

HO'OPILI

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These industries emit large amounts of sulfur dioxide, nitrogen oxides, particulate matter, carbon monoxide and other air pollutants; however, prevailing winds from the east or northeast carry these emissions away from the Petition Area most of the time.

Until recently, air pollution in the Petition Area originating from agricultural sources could mainly be attributed to sugar cane operations in the 'Ewa area and to pineapple cultivation in the central O'ahu area. Emissions from both the sugar mill and the canefield operations in the area have now been eliminated with the closure of Oahu Sugar Company, Ltd. (OSCo). Much of the former sugarcane lands are currently being used as pastureland or for diversified agriculture. Also, pineapple cultivation has been significantly reduced. Therefore, air pollution from agricultural sources in the Petition Area has been substantially reduced over the course of the past several years.

Natural sources of air pollution emissions that could also affect the Petition 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 Hawai'i.

Summary of Existing Air Quality Conditions. The present air quality of the Petition Area appears to be relatively good based on nearby air quality monitoring data.

Based on air quality data from the nearest monitoring stations operated by DOH, it appears likely that the State Ambient Air Quality Standards (AAQS) for sulfur dioxide, nitrogen dioxide, ozone, and lead are currently being met at the Petition Area. Concentrations of particulate matter normally comply with State and Federal standards, except occasionally on New Years Day (fireworks activity). While carbon monoxide measurements at the Kapolei monitoring station suggest that concentrations are within the State and Federal standards, local "hot spots" may exist near traffic-congested intersections.

Anticipated Impacts and Mitigation Measures

It may be inevitable that some short- and/or long-term impacts on air quality will occur either directly or indirectly as a result of project construction and use.

Short-term Impacts and Mitigation. Short-term direct and indirect impacts on air quality will likely occur during the project construction phase. Two potential types of air pollution emissions that could directly result in short-term air quality impacts during project construction include: 1) fugitive dust from vehicle movement and soil excavation; and 2) exhaust emissions from on-site construction equipment. Exhaust emissions from stationary and mobile construction equipment, from the disruption of traffic, and from workers' vehicles may affect air quality during the construction period.

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

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to ensure compliance with State regulations. Fugitive dust emissions can be controlled to a large extent by watering active work areas, using wind screens, keeping adjacent paved roads clean and covering 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 can help to evaluate the effectiveness of the 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.

All construction activities on the project site will comply with State Air Pollution Control regulations and the provisions of Section 11-60.1-33, HAR, on Fugitive Dust. An effective dust control plan for the construction phase will be implemented, and particular care will be taken when construction activities take place near existing homes, businesses or highways.

Long-term Impacts and Mitigation. After construction, motor vehicles traveling to and from the proposed development will result in a long-term increase in air pollution emissions in the Petition Area.

To evaluate the potential long-term indirect ambient air quality impact of increased roadway traffic associated with the project, computerized emission and atmospheric dispersion models were used to estimate ambient carbon monoxide concentrations along roadways leading to and from the project. Maximum carbon monoxide concentrations typically coincide with peak traffic periods; therefore, air quality impacts were assessed during the morning and afternoon peak traffic periods evaluated by the traffic study (See Section 4.8.1 and Appendix H). Air quality analyses were conducted for the following intersections:

- Farrington Highway at Fort Weaver Road (Northbound Ramps);
- Farrington Highway at Leokū Street;
- Fort Weaver Road at Old Fort Weaver Road;
- Fort Weaver Road at Renton Road;
- Farrington Highway at Fort Barrette Road;
- North-South Road at H-1 Freeway (Eastbound Ramps);
- North-South Road at Farrington Highway; and
- North-South Road at Kapolei Parkway.

For the Ho'opili project, four scenarios were selected for the carbon monoxide modeling study: 1) Year 2007: Existing Conditions; 2) Year 2030: Without the Project; 3) Year 2030: With the Project and With the Transit Corridor; and 4) Year 2030: With the Project and Without the Transit Corridor.

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In the Year 2007: Existing Conditions Scenario, the highest worst-case one-hour concentration was predicted to occur during the morning near the intersection of Fort Weaver Road and Renton Road. A value of 12.1 milligrams per cubic meter (mg/m³) was predicted to occur at this location and time. Peak-hour worst-case values at the other locations and times studied for this scenario ranged between 4.6 and 11.0 mg/m³. All projected worst-case concentrations for this scenario complied with Federal standards; however, concentrations exceeded the more stringent State standards at two locations in the Petition Area (Fort Weaver Road at Renton Road and Fort Weaver Road at Old Fort Weaver Road).

In the Year 2030: Without the Project Scenario, the highest worst-case one-hour concentration was predicted to occur during the morning at the intersection of Farrington Highway and Fort Barrette Road. A value of 7.7 mg/m³ was predicted to occur at this location and time. Peak-hour worst-case values at the other locations and times ranged between 3.2 and 7.4 mg/m³. All projected worst-case concentrations for this scenario remained within the State and Federal standards.

In the Year 2030: With the Project and With the Transit Corridor Scenario, the highest worst-case one-hour carbon monoxide concentration was predicted to occur during the morning at the intersection of the North-South Road and Farrington Highway. A value of 8.2 mg/m³ was predicted to occur at this location and time. Peak-hour worst-case values at the other locations and times ranged between 4.6 and 7.8 mg/m³. All projected worst-case concentrations for this scenario remained within the State and Federal standards.

In the Year 2030: With the Project and Without the Transit Corridor Scenario, the predicted worst-case one-hour concentration continued to remain the same or increase slightly compared to the alternative with the project and with the transit corridor. Peak-hour worst-case values for this scenario ranged between 4.6 and 8.9 mg/m³. Although the predicted concentrations increased somewhat in this alternative, the values remained within the State and Federal standards.

Several assumptions were made concerning both traffic movement and worst-case meteorological conditions in this air quality analysis. The analysis assumed a wind speed of one meter per second with a steady direction for one hour will occur. A steady wind of one meter per second blowing from a single direction for an hour is extremely unlikely and may occur only once a year or less. With wind speeds of two meters per second, for example, computed carbon monoxide concentrations would be only about half the values given above.

Based on the air quality modeling results, worst-case carbon monoxide concentrations in the future with the project should be lower (better) than the existing levels and within the Federal and State standards.

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Depending on the demand levels, long-term impacts on air quality are also possible due to indirect emissions associated with a development's electrical power and solid waste disposal requirements. Based on the estimated demand levels and emission rates involved, any impacts will likely be negligible.

4.5 MAN-MADE HAZARDS

Existing Conditions

The Petition Area was historically in sugar cane cultivation until relatively recent times. The only known man-made hazardous site related to sugar cane cultivation in the vicinity was a fertilizer/pesticide mixing plant located on the adjacent DHHL property, and not within the Petition Area.

The State of Hawaii Department of Health (DOH) currently assesses the potential of hazards of former agricultural lands on human health based on known historic uses.

Anticipated Impacts and Mitigation Measures

On March 13, 2008, in an interdepartmental memorandum from the DOH Hazard Evaluation & Emergency Response Office (HEER) to the DOH Environmental Planning Office, HEER wrote: "The land under consideration for development of the Ho'opili Project mixed residential/commercial community was formerly used to grow sugar cane. The Draft EIS acknowledges the presence of potential contamination, and investigative work is being coordinated with the HEER Office." The Petitioner is working with DOH on a sampling methodology to determine the presence and levels of certain pesticides. Subsequent actions will be based on the results of the sampling.

Based on sampling done on the adjacent DHHL property, no impacts from pesticide use on the former sugar cane cultivation of the Petition Area are anticipated. Since the Ewa Plain was once mostly under sugar cultivation and large areas have subsequently been developed for residential use without any apparent ill effects, it is anticipated that future residents in the Petition Area will not be exposed to unacceptable levels of pesticides from past or present agricultural activities. During the public review period, the HEER recommended that soils be tested for residual pesticide contamination and that the presence of potential hazards be evaluated. The scope of the investigative work is currently being coordinated with the HEER Office to ensure that the study will be carried out in the most efficient and effective manner possible.

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4.6 VISUAL RESOURCES

Existing Conditions

The Petition Area is located in 'Ewa (the area roughly bounded by the H-1 Freeway to the north, Kapolei Golf Course, Kapolei Middle School and the Villages of Kapolei to the west, 'Ewa Villages to the south, and Honouliuli and Fort Weaver Road to the east). Most of 'Ewa is mostly open and is being cultivated. The major man-made features in 'Ewa besides roads (such as Farrington Highway and the North-South Road – under construction) are HECO's transformer station along Farrington Highway and its overhead 138kV powerlines and supporting tower structures crossing the H-1 Freeway, and running along Farrington Highway and North-South Road.

As is the case with the rest of 'Ewa, Parcels A, B and C of the Petition Area are presently undergoing various forms of diversified agriculture. A portion of the Petition Area is being developed during the construction of North-South Road (construction on-going). Views of the Wai'anae Mountains and Diamond Head are offered from certain locations of the project site. However, since most of the Petition Area is being actively cultivated, the public does not have the opportunity to experience these views. The most heavily traveled roadways in the vicinity of the site are the H-1 Freeway and Fort Weaver Road. In fact, as DPP noted in their comments on the EISPN, the *Ewa Development Plan Open Space Map* shows that "panoramic views" of the property are available from these roadways. While nearly all of the Petition Area is lower in elevation than the H-1 Freeway, views makai from H-1 Freeway are infrequent along the stretch of the freeway between where Kunia Road and Palehua Road cross the freeway. In some sections of the H-1 Freeway, it appears that the freeway was cut across slopes and/or the makai shoulder of the freeway was graded with berms. At posted freeway speeds of 60 miles per hour, viewing the Petition Area while driving is hazardous.

Most of the Petition Area is higher in elevation than Fort Weaver Road, but lower in elevation than the H-1 Freeway.

The most visible portion of the Petition Area from either the H-1 Freeway and/or Kunia Road/Fort Weaver Road is located near the intersection of the H-1 Freeway and Kunia Road or from Farrington Highway.

Anticipated Impacts and Mitigation Measures

The visual appearance of the Petition Area as well as the rest of 'Ewa (including the Kroc Center, UHWO and DHHL East Kapolei Development Parcel 2) will change from vacant scrub and cultivated vegetation to a landscaped mixed-use community with parks and open space. The HHCTC project, a possible transit maintenance and storage facility, transit-oriented development, project landscaping, and the project's architectural design will set the visual character of the Petition Area.

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Field visits were conducted from various points along the H-1 Freeway and Fort Weaver Road where “panoramic views” have been identified in the *Ewa Development Plan Open Space Map*.

West Loch Golf Course presents a large stretch of open space on the western side of Fort Weaver Road and views of the Ho'opili development (which will be at a higher elevation than Fort Weaver Road) will be available along this portion of the Fort Weaver Road, although the proposed Ho'opili development will be approximately 2,000 feet away. Planting trees along the eastern edge of the Petition Area will provide a landscaped character of the Ho'opili project, and serve to mitigate visual impacts along Fort Weaver Road.

Currently, when traveling from the Wai'anae direction of the H-1 Freeway near Exit 5 (East) Kunia Road/'Ewa/Waipahu, drivers have an unobstructed panoramic view towards the Ko'olau Mountains, Pearl City, Pearl Harbor, 'Ewa and the Pacific Ocean. The Petition Area, which will be located at a lower elevation than the freeway, will be visible from the freeway; and the visual character will change from open space to a planned development community. However, drivers' views towards the Ko'olau Mountains, Pearl City, Pearl Harbor, 'Ewa and the Pacific Ocean will likely remain unobstructed.

When traveling from further west along the H-1 Freeway, views towards the project site vary as certain segments of the H-1 Freeway contain berms and dense vegetation that obstruct views. While nearly all of the Petition Area is lower in elevation than the H-1 Freeway, views makai from H-1 Freeway are infrequent along the stretch of the H-1 Freeway between where Kunia Road and Palehua Road cross the H-1 Freeway. One unobstructed viewing opportunity will be the stretch of the H-1 Freeway crossing Honouliuli Gulch. Since the Petition Area will be located at a slightly lower elevation than the H-1 Freeway, this portion of the Ho'opili project will be highly visible. Careful attention to the architectural character and landscape architectural design of this portion (and the remainder) of the Petition Area will mitigate the impacts to existing views.

4.7 SOCIAL-ECONOMIC CHARACTERISTICS

A Social Impact Assessment for the Petition Area was conducted in November 2007 by Belt Collins Hawaii Ltd. This report is included in Appendix I. A Market Assessment for the Petition Area was conducted in March 2007 by Mikiko Corporation. This report is included in Appendix J. In addition, an Economic and Fiscal Impact Assessment for the Project was conducted in August 2007 by Mikiko Corporation. This report is included in Appendix K.

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4.7.1 History of the Ewa Development Plan Area

Prior to the 1970s, the island economy depended on a mix of tourism, military activity, construction, and plantation agriculture. In Ewa, the roles of the military and plantation agriculture in the region's economy has declined (Barbers Point Naval Air Station and Oahu Sugar Company). For the region surrounding Ho'opili, this evolution of the region's economy has been important.

The Oahu Sugar Company, which had used much of the 'Ewa Plain for sugar cultivation, ceased operations by 1995. The land became available for urban development, families in Waipahu and 'Ewa Villages lost a major source of income, and many older workers retired. 'Ewa became a truck farming area using the land and water released from sugar cultivation, with Aloun Farm, Inc. emerging as the island's leading producer of vegetables. The Kapolei area was designated as O'ahu's "Second City" decades ago. James Campbell Industrial Park was created as the island's leading heavy industrial area. The industrial park has seen significant recent growth, including construction of a new Honolulu Advertiser printing plant. The Kapolei urban center was slower to develop but has boomed since 2000. Commercial and residential areas began to be built in the 1990s. In addition, Kapolei has office buildings that accommodate State, City, and the private sector workers, as well as extensive retail areas. The major landowner in the region, James Campbell Company LLC, reports nearly 25,000 jobs in the area, expecting that number to grow to about 65,000 by 2025. Kalaehoa Harbor (formerly Barbers Point Harbor), a deep draft harbor, is nearby. The harbor and the Industrial Park are included in Foreign Trade Zone No. 9.

The Kapolei urban center was slower to develop but has boomed since 2000. Commercial and residential areas began to be built in the 1990s. Located within the *Ewa Development Plan Area*, Ko 'Olina now includes a hotel, a time share resort, high-end vacation homes and condos; a marina has been built and is in use. Residents are now served by a public library, local police and fire stations, a satellite city hall office and other governmental agencies. There is a variety of housing types in 'Ewa, including senior housing, as well as public and private schools and preschools. 'Ewa has one of O'ahu's largest private recreation area, Hawaiian Waters Adventure Park, in addition to community parks and golf courses. The City's transit plans call for a fixed guideway alignment serving the 'Ewa area.

4.7.2 Population

Existing Conditions

According to the City and County of Honolulu Department of Planning and Permitting (DPP), the year 2006 population of the *Ewa Development Plan Area* (Ewa DPA) was 86,000 (DPP, 2006). This comprised an increase of 25.1 percent from its 2000 population of 68,718. The DPP expects the population of the Ewa DPA to increase to 180,200 by the year 2030. In comparison, the population for the City and County of Honolulu as a whole

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increased only 3.8 percent from 876,156 to 909,863 between 2000 and 2006. The City and County of Honolulu is expected to experience a population growth of 27.5 percent (241,144 persons) from 876,156 to 1,117,300 total residents during the same 30-year period.

The Petition Area is presently undeveloped and contains cultivated fields for diversified agriculture, pasturage, and agricultural research, and fallow fields formerly used for sugar cane cultivation. There are no residents currently residing within the Petition Area.

Anticipated Impacts and Mitigation Measures

The Ho'opili project will provide up to 11,750 units. Assuming the O'ahu 2000 average size of households of just less than 3 persons per household, the Ho'opili project would have an overall population of approximately 35,290 residents. The majority of the population moving into the Ho'opili project is expected to come from O'ahu residents relocating from other areas of the island. By 2030, employment opportunities at the project are projected to increase in-migration to the island of O'ahu by approximately 2,170 residents, with 1,020 residents from out-of-State. In addition, its residential opportunities could attract some 660 new county residents of which 430 might also be new to the State.

'Ewa has been identified as a development plan area into which new housing and population are to be encouraged. The population increase is therefore consistent with the City and County of Honolulu's policy to direct future growth to this region. With the population of the Ho'opili project mainly consisting of O'ahu residents that have relocated from other parts of the island, this increase in population has already been incorporated into the City and County of Honolulu's growth projection, and as such, no mitigation measures are foreseen for the proposed project.

4.7.3 Housing

Existing Conditions

A Market Assessment for the Petition Area was conducted in March 2007 by Mikiko Corporation. This report is summarized below and included in Appendix J.

Currently, O'ahu is experiencing a shortage of suitable housing units, with an estimated pent-up demand for approximately 17,000 units. Based on projected growth patterns, O'ahu will need more about 98,000 more housing units by the year 2030, including the 17,000 currently estimated as pent-up demand.

Anticipated Impacts and Mitigation Measures

Over the next 20 years, the Ewa DPA is expected to experience a faster growth rate than any other area of O'ahu. The Ewa DPA accounted for 20,797 housing units in 2000 and

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the housing supply is projected to triple by 2030 to 60,552 housing units. By 2000, its residential areas were largely inhabited by young families. In the newer subdivisions, home ownership is much higher than for O'ahu as a whole, but the rental inventory for low-income families in 'Ewa remains low. To accommodate the projected growth, 34,600 housing units will be needed in this DPA between 2000 and 2025. With most of O'ahu's new housing stock being planned for development in the 'Ewa and Central O'ahu regions of the island, this trend is expected to continue over the next several decades to accommodate the anticipated population growth and housing demand on O'ahu. The 'Ewa region offers the island's major opportunity for home ownership at relatively reasonable prices because of lower land costs. The Ho'opili project will provide up to 11,750 housing units which could represent a partial solution to O'ahu's current housing shortage.

O'ahu is also experiencing a need for housing for middle-income families. By developing new housing for the middle-income group, Ho'opili responds to that need. Moreover, new housing construction will help to limit price increases for both new and resale housing by increasing new housing stock.

The majority of Ho'opili's 11,750 residential units would consist of for-sale multi-family homes. The Project will also include for-sale single-family units and multi-family rental units. Ho'opili's single-family units would be developed at approximately 5- to 8-units per net acre. Multi-family units will range from low-rise townhome units at approximately 10- to 14-units per acre, to mid-rise development at 30- to 50-units per acre.

The proposed housing will be in neighborhoods that integrate low- and medium-density or medium- and high-density residential areas. As a result, Ho'opili will cater to a range of income levels. In accordance with the City and County of Honolulu's affordable housing guidelines, up to 30 percent of the total number of units are expected to be developed as affordable housing units. Details of the affordable housing program in the Ho'opili project that pertain to the regulations and programs of the City and County of Honolulu will be coordinated with the County prior to development.

Affordable housing unit pricing will need to be coordinated with City and County of Honolulu departments, as pricing will be based on then-prevailing County rules and market conditions. The project is in the planning process so there may be an opportunity to identify a few house lots throughout the proposed project for the development of group homes for persons with special needs.

Ho'opili may be compared to Hawai'i Kai and Mililani, planned communities that have become home to thousands of O'ahu residents who, as they age, choose to grow older within their communities rather than move to other neighborhoods. In addition to home ownership opportunities, the project will provide commercial, educational, and recreational opportunities which will enable residents the opportunity to live, work, learn, play, and shop within the community.

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4.7.4 Economic Impacts

Existing Conditions

Presently, the Petition Area generates revenue in the form of rent from Aloun Farm Inc., Sugarland Farms, Inc., Rocker G. Livestock, Larry G. Jefts, Garst Seed Company, Roberts Hawaii, School Bus, Inc., and the Hawaii Agricultural Research Center; sales taxes from the sale of produce; and income taxes from employees of the various lessees. The current approximate annual real property tax revenue paid to the City and County of Honolulu for the Petition Area is approximately \$51,000.

Anticipated Impacts and Mitigation Measures

The Petitioner estimates that the development of the Ho'opili project will cost approximately \$4.6 billion (in Year 2007 dollars), spent over the project timeline of 2009 – 2030.

The Petitioner is committed to provide or finance its share of infrastructure and facility improvements to support the Ho'opili project. The Petitioner continues to coordinate with major planning and development efforts by other regional developers, such as UHWO, DHHL and HCDA. Meetings among regional developers, as well as with County and State agencies, have been held on a regular and frequent basis to discuss the shared infrastructure and facility improvements. The project will require some commitment of State funds and resources. The State and County will have to extend additional public services for the proposed project, these include: repair and maintenance of roads, water systems, sewer systems, drainage systems and parks; transit, police, fire protection and emergency medical services; and schools.

The cost of the aforementioned public services will be offset by the revenues to the State and County that will be generated by the project. During construction, the project will generate excise taxes via the sale of building supplies and equipment, and on professional services. It will also generate income taxes from those involved in the construction of the project. At full build out, the project will include the development of residential, commercial, and industrial land that will generate property taxes and sales taxes each time a property is resold. The project will perpetually generate income, conveyance, and other taxes for the State, and property and other taxes for the County.

The project's most significant fiscal impact would be the higher real property taxes that would be generated compared to those currently paid. In Year 2007 dollars, the Ho'opili project is projected to generate an additional \$7.7 million in real property tax revenues in 2015, or \$29.1 million on an annual basis upon the project's completion in 2030. These real property tax collections will continue after 2030.

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In addition to real property taxes, the City and County of Honolulu obtains liquid fuel, utility franchise, motor vehicle weight, and other license and permit fees from residents and businesses. The Ho'opili project anticipates approximately \$0.6 million in additional City and County of Honolulu revenues by 2030. Also upon completion, the project could generate approximately \$2.1 million per year in additional Gross Excise Tax revenues to the State. As illustrated in Exhibit 5-2 of Appendix K, additional taxes earned by the City and County of Honolulu as a result of the Ho'opili project are estimated at \$8.7 million in 2015, or \$31.1 million per year by 2030 and thereafter.

4.7.5 Employment

Existing Conditions

The civilian workforce in the Ewa DPA was modest in 2000, totaling about 15,000 employees. With the closure of the Naval Air Station (NAS) Barbers Point, the largest job cluster in the Ewa DPA was in education and health services. Since then, the island economy has grown steadily. The island of O'ahu and the State of Hawai'i have emerged with much lower unemployment rates compared to the rest of the nation. Unemployment continues at very low rates (2.6% as of September 2007) and state tax revenues grew by 11% in FY2006 compared to the previous year. The healthy economy is visible in new store openings, construction in industrial areas, and investment by U.S. mainland real estate investors in industrial and commercial properties in the region.

Presently, the Petition Area produces employment and income in the form of short-term agricultural and other leases. Sugarland Farms and Aloun Farm, Inc. hold the major leases on portions of the Ho'opili property and sublease to additional farmers growing mainly truck crops that are sold in Honolulu markets.

Anticipated Impacts and Mitigation Measures

As development proceeds, existing agricultural operations will have to relocate off-site. Eventually, approximately 80 agricultural-related jobs and \$1.7 million per payroll will be ultimately be lost from the Petition Area, but the jobs and the agricultural operations will likely relocate to other locations on O'ahu, which has many other acres of former sugar cane and pineapple lands. Moreover, many more employment opportunities will be gained in different job sectors.

According to projections by Decision Analysts Hawaii, Inc. job growth in the Kapolei region will increase by nearly 160% over the next 20 years. Since the 2000 Census, jobs in the Kapolei region grew by 32 percent to nearly 25,000 in 2005. Reflecting the enormous growth that is expected to drive Kapolei's planned expansion, the projections show that jobs will increase to nearly 65,000 by 2025. The project will generate direct, indirect, and induced jobs both within the Petition Area and on an island-wide basis. These jobs will occur both during construction and after construction as operational employment.

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The project is expected to generate approximately 66,600 full-time equivalent (FTE) person-years of development related jobs during the construction phase of the project. The project will generate direct jobs via on-site retail and office facilities at Ho'opili's business park. Excluding those jobs that may relocate to Ho'opili from elsewhere in the State, approximately ~~680~~ 1,550 net new jobs are expected to be created (by 2030) through direct employment associated with the project. In addition, the project will generate indirect jobs via the supply of goods and services. Applying State employment multipliers to the project, approximately 870 jobs will be created through indirect employment associated with the project.

At full build out, employment associated with the Petition Area ~~employment~~ is expected to account for approximately 7,000 ~~4,550 net~~ new jobs. Consistent with the Ewa DP and the *Kapolei Area Long Range Master Plan*, the new jobs will generate employment in 'Ewa to reduce the need for residents traveling to downtown Honolulu for work-related purposes.

4.8 INFRASTRUCTURE AND UTILITIES

Within the Petition Area, there are no significant on-site infrastructure facilities (such as a water reservoir or a wastewater treatment plant). Extensive on-site and off-site improvements will be made, including roadways; water storage and transmission facilities; wastewater collection lines, and electrical/communication systems. Bills Engineering Inc. prepared preliminary engineering and drainage reports for the proposed project. Key elements of the reports are summarized in the following sections.

4.8.1 Transportation

A traffic impact analysis report (TIAR) for the project was prepared by Wilbur Smith & Associates (WSA) in February 2008 to identify existing traffic conditions. This report is included in Appendix L.

Existing Conditions

Existing Roadways

The following provides a brief discussion of the existing regional roadway network in the vicinity of the Petition Area.

H-1 Freeway (H-1) (State-owned/maintained). H-1 stretches east-west through Central Honolulu and the 'Ewa District. It provides connections of the Petition Area to areas outside of 'Ewa. East of the Waiawa interchange, it provides five lanes of travel in each direction. Between the Waiawa and Kunia interchanges, the freeway provides four lanes

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of travel in each direction. West of the Kunia interchange, the freeway has three travel lanes in each direction.

H-2 Freeway (H-2) (State-owned/maintained). H-2 extends north-south through Central O'ahu and connects to the H-1 Freeway. It provides four lanes of travel in each direction from Waiawa interchange to Mililani, where it narrows to two lanes of travel in each direction.

Farrington Highway (City-owned/maintained). Farrington Highway extends east-west, parallel to the H-1 Freeway, and provides access to the Petition Area. It provides four lanes of travel in each direction from the Kamehameha interchange to Old Fort Weaver Road. Farrington Highway extends westward with one travel lane in each direction to the Villages of Kapolei where it widens to provide two lanes of travel in each direction from Kapolei Golf Course Road into the City of Kapolei. Farrington Highway provides one travel lane in each direction in the vicinity of the Petition Area. The City and County of Honolulu has plans for the widening of Farrington Highway to two lanes in each direction with a right-of-way width of 100 feet between the Kapolei Golf Course and Fort Weaver Road. The widening of Farrington Highway has long been planned and is a transportation facility on the Oahu Regional Transportation Plan (ORTP).

Kamehameha Highway (State-owned/maintained). Kamehameha Highway extends north-south to accommodate traffic traveling from the north and south shores of O'ahu. It is a four-lane highway, with separate left- and right-turn lanes at Waipahu Street, Lumi'au'au Street, Lumi'aina Street, Waipi'o Uka Street, and Ka Uka Boulevard intersection.

The following provides a brief discussion of the existing local roadway system in the vicinity of the Petition Area.

Fort Weaver Road (State-owned/maintained). This roadway extends north-south, connecting the H-1 Freeway with the Farrington Highway. North of Farrington Highway, Fort Weaver Road becomes Kunia Road. Fort Weaver Road serves as a six-lane expressway between the H-1 Freeway and Laulaunui Street. The roadway serves as a four-lane main arterial roadway with a median divider and left turn lanes at cross streets from Farrington Highway to North Road. This road is currently undergoing a widening project.

Fort Barrette Road (City-owned/maintained). This roadway extends north-south, connecting the Kalaeloa Redevelopment Area and Makakilo, and provides access to Farrington Highway and H-1 Freeway. Makai of Farrington Highway to Franklin D. Roosevelt Avenue, Fort Barrette Road serves as a two-lane divided roadway. Mauka of Farrington Highway, it serves as a four-lane divided roadway.

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Old Fort Weaver Road (City-owned/maintained). This two-lane roadway provides access to Farrington Highway and Fort Weaver Road.

Laulaunui Street (City-owned/maintained). This four-lane minor arterial roadway extends east-west between Kaihuopalai Street and Laulaunui Lane.

Leokū Street (City-owned/maintained). This two- to four-lane minor roadway extends north-south between Waipahu Street and Leokane Street.

Kunia Road (State-owned/maintained). This roadway is an extension of Fort Weaver Road north from Farrington Highway and the H-1 Freeway Interchange to provide access into Central O'ahu.

Kupuna Loop (City-owned/maintained). This four lane looped arterial roadway provides direct access with Kunia Road at both its origin and terminus.

Renton Road (City-owned/maintained). This two- to four-lane minor arterial roadway extends east-west, connecting Fort Weaver Road, Kapolei Parkway and Franklin D. Roosevelt Avenue.

Roads Under Construction

The State Department of Transportation is constructing the North-South Road along the eastern boundary of the UHWO campus site. With a 128-foot right-of-way, North-South Road will include three vehicular lanes with paved shoulders in each direction, a 28-foot-wide median that could accommodate an exclusive transit corridor, and sidewalks on both sides of the road. A new interchange with the H-1 Freeway is currently being constructed. North-South Road will connect the 'Ewa Beach and 'Ewa Marina areas with the H-1 Freeway (requiring the completion of 0.7 miles of Kapolei Parkway through Varona Village).

Public Transit

Oahu Transit Services, Inc. under contract to the City and County of Honolulu provides TheBus fixed-route service to the communities adjacent to and in the general vicinity of the proposed Ho'opili project. These routes include both suburban trunk routes and express routes. TheBus operates seven bus lines that directly serve the proposed Project and its immediate vicinity. In addition, TheBoat provides express ocean-bound ferry service between Kalaeloa and Honolulu Harbors. The existing public transit system and proposed improvements are discussed in more detail in Section 4.9.6 of this Draft EIS.

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Existing (2006) Traffic

Currently, neither the City and County of Honolulu nor the State of Hawai'i have guidelines for identifying the transportation impacts caused by a project. However, WSA consulted with DOT Highways Division, DTS and DPP Traffic Branch on the methodology for the TIAR. For the purposes of this TIAR, certain thresholds were identified to analyze the project's transportation impacts at intersections, freeway segments and ramp-freeway junctions in the vicinity of the Ho'opili project. These guidelines are presented below.

Intersections

- A project would cause a transportation impact at an intersection if it degrades the Level of Service (LOS)¹ of the intersection LOS to E or worse (with A being the best and F being the worst).
- A project would cause a transportation impact at an intersection operating at LOS E or F if it degrades the volume-to-capacity ratio of the intersection by more than 10 percent.

Freeway Segments

- A project would cause a transportation impact at a freeway segment if it degrades the LOS of the freeway segment to LOS E or worse.

Ramp-Freeway Junctions

- A project would cause a transportation impact at a ramp-freeway junction if it degrades the LOS of the ramp-freeway to LOS E or worse.

Existing (2006) Intersection Operating Conditions

Existing intersection operating conditions in the vicinity of the project were conducted in April 2006. The AM peak hour of traffic occurred between 6:00 AM to 8:00 AM, and the PM peak hour of traffic occurred between 3:00 PM to 5:00 PM, respectively. A total of 12 intersections were analyzed of which nine are signalized, and three are Two-Way Stop-Controlled (TWSC) intersections. Under existing AM peak hour conditions, 7 of the 12 intersections operated at what the traffic engineering consultant considers an acceptable Level of Service (LOS) D or better.

Similar to the AM peak hour conditions, the existing PM peak hour conditions reveal that five intersections operate at an unacceptable LOS E or F.

¹ Operations of the study intersections were evaluated using Level of Service (LOS) calculations. LOS is a qualitative description of the performance of an intersection based on the average delay per vehicle. Intersection levels of service range from LOS A, which indicates free flow or excellent conditions with short delays, to LOS F, which indicates congested or overloaded conditions with extremely long delays. LOS for signalized intersections was calculated using the Highway Capacity Manual 2000 (HCM 2000) methodology. The LOS is based on the average delay (in seconds per vehicle) for the various movements within the intersection. A combined weighted average delay and LOS are presented for each of the signalized intersections. The average delay for signalized intersections was calculated using the Synchro analysis software.

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Existing (2006) Freeway Segment Operating Conditions

Roadway and traffic control information was obtained during AM and PM peak hours of traffic for 10 existing freeway segments on April 2006. Existing mainline freeway characteristic including the number of lanes, volumes, and posted speed limits were used to calculate the levels of service. The results of the existing freeway segment analysis using *Highway Capacity Software* (HCS) indicate that under existing AM peak hour conditions, 9 of the 10 freeway segments operate at what the traffic engineering consultant considers an acceptable LOS D or better. Freeway segment, H-1 Eastbound (west of Pāiwa Street) operated at an unacceptable LOS E.

Under existing PM peak hour conditions, 8 of the 10 freeway segments operate at what the traffic engineering consultant considers an acceptable LOS D or better. Freeway segments, H-1 Westbound (west of Pāiwa Street) and H-1 Westbound (east of Kamehameha Highway) operated at an unacceptable LOS E.

Existing (2006) Ramp-Freeway Junction Operating Conditions

Roadway and traffic control information was obtained during AM and PM peak hours of traffic for existing ramp-freeway junctions on April 2006. Similar to the existing freeway segment analysis, HCS software was used to analyze the operating conditions of the existing ramp-freeway junctions. Under existing AM peak hour conditions, four ramp-freeway junctions operated at what the traffic engineering consultant considers an acceptable LOS D or better.

Under existing PM peak hour conditions, two ramp-freeway junctions operated at what the traffic engineering consultant considers an acceptable LOS C. Ramp-freeway junctions, H-1/Fort Weaver Road (Westbound Off-Ramp) and H-1/Fort Weaver Road (Westbound Loop Off-Ramp), operated at an unacceptable LOS F.

Future Baseline Traffic Conditions (without Ho'opili project)

Full development of the Ho'opili project is expected to occur by 2030. As such, traffic volumes for year 2030 conditions were estimated based on the forecasts provided by the 2030 Oahu Metropolitan Planning Organization (OMPO) Transportation Model. This approach resulted in a cumulative impact assessment for future conditions and other anticipated developments expected by year 2030 near the Ho'opili project (such as UHWO, DHHL East Kapolei Development Parcel 2, and the Kroc Center) plus the expected growth in housing and employment for the remainder of the 'Ewa region. To identify the operating conditions of the future transportation network located in the vicinity of the project, a 2030 Baseline Conditions (without the project) analysis was prepared to compare traffic impacts under with and without project conditions.

The traffic study conducted for the UHWO campus (prepared by PB Americas, Inc.)

HO'OPILI

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indicates that several major roadways would be improved between 2009 and 2025 including: The widening of H-1 Freeway and Farrington Highway, a new North-South Road, a new interchange at H-1 Freeway and connection to the completed Kapolei Parkway. In addition, the 2030 Oahu Regional Transportation Plan (ORTP), mentions that the high-occupancy vehicle (HOV) lanes on H-1 Freeway are planned to be extended from Waiawa Interchange (H-1/H-2 Freeway Merge) to the Makakilo Interchange. Roadway improvements anticipated by Year 2025 include the widening of Fort Barrette Road and Fort Weaver Road, the completion of the East-West Connector Road, and additional internal roadways proposed by Ho'opili and DHHL East Kapolei Development Parcel 1 (See Figure 4.2: 'Ewa Regional Transportation Plan).

The UHWO traffic study also reported that a review of the Ewa Highway Master Plan would include the inclusion of a loop ramp at the North-South Road Interchange. Furthermore, if right-of-way (ROW) is available acceleration and deceleration lanes lengths may be increased. As such, the above improvements were assumed to be in place by 2030.²

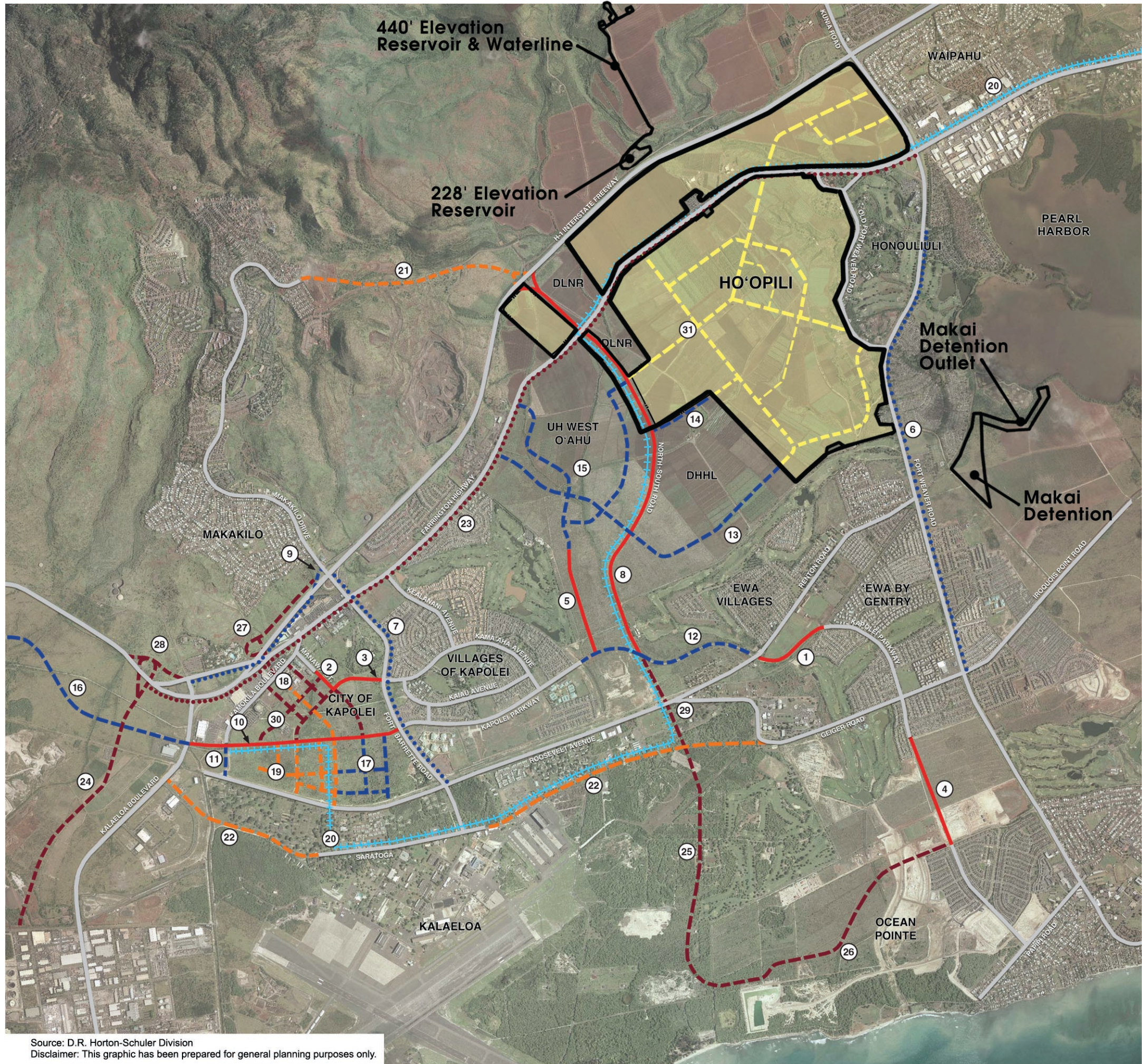
The Ho'opili project borders Farrington Highway which is a transportation facility on the ORTP. The Petitioner will coordinate with the City and County of Honolulu Department of Design and Construction (DDC) regarding the expanded right-of-way required for the City and County of Honolulu's long-planned widening of Farrington Highway, as well as improvements to the highway (such as turning lanes) which are needed to mitigate traffic that can be directly attributed to the proposed development.

The Petitioner will continue to coordinate with DOT on the planning of the H-1 Freeway/North-South Road Interchange. Bicycle facilities not located within State highway right-of-ways and City and County of Honolulu dedicable roadways will be privately-owned and maintained by a community association.

Projected Intersection Operating Conditions

During the AM peak hour, 17 of the 19 study intersections would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (LOS D or better) (See Table 4.1). Intersections operating at what the traffic engineering consultant identifies as unacceptable traffic conditions (LOS E or worse) include: Fort Weaver Road/Renton Road and Farrington Highway/Fort Barrette Road. During the PM peak hour, 16 of the 19 study intersections would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.2). The traffic engineering consultant identified the following intersections as operating at unacceptable traffic conditions: Fort Weaver Road/Renton Road; Farrington Highway/West Old Fort Weaver Road; and Farrington Highway/Fort Barrette Road.

² Based on feedback from DOT, 1) A Diamond (not a "clover leaf") interchange is being planned at the North-South Road/H-1 Interchange; and 2) The WSA traffic analysis did not assume that the loop ramp will be in place by 2030.



2006

1. Kapolei Parkway between Renton Rd. and Kolowaka Dr. New Road - Completed
ORTP 30 Year Plan: www.oahumpo.org/ortp/index.html
2. Manawai Eastern Extension to Ft. Barrette Rd. New Road - Completed
ORTP 30 Year Plan: www.oahumpo.org/ortp/index.html
3. Kama'aha Ave. Extension to Ft. Barrette Rd. New Road - Completed
Honolulu Advertiser 7/26/06 & Campbell FYI Oct 2006
4. Kapolei Parkway South of Geiger Rd. New Road - Under Construction
Honolulu Star-Bulletin 9/28/06
5. DHHL Road between UH West O'ahu & Kapolei Parkway New Road - Under Construction
Honolulu Advertiser 9/11/06

2007-2009

6. Ft. Weaver Rd. between 'A'awa Dr. and Geiger Rd. Widening Begins 2006
Honolulu Advertiser 9/4/06
7. Ft. Barrette Rd. between H-1 and Roosevelt Ave. Widening Begins 2008
Campbell: Kapolei FYI March 2006 www.kapolei.com
8. North-South Rd. between H-1 and Future Kapolei Parkway New Road - Under Construction
Campbell: Kapolei FYI August 2006 www.kapolei.com
9. Kapolei Interchange at H-1 and Makakilo Dr. New Road - In Design
Honolulu Advertiser 7/26/06
10. Kapolei Parkway west of Ft. Barrette Rd. New Road - Under Construction
DR Horton-Schuler Homes/Campbell: Kapolei FYI August 2006 www.kapolei.com
11. Kamokila Extension New Road - In Design
Honolulu Advertiser 10/11/06
12. Kapolei Parkway west of Renton Rd. Out to Bid
Confirmed w/DPP 1/11/07
13. East-West Rd. from Ho'opili to Farrington Hwy. New Road - In Plan
Honolulu Advertiser 9/11/06 & PBR HAWAII
14. DHHL mauka east-west connection to North-South Rd. New Road - In Plan
Department of Hawaiian Home Lands (DHHL)
15. UH West O'ahu roads south of Farrington Hwy. New Road - In Plan
PBR HAWAII
16. Kapolei Parkway from Kalaeloa Blvd. to Ko Olina. New Road - In Plan
Kapolei Master Plan: www.kapolei.com/Business/maps.htm
17. Mehana Streets Phase One, west of Ft. Barrette Rd. New Road - In Plan
DR Horton-Schuler Homes

2010-2015

18. Wakea St. between Farrington Hwy. & Roosevelt Ave. New Road - In Plan
Kapolei Master Plan: www.kapolei.com/Business/maps.htm
19. Mehana Streets Phase Two, south of Kapolei Parkway New Road - In Plan
DR Horton-Schuler Homes
20. Rail Transit along Farrington Hwy. & North-South Rd. New Road - In Plan
City & County of Honolulu
21. Makakilo Connector between Makakilo Dr. and H-1 New Road - In Plan
ORTP 30 Year Plan: www.oahumpo.org/ortp/index.html
22. Saratoga Realignment from Kalaeloa Blvd. to Geiger Rd. New Road - In Plan
Kalaeloa Master Plan: www.hcdaweb.org

2016-Beyond

23. Farrington Hwy. between Ft. Weaver Rd. to Palailai Interchange Widening - In Plan
Star-Bulletin 2/19/06
24. Hanua St. H-1 to Malakole St. New Road - In Plan
Star-Bulletin 2/19/06
25. Keone'ula Rd. continuation of North-South Rd. through Kalaeloa New Road - In Plan
Kalaeloa Master Plan: www.hcdaweb.org
26. Keone'ula Rd. to Ocean Pointe continuation of North-South Rd. New Road - In Plan
Kalaeloa Master Plan: www.hcdaweb.org
27. Kapolei Interchange alternate northern route to Makakilo Dr. New Road - In Plan
Honolulu Advertiser 9/27/06
28. Palailai Interchange at Hanua St. and H-1 New Road - In Plan
ORTP & Honolulu Advertiser 9/27/06
29. North South Rd. between Future Kapolei Parkway and Roosevelt Ave. New Road - In Plan
'Ewa Development Plan
30. City of Kapolei Streets New Road - In Plan
Kapolei Master Plan: www.kapolei.com/Business/maps.htm
31. Ho'opili Roads New Roads - In Plan

Roads within Ho'opili will be phased in accordingly.

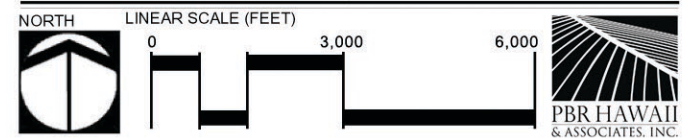
LEGEND

- Project Site Boundary
- Petition Area
- Existing Roads
- Completed/Under Construction (Present)
- Proposed Roads (2007-2009)
- Proposed Improvements (2007-2009)
- Proposed Roads (2010-2015)
- Proposed Roads (2016-Beyond)
- Proposed Improvements (2016-Beyond)
- Rail
- Ho'opili Roads

Figure 4.2: 'Ewa Regional Transportation Plan

HO'OPIILI

O'ahu, Hawaii'i



Source: D.R. Horton-Schuler Division
Disclaimer: This graphic has been prepared for general planning purposes only.

HO'OPILI

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Table 4.1. Year 2030 Baseline AM Peak Hour Intersection Operations

Intersection	Control	Year 2030 Without Project	
		Delay	LOS
External Intersections			
Kunia Rd./Kunia Loop	Signal	12.8	B
Kunia Rd./H-1 WB On-Ramp*	TWSC	3.3	A
Kunia Rd./H-1 EB Ramps	Signal	8.9	A
Farrington Hwy./Fort Weaver Rd. SB Ramps	Signal	5.2	A
Farrington Hwy./Fort Weaver Rd. NB Ramps	Signal	3.0	A
Farrington Hwy./Leoku St.	Signal	18.0	B
Fort Weaver Rd./Laulaunui St.	Signal	29.8	C
Fort Weaver Rd./Old Fort Weaver Rd.	Signal	16.7	B
Fort Weaver Rd./Renton Rd.	Signal	78.1	E
Farrington Hwy./East Old Fort Weaver Rd.**	TWSC	16.4	C
Farrington Hwy./West Old Fort Weaver Rd.**	TWSC	22.0	C
Farrington Hwy./Fort Barrette Rd.	Signal	62.7	E
North-South Rd./H-1 WB Ramps	Signal	32.4	C
North-South Rd./H-1 EB Ramps	Signal	38.1	D
North-South Rd./Farrington Hwy	Signal	35.2	D
North-South Rd./North UH Connector	Signal	7.3	A
North-South Rd./East-West Road	Signal	27.0	C
North-South Rd./Kapolei Pkwy.	Signal	34.8	C
East-West Rd./Old Fort Weaver Rd.	Signal	22.3	C

Notes:

* - This location is stop-controlled under existing conditions, but is signalized under 2030 conditions.

** - This location is stop-controlled under 2030 conditions, but is signalized under 2030 plus project

TWSC – Two-way Stop-Control

Signal – Traffic Signal

Delay represents average delay presented in seconds per vehicle.

Delay and LOS are presented for worst approach for two-way stop controlled intersections.

Bold type indicates LOS E or F.

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

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Table 4.2. Year 2030 Baseline PM Peak Hour Intersection Operations

Intersection	Control	Year 2030 Without Project	
		Delay	LOS
External Intersection			
Kunia Rd./Kunia Loop	Signal	17.1	B
Kunia Rd./H-1 WB On-Ramp*	TWSC	14.1	B
Kunia Rd./H-1 EB Ramps	Signal	8.8	A
Farrington Hwy./Fort Weaver Rd. SB Ramps	Signal	14.0	B
Farrington Hwy./Fort Weaver Rd. NB Ramps	Signal	8.0	A
Farrington Hwy./Leoku St.	Signal	47.4	D
Fort Weaver Rd./Laulaunui St.	Signal	26.3	C
Fort Weaver Rd./Old Fort Weaver Rd.	Signal	45.0	D
Fort Weaver Rd./Renton Rd.	Signal	63.4	E
Farrington Hwy./East Old Fort Weaver Rd.**	TWSC	32.0	D
Farrington Hwy./West Old Fort Weaver Rd.**	TWSC	55.4	F
Farrington Hwy./Fort Barrette Rd.	Signal	67.5	E
North-South Rd./H-1 WB Ramps	Signal	25.6	C
North-South Rd./H-1 EB Ramps	Signal	15.7	B
North-South Rd./Farrington Hwy	Signal	35.8	D
North-South Rd./North UH Connector	Signal	13.5	B
North-South Rd./East-West Road	Signal	28.6	C
North-South Rd./Kapolei Pkwy.	Signal	54.2	D
East-West Rd./Old Fort Weaver Rd.	Signal	20.6	C

Notes:

* - This location is stop-controlled under existing conditions, but is signalized under 2030 conditions.

** - This location is stop-controlled under 2030 conditions, but is signalized under 2030 plus project

TWSC – Two-way Stop-Control

Signal – Traffic Signal

Delay represents average delay presented in seconds per vehicle.

Delay and LOS are presented for worst approach for two-way stop controlled intersections.

Bold type indicates LOS E or F.

Source: Wilbur Smith Associates, *Traffic Impact Analysis Report for Ho'opili (2007)*

Projected Freeway Segment Operating Conditions

During the AM peak hour, 6 of the 10 freeway segments studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions. During the PM peak hour as well, 6 of the 10 study freeway segments would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.3). Under 2030 Baseline Conditions (without the project), cumulative traffic impacts occur at a total of eight freeway segments.

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Table 4.3. Year 2030 Baseline Peak Hour Freeway Segment Operations

Freeway	Segment	Year 2030 Without Project		
		Volume	Density	LOS
AM Peak				
H-1 EB	S/O Makakilo Dr.	5434	37.8	E
H-1 EB	W/O Kunia Rd.	8197	>45	F
H-1 EB	W/O Paiawa St.	9906	43.4	E
H-1 EB	E/O Kamehameha Hwy.	7512	38.8	E
H-2 NB	At Ka Uka Blvd.	3184	21.3	C
H-1 WB	S/O Makakilo Dr.	3259	21.8	C
H-1 WB	W/O Kunia Rd.	3735	18.3	C
H-1 WB	W/O Paiawa St.	4366	16.6	B
H-1 WB	E/O Kamehameha Hwy.	3069	20.5	C
H-2 SB	At Ka Uka Blvd.	6273	30.7	D
PM Peak				
H-1 EB	S/O Makakilo Dr.	4680	31.3	D
H-1 EB	W/O Kunia Rd.	5833	28.5	D
H-1 EB	W/O Paiawa St.	7137	27.2	D
H-1 EB	E/O Kamehameha Hwy.	4249	28.4	D
H-2 NB	At Ka Uka Blvd.	6220	>45	F
H-1 WB	S/O Makakilo Dr.	6365	>45	F
H-1 WB	W/O Kunia Rd.	7860	43.3	E
H-1 WB	W/O Paiawa St.	7931	25.2	C
H-1 WB	E/O Kamehameha Hwy.	7766	42.2	E
H-2 SB	At Ka Uka Blvd.	4616	22.5	C

Notes:

Density is given in pc/mi/ln.

Bold type indicates LOS E or F

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

Projected Ramp-Freeway Junction Operating Conditions

During the AM peak hour, 7 of the 10 ramp-freeway junctions studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions. During the PM peak hour, 7 of the 10 ramp-freeway junctions studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.4). In considering both AM and PM peak hours under 2030 Baseline Conditions (without the project), cumulative traffic impacts occur at a total of six ramp junctions.

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Table 4.4. Year 2030 Baseline Ramp-Freeway Junction Operations

Location	Ramp	Year 2030 Without Project	
		Delay*	LOS
AM Peak			
H-1/Fort Weaver Road	WB Off-Ramp	16.0	B
H-1/Fort Weaver Road	WB Loop Off-Ramp	1.3	A
H-1/Fort Weaver Road	WB On-Ramp	15.0	B
H-1/Fort Weaver Road	EB Off-Ramp	37.4	E
H-1/Fort Weaver Road	EB On-Ramp	24.8	F
H-1/Fort Weaver Road	EB Loop On-Ramp	26.3	F
H-1/North-South Road	WB Off-Ramp	20.3	C
H-1/North-South Road	WB On-Ramp	13.5	B
H-1/North-South Road	EB Off-Ramp	25.0	C
H-1/North-South Road	EB On-Ramp	28.8	D
PM Peak			
H-1/Fort Weaver Road	WB Off-Ramp	38.0	F
H-1/Fort Weaver Road	WB Loop Off-Ramp	19.9	F
H-1/Fort Weaver Road	WB On-Ramp	26.0	C
H-1/Fort Weaver Road	EB Off-Ramp	28.8	D
H-1/Fort Weaver Road	EB On-Ramp	18.3	B
H-1/Fort Weaver Road	EB Loop On-Ramp	20.4	C
H-1/North-South Road	WB Off-Ramp	41.1	F
H-1/North-South Road	WB On-Ramp	27.7	C
H-1/North-South Road	EB Off-Ramp	21.0	C
H-1/North-South Road	EB On-Ramp	17.0	B
Notes:			
* - Lower density does not necessarily indicate a lower LOS. This is because the LOS is calculated based upon a number of factors including: merge influence area, length of the acceleration lane, etc. See Appendix F for the HCM methodology used to calculate the LOS			
Density is presented in pc/mi/ln			
DEC - Demand Exceeds Capacity			
Bold type indicates LOS F.			

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

Proposed Project

There are several major transportation projects that have been long-planned for 'Ewa. The Ho'opili project has been planned assuming that certain planned transportation projects will be constructed including a portion of North-South Road between Farrington Highway and Kapolei Parkway; a portion of the North-South Road and a new H-1 Freeway interchange; a portion of the intersection of North-South Road and Farrington Highway; the long-planned widening of Farrington Highway fronting Ho'opili; the proposed East-West Connector Road through the Petition Area; and the first segment of the proposed Honolulu High-Capacity Transit Corridor project through the Petition Area.

The Ho'opili project has been planned assuming that the above major transportation projects would be in place. In addition, the Conceptual Land Use Plan reflects the desire for a community that is "complete" with: affordable living options; employment centers; quality schools; shopping, gathering and recreational places; and parks and open space for residents. Implementation of the Plan will allow residents the ability to live, work, learn, play, and shop within Ho'opili, reducing the need to use personal motor vehicles

HO'OPILI

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on regional roadways. Ho'opili's planning consultant, Van Meter Williams Pollack, in consultation with Charlier & Associates, was primarily responsible for the design of Ho'opili's internal roadway system which emphasized Traditional Neighborhood Design principles such as facilitating pedestrian access and connectivity (to UHWO and DHHL East Kapolei Development Parcel 2, and to the above major transportation projects).

To accommodate connectivity, the Ho'opili project would include the construction of numerous internal roadways to accommodate on-site circulation (See Figure 4.3: Internal Roadways). A description of the proposed internal street network is included below.

First Avenue. This east-west avenue connector street runs from Second Avenue to A Street.

Second Avenue. This east-west avenue connector street runs from Fort Weaver Road to Farrington Highway.

Third Avenue. This east-west avenue connector street runs from Fort Weaver Road to Second Avenue.

Fourth Avenue. This east-west avenue connector street runs between Parkway and C Street.

Fifth Avenue. This north-south avenue connector street runs between Parkway and B Street.

A Street. This north-south street runs between First Avenue and East-West Road.

B Street. This north-south street runs between Farrington Highway and East-West Road.

C Street. This east-west street runs between Fort Weaver Road and Parkway

D Street. This north-south street runs between Second Avenue and Farrington Highway.

E Street. This north-south street runs between Second Avenue and Farrington Highway.

Vehicular access to the Ho'opili project would be made possible via multiple entry points. From the north, vehicles would approach the project from the Kunia Road/H-1 Interchange and have access to the site at the intersections of Fort Weaver Road/Second Avenue and Fort Weaver Road/Third Avenue. Access to the Ho'opili project from the south would be provided from the intersections of North-South Road/East-West Connector Road and Fort Weaver Road/C Street. From the west, vehicles would approach the Ho'opili project from the Farrington Highway/North-South Road intersection and gain access to the site at the intersection of Farrington Highway/B Street. From the east, vehicles would have opportunities to enter the Ho'opili project at the following access

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points along Farrington Highway: Farrington Highway/Second Avenue, Farrington Highway/West Old Fort Weaver Road and Farrington Highway/East Old Fort Weaver Road.

Due to the size and nature of the Ho'opili project, the Petitioner will coordinate closely with the City and County of Honolulu to identify possibilities for future expansion of the bus service in the vicinity of the project including on the above proposed internal transportation network. This is likely to occur with or without the implementation of the HHCTC project. It is assumed that the locations of bus stops and shelters in relation to schools, commercial and residential facilities in the area will be used to determine appropriate bus stop locations. To enhance connectivity, bus stops should be sited along pedestrian/bicycle paths.

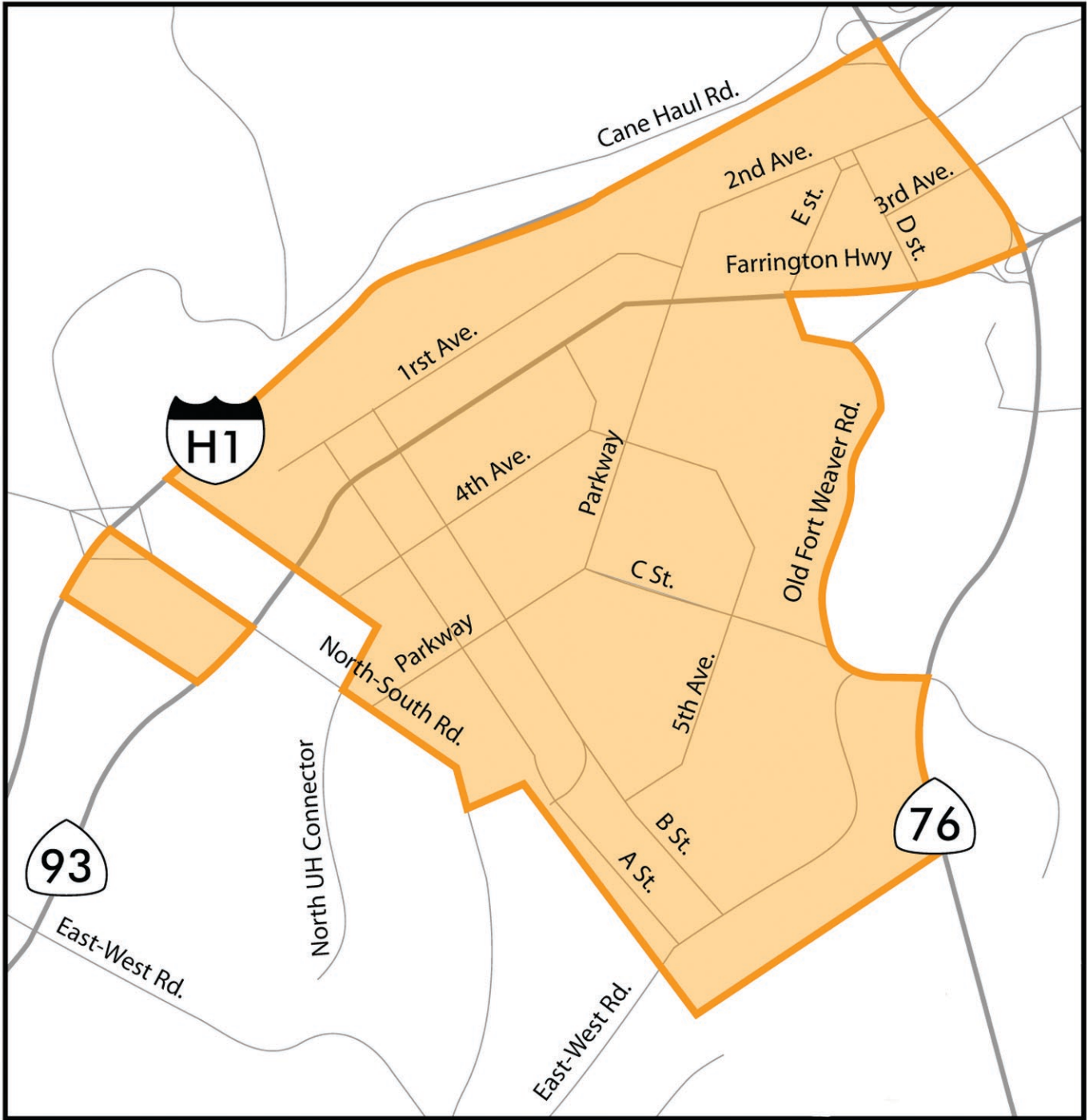
The proposed project has been designed to reduce future residents' reliance on private motorized vehicles through the following measures:

- Ho'opili is the first new project designed to ~~embrace~~ support the City and County of Honolulu's high-capacity transit (elevated, fixed-guideway) corridor and station(s) (and a possible transit maintenance and storage facility);
- the Petition Area is large enough to be designed and offer a full range of mixed land uses, including a wide range of places of live, work, shop, recreate and learn and will aspire to achieve a job-housing balance;
- Ho'opili is designed to maximize connectivity (transit, pedestrian, bicycle and vehicular) with surrounding streets and communities (including DHHL and UHWO), while minimizing cul-de-sacs and dead-end streets;
- Ho'opili will be designed to take advantage of the relative flatness of the site and proximity to UHWO by designing streets and grade-separated multi-modal pathways for walking and bicycling; and
- the Petitioner will seek to implement other transportation management and transportation demand management (TDM) strategies (such as requesting that the State/County consider extending or instituting contra-flow of major transportation corridors during a.m. and p.m. peak travel times).

The most important TDM strategy is that the project is designed to ~~embrace~~ support both rail and bus transit and the project is proposed to have mixed uses over most of the entire Petition Area.

Anticipated Impacts

The City and County of Honolulu is planning for a high-capacity transit corridor project between Kapolei and the University of Hawai'i at Mānoa (UH Mānoa). The Honolulu High-Capacity Transit Corridor Project (HHCTCP) has evaluated transit alternatives for the 23-mile long corridor between Kapolei and UH Mānoa. The City and County of Honolulu will now undertake preliminary engineering and is in the process of preparing the



 Petition Area

Figure 4.3: Internal Roadways

HO'OPI LI

O'ahu, Hawai'i



Not to Scale



HO'OPILI

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environmental impact statement for the Locally Preferred Alternative (LPA). As the first project, the City Council selected a minimum operable segment (MOS) that will begin near the Kroc Center on North-South Road to Farrington Highway, through Waipahu, Pearl City, Aiea, and via Salt Lake Boulevard through downtown Honolulu to Ala Moana Center. As of this writing, we understand that the portion of the alignment between the Kroc Center and Waipahu, the location of the transit maintenance and storage facility, and the location of potential transit stations are being finalized.

Two possible HHCTC alignments through Ho'opili have been discussed with at least one station proposed within Ho'opili. If required for the transit project, the Petitioner will coordinate with DTS regarding the possibility of allocating a portion of the project lands for a potential high-capacity transit maintenance and storage facility.

High-capacity transit will be one component of a multi-modal alternative that will provide a balanced transportation system in the Petition Area. The City and County of Honolulu ~~Oahu Transit Service~~ operates TheBus and TheBoat on a supply and demand basis, subject to the availability of resources. Section 4.9.6 contains a more detailed description of transit related issues.

In addition to projecting 2030 Baseline Conditions (without the project), the traffic impact analysis report prepared for the Ho'opili project focused on projecting future transportation conditions with the anticipation of the City's proposed transit corridor project (Scenario A: With Transit Corridor). However, an in-depth analysis of future conditions without the proposed transit corridor project was also conducted to identify additional traffic impact and improvement actions in the event that the proposed transit corridor project does not extend to Ho'opili in 2030 (Scenario B: Without Transit Corridor). Each scenario's ("With Transit Corridor" and "Without Transit Corridor") impacts to "level of service" (LOS) was compared to 2030 Baseline Conditions for AM and PM peak hour intersection operations, peak hour H-1 Freeway segment operations, and ramp-H-1 Freeway junction operations. The three scenarios studied then were:

2030 Baseline Conditions Without (the Ho'opili) Project. Under this scenario, projected future transportation improvements were assumed to be in place by 2030 under without the project conditions. Future traffic volumes were obtained from the Year 2030 Oahu Metropolitan Planning Organization (OMPO) Transportation Model.

2030 Baseline Conditions With (the Ho'opili) Project, Scenario A: With Transit Corridor. Under this scenario, it is assumed that the Honolulu High Capacity Transit Corridor (HHCTC) is constructed and would pass through the Ho'opili project. The presence of a transit corridor within the Ho'opili project would affect the number of vehicle-trips generated by the proposed project land uses. The transit facility would attract an increase in the portion of the person-trips generated from the Ho'opili project; thus increasing the project-related transit trips and reducing the project-related vehicle trips. Thus a transit

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reduction factor was applied while developing the project trip generation under this scenario.

The proposed transit alignment would run diagonally through the Ho'opili project along the UHWO Internal Road B, turn down into the median of North-South Road, and stop at the Kroc Center in the median of North-South Road. The median would follow the grass-lined channel of the realigned Kalo'i Gulch. Two transit stations are assumed within Ho'opili, the exact locations of which are still being determined. It should be noted that increased ridership is likely to occur depending on the location of the transit stations, particularly based on the density of the area surrounding the transit station.

2030 Baseline Conditions With (the Ho'opili) Project, Scenario B: Without Transit Corridor. Under this scenario, it is assumed that the HHCTC is either not constructed by 2030 or is not passing through the Ho'opili project. In this scenario, no transit reduction factor was applied while developing the project trip generation.

All of the impacts described for each of the following scenarios assume the cumulative impact of surrounding projects (such as UHWO and DHHL East Kapolei Development Parcel 2), in operation by 2030.

2030 Baseline Conditions With (the Ho'opili) Project, Scenario A: With Transit Corridor – Projected Intersection Operating Conditions

During the AM peak hour, 22 of the 26 intersections studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (LOS D or better) (See Table 4.5). During the PM peak hour, 17 of the 26 study intersections would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.6). Out of the four intersections operating at an unacceptable traffic condition during the AM peak hour, all four intersections also operate at an unacceptable level during the PM peak hour. Therefore under Scenario A: With Transit Corridor, the Ho'opili project would result in cumulative traffic impacts at a total of nine intersections during one or both of the peak traffic hours.

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Table 4.5. Year 2030 AM Peak Hour Intersection Operations

Intersection	Control	Year 2030 Without Project		Year 2030 with Scenario A		Impact	Year 2030 with Scenario B		Impact
		Delay	LOS	Delay	LOS		Delay	LOS	
External Intersections									
Kunia Rd./Kunia Loop	Signal	12.8	B	15.7	B	No	17.9	B	No
Kunia Rd./H-1 WB On-Ramp*	TWSC	3.3	A	4.5	A	No	4.5	A	No
Kunia Rd./H-1 EB Ramps	Signal	8.9	A	8.4	A	No	8.4	A	No
Farrington Hwy./Fort Weaver Rd. SB Ramps	Signal	5.2	A	9.9	A	No	10.3	B	No
Farrington Hwy./Fort Weaver Rd. NB Ramps	Signal	3.0	A	25.4	C	No	38.4	D	No
Farrington Hwy./Leoku St.	Signal	18.0	B	19.2	B	No	23.6	C	No
Fort Weaver Rd./Laulaunui St.	Signal	29.8	C	42.6	D	No	53.9	D	No
Fort Weaver Rd./Old Fort Weaver Rd.	Signal	16.7	B	176.6	F	Yes	268.8	F	Yes
Fort Weaver Rd./Renton Rd.	Signal	78.1	E	111.8	F	Yes	114.8	F	Yes
Farrington Hwy./East Old Fort Weaver Rd.**	TWSC	16.4	C	31.4	C	No	40.1	D	No
Farrington Hwy./West Old Fort Weaver Rd.**	TWSC	22.0	C	17.2	B	No	24.8	C	No
Farrington Hwy./Fort Barrette Rd.	Signal	62.7	E	75.9	E	Yes	71.6	E	Yes
North-South Rd./H-1 WB Ramps	Signal	32.4	C	42.2	D	No	99.4	F	Yes
North-South Rd./H-1 EB Ramps	Signal	38.1	D	30.0	C	No	37.3	D	No
North-South Rd./Farrington Hwy	Signal	35.2	D	76.7	E	Yes	105.4	F	Yes
North-South Rd./North UH Connector	Signal	7.3	A	38.6	D	No	33.4	C	No
North-South Rd./East-West Road	Signal	27.0	C	37.0	D	No	40.8	D	No
North-South Rd./Kapolei Pkwy.	Signal	34.8	C	43.1	D	No	62.7	E	Yes
East-West Rd./Old Fort Weaver Rd.	Signal	22.3	C	14.3	B	No	14.1	B	No
Internal Intersections									
Farrington Hwy./B St.	Signal	-	-	30.2	C	N/A	30.6	C	N/A
East-West Rd./A St.	Signal	-	-	21.0	C	N/A	24.6	C	N/A
Farrington Hwy./Parkway/2nd Ave.	Signal	-	-	33.0	C	N/A	33.2	C	N/A
Kunia Rd./2nd Ave.	OWSC	-	-	0.0	A	N/A	0.0	A	N/A
Kunia Rd./3rd Ave.	OWSC	-	-	11.9	B	N/A	12.3	B	N/A
East-West Rd./B St.	Signal	-	-	27.3	C	N/A	23.9	C	N/A
Farrington Hwy./Project Access Road to NW Parcel at North-South Road	Signal	-	-	17.8	B	N/A	18.3	B	N/A
Notes:									
* - This location is stop-controlled under existing conditions, but is signalized under 2030 conditions.									
** - This location is stop-controlled under 2030 conditions, but is signalized under 2030 plus project conditions.									
TWSC - Two-way Stop-Control									
OWSC - All-way Stop-Control									
Signal - Traffic Signal									
N/A - Not Applicable									
Delay represents average delay presented in seconds per vehicle.									
Delay and LOS are presented for worst approach for two-way stop controlled intersections.									
Bold type indicates LOS E or F.									

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

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Table 4.6. Year 2030 PM Peak Hour Intersection Operations

Intersection	Control	Year 2030 Without Project		Year 2030 with Scenario A		Impact	Year 2030 with Scenario B		Impact
		Delay	LOS	Delay	LOS		Delay	LOS	
External Intersection									
Kunia Rd./Kunia Loop	Signal	17.1	B	36.8	D	No	40.1	D	No
Kunia Rd./H-1 WB On-Ramp*	TWSC	14.1	B	18.6	B	No	15.4	B	No
Kunia Rd./H-1 EB Ramps	Signal	8.8	A	11.3	B	No	19.4	B	No
Farrington Hwy./Fort Weaver Rd. SB Ramps	Signal	14.0	B	10.0	B	No	9.4	A	No
Farrington Hwy./Fort Weaver Rd. NB Ramps	Signal	8.0	A	134.2	F	Yes	221.0	F	Yes
Farrington Hwy./Leoku St.	Signal	47.4	D	61.9	E	Yes	57.6	E	Yes
Fort Weaver Rd./Laulaunui St.	Signal	26.3	C	44.9	D	No	56.3	E	Yes
Fort Weaver Rd./Old Fort Weaver Rd.	Signal	45.0	D	289.5	F	Yes	322.9	F	Yes
Fort Weaver Rd./Renton Rd.	Signal	63.4	E	125.3	F	Yes	130.6	F	Yes
Farrington Hwy./East Old Fort Weaver Rd.**	TWSC	32.0	D	20.6	C	No	40.9	D	No
Farrington Hwy./West Old Fort Weaver Rd.**	TWSC	55.4	F	25.9	C	No	30.5	C	No
Farrington Hwy./Fort Barrette Rd.	Signal	67.5	E	74.4	E	Yes	67.0	E	Yes
North-South Rd./H-1 WB Ramps	Signal	25.6	C	38.2	D	No	54.0	D	No
North-South Rd./H-1 EB Ramps	Signal	15.7	B	87.5	F	Yes	105.4	F	Yes
North-South Rd./Farrington Hwy	Signal	35.8	D	136.3	F	Yes	117.1	F	Yes
North-South Rd./North UH Connector	Signal	13.5	B	49.0	D	No	50.3	D	No
North-South Rd./East-West Road	Signal	28.6	C	43.1	D	No	45.9	D	No
North-South Rd./Kapolei Pkwy.	Signal	54.2	D	58.5	E	Yes	68.3	E	Yes
East-West Rd./Old Fort Weaver Rd.	Signal	20.6	C	62.6	E	Yes	13.6	B	No
Internal Intersection									
Farrington Hwy./B St.	Signal	-	-	41.7	D	N/A	38.4	D	N/A
East-West Rd./A St.	Signal	-	-	17.5	B	N/A	26.2	C	N/A
Farrington Hwy./Parkway/2nd Ave.	Signal	-	-	71.1	E	N/A	42.8	D	N/A
Kunia Rd./2nd Ave.	OWSC	-	-	0.0	A	N/A	0.0	A	N/A
Kunia Rd./3rd Ave.	OWSC	-	-	0.0	A	N/A	0.0	A	N/A
East-West Rd./B St.	Signal	-	-	46.6	D	N/A	60.8	E	N/A
Farrington Hwy./Project Access Road to NW Parcel at North-South Road	Signal	-	-	16.3	B	N/A	17.0	B	N/A
<p>Notes:</p> <p>* - This location is stop-controlled under existing conditions, but is signalized under 2030 conditions.</p> <p>** - This location is stop-controlled under 2030 conditions, but is signalized under 2030 plus project conditions.</p> <p>TWSC – Two-way Stop-Control</p> <p>OWSC - All-way Stop-Control</p> <p>Signal – Traffic Signal</p> <p>N/A - Not Applicable</p> <p>Delay represents average delay presented in seconds per vehicle.</p> <p>Delay and LOS are presented for worst approach for two-way stop controlled intersections.</p> <p>Bold type indicates LOS E or F.</p>									

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

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2030 Baseline Conditions With (the Ho'opili) Project, Scenario A: With Transit Corridor – Projected Freeway Segment Operating Conditions

During the AM peak hour, 6 of the 10 freeway segments studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions. During the PM peak hour, 3 of the 10 study freeway segments would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.7). Under Scenario A: With Transit Corridor, the Ho'opili project would result in cumulative traffic impacts at a total of five freeway segments.

Table 4.7. Year 2030 Peak Hour Freeway Segment Operations

Freeway	Segment	Year 2030 Without Project			Year 2030 with Scenario A			Year 2030 with Scenario B		
		Volume	Density	LOS	Volume	Density	LOS	Volume	Density	LOS
AM Peak										
H-1 EB	S/O Makakilo Dr.	5434	37.8	E	5892	43.9	E	5928	44.5	E
H-1 EB	W/O Kunia Rd.	8197	> 45	F	9143	> 45	F	9217	> 45	F
H-1 EB	W/O Paiawa St.	9906	43.4	E	11906	> 45	F	12062	> 45	F
H-1 EB	E/O Kamehameha Hwy.	7512	38.8	E	8435	> 45	F	8507	> 45	F
H-2 NB	At Ka Uka Blvd.	3184	21.3	C	3597	24.1	C	3629	24.3	C
H-1 WB	S/O Makakilo Dr.	3259	21.8	C	3756	25.1	C	3794	25.4	C
H-1 WB	W/O Kunia Rd.	3735	18.3	C	4491	21.9	C	4549	22.2	C
H-1 WB	W/O Paiawa St.	4366	16.6	B	5858	22.3	C	5974	22.8	C
H-1 WB	E/O Kamehameha Hwy.	3069	20.5	C	3757	25.1	C	3811	25.5	C
H-2 SB	At Ka Uka Blvd.	6273	30.7	D	6581	32.5	D	6605	32.6	D
PM Peak										
H-1 EB	S/O Makakilo Dr.	4680	31.3	D	5334	36.7	E	5392	38.7	E
H-1 EB	W/O Kunia Rd.	5833	28.5	D	6891	34.5	D	6985	35.1	E
H-1 EB	W/O Paiawa St.	7137	27.2	D	9139	37.0	E	9309	38.2	E
H-1 EB	E/O Kamehameha Hwy.	4249	28.4	D	5173	35.2	E	5251	35.9	E
H-2 NB	At Ka Uka Blvd.	6220	> 45	F	6663	> 45	F	6668	> 45	F
H-1 WB	S/O Makakilo Dr.	6365	> 45	F	7022	> 45	F	7080	> 45	F
H-1 WB	W/O Kunia Rd.	7860	43.3	E	8875	> 45	F	8964	> 45	F
H-1 WB	W/O Paiawa St.	7931	25.2	C	10131	32.9	D	10317	33.7	D
H-1 WB	E/O Kamehameha Hwy.	7766	42.2	E	8781	> 45	F	8867	> 45	F
H-2 SB	At Ka Uka Blvd.	4616	22.5	C	5070	24.8	C	5108	25	C
Notes: Density is given in pc/mi/ln. Bold type indicates LOS E or F										

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

2030 Baseline Conditions With (the Ho'opili) Project, Scenario A: With Transit Corridor – Projected Ramp-Freeway Junction Operating Conditions

During the AM peak hour, 7 of the 10 ramp-freeway junctions studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions. During the PM peak hour, 7 of the 10 ramp-freeway junctions studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.8). In considering both AM and PM peak hours, the Ho'opili project would significantly affect traffic conditions at a total of five ramp junctions.

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Table 4.8. Year 2030 Ramp-Freeway Junction Operations

Location	Ramp	Year 2030 Without Project		Year 2030 with Scenario A		Year 2030 with Scenario B	
		Delay*	LOS	Delay	LOS	Delay	LOS
AM Peak							
H-1/Fort Weaver Road	WB Off-Ramp	16.0	B	16.0	B	16.0	B
H-1/Fort Weaver Road	WB Loop Off-Ramp	1.3	A	8.2	A	9.6	A
H-1/Fort Weaver Road	WB On-Ramp	15.0	B	15.7	B	15.7	B
H-1/Fort Weaver Road	EB Off-Ramp	37.4	E	38.9	F	39.0	F
H-1/Fort Weaver Road	EB On-Ramp	24.8	F	36.1	F	37.7	F
H-1/Fort Weaver Road	EB Loop On-Ramp	26.3	F	26.3	F	26.3	F
H-1/North-South Road	WB Off-Ramp	20.3	C	26.3	C	26.9	C
H-1/North-South Road	WB On-Ramp	13.5	B	16.9	B	17.2	B
H-1/North-South Road	EB Off-Ramp	25.0	C	29.1	D	29.6	D
H-1/North-South Road	EB On-Ramp	28.8	D	38.3	F	37.4	F
PM Peak							
H-1/Fort Weaver Road	WB Off-Ramp	38.0	F	38.0	F	38.0	F
H-1/Fort Weaver Road	WB Loop Off-Ramp	19.9	F	30.7	F	33.0	F
H-1/Fort Weaver Road	WB On-Ramp	26.0	C	26.3	C	26.3	F
H-1/Fort Weaver Road	EB Off-Ramp	28.8	D	31.1	D	31.3	D
H-1/Fort Weaver Road	EB On-Ramp	18.3	B	29.3	F	31.3	F
H-1/Fort Weaver Road	EB Loop On-Ramp	20.4	C	20.4	C	20.4	C
H-1/North-South Road	WB Off-Ramp	41.1	F	49.3	F	50.2	F
H-1/North-South Road	WB On-Ramp	27.7	C	27.1	F	27.2	F
H-1/North-South Road	EB Off-Ramp	21.0	C	27.3	C	27.9	C
H-1/North-South Road	EB On-Ramp	17.0	B	25.8	C	26.7	C
Notes: * - Lower density does not necessarily indicate a lower LOS. This is because the LOS is calculated based upon a number of factors including: merge influence area, length of the acceleration lane, etc. See Appendix F for the HCM methodology used to calculate the LOS for Freeway Segments. Density is presented in pc/mi/ln DEC - Demand Exceeds Capacity Bold type indicates LOS F.							

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

2030 Baseline Conditions With (the Ho'opili) Project, Scenario B: Without Transit Corridor – Projected Intersection Operating Conditions

During the AM peak hour, 20 of the 26 intersections studied, would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.5). During the PM peak hour, 17 of the 26 intersections studied, would operate under what the traffic engineering consultant identifies as acceptable traffic conditions See Table 4.6). Under Scenario B: Without Transit Corridor, in considering both AM and PM peak hours, the Ho'opili project would result in cumulative traffic impacts at a total of 10 intersections operating under unacceptable conditions.

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2030 Baseline Conditions With (the Ho'opili) Project, Scenario B: Without Transit Corridor – Projected Freeway Segment Operating Conditions

During the AM peak hour, 6 of the 10 freeway segments studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions. During the PM peak hour, 2 of the 10 study freeway segments would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.7). Under Scenario B: Without Transit Corridor, the Ho'opili project would result in cumulative traffic impacts at a total of six freeway segments.

2030 Baseline Conditions With (the Ho'opili) Project, Scenario B: Without Transit Corridor – Projected Ramp-Freeway Junction Operating Conditions.

During the AM peak hour, 8 of the 10 ramp-freeway junctions studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions. During the PM peak hour, 6 of the 10 ramp-freeway junctions studied would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.8). In considering both AM and PM peak hours, the Ho'opili project would significantly affect traffic conditions at a total of five ramp junctions.

Mitigation Measures

To mitigate against traffic impacts, roadway improvements have been identified including: 1) additional traffic lanes at intersections and/or changed usage of existing lanes; 2) by programming an alternate signal timing plans that would be in operation during specified peak commute periods; and 3) by restricting pedestrian crossing on one or more of the intersection approaches in order to allow unconstrained right-turn movement. These proposed mitigation measures were then studied and resulted in the following findings.

Under **Scenario A: With Transit Corridor with Mitigation Measures**, 25 of the 26 intersections studied during the AM peak hour, would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.9). During the PM peak hour, 22 of the 26 intersections studied, would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.10).

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Table 4.9. Scenario A: AM Peak Hour Intersection Operations with Mitigations

Intersection	Control	Year 2030 plus Project Conditions		Year 2030 with Mitigation Measures		Impact
		Delay	LOS	Delay	LOS	
External Intersections						
Kunia Rd./Kunia Loop	Signal	15.7	B	15.8	B	No
Kunia Rd./H-1 WB On-Ramp	TWSC	4.5	A	4.5	A	No
Kunia Rd./H-1 EB Ramps	Signal	8.4	A	7.7	A	No
Farrington Hwy./Fort Weaver Rd. SB Ramps	Signal	9.9	A	5.7	A	No
Farrington Hwy./Fort Weaver Rd. NB Ramps	Signal	25.4	C	13	B	No
Farrington Hwy./Leoku St.	Signal	19.2	B	19.3	B	No
Fort Weaver Rd./Laulaunui St.	Signal	42.6	D	44.2	D	No
Fort Weaver Rd./Old Fort Weaver Rd.	Signal	176.6	F	37.5	D	No
Fort Weaver Rd./Renton Rd.	Signal	111.8	F	59.2	E	Yes
Farrington Hwy./East Old Fort Weaver Rd.	TWSC	31.4	C	37.1	D	No
Farrington Hwy./West Old Fort Weaver Rd.	TWSC	17.2	B	18.1	B	No
Farrington Hwy./Fort Barrette Rd.	Signal	75.9	E	48.9	D	No
North-South Rd./H-1 WB Ramps	Signal	42.2	D	42.2	D	No
North-South Rd./H-1 EB Ramps	Signal	30.0	C	14.7	B	No
North-South Rd./Farrington Hwy	Signal	76.7	E	46.8	D	No
North-South Rd./North UH Connector	Signal	38.6	D	38.7	D	No
North-South Rd./East-West Road	Signal	37.0	D	35.1	D	No
North-South Rd./Kapolei Pkwy.	Signal	43.1	D	36.1	D	No
East-West Rd./Old Fort Weaver Rd.	Signal	14.3	B	20.5	C	No
Internal Intersections						
Farrington Hwy./B St.	Signal	30.2	C	30.3	C	No
East-West Rd./A St.	Signal	21.0	C	20.4	C	No
Farrington Hwy./Parkway/2nd Ave.	Signal	33.0	C	40.3	D	No
Kunia Rd./2nd Ave.	OWSC	0.0	A	0.0	A	No
Kunia Rd./3rd Ave.	OWSC	11.9	B	11.9	B	No
East-West Rd./B St.	Signal	27.3	C	32.3	C	No
Farrington Hwy./Project Access Road to NW Parcel at North-South Road	Signal	17.8	B	15.2	B	No

Notes:

* - This location is stop-controlled under existing conditions, but is signalized under 2030 conditions.

** - This location is stop-controlled under 2030 conditions, but is signalized under 2030 plus project conditions.

TWSC – Two-way Stop-Control

OWSC - All-way Stop-Control

Signal – Traffic Signal

Delay represents average delay presented in seconds per vehicle.

Delay and LOS are presented for worst approach for two-way stop controlled intersections.

Bold type indicates LOS E or F.

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

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Table 4.10. Scenario A: PM Peak Hour Intersection Operations with Mitigations

Intersection	Control	Year 2030 plus Project Conditions		Year 2030 with Mitigation Measures		Impact
		Delay	LOS	Delay	LOS	
External Intersections						
Kunia Rd./Kunia Loop	Signal	36.8	D	37.5	D	No
Kunia Rd./H-1 WB On-Ramp	TWSC	18.6	B	22.9	C	No
Kunia Rd./H-1 EB Ramps	Signal	11.3	B	8.2	A	No
Farrington Hwy./Fort Weaver Rd. SB Ramps	Signal	10.0	B	10.0	A	No
Farrington Hwy./Fort Weaver Rd. NB Ramps	Signal	134.2	F	34.7	C	No
Farrington Hwy./Leoku St.	Signal	61.9	E	69.4	E	Yes
Fort Weaver Rd./Laulaunui St.	Signal	44.9	D	46.1	D	No
Fort Weaver Rd./Old Fort Weaver Rd.	Signal	289.5	F	62.8	E	Yes
Fort Weaver Rd./Renton Rd.	Signal	125.3	F	60.4	E	Yes
Farrington Hwy./East Old Fort Weaver Rd.	TWSC	20.6	C	22.2	C	No
Farrington Hwy./West Old Fort Weaver Rd.	TWSC	25.9	C	20.5	C	No
Farrington Hwy./Fort Barrette Rd.	Signal	74.4	E	53.0	D	No
North-South Rd./H-1 WB Ramps	Signal	38.2	D	36.1	D	No
North-South Rd./H-1 EB Ramps	Signal	87.5	F	42.7	D	No
North-South Rd./Farrington Hwy	Signal	136.3	F	53.9	D	No
North-South Rd./North UH Connector	Signal	49.0	D	44.3	D	No
North-South Rd./East-West Road	Signal	43.1	D	40.5	D	No
North-South Rd./Kapolei Pkwy.	Signal	58.5	E	51.8	D	No
East-West Rd./Old Fort Weaver Rd.	Signal	62.6	E	16.3	B	No
Internal Intersections						
Farrington Hwy./B St.	Signal	41.7	D	40.4	D	No
East-West Rd./A St.	Signal	17.5	B	16.9	B	No
Farrington Hwy./Parkway/2nd Ave.	Signal	71.1	E	48.3	D	No
Kunia Rd./2nd Ave.	OWSC	13.9	B	0.0	B	No
Kunia Rd./3rd Ave.	OWSC	13.8	B	0.0	A	No
East-West Rd./B St.	Signal	46.6	D	59.4	E	Yes
Farrington Hwy./Project Access Road to NW Parcel at North-South Road	Signal	16.3	B	16.3	B	No
Notes:						
* - This location is stop-controlled under existing conditions, but is signalized under 2030 conditions.						
** - This location is stop-controlled under 2030 conditions, but is signalized under 2030 plus project conditions.						
TWSC - Two-way Stop-Control						
OWSC - All-way Stop-Control						
Signal - Traffic Signal						
Delay represents average delay presented in seconds per vehicle.						
Delay and LOS are presented for worst approach for two-way stop controlled intersections.						
Bold type indicates LOS E or F.						

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

Under **Scenario B: Without the Transit Corridor with Mitigation Measures**, 24 of the 26 intersections studied during the AM peak hour, would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.11). During the PM peak hour, 22 of the 26 intersections studied, would operate under what the traffic engineering consultant identifies as acceptable traffic conditions (See Table 4.12).

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Table 4.11. Scenario B: AM Peak Hour Intersection Operations with Mitigations

Intersection	Control	Year 2030 plus Project Conditions		Year 2030 with Mitigation Measures		Impact
		Delay	LOS	Delay	LOS	
External Intersections						
Kunia Rd./Kunia Loop	Signal	17.9	B	17.9	B	No
Kunia Rd./H-1 WB On-Ramp	TWSC	4.5	A	4.5	A	No
Kunia Rd./H-1 EB Ramps	Signal	8.4	A	8.4	A	No
Farrington Hwy./Fort Weaver Rd. SB Ramps	Signal	10.3	B	11.7	B	No
Farrington Hwy./Fort Weaver Rd. NB Ramps	Signal	38.4	D	16.0	B	No
Farrington Hwy./Leoku St.	Signal	23.6	C	19.3	B	No
Fort Weaver Rd./Laulaunui St.	Signal	53.9	D	52.0	D	No
Fort Weaver Rd./Old Fort Weaver Rd.	Signal	268.8	F	97.2	F	Yes
Fort Weaver Rd./Renton Rd.	Signal	114.8	F	60.5	E	No
Farrington Hwy./East Old Fort Weaver Rd.	TWSC	40.1	D	42.4	D	No
Farrington Hwy./West Old Fort Weaver Rd.	TWSC	24.8	C	20.5	C	No
Farrington Hwy./Fort Barrette Rd.	Signal	71.6	E	52.0	D	No
North-South Rd./H-1 WB Ramps	Signal	99.4	F	50.1	D	No
North-South Rd./H-1 EB Ramps	Signal	37.3	D	14.6	B	No
North-South Rd./Farrington Hwy	Signal	105.4	F	46.5	D	No
North-South Rd./North UH Connector	Signal	33.4	C	33.4	C	No
North-South Rd./East-West Road	Signal	40.8	D	41.1	D	No
North-South Rd./Kapolei Pkwy.	Signal	62.7	E	42.5	D	No
East-West Rd./Old Fort Weaver Rd.	Signal	14.1	B	19.7	B	No
Internal Intersections						
Farrington Hwy./B St.	Signal	30.6	C	31.0	C	No
East-West Rd./A St.	Signal	24.6	C	24.4	C	No
Farrington Hwy./Parkway/2nd Ave.	Signal	33.2	C	46.0	D	No
Kunia Rd./2nd Ave.	OWSC	0.0	A	0.0	A	No
Kunia Rd./3rd Ave.	OWSC	12.3	B	12.3	B	No
East-West Rd./B St.	Signal	23.9	C	28.6	C	No
Farrington Hwy./Project Access Road to NW Parcel at North-South Road	Signal	18.3	B	15.3	B	No
Notes:						
* - This location is stop-controlled under existing conditions, but is signalized under 2030 conditions.						
** - This location is stop-controlled under 2030 conditions, but is signalized under 2030 plus project conditions.						
TWSC – Two-way Stop-Control						
OWSC - All-way Stop-Control						
Signal – Traffic Signal						
Delay represents average delay presented in seconds per vehicle.						
Delay and LOS are presented for worst approach for two-way stop controlled intersections.						
Bold type indicates LOS E or F.						

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

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Table 4.12. Scenario B: PM Peak Hour Intersection Operations with Mitigations

Intersection	Control	Year 2030 plus Project Conditions		Year 2030 with Mitigation Measures		Impact
		Delay	LOS	Delay	LOS	
External Intersections						
Kunia Rd./Kunia Loop	Signal	40.1	D	40.8	D	No
Kunia Rd./H-1 WB On-Ramp	TWSC	15.4	B	14.2	B	No
Kunia Rd./H-1 EB Ramps	Signal	19.4	B	16.4	B	No
Farrington Hwy./Fort Weaver Rd. SB Ramps	Signal	9.4	A	8.8	A	No
Farrington Hwy./Fort Weaver Rd. NB Ramps	Signal	221.0	F	48.1	D	No
Farrington Hwy./Leoku St.	Signal	57.6	E	66.5	E	Yes
Fort Weaver Rd./Laulaunui St.	Signal	56.3	E	54.1	D	No
Fort Weaver Rd./Old Fort Weaver Rd.	Signal	322.9	F	86.2	F	Yes
Fort Weaver Rd./Renton Rd.	Signal	130.6	F	57.1	E	Yes
Farrington Hwy./East Old Fort Weaver Rd.	TWSC	40.9	D	37.3	D	No
Farrington Hwy./West Old Fort Weaver Rd.	TWSC	30.5	C	25.2	C	No
Farrington Hwy./Fort Barrette Rd.	Signal	67.0	E	52.9	D	No
North-South Rd./H-1 WB Ramps	Signal	54.0	D	54.1	D	No
North-South Rd./H-1 EB Ramps	Signal	105.4	F	22.0	C	No
North-South Rd./Farrington Hwy	Signal	117.1	F	69.1	E	Yes
North-South Rd./North UH Connector	Signal	50.3	D	51.4	D	No
North-South Rd./East-West Road	Signal	45.9	D	44.7	D	No
North-South Rd./Kapolei Pkwy.	Signal	68.3	E	48.8	D	No
East-West Rd./Old Fort Weaver Rd.	Signal	13.6	B	32.8	C	No
Internal Intersections						
Farrington Hwy./B St.	Signal	38.4	D	45.4	D	No
East-West Rd./A St.	Signal	26.2	C	32.1	C	No
Farrington Hwy./Parkway/2nd Ave.	Signal	42.8	D	47.1	D	No
Kunia Rd./2nd Ave.	OWSC	0.0	A	0.0	A	No
Kunia Rd./3rd Ave.	OWSC	0.0	A	0.0	A	No
East-West Rd./B St.	Signal	60.8	E	50.5	D	No
Farrington Hwy./Project Access Road to NW Parcel at North-South Road	Signal	17.0	B	17.0	B	No
Notes:						
* - This location is stop-controlled under existing conditions, but is signalized under 2030 conditions.						
** - This location is stop-controlled under 2030 conditions, but is signalized under 2030 plus project conditions.						
TWSC – Two-way Stop-Control						
OWSC - All-way Stop-Control						
Signal – Traffic Signal						
Delay represents average delay presented in seconds per vehicle.						
Delay and LOS are presented for worst approach for two-way stop controlled intersections.						
Bold type indicates LOS E or F.						

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

The traffic impacts at these locations are identified under 2030 conditions, and represent increases in cumulative traffic from other developments within and outside the study area. Therefore, the contribution of traffic from the Ho'opili project to cumulative traffic increases should be recognized, and the assignment of traffic impacts should be proportionally allocated. The following locations are proposed for improvement under Scenario A: With Transit Corridor Conditions and Scenario B: Without Transit Corridor Conditions:

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- Farrington Highway/Fort Weaver Road~~ch~~ Northbound Ramps;
- Farrington Highway/Leokū Street;
- Fort Weaver Road/Old Fort Weaver Road;
- Fort Weaver Road/Renton Road;
- Farrington Highway/Fort Barrette Road;
- North-South Road/H-1 Eastbound Ramps;
- North-South Road/Farrington Highway; and
- North-South Road/Kapolei Parkway.

Assuming that mitigation measures are implemented, the result of the analysis indicates that the Ho'opili project would result in what the traffic engineering consultant identifies as significant impacts to only one intersection under Scenario A: With Transit Corridor Scenario; this would occur at Farrington Highway/Leokū Street. Under Scenario B: Without Transit Corridor Scenario, a total of three intersections are anticipated to result in what the traffic engineering consultant identifies as significant impacts as a result of the Ho'opili project: Farrington Highway/Leokū Street, Fort Weaver Road/Old Fort Weaver Road and Fort Weaver Road/Renton Road.

One or more of the above mitigation measures may require land from State and County road rights-of-way. This EIS is intended to address the impacts of the proposed project, and in particular, what benefits or costs may result from the proposed action on State and County lands (involving mostly road right-of-ways).

As planned, the directed growth towards/urbanization in 'Ewa will add to traffic on Fort Weaver Road and Farrington Highway through the Project Area.³ On the other hand, construction of the North-South Road and the H-1 Freeway access associated with the new roadways will help to limit congestion throughout the regional road system. New roads within the project, DHHL East Kapolei Development Parcel 2 and UHWO will provide additional connectivity between Fort Weaver Road and the North-South Road and between the UHWO and DHHL lands to the west and south of Ho'opili and Ho'opili itself.

Before Ho'opili is built, the new H-1 interchange will serve the North-South Road and Farrington Highway. This will be important for trucks to and from the Grace Pacific quarry and plant: they will travel to the new interchange, rather than along Farrington Highway past the Ho'opili site. Accordingly, urbanization along Farrington Highway east of the new interchange will have little or no impact on this truck traffic.

Eventually, rail transit could be built along North-South Road and Farrington Highway, and possibly through Ho'opili. Plans for Ho'opili have been drawn up with transit in mind, even though the exact route and placement of stations is still undecided. With

³ For detailed quantitative analysis of the project's impact on transportation and traffic congestion, see the Traffic Impact Analysis Report (Wilbur Smith Associates 2007).

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transit, the project can further minimize dependence on automobiles by its residents. A comparison of the existing conditions with 2030 Conditions with and without the Ho'opili project can be seen in Table 4.13.

Table 4.13. Comparison of Existing Traffic and Year 2030 Traffic With and Without the Project

MORNING PEAK				INCLUDES RAIL:	
#	Freeway	Segment	Existing LOS	2030 without Ho'opili	2030 with Ho'opili
1	H-1 EB	S/O Makakilo Dr.	A	E	E
2	H-1 EB	W/O Kunia Rd.	C	F	F
3	H-1 EB	W/O Pa'iwa St.	E	E	F
4	H-1 EB	E/O Kamehameha	D	E	F
5	H-2 SB	At Ka 'Uka Blvd.	D	D	D
6	H-1 WB	S/O Makakilo Dr.	A	C	C
7	H-1 WB	W/O Kunia Rd.	C	C	C
8	H-1 WB	W/O Pa'iwa St.	C	B	C
9	H-1 WB	E/O Kamehameha	C	C	C
10	H-2 NB	At Ka 'Uka Blvd.	B	C	C
AFTERNOON PEAK				INCLUDES RAIL:	
#	Freeway	Segment	Existing LOS	2030 without Ho'opili	2030 with Ho'opili
1	H-1 EB	S/O Makakilo Dr.	B	D	E
2	H-1 EB	W/O Kunia Rd.	D	D	D
3	H-1 EB	W/O Pa'iwa St.	C	D	B
4	H-1 EB	E/O Kamehameha Hwy.	B	D	B
5	H-2 SB	At Ka 'Uka Blvd.	B	C	C
6	H-1 WB	S/O Makakilo Dr.	B	F	F
7	H-1 WB	W/O Kunia Rd.	C	E	F

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<u>8</u>	<u>H-1 WB</u>	<u>W/O Pa'iwa St.</u>	<u>E</u>	<u>C</u>	<u>D</u>
<u>9</u>	<u>H-1 WB</u>	<u>E/O Kamehameha Hwy.</u>	<u>E</u>	<u>E</u>	<u>F</u>
<u>10</u>	<u>H-2 NB</u>	<u>At Ka' Uka Blvd.</u>	<u>C</u>	<u>F</u>	<u>F</u>

Source: Wilbur Smith Associates, Traffic Impact Analysis Report for Ho'opili (2007)

Ho'opili will contribute to the 'Ewa Transportation Impact Fee program, supporting development of local roadways and easing impacts on the existing arterials.

Not factored in the above traffic impact assessment is the potential positive effect of Transportation Demand Management (TDM) strategies.

TDM strategies address traffic congestion by reducing the number of vehicle trips and the amount of vehicle miles traveled, thereby reducing overall travel demand. The aim of these strategies is focused on promoting travel alternatives such as increased transit usage, walking and bicycling to help achieve this goal. The Leeward Oahu Transportation Management Association (LOTMA) currently provides TDM services in the vicinity of the Ho'opili project. It is anticipated that the Ho'opili project will continue to support the existing programs and services in place, as well as consider additional TDM strategies as a means of managing and improving travel demand.

4.8.2 Water Supply Facilities

Existing Conditions

The Petition Area is within the BWS service area. The BWS has a 440-foot elevation system and a 228-foot elevation system. The service limit between the 440 system and the 228 system splits Parcel C of the Petition Area. A 5.0-million gallon (MG) storage tank provides storage for the 228-foot elevation system and this tank is located within Parcel F, adjacent to the H-1 Freeway. A 1.0-MG storage tank provides storage for the 440-foot elevation system and this tank is located within Parcel E, mauka of the H-1 Freeway. A 42-inch transmission line delivers water from the 440 system in Parcel E to the area adjacent to the 228 system in Parcel F. Water from both the 440 system and the 228 system pass makai of the H-1 Freeway via separate transmission lines running through the Honouliuli Gulch crossing under the H-1 Freeway. These transmission lines connect both the BWS 440 and 228 systems to developed lands below the H-1 Freeway. There are also major transmission lines in Farrington Highway corridor. The transmission lines in Farrington Highway include 30- and 36-inch lines.

There is no non-potable water system in the area. However, irrigation water for agricultural lands in the area comes from a battery of wells commonly referred to as EP 5 & 6 located within Parcel C. The average irrigation use is approximately 2.0 to 3.0 million gallons per day (MGD), depending on the time of the year.

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Anticipated Impacts and Mitigation Measures

The total average daily source requirement for ultimate build-out is estimated at 3.9 MGD. The future water demand from the proposed project is based on standard civil engineering methodology; it is possible that with the implementation of feasible water conservation appliances, future water demand from the project may be lessened. During the public review period, the BWS wrote: "The developer should also consider rain barrel catchments, water-efficient front-load washer appliances and ultra low-flow toilets." It is intended that source (well supply) would be provided by BWS from existing sources. Although BWS cannot reserve water for future projects, it has indicated that there is water available to meet the estimated water demand for the project (3.9 MGD). Water Facility Charges paid by the Petitioner will be used by the Board to assist in the source replenishment caused by the project's water demands.

New water system demands will require that the Petitioner provide system upgrades to the transmission and storage components to ensure that the system operates effectively and meets BWS standards.

It is proposed to provide water system improvements to meet the Project's water demands and dedicate the improvements to the BWS. The project will require the installation of a 5.5 MG storage tank at the BWS 440 site in Parcel E. A new 24-inch transmission line will be installed parallel to the 42-inch running between the 440 tank site and 228 tank site to allow water to be pumped up to the 440 site. The pump station will be located at the existing 228 reservoir site in Parcel F.

Water for the 228 system will come from the existing 5.0 MG tank at the Honouliuli 228 site just mauka of the H-1 Freeway (Parcel F). The storage requirement for the project (1.5 MG) does not merit construction of a new tank at the 228 site. The project will contribute Facility Charges that will be used for the construction of a new 5.0 MG tank at the Honouliuli 228 site at the appropriate time.

The existing Honouliuli Gulch crossing under H-1 Freeway may not have sufficient capacity for additional transmission lines to carry water to the project boundaries. The Petitioner has requested that the State Department of Transportation (DOT) dispose of real property rights within the State Right-of-Way (ROW) to allow an easement for water use (right to micro-tunnel and installation of a drinking waterline) under and across the H-1 Freeway (See Figure 4.44: Preliminary Easement Map). Once construction of the waterline is complete, the waterline easement will be dedicated to the BWS. While the specific nature of improvements is not known at this time, the EIS is intended to address all current and future instances involving the use of State and/or County lands and funds relating to the Ho'opili project.

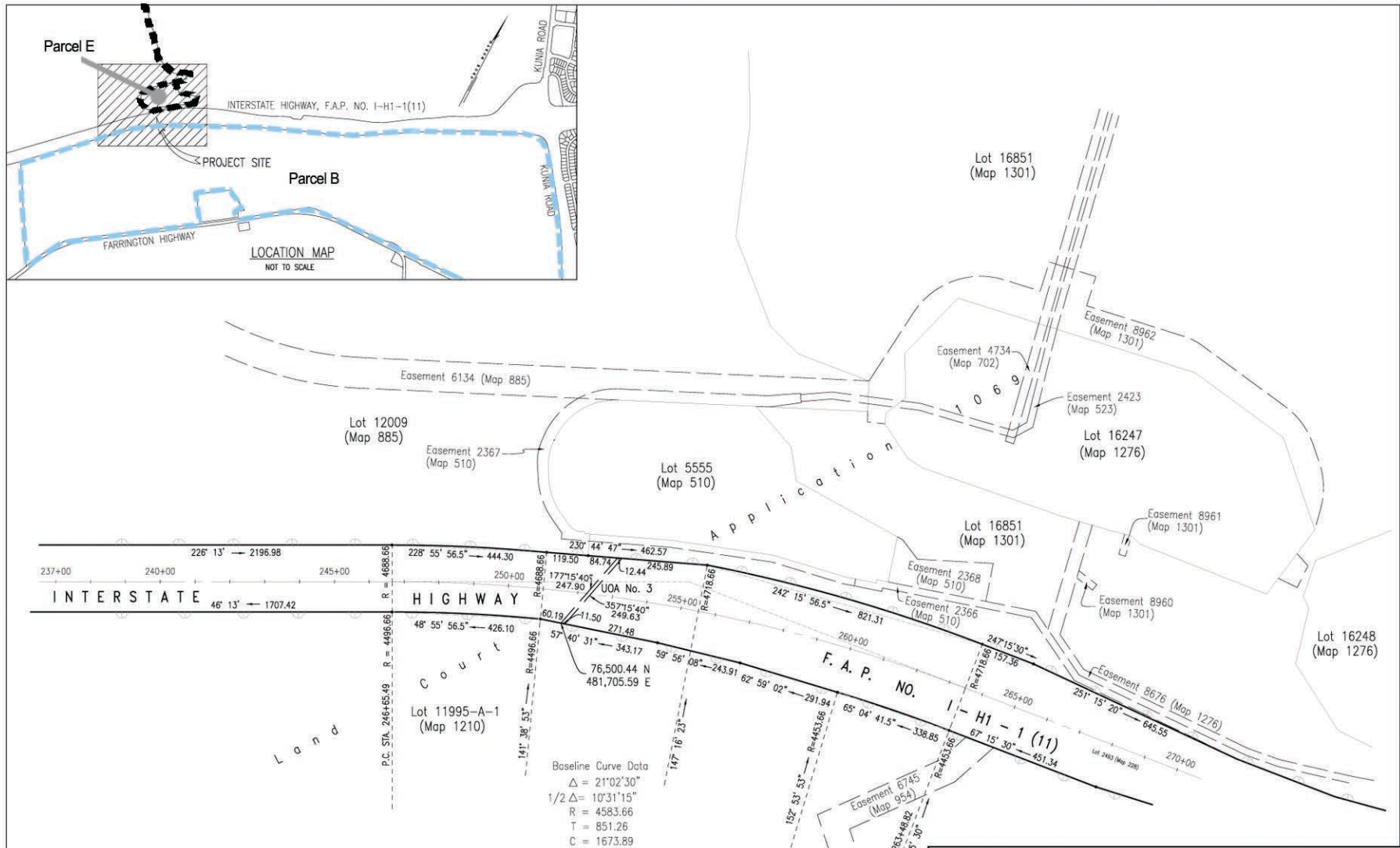
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With respect to non-potable water requirements, the project will be maximizing non-drinking usage to minimize the demand on the safe drinking water system. If a suitable supply is made available, street right of ways of the Ho'opili project will have underground non-drinking distribution systems. It is proposed to upgrade the existing non-drinking source (EP 5 & 6 located within Parcel C) to a BWS dedicable standard to be used as the source for the non-drinking system. It is also proposed to ultimately allow for future dedication of the non-drinking system. It is estimated that the ultimate non-drinking demand for the project will be approximately 2.1 MGD. The Petitioner will consider the use of drought tolerant/low water use plants and the implementation of xeriscaping principles for landscaping within the Ho'opili project to the extent practicable. The installation of an efficient irrigation system, possibly using drip irrigation, will be considered in the design of the project where feasible. Moisture sensors to avoid the operation of the system in the rain and if the ground has adequate moisture would be incorporated into the irrigation system, where feasible.

Another source of non-potable water is reclaimed water. The Honolulu Board of Water Supply (BWS) entered into the water recycling business in 2000 by purchasing the Honouliuli Water Reclamation Facility. Water recycling of treated wastewater effluent is one element of a broader BWS strategy to protect O'ahu's aquifers and to conserve water resources through conservation and development of new water supplies. Treated effluent from the facility is now irrigating golf courses that were once using brackish water, including West Loch, 'Ewa Villages, Hawai'i Prince, and Coral Creek. The facility is also providing recycled water (at a different level of treatment) to industries at Campbell Industrial Park.

The project will be maximizing the use of non-potable water for irrigation to minimize the impact on the source component of the BWS system. It is proposed that the project's greenbelts, parks and roadway medians use non-potable water for irrigation, if a suitable supply will be available. The BWS Water Resources Division will be contacted regarding the availability of recycled water and other non-potable water supplies. A Conceptual Water Master Plan addressing safe drinking and non-potable water facilities has been prepared and reproduced in its entirety and attached to this EIS as Appendix M will be submitted to for BWS for its review and approval. In addition, construction drawings will be submitted to BWS for its review and approval. During the public review period of the Draft EIS, the DLNR Commission on Water Resource Management requested that "the reuse of storm water and installation of water efficient fixtures be considered" and recommended "the use of xeriscaping and the planting of drought tolerant and salt-tolerant plans to conserve water supplies."



Notes:
 UOA No. 3 for Waterline tunnel crossing in favor of the BWS = 2487 Sq. Ft.
 Interstate Highway Data compiled from State Department of Transportation Right of Way Map FAP No. I-H1-1(11) (See P.H. 503-8)
 Origin of Azimuths referred to Hawaiian Plane Coordinate Grid System, Zone III
 Coordinates referred to Hawaiian Plane Coordinate Grid System, Zone III
 Denotes no access permitted

MAP SHOWING
 USE AND OCCUPANCY AGREEMENT No. 3
 FOR WATERLINE TUNNEL CROSSING
 AFFECTING INTERSTATE HIGHWAY
 F.A.P. No. I-H1-1 (11)
 HONOLULU, EWA, OAHU, HAWAII

Figure 4.4 Preliminary Easement Map

HO'OPIILI

O'ahu, Hawai'i

NORTH

Not To Scale

PBR HAWAII & ASSOCIATES, INC.

LEGEND

- Parcel E
- Parcel B

Source: CONTROLPOINT SURVEYING, INC (2008).
 Disclaimer: This graphic has been prepared for general planning purposes only.

07057-5 Exhibit.dwg

Tax Map Key: 9-1-18 AND 9-2-02: Road (Por.)
 Job No. 07057-5

CONTROLPOINT SURVEYING, INC.
 1150 SOUTH KING STREET, SUITE 1200
 HONOLULU, HAWAII 96814

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4.8.3 Wastewater Facilities

Existing Conditions

Within the 'Ewa area, sewage is treated by the City and County of Honolulu's Honouliuli Wastewater Treatment Facility (WWTF). The treatment facility is located at the corner of North Hanson Road and Geiger Road, approximately 7,200 feet (1.4 miles) south of Parcel C. The Petition Area is upwind of the Honouliuli WWTF during predominant tradewind conditions. Based on average daily flows, the facility has a primary treatment capacity of 38 million gallons per day (MGD), with future plans to expand to 51 MGD. The primary means of disposal is through a deep ocean outfall with a design capacity of 112 MGD. The facility was recently upgraded (with the Honouliuli Water Reclamation Facility) to produce 10 MGD of R-1 quality effluent, which is suitable for irrigation reuse.

The nearest existing sewer collection system to the Petition Area is the Makakilo Interceptor/Kapolei Interceptor system located along the OR&L railroad tracks. The Department of Hawaiian Homelands (DHHL) is currently extending a collection system component from the Makakilo/Kapolei collection in a northerly direction up the North-South Road alignment to serve its land holdings in the area. The main component of the system currently being built (42-inch sewer) has been oversized to accommodate the Ho'opili project as well as the University of Hawai'i West O'ahu (UHWO) campus. The Petitioner has already contributed \$2 million towards the construction and installation of the 42-inch sewer line.

The existing treatment plant capacity of the Honouliuli WWTP is 35 MGD. Current flows are approximately 27 MGD.

Anticipated Impacts and Mitigation Measures

The Ho'opili project will ultimately serve a projected 11,750 homes and commercial and retail space. This translates into an average daily sewage flow rate of 4.35 MGD.

A gravity collection system will be designed to City and County standards and ultimately dedicated to the City and County of Honolulu to serve the project. The point of connection to off-site collection systems will be at the southern boundary of Parcel C and at the common property line with DHHL. DHHL is installing a 36-inch collection system within its East Kapolei project and the collection system has been oversized to receive wastewater from the Ho'opili project (as well as from UHWO).

The Ho'opili project will consist of three sewer zones. Zone 1, located on western side of the project, will gravity flow to the Main Trunk Sewer to Honouliuli WWTP with a design average daily flow of 3.441 MGD and a design peak flow of 9.2 MGD. Zone 2, located adjacent to the east side of Zone 1 and Old Fort Weaver Road, will gravity flow to the proposed Ho'opili sewage pump station, where it will then be lifted to Zone 1. Zone 2

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has a design average daily flow of 0.448 MGD and design peak flow of 2.0 MGD. Zone 3 is located on the northeastern corner of the project, and will gravity flow to the Kunia sewage pump station, eventually connecting to the Waipahu sewage pump station. Zone 3 has a design average daily flow of 0.421 MGD and design peak flow of 1.6 MGD.

Two pump stations will be required for the project. One will generally be located at the southeastern end of Parcel C. All sewage from the eastern one-third of Parcel C will flow by gravity sewer to the subject pump station. The pump station will in turn lift the sewage to the gravity flow system on the western portion of Parcel C that ultimately connects to the 36-inch sewer line at the DHHL/Ho'opili boundary.

A second pump station will be required to serve the eastern half of Parcel B. Honouliuli Gulch bisects Parcel B and sewage from the eastern half of Parcel B will be collected by gravity sewer and directed to this pump station. The pump station will lift sewage into the gravity system within Parcel C.

An alternative for the Parcel B pump station is to connect to the existing City and County of Honolulu gravity systems within Farrington Highway corridor and ultimately connect to the Kunia and Waipahu pump stations. If this alternative is utilized there are expected upgrades to the existing gravity systems within Farrington Highway and surrounding streets as well as upgrades to both the Kunia and Waipahu Pump Stations.

Ultimate development of the Ho'opili project will exceed the capacity of the Makakilo/Kapolei Interceptors running along the OR&L railroad tracks. The Ho'opili project will participate in a future project to increase the capacity of the Makakilo/Kapolei Interceptor sewers from the intersection of North-South Road to the Honouliuli Wastewater Treatment Plant (WWTP). Options being explored are a third interceptor or complete replacement of one of the existing interceptors.

Over time the project will result in an increase in wastewater being generated than currently being generated on-site (by agricultural activities). To mitigate this effect, new collection system components consisting of gravity sewer, pump stations and relief sewers will be constructed.

The project will generate additional flow that must be treated at the Honouliuli WWTP. To mitigate the additional burden, the project will participate in the Wastewater System Facility Charge (WSFC) program and contribute funds (based on building permits) to expand the treatment plant. Land is available at the Honouliuli WWTP site to allow for expansion. The ultimate expansion of the Honouliuli WWTP is master planned to treat 51 MGD.

Preliminary contact with the City and County of Honolulu Department of Environmental Services has indicated that the sewer system has the capacity to accommodate the Project

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with a build-out beginning in four to six years and ending 15 to 20 years after. The Petition Area has always been within the service limits of the Honouliuli WWTP.

Wastewater collected from the site is eventually treated at the Honouliuli Water Reclamation Facility (WRF). The entire water recycling facility is located adjacent to the City & County of Honolulu's Honouliuli WWTP. Water recycling components include a Reuse Pump Station, a Sand Filter Structure which includes rapid mixing tanks and chemical flocculators, Ultraviolet Light (UV) Disinfection, a Microfiltration/Reverse Osmosis Building, Storage Tanks, and a Product Delivery Pump Station.

The facility currently has a capacity of 12 million gallons per day (MGD) and produces two grades of recycled water. R-1 water is used for irrigational uses, and Reverse Osmosis (RO) for industrial uses. The facility is currently capable of producing up to 10 MGD of R-1 water, which is the highest level of treatment as designated by the State Department of Health. R-1 water is currently used throughout the State of Hawai'i for golf course irrigation, landscaping, and agriculture. On the other hand, RO water is intended strictly for industrial uses such as boiler feed water, cooling tower make-up water, and process water for refineries. The facility currently has an RO capacity of 2 MGD. Both types of recycled water begin with secondary treated effluent from the Honouliuli WWTP.

The Honouliuli WRF currently supplies the City golf courses of West Loch and 'Ewa Villages with 1 MGD each of R-1 water. Recycled water is pumped to the West Loch course at night, while the 'Ewa Villages course is supplied during the day. The pumping rate to each course is 150 gallons per minute (GPM) at a pressure of 68 pounds per square inch (PSI).

All wastewater plans will conform to applicable provisions of Chapter 11-62, HAR, "Wastewater Systems," and the DOH Wastewater Branch reserves the right to review the detailed wastewater plans for conformance to applicable rules. In addition, the Petitioner will work with the Board of Water Supply and utilize recycled water for irrigation and other non-potable water purposes in the open spaces and for landscaping areas to the extent practicable.

4.8.4 Drainage Facilities

Existing Conditions

The Petition Area is within three distinct drainage basins. These are the Kalo'i drainage basin, the Honouliuli Stream drainage basin and the West Loch drainage basin. The Kalo'i Basin stretches to the top of the eastern slopes of the Wai'anae mountain range and terminates near the ocean in the vicinity of Haseko's Ocean Pointe development. The drainage basin mauka of the H-1 Freeway is 3,000 acres and generates a peak flow of 5,000 cubic feet per second (CFS). The drainage basin size increases to 4,330 acres and carries a peak flow of 8,900 CFS at the entrance to 'Ewa Villages. The mauka boundary of Ewa Villages is laterally equal to the southern boundary of Parcel C. Approximately 100

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acres of the Ho'opili project are within this watershed. Kalo'i Gulch is characterized on the USGS map as an intermittent stream.

The Honouliuli Stream drainage basin also stretches to the top of the eastern slopes of the Wai'anae mountain range. This basin contains 6,600 acres (11,200 CFS – peak flow) of drainage area mauka of the H-1 Freeway and expands to 7,880 acres (12,300 CFS – peak flow) at its connection with the West Loch of Pearl Harbor. The terminus location is in the vicinity of the West Loch Golf Course. Approximately 635 acres of the Ho'opili project are in the Honouliuli Stream drainage basin.

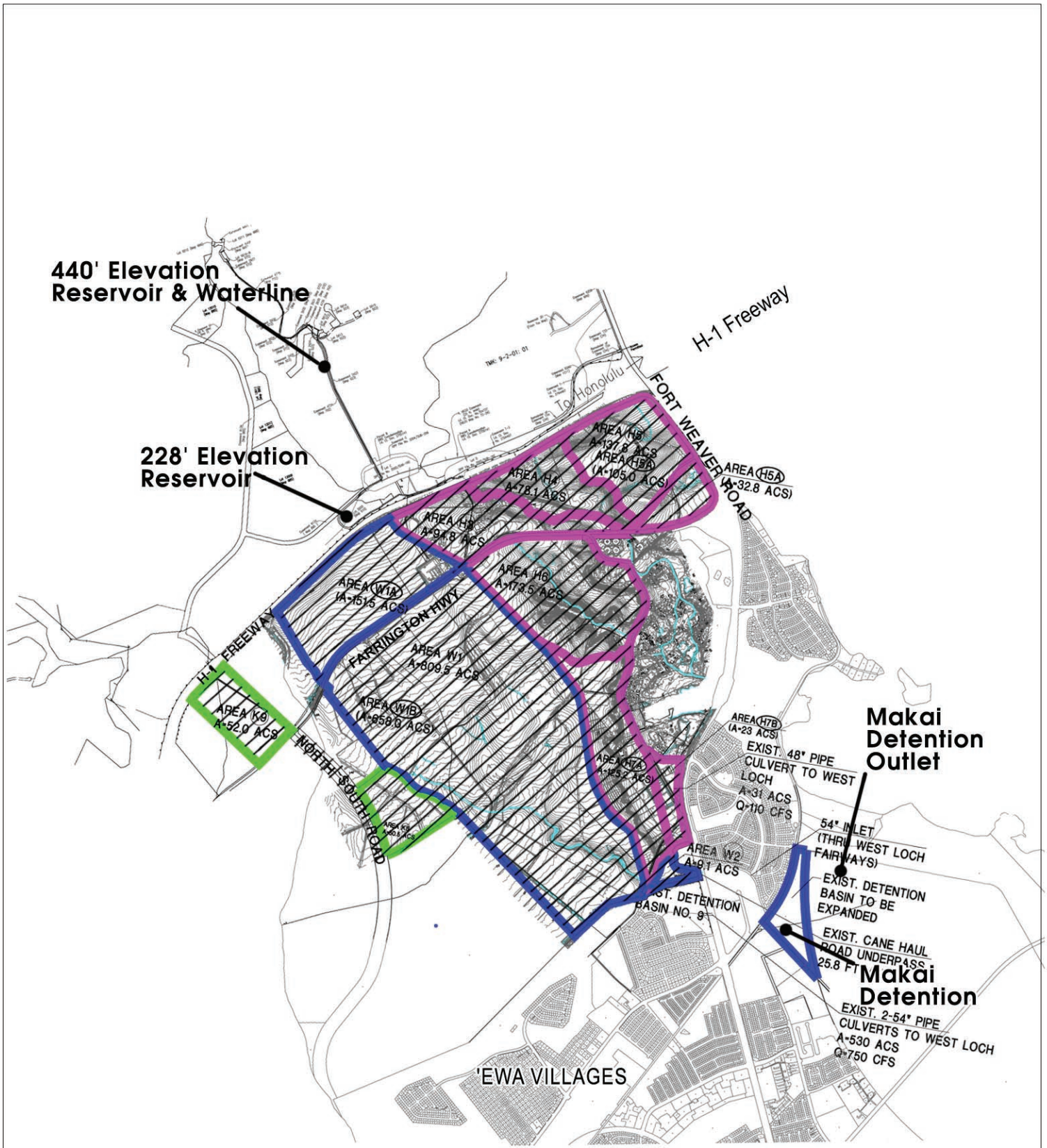
The West Loch drainage basin is the smallest drainage basin affecting the project. The basin upper reaches begin at the makai side of the H-1 Freeway and generally terminates at two locations at the West Loch of Pearl Harbor. One terminus is through West Loch Estates and the other is an overflow from an existing detention basin located east of Fort Weaver Road and just south of the OR&L railroad tracks (See Parcel D1 on Figure 1.5: Parcels Map). This basin contains approximately 937 acres and generates a peak flow of 2,500 CFS. The total basin is within lands that are part of the Ho'opili project.

Anticipated Impacts and Mitigation Measures

With respect to the portion of the project within the Kalo'i drainage basin, the project will be creating on-site detention basins to collect all storm water runoff and discharge the flow at a rate that will not exceed pre-development conditions. The project will also be providing storage and detention to meet the Rules Relating to Storm Drainage Standards with respect to water quality standards. The basin size could be decreased at some time in the future when the terminus of Kalo'i basin is finalized. All developed projects discharging to the Kalo'i basin currently have discharge restrictions and these restrictions will continue until the Kalo'i basin terminus is finalized. The portions of the project within the Kalo'i drainage basin are Parcels A and the western most part of Parcel C adjacent to the North-South Roadway alignment (See Figure 4.52: Drainage Basins). The Petitioner will continue to coordinate with County and State agencies to discuss issues within the Kalo'i Gulch Watershed.

With respect to the Honouliuli Stream drainage basin, the project will provide detention basins to collect all storm water runoff and discharge the flow at a rate that will not exceed the 10-year recurrence flow rate. This is the recognized capacity of the Honouliuli Stream channel. The project will also be providing storage and detention to meet the Rules Relating to Storm Drainage Standards with respect to water quality standards. The portions of the project within the Honouliuli Stream drainage basin are Parcels B and the northeastern part of Parcel C adjacent to Old Fort Weaver Road (See Figure 4.52: Drainage Basins).

With respect to the West Loch drainage basin, the project intends to collect all storm water and route it to the existing detention basin located on the east side of Fort Weaver



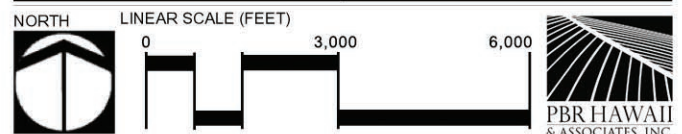
LEGEND

- Project Site Boundary
- Petition Area
- Kaloi Drainage Basin
- West Loch Drainage Basin
- Honouliuli Drainage Basin
- Drainage Basin-Existing
- Drainage Basin-Developed

Figure 4.5: Drainage Basins

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O'ahu, Hawai'i



Source: Bills Engineering, Inc.
 Disclaimer: This graphic has been prepared for general planning purposes only.

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Road and south of the OR&L railroad tracks. The routing would require the installation of a concrete channel from the southeastern end of Parcel C, under Fort Weaver Road (using the existing cane haul underpass) and connecting to the existing detention basin. The basin would be expanded to ensure that the water quality storage component of the City and County of Honolulu Standards was achieved. An overflow from the detention basin would discharge to the West Loch of Pearl Harbor (See Parcel D2 on Figure 1.5: Parcels Map). The portion of the project within the West Loch drainage basin is the bulk of Parcel C (See Figure 4.52: Drainage Basins).

The overflow from the detention basin would have to cross Navy property and permission from the Navy would be required. Initial inquiries have been made to the Navy to see if the overflow can be negotiated. Issues with the Navy include security and access in a post- "9/11" environment, Navy plans for development in the overflow corridor, and the acquisition of a maintenance commitment by the City and County of Honolulu. The concept of the overflow across Navy property is not new and was approved in concept back in the early- to mid- 1990's. Lack of action and the issues cited above are points that need to be resolved for the overflow option to move forward.

If permitted, the overflow option across Navy property will solve drainage problems occurring on Fort Weaver Road, within West Loch Estates and within portions of 'Ewa Villages by effectively collecting the storm water that currently is misdirected across these properties. However, as of this date, the Navy has rejected any considerations to allow increased runoff to cross Navy land.

The alternative drainage solution if the overflow across Navy property cannot be resolved is to construct retention basins on site holding back the total volume of a 100 year- 24 hour storm. These basins would be located on the southern portion of Parcel C.

The project will increase impervious surfaces such as roadways, roofs, paved parking areas, and sidewalks. These surfaces will cause an increase in storm water discharge within the Petition Area. However, detention basins and/or retention basins are being planned and sited to detain and/or retain storm water to ensure that areas downstream of the project are not impacted. Based on comments received from the City and County of Honolulu Department of Facilities Management during the public review period, storm drainage detention and retention basins within the project site shall be privately-owned and maintained, unless particular parcels of land are dedicated to or acquired by the government. During the public review period, the State Office of Planning requested a discussion of low impact development techniques that can be incorporated into the building and site design to improve stormwater management. Table 1.1 of Low Impact Development: A Practitioner's Guide (2006) lists specific Low Impact Development (LID) best management practices (BMP's) and techniques.

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- Preservation of Undisturbed Areas: As recommended, most of the existing undisturbed areas (or uncultivated) areas will be preserved, because the gulches and steeper sloped areas are unsuitable for development. Most of the project area is highly developable, but has been highly disturbed from past and present agricultural cultivation.
- Preservation of Buffers: Naturally vegetated buffers will be defined, delineated and preserved along Honouliuli Gulch.
- Reduction of Clearing and Grading: Clearing and grading of the site will be limited to the minimum amount for the development function, road access and infrastructure.
- Locating Sites in Less Sensitive Areas: Most of the Petition Area is highly developed and does not include sensitive resource areas such floodplains, steep slopes, wetlands, mature forests or critical habitats.
- Open Space Design: While the project will be more densely developed than most of the projects in the Villages of Kapolei or the rest of 'Ewa, this project acknowledges that there are very limited areas on O'ahu left to develop and this will allow other areas in Central O'ahu, North Shore, Ko'olaupoko, Ko'olaupoko and Wai'anae to remain undeveloped.
- Roadway Reduction: The proposed traditional neighborhood design and pedestrian-friendly development concept proposes more but narrower roads than a conventional development, to: 1) ensure lower vehicle speeds; 2) enhance pedestrian safety in crossing the streets; and 3) facilitate safer bicycle travel.
- Sidewalk Reduction: The proposed pedestrian-friendly and traditional neighborhood design development concept proposes meeting minimum standards for sidewalks to: 1) enhance greater pedestrian use, and 2) facilitate safer bicycle travel for children and inexperienced adult bicyclists. Impervious surfaces could be reduced by consolidating separate pedestrian and bicycle paths into multi-modal paths.
- Driveway Reduction: The proposed development will strive to minimize driveway lengths and widths to reduce overall imperviousness.
- Cul-de-sac Reduction: The proposed pedestrian-friendly, traditional neighborhood design development concept seeks to avoid cul-de-sacs to increase connectivity within the project and to surrounding communities.
- Building Footprint Reduction: The proposed transit-oriented development concept is not adverse to taller buildings to reduce the impervious footprint of buildings while recognizing the visual appearance of Kapolei.
- Parking Reduction: The proposed mixed-use, pedestrian-friendly and transit-oriented development concept is supportive of reducing the current off-street parking requirements and reducing the overall imperviousness associated with parking lots.
- Vegetated Buffer/Filter Strips: Where feasible, runoff will be directed to open space buffers to treat and control stormwater runoff from developed areas.
- Open Vegetated Channels: Where feasible, properly designed and constructed

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vegetated channels will be provided to convey runoff, but it is unlikely that will occur along streets dedicated to the City and County of Honolulu.

- Bioretention and Rain Gardens: Where feasible, bioretention and rain gardens will be provided.
- Infiltration: Where feasible, infiltration trenches, basins or leaching chambers will be provided.
- Rooftop Runoff Reduction Mitigation: Where feasible, runoff will be directed from rooftops to pervious areas.
- Stream Daylighting for Redevelopment Projects: Not applicable because there are no previously-culverted/piped streams to "daylight" to restore natural habitats.
- Tree Planting: The proposed project will include street trees, park landscaping and project landscaping to reduce stormwater runoff and provide shade.

Surface water quality can be impacted through development. Per comments received by the State Department of Health Clean Water Branch, any discharges related to project construction or operation activities shall comply with the applicable State Water Quality Standards as specified in Chapter 11-54, HAR. Further, the DOH Clean Water Branch wrote that the Hawaii Revised Statutes, Subsection 342D-50(a), requires that "[n]o person, including any public body, shall discharge any water pollutants into state waters, or cause or allow any water pollutant to enter state waters except in compliance with this chapter, rules adopted pursuant to this Chapter, or a permit or variance issued by the director." The project will need to obtain NPDES permits and Grading Permits (as previously identified in the DEIS). Both required permits have substantial effort identified in their applications specifically addressing BMP issues. The substantive parts of the permitting processes focus on BMP tools and monitoring. Features will include: stabilized gravel entrances, siltation berms, diversion of storm water around work areas, use of detention basins, diversion swales, filter traps at catch basins, calculation of soils losses meeting acceptable levels and monitoring plans. BMP's are an important part of current construction practice. The project will be providing detention basins to meet City and County of Honolulu Standards for water quality treatment. Structural methods may also be used to meet water quality requirements of the Rules Relating to Storm Drainage Standards. Structural methods include the use of Stormceptor® type storm drain manholes.

4.8.5 Solid Waste Disposal Facilities

Existing Conditions

On the island of O'ahu, the majority of residential and commercial trash is disposed of at the Honolulu Program of Waste Energy Recovery (H-POWER) facility, the City and County of Honolulu's waste-to-energy plant located nearby at the Campbell Industrial Park. Approximately 600,000 tons of solid waste is processed annually at the facility, therefore, reducing the volume of solid waste going into landfills by 90 percent. Through a purchase power agreement with HECO, the H-POWER facility provides 46 megawatts (MW) of renewable energy that supplies power to between 40,000 and 45,000 homes on O'ahu on

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a daily basis. Presently, H-POWER has two boilers and one turbine/generator. A proposed third boiler would enable H-POWER to supply electricity to 20 percent more homes each year. Ash and non-processibles are transported and buried at the Waimānalo Gulch Landfill.

Waimānalo Gulch Landfill, which opened in 1989, is located northwest of the proposed Ho'opili project. While the land is owned by the City and County of Honolulu, the landfill is operated by Waste Management, Inc. The site accepts ash and residue from the H-POWER facility, industrial wastes, and non-combustible construction and demolition debris. Commercial haulers pay \$72.75 per ton to dispose solid waste at the facility. During the public review period, the State Land Use Commission reported that it took action to extend the deadline to close the Waimanalo Gulch Sanitary Landfill to November 1, 2008, and the City and County of Honolulu Department of Environmental Services has plans to expand the landfill by another approximately 92.5 acres.

Anticipated Impacts and Mitigation Measures

~~Solid waste will be generated during construction and operation of the proposed Ho'opili project. The amount of waste generated during construction will vary, depending on various conditions such as the type of construction. Project construction will conform to the guidelines and objectives of Chapter 342G, HRS, INTEGRATED SOLID WASTE MANAGEMENT. Construction will also comply with the City and County of Honolulu's approved integrated solid waste management plans in a schedule and time frame satisfactory to the DOH.~~

~~Recycling shall be encouraged within the project including the reuse and recycling of green waste generated during construction clearing and grubbing activities, the use of recycled construction and demolition wastes and the use of materials made from recycled products, the use of locally produced compost as available for landscaping, and the provision of space for recycling bins in the detailed design of the community. As such, a construction waste recycling plan will be prepared before the start of construction.~~

~~According to Popular Mechanics, the approximate municipal solid waste generated per person per day is approximately 4.5 pounds. Assuming an average household size of 3.0 persons, at full build out, the solid waste generated by the project is estimated to average approximately 158,625 pounds per day. It should be noted that this estimate does not account for solid waste that would be recycled, which would be a considerable amount. The goal for waste management is to appropriately reduce, reuse and recycle materials, to minimize generation of solid waste and achieve diversion from landfills. As such, in conformance with Chapter 344-4(2), HRS, the project will promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling.~~

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In the future, the H POWER plant will need to be expanded or an increased emphasis will need to be placed on recycling to dispose of the solid waste. According to the City and County of Honolulu, approximately 15 percent of residential solid waste is recyclable newspaper, aluminum, glass, and plastic; and 25 to 30 percent is compostable yard trimming. The City and County of Honolulu is restarting its curbside pick up recycling program. In November, 2007, two pilot curbside recycling programs began in Mililani and Hawai'i Kai. During the six to twelve month evaluation period, the City and County of Honolulu Department of Environmental Services staff will be coordinating plans for islandwide expansion.

On March 7, 2008, the State Land Use Commission agreed to allow the City and County of Honolulu's Waimanalo Gulch Sanitary Landfill to remain open for at least 18 more months. The City had sought a 24-month extension, through May 1, 2010.

Waste Management of Hawaii has operated the Waimanalo Gulch Sanitary Landfill as an integral part of the City's solid waste management infrastructure for approximately 20 years. The facility is heavily regulated, monitored and controlled by local, state and federal government agencies.

Before Mayor Hannemann took office, the City Council chose to keep the landfill in its current location, after evaluating a wide range of potential options.

Mayor Hannemann has noted that the recent emergency disposal of 28 tons of recalled beef at the landfill demonstrated that O'ahu will always need such a facility. However, the City and County of Honolulu is striving to decrease the amount of waste that's sent to the landfill, including: expanding the City's curbside residential recycling program; shipping at least 100,000 tons of waste to a mainland facility, and expanding the H-Power garbage-to-energy plant.

According to the U.S. Environmental Protection Agency, in 2006, individuals recycled 1.5 pounds of our individual waste generation rate of 4.6 pounds per day, for a net waste generation amount of 3.1 pounds per day. Assuming an average household size of 3.0 persons, at full build-out, the solid waste generated by the project is estimated to average approximately 109,275 pounds per day. According to the City and County of Honolulu, approximately 15 percent of residential solid waste is recyclable newspaper, aluminum, glass, and plastic; and 25 to 30 percent is compostable yard trimming. In the future, the H-POWER plant will need to be expanded or an increased emphasis will need to be placed on recycling to dispose of the solid waste.

Recycling will be encouraged within the project including the reuse and recycling of green waste generated during construction clearing and grubbing activities, the use of recycled construction and demolition wastes and the use of materials made from recycled products, the use of locally produced compost as available for landscaping, and the

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The City and County of Honolulu is restarting its curbside pick up recycling program. In November, 2007, two pilot curbside recycling programs began in Mililani and Hawai'i Kai. During the six to twelve month evaluation period, the City and County of Honolulu Department of Environmental Services staff will be coordinating plans for islandwide expansion.

On June 27, 2008, the Associated Press reported that Mililani and Hawai'i Kai residents have recycled 54 percent of their cans, bottles, newspapers and green waste during the city's six-month curbside recycling pilot project. City Officials with the City and County of Honolulu Department of Environmental Services (DES) are reportedly satisfied with the results and are moving forward with plans to provide some 160,000 O'ahu homes the curbside recycling service by May 2010. In the new plan, the city will collect garbage and recyclables each once a week. The DES will no longer have garbage pickup twice-weekly. A study released by DES predicts the program will divert an estimated 53,800 tons of mixed recyclables and green waste from O'ahu landfills. They plan to begin expanding the program to more communities in November 2008.

The goal for waste management is to appropriately reduce, reuse and recycle materials, to minimize generation of solid waste and achieve diversion from landfills. As such, in conformance with Chapter 344-4(2), HRS, the project will promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling.

4.8.6 Electrical Facilities

Existing Conditions

Electricity for the area is currently provided by the Hawaiian Electric Company, Inc. (HECO). HECO owns and maintains a pole line along Farrington Highway that supports two ~~138-kilo-volt~~ kilovolt (kV) lines and one 12.47-kV line (with provisions for a 46-kV line in the future). The pole line runs along Farrington Highway from HECO's 'Ewa Nui Substation to Palehua Road. From the 'Ewa Nui Substation, the 12.47-kV line and a 46-kV line runs along Farrington Highway to the Waipahu Interchange and up Fort Weaver Road. The line also runs along Old Fort Weaver Road to the intersection with Fort Weaver Road. A 12.47-kV line serving the West Loch area, traverses the project site makai toward the Old Fort Weaver Road. Both of the 138-kV lines turn south at Palehua Road and follow the alignment of the future North-South Road to the OR&L right-of-way. Two other 138-kV pole lines from the Kahe Power Plant pass to the north of Parcel A, mauka of the H-1 Freeway. In response to the EISPN, HECO wrote that it has "...existing facilities within the project area that will require continued access for maintenance purposes..." The Petitioner will allow HECO continued access for maintenance purposes. An existing 46-kV circuit that is supported by wood poles follows the alignment of the H-1

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Freeway. On the Honolulu-side of Pu'u Makakilo, a spur continues across the H-1 Freeway to the Pacific Concrete and Rock Substation, while the main branch of the pole line continues to parallel the H-1 Freeway alignment and heads toward the 'Ewa Nui Substation.

HECO representatives have provided easement documents and maps of existing HECO facilities that are currently encumbered by the Ho'opili project. These easements will be researched during the preliminary engineering phase of the project to determine whether the affected facility will need to be relocated.

Anticipated Impacts and Mitigation Measures

The project is initially expected to generate an electrical demand of approximately 42 megavolt amperes (MVA) for conventional development. At full build-out, the estimated electrical demand is estimated to be approximately 98 MVA (assuming a diversity factor of 70%). HECO has determined that to serve the ultimate load for the proposed development, three distribution substations, including power lines to and from them, will be needed.

The first distribution substation is proposed to be located mauka of Farrington Highway, between the 'Ewa Nui Transmission Substation and Fort Weaver Road. The second distribution substation is proposed to be located adjacent Ho'opili's main road perpendicular to North-South Road. The third distribution substation is proposed to be located between the North-South Road and the 'Ewa Nui Transmission Substation. The three substations may be relocated from the locations described above based on how development proceeds. Each distribution substation will require at least two 46-kV feeders and one or two transformers, with a third 46-kV feeder and up to four transformers total required for full-build-out of the substation. The new substation sites, each approximately 20,000 square feet in size, will be likely kept at a low profile. HECO will own/maintain the land sited for the distribution substations.

All new primary and secondary distribution lines serving the Ho'opili project will be placed underground to reduce visual impacts.

The installation of power lines and substations may require approval by the State Public Utilities Commission depending if the primary provider of electrical power is HECO or another private utility company, as well as other applicable State and County approvals and permits. In response to the EISPN, HECO wrote that it "...has no objections at this time." Also required is the use of State and County road rights-of-way for the installation of powerlines.

If HECO is primary provider of electrical power, then some of the projected demand would be offset if the solid waste generated daily by the development were burned at the City and County of Honolulu's H-POWER facility. An estimated 59 tons of solid waste

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will be produced daily by the development (assuming no recycling), and at 1 MW of electricity per 35 tons of solid waste, approximately 1.67 MW will be generated from the property. Under a purchase power agreement with HECO, the H-POWER facility provides 46 MW of renewable energy that supplies power to between 40,000 and 45,000 homes on O'ahu on a daily basis. A proposed third boiler at the facility would enable H-POWER to supply electricity to 20 percent more homes each year.

HECO is planning to build a 110-megawatt (MW) simple cycle combustion turbine generator power plant in 2009. According to the HECO website, HECO "is looking for companies to supply enough biofuel -- either ethanol or biodiesel -- to fuel HECO's new Campbell Industrial Park Generating Station planned to be in service by mid-2009. HECO reached an agreement with the State Consumer Advocate, subject to approval by the State Public Utilities Commission, to fuel this new 110-megawatt peaking plant with 100-percent, renewable biofuel. "

Based on DBEDT Strategic Industries Division's recommendations, the Petitioner's mechanical and electrical consultants, in consultation with its sustainability consultant, will be directed to review the City and County of Honolulu's Energy Code early in the project and to consult with Hawaiian Electric Company, Inc. (HECO) on demand-side management programs that offer rebates for installation of energy-efficient technologies (including solar power and energy-efficient appliances). During the public review period the State Office of Planning requested discussion of the following: the U.S. Green Building Council's (GBC) Leadership in Energy and Environmental Design (LEED) certification; Hawaii's Green Built, and Zero-Net Energy Green Homes.

U.S. Green Building Council's (GBC) Leadership in Energy and Environmental Design (LEED) Certification - According to the GBC website: "The Leadership in Energy and Environmental Design (LEED) Green Building Rating System™ encourages and accelerates global adoption of sustainable green building and development practices through the creation and implementation of universally understood and accepted tools and performance criteria. LEED is a third party certification program and the nationally accepted benchmark for the design, construction and operation of high performance green buildings. LEED gives building owners and operators the tools they need to have an immediate and measurable impact on their buildings' performance. LEED promotes a whole-building approach to sustainability by recognizing performance in five key areas of human and environmental health: sustainable site development, water savings, energy efficiency, materials selection and indoor environmental quality." Even though State agencies are directed to implement LEED Silver to the extent possible (under Chapter 196 of the Hawaii Revised Statutes), to date, there have only been a couple of projects built by the State of Hawai'i (Imiloa Astronomy Center, Waipahu Middle School Cafeteria, Hawai'i Gateway Energy Center) so certified.

According to the GBC website: "The LEED for Neighborhood Development Rating System integrates the principles of smart growth, urbanism and green building into the first

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national system for neighborhood design. LEED certification provides independent, third-party verification that a development's location and design meet accepted high levels of environmentally responsible, sustainable development. Currently in its pilot period, LEED for Neighborhood Development is a collaboration among USGBC, the Congress for the New Urbanism and the Natural Resources Defense Council. The pilot program is no longer accepting projects. The post-pilot version of the rating system, which will be available to the public, is expected to launch in 2009." Ho'opili is part of the LEED-ND pilot program, and it is in the early stages of working with the U.S. Green Building Council (USGBC) to obtain information required to implement LEED-ND to the extent that it is feasible and practicable.

A preliminary overview of LEED-ND features to be incorporated into the development project site include:

In order to reduce the impacts of urban sprawl, or unplanned, uncontrolled spreading of urban development into areas outside of the metropolitan region, and create more livable communities, LEED for Neighborhood Development communities include:

- locations that are closer to existing town and city centers,
- areas with good transit access, and
- sites adjacent to existing development.

LEED for Neighborhood Development emphasizes the creation of compact, walkable, vibrant, mixed-use neighborhoods with good connections to nearby communities (such as UHWO and DHHL East Kapolei Development 2). Research has shown that living in a mixed-use environment within walking distance of shops and services results in increased walking and biking, which improve human cardiovascular and respiratory health and reduce the risk of hypertension and obesity.

LEED for Neighborhood Development also encourages increased transportation choice and decreased automobile dependence. These two things go hand-in-hand; convenient transportation choices such as buses, trains, car pools, bicycle lanes and sidewalks, for example, are typically more available near neighborhood centers and town centers, which are also the locations that produce shorter automobile trips. All of these concepts are being incorporated into the planning of the Ho'opili project.

Hawaii Builtgreen™ Home Program - According to the DBEDT website: "The 'Hawaii BuiltGreen™ Program' is a statewide program to make it easier for builders and homeowners to design and build energy- and resource-efficient homes in Hawaii. It includes hands-on, right-here-in-Hawaii examples of what to do and how to do it, such as a real home, exhibits, seminars, and workshops." According to the Building Industry Association website, there are no Hawaii BuiltGreen™ Award-winning housing projects built by the State of Hawai'i.

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Zero-Net Energy Green Homes - According to Wikipedia: "A zero energy building (ZEB) or net zero energy building is a general term applied to a building with a net energy consumption of zero over a typical year. Zero energy buildings are gaining considerable interest as a means to cut greenhouse gas emissions and conserve energy... There are many overlapping similarities between the goals of ZEB and GB [Green Buildings]. However, the subtle differences are significant, but diminishing, as scarce knowledge becomes more widespread."

The goal of ZEB design is the reduction, and eventual elimination of, energy bills and greenhouse gas emissions using potentially complex thermal physics necessary for zero energy design.

It is unlikely that there are any net zero energy housing projects built by the State of Hawai'i.

The Petitioner is also considering the potential use of photovoltaic cells on future project buildings, where practicable. As an example, large national retailers are entering agreements with micro utility companies who arrange for solar power systems financing and sells such systems to the micro utility company's financing partner. In addition, these micro utilities design, install and maintain these photovoltaic systems per each customer's requirements. The customer pays the financing partner for the solar electricity generated over a long-term power purchase agreement. At the end of the term specified under the agreement, the customer typically has the option to renew the agreement, transfer the equipment to a new site, or purchase the system outright from the financing partner.

To reduce energy consumption from the operation of air-conditioners, the Petitioner is considering the installation of chill water lines. While the above two options are alternatives to relying on only HECO for electrical needs, it is possible that these proposed uses may still have a need for transmission line easements within, and the use of, State and County road rights-of-way.

As previously noted, portions of the HECO's 138-kV lines run through the Petition Area, along Farrington Highway and follow the alignment of the future North-South Road to the OR&L right-of-way. These lines are suspended near the tops of large, tall metal poles. According to HECO, the State of Hawaii Department of Health (DOH) recommends a prudent avoidance policy for electric and magnetic fields.

According to a HECO flyer titled Electric and Magnetic Fields (EMF), "[s]tudies disagree on EMF and health effects," therefore, HECO "designs and builds facilities to minimize EMF consistent with DOH's EMF policy[.]" Since coordination with HECO is required in designing future buildings within the Petition Area, EMF concerns will likely be addressed.

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4.8.7 Telephone/Communication Facilities

Existing Conditions

Hawaiian Telcom, which provides telephone service to the area, owns and maintains a pole line along Farrington Highway, Old Fort Weaver Road and Kunia Road. This pole line is substandard; however, Oceanic Time Warner Cable and Pacific Lightnet have an agreement with Hawaiian Telcom for use of its poles and have attached cables to extend their facilities to Kapolei. AT&T has a fiber cable buried within the southern shoulder of the existing Farrington Highway right-of-way. In addition, the Federal government owns a buried joint tactical support cable within the Farrington Highway right-of-way.

Anticipated Impacts and Mitigation Measures

The project will increase the demand for telephone/communication service in the 'Ewa region. If Hawaiian Telcom and Oceanic Time Warner Cable are the selected providers, they will need to extend their trunking facilities from Farrington Highway to serve the proposed Ho'opili project. It is possible that one or more micro-utility companies may be providing a portion or all telephone/communication services to the Petition Area and the rest of the Project Area. These telephone and communication lines (to be installed by Hawaiian Telcom, Oceanic Time Warner Cable and/or a micro-utility company), will require easements within and the use of State and County road right-of-ways. Electrical drawings of the project will be submitted to Hawaiian Telcom for its review and approval before the start of construction. There are no significant impacts to existing telephone or cable service that are anticipated, and as such, no mitigation measures are proposed for the expansion of existing service.

Due to the current location of the existing telephone pole line along Farrington Highway; Hawaiian Telcom, Oceanic Time Warner Cable, Pacific Lightnet will have to relocate their lines to either new poles or underground along Farrington Highway in the future. Similarly, another provider of telephone/communication lines to the proposed project may locate their lines to new poles along Farrington Highway. During the public review period for the EISPN, Hawaiian Telcom noted that with City and County of Honolulu's planned widening of Farrington Highway, "further review is required by Hawaiian Telcom during the design stages of the project to determine the scope of work and the associated relocation costs."

All new telephone and communication lines serving the Petition Area will be placed underground to reduce visual impacts.

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4.9 PUBLIC SERVICES AND FACILITIES

The project will increase the population of 'Ewa. As such, the demand for public services (i.e., police and fire protection, public transportation) and public facilities (i.e., schools, hospitals, parks) will increase. The project will include as many as five public school sites and approximately 210 acres of public parks and open space.

4.9.1 Educational Facilities

Existing Conditions

The following table compiled from the State Department of Education (DOE) sources lists the past and projected enrollments of public schools within the vicinity of the Petition Area.

Table 4.143. Public School Enrollment

SCHOOL	2006-2007 CAPACITY	2002-2003 ENROLLMENT	2003-2004 ENROLLMENT	2004-2005 ENROLLMENT	2005-2006 ENROLLMENT	2006-2007 ENROLLMENT	2007-2008 ENROLLMENT	2012 PROJECTED ENROLLMENT	2012 ENROLLMENT LESS 2006- 2007 CAPACITY
Middle and High Schools – Kapolei Complex									
Kapolei High	2,015	1,356	1,928	2,162	2,333	2,341	2,285	2,302	287
Kapolei Middle	1,818	1,585	1,698	1,699	1,580	1,616	1,559	1,737	-81
Middle and High Schools – Campbell Complex									
Campbell High	2,060	1,942	1,854	2,009	2,283	2,370	2,491	2,627	567
'Ewa Makai Middle*	1400	--	--	--	--	--	--	1570	170
Ilima Intermediate	1,306	1,161	1,225	1,246	1,201	1,212	1,302	725	-581
Elementary Schools – Kapolei Complex									
Barbers Point	693	374	381	494	529	493	506	628	-265
Kapolei	1,246	1,183	1,165	1,173	1,126	1,100	1,065	905	-341
Kapolei II*	--	--	--	--	--	--	--	550	N/A
Makakilo	588	510	493	521	509	505	479	563	-25
Mauka Lani	681	589	607	582	577	580	547	598	-83

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SCHOOL	2006-2007 CAPACITY	2002-2003 ENROLLMENT	2003-2004 ENROLLMENT	2004-2005 ENROLLMENT	2005-2006 ENROLLMENT	2006-2007 ENROLLMENT	2007-2008 ENROLLMENT	2012 PROJECTED ENROLLMENT	2012 ENROLLMENT LESS 2006- 2007 CAPACITY
Elementary Schools – Campbell Complex									
‘Ewa	741	831	850	878	933	925	934	944	203
‘Ewa Beach	728	604	594	601	665	415	365	416	-312
Holomua	1,427	1,277	1,344	1,428	1,442	1,534	1,444	1,496	69
Iroquois Point	947	513	455	464	563	653	668	573	-374
Kaimiloa	752	717	691	678	679	661	649	557	-195
Pōhākea	670	586	563	556	551	526	494	472	-198
Keone‘ula	960	--	--	--	--	431	746	916	-44

* The proposed schools have yet to be constructed.

Source: State of Hawai‘i, Department of Education, October 2007

The UHWO is proposing a 12-acre elementary school site and the DHHL is proposing an elementary school site and a middle school site within its East Kapolei Development Parcel 2 project area. A 50-acre high school on DHHL land between Farrington Highway and the H-1 Freeway is under discussion.

For planning purposes, the DOE assumes an enrollment of 550 students per elementary school, 600 students per middle school, and 1,000 students per high school. However, in 2007, the Hawaii State Legislature passed Act 245 regarding impact fees for schools. Act 245 defines “Recent School Construction Averages” as the department’s historical average acres required and enrollment capacity for elementary (K-5), middle (6-8), and high (9-12). Based on existing school construction data, the historical average design standards are as follows:

Table 4.14. Existing School Construction Data

SCHOOL TYPE	ACRES/SCHOOL	ENROLLMENT/SCHOOL	ACRES/STUDENT
Elementary School	12.5	800 students	.0156 acre
Middle School	16.5	1,500 students	.0110 acre
High School	49.0	1,600 students	.0306 acre

During the Draft EIS public review period, the DOE commented that “Different schools are designed for different enrollment sizes, and once schools open, enrollments change over time. Campus sizes also vary. Historical averages do not determine school design standards.” The Petitioner concurs and proposes to provide a total of 90 acres throughout the project site that can be planned by DOE for public schools. The Petitioner is working with the DOE so that the larger land area campuses are sited away from mixed-use developments. Schools fitting within a single-block can be sited in higher density areas.

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Anticipated Impacts and Mitigation Measures

The Petitioner has held frequent preliminary consultations with the DOE on the total number of public schools that need to be built within the project and their preliminary locations. While the number of schools has not been agreed upon, the project land use plan has been designed to include as many as five public school sites. The Conceptual Land Use Plan (See Figure 2.9: Conceptual Land Use Plan) shows possible locations for three elementary schools, one middle school, and one high school. In total, approximately 90 acres will be reserved for public schools and facilities to meet the demand for educational facilities in the growing 'Ewa region. The proposed schools in the Project Area will serve residents of Ho'opili and possibly some school-aged children from nearby future subdivisions in UHWO and DHHL East Kapolei Development Parcels 1 and 2. A high school will be attractive to ~~certainly attract residents~~ homebuyers from areas outside of Ho'opili. This does not include the possibility that one or two private schools may be included in Ho'opili. If a planned private school(s) is built within the project, this will increase educational choices for local families. UHWO will offer higher education opportunities for regional residents.

4.9.2 Police Protection

Existing Conditions

The proposed project is located within Honolulu Police Department (HPD) District 8, which encompasses the leeward coast and the 'Ewa Plain. There are approximately 100 field officers assigned to this district, and response time for the entire district fluctuates between five and seven minutes. In order to meet the growing needs of the 'Ewa Plain communities, in 2000, the City and County of Honolulu opened the Regional Kapolei Police Station at 1100 Kamokila Boulevard.

Anticipated Impacts and Mitigation Measures

The project will increase the population of Kapolei and the demand for police service. According to the *Ewa Development Plan*, the 'Ewa Villages Substation is planned to service the East 'Ewa region, which includes the Ho'opili project. The service date for this substation has yet to be determined. The Petitioner is proposing a public facility site immediately mauka of Farrington Highway near the western portion of Parcel B for a use such as a police substation, fire station and/or emergency medical service (EMS) site. During the public review period for the EISPN, the HPD wrote that "the project should have no unanticipated impact on the facilities or operations of the Honolulu Police Department." During the public review period for the Draft EIS, the HPD wrote that "the Honolulu Police Department (HPD) will need to expand its patrol services as Ho'opili is developed... the HPD looks forward to making the best use of the public facility site proposed by the developer as planning progresses."

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4.9.3 Fire Protection

Existing Conditions

Fire protection in the *Ewa Development Plan Area* is provided by the Honolulu Fire Department (HFD) 'Ewa Beach Fire Station (an engine company), Makakilo Fire Station (an engine company), and Kapolei Fire Station (an engine and ladder company, and the Battalion 4 Headquarters). The Kapolei Fire Station located in Kapolei Business Park was completed in 1995 to serve the expanding development on the 'Ewa Plain.

Portions of the Petition Area consist of vacant scrub vegetation, which combined with the 'Ewa region's low annual rainfall, creates a potential fire hazard.

Anticipated Impacts and Mitigation Measures

The project will increase the population of 'Ewa and the demand for fire service. According to the *Ewa Development Plan*, to meet the projected population and economic growth in 'Ewa by 2020, three fire stations at 'Ewa Villages, Ko 'Olina, and Makaiwa Hills are planned, however service dates have yet to be determined. A new fire station is being planned on the DHHL East Kapolei Development Parcel 1 site near the intersection of Kapolei Parkway and North-South Road. The Petitioner is proposing a public facility site immediately mauka of Farrington Highway near the western portion of Parcel B for a use such as a fire station, EMS site and/or police substation. Within the Petition Area, access for fire apparatus, water supply, and building construction will be in conformance with existing codes and standards. As such, fire apparatus road shall be designed and constructed in accordance with the Uniform Fire Code, Section 902.2.1, as amended. Water infrastructure shall be designed and installed in accordance with the Uniform Fire Code, Section 903.2, as amended. In addition, civil drawings will be submitted to HFD for its review and approval.

4.9.4 Medical Facilities

Existing Conditions

Health care services in the 'Ewa region are provided by Hawai'i Medical Center West (the nearest hospital facility), Pali Momi Medical Center, Wahiawā General Hospital, Kaiser Permanente Waipi'o Clinic, and the recently opened Kapolei Medical Park (located across the Kapolei Shopping Center at the corner of Farrington Highway and Fort Barrette Road). Other routine medical services can be obtained at major hospital facilities in urban Honolulu, about a 30-minute drive from the subject property. The City and County of Honolulu has 18 emergency medical services Advanced Life Support Ambulance units and two Rapid Response Paramedic units on O'ahu. Two of the Advanced Life Support Ambulance units are located nearby, one at the Kapolei Fire Station, the other at the Waipahu Fire Station. One of the Rapid Response Paramedic units is located at the nearby Hawai'i Medical Center West.

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Anticipated Impacts and Mitigation Measures

The project will increase the population of 'Ewa, and as such, there will be an occasional and unavoidable demand for emergency medical services. It is unlikely, however, that this demand will impact the level of service provided to other residents of O'ahu. The Petitioner is proposed a public facility site immediately mauka of Farrington Highway near the western portion of Parcel B for a use such as a police substation and/or EMS site. Existing medical and healthcare facilities in the 'Ewa region and surrounding areas should be able to accommodate the anticipated increase in demand.

4.9.5 Recreational Facilities

Existing Conditions

Recreational facilities in the 'Ewa area include regional parks, community parks, neighborhood parks, and beach/shoreline parks. Regional parks are large recreational complexes. According to the City and County of Honolulu Department of Parks and Recreation (DPR), community parks serve an approximate population of 10,000 people and normally include play fields, courts, and a recreation building. Neighborhood parks serve an approximate population of 5,000 people and usually include play fields, courts, and a comfort station. Beach/shoreline parks are day use parks primarily for swimming, sunbathing, and picnicking. Existing parks in the 'Ewa area are listed in the following table.

Table 4.15. 'Ewa Parks

NAME	TYPE	SIZE (ACRES)
Barbers Point Beach Park	Beach	7.39
'Ewa Beach Community Park	Community	13.25
'Ewa Beach Park	Beach	4.88
'Ewa Mahiko Neighborhood Park	Neighborhood	6.33
Kahe Point Beach Park	Beach	4.47
Kamokila Park	Community	5.89
Kapolei Community Park	Community	12.00
Kapolei Regional Park	Regional	69.39
Makakilo Community Park	Community	8.50
Makakilo Neighborhood Park	Neighborhood	4.01
Mauka Lani Neighborhood Park	Neighborhood	4.40
One'ula Beach Park	Beach	30.00
Pu'uloa Neighborhood Park	Neighborhood	4.34
West Beach Shoreline Park, North	Beach	10.00
West Beach Shoreline Park, South	Beach	18.26
Source: <i>State Comprehensive Outdoor Recreation Plan</i> , State of Hawai'i, Department of Land and Natural Resources, May 2003		

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Anticipated Impacts and Mitigation Measures

The project includes approximately 210 acres for park and open space. The Petitioner proposes a series of parks and open spaces including a district park with active playfields, proposed to be located within the center of the Ho'opili project. In addition, a Canyon Park, located at the southeastern portion of the Ho'opili project, will provide a unique wilderness-type park alternative for residents. A Civic Plaza is envisioned as a community gathering space for outdoor concerts, farmer's markets, and other community events. Interspersed throughout the project will be "mini" (neighborhood) parks

Open space buffers are proposed to be located along the H-1 Freeway and Old Fort Weaver Road. In addition, linear parks and open space will encircle the Ho'opili project with walking/biking paths. "Mini" parks located throughout the project will be within walking distance of most residences. A regional bikeway plan has been developed in cooperation with UHWO, DHHL and HCDA. Figure 4.6~~3~~: East Kapolei Regional Bikeway Plan shows the approximate alignment of bikeways being proposed by DHHL, UHWO and the Petitioner and how they may connect to bikeways proposed by others (such as HCDA), the bike path shown on the Ewa DP Public Facilities Map, the bikeways shown on the State Bicycle Plan 2003, and park sites proposed by HCDA, DHHL, UHWO and the Petitioner, and possible transit stops (locations being finalized as of this writing). Based on comments received from the City and County of Honolulu Department of Facilities Management during the public review period, project bikeways and walkways not located within road rights-of-ways dedicated to the government will be privately-owned and maintained.

The City and County of Honolulu's Park Dedication Ordinance applies to all new residential developments and will mitigate the demand for recreational facilities. In addition, the project may include organizations that provide recreational and/or social service facilities such as the Boys and Girls Clubs and YMCAs.

The City and County of Honolulu Department of Parks and Recreation (DPR) reviewed the EISPN and Draft EIS, and wrote that it had no comments to offer at this time. As recommended in the City and County of Honolulu Department of Design and Construction (DDC), the Petitioner will meet with City officials from the Department of Planning and Permitting, DDC, and DPR at an early stage in the development's planning process to develop a conceptual plan for overall park development which is acceptable and appropriate.

4.9.6 Public Transit

Existing Conditions

Oahu Transit Services, Inc. under contract to the City and County of Honolulu provides TheBus fixed-route service to the communities adjacent to and in the general vicinity of

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the proposed Ho'opili project. These routes include both suburban trunk routes and express routes. TheBus operates seven bus lines that directly serve the proposed Project and its immediate vicinity, they include:

- **Route A City Express.** Route A operates express service that connects Waipahu and Pearlridge with Downtown and the University of Hawai'i at Mānoa. Service is provided at approximately 15 minute intervals between 4:45 AM and 10:00 PM on weekdays, and 30 minute intervals between 5:00 AM and 8:30 PM on weekends.
- **Route 41 Kapolei Transit Center.** This route serves the Villages of Kapolei areas, including a portion of the Makakilo Drive-Fort Barrette Road. Service is provided approximately at one hour intervals from about 5:00 AM to 9:00 PM, seven days a week.
- **Route 42 'Ewa Beach.** Route 42 provides service along Farrington Highway in the City of Kapolei at half-hour intervals from approximately 6:00 AM to 1:30 AM for westbound travel seven days a week. Eastbound service runs from approximately 4:00 AM to 1:00 AM also seven days a week.
- **Route 43 Waipahu Transit Center.** This route provides service along the H-1 Freeway and through the City of Waipahu, connecting Waipahu to downtown Honolulu. Service is provided seven days a week at half-hour intervals from 7:00 AM to 5:00 PM.
- **Route 81 Waipahu Express (PM)/ Downtown Express (AM).** This route provides express service at approximately 15 minute intervals from Waipahu to Downtown during the morning hours between 4:30 AM and 7:30 AM. Evening service frequency to Waipahu varies from 15 to 30 minute intervals and operates between 3:00 PM and 6:20 PM.
- **Route 91 Downtown Express (AM) / 'Ewa Beach Express (PM).** Service is provided along the H-1 Freeway connecting the Downtown to 'Ewa Beach. Eastbound service on this route runs at 20 minute intervals from 4:30 AM to 7:00 AM, connecting 'Ewa Beach to the Downtown. Westbound service to 'Ewa Beach is provided during the PM hours at 20 minute intervals beginning at 3:25 PM and concluding at 6:15 PM.
- **Route 102 Villages of Kapolei Express.** This route provides three morning Honolulu-bound trips and three afternoon return trips to the Villages of Kapolei during the peak commute periods. The route provides service along Fort Barrette Road and Farrington Highway in the Villages of Kapolei area.

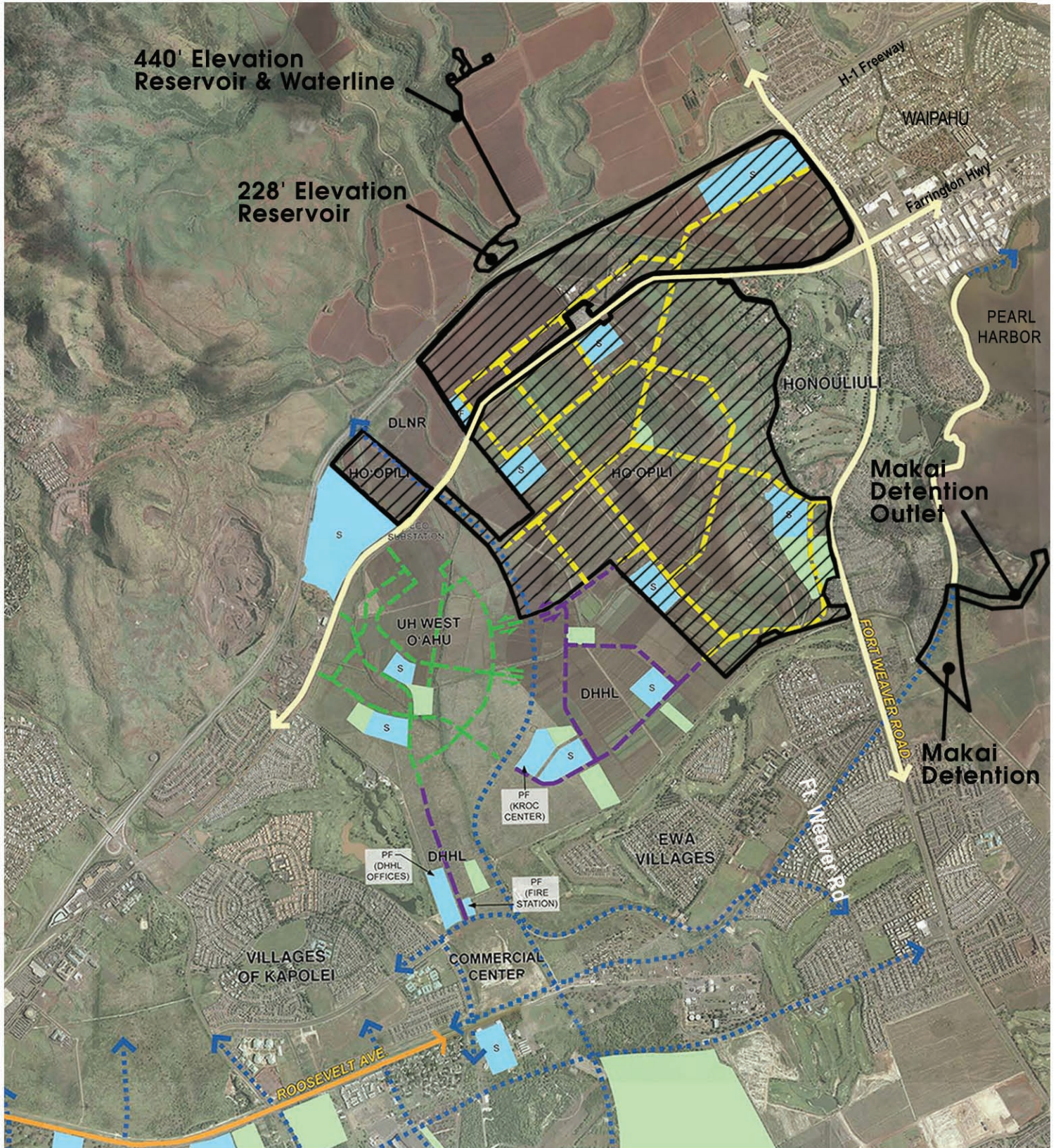


Figure 4.6: East Kapolei Regional Bikeway Plan

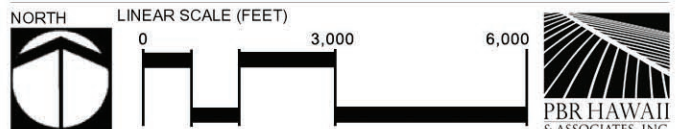
LEGEND

- Project Site Boundary
- Petition Area
- Proposed UH West O'ahu Bikeway
- Proposed Ho'opili Bikeway
- Proposed DHHL Bikeway
- Proposed Bikeway by Others
- Existing State Bike Plan
- Pearl Harbor Historic Trail and Leeward Bikeway
- Proposed Parks
- Proposed Schools
- Proposed Public Facility
- Right-in / Right-out
- Right-in / Right-out

Source: State of Hawaii Department of Transportation Bicycle Plan 2000;
 Draft Ewa Connectivity Study 2007.
 Disclaimer: This graphic has been prepared for general planning purposes only.

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In addition to TheBus express routes, the Leeward Oahu Transportation Management Association (LOTMA) also sponsors an express bus service along Fort Weaver Road to Honolulu with one morning and one afternoon trip.

Future Conditions

The City and County of Honolulu is planning for a high-capacity transit corridor project between Kapolei and the University of Hawai'i at Mānoa. The Honolulu High-Capacity Transit Corridor Project (HHCTCP) has evaluated transit alternatives for the 23-mile long corridor between Kapolei and UH Mānoa. On December 22, 2006, the City Council adopted Bill 79 (2006), CD2, FD2 (Ordinance 07-001) which selected the fixed guideway alternative as the Locally Preferred Alternative (LPA). The LPA route travels between Kapolei and the University of Hawai'i at Mānoa, starting at or near the intersection of Kapolei Parkway and Kalaeloa Boulevard, down Saratoga Avenue to North-South Road (green route) or along Kamokila Boulevard (yellow route), as determined by the City and County of Honolulu administration before or during preliminary engineering. The route then continues to Farrington Highway across Ft. Weaver Road, to Kamehameha Highway to Salt Lake Boulevard and Aolele Street, as determined by the City administration before or during preliminary engineering to downtown Honolulu via Dillingham Boulevard. After leaving Dillingham Boulevard, the alignment would continue along Nimitz Highway, Halekauwila Street and Kapi'olani Boulevard to UH Mānoa with a branch to Waikīkī (See Figure 4.74: Planned High-Capacity Transit Corridor & Proposed Transit Station). The City and County of Honolulu will now undertake preliminary engineering and is in the process of preparing the environmental impact statement for the LPA. As the first project, the City Council selected a minimum operable segment (MOS) that will begin near the Kroc Center on North-South Road to Farrington Highway, through Waipahu, Pearl City, Aiea, and via Salt Lake Boulevard through downtown Honolulu to Ala Moana Center. As of this writing, we understand that the portion of the alignment between the Kroc Center and Waipahu, the location of the transit maintenance and storage facility, and the location of potential transit stations are being finalized.

Both of the possible Kapolei alignments include at least one station within the Ho'opili site. If required for the transit project, the Petitioner will coordinate with DTS regarding the possibility of allocating a portion of the project lands for a potential high-capacity transit maintenance and storage facility.

The Fixed Guideway Alternative alignments that are adjacent to the Ho'opili site would either be at-grade with limited grade crossings or on elevated structures. The fixed guideway could be as narrow as 25 feet wide. If the structures are elevated, they would be supported by six foot wide columns and the structure could be about 30 feet tall.

At this time, no decision has been made regarding the technology that would be used for the Fixed Guideway Alternative. This decision will be made at a later stage of project development. The City and County of Honolulu is preparing a Draft EIS and is in the

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process of requesting approval from the Federal Transit Administration to begin preliminary engineering (project design). Now that the City Council has selected the Fixed Guideway Alternative, the area landowners, including DHHL, UHWO and the Petitioner have been coordinating with the Department of Transportation Services in finalizing the high-capacity transit corridor alignment and location of transit stations between the Kroc Center and Waipahu. The earliest that construction could begin on a selected alternative would be 2009. Due to the size and cost of the overall project, it is likely to be built in several phases lasting several years, starting with the first project, or MOS.

Anticipated Impacts and Mitigation Measures

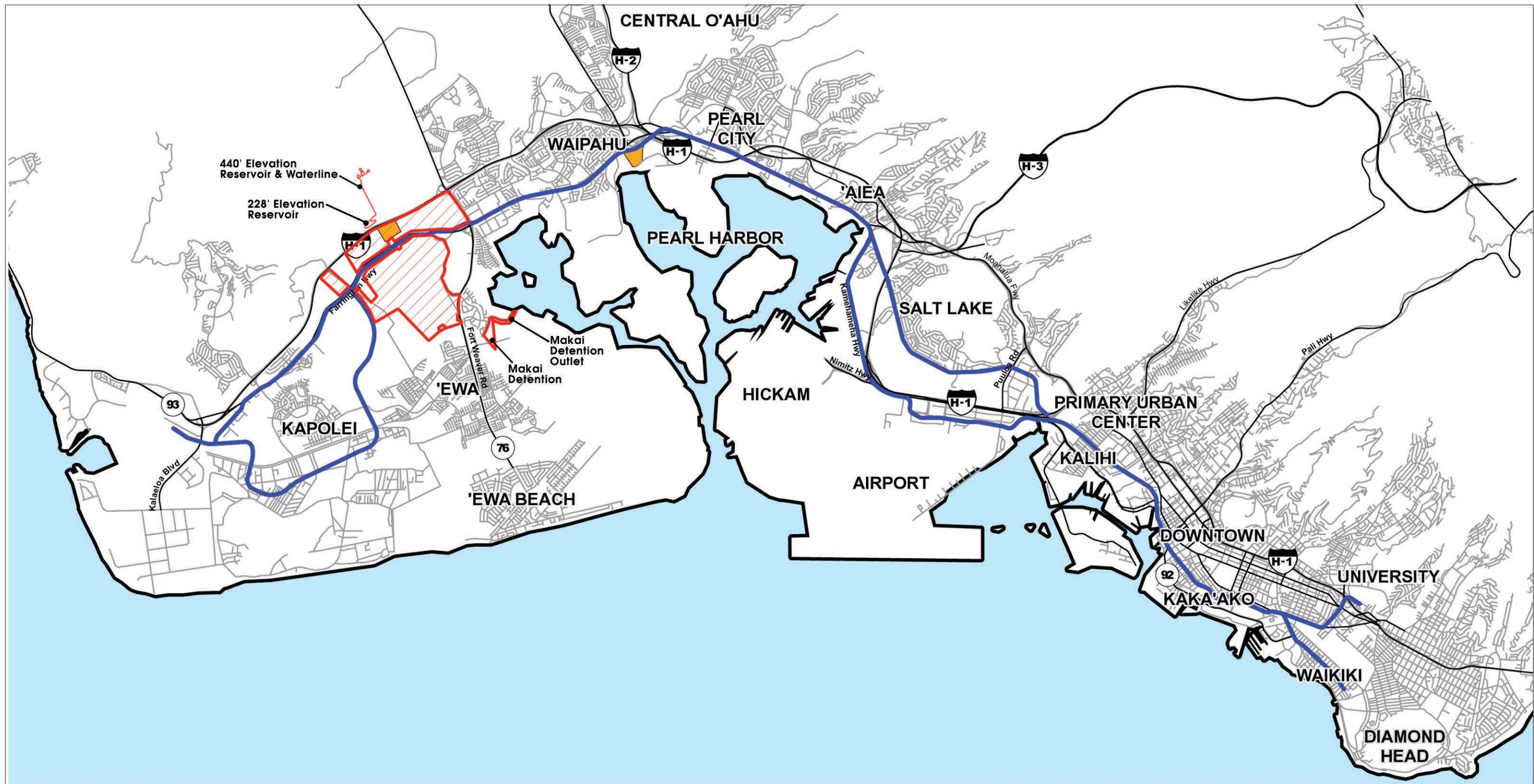
Ho'opili will be designed to be walkable/bikable and transit-ready. The use of public transportation will be encouraged within the Petition Area, as TheBus passes through it along Farrington Highway and transit nodes and corridors are located nearby. With several public schools and retail areas proposed, the Ho'opili Conceptual Land Use Plan is planned as a community in which residents can live, work, play, shop, and attend school. Additionally, the UHWO campus will enable 'Ewa residents to attend an institution of higher learning without commuting to Honolulu. Increased use of public transportation means fewer residents driving their own vehicles and less traffic on roadways. As the Ho'opili Project and the City of Kapolei develop over several years, east-west vehicular traffic to and from Honolulu is likely to gradually adjust as more jobs are created in Kapolei and Kalaeloa. The Petitioner will continue to coordinate with the Department of Transportation Services (DTS) in regards to the Honolulu High-Capacity Transit Corridor Project.

4.9.7 Community Services

Existing Conditions

Community services in the vicinity of the proposed Ho'opili project are listed below:

- Schools (See Section 4.9.1)
- Kapolei Police Station (See Section 4.9.2)
- Three Fire Stations in the 'Ewa Region (See Section 4.9.3)
- Churches
- Shopping Centers in Kapolei and Makakilo
- Public Libraries in Kapolei and Makakilo
- Post Offices in Kapolei and 'Ewa
- Medical Facilities (See Section 4.9.4)
- Recreational Facilities (See Section 4.9.5)
- Public Transit Facilities (See Section 4.9.6)



LEGEND

-  Project Site Boundary
-  Petition Area
-  Locally Preferred Alternative
-  Maintenance Site Options

Figure 4.7: Planned High-Capacity Transit Corridor & Proposed Transit Station

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Not to Scale



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Anticipated Impacts and Mitigation Measures

The proposed Ho'opili project is not expected to adversely impact the community services in the region. The project's anticipated impacts and mitigation measures on public educational facilities, HPD and HFD facilities, medical facilities, recreational facilities, and public transit facilities were previously mentioned in this section.

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5.0

Relationship to Land Use Plans, Policies, & Controls

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5.0 RELATIONSHIP TO LAND USE PLANS, POLICIES, AND CONTROLS

This section discusses the relationship of the proposed project to Federal, State, and County land use plans, policies, and controls for the 'Ewa region. Some of the land use plans, policies and guidelines are in tabular form, and are addressed with text and/or the following letter code:

S = Supportive, N/S = Not Supportive, N/A = Not Applicable.

5.1 FEDERAL

Americans with Disabilities Act. The Americans with Disabilities Act (ADA) of 1990 establishes guidelines for accessibility to buildings and facilities by individuals with disabilities. To the extent required by regulations issued by federal agencies, ADA guidelines will be applied to the Petition Area during the design and construction phases. In addition, the design of public spaces will be integrated to promote greater accessibility for persons with disabilities. It should be noted that most of the Petition Area consists of naturally moderate slopes, thus providing the potential for good accessibility.

National Pollution Discharge Elimination System. A National Pollution Discharge Elimination System (NPDES) permit, administered by the State DOH, will be required for this project. As such, an NPDES permit application will be submitted prior to Grading Permits.

5.2 STATE OF HAWAI'I

5.2.1 Environmental Impact Statement Law, Chapter 343, Hawaii Revised Statutes

This EIS has been prepared in compliance with Chapter 343, *Hawaii Revised Statutes* (HRS). Various agencies, organizations, and individuals were consulted during the pre-consultation phase for the EIS. EISPN comment letters and applicable responses are included in Section 12.0. A 45-day review period will commence upon publication of the Draft EIS in the Office of Environmental Quality Control (OEQC) *The Environmental Notice*. Comment letters on the Draft EIS and applicable responses will be provided in the Final EIS.

5.2.2 State Environmental Policy, Chapter 344, Hawaii Revised Statutes

State Environmental Policy, Chapter 344, HRS establishes a State policy to encourage productive and enjoyable harmony between people and their environment, promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of humanity, and enrich the understanding of the

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ecological systems and natural resources important to the people of Hawai'i. A discussion of the policy guidelines are listed in the table below.

Table 5.1. State Environmental Policy, Chapter 344, Hawaii Revised Statutes

State Environmental Policy, Chapter 344, Hawaii Revised Statutes	S	N/S	N/A
§344-4 Guidelines. In pursuance of the state policy to conserve the natural resources and enhance the quality of life, all agencies, in the development of programs, shall, insofar as practicable, consider the following guidelines:			
(1) POPULATION.			
(A) Recognize population impact as a major factor in environmental degradation and adopt guidelines to alleviate this impact and minimize future degradation;	X		
(B) Recognize optimum population levels for counties and districts within the State, keeping in mind that these will change with technology and circumstance, and adopt guidelines to limit population to the levels determined.	X		
Discussion: The Ho'opili project will provide up to 11,750 residential units. According to the economic/fiscal impact report, Ho'opili project would increase the overall regional population by approximately 35,290 residents. The population increase is consistent with the City and County of Honolulu's policy to direct future growth to the 'Ewa region.			
(2) LAND, WATER, MINERAL, AIR, AND OTHER NATURAL RESOURCES.			
(A) Encourage management practices which conserve and fully utilize all natural resources;	X		
(B) Promote irrigation and waste water management practices which conserve and fully utilize vital water resources;	X		
(C) Promote the recycling of waste water;	X		
(D) Encourage management practices which conserve and protect watersheds and water sources, forest, and open space areas;			X
(E) Establish and maintain natural area preserves, wildlife preserves, forest reserves, marine preserves, and unique ecological preserves;			X
(F) Maintain an integrated system of state land use planning which coordinates the state and county general plans.			X
(G) Promote the optimal use of solid wastes through programs of waste prevention, energy resource recovery, and recycling so that all our wastes become utilized.	X		
Discussion: Sustainability options are being considered for the Ho'opili project.			
(3) FLORA AND FAUNA.			
(A) Protect endangered species of indigenous plants and animals and introduce new plants or animals only upon assurance of negligible ecological hazard;	X		
(B) Foster the planting of native as well as other trees, shrubs, and flowering plants compatible to the enhancement of our environment.	X		
Discussion: None of the plant species identified in the Project Area are considered a threatened or endangered species or a species of concern. A concerted effort was made in surveying for Ko'oloa'ula; however, no plants were observed on the property. As such, the Ho'opili project is not expected to have a significant impact on the botanical resources in the 'Ewa region. No endangered			

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State Environmental Policy, Chapter 344, Hawaii Revised Statutes	S	N/S	N/A
animal species were encountered during fauna surveys of the Project Area.			
(4) PARKS, RECREATION, AND OPEN SPACE.			
(A) Establish, preserve and maintain scenic, historic, cultural, park and recreation areas, including the shorelines, for public recreational, educational, and scientific uses;	X		
(B) Protect the shorelines of the State from encroachment of artificial improvements, structures, and activities;			X
(C) Promote open space in view of its natural beauty not only as a natural resource but as an ennobling, living environment for its people.	X		
Discussion: The Ho'opili project includes approximately 210 acres of parks and open space within the Petition Area. A hierarchy of open spaces will be provided throughout the Petition Area, which includes a downtown civic plaza. A district park is being planned along Old Fort Weaver Road. In addition, a significant open space and pedestrian/bicycle trail network will provide a wide variety of recreational opportunities for residents and visitors alike. A variety of open space buffers are planned along H-1 Freeway, Honouliuli Gulch, and Old Fort Weaver Road to promote the connectivity of the Ho'opili project to adjacent neighborhoods. Project landscaping, the provision of view corridors, and sensitive architectural design will set the visual character of the area.			
(5) ECONOMIC DEVELOPMENT.			
(A) Encourage industries in Hawaii which would be in harmony with our environment;			X
(B) Promote and foster the agricultural industry of the State; and preserve and conserve productive agricultural lands;			X
(C) Encourage federal activities in Hawaii to protect the environment;			X
(D) Encourage all industries including the fishing, aquaculture, oceanography, recreation, and forest products industries to protect the environment;			X
(E) Establish visitor destination areas with planning controls which shall include but not be limited to the number of rooms;			X
(F) Promote and foster the aquaculture industry of the State; and preserve and conserve productive aquacultural lands.			X
Discussion: Within the Petition Area, lands will be gradually withdrawn from agricultural production for the proposed Ho'opili project. This will result in some loss in revenues, jobs, or payroll. However, the State and Count have long planned for new development in the Petition Area, and tenants have been fully aware, for quite some time, that the proposed Petition Area would be used to accommodate for future urban development in the region.			
(6) TRANSPORTATION.			
(A) Encourage transportation systems in harmony with the lifestyle of the people and environment of the State;	X		
(B) Adopt guidelines to alleviate environmental degradation caused by motor vehicles;	X		
(C) Encourage public and private vehicles and transportation systems to conserve energy, reduce pollution emission, including noise, and provide safe and convenient accommodations for their users.	X		
Discussion: The proposed Ho'opili project is envisioned as a "complete" community where residents can live, work, learn, play, and shop within the 'Ewa region, thus alleviating traffic to other destinations in Honolulu. Since much of the morning commute from 'Ewa is towards downtown Honolulu and the University of Hawai'i at Mānoa, as Kapolei (including the proposed Ho'opili			

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State Environmental Policy, Chapter 344, Hawaii Revised Statutes	S	N/S	N/A
<p>project) generates more employment and career opportunities, and University of Hawai'i at West O'ahu develops, the morning commute on the H-1 Freeway should lessen. Ho'opili is conveniently located near major transportation facilities, and is designed to be bus/high-capacity transit-ready with a vast, interconnected internal street grid that provides numerous ways of getting around by rail transit, bus, walking, bicycle and car.</p> <p>The Ho'opili project will reduce commuting time and distances for residents in the 'Ewa region. The Ho'opili mixed-use community contains a series of neighborhoods with a myriad of uses including residential, retail, office, and light industrial which would reduce the necessity to travel outside of the region. Within the petition area, pedestrian walkways and bicycle lanes will encourage non-motorized forms of transportation and reduce fossil fuel consumption.</p>			
(7) ENERGY.			
(A) Encourage the efficient use of energy resources.	X		
<p>Discussion: Project buildings, activities, and site grounds are planned to be designed with energy-saving considerations, and the project will be consistent with State's objective to promote cost-effective energy conservation through the adoption of energy-efficient practices and technologies. Given the natural climate, the project may be suited for the use of renewable energy technologies including photovoltaics. In addition, based on the Department of Business, Economic Development & Tourism (DBEDT), Strategic Industries Division's recommendations, Ho'opili's mechanical and electrical consultants, in consultation with its sustainability consultant, will be directed to review the City and County of Honolulu's Energy Code early in the project and to consult with Hawaiian Electric Company, Inc. (HECO) on demand-side management programs that offer rebates for installation of energy-efficient technologies.</p>			
(8) COMMUNITY LIFE AND HOUSING.			
(A) Foster lifestyles compatible with the environment; preserve the variety of lifestyles traditional to Hawaii through the design and maintenance of neighborhoods which reflect the culture and mores of the community;	X		
(B) Develop communities which provide a sense of identity and social satisfaction in harmony with the environment and provide internal opportunities for shopping, employment, education, and recreation;	X		
(C) Encourage the reduction of environmental pollution which may degrade a community;	X		
(D) Foster safe, sanitary, and decent homes;	X		
(E) Recognize community appearances as major economic and aesthetic assets of the counties and the State; encourage green belts, plantings, and landscape plans and designs in urban areas; and preserve and promote mountain-to-ocean vistas.	X		
<p>Discussion: The proposed Ho'opili project is envisioned as a "complete" community, where residents can live, work, learn, play, and shop. The project would include a mixed-use community that would complete and connect 'Ewa with the surrounding communities. Originating from the common vision and values of a community-driven planning effort, the conceptual plan contains a series of neighborhoods with a mix of uses including residential, retail, office and light industrial. Included in this mix are a series of parks, schools, public buildings and community centers which act as a focus and help define the identity of each neighborhood.</p> <p>Ho'opili will be connected to the surrounding 'Ewa District by a network of streets and bicycle paths which allow a variety of circulation options for residents and visitors. In the geographical center of the site there is a public square or Civic Plaza that is surrounded by higher density housing</p>			

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State Environmental Policy, Chapter 344, Hawaii Revised Statutes	S	N/S	N/A
development and mixed-use buildings. Housing intensity transitions to lower density small lot single-family homes along the eastern and southern peripheries of the site. A significant open space and pedestrian/bicycle trail network provides a wide variety of recreational opportunities for residents and other members of the 'Ewa community. Ho'opili will incorporate traditional Hawaiian building styles with a modern, contemporary aesthetic and will reflect the landscape and climate.			
Sustainability options are being considered for the Ho'opili project.			
T(9) EDUCATION AND CULTURE.			
(A) Foster culture and the arts and promote their linkage to the enhancement of the environment;	X		
(B) Encourage both formal and informal environmental education to all age groups.			X
Discussion: While the residential population within Kapolei has grown as planned, it lacks much of the culture and the arts which are available within the Primary Urban Center. The Ho'opili project is planned to include a series of parks, schools, public buildings and community centers which act as a focus and help define the identity of each neighborhood.			
(10) CITIZEN PARTICIPATION.			
(A) Encourage all individuals in the State to adopt a moral ethic to respect the natural environment; to reduce waste and excessive consumption; and to fulfill the responsibility as trustees of the environment for the present and succeeding generations; and	X		
(B) Provide for expanding citizen participation in the decision making process so it continually embraces more citizens and more issues.			X
Discussion: Recycling shall be encouraged within the project including the reuse and recycling of green waste generated during construction clearing and grubbing activities, the use of recycled construction and demolition wastes and the use of materials made from recycled products, the use of locally produced compost as available for landscaping, and the provision of space for recycling bins in the detailed design of the community. The City and County of Honolulu is restarting its curbside pick up recycling program. In November, 2007, two pilot curbside recycling programs began in Mililani and Hawai'i Kai. During the six- to twelve-month evaluation period, the City and County of Honolulu Department of Environmental Services staff will be coordinating plans for island-wide expansion.			
On June 27, 2008, the Associated Press reported that Mililani and Hawai'i Kai residents have recycled 54 percent of their cans, bottles, newspapers and green waste during the city's six-month curbside recycling pilot project. City Officials with the City and County of Honolulu Department of Environmental Services (DES) are reportedly satisfied with the results and are moving forward with plans to provide some 160,000 O'ahu homes the curbside recycling service by May 2010. In the new plan, the city will collect garbage and recyclables each once a week. The DES will no longer have garbage pickup twice-weekly. A study released by DES predicts the program will divert an estimated 53,800 tons of mixed recyclables and green waste from O'ahu landfills. They plan to begin expanding the program to more communities in November 2008.			

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5.2.3 State Land Use Law, Chapter 205, Hawaii Revised Statutes

The *State Land Use Law* (Chapter 205, HRS) establishes the State Land Use Commission (LUC) and designates all lands in the State of Hawai‘i into four districts: Urban, Rural, Agricultural, and Conservation.

The Petition Area is within the State Agricultural District (See Figure 2.4: State Land Use District). As such, a State Land Use District Boundary Amendment will be sought to change the site from the Agricultural District to the Urban District.

The LUC’s decision making criteria for petitions for reclassification of district boundaries can be found in Section 205-17, HRS, and Section 15-15-77, HAR. Additionally, Section 15-15-18, HAR contains standards used in determining the Urban district. The following table is an analysis of how the project conforms to these criteria and standards.

Table 5.2. State Land Use Law Chapter 205, Hawaii Revised Statutes, Section 15-15-77, Hawaii Administrative Rules

State Land Use Law Chapter 205, Hawaii Revised Statutes, Section 15-15-77, Hawaii Administrative Rules	S	N/S	N/A
LAND USE COMMISSION DECISION MAKING CRITERIA			
HRS §205-17 Land use commission decision making criteria. In its review of any petition for reclassification of district boundaries pursuant to this chapter, the commission shall specifically consider the following:			
(1) The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii state plan and relates to the applicable priority guidelines of the Hawaii state plan and the adopted functional plans;	X		
(2) The extent to which the proposed reclassification conforms to the applicable district standards;	X		
(3) The impact of the proposed reclassification on the following areas of state concern:	X		
(A) Preservation or maintenance of important natural systems or habitats;	X		
(B) Maintenance of valued cultural, historical, or natural resources;	X		
(C) Maintenance of other natural resources relevant to Hawaii’s economy, including, but not limited to, agricultural resources;	X		
(D) Commitment of state funds and resources;	X		
(E) Provision of employment opportunities and economic development; and	X		
(F) Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups; and	X		
(4) The representations and commitments made by the petitioner in securing a boundary change.	X		
Discussion: In accordance with Commission Rule § 15-15-77, HAR, and HRS § 205-4(h), and based upon information included in this EIS the district boundary amendment requested by the Petitioner is reasonable, not violative of HRS § 205-2, as amended, and is consistent with the provisions of HRS §§			

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State Land Use Law Chapter 205, Hawaii Revised Statutes, Section 15-15-77, Hawaii Administrative Rules	S	N/S	N/A
205-16, 205-17 and 205A-2 and Chapter 226, as amended. The Petitioner will seek an Order Amending the Land Use District Boundary of the Petition Area from the Agricultural District to the Urban District.			
HAR §15-15-77 Decision-making criteria for boundary amendments.			
(a) The commission shall not approve an amendment of a land use district boundary unless the commission finds upon the clear preponderance of the evidence that the proposed boundary amendment is reasonable, not violative of section 205-2, HRS, and consistent with the policies and criteria established pursuant to sections 205-16, 205-17, and 205A-2, HRS.	X		
(b) In its review of any petition for reclassification of district boundaries pursuant to this chapter, the commission shall specifically consider the following:	X		
(1) The extent to which the proposed reclassification conforms to the applicable goals, objectives, and policies of the Hawaii state plan and relates to the applicable priority guidelines of the Hawaii state plan and the adopted functional plans;	X		
(2) The extent to which the proposed reclassification conforms to the applicable district standards;	X		
(3) The impact of the proposed reclassification on the following areas of state concern;	X		
(A) Preservation or maintenance of important natural systems or habitats;	X		
(B) Maintenance of valued cultural, historical, or natural resources;	X		
(C) Maintenance or other natural resources relevant to Hawaii's economy including, but not limited to agricultural resources;	X		
(D) Commitment of state funds and resources;	X		
(E) Provision for employment opportunities and economic development; and	X		
(F) Provision for housing opportunities for all income groups, particularly the low, low-moderate, and gap groups;	X		
(4) In establishing the boundaries of the districts in each county, the commission shall give consideration to the general plan of the county in which the land is located;	X		
(5) The representations and commitments made by the petitioner in securing a boundary change, including a finding that the petitioner has the necessary economic ability to carry out the representations and commitments relating to the proposed use or development; and	X		
(6) Lands in intensive agricultural use for two years prior to date of filing of a petition or lands with a high capacity for intensive agricultural use shall not be taken out of the agricultural district unless the commission finds either that the action:	X		
(A) Will not substantially impair actual or potential agricultural production in the vicinity of the subject property or in the county or State; or			X
(B) Is reasonably necessary for urban growth.	X		
(c) Amendments of a land use district boundary in conservation districts involving land areas fifteen acres or less shall be determined by the commission pursuant to this subsection and section 205-3.1, HRS.			X
(d) Amendments of land use district boundary in other than conservation districts involving land areas fifteen acres or less shall be determined by the			X

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State Land Use Law Chapter 205, Hawaii Revised Statutes, Section 15-15-77, Hawaii Administrative Rules	S	N/S	N/A
appropriate county land use decision-making authority for the district.			
(e) Amendments of a land use district boundary involving land areas greater than fifteen acres shall be determined by the commission, pursuant to this subsection and section 205-3.1, HRS.	X		
Discussion: The proposed action is consistent with the standards for determining boundaries of the Urban district pursuant to HAR § 15-15-18. Reclassification of the Petition Area to the Urban District and the subsequent City and County of Honolulu Change of Zone Application would permit the Petition Area to conform to the surrounding land uses and would permit the low-to medium-density residential uses and recreational development.			
STANDARDS FOR DETERMINING URBAN DISTRICT BOUNDARIES			
HAR §15-15-18 Standards for determining "U" urban district boundaries. Except as otherwise provided in this chapter, in determining the boundaries for the "U" urban district, the following standards shall be used:			
(1) It shall include lands characterized by "city-like" concentrations of people, structures, streets, urban level of services and other related land uses;	X		
(2) It shall take into consideration the following specific factors:	X		
(A) Proximity to centers of trading and employment except where the development would generate new centers of trading and employment;	X		
(B) Availability of basic services such as schools, parks, wastewater systems, solid waste disposal, drainage, water, transportation systems, public utilities, and police protection; and	X		
(C) Sufficient reserve areas for foreseeable urban growth;	X		
(3) It shall include lands with satisfactory topography, drainage, and reasonably free from the danger of any flood, tsunami, unstable soil condition, and other adverse environmental effects;	X		
(4) Land contiguous with existing urban areas shall be given more consideration than non-contiguous land, and particularly when indicated for future urban use on state or county general plans;	X		
(5) It shall include lands in appropriate locations for new urban concentrations and shall give consideration to areas of urban growth as shown on the state and county general plans;	X		
(6) It may include lands which do not conform to the standards in paragraphs (1) to (5):	X		
(A) When surrounded by or adjacent to existing urban development; and	X		
(B) Only when those lands represent a minor portion of this district;			X
(7) It shall not include lands, the urbanization of which will contribute toward scattered spot urban development, necessitating unreasonable investment in public infrastructure or support services; and	X		
(8) It may include lands with a general slope of twenty per cent or more if the commission finds that those lands are desirable and suitable for urban purposes and that the design and construction controls, as adopted by any federal, state, or county agency, are adequate to protect the public health, welfare and safety, and the public's interests in the aesthetic quality of the landscape.			X
Discussion: The Ho'opili project is consistent with the standards for determining boundaries of the Urban District pursuant to Section 15-15-18, HAR, and as such, a State Land Use District Boundary Amendment will be sought to change the site from the Agricultural District to the Urban District. The			

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State Land Use Law Chapter 205, Hawaii Revised Statutes, Section 15-15-77, Hawaii Administrative Rules	S	N/S	N/A
<p>majority of adjacent lands that surround the Petition Area are within the Urban District. Existing residential developments include: Waipahu Town to the northeast; Honouliuli and West Loch Estates to the east; and 'Ewa Villages and 'Ewa Villages Golf Course to the south. Vacant lands to the west are slated for future development by UHWO and DHHL. The lands to the north of the Petition Area are within the Agricultural State Land Use District, and are mauka of the City and County of Honolulu's Ewa DP Urban Growth Boundary. The Petition Area lies within the City and County of Honolulu's Ewa DP Urban Growth Boundary, and as such, reclassification of the Petition Area to the Urban District and subsequent City and County of Honolulu Change of Zone application would permit the Petition Area to conform to the surrounding land uses and would permit the low-to medium-density residential uses and recreational development. Urbanization of 'Ewa is further assumed by the City and County of Honolulu through the planning of HHCTC alignment through the Petition Area.</p>			

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5.2.4 Coastal Zone Management Program, Chapter 205A, Hawaii Revised Statutes

All lands of the State of Hawai'i are included within the Coastal Zone Management (CZM) Area as defined in Chapter 205A, HRS. As such, the Petition Area is within the CZM Area; however, it is not located along a shoreline.

The objectives and policies of the CZM Program are discussed in the table below.

Table 5.3. Coastal Zone Management Act, Chapter 205A, Hawaii Revised Statutes

Coastal Zone Management Act, Chapter 205A, Hawaii Revised Statutes	S	N/S	N/A
RECREATIONAL RESOURCES			
Objective			
(A) Provide coastal recreational opportunities accessible to the public.			
Policies			
(A) Improve coordination and funding of coastal recreational planning and management; and			X
(B) Provide adequate, accessible, and diverse recreational opportunities in the coastal zone management area by:			X
(i) Protecting coastal resources uniquely suited for recreational activities that cannot be provided in other areas;			X
(ii) Requiring replacement of coastal resources having significant recreational value including, but not limited to, surfing sites, fishponds, and sand beaches, when such resources will be unavoidably damaged by development; or requiring reasonable monetary compensation to the State for recreation when replacement is not feasible or desirable;			X
(iii) Providing and managing adequate public access, consistent with conservation of natural resources, to and along shorelines with recreational value;			X
(iv) Providing an adequate supply of shoreline parks and other recreational facilities suitable for public recreation;			X
(v) Ensuring public recreational uses of county, state, and federally owned or controlled shoreline lands and waters having recreational value consistent with public safety standards and conservation of natural resources;			X
(vi) Adopting water quality standards and regulating point and nonpoint sources of pollution to protect, and where feasible, restore the recreational value of coastal waters;			X
(vii) Developing new shoreline recreational opportunities, where appropriate, such as artificial lagoons, artificial beaches, and artificial reefs for surfing and fishing; and			X
(viii) Encouraging reasonable dedication of shoreline areas with recreational value for public use as part of discretionary approvals or permits by the land use commission, board of land and natural resources, and county authorities; and crediting such dedication against the requirements of section 46-6.			X
Discussion: The majority of the Ho'opili project is located in Zone D, areas in which flood hazards			

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Coastal Zone Management Act, Chapter 205A, Hawaii Revised Statutes	S	N/S	N/A
<p>are undetermined (See Figure 3.5: Flood Insurance Rate Map). A very small portion of Parcel C within Honouliuli Stream is located in Zone AE and X. A portion of Parcel B within Honouliuli Stream is located in Zone A and Zone X. However, with the proposed development and associated drainage improvements, surface flows will be better managed. With respect to the portion of the project within the Kalo'i drainage basin, the project will be creating on-site detention basins to collect all storm water runoff and discharge the flow at a rate that will not exceed pre-development conditions. With respect to the Honouliuli Stream drainage basin, the project will provide detention basins to collect all storm water runoff and discharge the flow at a rate that will not exceed the 10-year recurrence flow rate. With respect to the West Loch drainage basin, the project intends to collect all storm water and route it to the existing detention basin located on the east side of Fort Weaver Road and south of the OR&L railroad tracks. Off-site drainage improvements will comply with all applicable governmental rules and regulations. Since the property is located inland, the project is not anticipated to impact access to coastal resources.</p>			
HISTORIC RESOURCES			
Objective			
(A) Protect, preserve, and, where desirable, restore those natural and manmade historic and prehistoric resources in the coastal zone management area that are significant in Hawaiian and American history and culture.			
Policies			
(A) Identify and analyze significant archaeological resources;	X		
(B) Maximize information retention through preservation of remains and artifacts or salvage operations; and	X		
(C) Support state goals for protection, restoration, interpretation, and display of historic resources.	X		
Discussion: According to SHPD, the archaeological inventory survey report is now accepted in fulfillment of Sections 13-284 and 13-276, HAR (See Appendix E). A preservation plan and archaeological monitoring plan will be prepared and submitted to SHPD for its review and approval.			
SCENIC AND OPEN SPACE RESOURCES			
Objective			
(A) Protect, preserve, and, where desirable, restore or improve the quality of coastal scenic and open space resources.			
Policies			
(A) Identify valued scenic resources in the coastal zone management area;			X
(B) Ensure that new developments are compatible with their visual environment by designing and locating such developments to minimize the alteration of natural landforms and existing public views to and along the shoreline;			X
(C) Preserve, maintain, and, where desirable, improve and restore shoreline open space and scenic resources; and			X
(D) Encourage those developments that are not coastal dependent to locate in inland areas.			X
Discussion: The Ho'opili project is located outside of the Special Management Area. As such, coastal scenic resources will not be significantly affected by the development. Open space buffers are proposed to be located along the H-1 Freeway and Old Fort Weaver Road. In addition, linear parks and open space will encircle the Ho'opili project with walking/biking paths.			
COASTAL ECOSYSTEMS			
Objective			

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Coastal Zone Management Act, Chapter 205A, Hawaii Revised Statutes	S	N/S	N/A
(A) Protect valuable coastal ecosystems, including reefs, from disruption and minimize adverse impacts on all coastal ecosystems.			
Policies			
(A) Exercise an overall conservation ethic, and practice stewardship in the protection, use, and development of marine and coastal resources;			X
(B) Improve the technical basis for natural resource management;			X
(C) Preserve valuable coastal ecosystems, including reefs, of significant biological or economic importance;			X
(D) Minimize disruption or degradation of coastal water ecosystems by effective regulation of stream diversions, channelization, and similar land and water uses, recognizing competing water needs; and			X
(E) Promote water quantity and quality planning and management practices that reflect the tolerance of fresh water and marine ecosystems and maintain and enhance water quality through the development and implementation of point and nonpoint source water pollution control measures.			X
<p>Discussion: The Ho'opili project does not front the natural shoreline. With respect to the portion of the project within the Kalo'i drainage basin, the project will be creating on-site detention basins to collect all storm water runoff and discharge the flow at a rate that will not exceed pre-development conditions. With respect to the Honouliuli Stream drainage basin, the project will provide detention basins to collect all storm water runoff and discharge the flow at a rate that will not exceed the 10-year recurrence flow rate. With respect to the West Loch drainage basin, the project intends to collect all storm water and route it to the existing detention basin located on the east side of Fort Weaver Road and south of the OR&L railroad tracks.</p>			
ECONOMIC USES			
Objective			
(A) Provide public or private facilities and improvements important to the State's economy in suitable locations.			
Policies			
(A) Concentrate coastal dependent development in appropriate areas;			X
(B) Ensure that coastal dependent development such as harbors and ports, and coastal related development such as visitor industry facilities and energy generating facilities, are located, designed, and constructed to minimize adverse social, visual, and environmental impacts in the coastal zone management area; and			X
(C) Direct the location and expansion of coastal dependent developments to areas presently designated and used for such developments and permit reasonable long-term growth at such areas, and permit coastal dependent development outside of presently designated areas when:			X
(i) Use of presently designated locations is not feasible;			X
(ii) Adverse environmental effects are minimized; and			X
(iii) The development is important to the State's economy.			X
<p>Discussion: The Ho'opili project will provide various employment opportunities in the rapidly growing 'Ewa region. The project is located mauka of the shoreline and does not propose any coastal-dependent development. The land uses planned for the project are well inland of coastal areas, and coastal resources will not be affected. Visual impacts will be minimized, as the proposed development will be integrated with the surrounding topography, to the extent possible.</p>			
COASTAL HAZARDS			

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Coastal Zone Management Act, Chapter 205A, Hawaii Revised Statutes	S	N/S	N/A
Objective			
(A) Reduce hazard to life and property from tsunami, storm waves, stream flooding, erosion, subsidence, and pollution.			
Policies			
(A) Develop and communicate adequate information about storm wave, tsunami, flood, erosion, subsidence, and point and nonpoint source pollution hazards;			X
(B) Control development in areas subject to storm wave, tsunami, flood, erosion, hurricane, wind, subsidence, and point and nonpoint source pollution hazards;			X
(C) Ensure that developments comply with requirements of the Federal Flood Insurance Program; and			X
(D) Prevent coastal flooding from inland projects.			X
Discussion: The Ho'opili project will be designed and constructed in compliance with all applicable Federal, State, and County environmental protection, design, and building standards and regulations, including the Federal Flood Insurance Program. Drainage systems, in compliance with applicable State and County rules and regulations, will mitigate the existing flood hazard potential.			
MANAGING DEVELOPMENT			
Objective			
(A) Improve the development review process, communication, and public participation in the management of coastal resources and hazards.			
Policies			
(A) Use, implement, and enforce existing law effectively to the maximum extent possible in managing present and future coastal zone development;			X
(B) Facilitate timely processing of applications for development permits and resolve overlapping or conflicting permit requirements; and			X
(C) Communicate the potential short and long-term impacts of proposed significant coastal developments early in their life cycle and in terms understandable to the public to facilitate public participation in the planning and review process.			X
Discussion: No coastal areas or resources are expected to be affected by the proposed development. Applications for required land use entitlements for the proposed project will be reviewed by State and County agencies. Individuals, community groups (such as the Ho'opili Community Task Force), and appropriate County agency personnel have been consulted about the proposed project, and comments received have been incorporated into the planning process and into this document.			
PUBLIC PARTICIPATION			
Objective			
(A) Stimulate public awareness, education, and participation in coastal management.			
Policies			
(A) Promote public involvement in coastal zone management processes;			X
(B) Disseminate information on coastal management issues by means of educational materials, published reports, staff contact, and public workshops for persons and/or organizations concerned with coastal issues, developments, and government activities; and			X
(C) Organize workshops, policy dialogues, and site-specific mediations to respond to coastal issues and conflicts.			X
Discussion: The proposed project is not anticipated to impact coastal resources, nevertheless, the			

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Coastal Zone Management Act, Chapter 205A, Hawaii Revised Statutes	S	N/S	N/A
Petitioner has consulted with various West O'ahu community groups in the formulation of the Ho'opili master plan. This planning effort produced a community-driven vision for the proposed development.			
BEACH PROTECTION			
Objective			
(A) Protect beaches for public use and recreation.			
Policies			
(A) Locate new structures inland from the shoreline setback to conserve open space, minimize interference with natural shoreline processes, and minimize loss of improvements due to erosion;			X
(B) Prohibit construction of private erosion-protection structures seaward of the shoreline, except when they result in improved aesthetic and engineering solutions to erosion at the sites and do not interfere with existing recreational and waterline activities; and			X
(C) Minimize the construction of public erosion-protection structures seaward of the shoreline.			X
Discussion: The Petition Area is not located on or near a beach, nor will it impact coastal resources.			
MARINE RESOURCES			
Objective			
(A) Promote the protection, use, and development of marine and coastal resources to assure their sustainability.			
Policies			
(A) Ensure that the use and development of marine and coastal resources are ecologically and environmentally sound and economically beneficial;			X
(B) Coordinate the management of marine and coastal resources and activities to improve effectiveness and efficiency;			X
(C) Assert and articulate the interests of the State as a partner with federal agencies in the sound management of ocean resources within the United States exclusive economic zone;			X
(D) Promote research, study, and understanding of ocean processes, marine life, and other ocean resources in order to acquire and inventory information necessary to understand how ocean development activities relate to and impact upon ocean and coastal resources; and			X
(E) Encourage research and development of new, innovative technologies for exploring, using, or protecting marine and coastal resources.			X
Discussion: Since the Petition Area is located away from the shoreline, no coastal or marine resources will be impacted.			

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5.2.5 Hawaii State Plan, Chapter 226, Hawaii Revised Statutes

The *Hawaii State Plan* (Chapter 226, HRS), which serves as a guide for the long-range growth and development of the State, establishes a set of goals, objectives, policies, and priorities for the State. The *Hawaii State Plan* can be divided into three parts: Part I (Overall Theme, Goals, Objectives and Policies); Part II (Planning, Coordination and Implementation); and Part III (Priority Guidelines). The project’s conformance to the *Hawaii State Plan* is listed below in Tables 5.4 and 5.5.

Table 5.4. Hawaii State Plan, Chapter 226, Hawaii Revised Statutes – Part I. Overall Theme, Goals, Objectives and Policies

Hawaii State Plan, Chapter 226, Hawaii Revised Statutes – Part I. Overall Theme, Goals, Objectives and Policies	S	N/S	N/A
HRS § 226-1: Findings and Purpose			
HRS § 226-2: Definitions			
HRS § 226-3: Overall Theme			
HRS § 226-4: State Goals. In order to guarantee, for the present and future generations, those elements of choice and mobility that insure that individuals and groups may approach their desired levels of self-reliance and self-determination, it shall be the goal of the State to achieve:			
1) A strong, viable economy, characterized by stability, diversity and growth that enable fulfillment of the needs and expectations of Hawaii’s present and future generations.	X		
2) A desired physical environment, characterized by beauty, cleanliness, quiet, stable natural systems, and uniqueness, that enhances the mental and physical well-being of the people.	X		
3) Physical, social and economic well-being, for individuals and families in Hawaii, that nourishes a sense of community responsibility, of caring and of participation in community life.	X		
Discussion: The proposed project is consistent with the State’s goal to insure economic stability, diversity, and growth for present and future generations. The Ho’opili project will provide various housing and employment opportunities for the rapidly growing ‘Ewa region, which will in turn, relieve development pressures from other areas of O’ahu, particularly the Primary Urban Center, and rural areas such as Wai’anae, North Shore, Ko’olau Loa and Ko’olau Poko.			
HRS § 226-5: Objectives and policies for population.			
(a) It shall be the objective in planning for the State’s population to guide population growth to be consistent with the achievement of physical, economic and social objectives contained in this chapter;			
(b) To achieve the population objective, it shall be the policy of this State to:			
(1) Manage population growth statewide in a manner that provides increased opportunities for Hawaii’s people to pursue their physical, social and economic aspirations while recognizing the unique needs of each County.	X		
(2) Encourage an increase in economic activities and employment opportunities on the neighbor islands consistent with community needs and desires.			X
(3) Promote increased opportunities for Hawaii’s people to pursue	X		

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their socio-economic aspirations throughout the islands.			
(4) Encourage research activities and public awareness programs to foster an understanding of Hawaii's limited capacity to accommodate population needs and to address concerns resulting from an increase in Hawaii's population.			X
(5) Encourage federal actions and coordination among major governmental agencies to promote a more balanced distribution of immigrants among the states, provided that such actions do not prevent the reunion of immediate family members.			X
(6) Pursue an increase in federal assistance for states with a greater proportion of foreign immigrants relative to their state's population.			X
(7) Plan the development and availability of land and water resources in a coordinated manner so as to provide for the desired levels of growth in each geographic area.	X		
<p>Discussion: According to the City and County of Honolulu Department of Planning and Permitting (DPP), the year 2006 population of the <i>Ewa Development Plan Area</i> (DPA) was 86,000 (DPP, 2006). This represented an increase of 25.1 percent from its 2000 population of 68,718. The DPP expects the population of the Ewa DPA to increase to 180,200 by the year 2030. In comparison, the population for the City and County of Honolulu as a whole increased only 3.8 percent from 876,156 to 909,863 between 2000 and 2006. The City and County of Honolulu is expected to experience a population growth of 27.5 percent (241,144 persons) from 876,156 to 1,117,300 total residents during the same 30-year period (2000 to 2030). Besides providing substantial housing opportunities for the 'Ewa region, the Ho'opili project also supports the State's population distribution policies.</p>			
<p>HRS § 226-6: Objectives and policies for the economy in general.</p>			
(a) Planning for the State's economy in general shall be directed toward achievement of the following objectives:			
(1) Increased and diversified employment opportunities to achieve full employment, increased income and job choice, and improved living standards for Hawaii's people.	X		
(2) A steadily growing and diversified economic base that is not overly dependent on a few industries, and includes the development and expansion of industries on the neighbor islands.	X		
(b) To achieve the general economic objectives, it shall be the policy of this State to:			
(1) Expand Hawaii's national and international marketing, communication, and/or organizational ties, to increase the State's capacity to adjust to and capitalize upon economic changes and opportunities occurring outside the State.			X
(2) Promote Hawaii as an attractive market for environmentally and socially sound investment activities that benefit Hawaii's people.			X
(3) Seek broader outlets for new or expanded Hawaii business investments.			X
(4) Expand existing markets and penetrate new markets for Hawaii's products and services.	X		
(5) Assure that the basic economic needs of Hawaii's people are maintained in the event of disruptions in overseas transportation.			X
(6) Strive to achieve a level of construction activity responsive to, and consistent with, state growth objectives.	X		
(7) Encourage the formation of cooperatives and other favorable			X

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marketing arrangements at the local or regional level to assist Hawaii's small scale producers, manufacturers, and distributors.			
(8) Encourage labor-intensive activities that are economically satisfying and which offer opportunities for upward mobility.			X
(9) Foster greater cooperation and coordination between the government and private sectors in developing Hawaii's employment and economic growth opportunities.	X		
(10) Stimulate the development and expansion of economic activities which will benefit areas with substantial or expected employment problems.	X		
(11) Maintain acceptable working conditions and standards for Hawaii's workers.	X		
(12) Provide equal employment opportunities for all segments of Hawaii's population through affirmative action and nondiscrimination measures.	X		
(13) Encourage businesses that have favorable financial multiplier effects within Hawaii's economy.	X		
(14) Promote and protect intangible resources in Hawaii, such as scenic beauty and the aloha spirit, which are vital to a healthy economy.	X		
(15) Increase effective communication between the educational community and the private sector to develop relevant curricula and training programs to meet future employment needs in general, and requirements of new, potential growth industries in particular.			X
(16) Foster a business climate in Hawaii—including attitudes, tax and regulatory policies, and financial and technical assistance programs—that is conducive to the expansion of existing enterprises and the creation and attraction of new business and industry.			X
<p>Discussion: The Ho'opili project will provide for a diverse range of direct and indirect employment and economic opportunities for Hawai'i residents, both during and after project construction. Short-term construction-related jobs as well as permanent long-term operational jobs will be offered, increasing employment throughout the 'Ewa region and State. With greater employment and economic opportunities, the overall living standards and lifestyles will be enhanced for area residents, who will be able to live, work, learn, play, and shop within the Second City.</p>			
HRS § 226-7: Objectives and policies for the economy - agriculture			
(a) Planning for the State's economy with regard to agriculture shall be directed towards achievement of the following objectives:			
(1) Viability of Hawaii's sugar and pineapple industries.			X
(2) Growth and development of diversified agriculture throughout the State.		X	
(3) An agriculture industry that continues to constitute a dynamic and essential component of Hawaii's strategic, economic, and social well-being.			X
(b) To achieve the agriculture objectives, it shall be the policy of this State to:			
(1) Establish a clear direction for Hawaii's agriculture through stakeholder commitment and advocacy.			X
(2) Encourage agriculture by making best use of natural resources.			X
(3) Provide the governor and the legislature with information and			X

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options needed for prudent decision making for the development of agriculture.			
(4) Establish strong relationships between the agricultural and visitor industries for mutual marketing benefits.			X
(5) Foster increased public awareness and understanding of the contributions and benefits of agriculture as a major sector of Hawaii's economy.			X
(6) Seek the enactment and retention of federal and state legislation that benefits Hawaii's agricultural industries.			X
(7) Strengthen diversified agriculture by developing an effective promotion, marketing, and distribution system between Hawaii's producers and consumer markets locally, on the continental United States, and internationally.			X
(8) Support research and development activities that provide greater efficiency and economic productivity in agriculture.			X
(9) Enhance agricultural growth by providing public incentives and encouraging private initiatives.			X
(10) Assure the availability of agriculturally suitable lands with adequate water to accommodate present and future needs.			X
(11) Increase the attractiveness and opportunities for an agricultural education and livelihood.			X
(12) Expand Hawaii's agricultural base by promoting growth and development of flowers, tropical fruits and plants, livestock, feed grains, forestry, food crops, aquaculture, and other potential enterprises.			X
(13) Promote economically competitive activities that increase Hawaii's agricultural self-sufficiency.			X
(14) Promote and assist in the establishment of sound financial programs for diversified agriculture.			X
(15) Institute and support programs and activities to assist the entry of displaced agricultural workers into alternative agricultural or other employment.			X
(16) Facilitate the transition of agricultural lands in economically nonfeasible agricultural production to economically viable agricultural uses.			X
<p>Discussion: The agricultural policies are predominantly not applicable to the Ho'opili project. These policies were developed prior to the contraction of the sugarcane and pineapple industries, and as such, in the post "plantation" era, there is an abundant supply of land available for diversified agriculture.</p> <p>The Ho'opili project lies within the State Agricultural District (See Figure 2.4: State Land Use District). As such, a State Land Use District Boundary Amendment will be sought to change the site from the Agricultural District to the Urban District. The proposed State Land Use District Boundary Amendment is consistent with the standards for determining boundaries of the Urban District as the majority of adjacent lands that surround the Petition Area are within the Urban District. The Petition Area lies within the City and County of Honolulu's Ewa DP Urban Growth Boundary, and as such, reclassification of the Petition Area to the Urban District and subsequent City and County of Honolulu Change of Zone application would permit the Petition Area to conform to the surrounding land uses and would permit the low- to medium-density residential uses.</p>			

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HRS § 226-8: Objectives and policies for the economy – visitor industry			
(a) Planning for the State's economy with regard to the visitor industry shall be directed towards the achievement of the objective of a visitor industry that constitutes a major component of steady growth for Hawaii's economy.			
(b) To achieve the visitor industry objective, it shall be the policy of this State to:			
(1) Support and assist in the promotion of Hawaii's visitor attractions and facilities.			X
(2) Ensure that visitor industry activities are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people.			X
(3) Improve the quality of existing visitor destination areas.			X
(4) Encourage cooperation and coordination between the government and private sectors in developing and maintaining well-designed, adequately serviced visitor industry and related developments which are sensitive to neighboring communities and activities.			X
(5) Develop the industry in a manner that will continue to provide new job opportunities and steady employment for Hawaii's people.			X
(6) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the visitor industry.			X
(7) Foster a recognition of the contribution of the visitor industry to Hawaii's economy and the need to perpetuate the aloha spirit.			X
(8) Foster an understanding by visitors of the aloha spirit and of the unique and sensitive character of Hawaii's cultures and values.			X
Discussion: While the State's policies related to the economy and visitor industry are not directly applicable to the Ho'opili project, the Petitioner supports the State's objectives.			
HRS § 226-9: Objective and policies for the economy – federal expenditures			
(a) Planning for the State's economy with regard to federal expenditures shall be directed towards achievement of the objective of a stable federal investment base as an integral component of Hawaii's economy.			
(b) To achieve the federal expenditures objective, it shall be the policy of this State to:			
(1) Encourage the sustained flow of federal expenditures in Hawaii that generates long-term government civilian employment.			X
(2) Promote Hawaii's supportive role in national defense.			X
(3) Promote the development of federally supported activities in Hawaii that respect state-wide economic concerns, are sensitive to community needs, and minimize adverse impacts on Hawaii's environment.			X
(4) Increase opportunities for entry and advancement of Hawaii's people into federal government service.			X
(5) Promote federal use of local commodities, services, and facilities available in Hawaii.			X
(6) Strengthen federal-state-county communication and coordination in all federal activities that affect Hawaii.			X
(7) Pursue the return of federally controlled lands in Hawaii that are not required for either the defense of the nation or for other purposes of national importance, and promote the mutually beneficial exchanges of land between federal agencies, the State,			X

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and the counties.			
Discussion: While the State's policies related to the economy and federal expenditures are not directly applicable to the Ho'opili project, the Petitioner supports the State's objectives.			
HRS § 226-10: Objectives and policies for the economy – potential growth activities.			
(a) Planning for the State's economy with regard to potential growth activities shall be directed towards achievement of the objective of development and expansion of potential growth activities that serve to increase and diversify Hawaii's economic base.			
(b) To achieve the information industry objective, it shall be the policy of this State to:			
(1) Facilitate investment and employment in economic activities that have the potential for growth such as diversified agriculture, aquaculture, apparel and textile manufacturing, film and television production, and energy and marine-related industries.			X
(2) Expand Hawaii's capacity to attract and service international programs and activities that generate employment for Hawaii's people.			X
(3) Enhance and promote Hawaii's role as a center for international relations, trade, finance, services, technology, education, culture, and the arts.			X
(4) Accelerate research and development of new energy-related industries based on wind, solar, ocean, and underground resources and solid waste.			X
(5) Promote Hawaii's geographic, environmental, social, and technological advantages to attract new economic activities into the State.			X
(6) Provide public incentives and encourage private initiative to attract new industries that best support Hawaii's social, economic, physical, and environmental objectives.			X
(7) Increase research and the development of ocean-related economic activities such as mining, food production, and scientific research.			X
(8) Develop, promote, and support research and educational and training programs that will enhance Hawaii's ability to attract and develop economic activities of benefit to Hawaii.			X
(9) Foster a broader public recognition and understanding of the potential benefits of new, growth-oriented industry in Hawaii.			X
(10) Encourage the development and implementation of joint federal and state initiatives to attract federal programs and projects that will support Hawaii's social, economic, physical, and environmental objectives.			X
Discussion: While the State's policies related to the economy and potential growth activities are not directly applicable to the Ho'opili project, the Petitioner supports the State's objectives.			
HRS § 226-10.5: Objectives and policies for the economy – information industry			
(a) Planning for the State's economy with regard to the information industry shall be directed toward the achievement of the objective of positioning Hawaii as the leading dealer in information businesses and services in the Pacific Rim.			
(b) To achieve the information industry objective, it shall be the policy of this State to:			
(1) Encourage the continued development and expansion of the telecommunications infrastructure serving Hawaii to accommodate			X

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future growth in the information industry;			
(2) Facilitate the development of new business and service ventures in the information industry which will provide employment opportunities for the people of Hawaii;			X
(3) Encourage greater cooperation between the public and private sectors in developing and maintaining a well- designed information industry;			X
(4) Ensure that the development of new businesses and services in the industry are in keeping with the social, economic, and physical needs and aspirations of Hawaii's people;			X
(5) Provide opportunities for Hawaii's people to obtain job training and education that will allow for upward mobility within the information industry;			X
(6) Foster a recognition of the contribution of the information industry to Hawaii's economy; and			X
(7) Assist in the promotion of Hawaii as a broker, creator, and processor of information in the Pacific.			X
Discussion: While the State's policies related to the economy and information industry are not directly applicable to the Ho'opili project, the Petitioner supports the State's objectives.			
HRS § 226-11: Objectives and policies for the physical environment – land-based, shoreline, and marine resources.			
(a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historical resources.			
(1) Prudent use of Hawaii's land-based, shoreline, and marine resources.	X		
(2) Effective protection of Hawaii's unique and fragile environmental resources.			X
(b) To achieve the land-based, shoreline, and marine resources objectives, it shall be the policy of this State to:			
(1) Exercise an overall conservation ethic in the use of Hawaii's natural resources.	X		
(2) Ensure compatibility between land-based and water-based activities and natural resources and ecological systems.	X		
(3) Take into account the physical attributes of areas when planning and designing activities and facilities.	X		
(4) Manage natural resources and environs to encourage their beneficial and multiple use without generating costly or irreparable environmental damage.	X		
(5) Consider multiple uses in watershed areas, provided such uses do not detrimentally affect water quality and recharge functions.			X
(6) Encourage the protection of rare or endangered plant and animal species and habitats native to Hawaii.	X		
(7) Provide public incentives that encourage private actions to protect significant natural resources from degradation or unnecessary depletion.			X
(8) Pursue compatible relationships among activities, facilities, and natural resources.	X		

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(9) Promote increased accessibility and prudent use of inland and shoreline areas for public recreational, educational, and scientific purposes.	X		
Discussion: Most new development on O'ahu is being directed toward the 'Ewa region, as its physical attributes are compatible with urban development. The physical, environmental, and cultural attributes of the proposed project site are compatible with the land uses proposed. This EIS identifies existing natural and physical site conditions (i.e., slope, soils, drainage characteristics, archaeological sites, flora and fauna, public services and infrastructure) and potential impacts resulting from the Ho'opili project, and proposes measures to mitigate potential impacts.			
HRS § 226-12: Objectives and policies for the physical environment – scenic, natural beauty, and historic resources.			
(a) Planning for the State's physical environment shall be directed towards achievement of the objective of enhancement of Hawaii's scenic assets, natural beauty, and multi-cultural/historic resources.			
(b) To achieve the scenic, natural beauty, and historic resources objectives, it shall be the policy of this State to:			
(1) Promote the preservation and restoration of significant natural and historic resources.	X		
(2) Provide incentives to maintain and enhance historic, cultural, and scenic amenities.	X		
(3) Promote the preservation of views and vistas to enhance the visual and aesthetic enjoyment of mountains, ocean, scenic landscapes, and other natural features.	X		
(4) Protect those special areas, structures, and elements that are an integral and functional part of Hawaii's ethnic and cultural heritage.	X		
(5) Encourage the design of developments and activities that complement the natural beauty of the islands.	X		
Discussion: The archaeological inventory survey report has been accepted by SHPD in fulfillment of Section 13-284 and 13-276, HAR (See Appendix E). A preservation plan and archaeological monitoring plan will be prepared and submitted to SHPD for its review and approval. Should any archaeologically significant artifacts, bones, or other indicators of previous on-site activity be uncovered during the construction phases of development, construction will halt and archaeological resources will be treated in strict compliance with the requirements of the DLNR. Due to the flat topography of the property and adjacent lands, existing views across the site are possible only from surrounding elevated areas such as breaks along the high speed H-1 Freeway. It is acknowledged that the project will alter the character of the existing landscape from open, cultivated fields to long-planned urban development bisected by elevated rail transit. However, similar plans are being proposed by both UHWO and DHHL on surrounding lands..			
HRS § 226-13: Objectives and policies for the physical environment – land, air, and water quality.			
(a) Planning for the State's physical environment with regard to land, air, and water quality shall be directed towards achievement of the following objectives:			
(1) Maintenance and pursuit of improved quality in Hawaii's land, air, and water resources.	X		
(2) Greater public awareness and appreciation of Hawaii's environmental resources.	X		
(b) To achieve the land, air, and water quality objectives, it shall be the policy of this State to:			

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(1) Foster educational activities that promote a better understanding of Hawaii's limited environmental resources.			X
(2) Promote the proper management of Hawaii's land and water resources.	X		
(3) Promote effective measures to achieve desired quality in Hawaii's surface, ground, and coastal waters.	X		
(4) Encourage actions to maintain or improve aural and air quality levels to enhance the health and well-being of Hawaii's people.	X		
(5) Reduce the threat to life and property from erosion, flooding, tsunamis, hurricanes, earthquakes, volcanic eruptions, and other natural or man-induced hazards and disasters.	X		
(6) Encourage design and construction practices that enhance the physical qualities of Hawaii's communities.	X		
(7) Encourage urban developments in close proximity to existing services and facilities.	X		
(8) Foster recognition of the importance and value of the land, air, and water resources to Hawaii's people, their cultures and visitors.			X
<p>Discussion: The Petitioner recognizes the importance of complying with applicable Federal, State, and County regulations relating to the area's land, air, and water resources. The project is not anticipated to have direct long-term impacts on the quality of land, air, and water resources. Drainage systems, in compliance with applicable State and County rules and regulations, will mitigate the existing flood hazard potential. The potential flood hazard on the property will be mitigated by the development of a system of detention facilities that comply with County drainage regulations. The occurrence of natural hazards such as hurricane, earthquake, and volcanic eruption exist, but are no more likely to affect the property than any other location in the 'Ewa region.</p> <p>The Ho'opili project is surrounded by or in close proximity to existing and planned developments, services and facilities. It is situated between H-1 Freeway (north) and Mango Tree Road (south), and between the planned North-South Road (west) and Old Fort Weaver Road (east). Existing urban uses occur to the south ('Ewa Villages) and east (Honouliuli). New development is planned and/or being constructed to the west (UHWO and DHHL). All new infrastructure and infrastructure improvements will be sized and engineered to accommodate the proposed development.</p>			
HRS § 226-14: Objective and policies for facility systems – in general			
(a) Planning for the State's facility systems in general shall be directed towards achievement of the objective of water, transportation, waste disposal, and energy and telecommunication systems that support statewide social, economic, and physical objectives.			
(b) To achieve the general facility systems objective, it shall be the policy of this State to:			
(1) Accommodate the needs of Hawaii's people through coordination of facility systems and capital improvement priorities in consonance with state and county plans.	X		
(2) Encourage flexibility in the design and development of facility systems to promote prudent use of resources and accommodate changing public demands and priorities.	X		
(3) Ensure that required facility systems can be supported within resource capacities and at reasonable cost to the user.	X		
(4) Pursue alternative methods of financing programs and projects and cost-saving techniques in the planning, construction, and	X		

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maintenance of facility systems.			
Discussion: The Ho'opili project will comply with State and County rules and regulations regarding facility system objectives.			
HRS § 226-15: Objectives and policies for facility systems – solid and liquid wastes.			
(a) Planning for the State's facility systems with regard to solid and liquid wastes shall be directed towards the achievement of the following objectives:			
(1) Maintenance of basic public health and sanitation standards relating to treatment and disposal of solid and liquid wastes.	X		
(2) Provision of adequate sewerage facilities for physical and economic activities that alleviate problems in housing, employment, mobility, and other areas.	X		
(b) To achieve the solid and liquid waste objectives, it shall be the policy of this State to:			
(1) Encourage the adequate development of sewerage facilities that complement planned growth.	X		
(2) Promote re-use and recycling to reduce solid and liquid wastes and employ a conservation ethic.	X		
(3) Promote research to develop more efficient and economical treatment and disposal of solid and liquid wastes.			X
Discussion: A gravity wastewater collection system will be designed to City and County standards and ultimately dedicated to the County to serve the project. The point of connection to off-site collection systems will be at the southern boundary of Parcel C and at the common property line with DHHL. The wastewater will be conveyed to Honouliuli WWTP, and therefore, to mitigate the additional burden, the project will participate in the WSFC program and contribute funds to expand the treatment plant.			
Regarding solid waste, the City and County of Honolulu is restarting its curbside pick up recycling program. In November 2007, two pilot curbside recycling programs began in Mililani and Hawai'i Kai. During the six to twelve month evaluation period, the City and County of Honolulu Department of Environmental Services staff will be coordinating plans for island wide expansion.			
On June 27, 2008, the Associated Press reported that Mililani and Hawai'i Kai residents have recycled 54 percent of their cans, bottles, newspapers and green waste during the city's six-month curbside recycling pilot project. City Officials with the City and County of Honolulu Department of Environmental Services (DES) are reportedly satisfied with the results and are moving forward with plans to provide some 160,000 O'ahu homes the curbside recycling service by May 2010. In the new plan, the city will collect garbage and recyclables each once a week. The DES will no longer have garbage pickup twice-weekly. A study released by DES predicts the program will divert an estimated 53,800 tons of mixed recyclables and green waste from O'ahu landfills. They plan to begin expanding the program to more communities in November 2008.			
HRS § 226-16: Objectives and policies for facility systems – water.			
(a) Planning for the State's facility systems with regard to water shall be directed towards achievement of the objective of the provision of water to adequately accommodate domestic, agricultural, commercial, industrial, recreational, and other needs within resource capacities.			
(b) To achieve the facility systems water objective, it shall be the policy of this State to:			
(1) Coordinate development of land use activities with existing and potential water supply.	X		
(2) Support research and development of alternative methods to meet			X

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future water requirements well in advance of anticipated needs.			
(3) Reclaim and encourage the productive use of runoff water and wastewater discharges.	X		
(4) Assist in improving the quality, efficiency, service, and storage capabilities of water systems for domestic and agricultural use.	X		
(5) Support water supply services to areas experiencing critical water problems.	X		
(6) Promote water conservation programs and practices in government, private industry, and the general public to help ensure adequate water to meet long-term needs.	X		

Discussion: The total average daily source requirement for ultimate build-out is estimated at 3.9 MGD. The future water demand from the proposed project is based on standard civil engineering methodology; it is possible that with the implementation of feasible water conservation appliances, future water demand from the project may be lessened. During the public review period, the BWS wrote: "The developer should also consider rain barrel catchments, water-efficient front-load washer appliances and ultra low-flow toilets." It is intended that source (well supply) would be provided by BWS from existing sources. Although BWS cannot reserve water for future projects, it has indicated that there is water available to meet the estimated water demand for the project (3.9 MGD). Water Facility Charges paid by the Petitioner will be used by the Board to assist in the source replenishment caused by the project's water demands.

New water system demands will require that the Petitioner provide system upgrades to the transmission and storage components to ensure that the system operates effectively and meets BWS standards. These upgrades are described in detail in Section 4.8.2 of this EIS.

With respect to non-potable water requirements, the project will be maximizing non-drinking water usage to minimize the demand on the safe drinking water system. If a suitable supply is made available, street right of ways of the Ho'opili project will have underground non-drinking water distribution systems. It is proposed to upgrade the existing non-drinking water source (EP 5 & 6 located within Parcel C) to a BWS dedicable standard to be used as the source for the non-drinking system. It is also proposed to ultimately allow for future dedication of the non-drinking water system. It is estimated that the ultimate non-drinking water demand for the project will be approximately 2.1 MGD. The Petitioner will consider the use of drought tolerant/low water use plants and the implementation of xeriscaping principles for landscaping within the Ho'opili project to the extent practicable. The installation of an efficient irrigation system, possibly using drip irrigation, will be considered in the design of the project where feasible. Moisture sensors to avoid the operation of the system in the rain and if the ground has adequate moisture would be incorporated into the irrigation system, where feasible.

Another source of non-potable water is reclaimed water. The Honolulu Board of Water Supply (BWS) entered into the water recycling business in 2000 by purchasing the Honouliuli Water Reclamation Facility. Water recycling is one element of a broader BWS strategy to protect O'ahu's aquifers and to conserve water resources through conservation and development of new water supplies. The facility is now irrigating golf courses that were once using brackish water, including West Loch, 'Ewa Villages, Hawai'i Prince, and Coral Creek. The facility is also providing recycled water (at a different level of treatment) to industries at Campbell Industrial Park. The project's main source of non-potable water is still intended to be the caprock aquifer (EP 5 & 6), but the potential use of reclaimed water is being identified as an alternate option.

The project will be maximizing the use of non-potable water for irrigation to minimize the impact

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<p>on the source component of the BWS system. It is proposed that the project's greenbelts, parks and roadway medians use non-potable water for irrigation, if a suitable supply will be available. The BWS Water Resources Division will be contacted regarding the availability of recycled water and other non-potable water supplies. A Conceptual Water Master Plan addressing safe drinking and non-potable water facilities has been prepared and reproduced in its entirety and attached to this EIS as Appendix M will be submitted to BWS for its review and approval. In addition, construction drawings will be submitted to BWS for its review and approval. During the public review period of the Draft EIS, the DLNR Commission on Water Resource Management requested that "the reuse of storm water and installation of water efficient fixtures be considered" and recommended "the use of xeriscaping and the planting of drought tolerant and salt-tolerant plants to conserve water supplies."</p>			
HRS § 226-17: Objectives and policies for facility systems – transportation.			
(a) Planning for the State's facility systems with regard to transportation shall be directed toward the achievement of the following objectives, giving due consideration to all:			
(1) An integrated multi-modal transportation system that services statewide needs and promotes the efficient, economical, safe, and convenient movement of people and goods.	X		
(2) A statewide transportation system that is consistent with and will accommodate planned growth objectives throughout the State.	X		
(b) To achieve the transportation objectives, it shall be the policy of this State to:			
(1) Design, program, and develop a multi-modal system in conformance with desired growth and physical development as stated in this chapter;	X		
(2) Coordinate state, county, federal, and private transportation activities and programs toward the achievement of statewide objectives;			X
(3) Encourage a reasonable distribution of financial responsibilities for transportation among participating governmental and private parties;	X		
(4) Provide for improved accessibility to shipping, docking, and storage facilities;			X
(5) Promote a reasonable level and variety of mass transportation services that adequately meet statewide and community needs;	X		
(6) Encourage transportation systems that serve to accommodate present and future development needs of communities;	X		
(7) Encourage a variety of carriers to offer increased opportunities and advantages to interisland movement of people and goods;			X
(8) Increase the capacities of airport and harbor systems and support facilities to effectively accommodate transshipment and storage needs;			X
(9) Encourage the development of transportation systems and programs which would assist statewide economic growth and diversification;	X		
(10) Encourage the design and development of transportation systems sensitive to the needs of affected communities and the quality of Hawaii's natural environment;	X		
(11) Encourage safe and convenient use of low-cost, energy-efficient, non-polluting means of transportation;	X		
(12) Coordinate intergovernmental land use and transportation planning activities to ensure the timely delivery of supporting transportation			X

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infrastructure in order to accommodate planned growth objectives; and			
(13) Encourage diversification of transportation modes and infrastructure to promote alternate fuels and energy efficiency.	X		
Discussion: The proposed project has been designed to accommodate an integrated multi-modal transportation system, including high capacity (elevated rail) transit, bus, automobile, bicycle and pedestrian modes of travel.			
HRS § 226-18: Objectives and policies for facility systems – energy.			
(a) Planning for the State's facility systems with regard to energy shall be directed toward the achievement of the following objectives, giving due consideration to all:			
(1) Dependable, efficient, and economical statewide energy systems capable of supporting the needs of the people;	X		
(2) Increased energy self-sufficiency where the ratio of indigenous to imported energy use is increased;	X		
(3) Greater energy security in the face of threats to Hawaii's energy supplies and systems; and			X
(4) Reduction, avoidance, or sequestration of greenhouse gas emissions from energy supply and use.	X		
(b) To achieve the energy objectives, it shall be the policy of this State to ensure the provision of adequate, reasonably priced, and dependable energy services to accommodate demand.			
(c) To further achieve the energy objectives, it shall be the policy of this State to:			
(1) Support research and development as well as promote the use of renewable energy sources;			X
(2) Ensure that the combination of energy supplies and energy-saving systems is sufficient to support the demands of growth;			X
(3) Base decisions of least-cost supply-side and demand-side energy resource options on a comparison of their total costs and benefits when a least-cost is determined by a reasonably comprehensive, quantitative, and qualitative accounting of their long-term, direct and indirect economic, environmental, social, cultural, and public health costs and benefits;			X
(4) Promote all cost-effective conservation of power and fuel supplies through measures including:	X		
(A) Development of cost-effective demand-side management programs;	X		
(B) Education; and	X		
(C) Adoption of energy-efficient practices and technologies;	X		
(5) Ensure to the extent that new supply-side resources are needed, the development or expansion of energy systems utilizes the least-cost energy supply option and maximizes efficient technologies;			X
(6) Support research, development, and demonstration of energy efficiency, load management, and other demand-side management programs, practices, and technologies;			X
(7) Promote alternate fuels and energy efficiency by encouraging diversification of transportation modes and infrastructure;	X		
(8) Support actions that reduce, avoid, or sequester greenhouse gases in utility, transportation, and industrial sector applications; and	X		
(9) Support actions that reduce, avoid, or sequester Hawaii's			X

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greenhouse gas emissions through agriculture and forestry initiatives.			
<p>Discussion: Sustainability options are being considered for the Ho'opili project.</p> <p>Project buildings, activities, and site grounds are planned to be designed with energy-saving considerations, and the project will strive to be consistent with the State's objective to promote cost-effective energy conservation through the adoption of energy-efficient practices and technologies. Due to the sunny climate, the project will be suited for the use of renewable energy technologies including photovoltaics. <u>During the public review period, the Office of Hawaiian Affairs wrote: "...OHA recommends the use of not only photovoltaic cells but also small wind harvesting electrical generation for peripheral uses such as parking lot lighting."</u></p> <p><u>According to the American Wind Energy Association, small wind energy systems typically range from \$3,000 to \$5,000 for every kW (kilowatt) of generating capacity, or about \$40,000 for a 10 kW system (installed). According to the Hawaiian Electric Company (HECO), wind generation energy resources typically cost approximately \$.08 to \$.11/kW per hour, however these rates apply to larger wind systems (wind farms) as opposed to individual wind systems whose rates are not readily available by HECO.</u></p> <p><u>Photovoltaic (PV) systems range in price from \$8,250 for a one-kW system to more than \$40,000 for a five-kW system. According to HECO, internal estimates for photovoltaic (PV) energy resources typically cost approximately \$.30 to \$.40/kW per hour.</u></p> <p><u>The average energy consumption by a single-family residence in Hawai'i is approximately 600 kW per hour. According to HECO, "Non-firm sources, such as wind and solar, are called "as-available" resources and must be backed up by firm generation to ensure electricity is available when customers need it -- 24 hours a day, regardless of whether the wind is blowing or the sun is shining."</u></p> <p><u>"In addition to not being available 24-hours-a-day, the variability of wind, typical of the trade winds in Hawaii, can cause power problems. It can affect the quality of power produced. Today, a lot of sensitive electronic equipment can be damaged or disrupted by the variability of power produced from sources like the wind. These fluctuations can also place a big strain on the utility's fossil fuel generators if they have to kick in and meet the demand for electricity when the wind power is suddenly not available."</u></p> <p><u>Even when "as-available" resources are available, HECO still needs to cut back on "as-available" renewable energy sources during off-peak periods of electricity use. This is due to scenarios where customer demand for power drops too low, generation must be turned off to cut back on power production. Otherwise, the electric system could potentially overload and become unstable. Furthermore, fossil-fuel generation can only be reduced so much. This on-and-off cycling could lead to damage and accelerated deterioration of fossil-fuel generators. It also causes the generators to burn more fuel than necessary which leads to an increased cost of electricity.</u></p> <p><u>In June 2008, Governor Lingle signed SB 644 which requires that solar water heaters be required before issuance of a building permit on or after January 2010 for single-family residences.</u></p> <p><u>In addition, based on the Department of Business, Economic Development & Tourism (DBEDT), Strategic Industries Division's recommendations, Ho'opili's mechanical and electrical consultants, in consultation with its sustainability consultant, will be directed to review the City and County of</u></p>			