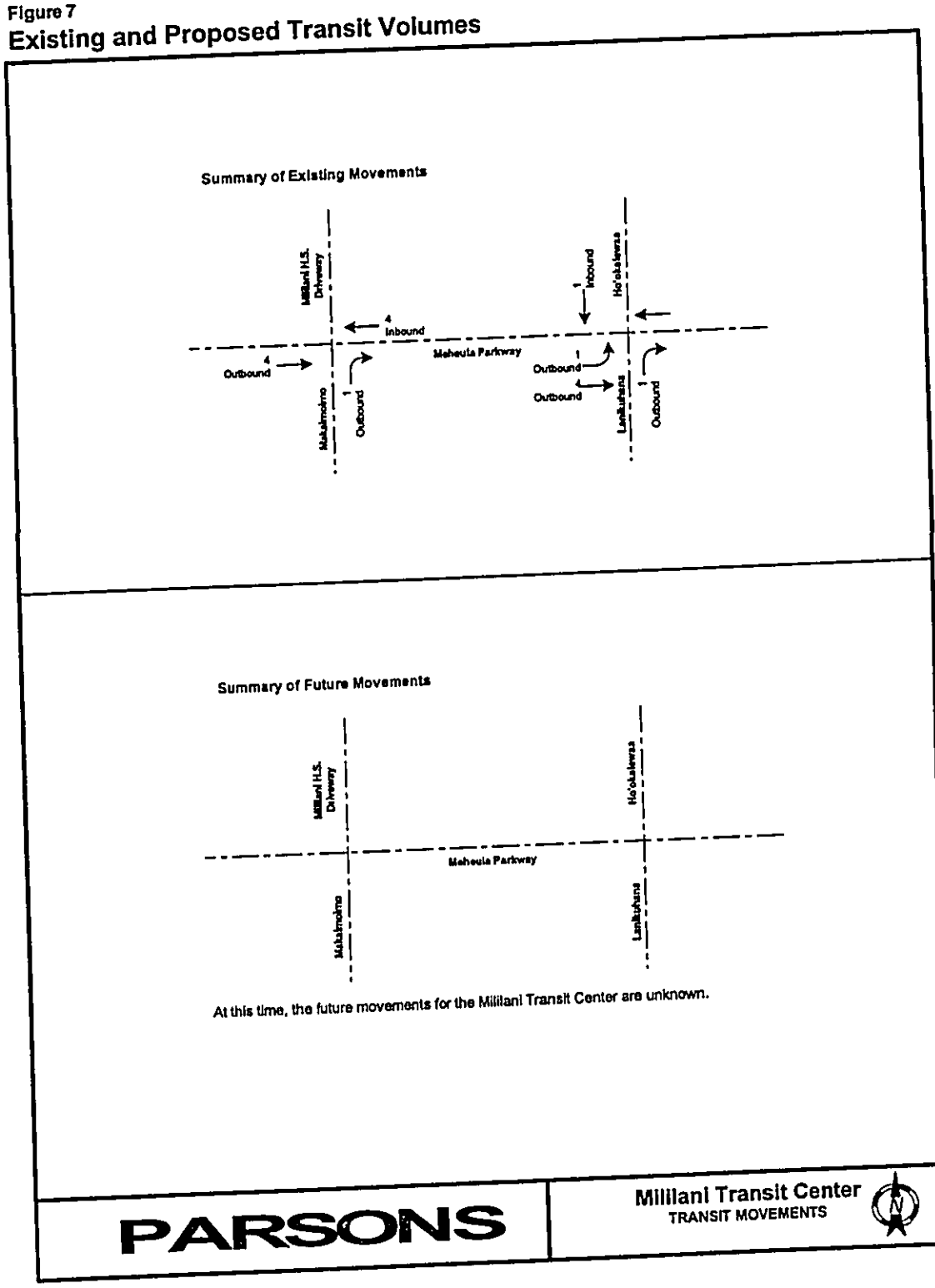
The first median break, westbound on Meheula Parkway just west of Lanikuhana Street will provide a left-turn bay for buses only to access the transit center. The second median break, just east of Makaimoimo Street, will provide for egress from the transit center and allow buses to continue westbound on Meheula Parkway.

To successfully implement this proposal and minimize impacts to the transportation infrastructure, the left-turn bay providing access to the transit center should provide sufficient storage capacity for a minimum of two buses.

To facilitate egress from the transit center, detector loops should be placed in the driveway of the center to stop traffic on all approaches at the intersections of Meheula Parkway and Lanikuhana Street and Meheula Parkway and Makaimoimo Street. A second option would be to stop all eastbound and westbound traffic on Meheula Parkway and allow the minor street traffic to continue. These options will provide for sufficient gaps in traffic flow and allow buses to cross eastbound Meheula Parkway and enter westbound Meheula Parkway without major conflicts with through traffic.

With only two pulses per hour, there would be minimal disruption to the overall flow of traffic.

Figure 7
Existing and Proposed Transit Volumes



6

Conclusions and Recommendations

Waianae

The completion of the Waianae Coast Community Transit Center will have no significant traffic impact within the project study area. Transit service levels in Waianae have already been increased to the level that will serve the proposed transit center. Transit routes will only be modified at the intersection of Farrington Highway and Leihoku Street, which provides direct access to the future transit center. No level of service or operational impacts are associated with this plan.

Wahiawa

The completion of the Wahiawa Community Transit Center will have less than significant impacts within the project study area. Although transit service levels will be increased from existing conditions with the implementation of the Hub and Spoke Plan, the frequency of the pulse system and the physical orientation of the transit center will minimize any impacts.

The predominant movement into the transit center from California Avenue will be a right-turn movement, which can be made very efficiently. It is recommended, though, that the signal phasing and/or striping be modified on the eastbound approach of California Avenue and Lehua Avenue to facilitate the left-turn movement. Currently, left turns must be made from a shared left-turn/through lane. Left-turn traffic must wait for a gap in westbound traffic to complete this maneuver. Heavy westbound through movements make left turns somewhat problematic during peak periods. With the addition of approximately nine buses in the peak hours, this lane may queue upstream to the next intersection as the buses wait for a sufficient gap. Modifying the phasing on the eastbound approach to add a protected/permitted phase will

allow eastbound traffic to proceed first, unopposed. After the protected phase ends, left turns can still be made on the permitted phase as gaps allow. A second option would be to re-stripe the shared left-turn/through lane as a single left-turn lane and implement a protected left-turn phase. This option would, however, restrict the capacity for through traffic at this location.

Mililani

The completion of the Mililani Community Transit Center is expected to have some operational impacts, which can be lessened with mitigations. The transit center will necessitate two median breaks on Meheula Parkway to facilitate access and egress to the transit center. It is recommended that the median break west of Lanikuhana, which provides access to the transit center, provide for storage for at least two 40-foot buses. This will prevent buses from blocking through traffic westbound on Meheula Parkway as they wait for gaps in traffic eastbound.

The median break that allows for egress from the proposed transit center, will significantly shorten the existing westbound left-turn bay at Meheula Parkway and Makaimoimo Street. As there are heavy left-turn movements from this lane to the Mililani Town Center and Walmart, additional storage capacity should be provided to the east of the median break.

In order to facilitate egress from the transit center, it is also recommended that loop detectors be installed in the project driveway. The loops would serve to stop traffic on all approaches at the intersections of Meheula Parkway/ Makaimoimo Street and Meheula Parkway/Lanikuhana Street or to stop the predominant eastbound/westbound through traffic and allow minor street traffic to proceed. This would minimize vehicular/bus conflicts and create gaps for efficient egress.

APPENDIX C
Air Quality Environmental Assessment Final Report
Prepared by The Environmental Company, Inc., June 2002

Partners, Inc.

AIR QUALITY
ENVIRONMENTAL ASSESSMENT
FINAL REPORT

at

Mililani Community Transit Center

(AMP Project No. A0096.40)

June 2002

Prepared for:

AM Partners, Inc.
1164 Bishop St., Suite 1000
Honolulu, HI 96813

Prepared by:

The Environmental Company, Inc.

Air Quality Environmental Assessment
Final Report

Mililani Community Bus Transit Center

Meheula Parkway, Mililani, Hawaii

June 2002

Prepared for:

AM Partners, Inc

Prepared by:

The Environmental Company, Inc.
1001 Bishop St., Pauahi Tower, Suite 1240
Honolulu, Hi 96813

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EXECUTIVE SUMMARY

The Honolulu City & County Department of Transportation Services is proposing to construct the Mililani Community Bus Transit Center along Meheula Parkway fronting the Mililani Town Center. The proposed project will consist of ten (10) bus bays along with passenger waiting facilities and other ancillary facilities. The project is expected to be completed at the end of September 2003 and will result in increased emissions due to exhaust from the increased bus activity at the said location. This study examines the potential short- and long-term air quality impacts that may occur as a result of these extra exhaust emissions and includes potential impact due to construction activities. In addition, this study suggests mitigative measures to reduce any potential air quality impacts where possible and appropriate.

Both Federal and state standards have been established to maintain ambient air quality. At the present time, seven parameters are regulated, including particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. Hawaii air quality standards are more stringent than the comparable national standards except for those pertaining to sulfur dioxide and particulate matter.

Regional and local climate, together with the amount and type of human activity generally dictate the air quality at the project site. Trade winds dominate in the region. Rough terrain plays an important role in local wind pattern. During winter, occasional storms may generate strong winds from the south (kona winds) for brief periods. When the trade winds or kona winds are weak or absent, landbreeze-seabreeze circulations or mountain drainage winds may develop. Wind speeds are often lower compared to more exposed coastal locations, but the trade winds still provide relatively good ventilation much of the time. Temperatures in the Oahu area leeward of the Koolaus are generally very moderate with average daily temperatures ranging from about 70 Fahrenheit (°F) to 85°F. Extreme temperatures range from about 53°F to about 95°F. Rainfall in the Mililani area is relatively high, averaging about 50 inches per year.

The present air quality at the project site appears to be reasonably good based on nearby air quality monitoring data. Air quality data from the nearest monitoring stations operated by the Hawaii Department of Health suggest that all national ambient air quality standards are currently being met, although occasional exceedances of the more stringent state standard for ozone may occur.

The resulting increase in the air pollution due to bus emission at the Mililani Community Transit Center was found to be relatively smaller than the significant emission rates as defined in the Hawaii Administrative Rules. Therefore, it is unlikely that any measurable impacts on air quality will occur. Implementing any air quality mitigation measures for long-term impacts from the proposed project is probably unnecessary and unwarranted.

1.0 INTRODUCTION AND BACKGROUND

1.1 INTRODUCTION

The Department of Transportation Services (DTS), City and County of Honolulu is proposing to construct and operate the Mililani Community Bus Transit Center on the island of Oahu, Hawaii. The proposed project will have ten (10) bus bays with passengers waiting facilities and other ancillary facilities. It will have circulator service line and a trunk line serving the Mililani and Honolulu route and is expected to start operation by the end of September 2003. This air quality assessment will be part of the basis to determine whether a more detailed environmental assessment is needed for the proposed development. The Environmental Company, Inc. (TEC, Inc.) conducted an air quality environmental assessment during the month of May 2002 to estimate the impact of future increase emissions due to activities at the Bus Transit Center. To ascertain the potential of the air quality impact on the project, the maximum annual bus volume was predicted for the Transit Center as a worst case scenario.

The purpose of this study is to describe existing air quality in the project area and to assess the potential long-term direct and indirect air quality impacts that could result from the use of the proposed facilities. Measures to mitigate these impacts are suggested where possible and appropriate.

1.2 PROJECT OVERVIEW

1.2.1 Site Description

The proposed **Mililani Community Bus Transit Center** will be located along Meheula Parkway fronting Mililani Town Center (Fig. 1.1, Site Map). It will use air rights over a portion of the shopping center's parking lot and landscape strip between the existing I Love Country Café and Kentucky Fried Chicken restaurant (Fig. 1.2, Parking lot). Across the street (South-west of the Transit Center) is the Mililani High School (Fig. 1.3). There are a couple of bus stops along Meheule Street fronting the proposed site (Fig. 1.4). The project site is currently zoned as Community Business with the surrounding areas zoned as general and residential.

The Transit Center will provide ten (10) bus bays for the regular bus and paratransit vehicles, passenger waiting shelters, a comfort station, informational kiosks, bike parking, lockers, and landscaping. An elevator and open stairways will provide links from the Transit Center to the shopping center parking level. A proposal has also been made for future provision of community meeting space at the lower level. The Transit Center will operate circulator lines that would service the Mililani area and a trunk line that will serve the Mililani and Downtown Honolulu route.

1.2.2 Interviews

Mr. James Burke of DTS described the activities at the proposed Bus Transit Center including the bus schedule and dwell time or wait-time for the buses to load and unload passengers. He also indicated that there will be 6 regular buses and 2 articulated buses to service the Transit Center. Finally, Mr. Burke concurred with the air quality assessment strategy that utilizes maximum allowable bus traffic at the Transit Center,

which represents a worst case scenario as the basis for calculating the annual volume of buses expected at the center.

In an effort to calculate annual emission volumes at the proposed Bus Transit Center, TEC, requested actual emission data from Mr. Rick Hardy of the Oahu Transit Services, Inc. Mr. Hardy explained that these data are not available because emissions from existing buses have not been monitored. He further explained that the Oahu Transit Services Inc. follow a strict maintenance schedule on their engines as per manufacturer specification. He explained that currently, buses serving the island of Oahu are equipped with diesel engines (Detroit Diesel Series 50) that have been tested and approve by the United State Environmental Protection Agency (EPA) prior to commercial production. Furthermore, he indicated that a $9,000 rebuild kit is use on a regular basis to ensure that each engine performs within the allowable EPA emission standard for heavy duty engines.

Pacific Detroit Diesel Company, through the help of Ms. Stella Yara, provided the EPA Emission standard (Table 1) and indicated that the regular buses at the Oahu Transit Services, use 1993 to 1998 model of the Series 50 diesel engines. The articulated buses use the 1999 Series 50 diesel engine. She reiterated that no actual emission data on the currently used buses on Oahu are available.

The Hawaii Department of Health (HDOH) through the help of Ms. Liza Young, provided Hawaii air quality data, including the Hawaii and EPA standards for the six criteria pollutants (Table 2). She further reinforced the claim of Mr. Hardy and Ms. Yara that automobile emission data is not available in the state of Hawaii and not required that the Oahu Transit Services to provide these data. The HDOH relies on the air monitoring stations strategically located in Oahu to monitor the amount of engine emission in the environment (Fig. 1.5).

1.2.3 Annual Bus Volume

The Mililani Community Bus Transit Center is expected to operate 20 hours daily. The Transit Center will be serviced with 8 regular buses and 2 articulated buses. Service plan for the Transit Center will reflect a "pulse" of about every ½ hour when the circulators and the trunk lines services are expected to meet at the Transit Center. The loading dwell time is about 3 to 5 minutes to allow the bus to load and unload passengers. It is assumed that the bus will be running in idle mode over this period in order to operate the air-conditioning system.

In order to assess the impact of the Transit Center on the quality of the ambient air, the air quality environmental assessment was evaluated on a worst case scenario. This scenario consisted of assuming that the Bus service remains on normal weekday schedule 365 days a year. Actual buses operate on a limited schedule on weekends and holidays. In addition all buses at the station are assumed to be in idle mode while waiting for passengers. The route numbers and service span for the Transit Center are based on Draft Central Oahu Hub and Spoke Service Plan and current public timetable for the existing service.

Based on the above assumptions, the worst case scenario estimated 78,475 buses expected to visit the Mililani Community Bus Transit Center each year.

2.0 AIR QUALITY ENVIRONMENTAL ASSESSMENT

2.1 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 2 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, Federal and state AAQS have been established for particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. The state has also set a standard for hydrogen sulfide. National AAQS are stated in terms of both primary and secondary standards for most of the regulated air pollutants. National primary standards are designed to protect the public health with an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other *economic damage*. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow a specified number of exceedances each year.

The Hawaii AAQS are in some cases considerably more stringent than the comparable national AAQS. In particular, the Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit, and the state 1-hour limit for ozone is more than two times as stringent as the national 1-hour standard. The national 1-hour ozone standard will be phased out (pending court appeal) the next few years in favor of the new (and more stringent) 8-hour standard (Table 2).

The Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make the state standards essentially the same as the national limits. In 1993, the state also revised its airborne particulate standards to follow those set by the Federal government. During 1997, the Federal government again revised its standards for particulate, but the new standards have been challenged in Federal court. To date, the HDOH has not updated the state particulate standards.

2.2 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawaii is relatively moderate throughout most of the state and most of the year, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography.

Hawaii lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high pressure cell to the north and east. On the island of Oahu, the Koolau and Waianae Mountain Ranges are oriented almost perpendicular to the trade winds, which accounts for much of the variation in the local climatology of the island. Mililani, the site of the proposed project, is a suburban area within the City and County of Honolulu. Mililani is situated between the Koolau and Waianae Ranges. Although climatic conditions vary somewhat across the project area, long-term weather data available from the Honolulu International Airport, located a few miles to the southeast, is at least *semi-representative*.

Wind frequency data given in Table 3 for Honolulu International Airport show that the annual prevailing wind direction for this area of Oahu is east northeast. On an annual basis, 34.7 percent of the time the wind is from this direction, and nearly 75 percent of the time the wind is in the northeast quadrant. Winds from the south are infrequent occurring only a few days during the year and mostly in association with winter storms. Wind speeds average about 11 mph (10 knots) and mostly vary between about 4 and 18 mph (5 and 15 knots). Surface wind speeds in the project area are somewhat lighter, and local wind directions are likely affected by the terrain.

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawaii, the annual and daily variation of temperature depend to a large degree on elevation above sea level, distance inland and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas exposed to the trade wind tend to have the least temperature variation, while inland and leeward areas often have the most. The project area's leeward location results in a relatively moderate temperature profile compared to some other locations around Oahu and the state. At the airport, average annual daily minimum and maximum temperatures are 70°F and 84°F, respectively [1]. The extreme minimum temperature was 53°F during January 1998, and the extreme maximum was 95°F during September 1994. Temperatures in Mililani area are cooler due to the higher elevation.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is often measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In suburban areas, like those in

the project area, stability class 5 or 6 is generally the highest stability class that occurs, developing during the nighttime and early morning.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawaii, minimum mixing heights tend to be high because of mechanical mixing caused by the trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur, however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer land. Mixing heights in the state typically are above 3,000 feet (1,000 meters).

Rainfall can have a beneficial effect on the air quality of an area in that it helps to suppress fugitive dust emissions, and it also may "washout" gaseous contaminants that are water-soluble. Rainfall in Hawaii is highly variable depending on elevation and on location with respect to the trade wind. Mililani, located at a higher elevation and between the Koolau and Waianae Ranges, has a wetter climate receiving about 50 inches per year [2].

2.3 PRESENT AIR QUALITY

Present air quality in the project area is mostly affected by air pollutants from motor vehicles, industrial sources, agricultural operations and to a lesser extent by natural sources. Table 4 presents an air pollutant emission summary for the island of Oahu for calendar year 1993. The emission rates shown in the table pertain to manmade emissions only, i.e., emissions from natural sources are not included. As suggested in the table, much of the particulate emissions on Oahu originate from area sources, such as the mineral products industry and agriculture. Sulfur oxides are emitted almost exclusively by point sources, such as power plants and refineries. Nitrogen oxides emissions emanate predominantly from industrial point sources, although area sources (mostly motor vehicle traffic) also contribute a significant share. The majority of carbon monoxide emissions occur from area sources (motor vehicle traffic), while hydrocarbons are emitted mainly from point sources. Based on previous emission inventories that have been reported for Oahu, it appears that emissions of particulate and nitrogen oxides have increased during the past ten years, while emissions of sulfur oxides, carbon monoxide and hydrocarbons have declined.

Roadways in the vicinity of the Transit Center site carry moderate volumes of motor vehicle traffic at times, and roadway intersections may be congested during peak traffic hours. Emissions from motor vehicles using these roadways, primarily nitrogen oxides and carbon monoxide, may cause localized impacts on air quality.

The Mililani Community Bus Transit Center site is farther removed from large industrial sources of air pollution, although emissions from distant sources at Campbell Industrial Park may affect this areas during kona wind conditions. With the demise of sugarcane growing on the Ewa Plain, air pollutions impacts from agriculture have significantly diminished in the area. Agriculture-related emissions in Mililani area may experience occasional dust and smoke impacts from nearby, large-scale pineapple cultivation and harvesting operations. Natural sources of air pollution emissions that also could affect

the project area but cannot be quantified very accurately include the ocean (sea spray), plants (aero-allergens), wind-blown dust, and perhaps distant volcanoes on the island of Hawaii.

The State Department of Health operates a network of air quality monitoring stations at various locations on Oahu. Each station, however, typically does not monitor the full complement of air quality parameters. Table 5 shows annual summaries of air quality measurements that were made nearest to the project area for several of the regulated air pollutants for the period 1996 through 2000. These are the most recent data that are currently available.

During the 1996-2000 period, sulfur dioxide was monitored by the State Department of Health at an air quality station located at Kapolei. Concentrations monitored were consistently low compared to the standards. Annual second-highest 3-hour concentrations (which are most relevant to the air quality standards) ranged from 17 to 64 $\mu g/m^3$, while the annual second-highest 24-hour concentrations ranged from 5 to 16 $\mu g/m^3$. Annual average concentrations were only about 1 to 2 $\mu g/m^3$. There were no exceedances of the state/national 3-hour (1,300 $\mu g/m^3$) or 24-hour (365 $\mu g/m^3$) AAQS for sulfur dioxide during the 5-year period.

Particulate matter less than 10 microns in diameter (PM-10) is also measured at the Kapolei monitoring station. Annual second-highest 24-hour PM-10 concentrations ranged from 26 to 129 $\mu g/m^3$ between 1996 and 2000. Average annual concentrations ranged from 13 to 19 $\mu g/m^3$. All values reported were within the state and national AAQS (50 $\mu g/m^3$ and 150 $\mu g/m^3$ for the average annual and annual values respectively).

Carbon monoxide measurements were also made at the Kapolei monitoring station. The annual second-highest 1-hour concentrations ranged from 1.2 to 1.7 mg/m^3. The annual second-highest 8-hour concentrations ranged from 0.6 to 0.8 mg/m^3. No exceedances of the state 1-hour (10 mg/m^3) or 8-hour (5 mg/m^3) AAQS were reported.

Nitrogen dioxide is also monitored by the Department of Health at the Kapolei monitoring station. Annual average concentrations of this pollutant ranged from 2 to 9 $\mu g/m^3$, safely inside the state and national AAQS at 70 $\mu g/m^3$ and 100 $\mu g/m^3$ respectively.

The nearest available ozone measurements were obtained at Sand Island (about 15 miles southeast of the project area). The second-highest 1-hour concentrations for each year from 1996 to 2000 ranged from 91 to 110 $\mu g/m^3$. Up to 13 exceedances of the state AAQS (100 $\mu g/m^3$ per year) were recorded during the monitoring period. No specific trend is discernable, although the number of exceedances was lower during the latter half of the five-year period.

Although not shown in the table, the nearest and most recent measurements of ambient lead concentrations that have been reported were made at the downtown Honolulu monitoring station between 1996 and 1997. Average quarterly concentrations were near or below the detection limit, and no exceedances of the state AAQS of 1.5 $\mu g/m^3$ were recorded. Monitoring for this parameter was discontinued during 1997.

Based on the data and discussion presented above, it appears likely that the State of Hawaii AAQS for sulfur dioxide, nitrogen dioxide, particulate matter and lead are

currently being met at the project site. Due to the abundance of ozone in the state of Hawaii, it is likely, that the state AAQS for ozone may be exceeded on occasion based on the Sand Island measurements for this parameter. The abundance of ozone is greatly influence by the amount of sunshine in the state. While carbon monoxide measurements at the Kapolei monitoring station suggest that concentrations are within the state and national standards, local "hot spots" may exist near traffic-congested intersections.

2.4 PROJECT IMPACT

2.4.1 Bus Emissions

The proposed Transit Center will result in increased bus traffic on nearby roadways, potentially causing long-term impacts on ambient air quality in the vicinity of the Transit Center where the buses will congregate. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide, and they also emit nitrogen oxides and other contaminates. In urban and suburban areas, carbon monoxide emissions near congested roadway intersections are the usual issue. In the case of diesel-powered buses, however, the primary air pollution emissions consist of nitrogen oxides and particulate matter; carbon monoxide emissions are generally inconsequential compared to automobile emissions.

Although computer models can generally be used to assess the impacts of carbon monoxide emissions from motor vehicle traffic, it is probably impractical to attempt to quantitatively model the bus emissions of nitrogen oxides and particulate that may be associated with the proposed facilities. In lieu of this, annual emissions from project bus operations in the vicinity of the Mililani Community Transit Center was estimated and compared to the "significant" emission rates as defined in the Hawaii Administrative Rules. Strictly speaking, the significant emission rates are intended to be applied to stationary point sources and not mobile sources such as bus traffic. Nevertheless, it is believed that this will provide a reasonable approach to ascertaining the significance of the project-related emissions of nitrogen oxides and particulate. If the project emissions are shown to be below the significant emissions rates, this is usually taken to indicate that a more detailed assessment of the emissions is not warranted.

To begin the evaluation of the potential long-term impacts on air quality related to the proposed facilities, the annual bus volumes at Mililani Community Transit Center was estimated. This was done by first identifying the bus routes that would include each Transit Center and then reviewing the schedules for these routes to enumerate the buses each day that would be associated with each route at the Transit Center. Table 6 shows the estimated annual bus volume at the Mililani Community Transit Center and the basis for the estimate. As indicated in the table, the expected total annual bus volumes at the facility is 78,475. As noted in the table, these estimates assume that weekend service will be the same as weekday service. Actual annual bus volumes will be somewhat lower due to reduced service on weekends and holidays.

Buses using the proposed Transit Center will emit air pollution on approach, during idle and as they depart. To estimate the bus emissions during these modes of operation, the EPA computer model MOBILE6.1 [5] was used in combination with the expected annual bus volumes. MOBILE6.1 can be used to provide composite emission factors for a given year, vehicle class, average vehicle speed and ambient air temperature. The composite emission factors generally pertain to various modes of operation (acceleration, cruise,

deceleration and idle) and are specified in terms of grams per vehicle mile of travel. Idle emission rates in terms of grams per minute can be estimated separately. For this project, MOBILE6.1 was used to estimate emission factors for the heavy-duty diesel vehicle (HDDV) class. Emission factors for nitrogen oxides, particulate, volatile organic compounds (VOC), carbon monoxide and sulfur dioxide were calculated for the year 2003, the expected year of project completion. Due to new emission standards for this class of vehicle that will be phased in during the next several years, emissions of nitrogen oxides and particulate will diminish in later years. An average annual temperature of 77°F was assumed, and it was further assumed that the average approach and departure speeds would be 25 mph.

Table 7 shows the resulting estimated composite and idle emission factors for HDDV. Nitrogen oxides emissions are the most appreciable followed by carbon monoxide, volatile organic compounds, sulfur dioxide and particulate. It is worth noting that carbon monoxide emissions from light-duty gasoline vehicles (LDGV) are about five times higher per vehicle mile of travel than are those for HDDV.

The next task is to determine the total vehicle miles and bus idle times associated with the Transit Center. A reasonable but somewhat arbitrary assumption is that emissions that occur beyond 1 mile of the Transit Centers will not significantly impact air quality in the vicinity of the Transit Center. Thus, the relevant approach and depart vehicle miles at the Transit Center were estimated to amount to the annual bus volume multiplied by 2 miles. Total annual idle times were estimated based on the annual bus volume and the assumption that each bus would idle for an average of 5 minutes at the Transit Centers. The resulting total annual approach and depart miles and the total annual idling times for the Transit Center are shown in Table 8.

The emission factors given in Table 7 combined with the estimated annual approach/depart miles and annual idle times shown in Table 8 will provide estimates of the total annual emissions attributable to the Transit Center. The resulting estimated annual emissions for the Mililani Community Transit Center for the year 2003 are indicated in Table 9. Nitrogen oxides emissions at the Mililani Community Transit Center is about 2.5 tons per year, while carbon monoxide emissions would amount to about 0.9 ton per year. Emissions of particulate, VOC and sulfur dioxide would be much less than 1 ton per year each. Emissions of nitrogen oxides and particulate can be expected to decrease with time as newer buses are phased in that must meet more stringent emission standards.

To ascertain the significance of the Transit Center emissions, the estimated annual emissions shown in Table 8 can be compared to the significant emission rates, which are defined in Hawaii Administrative Rules (HAR), Title 11, Chapter 60.1. Table 10 lists the significant emission rates for nitrogen oxides, particulate, VOC, carbon monoxide and sulfur dioxide. A comparison of these two tables shows that the Transit Center emissions will be substantially less than the defined significant emission rates. Nitrogen oxides emissions at the Mililani Community Transit Center is less than 7.0 percent of the significant emission rate, while all other emissions would amount to about 1 percent or less of the significant values.

2.4.2 Fugitive Dust Emissions During Construction

Although not a primary concern of this air quality assessment, short-term direct and indirect impacts on air quality could potentially occur due to project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project construction: (1) fugitive dust from vehicle movement and soil excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term impacts from slow-moving construction equipment traveling to and from the project sites, from a temporary increase in local traffic caused by commuting construction workers, and from the disruption of normal traffic flow caused by lane closures of adjacent roadways.

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with site clearing and preparation work. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately. This is because of its elusive nature of emission and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [3] has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions at the three project sites would likely be somewhere near that level, depending on the amount of rainfall that occurs. In any case, State of Hawaii Air Pollution Control Regulations [4] prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase is essential.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Control regulations further stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved areas is often a significant source of dust in construction areas. Some means to alleviate this problem, such as road cleaning or tire washing, may be appropriate. Paving of parking areas and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions. Monitoring dust at the project property line could be considered to quantify and document the effectiveness of dust control measures.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

Project construction activities will also likely obstruct the normal flow of traffic at times to such an extent that overall vehicular emissions in the project area will temporarily increase. The only means to alleviate this problem will be to attempt to keep roadways open during peak traffic hours and to move heavy construction equipment and workers to and from construction areas during periods of low traffic volume. Thus, most potential short-term air quality impacts from project construction can be mitigated.

2.5 CONCLUSIONS AND RECOMMENDATIONS

2.5.1 Primary Impact of Long-term Emissions

The purpose of this air quality assessment is to evaluate the impact that increased bus emissions will have on air quality when the Transit Center is in operation. Based on the worst case scenario described in section 1.2.3, it is estimated that any long-term impacts on air quality near the proposed Transit Center due to emissions from project-related bus traffic will be negligible. Annual emissions from bus traffic at the Transit Center will amount to only a small fraction of the state-defined significant emission rates, and thus it can be anticipated that any direct impacts on air quality from bus emissions will be minimal. It is conceivable, however, that indirect impacts on air quality could occur if the normal flow of ambient traffic on adjacent roadways is disrupted by bus traffic, causing excess emissions to occur from other motor vehicle traffic. Thus, the proposed facilities should be designed so as minimize the disruption of traffic on adjacent roadways. Implementing other measures to mitigate long-term impacts is probably unnecessary and unwarranted.

2.5.2 Secondary Impact of Construction Activities

The major potential short-term air quality impact of the project will occur from the emission of fugitive dust during construction. Uncontrolled fugitive dust emissions from construction activities are estimated to amount to about 1.2 tons per acre per month, depending on rainfall. To control dust, active work areas and any temporary unpaved work roads should be watered at least twice daily on days without rainfall. Use of windscreens and/or limiting the area that is disturbed at any given time will also help to contain fugitive dust emissions. Wind erosion of inactive areas of the site that have been disturbed could be controlled by mulching or by the use of chemical soil stabilizers. Dirt-hauling trucks should be covered when traveling on roadways to prevent windage. A routine road cleaning and/or tire washing program will also help to reduce fugitive dust emissions that may occur as a result of trucks tracking dirt onto paved roadways in the project area. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Monitoring dust at the project boundary during the period of construction could be considered as a means to evaluate the effectiveness of the project dust control program and to adjust the program if necessary.

During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from vehicles used by construction workers and from trucks traveling to and from the project. Increased vehicular emissions due to disruption of traffic by construction equipment, roadway lane closures and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours and by trying to avoid roadway lane closures during peak traffic periods.

References

1. "Local Climatological Data, Annual Summary with Comparative Data, Honolulu, Hawaii, 1998", National Oceanic and Atmospheric Administration, National Climatic Data Center, Asheville, NC.

2. U.S. Department of Commerce, Weather Bureau, "Climatography of the United States No. 86-44, Decennial Census of the United States Climate, Climatic Summary of the United States, Supplement for 1951 through 1960, Hawaii and Pacific", Washington, D.C., 1965.

3. Compilation of Air Pollutant Emission Factors, Volume I: Stationary Point and Area Sources, Fifth Edition, AP-42, U.S. Environmental Protection Agency, Research Triangle Park, NC, January 1995.

4. State of Hawaii. Hawaii Administrative Rules, Chapter 11-60, Air Pollution Control.

5. User's Guide to MOBILE6.1 and 6.2: Mobile Source Emission Factor Model, Draft, U.S. Environmental Protection Agency, Office of Air and Radiation, Office of Mobile Sources, Emission Control Technology Division, Test and Evaluation Branch, Ann Arbor, Michigan, March 2002.

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ACRONYMS

AAQS	Ambient Air Quality Standards
AMP	AM Partners, Inc.
CFR	Code of Federal Regulations
CO	Carbon Monoxide
DTS	Dept. of Transportation Services
EA	Environmental Assessment
EIS	Environmental Impact Statement
EPA	U.S. Environmental Protection Agency
FONSI	Finding Of No Significant Impact
HAR	Hawaii Administrative Rules
HC	Hydrocarbons
HDDV	Heavy-duty Diesel Vehicle
HDOH	Hawaii Dept. of Health
LDGV	Light-duty Gasoline Vehicle
NO_x	Nitrogen Oxides
PM	Particulate Matter
TEC	The Environmental Company, Inc.
TC	Transit Center
TMK	Tax Map Key
VOC	Volatile Organic Compounds

Table 1 EPA Emission Standards for Heavy-duty Diesel Engines, g/bhp-hr.
Model Year 1987 – 2003 (Source: Dieselnet.com)

Heavy-Duty Diesel Truck Engines				
Year	HC	CO	NOx	PM
1988	1.3	15.5	10.7	0.6
1990	1.3	15.5	6	0.6
1991	1.3	15.5	5	0.25
1994	1.3	15.5	5	0.1
1998	1.3	15.5	4	0.1
Urban Bus Engines				
Year	HC	CO	NOx	PM
1991	1.3	15.5	5	0.25
1993	1.3	15.5	5	0.1
1994	1.3	15.5	5	0.07
1996	1.3	15.5	5	0.05*
1998	1.3	15.5	4	0.05*

* - in-use PM standard 0.07

Table 2 Summary of State of Hawaii and National Ambient Air Quality Standards

Pollutant	Units	Averaging Time	Maximum Allowable Concentration		
			National Primary	National Secondary	State of Hawaii
Particulate Matter (<10 microns)	µg/m³	Annual	50[a]	50[a]	50
		24 Hours	150[b]	150[b]	150[c]
Particulate Matter (<2.5 microns)	µg/m³	Annual	15[a]	15[a]	-
		24 Hours	65[d]	65[d]	-
Sulfur Dioxide	µg/m³	Annual	80	-	80
		24 Hours	365[c]	-	365[c]
		3 Hours	-	1300[c]	1300[c]
Nitrogen Dioxide	µg/m³	Annual	100	100	70
Carbon Monoxide	mg/m³	8 Hours	10[c]	-	5[c]
		1 Hour	40[c]	-	10[c]
Ozone	µg/m³	8 Hours	157[e]	157[e]	-
		1 Hour	235[f]	235[f]	100[c]
Lead	µg/m³	Calendar Quarter	1.5	1.5	1.5
Hydrogen Sulfide	µg/m³	1 Hour	-	-	35[c]

[a] Three-year average of annual arithmetic mean.

[b] 99th percentile value averaged over three years.

[c] Not to be exceeded more than once per year.

[d] 98th percentile value averaged over three years.

[e] Three-year average of fourth-highest daily 8-hour maximum.

[f] Standard is attained when the expected number of exceedances is less than or equal to 1.

Note: Standards for particulate matter (<2.5 microns) and for 8-hour ozone are subject to court appeal.

Table 3 Annual Wind Frequency for Honolulu International Airport (%)

Wind Direction	Wind Speed (knots)									Total
	0-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	>40	
N	0.5	2.5	1.3	0.5	0.0	0.0	0.0	0.0	0.0	4.8
NNE	0.3	1.2	1.6	1.5	0.2	0.0	0.0	0.0	0.0	4.7
NE	0.3	2.1	6.1	11.0	3.2	0.3	0.0	0.0	0.0	23.0
ENE	0.2	2.5	10.9	16.6	4.1	0.3	0.0	0.0	0.0	34.7
E	0.1	1.0	2.5	2.8	0.5	0.0	0.0	0.0	0.0	7.0
ESE	0.0	0.3	0.4	0.3	0.0	0.0	0.0	0.0	0.0	1.1
SE	0.0	0.3	0.8	1.0	0.1	0.0	0.0	0.0	0.0	2.2
SSE	0.1	0.4	1.2	0.7	0.1	0.0	0.0	0.0	0.0	2.4
S	0.1	0.5	1.4	0.6	0.1	0.0	0.0	0.0	0.0	2.7
SSW	0.0	0.3	0.8	0.3	0.0	0.0	0.0	0.0	0.0	1.5
SW	0.0	0.2	0.8	0.4	0.0	0.0	0.0	0.0	0.0	1.5
WSW	0.0	0.3	0.5	0.4	0.0	0.0	0.0	0.0	0.0	1.2
W	0.1	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1
WNW	0.2	1.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	2.0
NW	0.4	2.3	0.8	0.1	0.0	0.0	0.0	0.0	0.0	3.8
NNW	0.5	2.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	3.8
Calm	2.5									2.5
Total	5.4	18.3	30.6	36.5	8.5	0.7	0.0	0.0	0.0	100.0

Source: Climatography of the United States No. 90 (1965-1974), Airport Climatological Summary, Honolulu International Airport, Honolulu, Hawaii, U.S. Department of Commerce, National Climatic Center, Asheville, NC, August 1978.

Table 4 Air Pollution Emissions Inventory for the Island of Oahu, 1993

Air Pollutant	Point Sources (tons/year)	Area Sources (tons/year)	Total (tons/year)
Particulate	25,891	49,374	75,265
Sulfur Oxides	39,230	nil	39,230
Nitrogen Oxides	92,436	31,141	123,577
Carbon Monoxide	28,757	121,802	150,559
Hydrocarbons	4,160	421	4,581

Source: Final Report, "Review, Revise and Update of the Hawaii Emissions Inventory Systems for the State of Hawaii", prepared for Hawaii Department of Health by J.L. Shoemaker & Associates, Inc., 1996

Table 5 Annual Summaries of Air Quality Measurements for Monitoring Stations Near Oahu Transit Center Project (Source: HDOH Annual Summaries, Hawaii Air Quality Data, 1996-2000)

Parameter / Location	1996	1997	1998	1999	2000
Sulfur Dioxide / Kapolei					
3-Hour Averaging Period:					
No. of Samples	2785	2845	2723	2710	2505
Highest Concentration ($\mu g/m^3$)	45	61	69	30	23
2nd Highest Concentration ($\mu g/m^3$)	42	52	64	17	18
No. of State AAQS Exceedances	0	0	0	0	0
24-Hour Averaging Period:					
No. of Samples	358	361	343	360	362
Highest Concentration ($\mu g/m^3$)	14	20	17	6	6
2nd Highest Concentration ($\mu g/m^3$)	11	16	16	6	5
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration ($\mu g/m^3$)	2	2	2	2	1
Particulate (PM-10) / Kapolei					
24-Hour Averaging Period:					
No. of Samples	55	269	359	362	356
Highest Concentration ($\mu g/m^3$)	52	41	34	129	148
2nd Highest Concentration ($\mu g/m^3$)	29	26	34	39	129
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration ($\mu g/m^3$)	19	13	15	15	17
Carbon Monoxide / Kapolei					
1-Hour Averaging Period:					
No. of Samples	8220	8649	8044	8395	8595
Highest Concentration (mg/m^3)	1.7	1.8	1.9	1.5	2.5
2nd Highest Concentration (mg/m^3)	1.6	1.7	1.5	1.2	1.6
No. of State AAQS Exceedances	0	0	0	0	0
8-Hour Averaging Period:					
No. of Samples	1049	1085	1044	1048	1076
Highest Concentration (mg/m^3)	0.7	0.7	0.6	0.6	1.0
2nd Highest Concentration (mg/m^3)	0.7	0.7	0.6	0.6	0.8
No. of State AAQS Exceedances	0	0	0	0	0
Nitrogen Dioxide / Kapolei					
Annual Average Concentration ($\mu g/m^3$)	2	8	8	7	9
Ozone / Sand Island					
1-Hour Averaging Period:					
No. of Samples	8263	8702	8688	8566	8482
Highest Concentration (mg/m^3)	92	106	114	110	98
2nd Highest Concentration (mg/m^3)	91	106	110	106	96
No. of State AAQS Exceedances	0	13	7	8	0

Table 6 Estimated Annual Bus Volumes for the Mililani Community Transit Center

Transit Center	Route No.	Service Start Time	Service End Time	Hours/Day	Buses/Hour	Buses/Day	Buses/Year
Mililani	501	5:00	21:30	16.5	2	33	12,045
	502	5:00	19:30	14.5	1	14	5,110
	503	5:00	19:30	14.5	1	15	5,475
	E	7:30	22:00	14.5	2	29	10,585
	50	6:00	22:00	16.0	2	32	11,680
	51	9:00	18:00	9.0	2	18	6,570
	52	5:10	22:00	17.0	2	34	12,410
	62	4:40	0:35	20.0	2	40	14,600
				Total	78,475		

Notes:

1. Route numbers based on Draft Central Oahu Hub and Spoke Service Plan.
2. Service times based on Draft Central Oahu Hub and Spoke Plan and Current Public Timetables for existing service.
3. Buses per hour calculated based on planned service headways.
4. Weekend service assumed to be the same as weekday service.
5. Express routes not included.

Table 7 Emission Factors for Heavy-Duty Diesel Vehicles

Parameter	Composite Emission Factor (g/mile)	Idle Emission Factor (g/min)
Nitrogen Oxides	12.3	0.90
Particulate	0.411	0.017
Volatile Organic Compounds	0.733	0.080
Carbon Monoxide	3.72	0.64
Sulfur Dioxide	0.448	0.019

Notes:

1. Emission factors obtained from MOBILE6.1.
2. Emission factors pertain to calendar year 2003 and ambient temperature of 77°F.
3. Composite emission factors pertain to an average vehicle speed of 25 mph.
4. Idle emission factors based on 2.5 mph speed.
5. Particulate emission factors pertain to exhaust emissions only.

Table 8 Annual Approach/Depart Miles and Idle Times for the Proposed Transit Center Project

Transit Center	Annual Bus Volume	Annual Approach/Depart Miles	Annual Idle Time (minutes)
Waianae	93,440	186,880	467,200
Wahiawa	84,315	168,630	421,575
Mililani	78,475	156,950	392,375

Table 9 Estimated Annual Emissions for the Mililani Community Transit Center Project

Transit Center	Parameter	Annual Approach/Depart Emissions (tons)	Annual Idle Emissions (tons)	Total Annual Emissions (tons)
Mililani	Nitrogen Oxides	2.1	0.39	2.5
	Particulate	0.071	0.0074	0.078
	VOC	0.13	0.034	0.16
	Carbon Monoxide	0.64	0.28	0.92
	Sulfur Dioxide	O.077	0.0082	0.085

Table 10 Significant Emission Rates

Parameter	Emission Rate (tons/year)
Nitrogen Oxides	40
Particulate	15
Volatile Organic Compounds	40
Carbon Monoxide	100
Sulfur Dioxide	40

Notes:

1. As defined in Hawaii Administrative Rules, Title 11, Chapter 60.1.
2. *Particulate emission rate pertains to particles less than 10 microns* aerodynamic diameter.

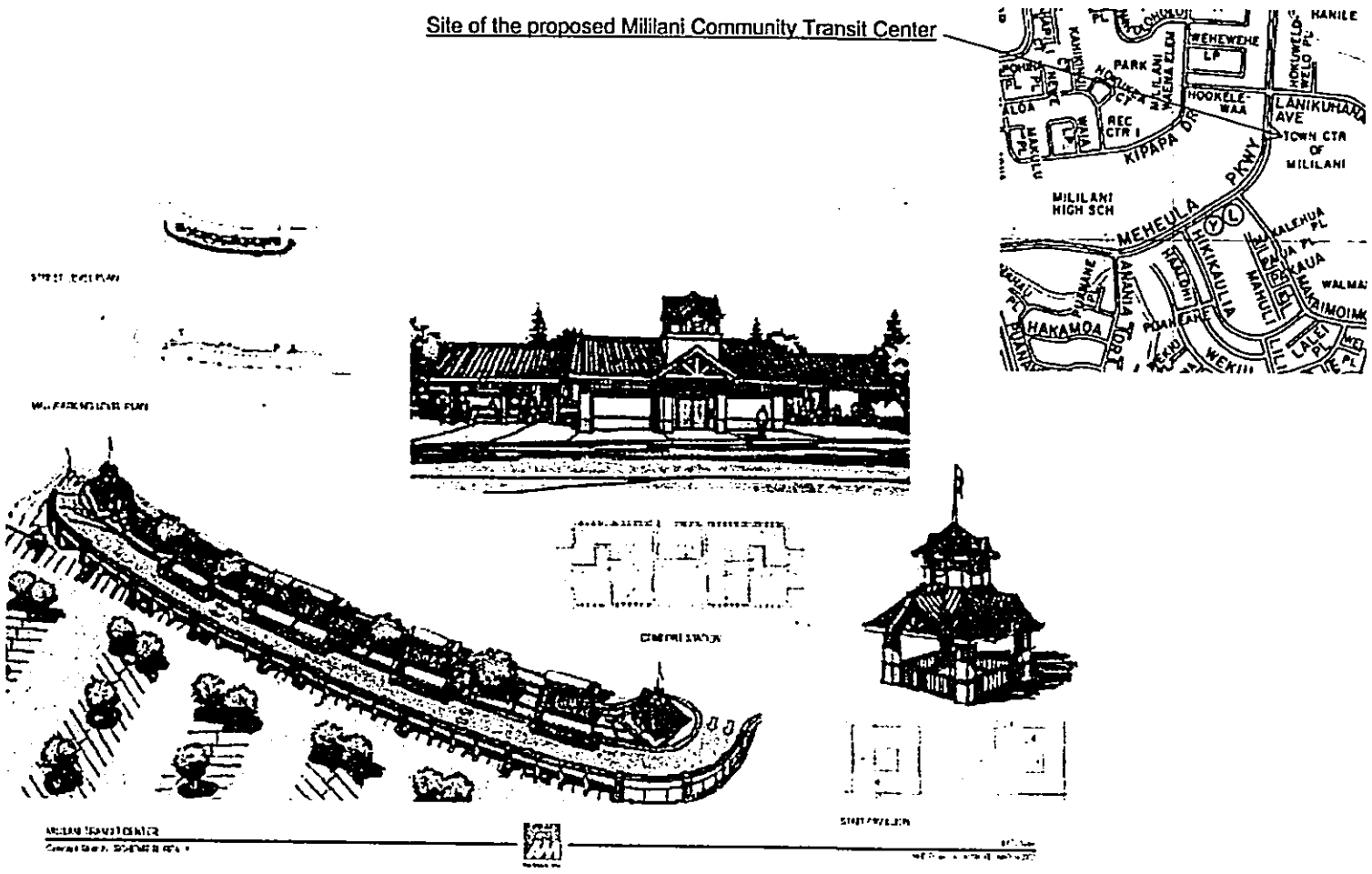


Figure 1.1 Site Map and Plan of the proposed Mililani Community Transit Center.

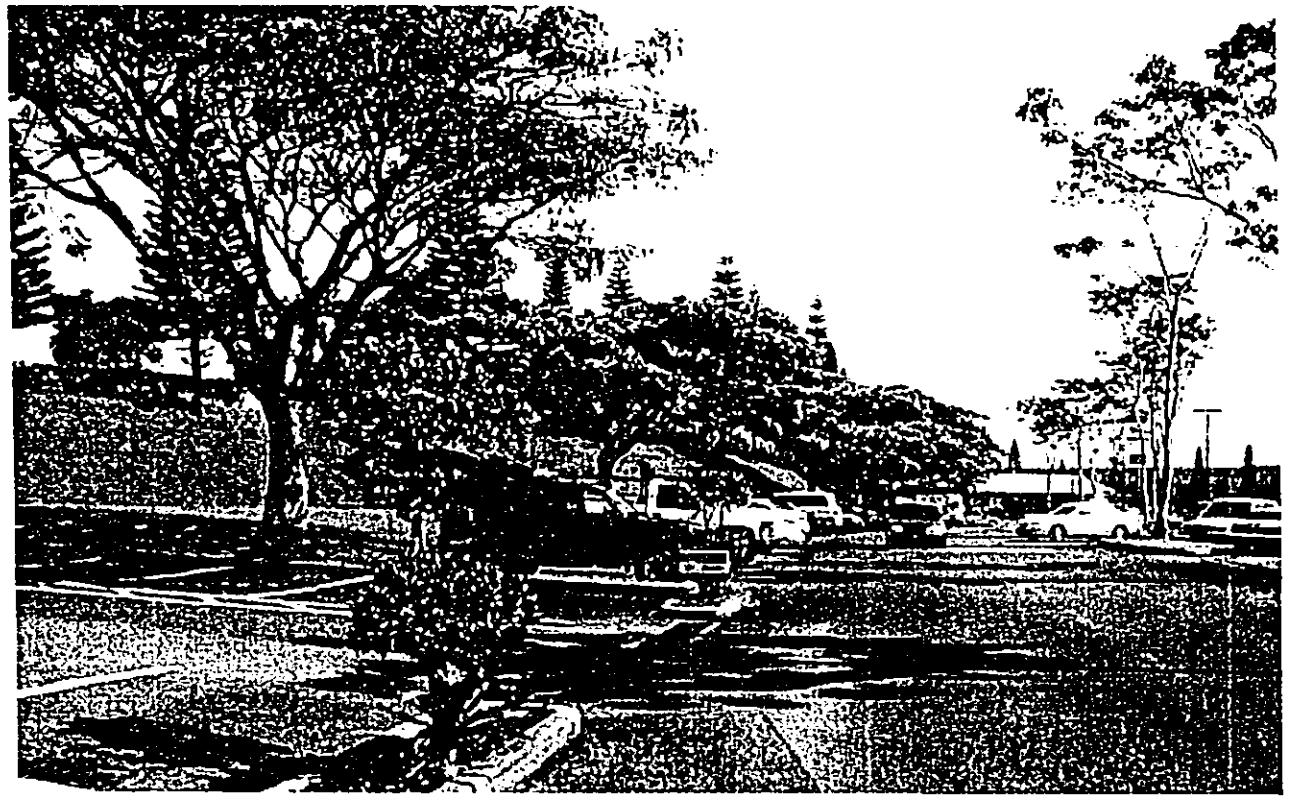


Figure 1.2 Parking stall below the proposed Mililani Community Transit Center between I love Country Café and KFC Restaurant at the Mililani Town Center.

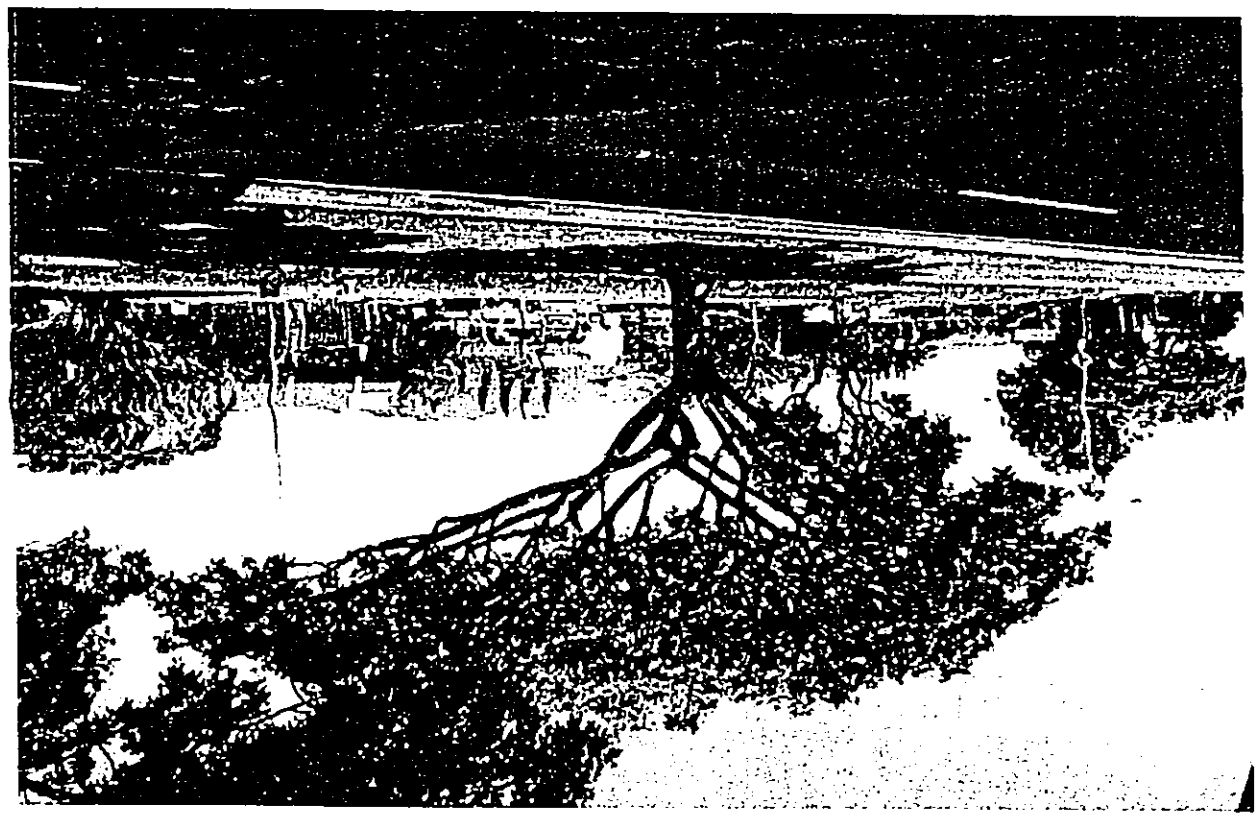


Figure 1.3 Mililani High School accross the proposed Mililani Community Transit Center.

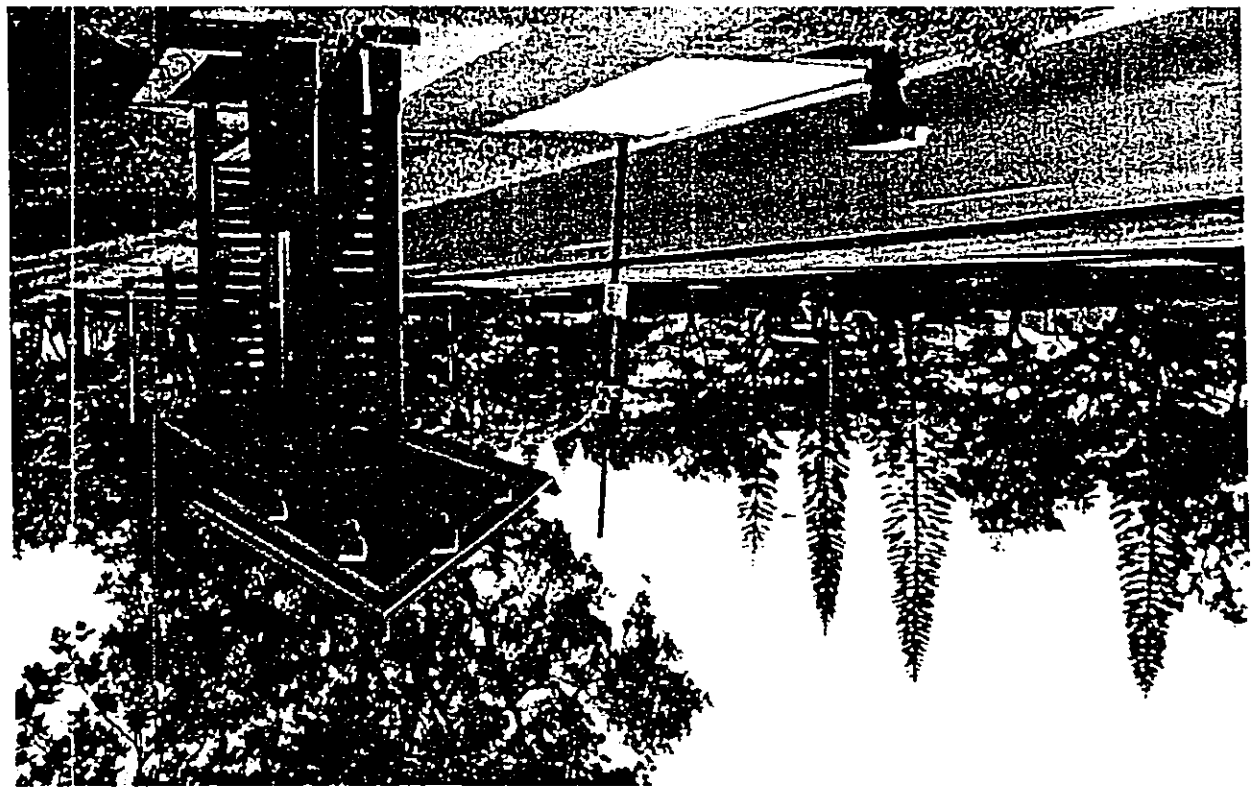
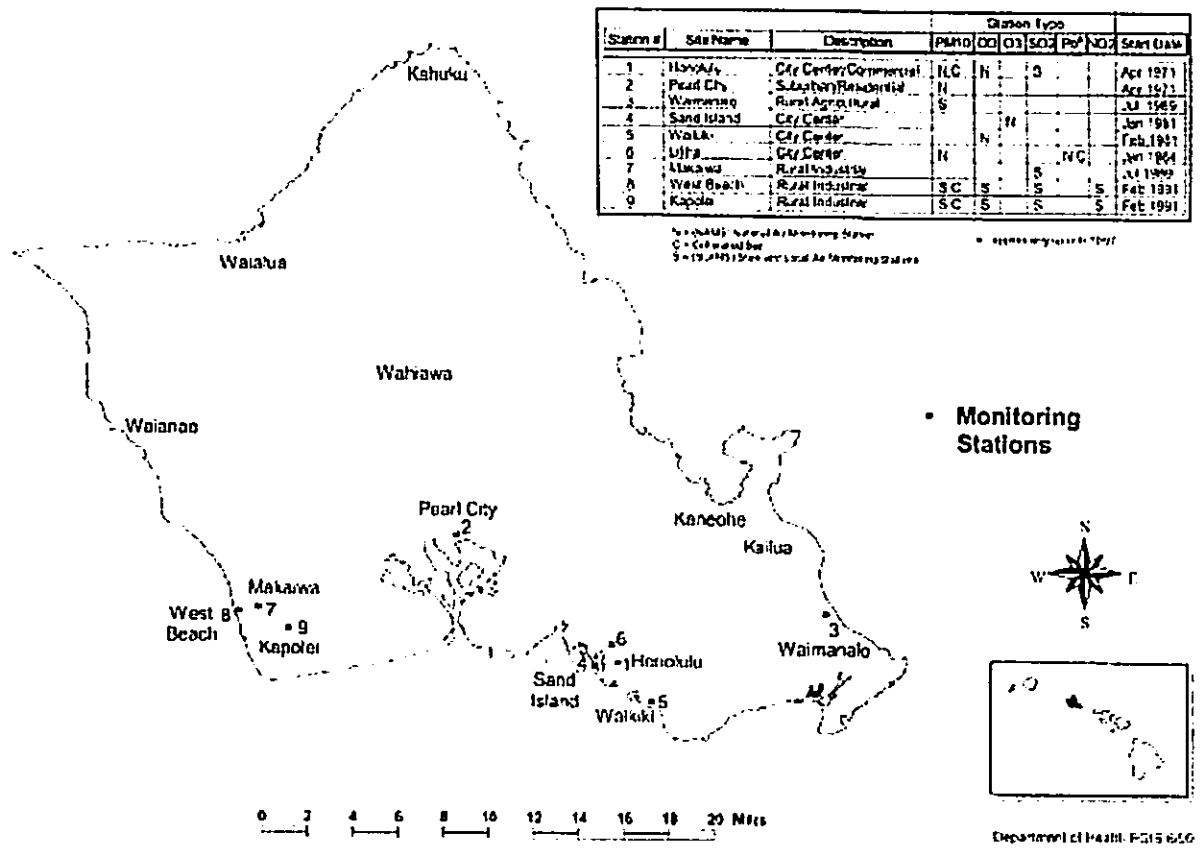


Figure 1.4 Mililani Transit Center along Mehehula Parkway (street level).

Island of Oahu - Air Quality Monitoring Stations



System #	Site Name	Description	Station Type: PM10	CO	O3	SO2	Pb*	NO2	Start Date
1	Honolulu	City Center/Commercial	N,C	N		S			Apr 1971
2	Pearl City	Suburban/Residential	N						Apr 1971
3	Waimanalo	Rural Agricultural	S						Jul 1969
4	Sand Island	City Center			N				Jan 1991
5	Waikiki	City Center		N					Feb 1991
6	Liliha	City Center	N					N,C	Jan 1984
7	Makaha	Rural Industrial				S			Jul 1989
8	West Beach	Rural Industrial	S,C	S		S		S	Feb 1991
9	Kapolei	Rural Industrial	S,C	S		S		S	Feb 1991

Figure 1.5 Air quality Monitoring Stations on the island of Oahu, Hawaii

AIR QUALITY STUDY

FOR THE PROPOSED

OAHU TRANSIT CENTERS PROJECT

OAHU, HAWAII

Prepared for:

The Environmental Company, Inc.

May 2002

B.D. NEAL & ASSOCIATES

*Applied Meteorology * Air Quality * Computer Science*

P.O. BOX 1808 * KAILUA-KONA, HAWAII 96745 * TELEPHONE (808) 329-1627 * FAX (808) 331-8428

EMAIL: bdneal@kona.net

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1.0 SUMMARY

The Honolulu City & County Department of Transportation Serivces is proposing to develop the Oahu Transit Centers Project at three locations in West and Central Oahu. The three locations include Waianae, Wahiawa and Mililani. The proposed project will consist of seven to ten bus bays at each location along with passenger waiting facilities and other ancillary facilities. Development of the project is expected to be completed during 2003. This study examines the potential short- and long-term air quality impacts that could occur as a result of construction and use of the proposed facilities and suggests mitigative measures to reduce any potential air quality impacts where possible and appropriate.

Both federal and state standards have been established to maintain ambient air quality. At the present time, seven parameters are regulated including: particulate matter, sulfur dioxide, hydrogen sulfide, nitrogen dioxide, carbon monoxide, ozone and lead. Hawaii air quality standards are more stringent than the comparable national standards except for those pertaining to sulfur dioxide and particulate matter.

Regional and local climate together with the amount and type of human activity generally dictate the air quality of a given location. Winds at each location are predominantly trade winds, but they are likely often deviated by the local terrain. During winter, occasional storms may generate strong winds from the south (kona winds) for brief periods. When the trade winds or kona winds are weak or absent, landbreeze-seabreeze circulations or mountain drainage winds may develop. Wind speeds are often lower compared to more exposed coastal locations, but the trade

winds still provide relatively good ventilation much of the time. Temperatures in the Oahu area leeward of the Koolaus are generally very moderate with average daily temperatures ranging from about 70?F to 85?F. Extreme temperatures range from about 53?F to about 95?F. Rainfall in the Waianae area is relatively low with an average of about 20 inches per year, while the Wahiawa and Mililani areas receive about 50 inches per year.

The present air quality of the project area appears to be reasonably good based on nearby air quality monitoring data. Air quality data from the nearest monitoring stations operated by the Hawaii Department of Health suggest that all national air quality standards are currently being met, although occasional exceedances of the more stringent state standard for ozone may occur. It is also probable that the more stringent state standards for carbon monoxide are exceeded at times near congested roadway intersections.

If the proposed project is given the necessary approvals to proceed, it may be inevitable that some short- and/or long-term impacts on air quality will occur either directly or indirectly as a consequence of project construction and use. Short-term impacts from fugitive dust will likely occur during the project construction phase. To a lesser extent, exhaust emissions from stationary and mobile construction equipment, from the disruption of traffic, and from workers' vehicles may also affect air quality during the period of construction. State air pollution control regulations require that there be no visible fugitive dust emissions at the property line. Hence, an effective dust control plan must be implemented to ensure compliance with state regulations. Fugitive dust emissions can be controlled to a large extent by watering of

active work areas, using wind screens, keeping adjacent paved roads clean, and by covering of open-bodied trucks. Other dust control measures could include limiting the area that can be disturbed at any given time and/or mulching or chemically stabilizing inactive areas that have been worked. Paving and landscaping of project areas early in the construction schedule will also reduce dust emissions. Monitoring dust at the project boundary during the period of construction could be considered as a means to evaluate the effectiveness of the project dust control program. Exhaust emissions can be mitigated by moving construction equipment and workers to and from the project site during off-peak traffic hours.

After construction, buses coming to and from the proposed transit centers will result in a long-term increase in air pollution emissions in the project area. To assess the potential impact of these emissions, estimates of project-related annual emissions were prepared. These were then compared to the significant emission rates defined in the Hawaii Administrative Rules. This comparison showed that the bus emissions at the transit centers will be relatively small compared to the significant emission rates. Therefore, as long as the transit center operations do not disrupt traffic on nearby roadways, it is unlikely that any measurable impacts on air quality will occur. Implementing any air quality mitigation measures for long-term impacts from the proposed project is probably unnecessary and unwarranted.

2.0 INTRODUCTION

The Honolulu City & County Department of Transportation Services is proposing to develop the Oahu Transit Centers Project at three locations on the island of Oahu. These consist of the Waianae

Coast Community Transit Center, the Wahiawa Community Transit Center and the Mililani Community Transit Center. Figure 1 indicates the locations of the three proposed transit centers.

The proposed Waianae Coast Community Transit Center will be located at 86-052 Leihoku Street, on a portion of TMK 8-6-1:29 adjacent to the Waianae Mall and across the street from the site of the Waianae YMCA. This facility will provide seven bays for TheBus and paratransit vehicles, arranged around a central "island" that will accommodate passenger waiting shelters, a comfort station with restrooms, vending and information kiosks, landscaping, bike parking/lockers, and a "gathering place" feature. The facility will also provide three bays for private school buses, a passenger drop-off/pick-up area, and parking for approximately 100 vehicles.

The proposed Wahiawa Community Transit Center will be located in Wahiawa's Civic Center at 956 California Avenue, on portions of TMK 7-4-6:2 and TMK 7-4-6:12. This facility will provide eight bays for TheBus and paratransit vehicles, four of which will be located off-street while the other four will be located along California Avenue. Passenger waiting shelters, a comfort station with restrooms, bike parking/lockers, and informational kiosks will be provided, along with landscaping and additional street trees.

The proposed Mililani Community Transit Center will located along Meheula Parkway fronting Mililani Town Center, and will use air rights over a portion of the shopping center's parking lot and landscape strip. The Center will provide ten bays for TheBus and paratransit vehicles, passenger waiting shelters, a comfort

station, informational kiosks, bike parking/lockers, and landscaping. An elevator and open stairways will provide links from the Transit Center to the shopping center parking level. A proposal has also been made to provide community meeting space at the lower level.

Development of all three transit centers is expected to be completed during 2003.

The purpose of this study is to describe existing air quality in the project area and to assess the potential short-term and long-term direct and indirect air quality impacts that could result from construction and use of the proposed facilities. Measures to mitigate these impacts are suggested where possible and appropriate.

3.0 AMBIENT AIR QUALITY STANDARDS

Ambient concentrations of air pollution are regulated by both national and state ambient air quality standards (AAQS). National AAQS are specified in Section 40, Part 50 of the Code of Federal Regulations (CFR), while State of Hawaii AAQS are defined in Chapter 11-59 of the Hawaii Administrative Rules. Table 1 summarizes both the national and the state AAQS that are specified in the cited documents. As indicated in the table, national and state AAQS have been established for particulate matter, sulfur dioxide, nitrogen dioxide, carbon monoxide, ozone and lead. The state has also set a standard for hydrogen sulfide. National AAQS are stated in terms of both primary and secondary standards for most of the regulated air pollutants. National primary standards are designed to protect the public health with

an "adequate margin of safety". National secondary standards, on the other hand, define levels of air quality necessary to protect the public welfare from "any known or anticipated adverse effects of a pollutant". Secondary public welfare impacts may include such effects as decreased visibility, diminished comfort levels, or other potential injury to the natural or man-made environment, e.g., soiling of materials, damage to vegetation or other economic damage. In contrast to the national AAQS, Hawaii State AAQS are given in terms of a single standard that is designed "to protect public health and welfare and to prevent the significant deterioration of air quality".

Each of the regulated air pollutants has the potential to create or exacerbate some form of adverse health effect or to produce environmental degradation when present in sufficiently high concentration for prolonged periods of time. The AAQS specify a maximum allowable concentration for a given air pollutant for one or more averaging times to prevent harmful effects. Averaging times vary from one hour to one year depending on the pollutant and type of exposure necessary to cause adverse effects. In the case of the short-term (i.e., 1- to 24-hour) AAQS, both national and state standards allow a specified number of exceedances each year.

The Hawaii AAQS are in some cases considerably more stringent than the comparable national AAQS. In particular, the Hawaii 1-hour AAQS for carbon monoxide is four times more stringent than the comparable national limit, and the state 1-hour limit for ozone is more than two times as stringent as the national 1-hour standard. The national 1-hour ozone standard will be phased out (pending court appeal) the next few years in favor of the new (and more stringent) 8-hour standard.

The Hawaii AAQS for sulfur dioxide were relaxed in 1986 to make the state standards essentially the same as the national limits. In 1993, the state also revised its particulate standards to follow those set by the federal government. During 1997, the federal government again revised its standards for particulate, but the new standards have been challenged in federal court. To date, the Hawaii Department of Health has not updated the state particulate standards.

4.0 REGIONAL AND LOCAL CLIMATOLOGY

Regional and local climatology significantly affect the air quality of a given location. Wind, temperature, atmospheric turbulence, mixing height and rainfall all influence air quality. Although the climate of Hawaii is relatively moderate throughout most of the state and most of the year, significant differences in these parameters may occur from one location to another. Most differences in regional and local climates within the state are caused by the mountainous topography.

Hawaii lies well within the belt of northeasterly trade winds generated by the semi-permanent Pacific high pressure cell to the north and east. On the island of Oahu, the Koolau and Waianae Mountain Ranges are oriented almost perpendicular to the trade winds, which accounts for much of the variation in the local climatology of the island. Waianae, Wahiawa and Mililani, the sites of the proposed project, are suburban areas within the City and County of Honolulu. Waianae is located leeward of the Waianae Range, while Wahiawa and Mililani are situated between the Koolau and Waianae Ranges. Although climatic conditions vary somewhat

across the project area, long-term weather data available from the Honolulu International Airport, located a few miles to the southeast, is at least semi-representative.

Wind frequency data given in Table 2 for Honolulu International Airport show that the annual prevailing wind direction for this area of Oahu is east northeast. On an annual basis, 34.7 percent of the time the wind is from this direction, and nearly 75 percent of the time the wind is in the northeast quadrant. Winds from the south are infrequent occurring only a few days during the year and mostly in association with winter storms. Wind speeds average about 11 mph (10 knots) and mostly vary between about 4 and 18 mph (5 and 15 knots). Surface wind speeds in the project area are somewhat lighter, particularly at the Waianae site, and local wind directions likely are affected by the terrain.

Air pollution emissions from motor vehicles, the formation of photochemical smog and smoke plume rise all depend in part on air temperature. Colder temperatures tend to result in higher emissions of contaminants from automobiles but lower concentrations of photochemical smog and ground-level concentrations of air pollution from elevated plumes. In Hawaii, the annual and daily variation of temperature depend to a large degree on elevation above sea level, distance inland and exposure to the trade winds. Average temperatures at locations near sea level generally are warmer than those at higher elevations. Areas exposed to the trade wind tend to have the least temperature variation, while inland and leeward areas often have the most. The project area's leeward location results in a relatively moderate temperature profile compared to some other locations around Oahu and the state. At the airport, average annual daily minimum and maximum temperatures are 70?F and 84?F, respectively

[1]. The extreme minimum temperature was 53?F during January 1998, and the extreme maximum was 95?F during September 1994. Temperatures in the Waianae area may be slightly higher compared to the airport due to wind-sheltering effects, while the Wahiawa and Mililani areas are probably slightly cooler due to the higher elevation.

Small scale, random motions in the atmosphere (turbulence) cause air pollutants to be dispersed as a function of distance or time from the point of emission. Turbulence is caused by both mechanical and thermal forces in the atmosphere. It is often measured and described in terms of Pasquill-Gifford stability class. Stability class 1 is the most turbulent and class 6 the least. Thus, air pollution dissipates the best during stability class 1 conditions and the worst when stability class 6 prevails. In suburban areas, like those in the project area, stability class 5 or 6 is generally the highest stability class that occurs, developing during the nighttime and early morning.

Mixing height is defined as the height above the surface through which relatively vigorous vertical mixing occurs. Low mixing heights can result in high ground-level air pollution concentrations because contaminants emitted from or near the surface can become trapped within the mixing layer. In Hawaii, minimum mixing heights tend to be high because of mechanical mixing caused by the trade winds and because of the temperature moderating effect of the surrounding ocean. Low mixing heights may sometimes occur, however, at inland locations and even at times along coastal areas early in the morning following a clear, cool, windless night. Coastal areas also may experience low mixing levels during sea breeze conditions when cooler ocean air rushes in over warmer

land. Mixing heights in the state typically are above 3000 feet (1000 meters).

Rainfall can have a beneficial effect on the air quality of an area in that it helps to suppress fugitive dust emissions, and it also may "washout" gaseous contaminants that are water-soluble. Rainfall in Hawaii is highly variable depending on elevation and on location with respect to the trade wind. The Waianae area is one of the drier areas on Oahu due to its leeward and near sea level location. Average annual rainfall amounts to about 20 inches [2]. Wahiawa and Mililani, located at a higher elevation and between the Koolau and Waianae Ranges, have a wetter climate receiving about 50 inches per year [2].

5.0 PRESENT AIR QUALITY

Present air quality in the project area is mostly affected by air pollutants from motor vehicles, industrial sources, agricultural operations and to a lesser extent by natural sources. Table 3 presents an air pollutant emission summary for the island of Oahu for calendar year 1993. The emission rates shown in the table pertain to manmade emissions only, i.e., emissions from natural sources are not included. As suggested in the table, much of the particulate emissions on Oahu originate from area sources, such as the mineral products industry and agriculture. Sulfur oxides are emitted almost exclusively by point sources, such as power plants and refineries. Nitrogen oxides emissions emanate predominantly from industrial point sources, although area sources (mostly motor vehicle traffic) also contribute a significant share. The majority of carbon monoxide emissions occur from area sources (motor vehicle traffic), while hydrocarbons are emitted mainly from point sources. Based on previous emission inventories that

have been reported for Oahu, it appears that emissions of particulate and nitrogen oxides have increased during the past ten years, while emissions of sulfur oxides, carbon monoxide and hydrocarbons have declined.

Roadways in the vicinity of the three proposed transit center sites carry moderate volumes of motor vehicle traffic at times, and roadway intersections may be congested during peak traffic hours. Emissions from motor vehicles using these roadways, *primarily nitrogen oxides and* carbon monoxide, may cause localized impacts on air quality.

At the Waianae site, the nearest industrial source of air pollution is the Waianae Wastewater Treatment Plant, which is located a few hundred feet to the south. Wastewater treatment plants emit hydrogen sulfide, which can cause odor nuisance even at very low concentrations. Kahe Power Plant is situated about 7 miles to the southeast, and adjacent to this is the Waimanalo Gulch Sanitary Landfill. Campbell Industrial Park is located about 12 miles to the southeast. Emissions from these facilities consist primarily of sulfur dioxide, nitrogen oxides and particulate. Due to the prevailing wind pattern in the area, it is unlikely that emissions from these sources cause any chronic impacts on air quality in the Waianae area, but occasional impacts may occur with south winds.

The Wahiawa and Mililani sites are farther removed from large industrial sources of air pollution, although emissions from distant sources at Campbell Industrial Park may affect these areas during kona wind conditions.

With the demise of sugarcane growing on the Ewa Plain, air pollutions impacts from agriculture have significantly diminished in the area. Agriculture-related emissions in the Waianae area consist mostly of particulate matter from small-scale operations, while the Wahiawa and Mililani areas may experience occasional dust and smoke impacts from nearby, large-scale pineapple cultivation and harvesting operations.

Natural sources of air pollution emissions that also could affect the project area but cannot be quantified very accurately include the ocean (sea spray), plants (aero-allergens), wind-blown dust, and perhaps distant volcanoes on the island of Hawaii.

The State Department of Health operates a network of air quality monitoring stations at various locations on Oahu. Each station, however, typically does not monitor the full complement of air quality parameters. Table 4 shows annual summaries of air quality measurements that were made nearest to the project area for several of the regulated air pollutants for the period 1996 through 2000. These are the most recent data that are currently available.

During the 1996-2000 period, sulfur dioxide was monitored by the State Department of Health at an air quality station located at Kapolei. Concentrations monitored were consistently low compared to the standards. Annual second-highest 3-hour concentrations (which are most relevant to the air quality standards) ranged from 17 to 64 ?g/m^3, while the annual second-highest 24-hour concentrations ranged from 5 to 16 ?g/m^3. Annual average

concentrations were only about 1 to 2 ?g/m^3. There were no exceedances of the state/national 3-hour or 24-hour AAQS for sulfur dioxide during the 5-year period.

Particulate matter less than 10 microns in diameter (PM-10) is also measured at the Kapolei monitoring station. Annual second-highest 24-hour PM-10 concentrations ranged from 26 to 129 ?g/m^3 between 1996 and 2000. Average annual concentrations ranged from 13 to 19 ?g/m^3. All values reported were within the state and national AAQS.

Carbon monoxide measurements were also made at the Kapolei monitoring station. The annual second-highest 1-hour concentrations ranged from 1.2 to 1.7 mg/m^3. The annual second-highest 8-hour concentrations ranged from 0.6 to 0.8 mg/m^3. No exceedances of the state or national 1-hour or 8-hour AAQS were reported.

Nitrogen dioxide is also monitored by the Department of Health at the Kapolei monitoring station. Annual average concentrations of this pollutant ranged from 2 to 9 ?g/m^3, safely inside the state and national AAQS.

The nearest available ozone measurements were obtained at Sand Island (about 15 to 25 miles southeast of the project area). The second-highest 1-hour concentrations for each year from 1996 to 2000 ranged from 91 to 110 ?g/m^3. Up to 13 exceedances of the state AAQS per year were recorded during the monitoring period. No specific trend is discernable, although the number of

exceedances was lower during the latter half of the five-year period.

Although not shown in the table, the nearest and most recent measurements of ambient lead concentrations that have been reported were made at the downtown Honolulu monitoring station between 1996 and 1997. Average quarterly concentrations were near or below the detection limit, and no exceedances of the state AAQS were recorded. Monitoring for this parameter was discontinued during 1997.

Based on the data and discussion presented above, it appears likely that the State of Hawaii AAQS for sulfur dioxide, nitrogen dioxide, particulate matter and lead are currently being met at the project site. It is likely, however, that the state AAQS for ozone may be exceeded on occasion based on the Sand Island measurements for this parameter. While carbon monoxide measurements at the Kapolei monitoring station suggest that concentrations are within the state and national standards, local "hot spots" may exist near traffic-congested intersections.

6.0 SHORT-TERM IMPACTS OF PROJECT

Short-term direct and indirect impacts on air quality could potentially occur due to project construction. For a project of this nature, there are two potential types of air pollution emissions that could directly result in short-term air quality impacts during project construction: (1) fugitive dust from vehicle movement and soil excavation; and (2) exhaust emissions from on-site construction equipment. Indirectly, there also could be short-term impacts from slow-moving construction

equipment traveling to and from the project sites, from a temporary increase in local traffic caused by commuting construction workers, and from the disruption of normal traffic flow caused by lane closures of adjacent roadways.

Fugitive dust emissions may arise from the grading and dirt-moving activities associated with site clearing and preparation work. The emission rate for fugitive dust emissions from construction activities is difficult to estimate accurately. This is because of its elusive nature of emission and because the potential for its generation varies greatly depending upon the type of soil at the construction site, the amount and type of dirt-disturbing activity taking place, the moisture content of exposed soil in work areas, and the wind speed. The EPA [3] has provided a rough estimate for uncontrolled fugitive dust emissions from construction activity of 1.2 tons per acre per month under conditions of "medium" activity, moderate soil silt content (30%), and precipitation/evaporation (P/E) index of 50. Uncontrolled fugitive dust emissions at the three project sites would likely be somewhere near that level, depending on the amount of rainfall that occurs. In any case, State of Hawaii Air Pollution Control Regulations [4] prohibit visible emissions of fugitive dust from construction activities at the property line. Thus, an effective dust control plan for the project construction phase is essential.

Adequate fugitive dust control can usually be accomplished by the establishment of a frequent watering program to keep bare-dirt surfaces in construction areas from becoming significant sources of dust. In dust-prone or dust-sensitive areas, other control measures such as limiting the area that can be disturbed at any given time, applying chemical soil stabilizers, mulching and/or using wind screens may be necessary. Control regulations further

stipulate that open-bodied trucks be covered at all times when in motion if they are transporting materials that could be blown away. Haul trucks tracking dirt onto paved streets from unpaved areas is often a significant source of dust in construction areas. Some means to alleviate this problem, such as road cleaning or tire washing, may be appropriate. Paving of parking areas and/or establishment of landscaping as early in the construction schedule as possible can also lower the potential for fugitive dust emissions. Monitoring dust at the project property line could be considered to quantify and document the effectiveness of dust control measures.

On-site mobile and stationary construction equipment also will emit air pollutants from engine exhausts. The largest of this equipment is usually diesel-powered. Nitrogen oxides emissions from diesel engines can be relatively high compared to gasoline-powered equipment, but the standard for nitrogen dioxide is set on an annual basis and is not likely to be violated by short-term construction equipment emissions. Carbon monoxide emissions from diesel engines, on the other hand, are low and should be relatively insignificant compared to vehicular emissions on nearby roadways.

Project construction activities will also likely obstruct the normal flow of traffic at times to such an extent that overall vehicular emissions in the project area will temporarily increase. The only means to alleviate this problem will be to attempt to keep roadways open during peak traffic hours and to move heavy construction equipment and workers to and from construction areas during periods of low traffic volume. Thus, most potential short-term air quality impacts from project construction can be mitigated.

7.0 LONG-TERM IMPACTS OF PROJECT

After construction is completed, use of the proposed facilities will result in increased bus traffic on nearby roadways, potentially causing long-term impacts on ambient air quality in the vicinity of each of the three transit centers where the buses will congregate. Motor vehicles with gasoline-powered engines are significant sources of carbon monoxide, and they also emit nitrogen oxides and other contaminates. In urban and suburban areas, carbon monoxide emissions near congested roadway intersections are the usual issue. In the case of diesel-powered buses, however, the primary air pollution emissions consist of nitrogen oxides and particulate matter; carbon monoxide emissions are generally inconsequential compared to automobile emissions.

Although computer models can generally be used to assess the impacts of carbon monoxide emissions from motor vehicle traffic, it is probably impractical to attempt to quantitatively model the bus emissions of nitrogen oxides and particulate that may be associated with the proposed facilities. In lieu of this, annual emissions from project bus operations in the vicinity of each of the proposed transit centers were estimated and compared to the "significant" emission rates as defined in the Hawaii Administrative Rules. Strictly speaking, the significant emission rates are intended to be applied to stationary point sources and not mobile sources such as bus traffic. Nevertheless, it is believed that this will provide a reasonable approach to ascertaining the significance of the project-related emissions of nitrogen oxides and particulate. If the project emissions are shown to be below the significant emissions rates,

this is usually taken to indicated that a more detailed assessment of the emissions is not warranted.

To begin the evaluation of the potential long-term impacts on air quality related to the proposed facilities, the annual bus volumes at each of the three transit centers were estimated. These were estimated by first identifying the bus routes that would include each transit center and then reviewing the schedules for these routes to enumerate the buses each day that would be associated with each route at the transit centers. Table 5 shows the resulting estimated annual bus volume at each facility and the basis for these estimates. As indicated in the table, the expected total annual bus volumes at each transit center are 93,440 at Waianae, 84,315 at Wahiawa and 78,475 at Mililani. As noted in the table, these estimates assume that weekend service will be the same as weekday service. Actual annual bus volumes will be somewhat lower due to reduced service on weekends and holidays.

Buses using the proposed transit centers will emit air pollution on approach, during idle and as they depart. To estimate the bus emissions during these modes of operation, the EPA computer model MOBILE6.1 [5] was used in combination with the expected annual bus volumes. MOBILE6.1 can be used to provide composite emission factors for a given year, vehicle class, average vehicle speed and ambient air temperature. The composite emission factors generally pertain to various modes of operation (acceleration, cruise, deceleration and idle) and are specified in terms of grams per vehicle mile of travel. Idle emission rates in terms of grams per minute can be estimated separately. For this project, MOBILE6.1 was used to estimate emission factors for the heavy-duty diesel vehicle (HDDV) class. Emission factors for nitrogen oxides,

particulate, volatile organic compounds (VOC), carbon monoxide and sulfur dioxide were calculated for the year 2003, the expected year of project completion. Due to new emission standards for this class of vehicle that will be phased in during the next several years, emissions of nitrogen oxides and particulate will diminish in later years. An average annual temperature of 77°F was assumed, and it was further assumed that the average approach and departure speeds would be 25 mph.

Table 6 shows the resulting estimated composite and idle emission factors for HDDV. Nitrogen oxides emissions are the most appreciable followed by carbon monoxide, volatile organic compounds, sulfur dioxide and particulate. It is worth noting that carbon monoxide emissions from light-duty gasoline vehicles (LDGV) are about five times higher per vehicle mile of travel than are those for HDDV.

The next task is to determine the total vehicle miles and bus idle times associated with each transit center. A reasonable but somewhat arbitrary assumption is that emissions that occur beyond 1 mile of the transit centers will not significantly impact air quality in the vicinity of the transit centers. Thus, the relevant approach and depart vehicle miles at each facility were estimated to amount to the annual bus volume multiplied by 2 miles. Total annual idle times were estimated based on the annual bus volume and the assumption that each bus would idle for an average of 5 minutes at the transit centers. The resulting total annual approach and depart miles and the total annual idling times for each transit center are shown in Table 7.

The emission factors given in Table 6 combined with the estimated annual approach/depart miles and annual idle times shown in Table 7 will provide estimates of the total annual emissions attributable to each transit center. The resulting estimated annual emissions for each facility for the year 2003 are indicated in Table 8. Nitrogen oxides emissions would amount to less than 3 tons per year at each transit center, while carbon monoxide emissions would amount to about 1 ton per year at each location. Emissions of particulate, VOC and sulfur dioxide would be much less than 1 ton per year each. Emissions of nitrogen oxides and particulate can be expected to decrease with time as newer buses are phased in that must meet more stringent emission standards.

To ascertain the significance of the transit center emissions, the estimated annual emissions shown in Table 8 can be compared to the significant emission rates, which are defined in Hawaii Administrative Rules (HAR), Title 11, Chapter 60.1. Table 9 lists the significant emission rates for nitrogen oxides, particulate, VOC, carbon monoxide and sulfur dioxide. A comparison of these two tables shows that the transit center emissions will be substantially less than the defined significant emission rates. Nitrogen oxides emissions at each location would amount to about 8 percent of the significant emission rate, while all other emissions would amount to about 1 percent or less of the significant values.

8.0 CONCLUSIONS AND RECOMMENDATIONS

The major potential short-term air quality impact of the project will occur from the emission of fugitive dust during construction. Uncontrolled fugitive dust emissions from construction activities

are estimated to amount to about 1.2 tons per acre per month, depending on rainfall. To control dust, active work areas and any temporary unpaved work roads should be watered at least twice daily on days without rainfall. Use of windscreens and/or limiting the area that is disturbed at any given time will also help to contain fugitive dust emissions. Wind erosion of inactive areas of the site that have been disturbed could be controlled by mulching or by the use of chemical soil stabilizers. Dirt-hauling trucks should be covered when traveling on roadways to prevent windage. A routine road cleaning and/or tire washing program will also help to reduce fugitive dust emissions that may occur as a result of trucks tracking dirt onto paved roadways in the project area. Paving of parking areas and establishment of landscaping early in the construction schedule will also help to control dust. Monitoring dust at the project boundary during the period of construction could be considered as a means to evaluate the effectiveness of the project dust control program and to adjust the program if necessary.

During construction phases, emissions from engine exhausts (primarily consisting of carbon monoxide and nitrogen oxides) will also occur both from on-site construction equipment and from vehicles used by construction workers and from trucks traveling to and from the project. Increased vehicular emissions due to disruption of traffic by construction equipment, roadway lane closures and/or commuting construction workers can be alleviated by moving equipment and personnel to the site during off-peak traffic hours and by trying to avoid roadway lane closures during peak traffic periods.

After the proposed project is completed, any long-term impacts on air quality near the three proposed transit centers due to

emissions from project-related bus traffic will be negligible. Annual emissions from bus traffic at each transit center will amount to only a small fraction of the state-defined significant emission rates, and thus it can be anticipated that any direct impacts on air quality from bus emissions will be minimal. It is conceivable, however, that indirect impacts on air quality could occur if the normal flow of ambient traffic on adjacent roadways is disrupted by bus traffic, causing excess emissions to occur from other motor vehicle traffic. Thus, the proposed facilities should be designed so as minimize the disruption of traffic on adjacent roadways. Implementing other measures to mitigate long-term impacts is probably unnecessary and unwarranted.

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Figure 1 - Project Location Map

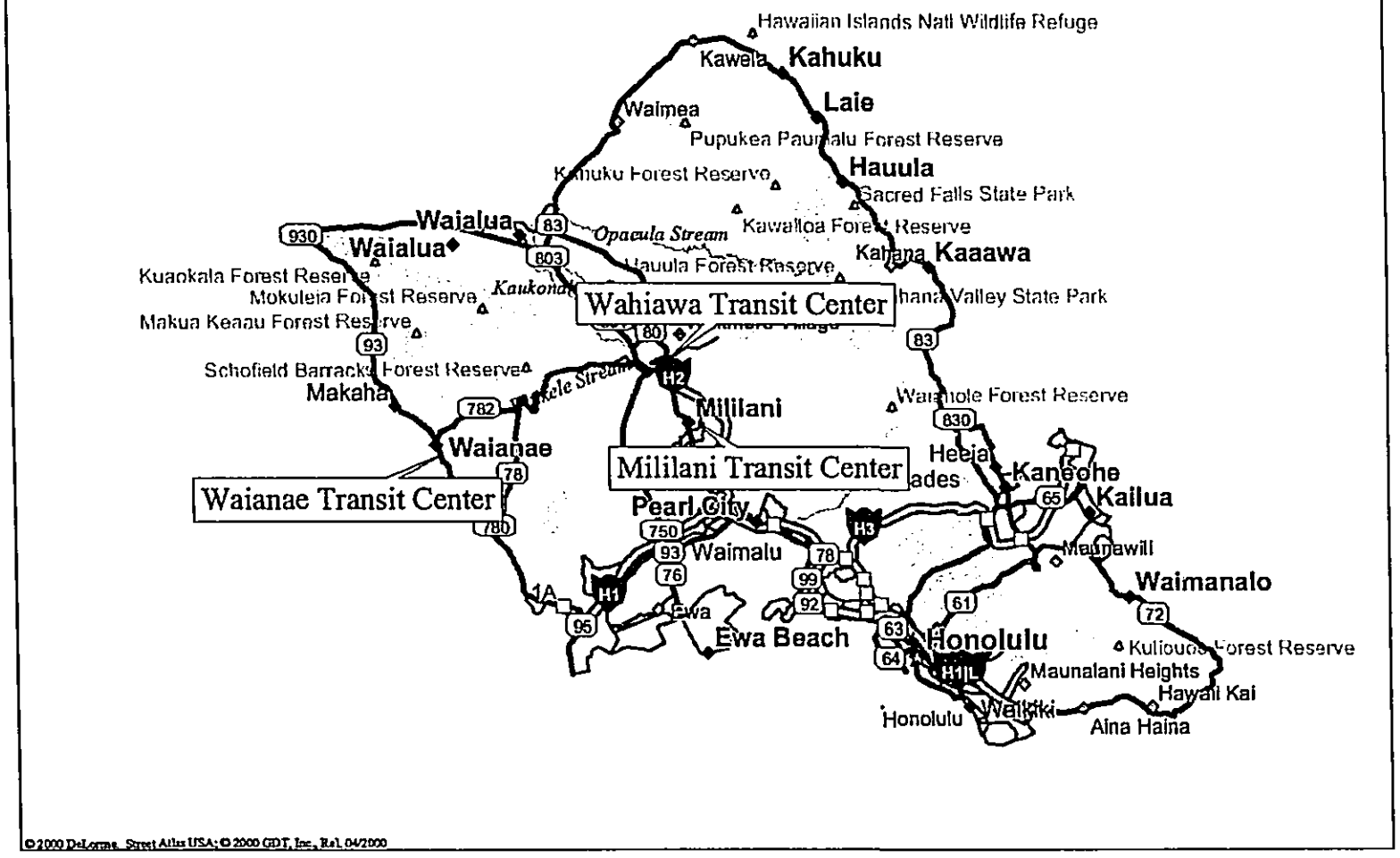

Table 1

SUMMARY OF STATE OF HAWAII AND NATIONAL
AMBIENT AIR QUALITY STANDARDS

Pollutant	Units	Averaging Time	Maximum Allowable Concentration		
			National Primary	National Secondary	State of Hawaii
Particulate Matter (<10 microns)	?g/m³	Annual 24 Hours	50[a] 150[b]	50[a] 150[b]	50 150[c]
Particulate Matter (<2.5 microns)	?g/m³	Annual 24 Hours	15[a] 65[d]	15[a] 65[d]	- -
Sulfur Dioxide	?g/m³	Annual 24 Hours 3 Hours	80 365[c] -	- - 1300[c]	80 365[c] 1300[c]
Nitrogen Dioxide	?g/m³	Annual	100	100	70
Carbon Monoxide	mg/m³	8 Hours 1 Hour	10[c] 40[c]	- -	5[c] 10[c]
Ozone	?g/m³	8 Hours 1 Hour	157[e] 235[f]	157[e] 235[f]	- 100[c]
Lead	?g/m³	Calendar Quarter	1.5	1.5	1.5
Hydrogen Sulfide	?g/m³	1 Hour	-	-	35[c]

[a] Three-year average of annual arithmetic mean.

[b] 99th percentile value averaged over three years.

[c] Not to be exceeded more than once per year.

[d] 98th percentile value averaged over three years.

[e] Three-year average of fourth-highest daily 8-hour maximum.

[f] Standard is attained when the expected number of exceedances is less than or equal to 1.

Note: Standards for particulate matter (<2.5 microns) and for 8-hour ozone are subject to court appeal.

Table 2

ANNUAL WIND FREQUENCY FOR HONOLULU INTERNATIONAL AIRPORT (%)

Wind Direction	Wind Speed (knots)									Total
	0-3	4-6	7-10	11-16	17-21	22-27	28-33	34-40	>40	
N	0.5	2.5	1.3	0.5	0.0	0.0	0.0	0.0	0.0	4.8
NNE	0.3	1.2	1.6	1.5	0.2	0.0	0.0	0.0	0.0	4.7
NE	0.3	2.1	6.1	11.0	3.2	0.3	0.0	0.0	0.0	23.0
ENE	0.2	2.5	10.9	16.6	4.1	0.3	0.0	0.0	0.0	34.7
E	0.1	1.0	2.5	2.8	0.5	0.0	0.0	0.0	0.0	7.0
ESE	0.0	0.3	0.4	0.3	0.0	0.0	0.0	0.0	0.0	1.1
SE	0.0	0.3	0.8	1.0	0.1	0.0	0.0	0.0	0.0	2.2
SSE	0.1	0.4	1.2	0.7	0.1	0.0	0.0	0.0	0.0	2.4
S	0.1	0.5	1.4	0.6	0.1	0.0	0.0	0.0	0.0	2.7
SSW	0.0	0.3	0.8	0.3	0.0	0.0	0.0	0.0	0.0	1.5
SW	0.0	0.2	0.8	0.4	0.0	0.0	0.0	0.0	0.0	1.5
WSW	0.0	0.3	0.5	0.4	0.0	0.0	0.0	0.0	0.0	1.2
W	0.1	0.5	0.2	0.0	0.0	0.0	0.0	0.0	0.0	1.1
WNW	0.2	1.4	0.3	0.1	0.0	0.0	0.0	0.0	0.0	2.0
NW	0.4	2.3	0.8	0.1	0.0	0.0	0.0	0.0	0.0	3.8
NNW	0.5	2.3	0.8	0.2	0.0	0.0	0.0	0.0	0.0	3.8
Calm	2.5									2.5
Total	5.4	18.3	30.6	36.5	8.5	0.7	0.0	0.0	0.0	100.0

Source: Climatography of the United States No. 90 (1965-1974), Airport Climatological Summary, Honolulu International Airport, Honolulu, Hawaii, U.S. Department of Commerce, National Climatic Center, Asheville, NC, August 1978.

Table 3

AIR POLLUTION EMISSIONS INVENTORY FOR ISLAND OF OAHU, 1993

Air Pollutant	Point Sources (tons/year)	Area Sources (tons/year)	Total (tons/year)
Particulate	25,891	49,374	75,265
Sulfur Oxides	39,230	nil	39,230
Nitrogen Oxides	92,436	31,141	123,577
Carbon Monoxide	28,757	121,802	150,559
Hydrocarbons	4,160	421	4,581

Source: Final Report, "Review, Revise and Update of the Hawaii Emissions Inventory Systems for the State of Hawaii", prepared for Hawaii Department of Health by J.L. Shoemaker & Associates, Inc., 1996

Table 4

ANNUAL SUMMARIES OF AIR QUALITY MEASUREMENTS FOR
MONITORING STATIONS NEAREST OAHU TRANSIT CENTERS PROJECT

Parameter / Location	1996	1997	1998	1999	2000
Sulfur Dioxide / Kapolei					
3-Hour Averaging Period:					
No. of Samples	2785	2845	2723	2710	2505
Highest Concentration (?g/m³)	45	61	69	30	23
2nd Highest Concentration (?g/m³)	42	52	64	17	18
No. of State AAQS Exceedances	0	0	0	0	0
24-Hour Averaging Period:					
No. of Samples	358	361	343	360	362
Highest Concentration (?g/m³)	14	20	17	6	6
2nd Highest Concentration (?g/m³)	11	16	16	6	5
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration (?g/m³)	2	2	2	2	1
Particulate (PM-10) / Kapolei					
24-Hour Averaging Period:					
No. of Samples	55	269	359	362	356
Highest Concentration (?g/m³)	52	41	34	129	148
2nd Highest Concentration (?g/m³)	29	26	34	39	129
No. of State AAQS Exceedances	0	0	0	0	0
Annual Average Concentration (?g/m³)	19	13	15	15	17
Carbon Monoxide / Kapolei					
1-Hour Averaging Period:					
No. of Samples	8220	8649	8044	8395	8595
Highest Concentration (mg/m³)	1.7	1.8	1.9	1.5	2.5
2nd Highest Concentration (mg/m³)	1.6	1.7	1.5	1.2	1.6
No. of State AAQS Exceedances	0	0	0	0	0
8-Hour Averaging Period:					
No. of Samples	1049	1085	1044	1048	1076
Highest Concentration (mg/m³)	0.7	0.7	0.6	0.6	1.0
2nd Highest Concentration (mg/m³)	0.7	0.7	0.6	0.6	0.8
No. of State AAQS Exceedances	0	0	0	0	0
Nitrogen Dioxide / Kapolei					
Annual Average Concentration (?g/m³)	2	8	8	7	9
Ozone / Sand Island					
1-Hour Averaging Period:					
No. of Samples	8263	8702	8688	8566	8482
Highest Concentration (mg/m³)	92	106	114	110	98
2nd Highest Concentration (mg/m³)	91	106	110	106	96
No. of State AAQS Exceedances	0	13	7	8	0

Source: State of Hawaii Department of Health, "Annual Summaries, Hawaii Air Quality Data, 1996 - 2000"

Table 5

ESTIMATED ANNUAL BUS VOLUMES FOR
OAHU TRANSIT CENTERS PROJECT

Transit Center	Route No.	Service Start Time	Service End Time	Hours/Day	Buses/Hour	Buses/Day	Buses/Year
Waianae	All	-	-	16	14	224	81,760
	All	-	-	8	4	32	11,680
						Total	93,440
Wahiawa	511	5:00	22:00	17.0	2	34	12,410
	512	7:00	19:00	12.0	1	12	4,380
	513	6:00	19:00	13.0	1	13	4,745
	514	5:00	0:00	19.0	1	19	6,935
	E	7:30	22:00	14.5	2	29	10,585
	50	6:00	22:00	16.0	2	32	11,680
	51	9:00	18:00	9.0	2	18	6,570
	52	5:10	22:00	17.0	2	34	12,410
	62	4:40	0:35	20.0	2	40	14,600
						Total	84,315
Mililani	501	5:00	21:30	16.5	2	33	12,045
	502	5:00	19:30	14.5	1	14	5,110
	503	5:00	19:30	14.5	1	15	5,475
	E	7:30	22:00	14.5	2	29	10,585
	50	6:00	22:00	16.0	2	32	11,680
	51	9:00	18:00	9.0	2	18	6,570
	52	5:10	22:00	17.0	2	34	12,410
	62	4:40	0:35	20.0	2	40	14,600
						Total	78,475

Notes:

1. Route numbers based on Draft Central Oahu Hub and Spoke Service Plan.
2. Service times based on Draft Central Oahu Hub and Spoke Plan and Current Public Timetables for existing service.
3. Buses per hour calculated based on planned service headways.
4. Weekend service assumed to be the same as weekday service.
5. Express routes not included.

Table 6

EMISSION FACTORS FOR
HEAVY-DUTY DIESEL VEHICLES

Parameter	Composite Emission Factor (g/mile)	Idle Emission Factor (g/min)
Nitrogen Oxides	12.3	0.90
Particulate	0.411	0.017
Volatile Organic Compounds	0.733	0.080
Carbon Monoxide	3.72	0.64
Sulfur Dioxide	0.448	0.019

Notes:

1. Emission factors obtained from MOBILE6.1.
2. Emission factors pertain to calendar year 2003 and ambient temperature of 77°F.
3. Composite emission factors pertain to an average vehicle speed of 25 mph.
4. Idle emission factors based on 2.5 mph speed.
5. Particulate emission factors pertain to exhaust emissions only.

Table 7

ANNUAL APPROACH/DEPART MILES AND IDLE TIMES FOR
OAHU TRANSIT CENTERS PROJECT

Transit Center	Annual Bus Volume	Annual Approach/Depart Miles	Annual Idle Time (minutes)
Waianae	93,440	186,880	467,200
Wahiawa	84,315	168,630	421,575
Mililani	78,475	156,950	392,375

Table 8

ESTIMATED ANNUAL EMISSIONS FOR OAHU TRANSIT CENTERS PROJECT

Transit Center	Parameter	Annual Approach/Depart Emissions (tons)	Annual Idle Emissions (tons)	Total Annual Emissions (tons)
Waianae	Nitrogen Oxides	2.5	0.46	3.0
	Particulate	0.085	0.0087	0.094
	VOC	0.15	0.041	0.19
	Carbon Monoxide	0.76	0.33	1.1
	Sulfur Dioxide	0.092	0.0098	0.10
Wahiawa	Nitrogen Oxides	2.3	0.42	2.7
	Particulate	0.076	0.0079	0.084
	VOC	0.14	0.037	0.18
	Carbon Monoxide	0.69	0.30	0.99
	Sulfur Dioxide	0.083	0.0088	0.092
Mililani	Nitrogen Oxides	2.1	0.39	2.5
	Particulate	0.071	0.0074	0.078
	VOC	0.13	0.034	0.16
	Carbon Monoxide	0.64	0.28	0.92
	Sulfur Dioxide	0.077	0.0082	0.085

Table 9

SIGNIFICANT EMISSION RATES

Parameter	Emission Rate (tons/year)
Nitrogen Oxides	40
Particulate	15
Volatile Organic Compounds	40
Carbon Monoxide	100
Sulfur Dioxide	40

Notes:

1. As defined in Hawaii Administrative Rules, Title 11, Chapter 60.1.
2. Particulate emission rate pertains to particles less than 10 microns aerodynamic diameter.

State of Hawaii

Department of Health
Clean Air Branch
Honolulu, Hawaii

Annual Summary
Hawaii Air Quality Data

2000

2000
HAWAII AIR QUALITY DATA

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Section 1
INTRODUCTION

The Department of Health has been monitoring ambient air quality in the State of Hawaii since 1957. Until 1971, there was only one air monitoring site, which was located on the island of Oahu. The air monitoring network today has expanded to include 17 monitoring stations on Oahu, Kauai, Maui and Hawaii. The primary purpose of the statewide monitoring network is to measure ambient air concentrations of the six criteria pollutants that the United States Environmental Protection Agency (EPA) has promulgated National Ambient Air Quality Standards (NAAQS). The six criteria pollutants with NAAQS are: carbon monoxide, nitrogen dioxide, sulfur dioxide, lead, ozone and particulate matter less than or equal to 10 micrometers (PM_{10}). The State of Hawaii also has standards for ozone, carbon monoxide and nitrogen dioxide more stringent than the NAAQS and an ambient air standard for hydrogen sulfide.

Ambient air monitoring for lead was discontinued in October 1997 with EPA approval. Since sampling for lead began, levels in the state have been far below the federal standard, and with the elimination of lead in gasoline, measured levels were consistently zero or nearly zero.

Most commercial, industrial and transportation activities and their associated air quality effects occur on Oahu where nine of the stations are located. Agricultural operations produce the greatest air quality impacts on Maui and Kauai. Impacts on ambient air quality from the ongoing eruption of the Kilauea Volcano and from activities associated with geothermal energy production are being monitored on the island of Hawaii. Current plans call for the continuation of sampling at these sites, however, relocations, additions and/or discontinuations can occur in the future as the need arises.

This report summarizes the air pollutant data collected at the 17 monitoring stations during calendar year 2000. Tabular and graphic summaries are provided which compare the measured concentrations with State and Federal ambient air quality standards. In addition, air pollutant concentration trend summaries are depicted in graphic form.

Various other data may be summarized as the need arises. Questions regarding these data and other air quality data should be addressed to:

State of Hawaii
Department of Health
Clean Air Branch
P.O. Box 3378
Honolulu, Hawaii 96801-3378
Phone: 808-586-4200
Fax: 808-586-4359

Section 2
DEFINITIONS

"Ambient Air": The general outdoor atmosphere, external to buildings, to which the general public has access.

"Ambient Air Quality": The quality or state of purity of the ambient air.

"Ambient Air Quality Standard": A limit in the quantity and exposure to pollutants dispersed or suspended in the ambient air.

"Carbon Monoxide": Carbon monoxide (CO) is a colorless, odorless, tasteless gas under atmospheric conditions. It is produced by the incomplete combustion of carbon fuels with the majority of emissions coming from transportation sources.

"Collocated": Procedure required for a certain percentage of PM_{10} samplers in the monitoring network. Collocated samplers determine precision or variation in the PM_{10} concentration measurements of identical samplers run in the same location under the same sampling conditions.

"EPA": The United States Environmental Protection Agency.

"Hydrogen Sulfide": Hydrogen sulfide (H_2S) is a toxic, colorless gas with a characteristic "rotten egg" odor detectable at very low levels. Also known as sewer gas, it is naturally occurring from sources such as volcanic activity, petroleum exploration and bacterial decomposition of organic matter.

"NAAQS": National Ambient Air Quality Standards. These are pollutant standards that the EPA has established to protect public health and welfare. NAAQS have been set for carbon monoxide, nitrogen dioxide, PM_{10}, ozone, sulfur dioxide, and lead. These are commonly referred to as the six criteria pollutants.

"NAMS": National Air Monitoring Stations. Sites which are part of the SLAMS network, must meet more stringent siting requirements, equipment type and quality assurance criteria.

"Nitrogen Dioxide": Nitrogen dioxide (NO_2) is a brownish, highly corrosive gas with a pungent odor. It is formed in the atmosphere from emissions of nitrogen oxides (NO_x). Sources of nitrogen oxides include electric utilities, industrial boilers, motor vehicle exhaust and combustion of fossil fuels. NO_2 is also a component in the atmospheric reaction that produces ground-level ozone.

"Ozone": This is the main constituent in photochemical air pollution. It is formed in the atmosphere by a chemical reaction of nitrogen oxides (NO_x) and volatile organic compounds (VOCs) in the presence of sunlight. In the upper atmosphere, ozone (O_3) shields the earth from harmful ultraviolet radiation; however, at ground level, it can cause harmful effects in humans and plants.

"Particulate Matter": Any dispersed matter, solid or liquid, in which the individual aggregates are larger than the single molecules in diameter, but smaller than 500 microns. Particulate matter includes dust, soot, smoke, and liquid droplets from sources such as factories, power plants, motor vehicles, construction activities, agricultural activities, and fires.

"PM_{10}": Particulate matter that is 10 microns or less in aerodynamic diameter. The EPA revised the NAAQS for particulate matter in 1987 to cover only PM_{10} because the smaller particles have a greater potential for respiratory health impacts.

"SLAMS" State and Local Air Monitoring Stations. The Clean Air Act requires that every state establish a network of air monitoring stations for criteria pollutants, using requirements set by the EPA Office of Air Quality Planning and Standards.

"Sulfur Oxides": Sulfur oxides are colorless gases which include sulfur dioxide (SO_2), sulfur trioxide, their acids and the salts of their acids. Emissions of sulfur oxides are largely from sources that burn fossil fuels such as coal and oil. In the State of Hawaii, another source of sulfur oxide emissions is from the eruption of Kilauea Volcano on the Big Island.

"Vog": Vog is a local term used when referring to the atmospheric haze produced by the combination of volcanic gas and particles with air and sunlight.

Table 2-1 **State of Hawaii and Federal Ambient Air Quality Standards**

Air Pollutant	Averaging Time	Standards		
		Hawaii State Standard [a] ($\mu g/m^3$)	Federal Primary Standard [b] ($\mu g/m^3$)	Federal Secondary Standard [c] ($\mu g/m^3$)
Carbon Monoxide	1-hour 8-hour	10,000 5,000	40,000 10,000	40,000 10,000
Nitrogen Dioxide	Annual (arithmetic)	70	100	100
PM_{10}	24-hour Annual (arithmetic)	150 50	150 50	150 50
Ozone	1-hour	100	235	235
Sulfur Dioxide	3-hour 24-hour Annual (arithmetic)	1,300 365 80	--- 365 80	1,300 --- ---
Lead	Calendar Quarter (arithmetic)	1.5	1.5	1.5
Hydrogen Sulfide	1-hour	35	—	---

[a] Designated to protect public health and welfare and to prevent the significant deterioration of air quality. Source: HAR §11-59-1
[b] Designated to prevent against adverse effects on public health. Source: 40CFR Part 50
[c] Designated to prevent against adverse effects on public welfare, including effects on comfort, visibility, vegetation, animals, aesthetic values, and soiling and deterioration of materials. Source: 40CFR Part 50

Section 3
SITE LOCATIONS AND DESCRIPTIONS

This section provides a description of the monitoring stations in the State of Hawaii. Table 3-1 lists the air pollutant(s) measured at each monitoring station, characterizes the area surrounding the station, and indicates the start dates for data collection. Table 3-2 identifies the type of sampler used to measure the concentration of each air pollutant. Figures 3-1, 3-2, 3-3 and 3-4 show the location of each monitoring station on the islands of Oahu, Kauai, Maui and Hawaii, respectively.

The following three subsections discuss each monitoring station in more detail.

A. ISLAND OF OAHU

1. Honolulu: Located atop the Department of Health (DOH) building (Kinau Hale), at 1250 Punchbowl Street in downtown Honolulu, this site is in a commercial, institutional, and residential area. It was established in April 1971 as a NAMS and SLAMS station. The pollutants sampled at this site are PM_{10}, CO, and SO_2.

2. Pearl City: Located atop the Leeward Medical Center, at 860 Fourth Street, the area is a combination of commercial and residential units and is approximately nine and a half miles northwest of downtown Honolulu. This site was established in April 1971 as a NAMS site initially for collection of Total Suspended Particulates (TSP) before it was changed to PM_{10} sampling in July 1985.

3. Waimanalo: Located within the Waimanalo Sewage Treatment Facility, at 41-1069 Kalanianaole Highway, this site is in a sparsely populated rural and agricultural community. Waimanalo is on the windward (upwind) side of Oahu approximately ten miles east-northeast of downtown Honolulu. This site was established in June 1971 as a SLAMS site initially for the sampling of TSP before it was changed to PM_{10} sampling in July 1989.

4. Sand Island: Located at the Anuenue Fisheries, the area is composed of light industrial, commercial, recreational, and harbor units and is approximately two miles southwest (typically downwind) of downtown Honolulu. This is a NAMS station that was established in February 1981 for the sampling of ozone.

5. Waikiki: Located at 2131 Kalakaua Avenue, Waikiki is a busy commercial and residential area with heavy vehicular traffic. It is approximately three miles southeast of downtown Honolulu. The station was established in January 1981as a NAMS site for the sampling of carbon monoxide.

6. Liliha: Located at Kauluwela Elementary School, 1486 Aala Street, this site is in a residential and commercial area near the H-1 freeway, approximately one and a quarter miles north of downtown Honolulu. This NAMS station was established in January 1984 and currently monitors for PM_{10}.

7. Makaiwa: Located at 92-670 Farrington Highway, this site is in a residential and agricultural area approximately twenty-five miles west of downtown Honolulu. This station is downwind and to the southeast of an electrical power plant. This site was established in July 1989 as a SLAMS station monitoring for SO_2.

8. West Beach: Located within the Ko'Olina Golf Course, this site is in a recreational, residential, and agricultural area approximately 27 miles west of downtown Honolulu and 1.5 miles northwest of Campbell Industrial Park. This SLAMS station was established in February 1991 for NO_2, PM_{10}, CO and SO_2.

9. Kapolei: Located at 91-591 Kalaeloa Boulevard at the entrance to Campbell Industrial Park, this site is in a commercial, industrial, and residential area with nearby agricultural lands. It is approximately 25 miles west of downtown Honolulu and was established in February 1991 as a SLAMS site. Air pollutants measured at the site include NO_2, PM_{10}, CO and SO_2.

B. ISLAND OF KAUAI

Lihue: The Lihue monitoring station is located in downtown Lihue at the District Health Office, 3034 Umi Street. This site is in a commercial and residential area with nearby agricultural areas. It is a SLAMS station that was established in November 1972 for the sampling of total particulates but was changed to a PM_{10} sampling site in October 1985.

C. ISLAND OF MAUI

1. Kihei: This station is located in Hale Piilani Park. This special purpose monitoring station is in a residential and agricultural area and was established to monitor PM_{10} from sugarcane burning activities.

2. Paia: This station is located in a residential area at 141 Baldwin Avenue. The site is downwind of several sugarcane fields and is just northeast of the HC&S Co. Paia Mill. This site was established in August 1996 as a special PM_{10} sampling station for sugarcane burning activities.

D. ISLAND OF HAWAII

1. Kona: This station is located on the grounds of the Konawaena High School at 81-1043 Konawaena School Road in Kealakekua, Hawaii. This special purpose site was established in April 1997 to monitor vog in the Kona area. The pollutants sampled at this site are SO_2 and PM_{10}. The 1-in 6-day sampling for PM_{10} at this site was discontinued on June 11, 2000.

2. Hilo: Established in March 1995, this station is located on the grounds of the Adult Rehabilitation Center of Hilo at 1099 Waianuenue Avenue to monitor vog. The pollutants sampled are SO_2 and PM_{10}.

3. Honokaa: Located at Honokaa High and Intermediate School at 45-527 Pakalana Street, this station was established in August 1997 on the upwind side of the island to monitor vog. The pollutants sampled at this site are SO_2 and PM_{10}. This site was discontinued on August 1, 2000.

4. Lava Tree: This station in Puna, is located on the eastern border of the Lava Tree State Park in a residential-agricultural area near Nanawale Estates. It is approximately 1.4 miles northwest of the Puna Geothermal Venture power plant. The station was established in August 1993 and monitors for H_2S.

5. Puna E: Located in the Leilani Estates residential subdivision in Puna, it is approximately 3 miles south-southwest of the Puna Geothermal Venture power plant. Established in 1992, this station monitors for H_2S.

Table 3-1 **State of Hawaii Air Monitoring Network**

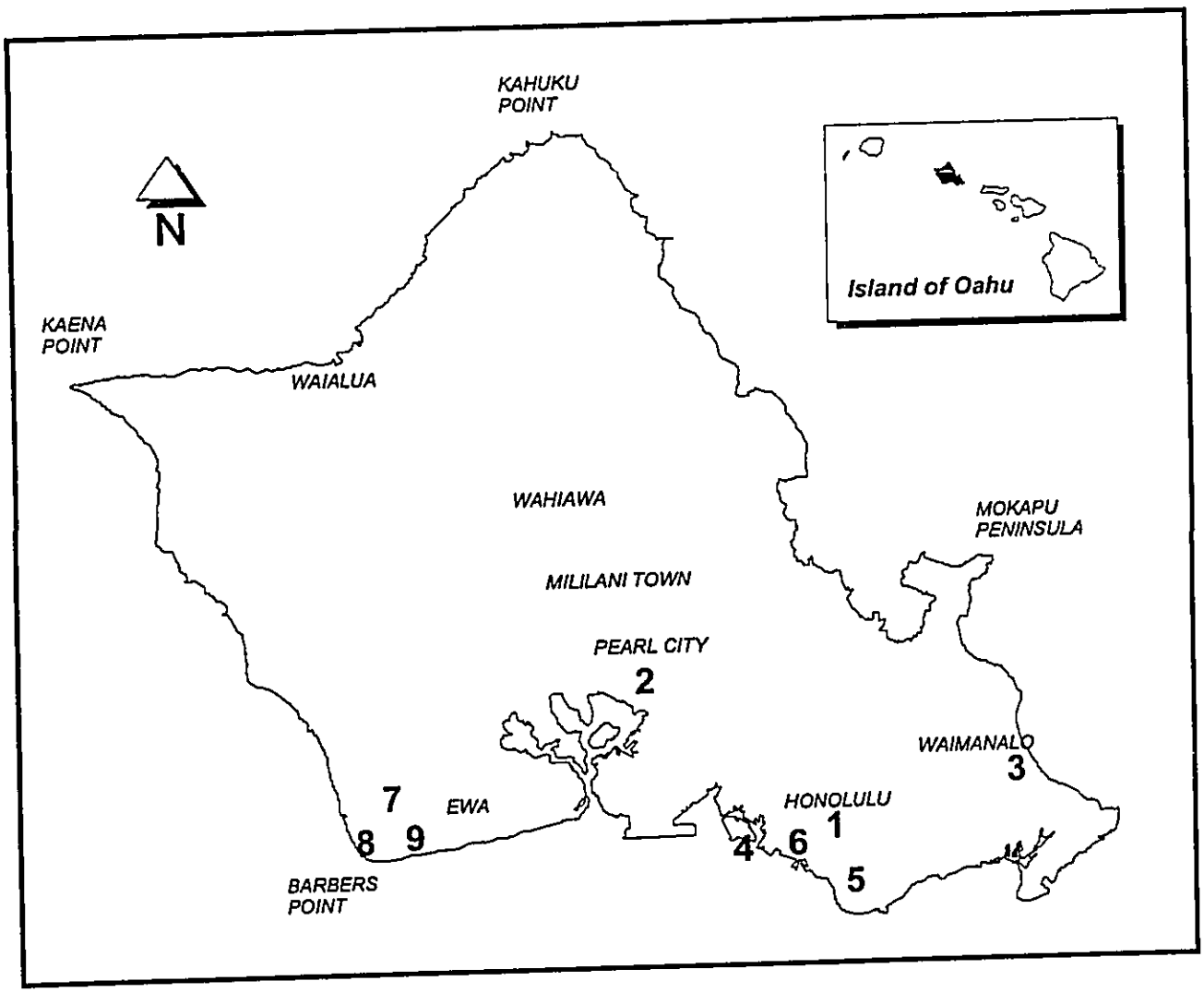
SITE	Station Type						SITE DESCRIPTION	START DATE
	PM_{10}	CO	O_3	SO_2	NO_2	H_2S		
OAHU								
HONOLULU	N	N	-	S	-	-	Center City/Commercial	April 1971
PEARL CITY	N	-	-	-	-	-	Suburban/Residential	April 1971
WAIMANALO	S	-	-	-	-	-	Rural / Agricultural	July 1989
SAND ISLAND	-	-	N	-	-	-	Center City	January 1981
WAIKIKI	-	N	-	-	-	-	Center City	February 1981
LILIHA	N	-	-	-	-	-	Center City	January 1981
MAKAIWA	-	-	-	S	-	-	Rural / Industrial	July 1989
WEST BEACH	S,C	S	-	S	S	-	Rural/Industrial	February 1991
KAPOLEI	S	S	-	S	S	-	Rural / Industrial	February 1991
KAUAI								
LIHUE	S	-	-	-	-	-	Center City / Commercial	October 1985
MAUI								
KIHEI	SS	-	-	-	-	-	Suburban / Residential	June 1996
PAIA	SS	-	-	-	-	-	Rural / Residential	August 1996
HAWAII								
KONA	SS	-	-	SS	-	-	Suburban	April 1997
HILO	SS	-	-	SS	-	-	Center City	March 1995
HONOKAA	SS	-	-	SS	-	-	Rural/Agricultural	May 1997
LAVA TREE	-	-	-	-	-	SS	Rural/Agricultural	August 1993
PUNA E	-	-	-	-	-	SS	Rural/Agricultural	1992

N = (NAMS) National Air Monitoring Station
C = Collocated Site
S = (SLAMS) State and Local Air Monitoring Stations
SS = Special Study (for sugar cane burning, vog, and geothermal energy)

Table 3-2 **Sampling Equipment at Each Monitoring Station**

Monitoring Station	PM_{10} Continuous Ambient Particulate Monitor	PM_{10} Manual Ambient Particulate Monitor (1 in 6 day)	CO Continuous Non-dispersive Infrared Analyzer	SO_2 Continuous Pulsed Fluorescent Ambient Air Analyzer	O_3 Continuous UV Photometric Analyzer	NO_2 Continuous Chemiluminescence Analyzer	H_2S Continuous Pulsed Fluorescent Ambient Air Analyzer
OAHU							
Honolulu	X		X	X			
Pearl City	X						
Waimanalo		X					
Sand Island					X		
Waikiki			X				
Liliha	X						
Makaiwa				X			
West Beach		X	X	X		X	
Kapolei	X		X	X		X	
KAUAI							
Lihue		X					
MAUI							
Kihei	X						
Paia	X						
HAWAII							
Kona		X		X			
Hilo		X		X			
Honokaa		X		X			
Lava Tree							X
Puna E							X

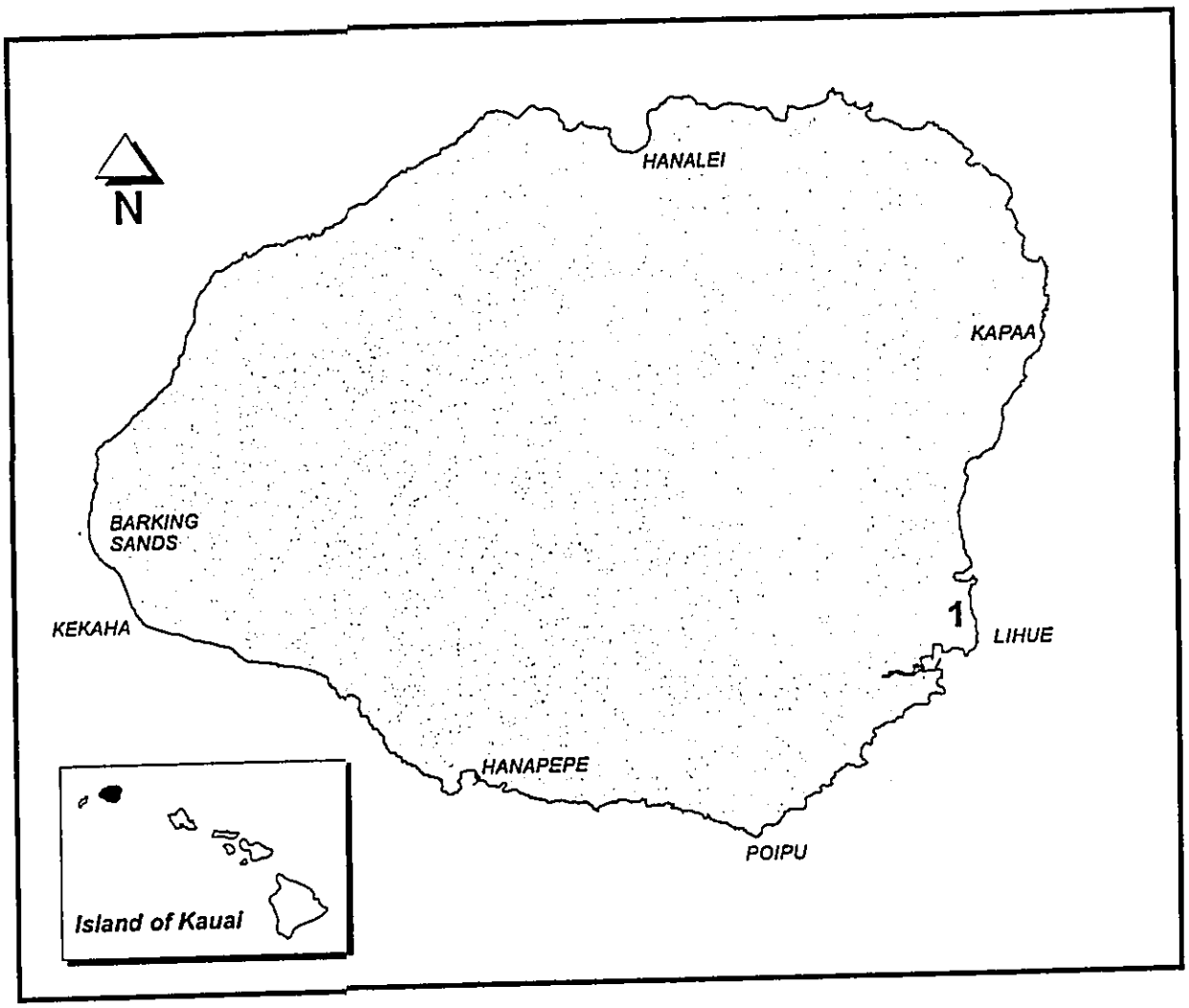
Figure 3-1 **Island of Oahu: Location of Air Monitoring Stations**



LEGEND

1 Honolulu (PM_{10}, SO_2, CO)
2 Pearl City (PM_{10})
3 Waimanalo (PM_{10})
4 Sand Island (O_3)
5 Waikiki (CO)
6 Liliha (PM_{10})
7 Makaiwa (SO_2)
8 West Beach (PM_{10}, SO_2, CO, NO_2)
9 Kapolei (PM_{10}, SO_2, CO, NO_2)

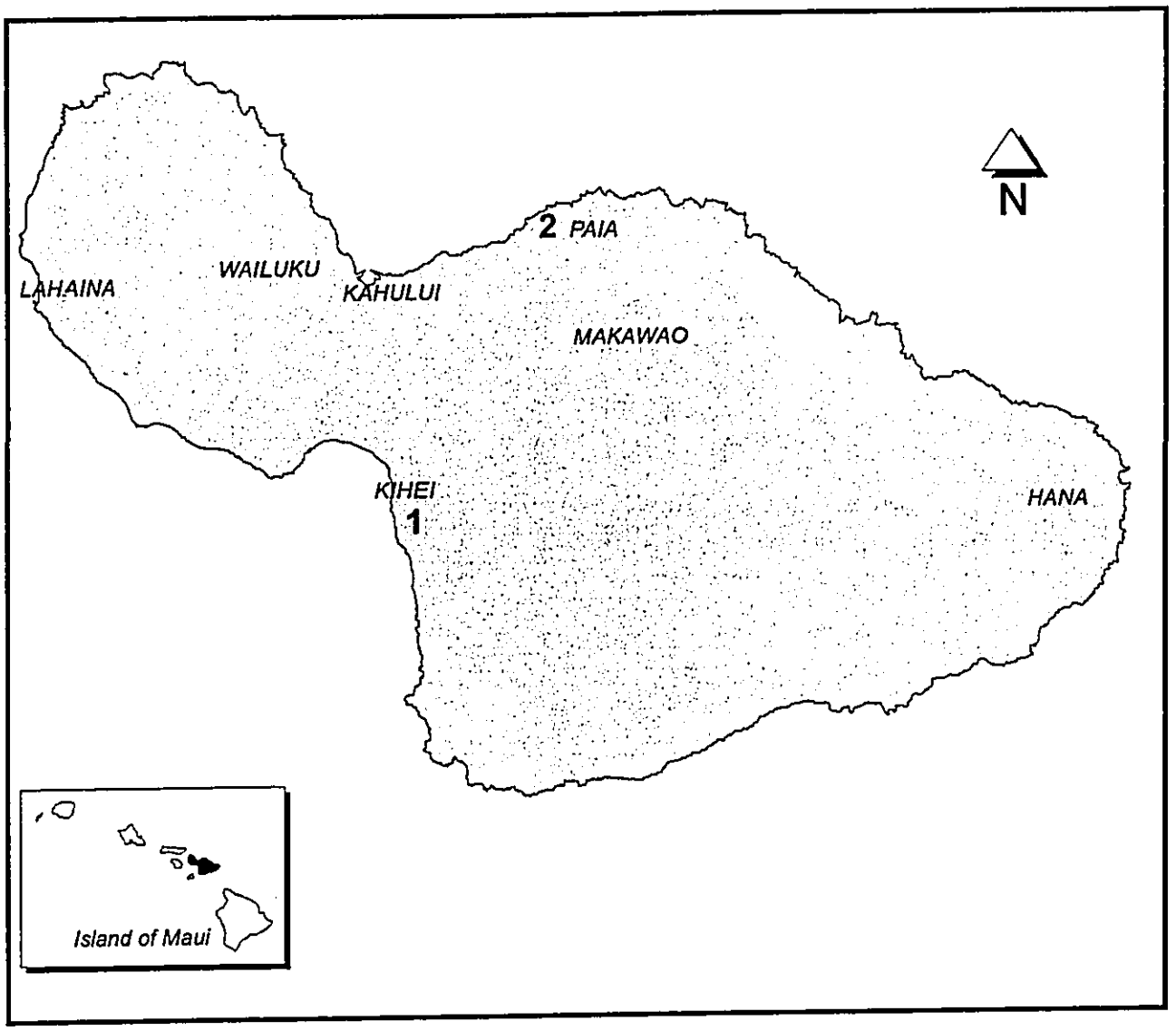
Figure 3-2 **Island of Kauai: Location of Air Monitoring Station**



LEGEND

1 Lihue (PM_{10})

Figure 3-3 **Island of Maui: Location of Air Monitoring Stations**

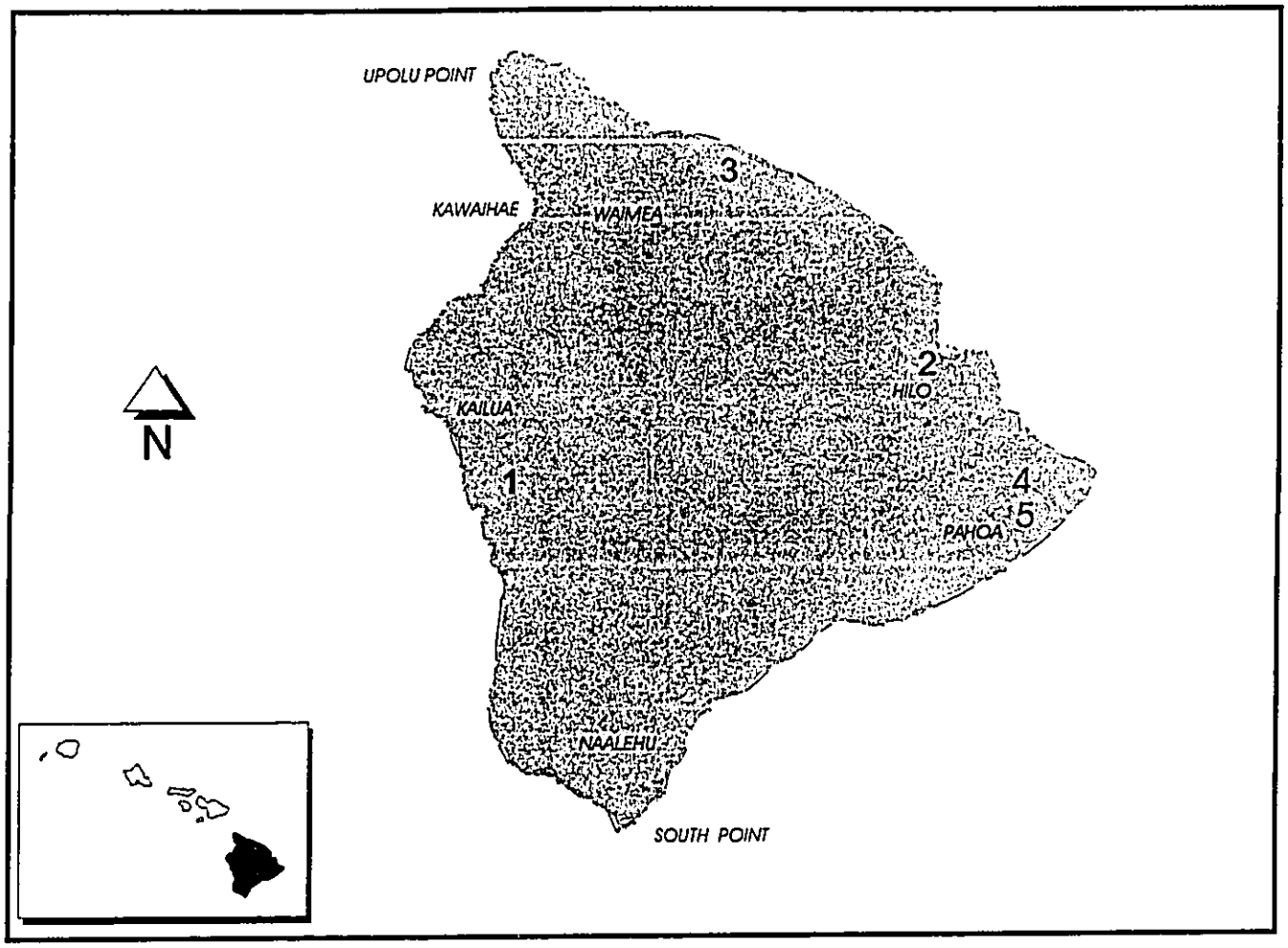


LEGEND

1 Kihei (PM_{10})

2 Paia (PM_{10})

Figure 3-4 **Island of Hawaii: Location of Air Monitoring Stations**



LEGEND

1 Kona (PM_{10}, SO_2)
2 Hilo (PM_{10}, SO_2)
3 Honokaa (PM_{10}, SO_2)
4 Lava Tree (H_2S)
5 Puna E (H_2S)

Section 4
2000 AIR QUALITY DATA

Hawaii enjoys some of the best air quality in the nation and, being an island state, is not impacted by pollution from neighboring states. However, as in any metropolitan area, there is some air pollution from various industrial and mobile sources in addition to agricultural and natural sources. The Department of Health, Clean Air Branch, has the responsibility for monitoring, protecting and enhancing the state's air quality and regulates and monitors pollution sources to ensure that the levels of criteria pollutants remain well below the state and federal air quality standards.

The following tables summarize the pollutant concentrations measured at each monitoring station. Tables 4-1 through 4-7 are annual summaries grouped by pollutant and provide the number of occurrences exceeding the NAAQS. There is no federal ambient air quality standard for H_2S, and Table 4-8 provides the number of occurrences exceeding the state standard.

The annual statistics provided in tables 4-1 through 4-8 are the highest and second highest $\mu g/m^3$ values recorded in the year for the averaging period and the annual means, which is the arithmetic mean of all valid hours recorded in the year. The possible periods is the total number of possible sampling periods in the year for the averaging time, and valid periods is the total number of sampling periods after data validation.

Tables 4-9 through 4-16 are monthly summaries of the range and average of each pollutant for each averaging period. The range is the lowest and highest $\mu g/m^3$ values recorded in the month for the averaging period and the average is the arithmetic mean of all hours recorded in the month. The highest value recorded in the year for each site is highlighted.

In the year 2000, the State of Hawaii was in attainment for all federal ambient air quality standards.

Table 4-1 Annual Summary of 24-Hour PM_{10}

	Annual Statistics			24-hour Occurrences Greater than 150 µg/m³													
	Max Hr		Annual Means														
OAHU	1st High	2nd High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods
Honolulu	83	31	14	0	0	0	0	0	0	0	0	0	0	0	0	366	361
Liliha	65	44	15	0	0	0	0	0	0	0	0	0	0	0	0	366	363
Waikiki	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
[a]Waimanalo	35	28	17	0	0	0	0	0	0	0	0	0	0	0	0	61	47
Pearl City	164[b]	154[b]	16	1[b]	0	0	0	0	0	0	0	0	0	0	1[b]	366	358
Makaiwa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kapolei	148	129	17	0	0	0	0	0	0	0	0	0	0	0	0	366	356
[a]West Beach	41	40	14	0	0	0	0	0	0	0	0	0	0	0	0	61	54
KAUAI																	
[a]Lihue	39	36	18	0	0	0	0	0	0	0	0	0	0	0	0	61	50
MAUI																	
Kihei	83	77	25	0	0	0	0	0	0	0	0	0	0	0	0	366	355
Paia	48	45	18	0	0	0	0	0	0	0	0	0	0	0	0	366	350
HAWAII																	
[a]Kona	23	23	18	0	0	0	0	0	0	0	0	0	0	0	0	28[c]	17
[a]Hilo	18	16	11	0	0	0	0	0	0	0	0	0	0	0	0	61	41
[a]Honokaa	23	17	10	0	0	0	0	0	0	0	0	0	0	0	0	36[d]	22
Lava Tree	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puna E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[a] PM_{10} sampling once every 6th day [b] Highest values, measured by a continuous method, occurred on 1/1/00 and 12/31/00, probably due to fireworks
[c] PM_{10} sampling was discontinued at this site on 6/11/00 [d] This station was discontinued on 8/1/00

Table 4-2 **Annual Summary of 1-Hour Carbon Monoxide**

	Annual Statistics			1-hour Occurrences Greater than 40,000 µg/m³													
	— Max Hr—		--Annual Means--														
	1st High	2nd High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods
OAHU																	
Honolulu	3990	3762	774	0	0	0	0	0	0	0	0	0	0	0	0	8784	8726
Liliha	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waikiki	4332	4332	905	0	0	0	0	0	0	0	0	0	0	0	0	8784	8728
Sand Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waimanalo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pearl City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Makaiwa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kapolei	2508	1596	336	0	0	0	0	0	0	0	0	0	0	0	0	8784	8595
West Beach	1596	1596	197	0	0	0	0	0	0	0	0	0	0	0	0	8784	8368
KAUAI																	
Lihue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAUI																	
Kihei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII																	
Kona	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hilo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Honokaa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lava Tree	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puna E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 4-3 **Annual Summary of 8-Hour Carbon Monoxide**

	Annual Statistics			8-hour Occurrences Greater than 10,000 µg/m³													
	Max Hr		Annual Means														
	1st High	2nd High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods
OAHU																	
Honolulu	1753	1724	774	0	0	0	0	0	0	0	0	0	0	0	0	1098	1091
Liliha	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waikiki	2166	2038	905	0	0	0	0	0	0	0	0	0	0	0	0	1098	1094
Sand Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waimanalo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pearl City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Makaiwa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kapolei	1055	827	336	0	0	0	0	0	0	0	0	0	0	0	0	1098	1076
West Beach	1012	627	197	0	0	0	0	0	0	0	0	0	0	0	0	1098	1042
KAUAI																	
Lihue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAUI																	
Kihei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII																	
Kona	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hilo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Honokaa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lava Tree	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puna E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 4-4 **Annual Summary of 1-Hour Ozone**

	Annual Statistics — Max Hr		Annual Means	1-hour Occurrences Greater than 235 µg/m³													
	1st High	2nd High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods
OAHU																	
Honolulu	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liliha	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waikiki	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand Island	98	96	32	0	0	0	0	0	0	0	0	0	0	0	0	8784	8482
Waimanalo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pearl City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Makaiwa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kapolei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West Beach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KAUAI																	
Lihue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAUI																	
Kihei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pala	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII																	
Kona	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hilo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Honokaa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lava Tree	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puna E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 4-5 **Annual Summary of 3-Hour Sulfur Dioxide**

	Annual Statistics — Max Hr		Annual Means	3-hour Occurrences Greater than 1,300 µg/m³													
	1st High	2nd High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods
OAHU																	
Honolulu	65	18	1	0	0	0	0	0	0	0	0	0	0	0	0	2928	2832
Liliha	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waikiki	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waimanalo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pearl City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Makaiwa	72	69	3	0	0	0	0	0	0	0	0	0	0	0	0	2928	2862
Kapolei	23	18	1	0	0	0	0	0	0	0	0	0	0	0	0	2928	2505
West Beach	11	9	1	0	0	0	0	0	0	0	0	0	0	0	0	2928	2304
KAUAI																	
Lihue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAUI																	
Kihei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII																	
Kona	50	49	6	0	0	0	0	0	0	0	0	0	0	0	0	2928	2897
Hilo	438	301	4	0	0	0	0	0	0	0	0	0	0	0	0	2928	2277
Honokaa	213	176	4	0	0	0	0	0	0	0	0	0	0	0	0	1704[a]	1691
Lava Tree	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puna E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

[a] This station was discontinued on 8/1/00

Table 4-6 **Annual Summary of 24-Hour Sulfur Dioxide**

	Annual Statistics			24-hour Occurrences Greater than 365 µg/m³													
	Max Hr		Annual Means														
	1st High	2nd High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods
OAHU																	
Honolulu	9	7	1	0	0	0	0	0	0	0	0	0	0	0	0	366	357
Liliha	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waikiki	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waimanalo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pearl City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Makaiwa	20	17	3	0	0	0	0	0	0	0	0	0	0	0	0	366	361
Kapolei	6	5	1	0	0	0	0	0	0	0	0	0	0	0	0	366	362
West Beach	4	4	1	0	0	0	0	0	0	0	0	0	0	0	0	366	333
KAUAI																	
Lihue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAUI																	
Kihei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pala	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII																	
Kona	25	16	6	0	0	0	0	0	0	0	0	0	0	0	0	366	365
Hilo	94	73	4	0	0	0	0	0	0	0	0	0	0	0	0	366	284
Honokaa	61	28	4	0	0	0	0	0	0	0	0	0	0	0	0	213*	213
Lava Tree	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puna E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

* This station was discontinued on 8/1/00

Table 4-7 **Annual Summary of Nitrogen Dioxide**

	Annual Statistics			Annual Occurrences Greater than 100 µg/m³													
	— Max Hr—		-Annual Means-														
	1st High	2nd High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods
OAHU																	
Honolulu	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liliha	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waikiki	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waimanalo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pearl City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Makaiwa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kapolei	-	-	9	-	-	-	-	-	-	-	-	-	-	-	0	8784	7213
West Beach	-	-	7	-	-	-	-	-	-	-	-	-	-	-	0	8784	8104
KAUAI																	
Lihue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAUI																	
Kihei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII																	
Kona	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hilo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Honokaa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lava Tree	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Puna E	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 4-8 **Annual Summary of 1-Hour Hydrogen Sulfide**

	Annual Statistics			1-hour Occurrences Greater than 35 µg/m³													
	Max Hr		Annual Means														
	1st High	2nd High	All Hours	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Possible Periods	Valid Periods
OAHU																	
Honolulu	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Liliha	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waikiki	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Sand Island	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Waimanalo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pearl City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Makaiwa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Kapolei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
West Beach	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
KAUAI																	
Lihue	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
MAUI																	
Kihei	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Paia	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
HAWAII																	
Kona	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Hilo	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Honokaa	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Lava Tree	7	7	2	0	0	0	0	0	0	0	0	0	0	0	0	8784	8319
Puna E	13	7	<1	0	0	0	0	0	0	0	0	0	0	0	0	8784	8276

Table 4-9 **Monthly Summary of 24-Hour PM_{10} ($\mu g/m^3$)**

Station		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Honolulu	Range	7-*83*	9-21	7-31	8-21	8-21	7-15	10-17	9-21	7-18	12-22	9-23	8-20
	Average	15	15	16	15	14	11	13	15	13	16	15	14
Liliha	Range	10-*65*	9-21	13-36	9-25	9-22	8-16	10-18	9-19	7-18	9-21	10-20	8-44
	Average	16	16	19	16	15	11	14	14	12	15	15	14
Pearl City	Range	8-*164*	9-24	8-33	8-21	9-21	7-17	10-19	10-20	8-18	13-24	13-26	11-154
	Average	19	16	17	15	14	12	14	15	13	16	19	15
Waimanalo [a]	Range	10	20	6-15	16-*35*	12-20	11-15	17-22	14-25	9-18	12-28	7-22	8-18
	Average	10	20	10	23	16	14	18	17	14	22	16	13
Kapolei	Range	8-*148*	7-38	9-41	7-129	9-35	8-27	10-30	8-19	8-16	8-52	8-26	7-22
	Average	19	19	17	28	18	16	14	13	12	16	14	14
West Beach [a]	Range	3-19	7-16	10-32	13-19	10-*41*	10-40	8-12	8-11	7-12	8-17	8	5-13
	Average	11	14	17	15	23	18	10	10	9	14	8	9
Lihue [a]	Range	11-21	27-36	13-*39*	16-21	12-24	13-18	15-20	16-29	13-21	14-27	12-22	8-22
	Average	14	32	20	18	20	15	17	24	17	21	16	15
Kihei	Range	9-48	14-67	10-41	10-77	15-64	13-54	16-62	10-46	14-52	13-77	5-37	9-*83*
	Average	17	25	20	23	28	26	35	29	27	30	17	18
Pala	Range	7-*48*	9-30	10-42	10-23	10-28	11-45	12-26	13-32	12-30	12-21	12-23	10-33
	Average	15	19	22	16	16	16	17	18	19	16	16	19
Kona [a]	Range	No Data	13-21	16-17	16-22	17-*23*	14-15	PM_{10} Sampling discontinued at this site on 6/16/00					
	Average		18	16	19	20	14						
Hilo [a]	Range	7-13	10-16	8-12	No Data	No Data	10-10	10-15	9-14	6-11	7-16	8	6-*18*
	Average	10	13	11			10	13	11	8	12	8	10
Honokaa [a]	Range	4-11	8-*23*	12-12	No Data	9-11	7-11	4-10	Station discontinued on 8/01/00				
	Average	7	15	12		10	10	8					

* Sampling is once every 6th day

Table 4-10 **Monthly Summary of 1-Hour Carbon Monoxide (µg/m^3)**

Station		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Honolulu	Range	342-3990	456-3192	456-2508	456-1368	342-2052	114-2166	342-2052	456-1824	342-2508	228-2052	456-3762	342-2964
	Average	755	925	870	706	710	746	696	793	813	549	907	832
Waikiki	Range	342-4332	456-4332	342-2964	228-1938	456-2280	114-2166	114-1710	456-2166	456-2850	570-2508	0-3078	0-2964
	Average	963	1193	1175	679	907	1065	603	790	1003	978	718	788
Kapolei	Range	0-1368	0-1596	0-912	0-798	0-1596	0-1140	0-2508	228-912	0-1140	0-1140	0-1482	114-1596
	Average	285	287	283	219	353	216	490	404	345	327	320	495
West Beach	Range	0-798	0-1254	0-798	0-570	0-1140	0-456	0-1026	114-456	0-570	0-684	0-1596	0-912
	Average	133	230	267	181	274	235	164	146	103	218	228	189

Table 4-11 **Monthly Summary of 8-Hour Carbon Monoxide (µg/m^3)**

Station		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Honolulu	Range	371-1582	641-1525	599-1268	485-955	442-1012	356-1097	371-998	556-1112	413-1724	342-1254	584-1753	399-1397
	Average	755	925	870	706	710	746	696	793	813	549	907	832
Waikiki	Range	485-2166	684-2009	684-1724	342-1411	684-1226	399-1496	257-1040	542-1466	627-2038	670-1425	14-1995	86-1568
	Average	963	1193	1175	679	907	1065	603	790	1003	978	718	788
Kapolei	Range	95-613	100-556	100-584	29-485	0-1055	0-584	114-741	257-584	71-827	86-556	14-684	114-812
	Average	285	287	283	219	353	216	490	404	345	327	320	495
West Beach	Range	71-314	128-371	114-456	100-342	114-385	100-413	49-342	114-342	0-244	14-499	0-1012	14-399
	Average	133	230	267	181	274	235	164	146	103	2128	228	189

Table 4-12 **Monthly Summary of 1-Hour Ozone (µg/m³)**

Station		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Sand Island	Range	0-86	0-88	0-90	2-98	2-76	2-47	2-51	0-53	0-39	0-55	0-69	0-80
	Average	47	32	45	55	32	20	21	22	15	27	33	30

Table 4-13 **Monthly Summary of 3-Hour Sulfur Dioxide (µg/m³)**

Station		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Honolulu	Range	0-65	0-17	3-18	0-3	0-2	0-3	0-2	0-17	0-6	0-7	0-7	0-5
	Average	1	4	3	<1	<1	<1	<1	<1	1	3	<1	1
Makaiwa	Range	0-27	0-48	0-55	0-12	0-61	0-46	0-8	0-18	0-49	0-61	0-25	2-72
	Average	2	5	3	2	4	3	2	3	4	3	3	6
Kapolei	Range	0-18	0-14	0-5	0-3	0-16	0-14	0-14	0-9	0-3	0-10	0-3	0-23
	Average	3	1	1	<1	1	1	1	<1	<1	<1	<1	2
West Beach	Range	0-11	0-3	0-5	0-4	0-4	0-5	0-5	3-5	3-4	0-1	0-0	0-8
	Average	1	<1	1	1	2	3	3	3	3	<1	0	<1
Kona	Range	3-37	2-49	3-50	3-44	0-23	5-13	5-10	5-16	0-22	0-41	0-28	0-38
	Average	7	7	7	8	7	6	6	7	5	4	4	6
Hilo	Range	0-136	0-438	0-106	0-187	0-5	0-20	0-3	0-3	0-115	0-2	0-16	0-174
	Average	4	19	6	4	2	1	1	<1	1	<1	2	11
Honokaa	Range	0-98	1-213	1-49	2-3	0-3	3-45	0-3	Station discontinued on 8/01/00				
	Average	4	9	4	3	2	3	3					

Table 4-14 **Monthly Summary of 24-Hour Sulfur Dioxide (µg/m³)**

Station		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Honolulu	Range	0-9	<1-7	3-6	0-3	0-<1	0-<1	0-<1	0-2	0-3	1-3	0-3	0-3
	Average	1	4	3	<1	<1	<1	<1	<1	1	3	<1	1
Makaiwa	Range	<1-12	2-16	1-13	<1-5	<1-11	<1-17	1-4	0-6	<1-10	1-11	1-7	3-20
	Average	2	5	3	2	4	3	2	3	4	3	3	6
Kapolei	Range	2-5	0-5	0-3	0-1	0-5	0-5	0-4	0-3	0-1	0-2	0-1	<1-6
	Average	3	1	1	<1	1	1	1	<1	<1	<1	<1	2
West Beach	Range	<1-4	<1-1	<1-3	1-2	1-3	1-4	1-4	3-4	3-3	0-<1	0-0	0-2
	Average	1	<1	1	1	2	3	3	3	3	<1	0	<1
Kona	Range	4-16	2-14	3-25	3-15	4-11	5-9	5-7	5-9	0-10	<1-12	0-10	2-16
	Average	7	7	7	8	7	6	6	7	5	4	4	6
Hilo	Range	0-41	1-94	<1-34	2-28	<1-3	<1-5	<1-3	0-1	0-26	<1-1	1-5	1-73
	Average	4	19	6	4	2	1	1	<1	1	<1	2	11
Honokaa	Range	1-25	2-61	2-15	2-3	1-3	3-12	2-3	Station discontinued on 8/01/00				
	Average	4	9	4	3	2	3	3					

Table 4-15 **Monthly Summary of 24-Hour Nitrogen Dioxide (µg/m^3)** [a]

Station		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Kapolei	Range	3-14	1-19	5-19	2-11	5-11	4-12	5-11	6-17	6-15	7-14	4-14	7-21
	Average	7	11	10	7	7	7	8	11	9	11	8	12
West Beach	Range	1-14	2-18	2-12	1-11	3-11	2-10	3-6	3-12	3-10	0-11	4-12	5-16
	Average	5	9	5	4	6	5	5	5	6	4	7	10

[a] There is no 24-hour state or federal standard for nitrogen dioxide

Table 4-16 **Monthly Summary of 1-Hour Hydrogen Sulfide (µg/m^3)**

Station		Jan	Feb	Mar	Apr	May	June	July	Aug	Sept	Oct	Nov	Dec
Lava Tree	Range	3-7	0-4	0-4	0-4	0-4	0-3	0-1	0-1	1-1	1-3	1-7	0-3
	Average	3	3	3	2	1	1	1	1	1	1	1	1
Puna E	Range	0-1	0-1	0-3	0-3	0-1	0-7	0-1	0-1	0-1	0-0	0-13	0-0
	Average	<1	<1	<1	<1	1	1	<1	<1	<1	0	<1	0

Section 5
AMBIENT AIR QUALITY TRENDS

The following graphs illustrate 5-year trends for PM_{10}, ozone, carbon monoxide, sulfur dioxide, and nitrogen dioxide from 1996 to 2000.

The graphs for PM_{10}, sulfur dioxide and nitrogen dioxide (figures 5-1, 5-2, 5-5 and 5-6, respectively) represent the annual averages for each year and for each station that monitors for that pollutant. Annual averages are derived by calculating the arithmetic mean of all valid hours recorded in the year. Included in the graphs are the state and federal annual standard(s).

The graphs for 1-hour ozone and 1-hour carbon monoxide (figures 5-3 and 5-4, respectively) represent the average of the daily maximum 1-hour values recorded in the year. These values are obtained by taking the highest recorded 1-hour value for each day then calculating the arithmetic mean of all those hours to arrive at the annual maximum average. Ozone and carbon monoxide do not have state or federal annual standards, however, included in the graphs are the 1-hour standards.

Figure 5-1 **Island of Oahu: PM_{10} Annual Average 1996 - 2000**

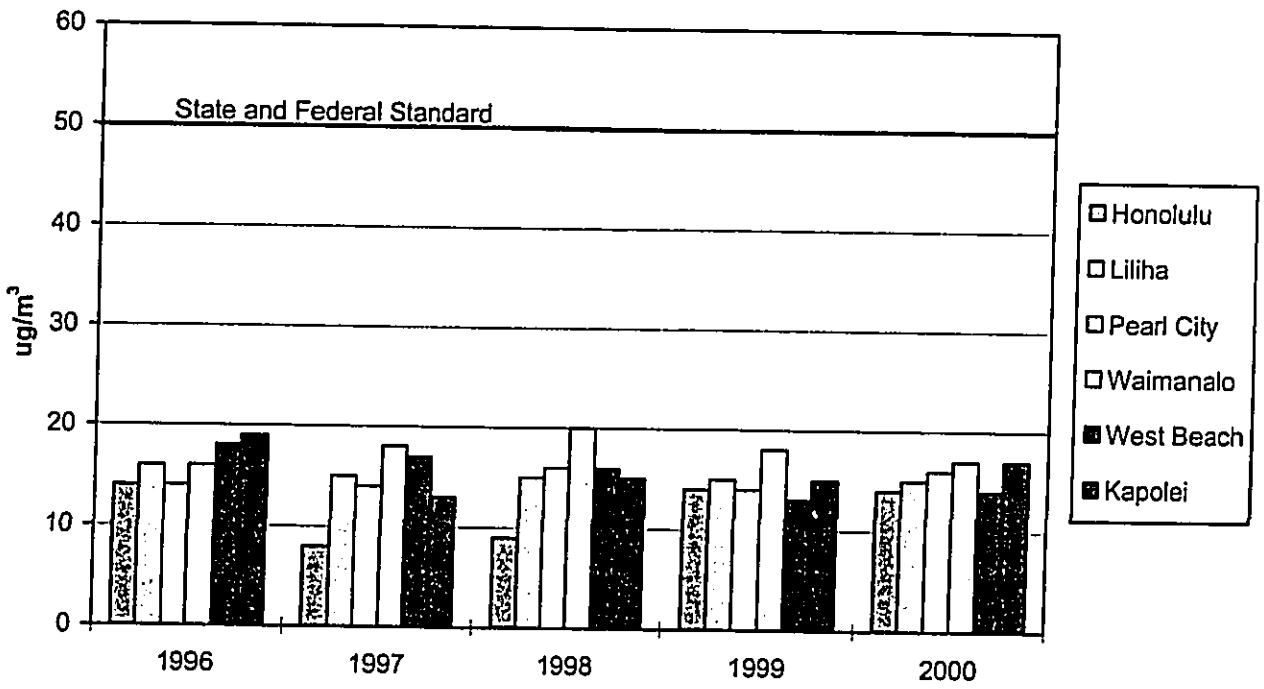


Figure 5-2 **Island of Kauai: PM_{10} Annual Average 1996 - 2000**

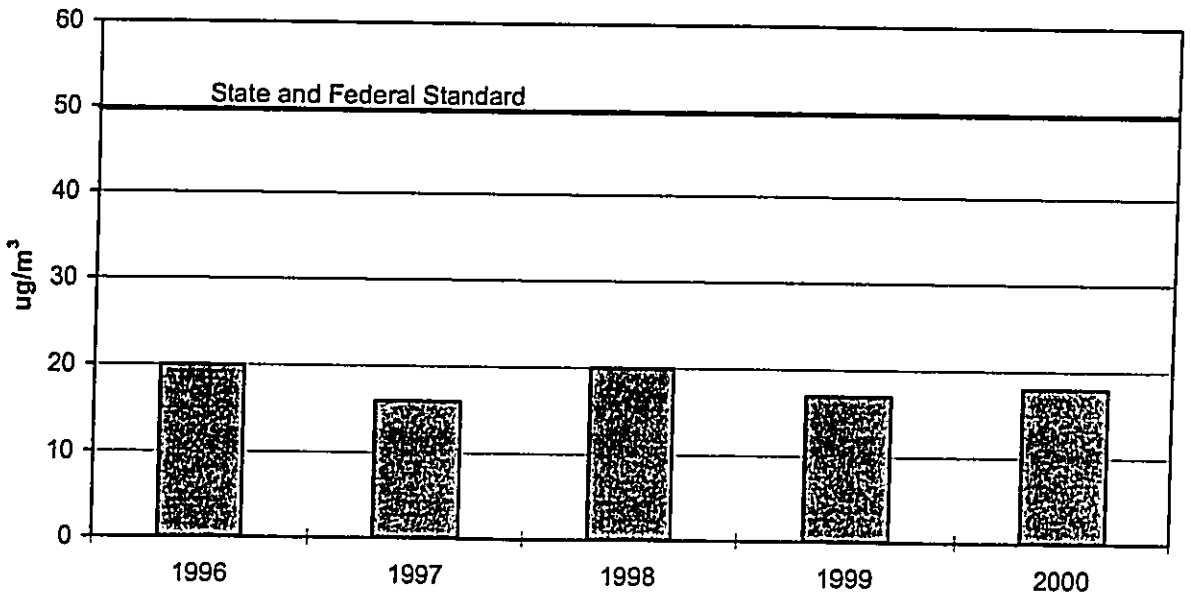


Figure 5-3 **Annual Average of Daily Maximum 1-Hour Ozone 1996 - 2000**

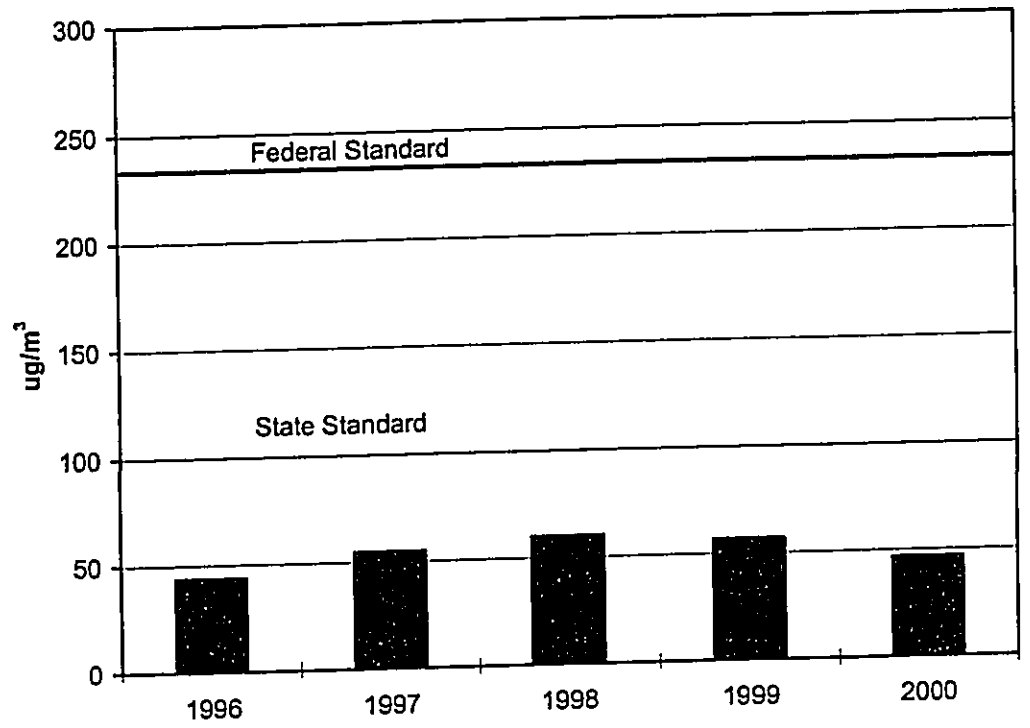


Figure 5-4 **Annual Average of Daily Maximum 1-Hour Carbon Monoxide 1996 - 2000**

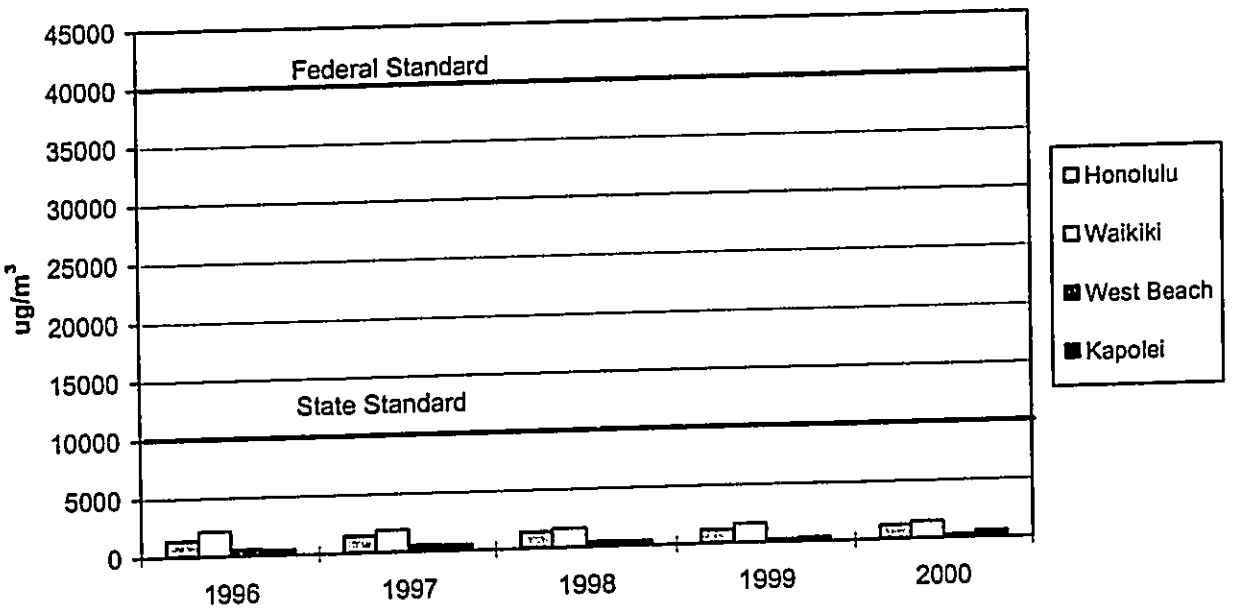


Figure 5-5 **Annual Average Sulfur Dioxide 1996 - 2000**

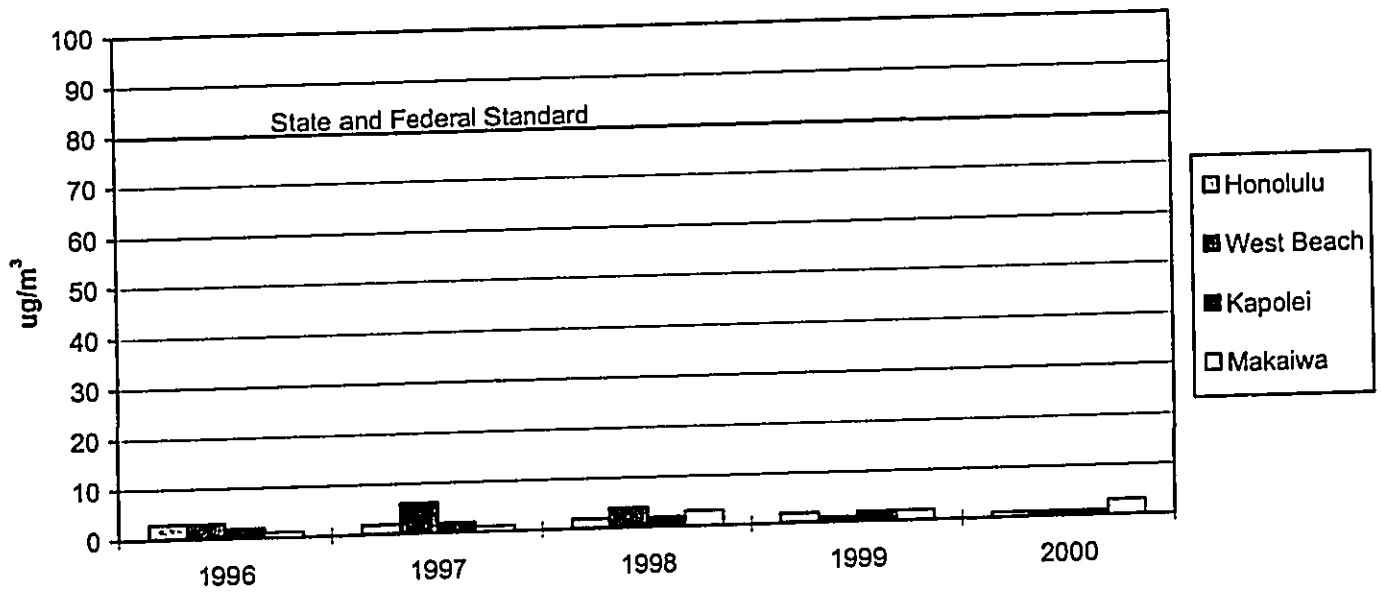
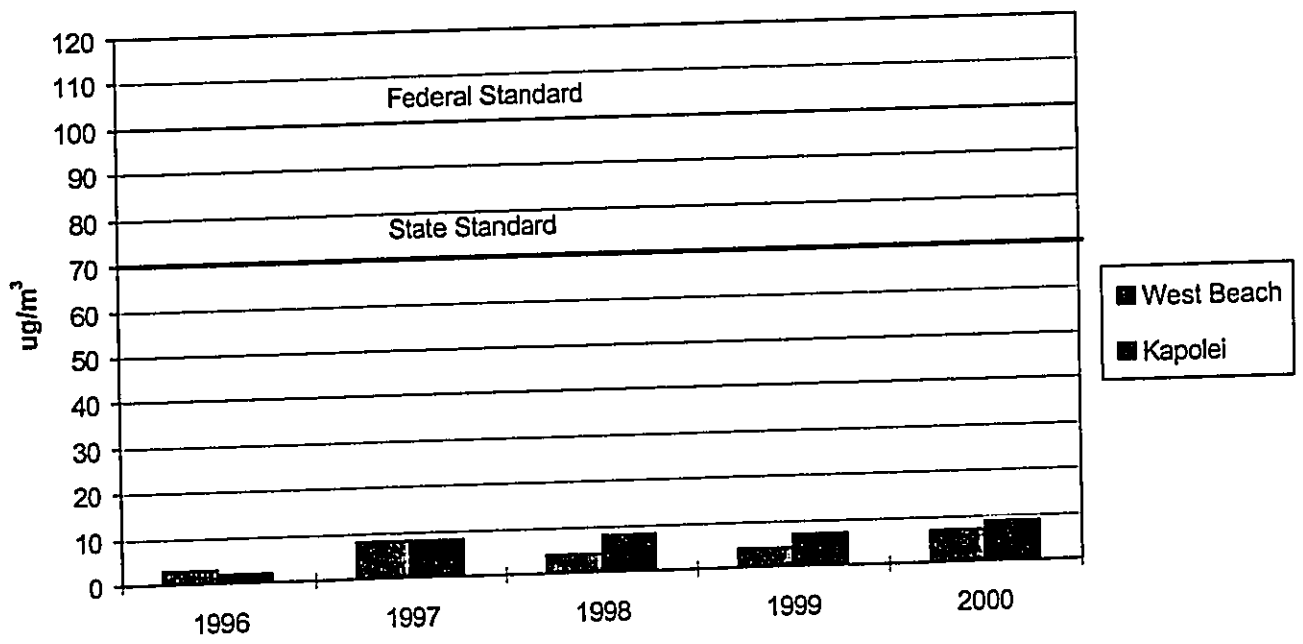


Figure 5-6 **Annual Average Nitrogen Dioxide 1996 - 2000**



APPENDIX D
Pre-Consultation Comment Letters and Responses

BENJAMIN J. CAYETANO
GOVERNOR

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

JUN 21 2002

PT6602 - 2575

BRIAN K. MINAAI
DIRECTOR

DEPUTY DIRECTORS
JEAN L. OSHITA
JADINE Y. URASAKI

IN REPLY REFER TO:
HWY-PS
2.6940

RECEIVED
02 JUN 27 A8:02
DIRECTOR'S OFFICE
TRANSPORTATION SERVICES

Ms. Cheryl D. Soon
Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawaii 96813

Dear Ms. Soon:

Subject: Draft Environmental Assessment (DEA) for Transit Centers in Waianae (TMK: 8-6-1: 29), Wahiawa (TMK: 7-4-6: por 2 and por. 12), and Mililani, TMK: 9-5-53: por. 2)

Thank you for consulting us concerning the forthcoming DEA. We request that the DEA provide traffic volumes that would be generated by the proposed transit centers. The DEA should also include an explanation of how it was determined that 100 parking stalls would be needed at the Waianae Transit Center, 42 parking stalls would be needed at the Wahiawa transit center, and no parking stalls would be needed at the Mililani transit center.

If you have any questions, please contact Ronald Tsuzuki, Head Planning Engineer, Highways Division, at 587-1830.

Very truly yours,

BRIAN K. MINAAI
Director of Transportation

c: AM Partners, Inc.

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4432 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

MUFI HANNEMANN
MAYOR

CHERYL D. SOON
DIRECTOR

GEORGE I. ATTA
DEPUTY DIRECTOR

August 2, 2002

Brian K. Minaai, Director
Department of Transportation
State of Hawaii
869 Punchbowl Street
Honolulu, Hawaii 96813-5097

Dear Mr. Minaai:

Subject: Draft Environmental Assessment (DEA) for Transit Centers in Waianae (TMK: 8-6-1:29), Wahiawa (TMK: 7-4-6:2 and por.12), and Mililani (TMK: 9-5-53:por. 2).

Thank you for responding with regard to the forthcoming Transit Center DEA. Information regarding traffic volumes to be generated by the proposed projects will be reported in the DEA. The DEA will also address parking provisions associated with each of the projects. With regard to the Waianae project, provision of a park-and-ride lot for approximately 100 vehicles has been proposed based upon an assessment of potential use of such a facility if provided in conjunction with the proposed transit center at the proposed site. The Wahiawa project does not incorporate a park-and-ride component, but will include improvements to an existing parking lot used by staff of and visitors to the adjacent State agency office facilities. The proposed project is not intended to augment or duplicate the existing park-and-ride facilities provided at the Wahiawa Armory site. The Mililani project is not intended to augment or duplicate the existing Mililani Mauka park-and-ride facility.

If you have any questions or concerns, please contact James Burke, Project Manager, at 523-4445.

Sincerely,

CHERYL D. SOON
Director

cc: Gordon S. Wood, AIA, AM Partners, Inc.

PT 7/02 - 2965

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

July 19, 2002

LD-NAV
C&CoHDTSTRANSIT95532.RCM2
L-3405

Honorable Sheryl D. Soon
Department of Transportation Services
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

RECEIVED
02 JUL 24 P12:42

Dear Ms. Soon:

Subject: Pre-Consultation – Department of Transportation Services Draft Environmental Assessment for Transit Center in Waianae (TMK: 8-6-1: 29). Wahiawa (Portion of TMK: 7-4-6: 2 and 7-4-6: 12), and Mililani (Portion of TMK: 9-5-53: 21)

This is a follow-up to our letter (Ref.: C&CoHSTRANSIT95532.RCM) to you dated June 6, 2002, pertaining to the subject matter.

Attached herewith is a copy of the Land Division Engineering Branch comment.

The Department of Land and Natural Resources has no other comment to offer on the subject matter.

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0438.

Very truly yours,

Madeline C. Unoki

for DIERDRE S. MAMIYA
Administrator

C: Oahu District Land Office

DEPARTMENT OF LAND AND NATURAL RESOURCES
Land Division
Engineering Branch

COMMENTS

Please note that the proposed three (3) Transit Centers in Waianae, Wahiawa and Mililani are located in Zone D. These are areas where flood hazards are undetermined.

However, if future studies determine that the project sites are within the flood zone, the project must comply with rules and regulations of the National Flood Insurance Program (NFIP) and all applicable County Flood Ordinances. If there are questions regarding the NFIP, please contact the State Coordinator, Mr. Sterling Yong, of the Department of Land and Natural Resources at 587-0248.

In addition, the City and County of Honolulu, Department of Transportation Services is responsible to obtain the necessary water allocation credits from the Board of Water Supply for the State property in Wahiawa.

Signed: Andrew M. Monden
ANDREW M. MONDEN, CHIEF ENGINEER

Date: 6/12/02

N:\WLD\MAKAI\SUZIE\OAHU\TransitCTROahu204.doc

PTG02-2327

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

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

June 6, 2002

LD-NAV
L-2983/3124/3130/3266/3258/3088/3108/3110

C&CoHDTSTRANSIT95532RCM

RECEIVED
2002 JUN 12 A 8:40
DIRECTOR'S OFFICE
TRANSPORTATION SERVICES

Honorable Cheryl D. Soon, Director
Department of Design and Construction
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Ms. Soon:

Subject: Pre-Consultation – Department of Transportation Services Draft Environmental Assessment for Transit Center in Waianae (TMK: 8-6-1: 29). Wahiawa (Portion of TMK: 7-4-6: 2 and 7-4-6: 12), and Mililani (Portion of TMK: 9-5-53: 21)

Thank you for the opportunity to review and comment on the subject matter. A copy of the your letter dated May 9, 2002, summary description and location map covering the proposed project was distributed to the following Department of Land and Natural Resources' Divisions for their review and comment:

- Division of Aquatic Resources
- Division of Forestry & Wildlife
- Division of State Parks
- Division of Boating and Ocean Recreation
- Historic Preservation Division
- Commission on Water Resource Management
- Land Division Engineering Branch
- Land Division Planning and Technical Services
- Oahu District Land Office

Attached herewith is a copy of the Land Division Oahu District Land Office comment.

The Department of Land and Natural Resources has no other comment to offer on the subject matter based on the attached response.

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0438.

Very truly yours,

Charlene E. Unoki
for DIERDRE S. MAMIYA
Administrator

C: Oahu District Land Office

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

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

2002 MAY 28 A 11:12

May 21, 2002

LD-NAV
L-2938

C&CoHDTSTRANSIT95532.CHT
Suspense Date: 6/3/02

MEMORANDUM:

From/~~To~~:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
XXX Historic Preservation Division
XXX Commission on Water Resource Management
Land Division Branches of:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

To: ~~FROM~~: Dierdre S. Mamiya, Administrator
Land Division
Charlene

SUBJECT: Pre-Consultation - Department of Transportation Services Draft Environmental Assessment for Transit Centers in Waianae (TMK: 8-6-1: 29), Wahiawa (portion of TMK: 7-4-6: 2 and 7-4-6: 12), and Mililani (portion of TMK: 9-5-53: 2)

Please review the attached letter covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

( ) We have no comments.

(✓) Comments attached.

Signed:

Date: 5/22/02

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

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

MEMORANDUM

To: Dierdre Mamiya
Land Administrator

Attn: Nick Vaccaro

From: Steve Lau
Land Agent

Subject: Department of Transportation Services, Draft Environmental Assessment for Transit Centers in Waianae (TMK:8-6-1:29), Wahiawa (portion of TMK:7-4-06:2 and 7-4-06:12), and Mililani (portion of TMK:9-5-053:2)

We have no comment on the proposed project. However, please be advised that for the Wahiawa sites (portion of TMK:7-4-06:2) is an unencumbered lot owned by DLNR.

The abutting property, TMK:7-4-06:12, which is encumbered under GEO 1763 to the Department of Accounting and General Services, Division of Public Works, for the Wahiawa Civic Center.

Both State properties would require Land Board approval for the set aside to the City and County, Department of Transportation Services.

RECEIVED
2002 MAY 23 P 1:22

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

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

May 21, 2002

LD-NAV
L-2938

C&CoHDTSTRANSIT95532.CMT
Suspense Date: 6/3/02

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
XXX Historic Preservation Division
XXX Commission on Water Resource Management
Land Division Branches of:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

FROM: Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Consultation - Department of Transportation Services Draft Environmental Assessment for Transit Centers in Waianae (TMK: 8-6-1: 29), Wahiawa (portion of TMK: 7-4-6: 2 and 7-4-6: 12), and Mililani (portion of TMK: 9-5-53: 2)

Please review the attached letter covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed:
Date: 5/22/02

HRY22'02AM10:25BOP

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

May 21, 2002

LD-NAV
L-2938

C&CoHDTSTRANSIT95532.CHT
Suspense Date: 6/3/02

MEMORANDUM:

~~TO:~~ FROM:

XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
✓ XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
XXX Historic Preservation Division
XXX Commission on Water Resource Management
Land Division Branches of:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

for Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Consultation - Department of Transportation Services Draft Environmental Assessment for Transit Centers in Waianae (TMK: 8-6-1: 29), Wahiawa (portion of TMK: 7-4-6: 2 and 7-4-6: 12), and Mililani (portion of TMK: 9-5-53: 2)

Please review the attached letter covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed:

Date: 5/23/02

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

May 23, 2002

LD/NAV
A&BWAIKIKI.CHT
NIKETOWN

L-3050/3035
Suspense Date: 6/7/02

MEMORANDUM:

TO:

XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Na Ala Hele Trails
XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
✓ XXX Historic Preservation Division
XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

FROM: for Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Assessment Consultation for Preparation of Environmental Assessment (EA) Covering A&B Waikiki Niketown Development, Island of Oahu, Hawaii
Wilson Okamoto & Associates, Inc. (Earl Matsukawa)

Please review the attached letter and exhibits covering the subject matter and submit your comments (if any) on Division letterhead signed and dated by the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments on or before the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed:

Date 5/30/02

RECEIVED
2002 JUN -3 A 10:38

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

May 21, 2002

LD-NAV
L-2938

C&CoHDTSTRANSIT95532.CMT
Suspense Date: 6/3/02

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
XXX Historic Preservation Division
XXX Commission on Water Resource Management
Land Division Branches of:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

FROM: for Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Consultation - Department of Transportation Services Draft Environmental Assessment for Transit Centers in Waianae (TMK: 8-6-1: 29), Wahiawa (portion of TMK: 7-4-6: 2 and 7-4-6: 12), and Mililani(portion of TMK: 9-5-53: 2)

Please review the attached letter covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

(X) We have no comments. ( ) Comments attached.

Signed: for

Date: 5-30-02

RECEIVED
MAY 23 2002

RECEIVED
2002 MAY 28 A 11:25

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

May 21, 2002

LD-NAV
L-2938

C&CoHDTSTRANSIT95532.CMT
Suspense Date: 6/3/02

MEMORANDUM:

TO: XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
XXX Historic Preservation Division
XXX Commission on Water Resource Management
Land Division Branches of:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

FROM: for Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Consultation - Department of Transportation Services Draft Environmental Assessment for Transit Centers in Waianae (TMK: 8-6-1: 29), Wahiawa (portion of TMK: 7-4-6: 2 and 7-4-6: 12), and Mililani(portion of TMK: 9-5-53: 2)

Please review the attached letter covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

(✓) We have no comments. ( ) Comments attached.

Signed: W. Bryan Kamaka

Date: 5/21/02

RECEIVED
2002 MAY 23 P 12:11

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

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

May 21, 2002

LD-NAV
L-2938

C&CoHDTSTRANSIT95532.CMT
Suspense Date: 6/3/02

MEMORANDUM:

TO:
- XXX Division of Aquatic Resources
- ✓ XXX Division of Forestry & Wildlife
- XXX Division of State Parks
- XXX Division of Boating and Ocean Recreation
- XXX Historic Preservation Division
- XXX Commission on Water Resource Management
- Land Division Branches of:
- XXX Planning and Technical Services
- XXX Engineering Branch
- XXX Oahu District Land Office

FROM: for Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: Pre-Consultation - Department of Transportation Services Draft Environmental Assessment for Transit Centers in Waianae (TMK: 8-6-1: 29), Wahiawa (portion of TMK: 7-4-6: 2 and 7-4-6: 12), and Mililani (portion of TMK: 9-5-53: 2)

Please review the attached letter covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date. Should you need more time to review the subject matter, please contact Nick Vaccaro at ext.: 7-0438.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

( ) We have no comments. ( ) Comments attached.

Signed:
DOFAW Administrator

Date: 5/22/02

DOFAW will defer comments until the draft EA is made available for review.

PT6/12 - 2445

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

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

RECEIVED
02 JUN 19 A8:05
DEPT. OF DESIGN & CONSTRUCTION
TRANSPORTATION SERVICES

June 17, 2002

LD-NAV
C&CoHDTSTRANSIT95532.RCM2
L-3458

Honorable Cheryl D. Soon, Director
Department of Design and Construction
City and County of Honolulu
650 South King Street
Honolulu, Hawaii 96813

Dear Ms. Soon:

Subject: Pre-Consultation – Department of Transportation Services Draft Environmental Assessment for Transit Center in Waianae (TMK: 8-6-1: 29), Wahiawa (Portion of TMK: 7-4-6: 2 and 7-4-6: 12), and Mililani (Portion of TMK: 9-5-53: 21)

This is a follow-up to our letter (Ref.: C&CoHSTRANSIT95532.RCM) to you dated June 6, 2002, pertaining to the subject matter.

Attached herewith is a copy of the Land Division Engineering Branch comment.

The Department of Land and Natural Resources has no other comment to offer on the subject matter.

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0438.

Very truly yours,

for DIERDRE S. MAMIYA
Administrator

C: Oahu District Land Office

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU
650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

GEORGE "KEOKI" MIYAMOTO
DEPUTY DIRECTOR

August 2, 2002

Dierdre S. Mamiya, Administrator
Department of Land and Natural Resources
State of Hawaii
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Mamiya:

Subject: Draft Environmental Assessment (DEA) for Transit Centers in Waianae (TMK: 8-6-1:29), Wahiawa (TMK: 7-4-6:2 and por.12), and Mililani (TMK: 9-5-53:por. 2).

Thank you for responding with regard to the forthcoming Transit Center DEA. If future studies determine that any or all of the project sites are within a flood zone, the project will comply with the rules and regulations of the National Flood Insurance Program (NFIP) and all applicable County Flood Ordinances. Unless other agreement is reached, the City and County of Honolulu, Department of Transportation Services, or its designate, will obtain the necessary water allocation credits from the Board of Water Supply for the transit center uses to be established on the State property in Wahiawa.

If you have any questions or concerns, please contact James Burke, Project Manager, at 523-4445.

Sincerely,

Cheryl D. Soon

CHERYL D. SOON
Director

cc: Gordon S. Wood, AIA, AM Partners, Inc.

PT 6/12-2365

DEPARTMENT OF PARKS AND RECREATION
CITY AND COUNTY OF HONOLULU
1000 ULUOHIA STREET, SUITE 309, KAPOLEI, HAWAII 96707
PHONE: (808) 692-5561 • FAX: 692-5131 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

WILLIAM D. BALFOUR, JR.
DIRECTOR

EDWARD T. "SKIPPA" DIAZ
DEPUTY DIRECTOR

June 12, 2002

RECEIVED
02 JUN 13 P2:51
DIRECTOR'S OFFICE
DEPT. OF TRANSPORTATION SERVICES

MEMORANDUM

TO: CHERYL D. SOON, DIRECTOR
DEPARTMENT OF TRANSPORTATION SERVICES

FROM: WILLIAM D. BALFOUR, JR., DIRECTOR

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (DEA) FOR TRANSIT CENTERS IN WAIANAE (TMK 8-6-1:29), WAHIAWA (PORTIONS OF TMK 7-4-6:2 AND TMK 7-4-6:12), AND MILILANI (PORTION OF TMK 9-5-53:2)

Thank you for the opportunity to review and comment on the Draft Environmental Assessment relating to Transit Centers in Waianae, Wahiawa and Mililani.

The Department of Parks and Recreation has no comment on the proposed Transit Centers.

Should you have any questions, please contact Mr. John Reid, Planner, at 692-5454.

for WILLIAM D. BALFOUR, JR.
Director

WDB:cu (11782)

cc: Mr. Don Griffin, Department of Design and Construction

PTL02-2374

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

BRUCE S. ANDERSON, Ph.D., M.P.H.
DIRECTOR OF HEALTH

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

In reply, please refer to:
File
02-131/cpo

June 12, 2002

Ms. Cheryl D. Soon, Director
Department of Transportation Services
650 South King Street, 3rd Floor
Honolulu, Hawaii 96813

RECEIVED
02 JUN 14 A 8:01
TRANSPORTATION SERVICES
DIRECTOR'S OFFICE

Dear Ms. Soon:

Subject: Pre-Environmental Assessment (PEA) Consultation
Transit Centers in Waianae, Wahiawa and Mililani
Tax Map Key: 8-6-001:29; 7-4-006:2, 7-4-006:12; and 9-5-053:2

Thank you for the opportunity to review and comment on the subject proposal. The PEA was routed to the various branches of the Environmental Health Administration. We have the following comments.

Clean Water Branch (CWB)

1. The applicant should contact the Army Corps of Engineers to identify whether a federal permit (including a Department of Army permit) is required for this project. A Section 401 Water Quality Certification is required for "Any applicant for Federal license or permit to conduct any activity including, but not limited to, the construction or operation of facilities, which may result in any discharge into the navigable waters...", pursuant to Section 401(a)(1) of the Federal Water Pollution Act (commonly known as the "Clean Water Act");

2. A National Pollutant Discharge Elimination System (NPDES) general permit coverage is required for the following discharges to waters of the State:

   a. Discharge of storm water runoff associated with industrial activities, as define in Title 40, Code of Federal Regulations, Sections 122.26(b)(14)(i) through 122.26(b)(14)(ix) and 122.26(b)(14)(xi);

   b. Discharge of storm water runoff associated with construction activities that involve the disturbance of five (5) acres or greater, including clearing, grading, and excavation;

   c. Discharge of treated effluent from leaking underground storage tank remedial activities;

   d. Discharge of once through cooling water less than one million gallons per day;

   e. Discharge of hydro-testing water;

   f. Discharge of construction dewatering effluent;

   g. Discharge of treated effluent from petroleum bulk stations and terminals; and

   h. Discharge of treated effluent from well drilling activities.

   Any person requesting to be covered by a NPDES general permit for any of the above activities should file a Notice of Intent with the Department of Health, Clean Water Branch (CWB) at least thirty (30) days prior to commencement of any discharges to State waters;

3. If construction activities involve the disturbance of one acre or greater, including clearing, grading, and excavation, and will take place or extend after March 10, 2003, an NPDES general permit coverage is required for discharges of storm water runoff into State waters; and

4. The applicant may be required to apply for an individual NPDES permit if there is any type of activity in which wastewater is discharged from the project into State waters.

If you have any questions, please contact the Clean Water Branch at (808) 586-4309.

Noise, Radiation and Indoor Air Quality (NRIAQ) Branch

All project activities shall comply with the Administrative Rules of the Department of Health, Chapter 11-46, on "Community Noise Control".

If you have any questions, please contact the NRIAQ at (808) 586-4701.

Sincerely,

GARY GILL
Deputy Director
Environmental Health Administration

c: CWB
NRIAQ

PT 6/02-2370 NE

BENJAMIN J. CAYETANO
GOVERNOR OF HAWAII

STATE OF HAWAII

DEPARTMENT OF LAND AND NATURAL RESOURCES

HISTORIC PRESERVATION DIVISION
KAKUHIHEWA BUILDING, ROOM 555
601 KAMOKILA BOULEVARD
KAPOLEI, HAWAII 96707

GILBERT S. COLOMA-AGARAN, CHAIRPERSON
BOARD OF LAND AND NATURAL RESOURCES
COMMISSION ON WATER RESOURCE MANAGEMENT

DEPUTIES
ERIC T. HIRANO
LINNEL NISHIOKA

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

June 10, 2002

LOG NO: 30066
DOC NO: 0206EJ08

Ms. Cheryl D. Soon, Director
Department of Transportation Services
City and County of Honolulu
650 South King Street, 3rd Floor
Honolulu, Hawaii 96813

Dear Ms. Soon:

SUBJECT: Chapter 6E-8 Historic Preservation Review Pre-Consultation on Draft Environmental Assessment for Transit Centers in Waianae, Wahiawa and Mililani, O'ahu
Lualualei, Wai'anae, Wahiawa, Wahiawa and Waipi'o, 'Ewa
TMK: (1) 8-6-001:029, 7-4-006:002 and 9-5-053:002

Thank you for the opportunity to provide comment for the Draft EA for the three transit centers. Our review is based on historic reports, maps, and aerial photographs maintained at the State Historic Preservation Division; no field inspection was made of the project areas. We received notification of this undertaking from your office on May 23, 2002.

SHPD responded to the Department of Planning and Permitting on the Wai'anae and Wahiawa Community Transit Centers. In both locations we believe that "no historic properties will be affected" by the development of the centers because of past urbanization and grubbing which has altered the land. Copies of our correspondence for these two projects are attached (SHPD Log Nos. 28802/29151).

The Mililani Transit Center is also proposed for an area which has been extensively developed in the recent past and which was previously used for commercial agriculture. Because it is highly unlikely that historic sites would be found, we believe that no historic properties will be affected by the development of the proposed Mililani Transit Center.

Should you have any questions, please feel free to call Sara Collins at 692-8026 or Elaine Jourdane at 692-8027.

Aloha,

DON HIBBARD, Administrator
State Historic Preservation Division

Attachments: SHPD Log 22802, 29151

c. Nick Vaccaro, DLNR Land Division

EJ:amk

RECEIVED
02 JAN 14 P 1:04
DEPT. OF TRANSPORTATION SERVICES

PT 5/02-2106

POLICE DEPARTMENT

CITY AND COUNTY OF HONOLULU

801 SOUTH BERETANIA STREET
HONOLULU, HAWAII 96813 - AREA CODE (808) 529-3111
http://www.honolulupd.org
www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

LEE D. DONOHUE
CHIEF

ROBERT AU
GLEN KAJIYAMA
DEPUTY CHIEFS

OUR REFERENCE CS-KP

May 23, 2002

TO: CHERYL D. SOON, DIRECTOR
DEPARTMENT OF TRANSPORTATION SERVICES

FROM: LEE D. DONOHUE, CHIEF OF POLICE
HONOLULU POLICE DEPARTMENT

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (DEA) FOR TRANSIT CENTERS IN WAIANAE (TMK 8-6-1:29), WAHIAWA (PORTIONS OF TMK 7-4-6:2 AND TMK 7-4-6:12), AND MILILANI (PORTION OF TMK 9-5-53:2)

Thank you for the opportunity to review and comment on the subject project.

We believe that there will be minimal impact on the facilities and services of the Honolulu Police Department when the proposed transit centers become operational.

If there are any questions, please call Ms. Carol Sodetani of the Support Services Bureau at 529-3658.

RECEIVED
02 MAY 28 AM 7:31
DIRECTOR'S OFFICE
DEPT. OF TRANSPORTATION SERVICES

LEE D. DONOHUE
Chief of Police

By
KARL GODSEY
Acting Assistant Chief of Police
Support Services Bureau

Serving and Protecting with Aloha

PF - 5/02 - 2150

BOARD OF WATER SUPPLY

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

May 30, 2002

TO: CHERYL D. SOON, DIRECTOR
DEPARTMENT OF TRANSPORTATION SERVICES

FROM: for CLIFFORD S. JAMILE, MANAGER AND CHIEF ENGINEER

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT FOR TRANSIT CENTERS IN WAIANAE (TMK: 8-6-1: 29), WAHIAWA (PORS. OF TMK: 7-4-6: 2 AND TMK: 7-4-6: 12), AND MILILANI (POR. TMK: 9-5-53: 2)

The existing water system is presently adequate to accommodate the proposed transit centers.

The availability of water will be confirmed when the building permit is submitted for our review and approval. When water is made available, the applicant will be required to pay our Water System Facilities Charges for resource development, transmission and daily storage.

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

If you have any questions, please contact Joseph Kaakua at 527-6123.

cc: AM Partners, Inc.

PF 5/02 - 2150

FIRE DEPARTMENT
CITY AND COUNTY OF HONOLULU
3375 KOAPAKA STREET, SUITE H425 • HONOLULU, HAWAII 96819-1869
TELEPHONE (808) 831-7761 • FAX (808) 831-7750 • INTERNET: www.co.honolulu.hi.us

May 29, 2002

TO: CHERYL D. SOON, DIRECTOR
DEPARTMENT OF TRANSPORTATION SERVICES

FROM: ATTILIO K. LEONARDI, FIRE CHIEF

SUBJECT: DRAFT ENVIRONMENTAL ASSESSMENT (DEA)
FOR TRANSIT CENTERS IN WAIANAE (TMK 8-6-001: 029),
WAHIAWA (PORTIONS OF TMK 7-4-006: 002 AND TMK 7-4-006: 012),
AND MILILANI (PORTION OF TMK 9-5-053: 002)

We received your letter dated May 9, 2002, regarding the Draft Environmental Assessment for the above-mentioned projects. The Honolulu Fire Department requests that the following be complied with:

1. Maintain fire apparatus access throughout the construction sites for the duration of the project.

2. Notify the Fire Communication Center (523-4411) of any interruption in the existing fire hydrant system during the project.

Should you have any questions, please call Battalion Chief Kenneth Silva of our Fire Prevention Bureau at 831-7778.

ATTILIO K. LEONARDI
Fire Chief

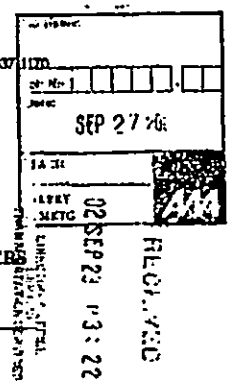
AKL/SK:bh

APPENDIX E
Draft Environmental Assessment Comment Letters and Responses

Longs Drug Stores

September 20, 2002

General Offices: 141 North Civic Drive, P.O. Box 5222, Walnut Creek, California 94596, (925) 937-1170



The City and County of Honolulu
Department of Transportation Services
Attention: Cheryl Soon, Director
650 South King Street, Third Floor
Honolulu, Hawaii 96813

RE: MILILANI AND WAHIAWA COMMUNITY TRANSIT CENTERS
DRAFT ENVIRONMENTAL ASSESSMENTS
LONGS DRUG STORE #254 AND #300
MILILANI AND WAHIAWA, HAWAII

Dear Ms. Soon:

Longs Drug Stores has reviewed the Environmental Assessments referenced above, along with that for the Wai'anae Coast Community Transit Centers. Based on our review, we wanted to clarify our understanding of the proposal, and request a response where required. We must be assured that there will be no unmitigated negative impacts as a part of this proposal.

MILILANI

Longs is concerned that customers using the Transit Center will attempt to utilize it as a park and ride facility. Without adequate parking, the natural tendency will be to utilize Mililani Town Center as a place to park and use the transit facilities. Gordon Wood of AM Partners has indicated that there will be an extensive educational effort, and signage posted to advise residents that there are no park and ride facilities at this location. If the residents want to park and ride, they will need to use the facilities at Mililani Mauka several miles away. We are concerned that enforcement will end up costing the center money if the City is not proactive about the "no shopping center parking" policy. What role will the City have in the event that its position that residents will not use the shopping center is incorrect? In that event, it is unreasonable to burden the private property owner with the expense and effort to patrol its parking area due to an unrelated use. Additionally, please advise as to the extent of the educational efforts and the signage that will be posted in this area in order to "protect" the shopping center.

Longs' understanding of the loss of parking in the shopping center, based on your letter to Castle & Cooke dated May 9, 2002, is that the parking will be reduced by no more than five stalls to accommodate the structural system for the facility.

WAHIAWA

As Longs' is not contiguous with the subject property, we do not have the same level of concern as Mililani. Will the educational efforts be the same level as those for the Mililani center?

Additionally, on page 6 you indicate, "Adequate park and ride facilities currently are provided at the Wahiawa Armory site; there is need to augment or duplicate those facilities." Based on this statement, it appears that the park and ride facility augmentation or duplication may be a requirement of this project. Please provide information with regard to: 1) where these facilities will be, 2) when they will be constructed, and 3) whether these additional parking facilities are a requirement of the Transit Center Project. Additionally, please provide assurance that the existing 90°, unmetered parking on Center Street will remain a viable option for residents who must park in this area, who may been displaced by this project if they are currently parking on the subject property.

We look forward to the Final Environmental Assessment in which the above concerns are addressed with adequate specificity to relieve our concerns regarding the I aspects, Longs also understands the benefit of providing these facilities adjacent to our stores. As a successful retailer in Hawaii, we want to make sure that our ability to serve the local residents is not impaired in any way, so we can continue to be an attractive retail option for the residents in these communities.

Should you have any questions or comments regarding the above please don't hesitate to contact me at (925) 210-6794.

Yours very truly,

LONGS DRUG STORES CALIFORNIA, INC.

Gary Veasy
Director of Design

GWV/jfp

cc: Mike Raphel
Gerald Saito
Nolan Kanioka
Steven Harris, #254
Dennis Akimoto, #300
Jean Ulep, Property Management Supervisor, Castle & Cooke
Gordon Wood, AM Partners
State of Hawaii Department of Health
File

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4525 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
MAYOR

CHERYL D. SOON
DIRECTOR

CALVIN TOSHIO SUNAMOTO
DEPUTY DIRECTOR

June 24, 2003

Mr. Gary Veasy
Director of Design
Longs Drugs Stores California, Inc.
141 North Civic Drive
P.O. Box 5222
Walnut Creek, California 94596

Dear Mr. Veasy.

Subject: Mililani Community Transit Center Draft Environmental Assessment (DEA)
Tax Map Key: 9-5-53:por.2 and portion of Meheula Parkway Right-of-Way

Thank you for your comments dated September 20, 2002, regarding the Draft Environmental Assessment (DEA) of the Mililani Community Transit Center. All comments timely received will be included in the Final Environmental Assessment to be submitted to Hawaii's Office of Environmental Quality Control.

The residents of Mililani and other users of the proposed Transit Center will be educated through various means (e.g., printed hand-outs, signage, and announcements during community gatherings) that park-and-ride facilities are located less than a mile from the proposed Transit Center location, and not at the proposed transit center. By obviating the need to use a car for any portion of a transit trip, the "hub and spoke" transit service supported by the proposed Transit Center will provide a distinctly different transit product than that offered by park-and-ride facilities. The existing Mililani Mauka Park-and-Ride is currently operational, adequate to serve the needs of Mililani, and well utilized by the community. Augmentation or duplication of the park and ride facilities is not, therefore, an element of this transit center project.

We thank you for appreciating the benefits that the proposed transit center will bring to the adjacent retailers of the area, including the Longs Drugs Store in Mililani. We anticipate the proposed Transit Center will prove a valuable asset to Mililani, and will help to assure the community's long-term economic and social vitality. We value your presence in Hawaii and we want to ensure the ability of area retailers to serve the local community is enhanced by the proposed project.

The Final Environmental Assessment (FEA) will be amended to address the concerns and comments discussed in your letter. Should you have any additional questions or comments, please don't hesitate to contact James Burke of my staff at 523-4445.

Sincerely,

CHERYL D. SOON
Director

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

September 13, 2002

LD-NAV
L-1358 (3)/1665/1569/1668/1512

C&CoHDTSTRANSITMILILANI.RCH

AH Partners, Inc.
Becky L. Hayashida
1164 Bishop Street, Suite 1000
Honolulu, Hawaii 96813

Dear Ms. Hayashida:

Subject: City and County of Honolulu Department of Transportation Services
Draft Environmental Assessment (DEA) Covering the MILILANI COMMUNITY
TRANSIT CENTER (August 2002), Island of Oahu, Hawaii
Consultant: AH Partners, Inc. - Project No. A00096.20

Thank you for distributing one (1) copy of the subject Draft Environmental Assessment (DEA) to the Department of Land and Natural Resources' (DLNR) Land Division.

The DLNR Land Division made available the one (1) copy of the DEA covering the proposed project to the following DLNR Divisions for their review and comment:

- Division of Aquatic Resources
- Division of Forestry & Wildlife
- Division of Boating and Ocean Recreation
- Commission on Water Resource Management
- Land Division Planning and Technical Services
- Land Division Engineering Branch
- Oahu District Land Office

Based on the attached responses the Department of Land and Natural Resources has no comment to offer on the subject matter. If the DLNR Land Division receives additional comments, they will be forwarded to your office at that time.

Should you have any questions, please feel free to contact Nicholas A. Vaccaro of the Land Division Support Services Branch at 587-0430.

Very truly yours,

Charlene E. Unoki
for DIERDRE S. MAMIYA
Administrator

C: Oahu District Land Office

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2002 AUG 29 P 12:24

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

August 27, 2002

LD-NAV
L-1358 (3)

C&CoHDTSTRANSITMILILANI.CMT
Suspense Date: 9/11/02

MEMORANDUM:

TO:
XXX Division of Aquatic Resources
XXX Division of Forestry & Wildlife
XXX Division of State Parks
XXX Division of Boating and Ocean Recreation
XXX Commission on Water Resource Management
Land Division Branches:
XXX Planning and Technical Services
XXX Engineering Branch
XXX Oahu District Land Office

FROM: for Dierdre S. Mamiya, Administrator
Land Division

SUBJECT: City and County of Honolulu Department of Transportation Services Draft Environmental Assessment (DEA) Covering the MILILANI COMMUNITY TRANSIT CENTER (AUGUST 2002)
Consultant: AH Partners, Inc. - Project No. A0096.20

Please review the DEA covering the subject matter and submit your written comment and recommendation (if any) on Division letterhead signed and dated on or before the suspense date.

NOTE: One (1) Copy of the subject DEA is available for your review in the Land Division Office, room 220.

Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

(X) We have no comments. ( ) Comments attached

Signed:
Date: DOFAW Administrator
8/28/02

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

August 27, 2002

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L-1358 (3)

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✓ XXX Engineering Branch
XXX Oahu District Land Office

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Signed: Eric T. Yuasa

Date: 9/4/02

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

August 27, 2002

LD-NAV
L-1358 (3)

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Suspense Date: 9/11/02

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STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

August 27, 2002

LD-NAV
L-1358 (3)

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FROM: Dierdre S. Mamiya, Administrator
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Signed:

Date: 8/30/02

STATE OF HAWAII
DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

August 27, 2002

LD-NAV
L-1358 (3)

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Land Division

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DEPARTMENT OF LAND AND NATURAL RESOURCES
LAND DIVISION
P.O. BOX 621
HONOLULU, HAWAII 96809

August 27, 2002

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L-1358 (3)

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Suspense Date: 9/11/02

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TO: XXX Division of Aquatic Resources
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XXX Commission on Water Resource Management
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Consultant: AM Partners, Inc. - Project No. A0096.20

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Should you need more time to review the subject matter, please contact Nicholas A. Vaccaro at ext.: 7-0384.

If this office does not receive your comments by the suspense date, we will assume there are no comments.

( ) We have no comments. ( ) Comments attached.

Signed:

Date:

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

June 24, 2003

Ms. Dierdre S. Mamiya
Administrator
Land Division
Department of Land and Natural Resources
P.O. Box 621
Honolulu, Hawaii 96809

Dear Ms. Mamiya:

Subject: Mililani Community Transit Center Draft Environmental Assessment (DEA)
Tax Map Key: 9-5-53:por 2 and portion of Meheula Parkway Right-of-Way

Thank you for distributing copies of the Draft Environmental Assessment (DEA). I understand that in addition to the Land Division, the following units of your department were given the opportunity to review and comment on the subject project.

- Division of Aquatic Resources
- Division of Forestry and Wildlife
- Division of State Parks
- Division of Boating and Ocean Recreation
- Commission on Water Resource Management
- Land Division Planning and Technical Services
- Land Division Engineering Branch
- Oahu District Land Office

Based on the responses we received, the Department of Land and Natural Resources has no comment to offer at this time. Should you have any questions or comments, please don't hesitate to contact James Burke of my staff at 523-4445.

Sincerely,

CHERYL D. SOON
Director

BENJAMIN J. CAYETANO
GOVERNOR

GENEVIEVE SALMONSON
DIRECTOR

STATE OF HAWAII
OFFICE OF ENVIRONMENTAL QUALITY CONTROL
[illegible]

September 19, 2002

Cheryl Soon
Department of Transportation Services
650 South King St. 3rd floor
Honolulu, Hawaii 96813

Attn: James Burke

Dear Ms. Soon:

Subject: Draft Environmental Assessment (EA) for Mililani Community Transit Center

We have the following comments to offer:

Visual impacts: Include drawings or diagrams of the site, the proposed buildings and any proposed landscaping that show the final appearance of the project in greater detail than that shown in Figure 4. A detailed site plan is also required. A cutaway diagram showing the transit center in relation to the slope of the ground and the shopping center parking lot would also be helpful.

Paving; landscaping: Hawaii Revised Statutes 103D-407 requires the use of recycled glass in paving materials whenever possible, and HRS 103D-408 requires the use of native Hawaiian flora whenever and wherever possible. For the text of these sections of HRS contact our office for a paper copy or go to our website at http://www.state.hi.us/health/oeqc/guidance/index.html.

Construction impacts: In the final EA provide a fuller discussion of construction impacts and planned mitigation measures. Factors should include:

Traffic:
A. Will part or all of Meheula Parkway or adjacent streets have to be closed off? What mitigation measures do you plan to reduce these impacts?
B. Is there currently a bus stop at this location? If so, where will it be moved to? How will pedestrian access to the bus stop be assured during construction?

Safety: Will there be a staging area for large construction equipment? How will you prevent theft or vandalism of construction property? How will you assure pedestrian safety?

Pile driving: Will pile drivers be required? If so how will you mitigate noise and vibration from the drivers? How close are the nearest neighbors? Will they be notified prior to commencement of pile driving?

Runoff: How will construction runoff be handled? What volume do you anticipate?

Consultations: In the final EA list the agencies, organizations and individuals receiving a copy of the draft EA. Consultation with the local planning department is required by law. If you have not already done so, consult with the Department of Planning & Permitting, allowing this agency sufficient time to review the draft EA and submit comments.

Funding: The total project cost is given at $32 million. Indicate how much of this is state or county funds, and whether there are any federal funds flowing through the state or county.

Parking: There are references to parking in the EA. How many stalls are involved? Section 2.2. mentions "existing parking" at the shopping center level. Will new stalls be created? If this transit center is not a park-n-ride facility, who is the parking for?

Bicycling facilities: State policy (HRS Chapters 26, 226, 264, 344) requires the promotion of forms of transportation systems alternative to motorized vehicles. In the final EA discuss what provisions are being made to create bicycle lanes or facilities, such as bike racks and/or bike lockers. Will the loop detectors embedded in the exit lanes detect the presence of bicycles, or will they only be sensitive to the weight of buses?

Ridership and routes: In the final EA provide an estimate of ridership when the transit center is operational. Also provide a map of the bus routes that will converge at the center.

Determination: A determination stating that an environmental impact statement will not be required is listed in section 9.2 of the draft EA. The EIS law prohibits a determination of significant impact or lack of significant impact before the end of the 30-day public comment period and prior to receipt, response and analysis of all written comments. For a draft EA the proper determination is *anticipated FONSI* (Finding of No Significant Impact).

If you have any questions call Nancy Heinrich at 586-4185.

Sincerely,

GENEVIEVE SALMONSON
Director

DEPARTMENT OF TRANSPORTATION SERVICES
CITY AND COUNTY OF HONOLULU

650 SOUTH KING STREET, 3RD FLOOR • HONOLULU, HAWAII 96813
TELEPHONE: (808) 523-4529 • FAX: (808) 523-4730 • INTERNET: www.co.honolulu.hi.us

JEREMY HARRIS
Mayor

CHERYL D. SOON
Director

LEDWIN "ELWIN" YAMAMOTO
Deputy Director

June 24, 2003

Ms. Genevieve Salmonson
Director
Office of Environmental Quality Control
State of Hawaii.
235 South Beretania Street, Suite 702
Honolulu, Hawaii 96813

Dear Ms. Salmonson:

Subject: Mililani Community Transit Center Draft Environmental Assessment (DEA)
Tax Map Key: 9-5-53:por.2 and portion of Meheula Parkway Right-of-Way

Thank you for your comments dated September 20, 2002 regarding the Draft Environmental Assessment (DEA) of the Mililani Community Transit Center. All comments timely received will be included in the Final Environmental Assessment to be submitted to your office.

In response to your concerns and comments to the Draft Environmental Assessment we offer the following statements:

Visual Impacts: Drawings of the site, the proposed buildings and any proposed landscaping that show the final appearance of the project in greater detail, and a detailed site plan will be incorporated in the Final Environmental Assessment (FEA).

Paving and Landscaping: We are familiar with the requirements of Hawaii Revised Statutes (HRS) 103D-407 which requires the use of recycled glass in paving materials whenever possible, and of HRS 103D-408 which requires the use of native Hawaiian flora whenever and wherever possible. We are aware of these requirements and are grateful for the reminder.

Construction Impacts: The FEA will provide a discussion of construction impacts and planned mitigation measures, particularly in the following areas:

Traffic: A Traffic Management Plan will be provided in the final design documents for each aspect of the construction that will determine required street closures, if any, and the mitigation measures to reduce the impacts of those closures.

The Traffic Management Plan will also provide mitigation measures to minimize impacts on pedestrian traffic. The bus stop closest to the project site is on Meheula Parkway approximately 75 feet distant from the site. The Traffic Management Plan will also include provisions that will allow uninterrupted use of existing cross walks.

Safety: The project's Specifications will describe the areas that can be used for staging. The prevention of theft and vandalism to the construction property, and the protection of the general public from construction activities are responsibilities of the General Contractor. The General Contractor will be directed to comply with all applicable rules that protect the health and safety of the general public.

Runoff: Construction run-off will be minimized through the use of widely accepted best management practices.

Pile driving. It is not likely that pile drivers will be used. Available soil data on the site indicates that deep structural foundations such as piles will not be required.

Consultations: The FEA will include the list of agencies, organizations and individuals who received a copy of the draft EA or who were referred to the web-site that hosted a copy of the DEA. We are aware of the requirement to consult with the local planning agency. The City and County of Honolulu, Department of Planning and Permitting has been given ample time to review the DEA and submit comments.

Funding: State funds will not be directly expended on this project. Federal funds may be used, but a final determination is not available at this time.

Parking: New parking stalls will not be created; existing parking stalls will remain and will continue to be used by current users.

As described in the DEA, the transit center is part of the "hub and spoke" concept. Residents throughout the island wanted transit services that could take them around their neighborhoods, as well as provide faster service to downtown Honolulu. To accommodate this collective vision, a new hub-and-spoke transit service has been planned for phase implementation throughout Oahu. The hub-and-spoke system relies on coordinated schedules to make transfers to and from express, local and circulator routes easy and convenient. This is why new transit centers are being proposed in 14 of Oahu's communities to provide comfortable and attractive places to make these transfers. Three different types of transit centers are envisioned: neighborhood transit centers, community transit centers and regional transit centers. A community transit center is being planned for Wahiawa. Since transit center users are transferring from other buses, these bus riders will not be using the parking stalls.

The Mililani Mauka Park-and-Ride located less than one mile away from the proposed transit center site, is currently operational, adequate to serve the needs of Mililani, and well utilized by the community. Augmentation or duplication of the park and ride facilities is not, therefore, an element of this transit center project.

Ridership and routes: It is estimated that the Mililani transit center will have a daily ridership of 2,500. These estimates are based on current and planned services. A map of the bus routes that will converge at the center will be provided in the FEA.

Determination: : Thank you for noting that for a draft EA, the proper determination is *anticipated FONSI* (Finding of No Significant Impact).

The Final Environmental Assessment (FEA) will be amended to address the concerns and comments discussed in your letter. Should you have any additional questions or comments, please don't hesitate to contact James Burke of my staff at 523-4445.

Sincerely,

CHERYL D. SOON
Director