

Land Use Technical Report Honolulu High-Capacity Transit Corridor Project

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Prepared for:
City and County of Honolulu

This technical report supports the Draft Environmental Impact Statement (EIS) prepared for the Honolulu High-Capacity Transit Corridor Project. It provides additional detail and information as it relates to:

- Methodology used for the analysis
- Applicable regulations
- Results of the technical analysis
- Proposed mitigation
- Coordination and consultation (as appropriate)
- References
- Model output (as appropriate)
- Other information/data

As described in the Draft EIS, the Locally Preferred Alternative, called the “Full Project,” is an approximate 30-mile corridor from Kapolei to the University of Hawai‘i at Mānoa with a connection to Waikīkī. However, currently available funding sources are not sufficient to fund the Full Project. Therefore, the focus of the Draft EIS is on the “First Project,” a fundable approximately 20-mile section between East Kapolei and Ala Moana Center. The First Project is identified as “the Project” for the purpose of the Draft EIS.

This technical report documents the detailed analysis completed for the Full Project, which includes the planned extensions, related transit stations, and construction phasing. The planned extensions and related construction planning have not been fully evaluated in the Draft EIS and are qualitatively discussed in the Cumulative Effects section of the Draft EIS as a foreseeable future project(s). Once funding is identified for these extensions, a full environmental evaluation will be completed in a separate environmental study (or studies), as appropriate.

Figure 1-3 through Figure 1-6 (in Chapter 1, Background) show the proposed Build Alternatives and transit stations, including the areas designated as planned extensions.

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Acronyms and Abbreviations

CEQ	Council on Environmental Quality
City	City and County of Honolulu
DHHL	Department of Hawaiian Home Lands
DPP	City and County of Honolulu Department of Planning and Permitting
DTS	City and County of Honolulu Department of Transportation Services
EIS	environmental impact statement
EPA	Environmental Protection Agency
‘Ewa (direction)	toward the west (see also Wai‘anae)
FAA	Federal Aviation Administration
FHWA	Federal Highway Administration
FTA	Federal Transit Administration
H-1	Interstate Route H-1 (the H-1 Freeway)
H-2	Interstate Route H-2 (the H-2 Freeway)
HCDA	Hawai‘i Community Development Authority
HDOT	State of Hawai‘i Department of Transportation
HRS	Hawai‘i Revised Statutes
HSTP	Hawai‘i Statewide Transportation Plan
Koko Head (direction)	toward the east
makai (direction)	toward the sea
mauka (direction)	toward the mountains
NCHRP	National Cooperative Highway Research Program
NEPA	National Environmental Policy Act
NPDES	National Pollution Discharge Elimination System
O‘ahuMPO	O‘ahu Metropolitan Planning Organization
ORTP	O‘ahu Regional Transportation Plan
PUC	Primary Urban Center
RTD	City and County of Honolulu Department of Transportation Services Rapid Transit Division
TAZ	traffic analysis zones
TOD	transit-oriented development
TPSS	traction power substation
TSD	transit-supportive development
UH	University of Hawai‘i
USC	U.S. Code
Wai‘anae	toward the west (see also ‘Ewa)

Summary

The City and County of Honolulu Department of Transportation Services Rapid Transit Division (RTD), in coordination with the U.S. Department of Transportation Federal Transit Administration (FTA), is preparing a Draft Environmental Impact Statement (EIS) to evaluate alternatives that would provide high-capacity transit service on O'ahu. The alternatives being considered are as follows:

1. No Build Alternative
2. Fixed Guideway Transit Alternative via Salt Lake Boulevard (Salt Lake Alternative)
3. Fixed Guideway Transit Alternative via the Airport (Airport Alternative)
4. Fixed Guideway Transit Alternative via the Airport & Salt Lake (Airport & Salt Lake Alternative)

Table S-1 provides a summary of land use effects from each alternative.

Table S-1: Summary of Land Use Effects

Alternative	Degree of Effect	Notes
No Build Alternative		
Density	Low	Unchanged
Rate of development	Low	Unchanged
Common to All Build Alternatives		
Density	Medium	Project will increase density in 'Ewa and selected station areas in Central O'ahu
Rate of development	Medium	Project may increase rate of development in 'Ewa
Salt Lake Alternative		
Density	Low	Station areas mostly built out
Rate of development	Low	Station areas mostly built out
Airport Alternative		
Density	Low	May change at Aloha Stadium and Honolulu Airport
Rate of development	Low	
Airport & Salt Lake Alternative		
Density	Medium	Combines impacts of Salt Lake Alternative and Airport Alternative
Rate of development	Medium	Combines impacts of Salt Lake Alternative and Airport Alternative
Impacts and Mitigation		
Construction Impacts	Medium	Most construction in public right-of-way but may impact adjacent land uses due to long duration
Indirect and cumulative impacts	Medium	Build Alternatives will concentrate growth in corridor and convert some agricultural land to urban uses
Mitigation	Low	As needed

Displacements are discussed in the *Honolulu High-Capacity Transit Corridor Project Neighborhoods and Communities Technical Report* (RTD 2008a).

Source: PB

No Build Alternative

The No Build Alternative would result in continuation of the low-density pattern of development in 'Ewa, Kapolei (as O'ahu's "second city"), and Central O'ahu, and moderate and high-density development in the Primary Urban Center (PUC). This pattern of development is in accordance with existing City and County of Honolulu (City) Development Plans for these areas.

Even without the Honolulu High-Capacity Transit Corridor Project (Project), growth on O'ahu will continue. The major effect on land use development without the Project, however, will be the continuation of low-planned densities and site planning oriented to vehicular access, particularly in 'Ewa and Central O'ahu, which is dependent on the highway system primarily for access and mobility.

Build Alternatives

The consequences of the Build Alternatives on land use are potentially higher density of planned development near stations in West O'ahu, including in Kapolei. Since most of the study corridor Koko Head of West O'ahu is built out with little vacant land, redevelopment of occupied parcels will be the primary means for future land use change, especially in Kapolei. However, the continuing strong market will tend to increase the potential for redevelopment of well-located, under-used parcels near certain transit stations in Central O'ahu and the PUC. Because of prior planning, the most substantial changes in land use are expected in West O'ahu, Kaka'ako, and Mō'ili'ili, with or without the Project and regardless of alternative.

Common to all Build Alternatives is the potential for transit-oriented development (TOD) and transit-supportive development (TSD). TOD is moderate- to high-density, mixed-use development that is transit/pedestrian oriented within walking distance of a station. Parking is reduced. TSD is lower density than TOD and is single-use development that is also within walking distance of a station.

In the PUC, many more station areas would experience land use changes to higher densities, also through redevelopment of occupied parcels. These land use changes are already expected based on prior planning by public agencies and private developers. Moreover, the *PUC Development Plan* (DPP 2004a) encourages higher densities in the transit corridor.

The highest potential for continued high-density development, such as office, retail, residential, and hotel uses, is between Downtown Honolulu and Waikīkī. The highest potential for lower- to medium-density new development in the study corridor, such as single-family detached housing, medium-density mixed-use TOD, low-rise office parks, free-standing shopping centers, and big-box retail stores, is in 'Ewa and Kapolei. These more suburban and rural areas are already planned for development, including the former Barbers Point Naval Air Station (now known as Kalaeloa). The moderately dense built-up areas between Waipahu and Downtown Honolulu and along University Avenue to UH Mānoa are relatively stable with few vacant parcels.

Of the 24 station sites, two are already in areas that can be characterized as TOD. These are located between Chinatown and Ala Moana Center. Sixteen of the station sites have high or medium potential for TOD, and eight have either low potential due to a lack of available developable land or are not within a growth area. Those stations with high potential for TOD are in three areas of the corridor: 'Ewa, Honolulu International Airport, and Downtown Honolulu to Waikīkī. Those stations with medium potential are not necessarily in growth areas, but either have strong public planning support because of TOD studies or are near properties of large land owners who may have redevelopment plans.

Salt Lake Alternative

Land-use impacts of the Salt Lake Alternative are limited because the area already is virtually built out, development is oriented away from Salt Lake Boulevard, and the area has poor or no pedestrian access to Salt Lake Boulevard. Substantial improvement to pedestrian access between the stations and adjacent developments will have to be provided to have any effect on further land use development or redevelopment near the stations. High-density residential areas are adjacent to the Koko Head section of Salt Lake Boulevard.

Airport Alternative

The Aloha Stadium Station site for this alternative has limited TOD and TSD potential except for the redevelopment potential of the vast surface parking lots to achieve TSD. A transit project park-and-ride lot is proposed mauka of the station. Structured parking would reduce the loss of stadium parking spaces, especially as part of a joint-development scheme.

Since the Pearl Harbor Naval Base Station site and the surrounding land is controlled by the military, it has limited TOD or TSD possibilities as part of the Project.

The site for the Honolulu International Airport Station has a high potential for TOD and joint development. Through coordinated planning and design, airport uses could be merged with transit station design and development to achieve a fully integrated station within airport facilities.

The Lagoon Drive Station site is located in a fully built-out industrial area with no vacant land. As a result, TOD and TSD potential are limited without redevelopment. In addition, future redevelopment may be subject to flight path limitations imposed by the Federal Aviation Administration (FAA). The alignment through the edge of Ke'ehi Lagoon Beach Park, a public facility, would most likely be a Section 4(f) use.

Airport & Salt Lake Alternative

The land use impacts of this alternative would be the combined impact described individually for the Salt Lake and the Airport Alternatives. Because the two

alignments are sufficiently separated, the land use impacts of one corridor would have little or no impact on the other.

Construction Impacts

Construction impacts on land use would be temporary and sequential as construction proceeds through an area. The four main components of the fixed guideway system, which are common to all alternatives being considered, include foundations, piers (support columns), superstructure (the elevated guideway structure), and stations. The foundations and stations, which include elevator and stairway touchdown points at street level, would have the most direct land use impacts on the right-of-way. The piers and the superstructure would have direct land use impacts because they displace small areas of land, most of which are in the public right-of-way.

A permanent 40-plus-acre vehicle maintenance and storage facility would be located on a site either near Ho'opili or Leeward Community College. Construction impacts on adjacent land uses are expected to be substantial at the Ho'opili site because it would displace agricultural land, be constructed near the planned community of Ho'opili, some of which may be completed by then, as well as be a nuisance to abutting uses on Farrington Highway. Construction land use impacts at the Leeward Community College site adjacent to the alignment may constitute a nuisance, including displacing part of its parking lot. Construction activities, including construction at the edge of the property adjacent to Waipahu High School stadium and the high school farther 'Ewa, may also constitute a nuisance.

The construction of park-and-ride facilities would require large land areas ranging up to approximately 17 acres to accommodate approximately 600 to 1,700 vehicles. These would be located at the following station sites: West Kapolei (planned extension), Kapolei Parkway (planned extension), East Kapolei (temporary), University of Hawai'i at West O'ahu (UH West O'ahu), Pearl Highlands Aloha Stadium—Airport Alternative, and Aloha Stadium—Salt Lake Alternative.

Indirect and Cumulative Impacts

Based on the locations of environmental resources near the Project as well as past and foreseeable projects, it is expected that the indirect and cumulative effects would be the conversion of agricultural land to developed land even with the No Build Alternative. The most notable indirect and cumulative effect of the many planned transportation projects, highways, and this Project would be to concentrate new development between now and 2030 in the project study area. It is likely that future development would not be less dense, since planned densities are already low. However, there is a potential for development to occur in a more scattered and less compact pattern, especially with the No Build Alternative. This phenomenon would increase the potential for new development in areas not planned for development in City development plans. This change would put the remaining natural areas, such as isolated wetlands and floodplains, at risk sooner. Only

remnants of natural resources remain, and those on private lands are only protected in part by existing local, State, and Federal environmental protection laws and ordinances.

Past development in the project study area has built out the corridor between Waipahu and Central Honolulu. Currently, Central Honolulu is experiencing major infill development, especially at the Ala Moana Center and in Kaka'ako. For example, General Growth Company (a private property owner/developer) announced in February 2008 a major redevelopment of its properties in Kaka'ako. Wai'anae of Waipahu, in Kapolei, major developments are planned in the near future, including a new campus for UH West O'ahu, the planned community of Ho'opili by the D.R. Horton Company, a mixed-use regional shopping center by the Department of Hawaiian Home Lands (DHHL), a Kroc Community Center by the Salvation Army, and the planned community of Kalaeloa by the Hawai'i Community Development Authority (HCDA).

Mitigation

During the planning of the Project since 2005, alternatives were developed and refined to avoid, minimize, or mitigate adverse indirect and cumulative effects. A multi-disciplinary team evaluated and compared the impacts of alternatives in an iterative process that continually focused on reducing adverse project impacts, including cumulative effects. The Build Alternatives were advanced over other alternatives that may have greater adverse direct impacts on community and natural resources. It is through these decisions that the RTD has attempted to reduce the potential for development-related indirect and cumulative impacts of the proposed project. In fact, the alignments have been changed throughout the planning process to support planned developments by others such as Kalaeloa, UH West O'ahu and Ho'opili proposals.

The indirect impacts associated with building the Project and the cumulative impacts of past, present, and future projects are difficult to predict and catalog with any certainty or specificity. The findings reflect reasonably foreseeable tendencies, such as increases in development pressure as a result of improved accessibility assuming there is market demand for new development in the region. Federal environmental regulations do not mention mitigation of indirect and cumulative effects.

1.1 Introduction

The City and County of Honolulu Department of Transportation Services Rapid Transit Division (RTD), in cooperation with the U.S. Department of Transportation Federal Transit Administration (FTA), is evaluating fixed-guideway alternatives that would provide high-capacity transit service on O'ahu. The project study area is the travel corridor between Kapolei and the University of Hawai'i at Mānoa (UH Mānoa) (Figure 1-1). This corridor includes the majority of housing and employment on O'ahu. The east-west length of the corridor is approximately 23 miles. The north-south width is, at most, 4 miles because the Ko'olau and Wai'anae Mountain Ranges bound much of the corridor to the north and the Pacific Ocean to the south.

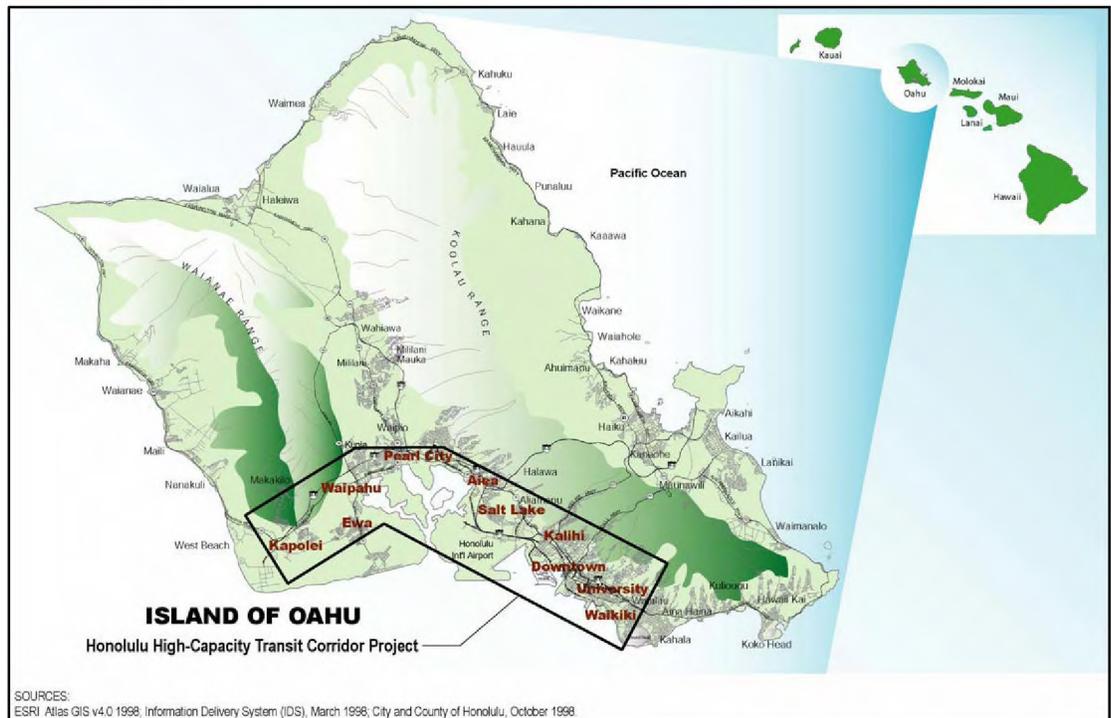


Figure 1-1: Project Vicinity

1.2 Description of the Study Corridor

The Honolulu High-Capacity Transit Corridor extends from Kapolei in the west (Wai'anae or 'Ewa direction) to UH Mānoa in the east (Koko Head direction) and is confined by the Wai'anae and Ko'olau Mountain Ranges in the mauka direction (towards the mountains, generally to the north within the study corridor) and the Pacific Ocean in the makai direction (towards the sea, generally to the south within the study corridor). Between Pearl City and 'Aiea, the corridor's width is less than 1 mile between Pearl Harbor and the base of the Ko'olau Mountains (Figure 1-2).

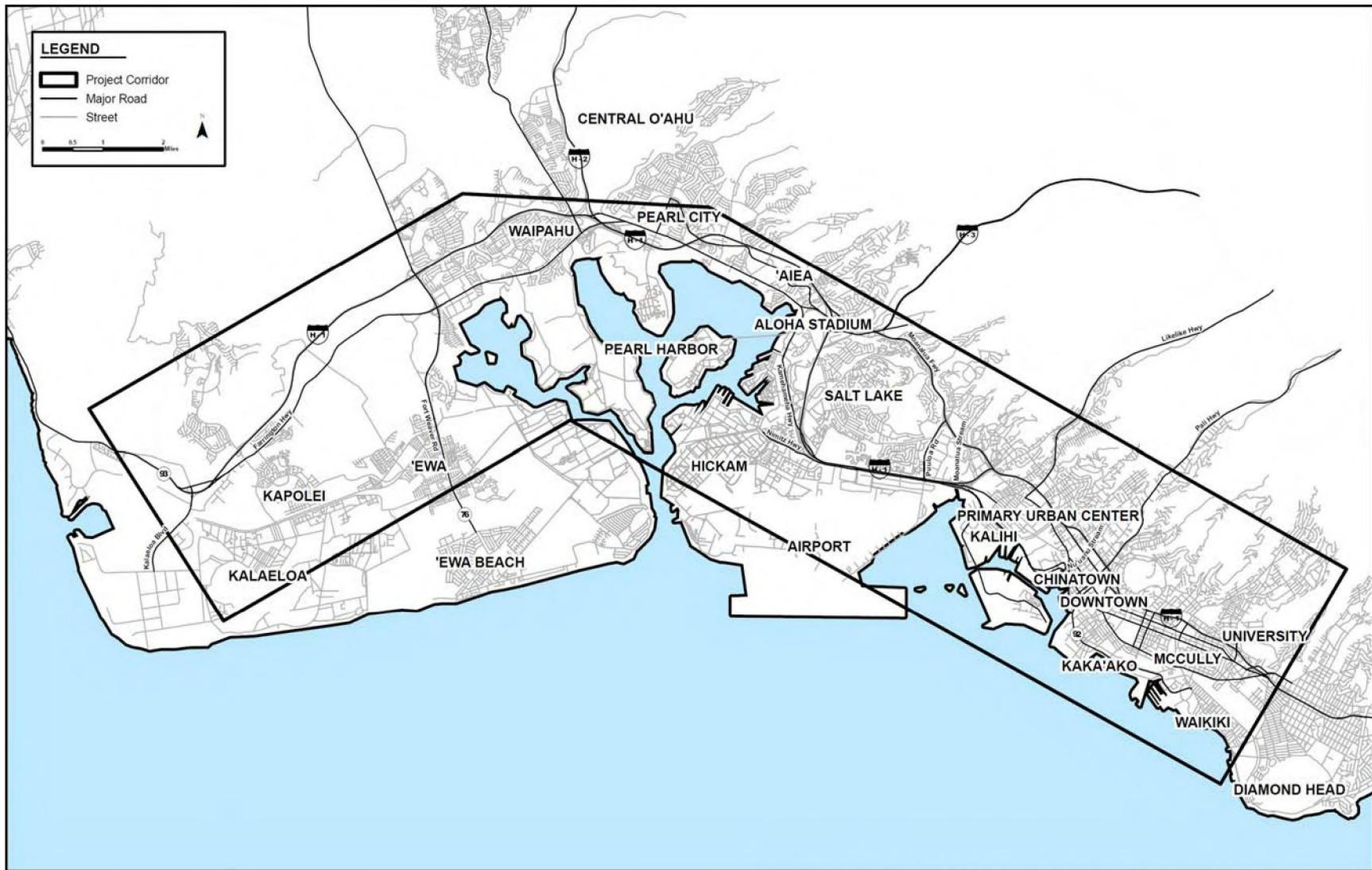


Figure 1-2: Areas and Districts in the Study Corridor

1.3 Alternatives

Four alternatives are being evaluated in the Environmental Impact Statement (EIS). They were developed through a screening process that considered alternatives identified through previous transit studies, a field review of the study corridor, an analysis of current and projected population and employment data for the corridor, a literature review of technology modes, work completed by the O'ahu Metropolitan Planning Organization (O'ahuMPO) for its *O'ahu Regional Transportation Plan 2030* (ORTP) (O'ahuMPO 2007), a rigorous Alternatives Analysis process, selection of a Locally Preferred Alternative by the City Council, and public and agency comments received during the separate formal project scoping processes held to satisfy National Environmental Policy Act (NEPA) (USC 1969) requirements and the Hawai'i EIS Law (Chapter 343) (HRS 2008). The alternatives evaluated are as follows:

1. No Build Alternative
2. Salt Lake Alternative
3. Airport Alternative
4. Airport & Salt Lake Alternative

1.3.1 No Build Alternative

The No Build Alternative includes existing transit and highway facilities and committed transportation projects anticipated to be operational by 2030. Committed transportation projects are those identified in the ORTP, as amended (O'ahuMPO 2007). Highway elements of the No Build Alternative also are included in the Build Alternatives. The No Build Alternative would include an increase in bus fleet size to accommodate growth, allowing service frequencies to remain the same as today.

1.3.2 Build Alternatives

The fixed guideway alternatives would include the construction and operation of a grade-separated fixed guideway transit system between East Kapolei and Ala Moana Center (Figure 1-3 to Figure 1-6). Planned extensions are anticipated to West Kapolei, UH Mānoa, and Waikīkī. The system evaluated a range of fixed-guideway transit technologies that met performance requirements, which could be either automated or employ drivers. All parts of the system would either be elevated or in exclusive right-of-way.

Steel-wheel-on-steel-rail transit technology has been proposed through a comparative process based on the ability of various transit technologies to cost-effectively meet project requirements. As such, this technology is assumed in this analysis.

The guideway would follow the same alignment for all Build Alternatives through most of the study corridor. The Project would begin by following North-South Road and other future roadways to Farrington Highway. Proposed station locations and

other project features in this area are shown in Figure 1-3. The guideway would follow Farrington Highway Koko Head on an elevated structure and continue along Kamehameha Highway to the vicinity of Aloha Stadium (Figure 1-4).

Between Aloha Stadium and Kalihi, the alignment differs for each of the Build Alternatives, as detailed later in this section (Figure 1-5). Koko Head of Middle Street, the guideway would follow Dillingham Boulevard to the vicinity of Ka'aahi Street and then turn Koko Head to connect to Nimitz Highway in the vicinity of Iwilei Road.

The alignment would follow Nimitz Highway Koko Head to Halekauwila Street, then along Halekauwila Street past Ward Avenue, where it would transition to Queen Street and Kona Street. Property on the mauka side of Waimanu Street would be acquired to allow the alignment to cross over to Kona Street. The guideway would run above Kona Street through Ala Moana Center.

Planned extensions would connect at both ends of the corridor. At the Wai'anae end of the corridor, the alignment would follow Kapolei Parkway to Wākea Street and then turn makai to Saratoga Avenue. The guideway would continue on future extensions of Saratoga Avenue and North-South Road. At the Koko Head end of the corridor, the alignment would veer mauka from Ala Moana Center to follow Kapi'olani Boulevard to University Avenue, where it would again turn mauka to follow University Avenue over the H-1 Freeway to a proposed terminal facility in UH Mānoa's Lower Campus. A branch line with a transfer point at Ala Moana Center or the Hawai'i Convention Center into Waikīkī would follow Kalākaua Avenue to Kūhiō Avenue to end near Kapahulu Avenue (Figure 1-6).

Salt Lake Alternative

The Salt Lake Alternative would leave Kamehameha Highway immediately 'Ewa of Aloha Stadium, cross the Aloha Stadium parking lot, and continue Koko Head along Salt Lake Boulevard (Figure 1-5). It would follow Pūkōloa Street through Māpunapuna before crossing Moanalua Stream, turning makai, crossing the H-1 Freeway and continuing to the Middle Street Transit Center. Stations would be constructed near Aloha Stadium and Ala Liliko'i. The total guideway length for this alternative would be approximately 19 miles and it would include 19 stations. The eventual guideway length, including planned extensions, for this alternative would be approximately 28 miles and it would include 31 stations.

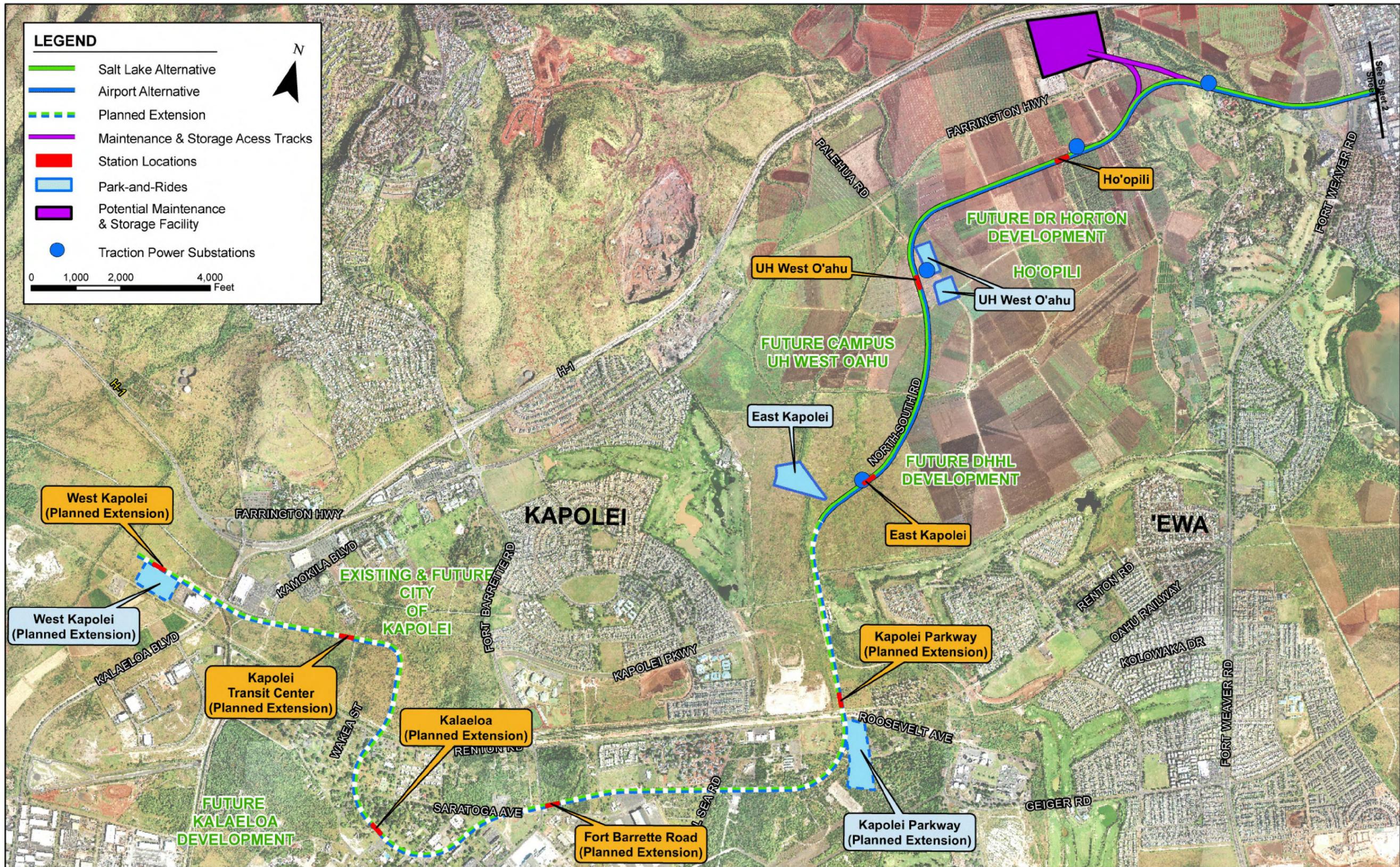


Figure 1-3: Fixed Guideway Transit Alternative Features (Kapolei to Fort Weaver Road)



Figure 1-4: Fixed Guideway Transit Alternative Features (Fort Weaver Road to Aloha Stadium)

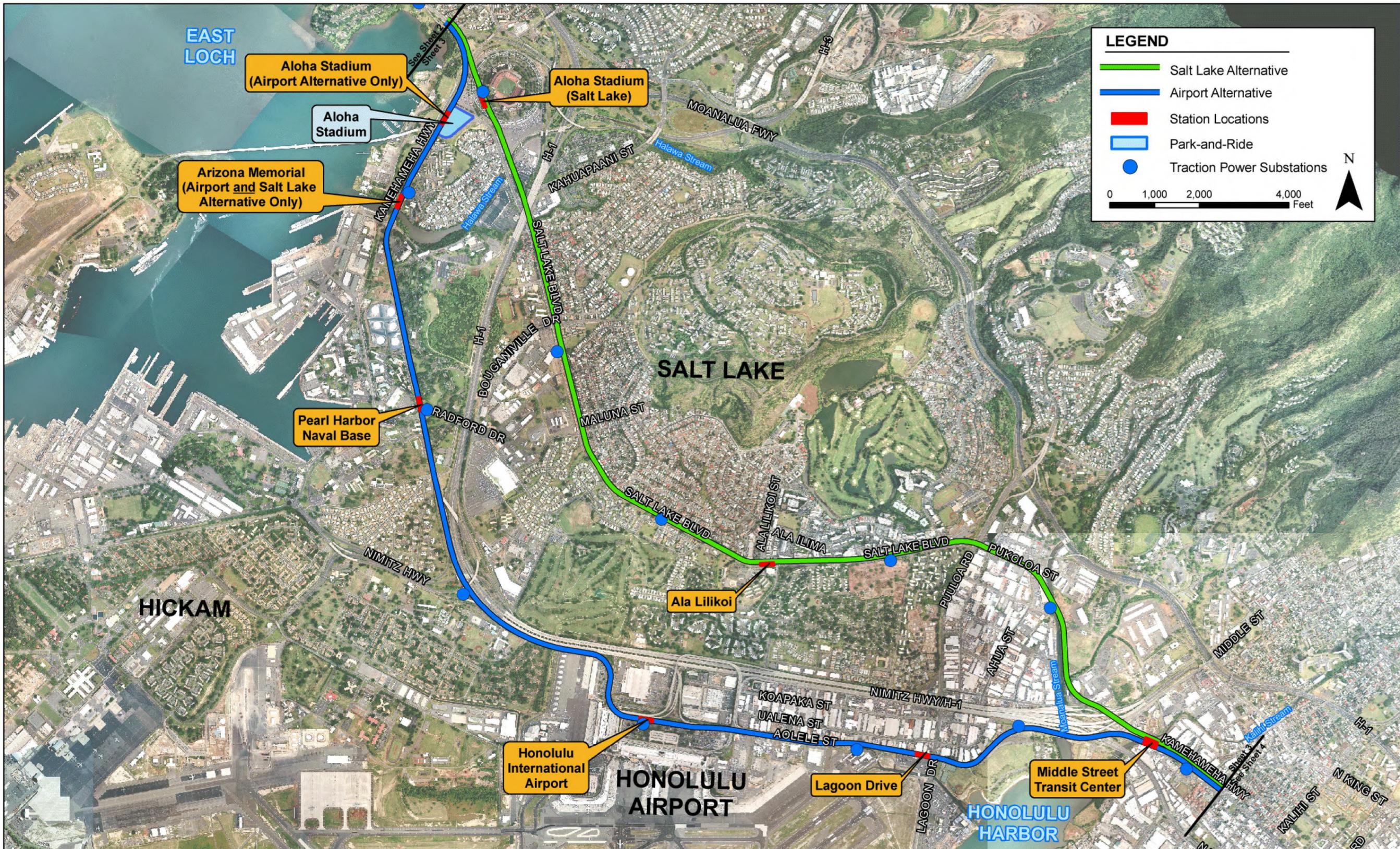


Figure 1-5: Fixed Guideway Transit Alternative Features (Aloha Stadium to Kalihi)

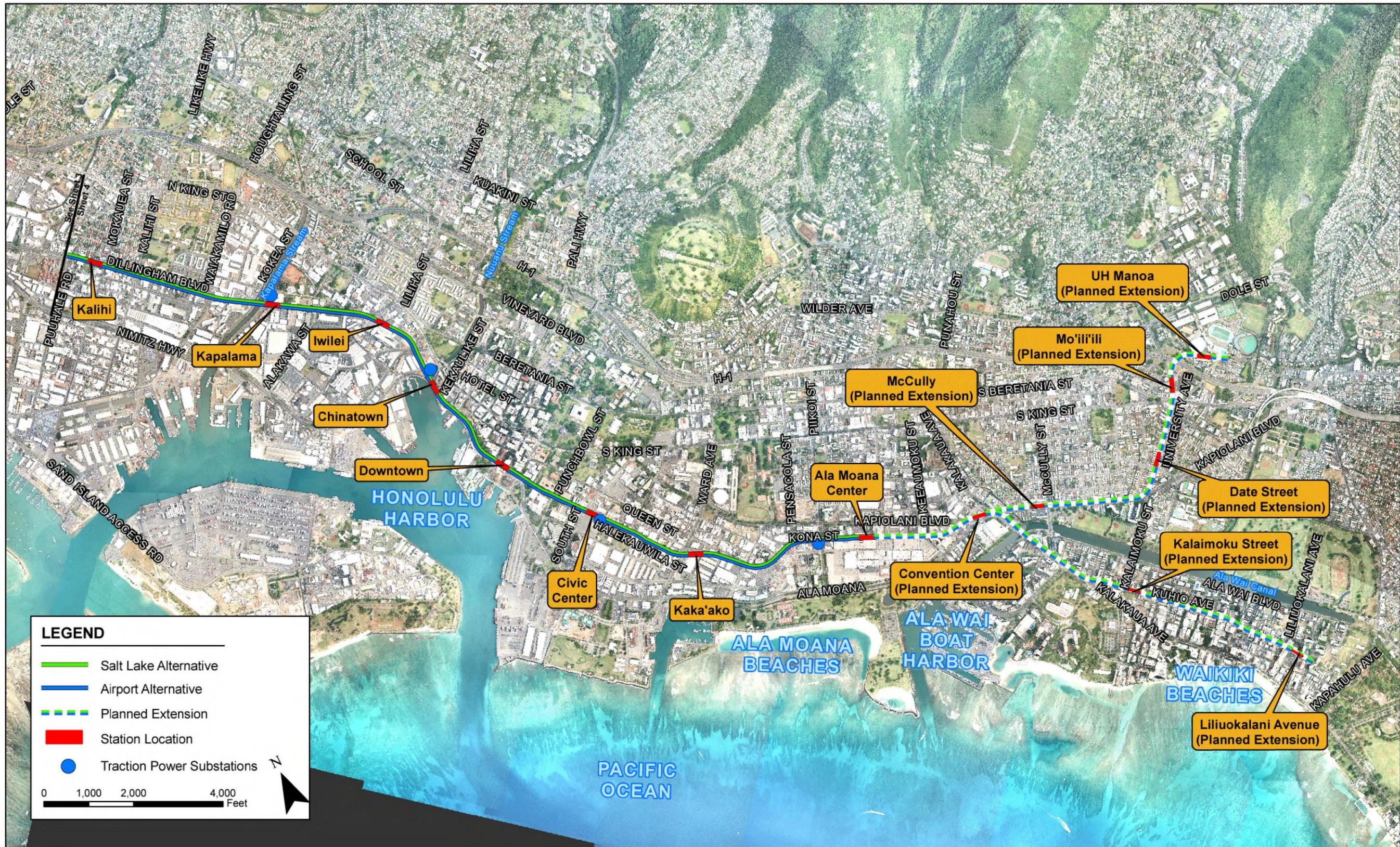


Figure 1-6: Fixed Guideway Transit Alternative Features (Kalihi to UH Mānoa)

Airport Alternative

The Airport Alternative would continue along Kamehameha Highway makai past Aloha Stadium to Nimitz Highway and turn makai onto Aolele Street and then follow Aolele Street Koko Head to reconnect to Nimitz Highway near Moanalua Stream and continuing to the Middle Street Transit Center (Figure 1-5). Stations would be constructed at Aloha Stadium, Pearl Harbor Naval Base, Honolulu International Airport, and Lagoon Drive. The total guideway length for this alternative would be approximately 20 miles and it would include 21 stations. The eventual guideway length, including planned extensions, for this alternative would be approximately 29 miles and it would include 33 stations.

Airport & Salt Lake Alternative

The Airport & Salt Lake Alternative is identical to the Salt Lake Alternative, with the exception of also including a future fork in the alignment following Kamehameha Highway and Aolele Street at Aloha Stadium that rejoins at Middle Street. The station locations discussed for the Salt Lake Alternative would all be provided as part of this alternative. Similarly, all the stations discussed for the Airport Alternative also would be constructed at a later phase of the project; however, the Aloha Stadium Station would be relocated makai to provide an Arizona Memorial Station instead of a second Aloha Stadium Station. At the Middle Street Transit Center Station, each line would have a separate platform with a mezzanine providing a pedestrian connection between them to allow passengers to transfer. The total guideway length for this alternative would be approximately 24 miles and it would include 23 stations. The eventual guideway length, including planned extensions, for this alternative would be approximately 34 miles and it would include 35 stations.

1.3.3 Features Common to All Build Alternatives

In addition to the guideway, the project will require the construction of stations and supporting facilities. Supporting facilities include a maintenance and storage facility, transit centers, park-and-ride lots, and traction power substations (TPSS). The maintenance and storage facility would either be located between North-South Road and Fort Weaver Road or near Leeward Community College (Figure 1-3 and Figure 1-4). Some bus service would be reconfigured to transport riders on local buses to nearby fixed guideway transit stations. To support this system, the bus fleet would be expanded.

2.1 Land Use Plans and Policies

State, regional, and community plans and policies affecting land use are in place and are enforceable through zoning, capital improvement programs, and grant and loan requirements at State and local levels. Proactive, community-based plans at the State and local levels establish a comprehensive framework for implementing long-range policies and goals for the future of O‘ahu, which affect the corridor.

Development Plans for the PUC and ‘Ewa direct new growth and supporting facilities to these areas, while *Sustainable Communities Plans* for East Honolulu, Central O‘ahu, and other parts of the island focus on sustaining the character of these communities, as well as preserving their significant natural and cultural resources.

2.1.1 Hawai‘i Statewide Transportation Plan

The *Hawai‘i Statewide Transportation Plan* (HSTP) (HDOT 2007) envisions a multi-modal transportation system and promotes transit-supportive development in activity centers along the corridor. As stated in the *Vision for Transportation in the 21st Century*, “... we envision a multi-modal transportation system that encourages the integration of advanced technology and innovation in providing for the safe, economic, efficient, and convenient movement of people while fostering economic growth and development throughout the state.” The Vision Statement also includes “environmentally friendly, automated rapid transit and people mover systems” and “jobs closer to home, and homes clustered around employment centers.” Similarly, the HSTP is supportive of TOD, such as “improve multi-modal and inter-modal connectivity of the transportation system,” “enhance inter-modal connectivity,” and “support ‘smart growth’ initiatives in land use planning.”

2.1.2 O‘ahu Regional Transportation Plan 2030

The O‘ahu Regional Transportation Plan 2030 (ORTP) (O‘ahuMPO 2006) focuses on improving mobility with a series of strategies and programs to address future transportation needs. It also recognizes the importance of rail transit: “At the heart of the ORTP 2030 is a rail transit system that will serve the corridor between Kapolei and Honolulu.” The proposed rail transit system from Kapolei to Honolulu “... will become the backbone of the transit system, connecting major employment and residential centers to each other and to downtown Honolulu.” The plan also includes feeder bus services for each station to integrate buses with the rail system.

2.1.3 City and County of Honolulu General Plan

The *City and County of Honolulu General Plan (as amended)* (DPP 1997a) establishes transit-supportive objectives and policies for the future of Honolulu. These include the following:

- Public transportation for travel to and from work and travel within Central Honolulu
- Bikeways for recreational activities and trips to work, schools, shopping centers, and community facilities
- Pedestrian walkways for getting around Downtown and Waikīkī and for trips to schools, parks, and shopping centers

The General Plan also establishes Honolulu (Wai‘ālae-Kāhala to Hālawā), ‘Aiea, and Pearl City as O‘ahu’s PUC. Specific policies promote development within the PUC, such as “[s]timulate development in the primary urban center by means of the City and County’s capital improvement program and State and Federal grant and loan programs.” The General Plan also has policies that would redistribute the future growth on O‘ahu to Central O‘ahu and ‘Ewa in an effort to decongest the PUC.

The General Plan also includes policies for land conservation and management, including the following stated goals:

- Establish a green belt in the ‘Ewa and Central O‘ahu areas in the development plans
- Maintain rural areas that provide environments supportive of lifestyle choices that depend on the availability of land suitable for small- to moderate-sized agricultural pursuits, a relatively open and scenic setting, and/or a small town or country atmosphere.

2.1.4 Primary Urban Center Development Plan

The *Primary Urban Center Development Plan* (DPP 2004a) identifies and protects lands outside the “urban community boundary” from development while directing development within the urban community boundary as shown on Figure 2-1.

The PUC Plan establishes the urban community boundary as a primary tool for the long-term organization and guidance of urban growth. The urban community boundary defines and contains the extent of urbanized or “built-up” areas. “The purpose is twofold: (1) to provide adequate lands for facilities or other groupings of built uses needed to support established or developing communities; and (2) to protect lands outside of the Urban Community Boundary that have important natural, cultural, or scenic resource values.”

Examples of policies and guidelines that promote transit use and related TOD include the following:

- A key element of the plan is to “Develop a Balanced Transportation System.” The PUC Plan also supports development of a rapid transit system: “To reduce automobile dependency and elevate quality of life, the PUC needs a higher-capacity higher-speed public transit system that can move efficiently through the urban core.” “Full development of the PUC, as called for in the General Plan, can only be achieved with the support of a well-conceived transportation system that is tightly integrated with land use policies and regulations.”

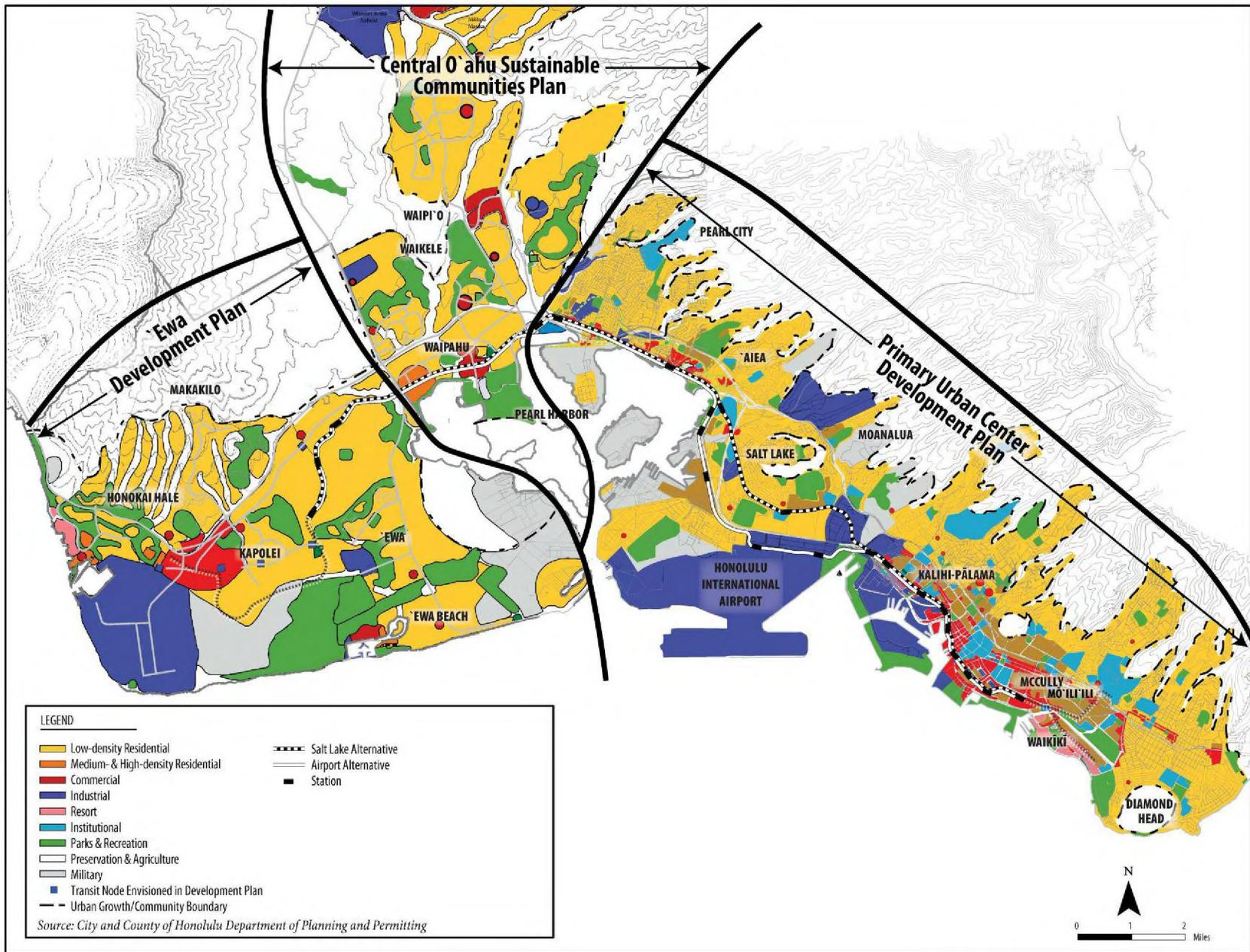


Figure 2-1: Planning Regions

- The PUC Plan links transit with established activity centers. “To attract ridership, proposed rapid transit routes will be within a five-minute walk from central Honolulu’s major activity centers, higher-density neighborhoods, and redevelopment areas. Transit service to the neighborhoods outside the five-minute zone will be supplemented by circulator buses to connect passengers to the rapid transit system at transit centers.”
- The PUC Plan supports transit to achieve an integrated transportation system: “Implement land use strategies to achieve a balanced transportation system. To improve the quality of life in the Primary Urban Center and to accommodate growth, development initiatives and regulatory controls should promote the growth of sustainable and appropriate alternative urban travel modes such as transit, walking, and bicycling;” and “Improve the public transit system, including development of a rapid transit component. Improvements to the transit system should be targeted to accommodating trans-PUC travel and making neighborhood service more convenient. A rapid transit component is needed to serve the high-volume east-west corridor, connect activity centers, and provide transportation capacity in place of increased roadways.”

2.1.5 ‘Ewa Development Plan

The *‘Ewa Development Plan* (DPP 1997b) is a visionary plan for the development of ‘Ewa, Kapolei, the new UH West O‘ahu campus, and several master planned communities in southwest O‘ahu. It establishes an “urban growth boundary” to protect agricultural lands and open space from urban development and reserves a “rapid transit corridor” with six transit nodes that are to be surrounded by high-density residential and commercial development as shown on Figure 2-1. The plan also establishes an open space network linking the communities of ‘Ewa.

The plan establishes the City of Kapolei as the urban core for the Secondary Urban Center. It defines six districts, which include the City Center, Commercial, and Civic Center districts. The City Center development is to be the “high density core of the city” with larger office towers as the predominant form of development. Transit nodes are to be located near the City Center and Civic Center. The plan states, “[a]s part of the Development Plan vision for a transit corridor linking the City of Kapolei, Waipahu, and the PUC, higher density residential and commercial development should be encouraged around the City of Kapolei transit node and the transit corridor...”

2.1.6 Community Development Plans

Central O‘ahu Sustainable Communities Plan

The *Central O‘ahu Sustainable Communities Plan* (DPP 2002) lies between the ‘Ewa and PUC development plans as shown on Figure 2-1. The plan establishes an “urban community boundary,” that dove-tails with the adjoining ‘Ewa and PUC urban growth boundaries, to manage land conservation and open space preservation. It

establishes policies that limit growth to protect the community's natural and scenic resources, as well as replacing aging infrastructure. The plan supports sustaining the unique character, lifestyle, and economic opportunities in the Central O'ahu communities but targets redevelopment around two transit centers in Waipahu. Another element of the plan is to design communities to encourage access to mass transit and reduce automobile usage. To achieve plan goals, moderate-density, mid-rise housing and commercial development are envisioned within walking distance of two major nodes and transit stops in Waipahu. The Central O'ahu Plan also calls for, and reserves open space for, high-speed transit along the H-2 Freeway corridor to Wahiawā, which is outside of the current study area.

Waipahu Livable Communities Initiative

The *Waipahu Livable Communities Initiative* (DPP 1998) covers a sub-area of the *Central O'ahu Sustainable Communities Plan* and was also developed as part of the Livable Communities Initiative. The initiative integrates the planning and development of pedestrian-oriented transit services and facilities. Intended to implement the *Waipahu Town Plan* (DPP 1995), which was adopted by the Honolulu City Council in 1996, the Waipahu Livable Communities Initiative selected the intersection of Mokuola Street and Farrington Highway as the preferred site for a major bus transfer station. This bus transfer station, which is located at a potential station site on Farrington Highway at Mokuola Street, was selected based on locational criteria, including proximity to major employment and activity centers, bus routes, Farrington Highway, bikeways and pedestrian paths, as well as proximity to future transit service.

'Aiea-Pearl City Livable Communities Plan

The *'Aiea-Pearl City Livable Communities Plan* (DPP 2004b) covers a sub-area of the *PUC Development Plan* and also promotes a transit-supportive pattern of development and pedestrian-friendly environment. A major component of this plan, which was developed as part of the Livable Communities Initiative Program, is the "identification of potential transit centers and major transfer points with convenient access to retail and service facilities within the town centers; and, pedestrian/ bicycle circulation to improve access and safety."

Pedestrian and Bicycle Planning

In 2006, an amendment to the City charter was passed to make Honolulu "pedestrian- and bicycle-friendly" (DTS 2006a). This is now one of the priorities of the RTD. In April 2007, the City announced plans to install pedestrian countdown timers at all crosswalks. This new project, along with ongoing curb-ramp projects, will continue to improve pedestrian facilities throughout Honolulu.

The HSTP (HDOT 2007) promotes development of a pedestrian-friendly environment. Objectives of the HSTP include "encourage bicycle and pedestrian travel for trips of short distances" and "facilitate and provide walking and bicycling options that meet statewide and community needs."

The ORTP (O'ahuMPO 2006) includes development of a pedestrian plan for O'ahu. The ORTP also incorporates plans for bicycles in a network of on-road bike lanes and off-road shared-use paths, including elements of Bike Plan Hawai'i and "Priority One Projects" identified in the Honolulu Bicycle Master Plan.

The *Ala Moana-Sheridan Community Plan* (DPP 2006) also reinforces multi-modal transportation with improved pedestrian crosswalks at major intersections and redesigned streets to improve pedestrian safety and provide medians and bike lanes. Planning for the Ala Moana Center Station includes direct pedestrian connections to the Center's mall level.

The *'Aiea-Pearl City Livable Communities Plan* (DPP 2004b) improves pedestrian and bicycle circulation to improve access and safety. One of the key goals of this plan is to "[i]mprove transit, pedestrian, and bicycle access that is compatible with land use, zoning, and urban design to reduce dependency on the automobile."

The *Waipahu Livable Communities Initiative* (DPP 1998) incorporates a pedestrian/bikeway system that would connect existing segmented facilities and extend connections into the town core. "The proposed pedestrian/bikeway system is intended to effectively serve and connect inter-community routes between major destinations in Waipahu and provide convenient access to the public transit system."

3.1 Land Use Impacts Methodology

This report documents existing land use conditions within the study corridor and identifies potential land use impacts of the project alternatives. The land use analysis evaluates both the long-term and short-term construction impacts of the proposed alternatives on land use and potential mitigation measures. In addition, the indirect and cumulative impacts of the project alternatives are identified such as the potential growth-inducing impacts of the Project and the combined effect of the proposed project alternatives with other past and planned actions.

3.1.1 Existing Land Use Conditions

This report builds on the *Honolulu High-Capacity Transit Corridor Project Land Use Technical Report* (DTS 2006b) prepared during the Alternatives Analysis phase of the Project to describe population, employment, major activity centers, and other indicators of potential transit ridership within the study corridor. It also assesses the potential for TOD within the corridor through such measures as the character of development and the amount of vacant and underdeveloped land near station sites. Direct impacts, such as displacements, are identified in the *Honolulu High-Capacity Transit Corridor Project Neighborhoods and Communities Technical Report* (RTD 2008a).

To update the 2006 data, aerial photographs were reviewed and verified in the field. A land use survey was conducted to identify and verify land use types, density, character of development, parcels available for development, and new developments. The locations of sensitive receptors, such as schools, hospitals, residences, and parks, were noted. The field survey was documented on land use data sheets for each station site. Maps showing existing land uses within one-half mile of a station were prepared. See Appendix A, Land Use Data Sheets and Maps. These data sheets and maps were prepared to identify existing land uses near station sites, including parks, cultural resources, residential, commercial, industrial, institutional, vacant land, and parking areas.

In addition, State, County and community level plans, zoning ordinances, policies, and reports were reviewed to identify demographic data and historic trends. Meetings were held in October 2007 with the City and County of Honolulu Department of Planning and Permitting (DPP), the HCDA, Kamehameha Schools (a large property owner and developer), and other developers active in the study corridor to review their plans for development in the area. Notes from these meetings were prepared and referred to in preparing this technical report.

3.1.2 Land Use Impacts and Mitigation

Potential land use impacts within the transit corridor station areas were assessed to identify changes in use and accessibility related to the proposed project. Next, the potential impacts of the Project on the most sensitive environmental resources in the

corridor were assessed, generally by estimating the possible locations of potential project-induced development and its proximity to or displacement of environmental resources. Based on the analysis of impacts, reasonable land use mitigation measures were identified.

Common to all Build Alternatives is the potential for TOD and TSD. TOD is moderate-to high-density, mixed-use development that is transit/pedestrian oriented within walking distance of a station. TSD is lower density than TOD and is single-use development that is also within walking distance of a station.

The potential for TSD and TOD near station sites was assessed. The assessment considered a range of development from continuation of current trends to maximum development allowed by relevant plans. Impacts on sensitive resources of specific TOD potential were identified.

Land areas for such permanent ancillary facilities as maintenance and storage facilities, park-and-ride lots, traction power substations, and transit centers were also identified. Their potential environmental impacts were assessed based on the locations of environmental resources that may be affected.

Construction activities were reviewed to estimate the land use impact of equipment delivery, materials storage and disposal, other laydown areas, access to the work site, and other construction purposes.

3.2 Indirect and Cumulative Impacts Methodology

The methodology used for the indirect and cumulative impact assessment was based on the following guidance from both the FTA and FHWA:

- Council on Environmental Quality's *Considering Cumulative Effects under the National Environmental Policy Act* (CEQ 1997)
- FHWA Position Paper, *Secondary and Cumulative Impact Assessment in the Highway Project Development Process* (FHWA 1992)
- FHWA's *Questions and Answers Regarding the Consideration of Indirect and Cumulative Impacts in the NEPA Process* (FHWA 2003)
- National Cooperative Highway Research Program Report 403, *Guidance for Estimating the Indirect Effects of Proposed Transportation Projects* (NCHRP 1996).

The approach was developed and applied based on the unique characteristics of the Project, its setting, and its issues. It included the following steps:

- Scoping, or the identification of issues, geographical limits (study area), and temporal limits (starting year for trends analyses and the future year for impact assessment)
- Identification of study area characteristics, including the following:
 - Past population and agricultural land loss
 - Existing land use, currently developing areas, and future land use plans

- Applicable environmental protection and land use control laws, ordinances, and programs
- Potentially affected environmental features
- Determination of indirect actions (actions taken by others in response to the Project, including reasonably foreseeable changes in development patterns) and other reasonably foreseeable future actions (development expected to occur with or without the Project and associated transportation and other infrastructure)
- Assessment of indirect impacts (environmental impacts associated with the indirect actions) and cumulative impacts (impacts associated with past, present, and reasonably foreseeable future actions)

Adopted O'ahu 2030 population and employment forecasts by the O'ahuMPO are components of the O'ahu travel forecasting model. These forecasts are provided by small geographic areas called traffic analysis zones (TAZ).

The construction of the Project and its alternative extensions would result in changes in accessibility, as measured in travel time, to jobs, labor force, and consumers. Changes in accessibility to jobs would cause changes in the distribution of housing units within the study area. Changes in accessibility to labor and consumers would cause changes in the distribution of jobs. Growth in an urban area is attributable to many factors. A new transportation project would not induce population or employment growth in the study area beyond that already forecasted but, rather, the change in accessibility to land offered by a new or greatly improved transportation project would only change the distribution of currently projected growth. TAZs with the best reductions in travel time would tend to attract the most redistributed development. These changes in the distribution of housing and jobs, as manifested in the study area, represent indirect actions taken in response to the future project.

The O'ahuMPO forecasts were supplemented in two ways. First, comprehensive planning documents of the City were reviewed as they pertain to the study area to identify the future development characteristics they contain. Second, interviews were held in October 2007 with land use decision makers, including senior planning staff of the City and the HCDA, as well as with major private developers active in the study area. These interviews provided specific information about planned land development projects, consistency or inconsistency of the projects with existing land use plans and policies, and the relationship, if any, between real estate investment decisions and the Project. Interviews with the public planning agencies focused on their land use plans and how the land use would change with or without the Project. Interviews with real estate developers focused on their plans for further development in the study corridor and the potential for those investment decisions to be affected by the alternatives.

The following assessment of the environmental impacts associated with development with and without the Project first used a reasonably foreseeable 2030 development footprint associated with the model results, plan reviews, and interviews. Then, the locations of environmental resources were used showing the known community, agricultural, cultural, and natural features in the study area.

3.2.1 Scoping

Indirect and Cumulative Effects Issues

The general assessment of indirect and cumulative impacts focuses on the following impact issues:

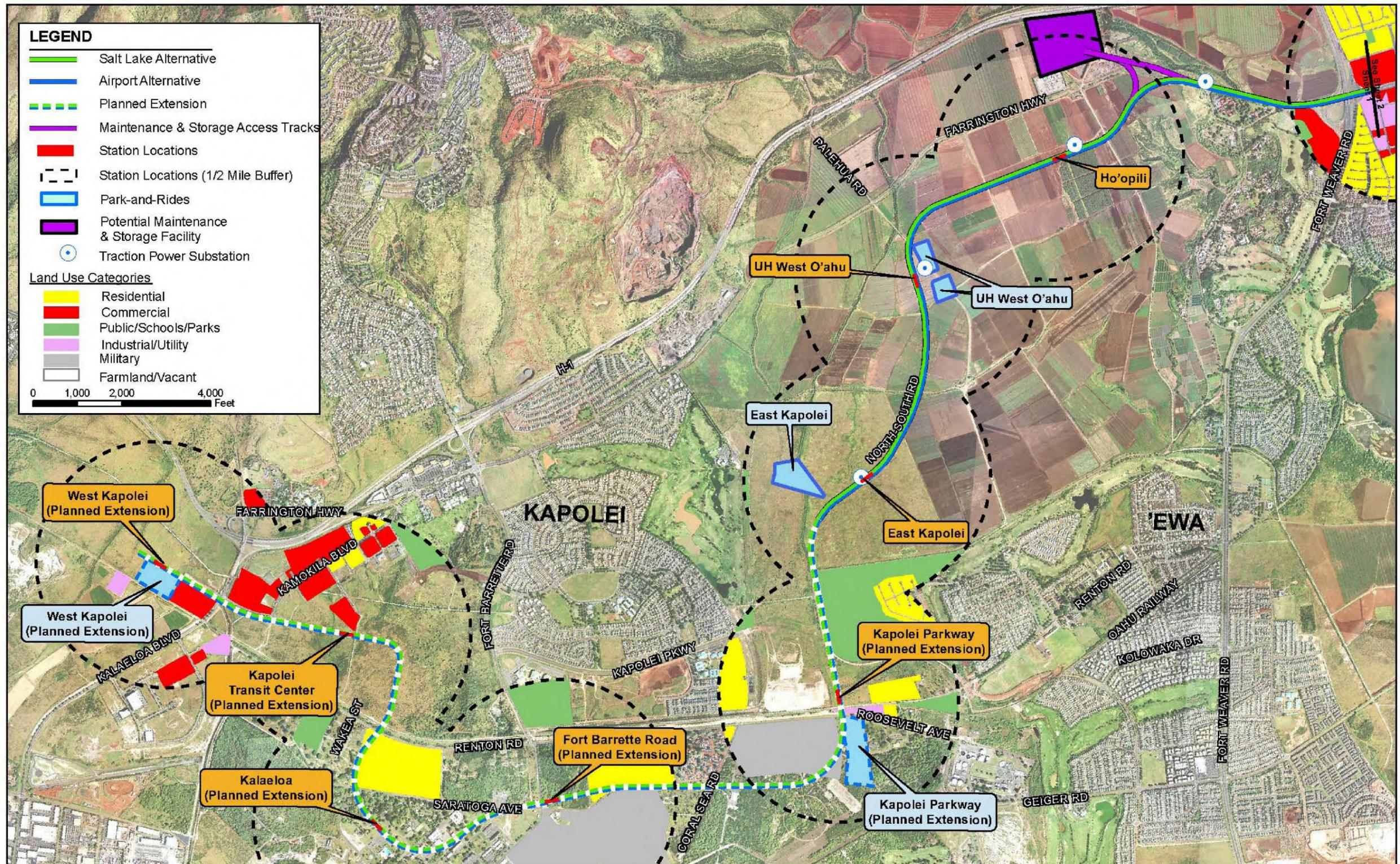
- Changes in development trends
- Travel benefits
- Agricultural land loss associated with development
- Natural resource loss associated with development
- Changes in water quality associated with development
- Public services and facilities required by development
- Loss of other community, cultural, and natural features of value in the study area

These issues were selected based on the public outreach conducted as part of the scoping process for the Project, as well as the identified reasonably foreseeable future actions within the study area. In both cases, the focus is on future development in the study area. New development, in turn, raises issues of its impact on travel in the study area; the loss of existing agricultural, natural, and other resources to development; and the need for additional investment in public services.

Geographic Limits

The geographic limits of the indirect assessment are illustrated in Figure 3-1 through Figure 3-4. The indirect impact assessment area shown encompasses the primary area of induced development associated with the Project, as identified by the population and employment modeling as refined by the interviews and land use plan characteristics. The primary area of induced development is within one-half mile from a project station for transit-oriented commercial and residential uses. The area used for the cumulative impacts analysis is larger to incorporate known or foreseeable developments. It extends beyond the induced impact boundaries. The cumulative impact study area was selected to encompass the following:

- The areas of increased development created by the improved accessibility offered by the Project
- The area where the primary benefits to travel associated with the Project are expected to occur
- The planning areas of public agencies and private land owners where increased development is expected
- The areas of potential resource loss associated with development and potential larger zones of influence associated with such losses (e.g., conversion of farmland to development)



Note: circles represent a one-half mile radius from each station

Figure 3-1: Induced Impact Area

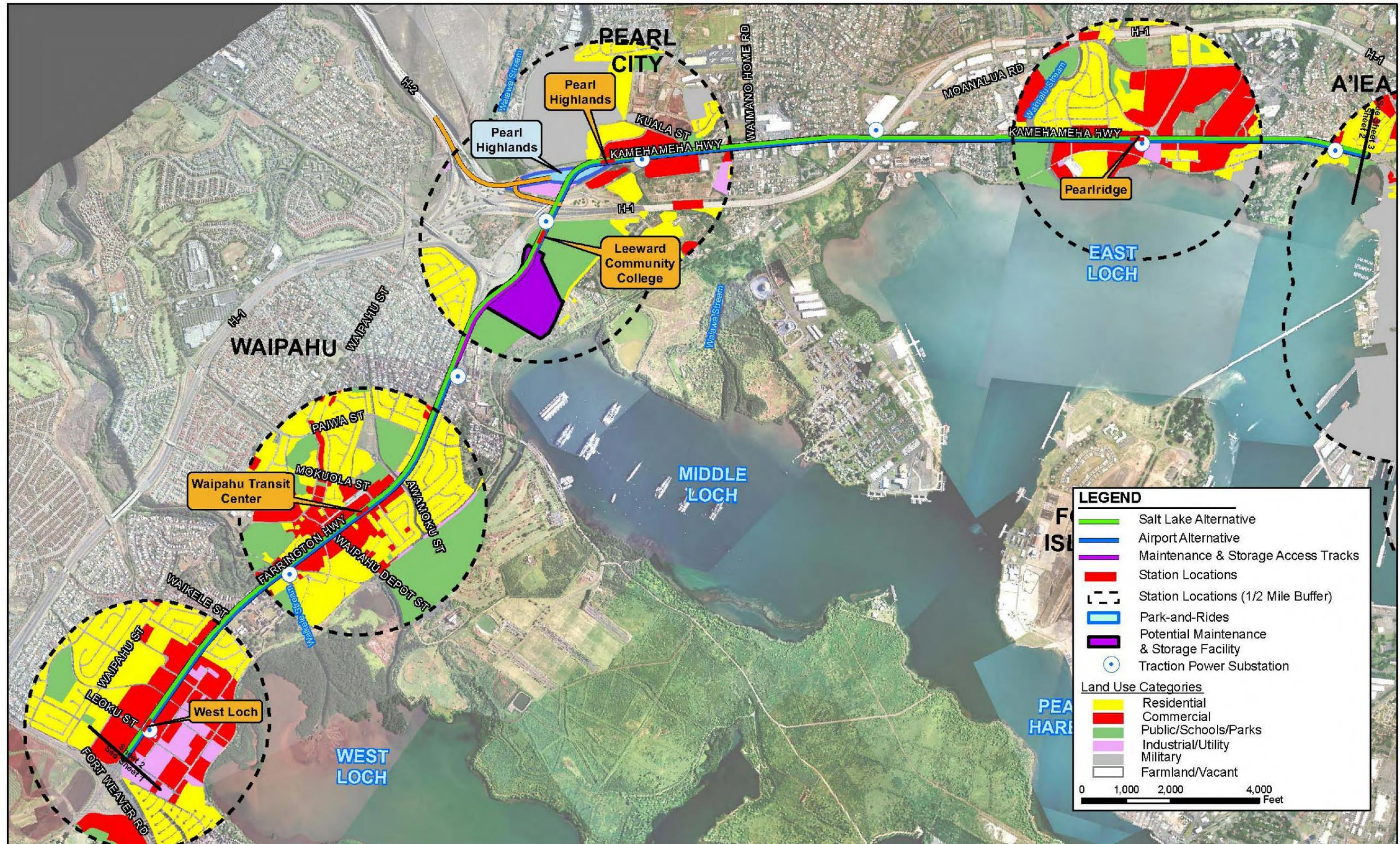
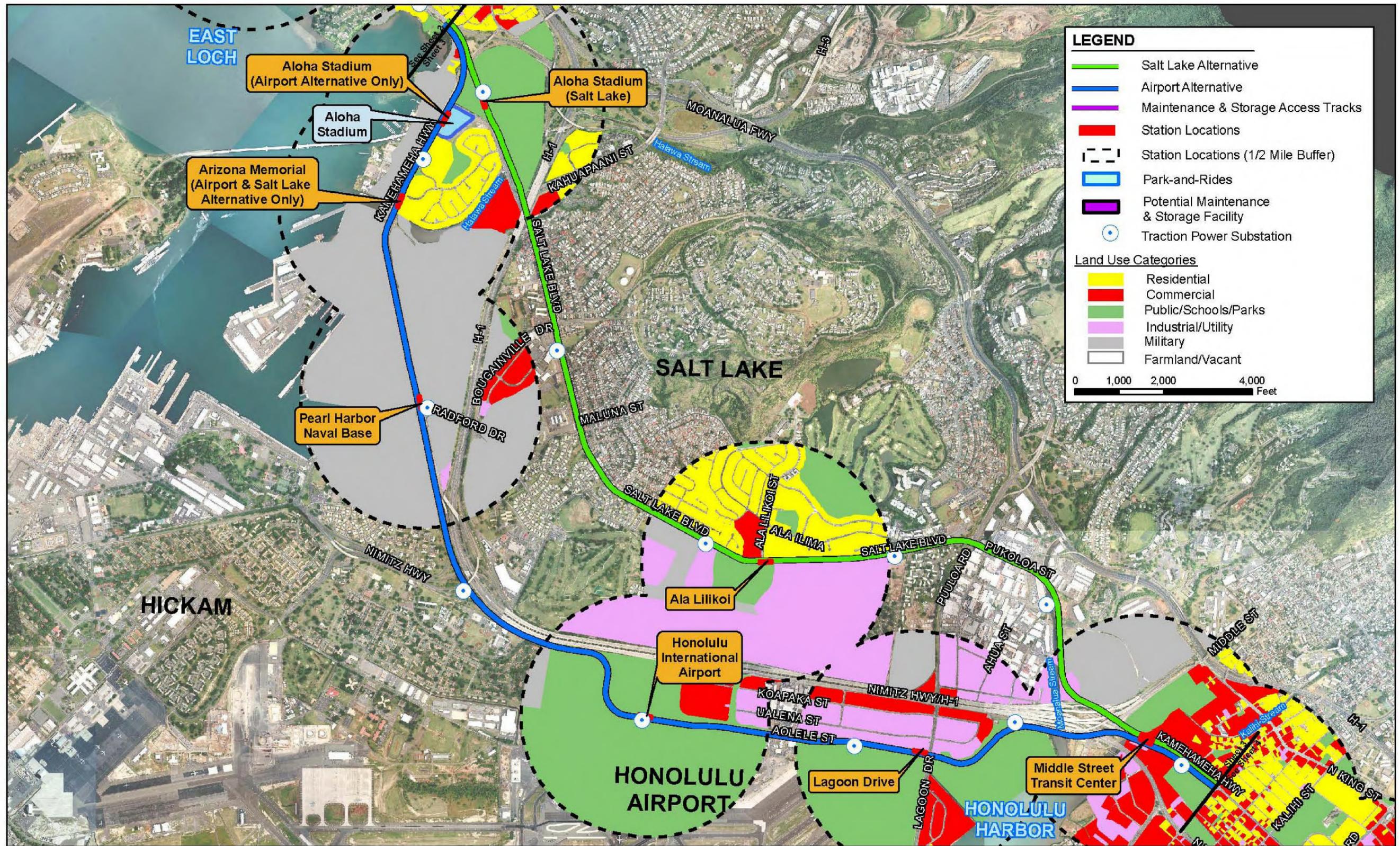


Figure 3-2: Induced Impact Area (continued)

Note: circles represent a one-half mile radius from each station



LEGEND

- Salt Lake Alternative
- Airport Alternative
- Maintenance & Storage Access Tracks
- Station Locations
- Station Locations (1/2 Mile Buffer)
- Park-and-Rides
- Potential Maintenance & Storage Facility
- Traction Power Substation

Land Use Categories

- Residential
- Commercial
- Public/Schools/Parks
- Industrial/Utility
- Military
- Farmland/Vacant

0 1,000 2,000 4,000 Feet

Figure 3-3: Induced Impact Area (continued)

Note: circles represent a one-half mile radius from each station

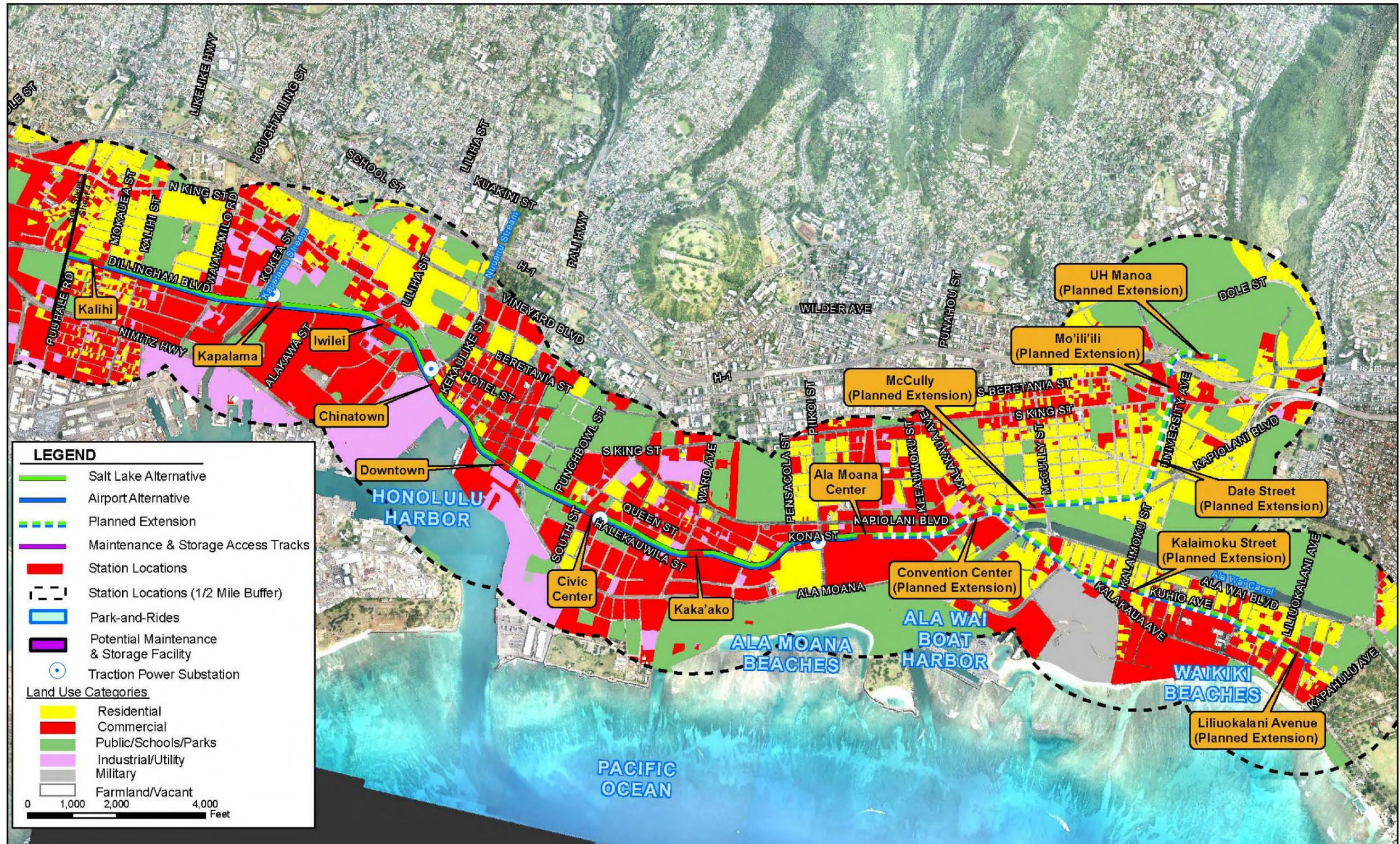


Figure 3-4: Induced Impact Area (continued)

Note: circles represent a one-half mile radius from each station

The modeling process assumed that the introduction of a transportation improvement alone cannot attract new growth to the O'ahu model service area; rather, such improvements can only affect the location of already expected growth.

Temporal Limit

O'ahu experienced major population growth spikes of 64 percent between 1920 and 1930 and 42 percent between 1940 and 1950. Growth rates have decreased steadily since 1950; growth was 26 percent during the 1960s, 21 percent during the 1970s, 10 percent during the 1980s, and 5 percent during the 1990s.

By the 1960s, the project study area between Waipahu and Honolulu had built out. Farther 'Ewa, however, many acres of developable land remained vacant. The 'Ewa Plain experienced development associated with military activity in the past. Today, growth on the 'Ewa Plain continues for other reasons. The "second city" of Kapolei, for example, is developing as a result of explicit urban planning policy by the City. Based on these trends, the late 1980s was chosen as the starting point to examine trends in the loss of agricultural lands, loss of natural resources, and changes in water quality of streams.

The year 2030 was selected as the planning horizon for the assessment of indirect and cumulative impacts since this is the timeframe most commonly used by local planning agencies and O'ahuMPO for forecasting future growth and planning its location and characteristics. Thus, it is only within this timeframe that reasonable and foreseeable future change can be identified.

Study Area Characteristics

Urban development is the primary land use in the study area. As such, the study area is mostly urban in character, except for West O'ahu, which is more suburban in character with much undeveloped land. Only a small proportion of the population lives at rural densities or is employed in agriculture. There are emerging growth areas in West O'ahu in the study area (e.g., Kapolei). Suburban-style and tourist-oriented development have been spreading throughout the island, especially near the shoreline. This trend was well established in the study area even before the Project was announced. Between 1995 and 2005, the number of farms in the City and County of Honolulu decreased from 900 to 800 (-11 percent) and the number of acres farmed decreased from 85,000 to 70,000 (-18 percent). At the same time, the size of the remaining farms increased.

The future land use development pattern in the study area is already established by extensive planning by the City and the State, which is up to date (see the figures in Section 2 of this report). Because the Build Alternatives would be an important new transportation facility, planned growth along the transit corridor has been incorporated in concept into official community plans. Growth generally follows the existing highway corridor between Waipahu and Downtown Honolulu in which the transit facility would be built. The community plans for O'ahu seek to preserve

agricultural land and rural character where possible, while concentrating development near transportation corridors.

The findings below are from the environmental analyses prepared for the project's Alternatives Analysis phase.

Farmlands or vacant lands in West O'ahu provide little natural habitat. The primary upland habitat for wildlife is near stream corridors. More natural areas in the study area are concentrated in West and Central O'ahu rather than the PUC.

Wetlands in the study area are near or along streams and shores of Pearl and Honolulu Harbors. Some are isolated, but minor. Loss of native natural resources occurred in the study area when land was converted to agricultural use. Conversion of wetlands for development and farming also has reduced their number. The net reduction in wetland acreage in the study area has slowed because of the protection granted wetlands under Section 404 of the Clean Water Act and State and local ordinances.

Larger streams in the study area have associated floodplains. Several streams, some of which are floodways and floodplains, would be crossed by the Project. The natural and beneficial values of floodplains in the study area are recreation, natural resource management, and environmental quality.

3.3 Environmental Protection and Land Use Control Laws, Ordinances, and Programs

Following is a description of the most relevant laws, regulations, and policies by levels of government that protect the environment and control land use development in the study area.

3.3.1 National Environmental Policy Act

Under NEPA (USC 1969), Federal agencies are required to prepare an assessment of impacts for proposed actions that could affect the quality of the environment. Efforts are to be made to mitigate significant impacts. A Draft EIS is being prepared for the Project under NEPA requirements, and other NEPA documents must also address the same range of impacts. NEPA requirements apply to Federal actions, such as funding a highway project or issuing a permit. Unless a Federal permit is required, NEPA does not apply to private development.

3.3.2 U.S. Army Corps of Engineers (Section 10 and 404 Permits)

Section 10 of the Rivers and Harbors Act of 1899 (USC 1899) and Section 404 of the Clean Water Act (USC 1948) require permits for placement of structures, dredged, or fill material into the "waters of the United States." All public and private projects must obtain permits. The most likely types of these permits in the study area would be for filling wetlands or relocating streams. Wetlands lost must be replaced. While mitigation requirements are the same for developers and the State of Hawai'i

Department of Transportation (HDOT) regarding wetland loss and replacement, under the Hawai'i Wetland Protection Act, the HDOT mitigates for isolated and jurisdictional wetlands.

3.3.3 National Pollutant Discharge Elimination System Permits

The National Pollutant Discharge Elimination System (NPDES) program is under Sections 318, 402, and 405(a) of the Clean Water Act (USC 1948) and requires permits for the discharge of pollutants from any point source into waters of the U.S. The NPDES does not regulate other types of impacts.

The Hawai'i Environmental Protection Agency is responsible for administering the associated stormwater control program. Stormwater from projects must be treated to the maximum extent practicable. Also, construction sites that disturb more than 1 acre must obtain a permit and have a stormwater pollution prevention plan.

3.3.4 Farmland

Potential impacts to farmland must be considered under Federal and State rules administered by State agencies. These rules apply to the Project and other development-related infrastructure projects in the study area, but not to private development. In terms of farmland, consideration must be given to alternatives that could lessen impacts to farmland in coordination with the U.S. and Hawai'i Departments of Agriculture. Relevant laws include the Federal Farmland Protection Policy Act (USC 1981) and the Hawai'i Farmland Preservation Act (HDOA 2005).

3.3.5 Protected Species

Potential impacts to threatened and endangered species also must be considered under Federal and State rules. Under the Federal Endangered Species Act of 1973 (USC 1973) and the Hawai'i Endangered Species Protection Act (HRS 1973), the potential for adversely affecting threatened and endangered species is considered. An agreement on mitigation is developed if adverse impacts could occur. The agreement is only approved once a detailed study and conservation plan/biological opinion is prepared.

4.1 Overview of Land Use in the Corridor

The study corridor is located between Kapolei in West O‘ahu and UH Mānoa with a connection to Waikīkī, located Koko Head of Downtown Honolulu. The study corridor encompasses both vacant but developing areas in West O‘ahu as well as the most densely developed areas on O‘ahu.

Most of the full study corridor from Waipahu to UH Mānoa and Waikīkī is developed. This narrow corridor, geographically constrained by the steep topography mauka, is where most of O‘ahu’s residents live and work. It is served by the island’s major transportation facilities. The highest density developments, such as office, retail, government, and residential and hotel towers, are located between Downtown and Waikīkī. This area is experiencing major redevelopment and construction to even higher densities. The lowest density development in the study corridor, such as single-family detached housing, low-rise office parks, free-standing shopping centers, and retail stores, is located farther west in ‘Aiea-Pearl City and Waipahu. Ongoing in-fill and redevelopment are occurring in the already developed portions of the corridor.

Farther Wai‘anae, the areas of ‘Ewa and Kapolei adjacent to the transit corridor are used for farming, are undeveloped, or are developing rapidly into residential and commercial areas. The more suburban West O‘ahu areas of ‘Ewa and Kapolei still include areas of open space, agricultural uses, and the former Barbers Point Naval Air Station (now known as Kalaeloa). The moderately dense area between Waipahu and Downtown is relatively stable with little major new construction.

4.2 Population and Employment within the Project Corridor

The 2007 population within one-half mile of a station in the Project corridor varies by alternative between 84,000 for the Airport Alternative and 98,000 for the Airport & Salt Lake Alternative (Table 4-1). According to these data prepared by the DPP, the most populous station areas are in densely built up commercial and residential Central Honolulu, while Kalihi is in a densely built up residential, industrial, and commercial area Waianae of Central Honolulu. The least populous station areas (200 or less) are at Ho‘opili and UH West O‘ahu in largely vacant areas of West O‘ahu awaiting major planned developments by private developers and the State.

The 2007 employment within the study corridor varies by alternative from 158,000 for the Salt Lake Alternative to 180,000 for the Airport & Salt Lake Alternative. The densest concentrations of jobs are in the following station areas: Downtown (37,000); Civic Center (19,000); Ala Moana Center (21,000). The lowest concentrations of jobs are in West O‘ahu in undeveloped area.

Table 4-1: Population and Employment within One-Half Mile of a Station by Alternative—2007

Alternative	Population	Employment
Salt Lake	93,594	157,734
Airport	83,594	176,830
Airport & Salt Lake	97,637	179,810
Planned extensions	56,855	72,146

Source: City and County of Honolulu, Department of Planning and Permitting

For the planned extension stations, the total 2007 population within one-half mile of station areas is 57,000. Population is highest in the Convention Center (11,000), McCully (10,000), and Date Street (11,000) station areas. The 2007 employment within one-half mile of planned extension stations is 72,000. The densest concentrations of jobs are near the Convention Center (11,000), Kālainoku Street Station (23,000), and Lili'uokalani Station (14,000).

4.3 Existing High Trip Generators

In addition to generally high population and employment densities, the study corridor contains several major facilities that would generate a high number of transit trips. These include the following:

- UH West O'ahu—projected to have 7,500 students at build-out in Fall 2009 (<http://westoahu.hawaii.edu/>)
- Leeward Community College—in 2006, Leeward Community College had 5,700 students (<http://www.hawaii.edu/campuses/leeward.html>)
- Pearlridge Center—the Center includes Sears; Macy's; 170 shops, restaurants, and services; plus an eight-story office building (<http://www.pearlridgeonline.com/>)
- Aloha Stadium—with a seating capacity of 50,000, Aloha Stadium hosts UH football games, annual college bowl games, the National Football League Pro-Bowl, Hawai'i High School Athletic Association games, carnivals, fairs, concerts, graduations, a large swap meet, and other major events (<http://alohastadium.hawaii.gov/events>)
- The Arizona Memorial—this major tourist destination is visited by 1.6 million people each year (<http://www.nps.gov/usar/>)
- Honolulu International Airport—the Airport has nearly 8,000 jobs and serves more than 20 million passengers a year (<http://www.hawaii.gov/dot/airports/hnl/index.htm>)
- Honolulu Community College—the college had more than 4,200 students in 2006 (<http://honolulu.hawaii.edu/>)
- Ward Centers—this large retail and entertainment complex includes Nordstrom Shoes, Nordstrom's Rack, Sports Authority, Borders Books, movie theaters, and restaurants (<http://www.wardcenters.com/>)

- Neal S. Blaisdell Center—Honolulu’s major cultural venue seats 8,800 and includes a concert hall with seating for 2,158 (<http://www.blaisdellcenter.com/>)
- Ala Moana Center—with 1.8 million square feet of retail space (Macy’s, Sears, Neiman Marcus, Nordstrom, and others), Ala Moana Center is one of the largest shopping centers in the U.S. (<http://www.alamoanacenter.com/>), as well as a major bus transit hub

4.4 Existing Land Use by Build Alternative

Existing land use conditions within one-half mile of the full study corridor and proposed station sites are described below and shown in Figure 4-1 through Figure 4-4. Future development plans are also identified in the text to indicate potential changed conditions in the future.

4.4.1 Salt Lake Alternative

The ‘Ewa area (West O‘ahu) is the only one in the corridor that is largely undeveloped; it contains much vacant land but is developing rapidly. The remainder of the corridor is almost fully developed and urbanized with little vacant land (see Appendix A).

The ‘Ewa end of the study corridor in West O‘ahu is undergoing rapid urbanization as a result of the development of Kapolei, ‘Ewa Villages, and other areas on the ‘Ewa Plain. In early 2008, much of the area remained undeveloped, however. For example, the largely abandoned site of the former Barbers Point Naval Air Station will be redeveloped as part of the Kalaeloa Community Development District. Ongoing development at Kapolei will absorb some of O‘ahu’s projected business, residential, and government growth in the ‘Ewa Plain. The City and the State have moved some of their governmental functions to Kapolei as a catalyst for further development by the private sector. Kapolei is being developed by Kapolei Property Development LLC, affiliated with the former Estate of James Campbell. The UH is planning a future campus in Kapolei to serve residents of West O‘ahu, Central O‘ahu, and Wai‘anae. Other planned developments in the area include Ho‘opili, a mixed-use community by the D.R. Horton Company, and a regional shopping center on land owned by DHHL.

The two already urbanized areas of the ‘Ewa Plain are divided by the alignment of North-South Road, part of which is under construction. Wai‘anae of the future North-South Road is Kapolei, developing largely between Farrington Highway on the mauka side and Renton Road on the makai side. The future campus of UH West O‘ahu is Koko Head of Kapolei center near the intersection of Farrington Highway and North-South Road. Koko Head of North-South Road is a larger area, already developed as single-family homes, in the ‘Ewa Villages/West Loch area along Fort Weaver Road.

The nature of the commercial development in Kapolei is largely suburban, single-use, low-density buildings surrounded by large parking areas with minimal pedestrian connectivity.

The following paragraphs describe the existing land use conditions in each of the station areas for the Project.

East Kapolei Station

The East Kapolei terminal station site is located on vacant land on the North-South Road. Kalo'i Gulch (floodway and detention basin) is adjacent to North-South Road. The area is largely vacant with some agricultural uses. Plans are being prepared by the Salvation Army to develop the \$80 million Kroc Community Center, a large recreational complex at the intersection of North-South Road and the proposed East-West Road. Medium-density housing and retail uses also are proposed nearby, as part of the Hunt development associated with UH West O'ahu. A temporary park-and-ride facility is proposed at the station site to serve this terminal station of the Project. Beyond one-half mile generally makai from the station site are single-family residential developments. The East Kapolei station would be the Wai'anae terminus of the Project that would extend to Ala Moana Center in Honolulu.

UH West O'ahu Station

Approximately 1 mile beyond and Koko Head is the UH West O'ahu Station site on the Ho'opili project lands. Wai'anae of the station are the villages of Kapolei and Kapolei Golf Course. Across North-South Road is vacant land reserved for the planned campus. Most of the area is vacant or in agricultural use. A park-and-ride lot is also proposed at this location.

Ho'opili Station

The Ho'opili Station site, amidst a 1,600-acre future planned community of the same name, is located about one-half mile makai of Farrington Highway near the center of the proposed D.R. Horton development. The area is largely undeveloped with vacant land and agricultural uses within one-half mile of the station site. D.R. Horton is the master developer of a master-planned community for which they expect to have permits approved by 2012 and build out by 2030.

Near the Ho'opili Station is the optional future site of a project vehicle maintenance and storage facility north of Farrington Highway in an agricultural area. The facility would be located at the rear of the existing Hawaiian Electric facility on Farrington Highway. Railroad spurs from the main line to the facility would traverse both vacant and agricultural lands.

Koko Head of the vehicle maintenance and storage facility site begins a highly urbanized area for the remainder of the corridor, which is in sharp contrast with the largely vacant but developing areas 'Ewa. The alignment first follows Farrington Highway in Waipahu and then Kamehameha Highway from Pearl City to 'Aiea. The area is built-out with relatively low density industrial, commercial, and residential land uses and encompasses Aloha Stadium and its extensive parking lots. Relatively medium-density development begins in Waipahu and ends before Aloha Stadium. There is little vacant land along this segment of the alignment.

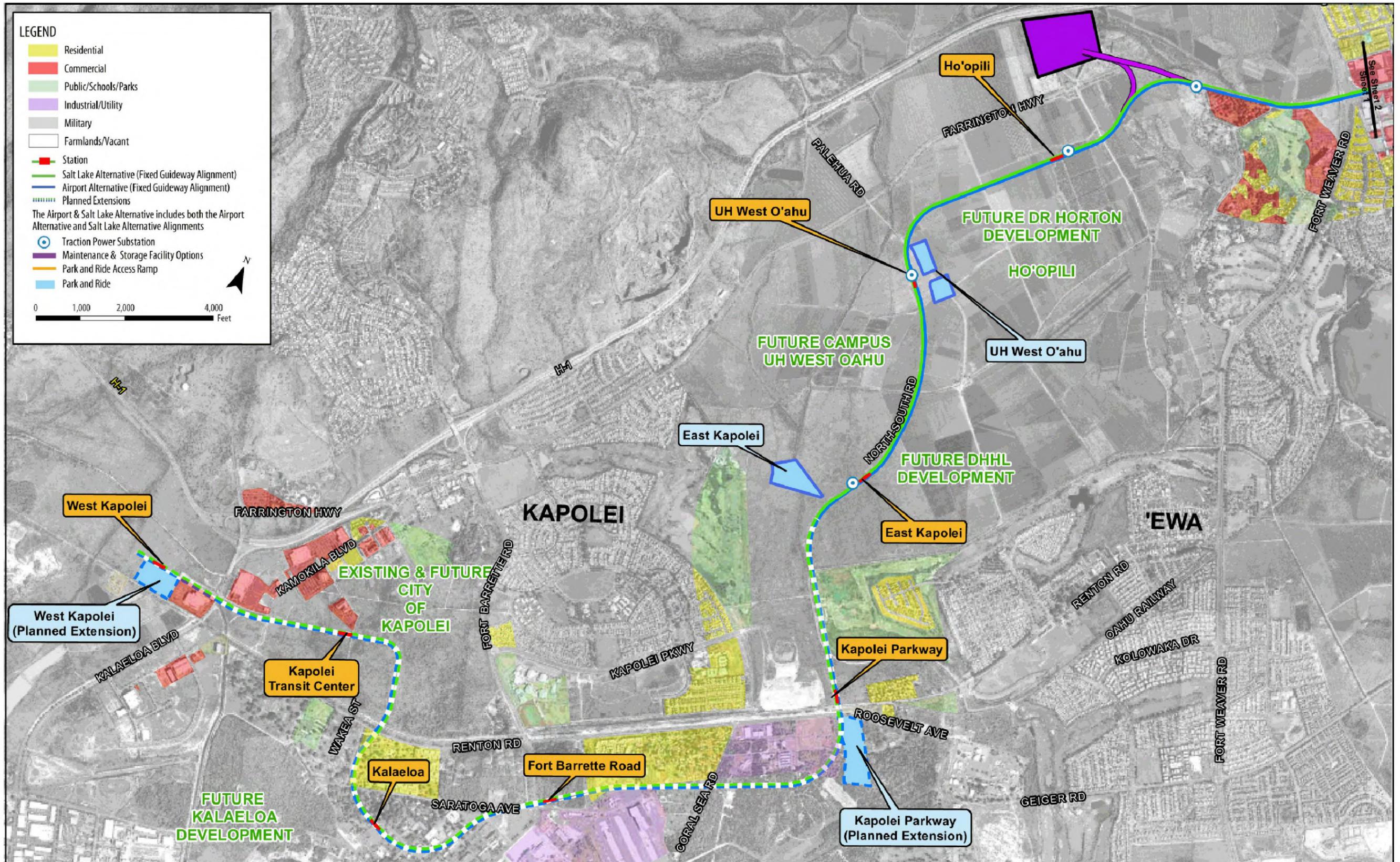


Figure 4-1: Existing Land Use in the Transit Corridor (Kapolei to Fort Weaver Road)

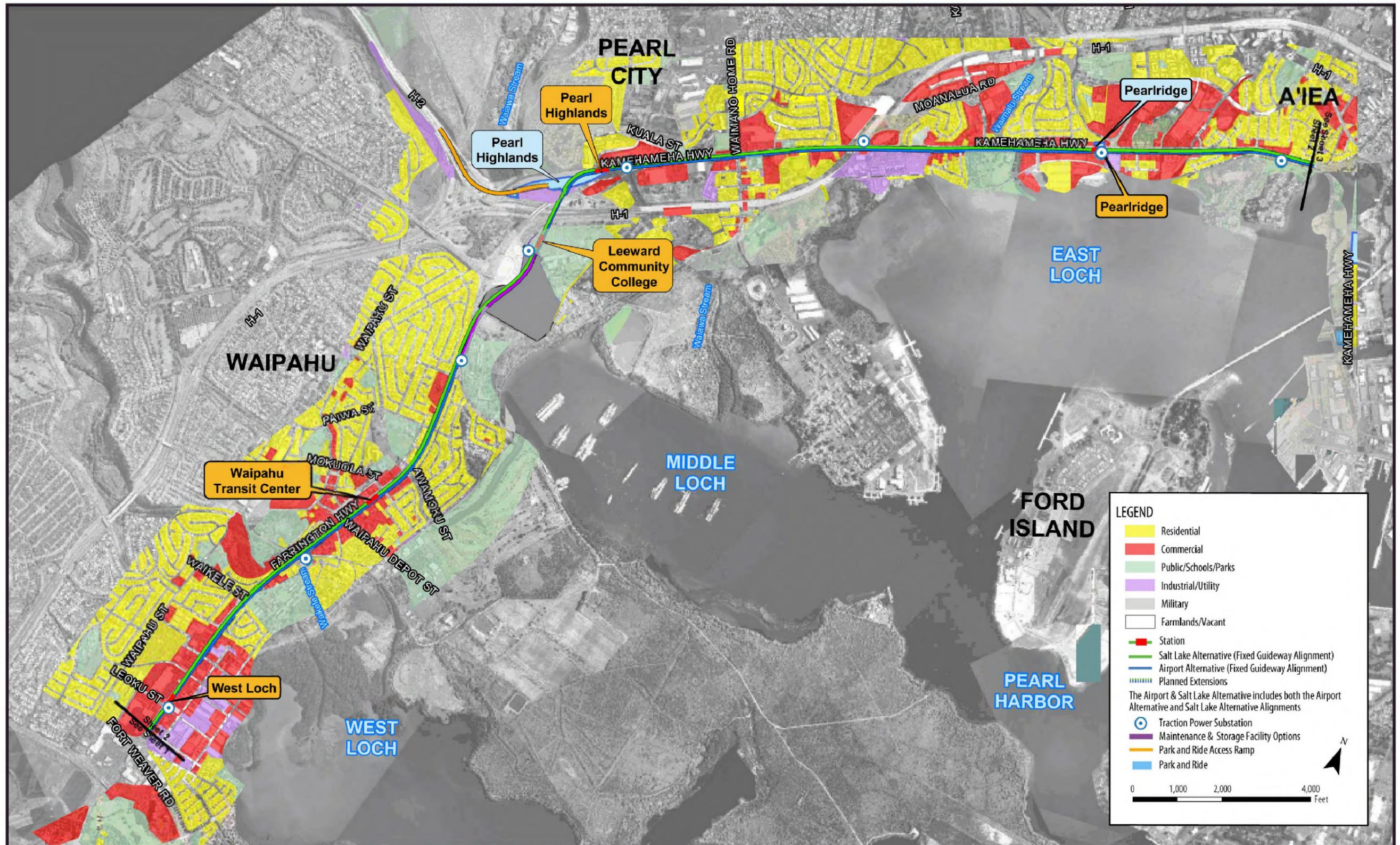


Figure 4-2: Existing Land Use in the Transit Corridor (Fort Weaver Road to Aloha Stadium)

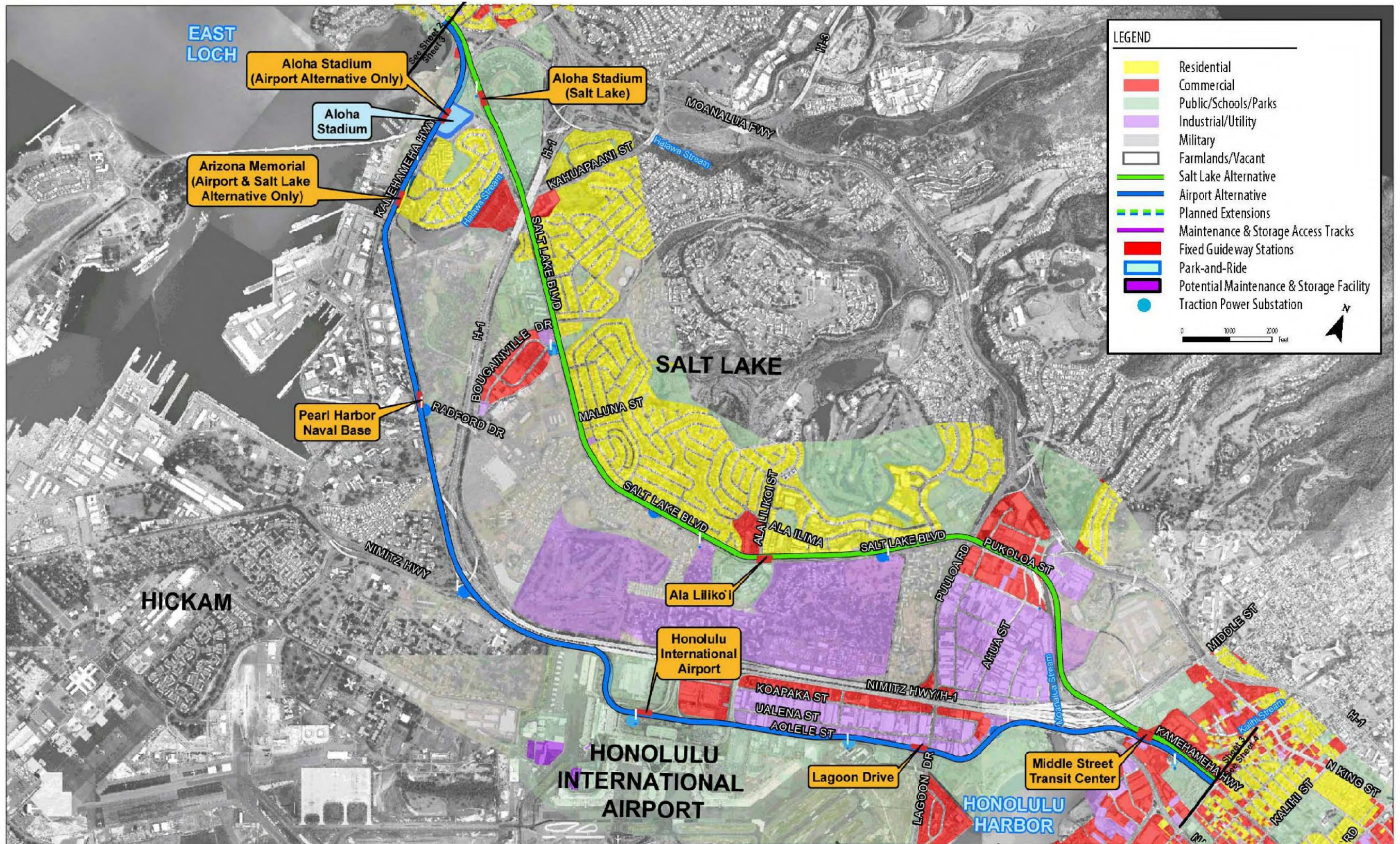


Figure 4-3: Existing Land Use in the Transit Corridor (Aloha Stadium to Kalihi)

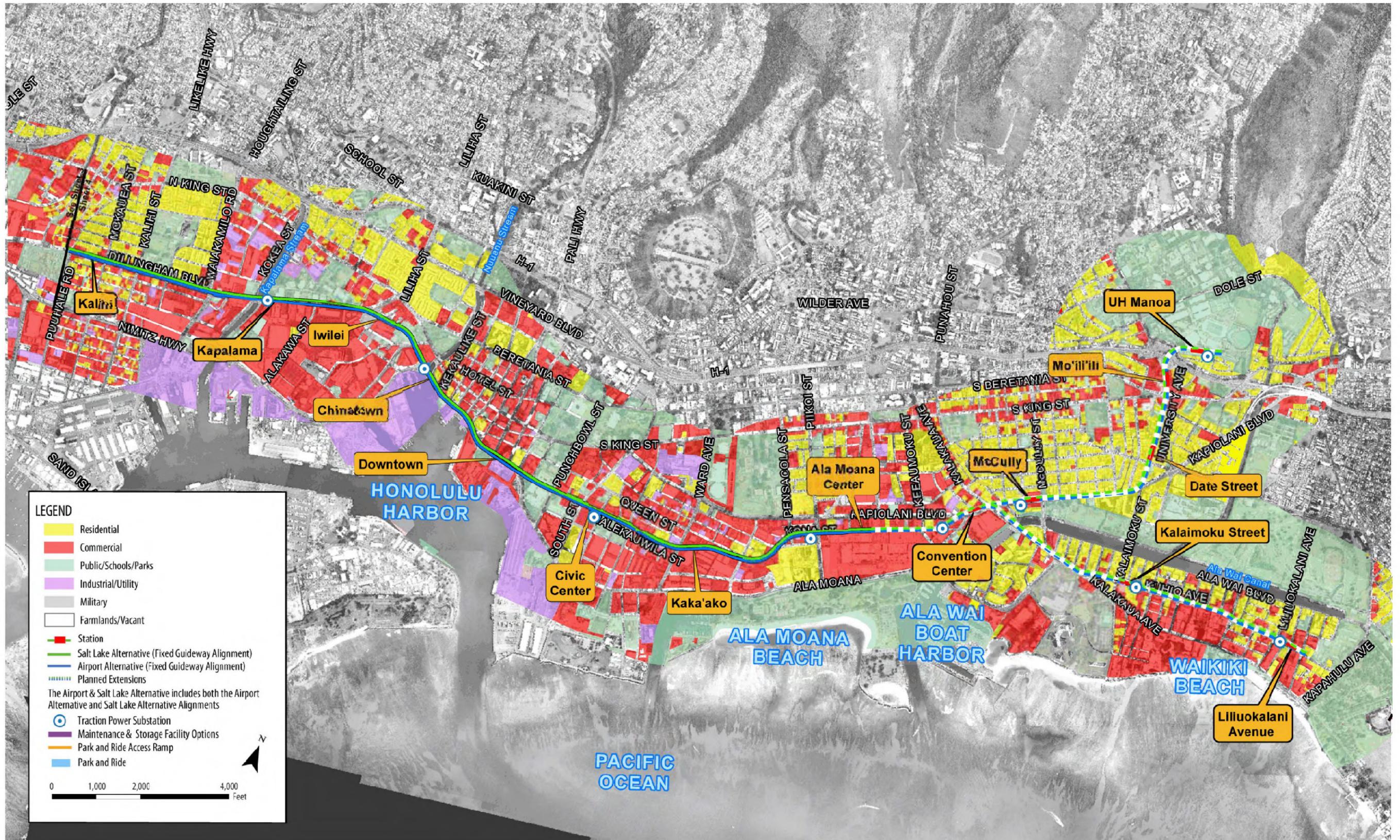


Figure 4-4: Existing Land Use in the Transit Corridor (Kalihi to UH Mānoa and Waikīki)

West Loch Station

The West Loch Station site is located in a commercial/industrial area Koko Head of the intersection of Farrington Highway and Fort Weaver Road at Leokū Street (Figure 4-2). The site is flanked by commercial and industrial uses with little vacant land nearby. The site is adjacent to optional locations for a transit center proposed by the City, which also is preparing a TOD plan in this area.

Waipahu Transit Center Station

The Waipahu Transit Center Station site is at Farrington Highway and Mokuola Street in an urbanized district with commercial, industrial, and residential uses. This station would interface with the existing Waipahu bus transit center and is also part of the January 2008 TOD Plan being prepared by the City. The DPP has prepared a draft TOD zoning ordinance, which is expected to be introduced to the State Legislature in August 2008. Kamehameha Schools owns 10 acres in this area with long-term leases which will expire in approximately 20 years. These properties represent a long-term redevelopment opportunity.

Leeward Community College Station

The Leeward Community College Station site is in the north end of the college's parking lot off Ala Ike Street. The College had 5,700 students in 2006. The site is near the Waiawa Interchange (H-2 and H-1 Freeways and Kamehameha Highway). Immediately adjacent and west lies a 43.3-acre vacant parcel that is the other optional site for a project maintenance and storage facility with railroad track spurs from the transit mainline.

Pearl Highlands Station

About one-half mile beyond the Leeward Community College Station is the Pearl Highlands Station site on Kamehameha Highway fronting the Pearl Highlands shopping center at Kuala/Acacia Streets. The large retail store, (Home Depot and Sam's Club and its associated parking, is located makai along Kamehameha Highway. The Hawai'i Laborer's Training Center is located between Pearl Highland Center and the H-1 Freeway. Also nearby is Century Park Plaza, two high-rise apartment buildings. A 9-acre park-and-ride lot (1,500 spaces) is proposed as part of the Project makai of the station. New access ramps from the interchange to the park-and-ride lot also are proposed to serve potential commuters from Central O'ahu.

Pearlridge Station

The Pearlridge Station site on Kamehameha Highway is adjacent to the Pearlridge Center, a major regional shopping destination. Sumida Farm, a unique 10.5-acre watercress farm fed by natural springs, lies adjacent to the shopping center. Other commercial, medical, and industrial uses are nearby, and some residential uses are located 'Ewa of the potential station site. The City plans a transit center makai of the

station site. Kamehameha Schools owns 40 acres in this area, including land upon which the Pearlridge Center is built. Consolidated Theaters leases a 13-acre site in the area, where a drive-in theater is developed. Kamehameha Schools views this as a future redevelopment opportunity.

Aloha Stadium Station

Along Salt Lake Boulevard are residential uses ranging from low to high density, including single-family military housing and a large industrial park. The Aloha Stadium station site is within the Salt Lake Boulevard right-of-way approximately 1,000 feet from the stadium, a walkable distance for stadium patrons (Figure 4-3). The stadium is used for high school, college, and post-season National Football League games, and the stadium parking lots are used for carnivals and swap meets. Existing land uses include low- and moderate-density housing and retail on both sides of Salt Lake Boulevard. A 13.8-acre park-and-ride lot with 1,300 spaces is proposed mauka of the station (see Chapter 1, Background).

Ala Liliko'i Street Station

The Ala Liliko'i Street Station site between Ala Liliko'i Street and Arizona Road is makai of a community shopping center and mauka of the Āliamanu Elementary and Intermediary Schools and public library. Military housing and facilities are located on the makai side of Salt Lake Boulevard.

Farther Koko Head is the Ke'ehi Interchange (H-1 Freeway and Kamehameha Highway) which eventually connects to Dillingham Boulevard. Dillingham Boulevard is lined with industrial and commercial uses. Some land uses are related to the warehousing and distribution activities of Honolulu Harbor makai of Dillingham Boulevard. Mauka of Dillingham Boulevard, the area is a mixture of residential and mixed-commercial/industrial uses. Dillingham Boulevard includes numerous overhead transmission lines.

The Middle/Kalihi Streets area includes industrial and commercial uses, as well as the O'ahu Community Correctional Center. 'Ewa of Kalihi Street, the area is surrounded by smaller commercial and residential uses. The area Koko Head of Kōkea Street is surrounded by commercial and industrial uses related to Honolulu Harbor.

Middle Street Transit Center Station

The Middle Street Transit Center Station site is just Koko Head of the Ke'ehi interchange. The area Koko Head of the station is mostly industrial and commercial. Nearby is the 1,000-inmate O'ahu Community Correctional Center. The existing Middle Street Transit Center mauka of the station site is a major bus hub for many lines that serve this central part of Honolulu.

Kalihi Station

The Kalihi Station site is dominated by industrial and commercial uses makai of Dillingham Boulevard and multifamily residences mauka of Dillingham Boulevard (Figure 4-4). Some of the commercial and industrial uses are related to the warehouse and distribution activities at nearby Honolulu Harbor. Kamehameha Schools is a major property owner in this area.

Kapālama Station

The Kapālama Station site is located at the 'Ewa end of Honolulu Community College, which is part of the UH system. The college, on the mauka side of Dillingham Boulevard, had more than 4,200 students in 2006. The campus is bounded by moderate-density housing on the mauka side. The makai side of Dillingham Boulevard is primarily surrounded by commercial and industrial uses. Power lines straddle the street. Kapālama Stream is adjacent to the station. Also nearby are the Sprint office building and big-box retail stores, such as Costco and Home Depot.

In addition, the area includes a mix of commercial, industrial, and residential uses. Kamehameha Schools owns 105 acres in this area. Many of the residents in this area are tenants in buildings owned by Kamehameha Schools. When the leases expire, many tenants will be displaced by new developments, including new moderate-density housing as well as commercial buildings for emerging technologies and media facilities. Kamehameha Schools believes this redevelopment will completely change the character of the area and make it a destination.

Iwilei Station

The Iwilei Station site is on Ka'aahi Street (off Dillingham Boulevard) amidst commercial and industrial uses, similar to the two previously discussed stations. Two housing complexes are mauka—Mayor Wright Homes and Kukui Gardens—both U.S. Housing and Urban Development low-rise affordable housing projects. A large homeless shelter (Goodwin IHS) is nearby.

Continuing Koko Head, the alignment traverses through the most complex and densely developed area in the entire study corridor. The alignment continues from along Nimitz Highway onto Halekauwila Street and then curves mauka to Kona Street before turning toward Mānoa Valley and Waikīkī. This area includes Chinatown, Downtown Honolulu, the Capital District (government center complex), Ward Center, and Ala Moana Center (both retail), the high-density tourist destinations of Waikīkī Beach, and the UH Mānoa (20,400 students [www.Hawai'i.edu 2008]). The area has a rich mixture of land uses and densities.

Chinatown Station

The Chinatown Station site on Nimitz Highway at River Street would serve Downtown Honolulu at its southwest corner. The area immediately adjacent and

mauka is part of Chinatown, which includes the historic O'ahu market, an important local and tourist attraction. A high-rise residential tower is adjacent to Nu Anu Stream next to the station site. Honolulu Harbor is adjacent and to the south, where the inter-island Super Ferry berths.

Downtown Station

The Downtown Station site on Ala Moana is at the foot of Bishop/Alakea Street near Irwin Park, the Aloha Tower/Aloha Tower Market Place. To the southwest is Irwin Park (State-owned), which is, largely, a well-landscaped parking lot. Farther makai is the Aloha Tower Marketplace (a two-level outdoor shopping mall with restaurants oriented to tourists and office workers). This station would also serve the Fort Street pedestrian mall (retail/office) and O'ahu's main cruise ship terminal at Piers 10 and 11, which processed approximately 342,000 passengers in 2007 (according to data from the Hawai'i Department of Business, Economic Development, and Tourism). Nearby is the very densely developed financial district (high-rise office towers). Makai of the station site is a power plant. A private landscaped plaza is located on the mauka side of Ala Moana Boulevard opposite the power plant.

Civic Center Station

The Civic Center Station at Halekauwila Street between South and Keawe Streets would serve nearby government offices and an area currently under transition from underutilized commercial and industrial activities to high-density condominium and office uses east of South Street, such as Keola La'i and Halekauwila Place, the Prince Jonah Kalaniana'ole Kūhiō Building, "Restaurant Row," an office/restaurant complex, is within walking distance. According to the HCDA, 16 projects with 9.4 million square feet of space have been built in the Kaka'ako Community Development District between 1988 and 2006. Halekauwila Street, which appears to be only 40 feet wide, is lined with monkey pod trees that create a shade canopy over the street. The HCDA is a major property owner in this area that has substantial redevelopment plans.

Kaka'ako Station

The Kaka'ako Station site is south of the intersection of Queen and Ward Streets. This mid-block site would require displacements. An unusual mix of big-box retail, cinemas, and restaurants with older, smaller industrial and businesses dominate this area, much of it owned and developed by General Growth. Ward Center, a large retail complex that includes Nordstrom Shoes, Nordstrom's Rack, Sports Authority, Borders Books, and others, as well as an entertainment complex (movies, restaurants), is located near the station site.

Kamehameha Schools owns 53 acres in the Kaka'ako area, which represents an urban development opportunity because of its high values (luxury market) and great views. Kamehameha Schools is planning high-density development of 1,500 to 2,000 units in buildings 350 feet high. It also wants to encourage developments for life sciences (i.e., biotechnology). Kamehameha Schools plans to work with General

Growth to coordinate developments in the same area. In both cases, Kamehameha Schools and General Growth developments would be built before the Project and, therefore, would not necessarily be oriented to the Project. Kamehameha Schools is concerned about the high elevation of the fixed guideway and stations as it may limit residential development potential.

Also in the Kaka'ako area, the HCDA has redevelopment plans for a community development district. They are preparing a draft EIS for mixed-use development in the mauka section of Kaka'ako which will be completed ahead of the Project. Many of the small businesses in this area lease space and have expressed concern about displacement by the Project.

The Neal S. Blaisdell Center, Honolulu's major cultural venue, is located three blocks mauka of the Kaka'ako Station. The area is changing to upscale and high-density uses. General Growth, the HCDA, and Kamehameha Schools are major land owners in this area with ambitious plans for redevelopment to higher intensity uses.

Ala Moana Station

The Ala Moana Station site is on Kona Street at the foot of Ke'eaumoku Street. Ala Moana Center has 1.8 million square feet of retail space (Macy's, Sears, Neiman Marcus, and others) and is one of the largest shopping centers in the U.S., as well as a major bus transit hub. A new Nordstrom department store was opened in 2008 near the station site.

Planned Extension—Wai'anae

The following paragraphs describe existing land use conditions for each of the station areas for the planned extensions:

West Kapolei Station

The West Kapolei terminal station site is located on vacant land with good access to Farrington Highway via Kalaeloa Boulevard and good access from Wai'anae farther up the Leeward Coast (Figure 4-1). The station site has ample room for the planned park-and-ride lot (1,200 spaces on 16 acres) and possible feeder bus facilities. The area around the station is vacant, except for the *Honolulu Advertiser* printing plant and a Home Depot store, both Koko Head. Mauka of the station site, a planned shopping complex named Kapolei Commons, with a Target store and a Costco store, is expected to be open by 2010.

Kapolei Station

The Kapolei Transit Center Station site is at the intersection of the future extensions of Kapolei Parkway and Wākea Street. The station area is largely vacant, but construction of a new judiciary complex is underway (as of February 2008). Other new office buildings in Kapolei are within walking distance. Much vacant land exists in the area within one-half mile of the station site, except for commercial uses along Kamokila Boulevard and vacant military housing south of Roosevelt Avenue. This station will serve the future downtown Kapolei.

Kalaeloa Station

The alignment curves makai to the proposed Kalaeloa Station site, 500 feet from the intersection of Saratoga and Hornet Avenues. Existing land uses along Saratoga Avenue include abandoned properties and buildings of the former Barbers Point Naval Air Station (Kalaeloa) and vacant land. The area has substantial woodlands. The station would serve a future mixed-use community to be built in phases in accordance with the Kalaeloa Master Plan adopted by the HCDA in 2007.

Fort Barrette Road Station

From Kalaeloa Station, the alignment traverses Saratoga Avenue, Koko Head to the Fort Barrette Road Station. Then, transitioning onto Independence Road, the alignment turns mauka to Kapolei Parkway Station and continues on to North-South Road.

Kapolei Parkway Station

The alignment continues Koko Head along the edge of a low-density, single-family area northwest of the intersection of Independence and Coral Sea Roads. Farther Koko Head, the alignment traverses more vacant but wooded land to the site of the Kapolei Parkway Station mauka of Roosevelt Avenue. Opposite the station is the site of a planned 1.1 million-square-foot regional shopping center with mixed uses planned by DHHL.

Planned Extension—Koko Head

Continuing Koko Head from the Ala Moana station site, the alignment continues to the Convention Center Station at Kalākaua Avenue/Kapi'olani Boulevard and the Hawai'i Convention Center; some property displacements would be required. The area around the Convention Center includes many retail businesses, residential condominium and rental towers, older single-family homes, and the Ala Wai Canal. Commercial uses flank both sides of Kapi'olani Boulevard.

McCully Station

The McCully Station site is at Kapi'olani Boulevard and McCully Street amidst a very dense urban area. The area is intensely built out with commercial uses on Kapi'olani Boulevard and high- and moderate-density housing and mixed uses beyond. Small strip shopping centers are on both sides of the station site. Ala Wai Canal, a major recreational and aesthetic feature, is 300 feet makai of the station site.

Date Street Station

The alignment curves mauka onto University Avenue to the Date Street Station site. Access to the station is from University Avenue and Date Street. The area is urban and fully built out with commercial uses on University Avenue. A new fire station is being constructed at the corner of University Avenue and Date Street. Beyond the immediate station area, the pattern of development is characterized by moderate-density, low-rise housing and mixed uses, with high-density, high-rise residential

buildings more distant. The 'Iolani School is nearby. This station would be a transfer point for bus service from East O'ahu. Bus transfers would be at street level.

Mō'ili'ili Station

Farther mauka, the Mō'ili'ili Station site is on the University Avenue/Coyne Street right-of-way between South King Street and the H-1 Freeway. Access to the station would be from University Avenue and South King Street. Commercial uses on University Avenue are oriented to UH students, including the former Varsity Cinema, restaurants, and bars. The UH Mānoa campus is just mauka of this area. Beyond the station area are moderate-density housing and high-density housing in high-rise buildings. The area is fully developed.

Kamehameha Schools owns much of the property near the Mō'ili'ili Station site and has major redevelopment plans for the area. New development may include faculty housing, commercial and entertainment uses in 60 to 150-foot high buildings and, possibly, a University bookstore. Kamehameha Schools has met with UH to discuss linkages between the campus and the station. Their developments are planned to complement the UH Mānoa master plan. Also at this station, Kamehameha Schools is concerned about the elevation of the station platform (approximately 60 feet above ground) in relation to the height of the six-story buildings they plan to develop here.

UH Mānoa Station

The UH Mānoa Station site is located on the UH Mānoa lower campus with access via Dole Street and Kalo Place, a short two-lane street under the elevated H-1 Freeway. This is a densely developed area of campus, and the station site is surrounded by UH's sports arena, swimming pool, baseball stadium, temporary classroom buildings, parking garages, and lots. A large parking garage is 750 feet mauka. The station site is within walking distance of the campus core and is on a major pedestrian walkway. The station would displace the temporary classroom facilities. This station is the Koko Head terminus of the main line.

A spur between the Convention Center Station and Waikīkī also is under consideration. It would have two stations on Kūhiō Avenue to serve this densely developed residential, commercial, and tourist area.

Kālaimoku Street Station

The Kālaimoku Street Station site on Kūhiō Avenue at Kālaimoku Street is the first within the major resort district. Principal access to the station would be from Kūhiō Avenue. Honolulu's largest resort hotels are located on or near Waikīkī Beach. High-density residential and hotel uses with ground-floor retail catering to residents and tourists are along both sides of Kūhiō Avenue. The area is very urban with heavy vehicular and pedestrian traffic. Kūhiō Avenue was recently landscaped.

Lili'uokalani Avenue Station

The Lili'uokalani Avenue Station site is at Kūhiō Avenue and Lili'uokalani Avenue. The station area is in an urban mix of high-rise hotels and apartment buildings. This

station is the Koko Head terminus of the Waikīkī spur. Buses from East O‘ahu also would transfer passengers at this station. No transit center is planned.

4.4.2 Airport Alternative

Along the Airport Alternative alignment are military facilities, including housing; the airport with airport-related industries, including hotels, parking, and commercial areas; and a large waterfront park Koko Head. The existing land use in this alternative is the same as the Salt Lake Alternative but does not include the Ala Liliko‘i station site. The Airport Alternative also includes the following stations:

Aloha Stadium Station

The Aloha Stadium Station for this alternative is on the mauka side of Kamehameha Highway adjacent to a future 7-acre park-and-ride site (see Figure 4-3 and Chapter 1 for number of parking spaces). Existing land uses around this station site include part of the 8,000-space parking area adjacent to the 50,000-seat stadium. Located nearby is Admiral Clarey Bridge, which provides access over the East Loch of Pearl Harbor to Ford Island. U.S. Navy facilities lie between the East Loch and the highway. Single-family residential uses are mauka of the station.

Pearl Harbor Naval Base Station

The Pearl Harbor Naval Base Station site on Kamehameha Highway is at Radford Drive/Makalapa Gate. The site is surrounded by various U.S. Navy facilities. Low-density residential uses predominate Koko Head of Kamehameha Highway with Pearl Harbor Navy facility uses (including oil tanks) on the ‘Ewa side.

Honolulu International Airport Station

The Honolulu International Airport Station site lies between the airport’s interisland terminal and the main U.S. Postal Service facility and would displace a part of the airport’s surface parking lots. The airport has 8,000 employees and serves 20 million airline passengers a year. The station site is near the site for a future airport parking garage. The station area is primarily surrounded by airport-related businesses. Also mauka of the nearby Nimitz Viaduct are a golf course and residential uses.

Lagoon Drive Station

The Lagoon Drive Station site is located on Aolele Street at Lagoon Drive. Several airport-related businesses and industries are near the station site. Mauka of the potential station site is a large commercial area and more housing flanking Pu‘uloa Road. The alignment continues Koko Head through the mauka edge of Ke‘ehi Lagoon Beach Park and would displace some parking areas for the park.

4.4.3 Airport & Salt Lake Alternative

The existing land use in the Airport & Salt Lake Alternative is the combination of the Salt Lake and the Airport Alternatives and, therefore, is not repeated here. The

Aloha Stadium Station in the Airport Alternative is eliminated in the Airport & Salt Lake Alternative.

Arizona Memorial Station

The Arizona Memorial Station site, located on Kamehameha Highway at Kalaloa Street, is included in this alternative. The area has moderate- to high-density low-rise apartment complexes, some single-family homes, a K-Mart, and military lands. The site is close to the Arizona Memorial, a popular visitor attraction at the Pearl Harbor Naval Base.

5.1 No Build Alternative

The consequences of the No Build Alternative on land use are a continuation of the low-density pattern of growth in 'Ewa and Central O'ahu and moderate and high-density development in the PUC in accordance with the City's development plans.

The growth rates on O'ahu and deliberate planning policy will continue to influence the high demand for new housing and commercial facilities on the island, even without the Project. The major effect on land use without the Project will be the lowering of planned densities, particularly in West O'ahu. Without the Project, current development plans in West O'ahu, including Kapolei, UH West O'ahu, and Ho'opili, would be implemented according to developers interviewed for this study in October 2007. Because of continued high demand in the Honolulu area, many high-density developments already planned are expected to be constructed even without the Project. These high-density developments are already planned for the Kaka'ako and Mō'ili'ili areas and are expected to go forward without this project.

Elsewhere in the transit corridor, land uses are expected to be developed in accordance with the official development plans. Current plans, however, are oriented to automobile use and lower densities, which will result in a continued low-density dispersed land use pattern, particularly in Central and West O'ahu. For example, Kapolei (O'ahu's "second city" in West O'ahu) is being developed at low and moderate densities creating a typical suburban-style of development that would most likely be replicated elsewhere. Without the high-capacity transit project, the introduction of high-density development is less likely because there is much vacant land that is readily developable in a suburban pattern, which is already the prevalent development style in the area. This, in turn, would continue reliance on the automobile for transportation needs.

5.2 Build Alternatives

5.2.1 Salt Lake Alternative

The following is a description of the land use effects of the Project. The indirect and cumulative impacts of these alternatives are described in Section 5.3. The direct impacts to neighborhoods and displacements are discussed in the *Honolulu High-Capacity Transit Corridor Project Neighborhoods and Communities Technical Report* (RTD 2008a).

The consequences of the Build Alternatives on land use are higher density of development near stations in 'Ewa than shown on the City's development plan, which did not show the station locations. Nevertheless, these higher densities are consistent with the plan's policy to support transit in the corridor. The Build Alternatives would have differing effects on land use in Central O'ahu because of the

lack of available development land near the stations. A few key stations in Central O'ahu may experience higher densities, but only through redevelopment of existing occupied parcels. For example, DPP is studying TOD opportunities in Waipahu. For TOD to occur there, redevelopment would be required since there is no vacant land. In addition, public incentives may be required since there is little evidence of major real estate investment here. Elsewhere in Central O'ahu, if public planning policies promoting TOD were in place, similar redevelopment potentials may be enhanced.

Many more station areas in the PUC would experience land-use changes to higher densities, also through redevelopment of occupied parcels. The PUC lacks vacant parcels; those used for surface parking are viewed as developable over the long-term. These land use changes are already expected based on prior planning by public and private developers. Moreover, the PUC Development Plan encourages higher densities in the transit corridor.

Because of prior planning, the most substantial changes in land use are expected in West O'ahu and Kaka'ako, with or without the Project and regardless of alternative. Without the Project, these changes in land use will continue but at lower densities, especially in West O'ahu. Land use effects may occur at other well sited stations that have not been the subject of detailed prior planning.

The general future land use pattern of the study corridor is shown in the community-level comprehensive plans by the City. These plans are consistent with the regional plan prepared by the same jurisdiction. See figures from each of the Plans in Chapter 2.

Most of the study corridor Koko Head of 'Ewa is built out. Redevelopment will be the primary means for future land use changes because there is little vacant land available. However, a continuing strong market will tend to increase the potential for redevelopment of well-located, underused parcels near transit stations.

The highest potential for continued high-density development, such as office, retail, residential, and hotel uses, is between Downtown Honolulu and Waikīkī. The highest potential for low- to medium-density new development in the study corridor, such as single-family detached housing, medium-density multi-family and mixed-use TOD, low-rise office parks, free-standing shopping centers, and big-box retail stores, is in West O'ahu. These more suburban and rural areas are already planned for development, including the former Barbers Point Naval Air Station (now known as Kalaeloa and Kapolei). The moderately dense built-up areas between Waipahu and Downtown Honolulu and along University Avenue to UH Mānoa are relatively stable with few vacant parcels.

Transit Station Land Use Effects

Land use effects are expected within one-half mile of station locations along the transit corridor (i.e., within walking distance to a station). (See Chapter 3 for figures that illustrate the one-half mile limit at the stations. Also, see Appendix A for more detailed existing land use maps for each individual station area.) These land use effects are expected since the new transit service would increase mobility and

accessibility to station areas and, consequently, change land values and development feasibility.

These land use effects could take the form of TSD and TOD. TSD includes land uses, such as office space and multi-story residential buildings, near transit stations. Office uses generate more transit riders than any other land use. TOD is more intensive and deliberately planned to integrate with transit and includes the following elements:

- Moderate- to higher-density uses
- Within an easy walk to and from a station
- Mix of uses and possible joint development
- Pedestrian-oriented
- New construction or redevelopment
- Generates transit ridership

For successful TOD to be achieved, the following elements have to be present: an excellent transit system, strong market demand, available parcels close to the station, and a consistent TOD land use planning policy. These elements exist in certain degrees in the transit corridor. The transit system is being planned to shorten trip durations in comparison to driving, especially during peak commuting periods. Strong market demand is continuing in O'ahu, especially in the transit corridor. Parcels near stations are already planned for higher density in West O'ahu, Kaka'ako, and Mō'ili'ili; land parcels near other stations are potential redevelopment sites, but such development has not yet been determined. The City is developing a TOD policy expected to be enacted in 2008. Table 5-1 summarizes the potential for TOD at the station sites. Already, two of the station sites are in areas that can be characterized as TOD. These are between Chinatown and Ala Moana Center. Of the 24 station sites, 16 have high or medium potential for TOD because they are in growth areas or known planned developments are ongoing. Eight stations have low potential for TOD due to a lack of available developable land, are not within a growth area or market demand appears low based on existing characteristics and development activity. The high potential for TOD is in three areas of the corridor: West O'ahu, Honolulu International Airport, and Downtown Honolulu. Of the 11 station sites on the Planned Extensions, 2 are in areas that can be considered TOD. In addition, 7 of station sites on the planned extensions have high or medium potential for TOD. Four station sites on the planned extensions are considered to have low TOD potential, mainly due to a lack of developable land.

In Table 5-1, a low TOD rating is for observed conditions at a station site such as no new major real estate investment evident, underutilized parcels indicating low market demand, and no vacant land. For TOD to occur in such areas, public incentives and consistently applied TOD policy and well located and available development parcels are needed. On the other hand, if certain large land owners in a station site area want to redevelop their properties for new uses, there is a strong possibility it could be successful.

Table 5-1: Transit-Oriented Development Potential at Planned Station Sites

Name of Station	Area Already TOD	High Potential for TOD	Medium Potential for TOD	Low Potential for TOD	Comment
Common to All Build Alternatives					
East Kapolei			X		Near site of planned regional mall on Department of Hawaiian Home Lands property. Pedestrian access between mall and station is key for TOD to occur.
UH West O'ahu		X			Potential for high ridership (7,600 students and 660 faculty and staff) if developed high density.
Ho'opili		X			Developer plans higher densities near station as part of 12,000-housing-unit new community.
West Loch			X		No vacant land. City preparing TOD plan and policies to increase public support for redevelopment. Market potential needs to be determined.
Waipahu Transit Center			X		No vacant land. City preparing TOD plan and policies to increase public support for redevelopment. Market potential needs to be determined.
Leeward Community College				X	Limited accessibility and no available vacant land other than surface parking.
Pearl Highlands				X	No vacant land near this big-box retail mall.
Pearlridge			X		No vacant land near this large, spread out regional mall. Abandoned drive-in theater parcel used for surface parking may be redeveloped in the future.
Ala Liliko'i				X	No vacant land.
Middle Street Transit Center				X	No vacant land.
Kalihi			X		No vacant land. Would require location supportive redevelopment policies. Major landowner (Kamehameha Schools) has redevelopment plans.
Kapālama				X	No vacant land but near 4,200-student Honolulu Community College, large transit-dependent population, and Kamehameha Schools redevelopable properties.
Iwilei			X		No vacant land. Station would displace parcels. TOD would require redevelopment of occupied parcels.

**Table 5-1: Transit-Oriented Development Potential at Planned Station Sites
(continued)**

Name of Station	Area Already TOD	High Potential for TOD	Medium Potential for TOD	Low Potential for TOD	Comment
Chinatown	X		X		TOD would require redevelopment of waterfront land near Super Ferry.
Downtown	X		X		With redevelopment of power plant site, otherwise low potential.
Civic Center	X	X			Further TOD requires redevelopment of occupied parcels and parking lots.
Kaka'ako		X			Redevelopment plans already established by property owners.
Ala Moana Center	X	X			TOD will require redevelopment of occupied parcels.
Salt Lake Alternative					
Aloha Stadium			X		TOD would require supportive policies specific to location and redevelopment of surface parking. Structured parking would reduce footprint and reduce loss of stadium parking spaces.
Airport Alternative					
Aloha Stadium			X		TOD would require redevelopment of surface parking. Structured parking would reduce footprint and reduce loss of stadium parking spaces.
Pearl Harbor Naval Base				X	Military land is unavailable for private development.
Honolulu International Airport		X			Strong potential for joint commercial development with future parking/airport uses. Would ease transfer of employees (8,000) and airline passengers (20 million a year) between transit and airport. Requires early design coordination.
Lagoon Drive				X	No vacant land. Restrictions due to airport proximity.
Airport & Salt Lake Alternative (includes the Salt Lake Alternative and the Airport Alternative)					
Arizona Memorial				X	Station replaces Airport Alternative Aloha Stadium Station. Mixed use area including much military land.
Project Total	2	6	10	8	
Planned Extensions					
West Kapolei			X		Future terminal station. Needs rezoning. Much vacant land. Good transit-supportive development.
Kapolei Transit Center		X			Future downtown of "second city." Much vacant land. Needs rezoning.

**Table 5-1: Transit-Oriented Development Potential at Planned Station Sites
(continued)**

Name of Station	Area Already TOD	High Potential for TOD	Medium Potential for TOD	Low Potential for TOD	Comment
Kalaeloa			X		Master Plan for a new community adopted in 2006 by the Hawai'i Community Development Authority. Plan is for relatively low density uses on a very large site, with high intensity uses near the stations.
Fort Barrette			X		Master Plan for a new community adopted in 2006 by the Hawai'i Community Development Authority. Plan is for relatively low density uses on a very large site, with high intensity uses near the stations.
Convention Center		X			TOD will require redevelopment of occupied parcels.
McCully				X	No vacant land.
Date			X		TOD would require redevelopment.
Mō'ili'ili		X			Major property owner has redevelopment plans.
UH Mānoa				X	Would require plans by UH.
Kālainokū	X			X	Already intensely developed. No vacant land.
Lili'uokalani	X			X	Already intensely developed. No vacant land.
Extensions Total	2	3	4	4	

Generally, the land use effects of the Build Alternatives are consistent with the broad policies of the Regional Plan. For example, there is a policy to redistribute the future population of O'ahu by 2025 so that 17 percent is in 'Ewa, 13 percent is in Central O'ahu, and 46 percent is in the PUC. This implies a shift in growth from the PUC to Central O'ahu and 'Ewa. To accomplish this, in part, new planned developments in Kapolei and Kalaeloa in 'Ewa, where the transit alignment is located, are consistent with this policy. Alternatively, this policy may conflict with the policy to maintain the viability of agriculture on O'ahu, specifically in 'Ewa and Central O'ahu. The development plans are somewhat in conflict with this policy since some agricultural lands in these areas are planned for urban uses. The policy of the community plans is, however, more supportive of the potential land use effects of the Project in these two areas than continued agricultural use. These community-level policies are consistent with the regional policy to reduce speculation in land and housing, because these plans clearly indicate where development is encouraged and discouraged. At the same time, these community plans may be inconsistent with the State Plan, particularly in Central O'ahu.

In 'Ewa, the locations of the transit station sites support development plans by others, both public agencies and private developers. These plans preceded transit planning and have been modified since then to make these new communities "transit ready." These development plans will continue to be implemented, even if the Project is not built, because of the strong market and ongoing planning processes. However, these developments would be less dense and more suburban in character without the Project, according to developers.

These ongoing and planned developments cover the West O'ahu segment of the Project and include the following:

- Planned \$100 million Kroc Center for the Salvation Army on a 10-acre site leased from DHHL near the planned UH West O'ahu campus site (completion date 2010)
- Continued expansion of the existing 'Ewa Villages and other areas on the 'Ewa Plain
- UH West O'ahu (open Fall 2009 according to website on 02-19-08)
- Ho'opili, a planned community by the D.R. Horton Company

The alignment continues through vacant land to the East Kapolei terminal station site along the North-South Road. The Kalo'i Gulch (floodway and detention basin) is adjacent to North-South Road. The largely vacant area is planned to be redeveloped as a large, mixed-use regional shopping center by the DeBartolo Company under the auspices of DHHL. In addition, the Kroc Community Center by the Salvation Army is planned for this area.

The UH West O'ahu Station site is adjacent to land reserved for UH West O'ahu's campus (open Fall 2009, <http://westoahu.hawaii.edu/>). The 200-acre site will accommodate 7,600 students and 660 staff and faculty. Coordination with UH West O'ahu is ongoing to support TOD at the station site. Current zoning of the campus site is *agricultural*, which is inappropriate for the planned use. A *hotel* zone is located across Farrington Highway, which is appropriate near the campus. This area may be ideal for a TOD overlay district because of the prospect of a large university campus population within walking distance. A large proposed park-and-ride lot would be located near the station, which would need to be coordinated with any TOD plans.

The future Ho'opili Station site is amidst a future planned community of the same name by the D.R. Horton Company. Ho'opili is planned to have approximately 12,000 housing units. In coordination with the developer, the transit alignment/station site was modified to better accommodate the plans of the developer and to improve the potential for TOD. The Ho'opili Station site is makai of Farrington Highway between North-South Road and Fort Weaver Road. Current zoning of *industrial* and *agriculture* is inappropriate to achieve TOD at this location. Rezoning would be necessary to increase TOD potential and would be required for the development to go forward.

Near the Ho'opili Station site, mauka of Farrington Highway, is the future optional location of a large project vehicle maintenance and storage facility. The facility would

be at the rear of the existing Hawaiian Electric facility on Farrington Highway. Railroad spurs from the main line to the facility would be mauka of Farrington Highway. This site is one of two options; the other is near the Leeward Community College Station.

Moderate- to high-density development begins in Waipahu and ends near Aloha Stadium. Land use effects of the transit stations may be limited by a lack of vacant land and would require redevelopment of occupied parcels. The area is built out with industrial, commercial, and residential land uses and encompasses Aloha Stadium and its extensive parking lots. If TOD were to be encouraged, redevelopment of station site areas would be necessary because there is no vacant land.

The West Loch Station site on Farrington Highway Koko Head of the Fort Weaver/Kunia Intersection is at Leokū Street, in a commercial/light industrial area. The area is appropriately zoned for TSD with *apartment* and *commercial* districts, but a large *industrial* district to the southeast is inappropriately zoned for TSD. Although there is little vacant land, a potential park-and-ride lot is proposed here. TOD potential is limited to redevelopment that will occur only with supportive land use policies that encourage it. The City, along with the local community, is preparing a TOD plan (January 2008) in the area with the objective to refocus the community's development character to TOD.

The Waipahu Transit Center Station site near Mokuola Street is an urbanized mixed-use district with commercial, industrial, and residential uses. Zoning is appropriate for TSD with *apartment*, *commercial*, and *residential* districts. This station site would interface with the existing Waipahu bus transit center. TOD potential is limited over the short-term since the area is fully built out with little vacant land. Redevelopment will require infrastructure funding and supportive land use policies. As with the West Loch Station, the City is preparing a TOD plan in the area to enhance TOD potential.

The Leeward Community College Station site adjacent to the College has limited TOD or TSD opportunities, since the land around it is committed for other uses. Mauka is the H-1 Freeway. Koko Head and makai is the College parking lot and 'Ewa is the second optional parcel under consideration for a maintenance and storage facility. Future expansion of College facilities could be sited adjacent to the station, enabling strong pedestrian connections to the station.

The Pearl Highlands Station site on Kamehameha Highway lies near Kuala Street, Koko Head of the Waiawa Interchange (H-2/H-1 Freeways). The area is zoned *commercial*, *apartment*, and *residential*, appropriate for TSD. Pedestrian connections would increase ridership here as the Hawai'i Laborer's Training Program school, two high-rise apartment buildings, a Home Depot, and the Pearl Highlands shopping area are all within walking distance. A proposed park-and-ride site is nearby. TOD potential, however, is limited since the area is fully built out with no vacant developable land. Strong pedestrian connections to abutting parcels may be difficult to achieve without land owner and/or developer participation. Redevelopment is unlikely since most of the buildings are relatively new.

The Pearlridge Station site is near Pearlridge Center, a major regional shopping destination. Commercial and industrial uses are nearby, and some residential uses are located 'Ewa of the potential station site. These uses reflect current zoning. With strong pedestrian connections, ridership could be increased in this TSD area. TOD potential is limited over the short-term since the area is fully built out with little vacant land. Strong pedestrian connections to abutting parcels will require land owner and/or developer participation. Redevelopment is likely at an abandoned drive-in theater site that is used for surface parking and twice-weekly swap meets. Longer-range TOD potential may be possible with strong consistent public policy and redevelopment.

Koko Head, new TOD and TSD potentials are limited because the area already is virtually built out and "transit ready." High-density residential areas lie along Salt Lake Boulevard and major activity centers are located at Aloha Stadium, Pearl Harbor Naval Base, and Honolulu International Airport. Redevelopment would be required to achieve new development that would be transit-supportive.

The Aloha Stadium Station site has limited TOD and TSD potential. Redevelopment of the vast surface parking lots would be required to achieve TSD. A 13.8-acre project park-and-ride lot is proposed mauka of the station. Stadium parking spaces displaced range from 32 to 120. Structured parking would reduce this loss, especially as part of a joint-development scheme.

The Ala Liliko'i Street Station site has virtually no short-term TOD or TSD potential, since the area is virtually built out with no vacant land. Extensive pedestrian connections with the relatively low-density uses would increase ridership potential.

Continuing Koko Head along Dillingham Boulevard, the area is virtually fully built out with little or no potential for TOD or TSD because there is no vacant land available. Redevelopment would be required and residents of the area are highly transit-dependent and a potential source of high transit ridership on the new system.

The Middle Street Transit Center Station site on Dillingham Boulevard is adjacent to the Ke'ehi Interchange and surrounded by industrial and commercial uses. TOD and TSD are extremely limited here because of non-supportive zoning. Such high-density development may be a long-range possibility if the adjacent planned park-and-ride lot is designed as part of a structured garage topped by mixed uses. Across Middle Street from the park-and-ride site is the Fort Shafter Maintenance Facility, which is not a transit-supportive land use. In the future it will serve as a transit center on a 9-acre parcel acquired by the City.

Farther Koko Head is the Kalihi Station site at Mokauea Street, which has *residential* and *industrial* zoning and uses on both sides of Dillingham Boulevard and near the O'ahu Community Correctional Center. Because of the built-up nature of the area and uses, TOD and TSD potential appear limited in the short term. Mauka of the station site, Kamehameha Schools owns many properties and has major redevelopment plans when current leases expire. In the longer term, Kamehameha Schools plans to redevelop their properties into new moderate-density housing as well as commercial buildings for emerging technologies and media facilities.

The Kapālama Station site is near Honolulu Community College. Although the station site is in a fully built-out area with no vacant land, making TOD and TSD potential limited in the short term, with 4,200 students this station has potential for high ridership. Moreover, mauka of the station site are properties owned by Kamehameha Schools that will be redeveloped in the long term when current leases expire.

The alignment near the Iwilei Station site crosses over parcels that may be displaced. Therefore, redevelopment of the area is possible. The potential for TOD may be strong, since the site is not far from Chinatown, Honolulu Harbor, and Downtown Honolulu, but it would require major redevelopment and rezoning since there are few, if any, vacant parcels nearby.

Continuing Koko Head to the terminal stations, the alignment traverses through the most densely built-up area of the entire corridor. The area already includes O'ahu's major activity centers, such as Downtown Honolulu, the Ward and Ala Moana Shopping Centers, the Hawai'i Convention Center, the UH's main campus, and the Waikīkī resort area. In effect, much of this area already can be characterized as TSD with strong TOD potential.

However, the Chinatown Station site on Nimitz Highway has limited TOD or TSD potential as the area is fully built out and next to the Chinatown Historic District. There may be redevelopment potential near the harbor adjacent to the interisland Super Ferry berth, however, there is no vacant land.

The Downtown Station site is within a fully built-out area that already has TOD. Transit ridership could be enhanced with strong pedestrian connections across wide Ala Moana Boulevard. Immediately makai of the station site is a power plant, long regarded as a redevelopment site. This station is the closest to the downtown waterfront, and certain parcels makai of the power plant may be suitable for redevelopment in the future.

The Civic Center Station site has limited TOD or TSD potential since the area is fully built out with moderate- and high-density uses. Strong pedestrian connections would generate ridership in this dense government-employment area.

The Kaka'ako Station site midblock would require displacements. The potential for redevelopment is high, especially with the participation of affected land owners. The area is changing to upscale and high-density uses. General Growth, the HCDA, and Kamehameha Schools are major land owners in this area with plans for redevelopment to higher-intensity uses. In February 2008, General Growth, for example, publicly announced major redevelopment plans for their properties to mixed-commercial and residential uses.

The Ala Moana Center Station site is the Koko Head terminus of the East Kapolei to Ala Moana Center for the Project. The owner of the Ala Moana Center has indicated interest in building a direct connection between the station and the adjacent shopping center—a strong example of future joint development at a transit station.

TOD and joint-development potential are high but would require redevelopment and integrated design with surrounding land owners' plans.

Planned Extension—Kapolei

For the planned extensions, the West Kapolei Station is the most Wai'anae and terminal station site. The site has room for the project's planned park-and-ride facilities. A shopping center and theater complex have been proposed by others mauka of the station. An additional major resort hotel complex at nearby Ko 'Olina farther Wai'anae of the station was announced in October 2007 by the Disney Corporation. The potential for TSD near the station is strong, but requires appropriate land use planning and rezoning. Zoning would have to be changed to allow TSD, since most land around the proposed terminal station is zoned *agricultural*, which is not transit-supportive. Small portions of land closer to Kalaeloa Boulevard are zoned *industrial*, *commercial*, and *residential* that may be more appropriate for TSD.

The Kapolei Transit Center Station site would be ideal for TOD, since it is planned to become a part of Downtown Kapolei. Current zoning is inappropriate, however, as it separates uses into *commercial*, *residential*, and *industrial* districts. A new TOD zoning overlay district is more appropriate here if mixed-use development that is pedestrian-oriented is desired. This would be more consistent with creating a Downtown Kapolei than is evident elsewhere in commercial areas of Kapolei. Kapolei is the rapidly growing "second city" of O'ahu, with major expansion under way.

The alignment curves makai to the proposed Kalaeloa Station site. The HCDA has a long-range plan to redevelop the former Barbers Point Naval Air Station into a relatively low-density, mixed-use community. A master plan for Kalaeloa was adopted by the HCDA in March 2006, which has the following goals for the 3,695-acre site:

- 3 million square feet of light industrial, commercial, retail, and office space
- Creation of an estimated 7,000 jobs
- Approximately 6,350 residential units (30 percent affordable)
- TOD and regional connections
- Opportunities for high technology development
- Alternative energy to promote self sufficiency
- New public schools
- Preservation of recreation, open space, and shorelines; and protection of cultural sites and endangered species through a Native Hawaiian Culture and Education Center

From this site, the alignment curves mauka through the abandoned military base to the Fort Barrette Station site. The station area would be redeveloped as part of the Kalaeloa new community. Because of the relatively low densities planned on this large site, TOD potential is moderate unless higher-density nodes around the two station sites are developed in the future. The master plan shows high-intensity mixed uses near the Kalaeloa Station site, but moderate-intensity mixed uses near the Fort Barrette Station site.

Planned Extension—Mānoa

From the Ala Moana station site, the alignment for the planned extension continues Koko Head to the Convention Center Station site mauka of the Hawai'i Convention Center, requiring displacements of small establishments mauka of Kapi'olani Boulevard and 'Ewa of Kalākaua Avenue. TOD potential is high but would require redevelopment of parcels since the area is fully built out.

The McCully Station site on Kapi'olani Boulevard is fully built out with no vacant land and has limited TOD potential.

The alignment curves mauka onto University Avenue where the Date Street Station site is located. TOD potential is limited, as the area is fully built out with no vacant land. However, since this will be a major bus transfer site serving East Honolulu, the potential for TOD could increase in the future.

Farther mauka on University Avenue is the Mō'ili'ili Station site at the Coyne Street Intersection. The area is fully developed. Kamehameha Schools owns much of the property here and has active and major redevelopment plans for the area. Therefore, the potential for TOD and joint development with transit is high.

The UH Mānoa Station site is in a congested area of the UH lower campus. TOD potential is low since the station is on university property. However, joint development potential with future UH facilities is high.

A spur between the Convention Center Station and Waikīkī would have two stations on Kūhiō Avenue to serve this densely developed residential, commercial, and tourist area. The area can be characterized as already TOD.

The TOD potential at Kālaimoku Street Station site at Kūhiō Avenue is high but would require adaptation of the area, which is fully built out at very high density with no vacant land.

The Lili'uokalani Avenue Station site is in the Kūhiō Avenue right-of-way at Lili'uokalani Avenue. Buses from East O'ahu also would transfer passengers at this station on the street. No transit center is planned. New TOD potential is high but would require adaptation of the area, which is fully built out at very high density.

5.2.2 Airport Alternative

The Aloha Stadium station for this alternative is on the mauka side of Kamehameha Highway opposite a 7-acre park-and-ride site. The site has limited TOD and TSD

potentials. Redevelopment of the vast surface parking lots would be required to achieve TSD. A transit project park-and-ride lot is proposed mauka of the station.

The Pearl Harbor Naval Base station site is controlled by the military. The Navy's future plans for this area are unknown. There may be TOD or TSD possibilities, and the Navy could redevelop this area to higher-density mixed use in the future. However, there is no indication that this would take place.

The Honolulu International Airport Station site lies between the airport's interisland terminal and the main U.S. Postal Service facility and would displace a part of the airport's surface parking lots. The station site is near the site for a future airport parking garage. The potential for TOD and joint commercial development is very high. Through coordinated planning and design, airport uses could be merged with transit station design and development to achieve a fully integrated station within airport facilities. Such a seamless transfer from transit to airport would encourage transit ridership for employees and passengers alike. Examples of good integration between airport and transit include O'Hare International Airport in Chicago, San Francisco International Airport, and Reagan National Airport in Washington, DC.

The Lagoon Drive station site at Aolele Street at Lagoon Drive is in a fully built out industrial area with no vacant land. As a result, TOD and TSD potentials are limited without redevelopment and may be subject to flight path limitations imposed by the FAA. The alignment through the edge of Ke'ehi Lagoon Beach Park would most likely be a Section 4(f) use. Section 4(f) of the U.S. Department of Transportation Act of 1966 (USC 1966) protects such public parkland from proposed transportation projects unless there is no feasible and prudent alternative for use of the park for the Project.

5.2.3 Airport & Salt Lake Alternative

The land use effects of this alternative would be the same as those described for the Salt Lake Alternative and the Airport Alternative. The land use effects of one corridor would not affect the other because the two alignments are sufficiently separated by military housing, and the demand for land use change in one corridor is completely separate from the other. The Salt Lake Boulevard alignment has high-density housing and an industrial park that may be redeveloped in the future as a transit village. The Airport alignment has the high activity generator of Honolulu International Airport (8,000 jobs, 20 million airline passengers a year).

There is one difference in the Airport & Salt Lake Alternative—the Aloha Stadium Station site in the Airport Alternative is eliminated and replaced with a new station called Arizona Memorial located just past the Ford Island Access Bridge. The Arizona Memorial Station site is on Kamehameha Highway opposite Kalaloa Street. Land use impacts of the station would be negligible because of the built up nature of the existing conditions, no or limited vacant land, and military ownership of much of the land.

5.2.4 Construction Impacts

The fixed guideway and stations would be aerial structures throughout the system. As a result, land use effects would be mixed depending on location. All construction impacts on land use would be temporary and sequential as construction proceeds through an area. The four main components of the fixed guideway system include foundations, piers (support columns), superstructure (the elevated guideway structure), and stations. The foundations and stations (elevator and stairway touchdown points at street level) would have the most direct land use effects in the right-of-way. The piers and the superstructure would have minimal or insignificant direct land use effects.

Construction staging areas would be needed throughout the project area to provide adequate space for construction equipment, construction materials, materials stockpiling and transfer, parking, and other construction-related activities. Because of the size and complexity of the Project and the lack of available land along the alignment, potential staging areas have only tentatively been identified. Obtaining these temporary staging and storage areas would likely be the responsibility of contractors. However, some staging areas may have to be reserved by the Project well in advance of construction, especially in the fast-developing West O'ahu area where land is currently available.

Support facilities, such as traction power substations and a maintenance and storage facility, would be at-grade unless the local site conditions demand otherwise. Other facilities, such as park-and-ride lots, would also be at-grade unless site conditions warrant portions of them be elevated or placed in a structure.

Foundations

Based on the preliminary analysis of soils and geology conditions in the corridor, two foundation construction methods would most likely be used to support the aerial guideway structure: drilled shafts and driven piles. In either case, land use effects would be primarily within the narrow width of the linear right-of-way of the transit system. The right-of-way for most of the system is in public streets; therefore, the amount of land taken for construction needs to be minimized to mitigate or avoid traffic impacts. Parcels near the right-of-way may be needed for dewatering, especially where construction would take place in floodplains, including near streams and Pearl and Honolulu Harbors.

Piers

Piers would be cast-in-place on top of the foundations. The cast-in-place structure includes the column and pier table. As a result, minimal or insignificant land use effects are expected, except for off-site storage of materials.

Superstructure

Because of the repetitive nature of the spans and the desire to minimize impact on the surrounding areas, the majority of the bridges along the alignment would consist of precast, span-by-span segments. Any falsework required for cast-in-place

concrete structures would use the area below the guideway, but likely in the construction zone only. The landscaped park-like edges on each side of Halekauwila Street, with the many monkey pod trees that spread their branches over the street, are likely to be affected by construction.

Stations

Construction becomes more complex in station areas and depends on the technology selected. The truss system can be used to install the guideway through the station area, but the platforms, mezzanines, stairs, and other structures would require a more elaborate cast-in-place construction technique that would vary from station to station to some degree. Station areas located Koko Head of Waipahu would experience more land use effects in comparison to currently undeveloped sections in West O'ahu. This is because the alignment is in the middle of the right-of-way or crosses through occupied parcels displacing uses which may require relocation.

Maintenance and Storage Facility

A permanent maintenance and storage facility would be located on one of two sites. The facility would occupy approximately 41 acres at the Ho'opili site and approximately 43 acres at the Leeward Community College site. The construction impacts of either site on adjacent land uses are expected to be substantial. For example, the optional site at Ho'opili in West O'ahu is presently in agricultural use, which, when displaced, may have to be replicated elsewhere or be irretrievably lost in the long term. Also, this site is adjacent to a large Hawaiian Electric Company switch yard and Farrington Highway. Therefore, construction traffic and activities could adversely affect adjacent land uses, including the new community of Ho'opili, which may be under construction at the same time. The other optional site is between Leeward Community College and the Waipahu High School stadium. The site is accessible from a public street, and the sensitive educational facilities are distant from the site; therefore, construction should not be an issue for these educational facilities, and impacts are expected to be mitigated. Potentially, the Ho'opili site could have more construction land use impacts on abutting properties than the Leeward Community College site.

Park-and-Ride Facilities

The construction of park-and-ride facilities would require over 70 acres of land to accommodate approximately 1,200 to 1,700 vehicles at each of the following locations (see Chapter 1 for details):

- West Kapolei—16 acres
- Kapolei Parkway—17 acres
- East Kapolei—12 acres
- UH West O'ahu—tbd
- Pearl Highlands—9 acres

- Aloha Stadium (Salt Lake Alternative)—14 acres
- Aloha Stadium (Airport Alternative)—7 acres

The sites in West O‘ahu are currently vacant, so displacement of other uses is not an issue. The Pearl Highlands site is in a constricted location due to topography and adjacent uses, but the facility is needed to support riders from Central O‘ahu using the H-1 and H-2 Freeways. New direct access ramps from both freeways are planned to make this critical parking lot accessible. The Aloha Stadium Station alternative optional sites would displace 32 to 120 stadium parking spaces. A parking structure for the park-and-ride facility could be considered here to reduce the number of stadium parking spaces taken.

Nuisance Impacts of Construction

Temporary construction activities will have short-term nuisance impacts on adjacent sensitive land uses. For example, pile driving and construction truck traffic would create impacts on adjacent sensitive land uses, such as housing, schools, and parks. These nuisance impacts include noise, vibration, and air pollution and need to be mitigated, especially in developed areas Koko Head of ‘Ewa. While most of the transit corridor would be constructed in the existing right of way of public highways and streets, many are lined with commercial and industrial uses. Nevertheless, residential uses are also located near the construction zone. In addition, the alignment passes by several schools and colleges in Waipahu, Salt Lake, and Kalihi.

5.3 Indirect and Cumulative Impacts

The President’s Council on Environmental Quality (CEQ) regulations implementing NEPA define indirect impacts as those:

“... which are caused by the proposed action and are later in time or farther removed in distance, but are still reasonably foreseeable. Indirect effects may include growth inducing effects and other effects related to the induced changes in the pattern of land use, population density or growth rate, and related effects on air and water and other natural systems, including ecosystems.” (CEQ 1997)

Cumulative impacts are those impacts:

“... which result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions...”
(40 CFR 1508.7)

The indirect and cumulative effects analysis considers the full range of consequences of actions related to project activities. NEPA, the CEQ regulations, and Hawai‘i’s environmental impact statement law (HRS 2008) require analysis of cumulative issues within the context of the action, alternatives, and effects.

Direct land use effects in this analysis are defined as project footprint impacts. The *indirect land use effects* of the Project are defined as nearby induced land development resulting from improved accessibility and mobility provided by the

Project. In addition, induced development is dependent on the availability of a number of factors, including available developable parcels nearby, public planning policy that supports TOD, and private market supports for such development. The following discussion includes both indirect land use impacts as well as their impacts on the environment.

An example of indirect effects in the Project study area is land used by induced development that otherwise would not develop or redevelop. However, in the transit corridor, development already is planned by others in West O'ahu and the PUC (i.e., Central Honolulu, with or without the Project). Therefore, the primary indirect effect of the Project would be to induce development with higher densities near transit stations, especially in West O'ahu, than presently planned. Indirect effects can positively affect communities by increasing the availability of housing and employment opportunities. They also can adversely affect environmental resources, such as the use of agricultural lands.

Cumulative impacts result from the Project, induced development, and other reasonably foreseeable development that would occur with or without the Project. Other major public or private projects that are foreseeable in the study area include proposed real estate developments and public works infrastructure projects. The overall cumulative effect of the Project and foreseeable projects is to reinforce development in 'Ewa, Central O'ahu, and the PUC, the same area as the transit corridor.

Currently, 63 percent of the 876,200 people living on O'ahu and 81 percent of the 499,300 jobs on O'ahu are within the three development plan areas through which the Project would be constructed. By 2030, this distribution will increase to 69 percent of the population and 84 percent of the employment as development continues to be concentrated in the PUC and 'Ewa development plan areas (City planning area designations).

The above forecasts are from the ORTP (O'ahuMPO 2006). These forecasts do not reflect the specific induced effects of the transit alternatives being considered in the Draft EIS (i.e., no population or employment forecasts are available that allow comparison with and without the Project). Therefore, the induced development analysis must be more qualitative than quantitative.

According to DPP, in 2030 population in the full study corridor (including the planned extensions) within one-half mile from a station will range between 217,000 for the Airport Alternative and 231,000 for the Airport & Salt Lake Alternative (Table 5-2). This change represents an approximate 10 percent increase from 2007. The most populous station areas will be Chinatown (17,000), Ala Moana Center (14,000), and Civic Center (14,000), all located in Central Honolulu. Of interest is that the Ho'opili station in West O'ahu will become much more populous with nearly 8,000 residents in the future relative the very few there today. In all, the eight West O'ahu stations will have more than 45,000 residents near them, nearly 20,000 more residents than today. This change, due to several planned developments, is the most substantial in the entire transit corridor. The least populous station areas will be in primarily non-

residential areas: Lagoon Drive (870); Pearl Harbor Naval Base (1,040), and Arizona Memorial (970).

Table 5-2: Population and Employment within One-Half Mile of a Station by Alternative—2030

Alternative	Population	Employment
Salt Lake		
First Project	153,176	184,169
Full Build	227,056	275,546
Airport		
First Project	143,574	204,148
Full Build	217,454	295,525
Airport & Salt Lake		
First Project	157,274	207,416
Full Build	231,154	298,793

Source: City and County of Honolulu, Department of Planning and Permitting

Employment in 2030 within the Full Project corridor will range between 184,000 for the Salt Lake Alternative to 299,000 for the Airport & Salt Lake Alternative. This change represents an approximate 6-percent increase from 2007. The most dense employment concentrations will be at the following station areas: Downtown (39,000); Ala Moana Center (25,000); Civic Center (24,000); and Kālaaimoku (25,000). Of interest is that the Kapolei Transit Center in the center of O‘ahu’s second city is projected to have 13,000 jobs near the station. Approximately 25,000 jobs will be near the eight West O‘ahu stations, also a substantial increase from 2007.

The above projections do not assume the Project. In other words, these projections reflect the No Build Alternative in this study. Projections for the Build Alternatives are not available; therefore, there is no ability to compare Build and No Build projections for this study. Nevertheless, much of the project-induced development is expected within one-half mile of proposed project stations. The increased mobility and accessibility that the Project provides will tend to increase land values near the Project, attracting new real estate investment in the transit corridor.

The most notable effect of the Build Alternatives would be to shift some forecasted growth for O‘ahu to the transit corridor, since there is a potential for new development between now and 2030 to concentrate within the study corridor. Concentrated development already is expected in the PUC, such as in Central Honolulu, Kaka‘ako, Ala Moana Center, and Mō‘ili‘ili near UH Mānoa due to known redevelopment plans of large land owners (both public and private). The potential also exists for development to spread in a wider area in undeveloped portions of West and Central O‘ahu (due largely to good highway access to future terminal stations and stations with large park-and-ride lots convenient to the H-1 and H-2 Freeways). Already, many developments are underway in West O‘ahu in the future transit corridor, such as the “second city” of Kapolei. Future known plans by others in West O‘ahu include the new UH West O‘ahu campus, the new planned

community of Ho‘opili adjacent to the campus, a major regional shopping center planned by DHHL, and the redevelopment in Kalaeloa of the former Barbers Point Naval Air Station.

Many Federal, State, and City regulations are already applied in the study area that can channel development to designated areas where it is wanted and away from protected resources. The City, DHHL, HCDA, and large land owners, such as Kamehameha Schools and private developers, have already anticipated and planned for the increased mobility and access provided by the Project. These plans are mostly current, and the accompanying City land use regulatory controls, such as zoning and subdivision regulations, are able to locate new growth consistent with local public planning policy. Other mitigation opportunities could be applied through additional and coordinated local land use controls.

5.3.1 Indirect Impacts

Expected and Induced Growth

According to the O‘ahu Regional Transportation Plan projections, the ‘Ewa, Central O‘ahu, and PUC development plan areas within which the transit corridor is located will grow by approximately 200,000 people and 40,000 jobs by 2030.

Table 5-3 and Table 5-4 show population and employment change within the three development plan areas (which are larger than the induced impact area).

Table 5-3: Population Change by Development Plan Area—2005 to 2030

Development Plan Area	2005	2030	% Change
Primary Urban Center	423,000	486,000	15
Central O‘ahu	151,000	191,000	26
‘Ewa	84,000	186,000	121
<i>Total</i>	658,000	863,000	31

Source: O‘ahuMPO

Table 5-4: Employment Change by Development Plan Area—2005 to 2030

Development Plan Area	2005	2030	% Change
Primary Urban Center	383,000	429,000	12
Central O‘ahu	53,000	71,000	34
‘Ewa	25,000	65,000	160
<i>Total</i>	461,000	565,000	23

Source: O‘ahuMPO

Table 5-5 shows the population and employment forecasts within the induced impact area (i.e., the area within one-half mile of the transit corridor). In 2007, approximately 140,000 to 154,000 people lived in the induced impact area, depending on the Build Alternative, which is forecast to increase to 217,000 to 231,000 in 2030. In 2007, there were approximately 230,000 to 252,000 jobs in the induced impact area, depending on the Build Alternative, which is forecast to range between 276,000 and

299,000 in 2030. These forecasts indicate that the Airport & Salt Lake Alternative would serve the most population and jobs compared with the other two Build Alternatives.

Table 5-5: Population and Employment in the Induced Impact Area by Build Alternative—2007 and 2030

Build Alternative	Population		Employment	
	2007	2030	2007	2030
Salt Lake	150,449	227,056	229,880	275,546
Airport	140,449	217,454	248,976	295,525
Airport & Salt Lake	154,492	231,154	251,956	298,793

Source: PB (extrapolated from City and County of Honolulu, Department of Planning and Permitting data)

Locations of Future Growth

The locations of future population and employment growth are shown in the development plans for 'Ewa, Central O'ahu, and the PUC.

Traffic Impact of Induced Growth

Induced growth and the redistribution of traffic in the study area's road system would not prevent the range of travel benefits that would be achieved by the Project.

Farmland Impacts

Farmland in West O'ahu is likely to be converted to urban uses because of prior planning. Existing watercress farms in the PUC are likely to remain due to regulations. The induced impact of the Project on farmlands would accelerate development within one-half mile of station sites. O'ahu has 70,000 acres remaining in farmland, most of which is not in the transit corridor. See the *Honolulu High-Capacity Transit Corridor Project Ecosystems and Natural Resources Technical Report* (RTD 2008b) for additional information.

Natural and Water Resources Impacts

The additional land needed for development of the Project in the induced impact area would come from vacant and agricultural lands, primarily in West O'ahu. Elsewhere, the land would come from existing developed and underdeveloped parcels in urbanized areas of Central O'ahu and the PUC. However, other types of natural lands may also be converted to development. See the *Honolulu High-Capacity Transit Corridor Project Ecosystems and Natural Resources Technical Report* (RTD 2008b) for additional information.

Woodlands Impacts

Woodlands in large unfragmented tracts are sparse and scattered in West O'ahu, particularly in Kalaeloa. Other wooded lands are linear and follow streams. Where development occurs adjacent to streams, some additional woodland would be used, further fragmenting the habitat. The most vulnerable wooded areas to development

pressure are in West O'ahu, where large projects in the induced impact area already are planned.

Wetlands

Wetlands in the study area are protected by Federal, State, and local regulations. Accordingly, induced development is not expected to affect wetlands, since developments induced by the Project would tend to exclude wetlands to avoid mitigation costs. Any affected wetlands would be mitigated. Wetlands in the study area are associated with area streams. Thus, as with woodlands, the wetlands most vulnerable to development pressure are in West O'ahu, where most of the development in the induced impact area is planned.

Streams

Induced development could adjoin additional segments of streams. Past development has contributed to declining water quality in streams and in both Pearl and Honolulu Harbors.

Public Services and Facilities

Expansion of public services and facilities would be associated with future growth in the study area, especially in fast developing West O'ahu and in the PUC. The increase associated with the Project would be equivalent to the increases in projected population and employment. Interviews with local planners indicated that they have policies to service growth, such as with new local roads and sewers. New development also brings additional requirements for police and fire protection services.

5.3.2 Cumulative Impacts

The cumulative impact assessment focuses on the total impact of the proposed project and other actions.

Other Actions Affecting Resources in the Study Area

Past Actions

The most notable past action affecting the study area was the urban and suburban development of West O'ahu beginning in the 1940s. This western suburbanization pressure has continued as Waipahu, the Pearl Harbor area, Salt Lake Boulevard, Kalihi, and Honolulu became built out and in-filled in the post-World War II years. Growth pressures spilled over into adjacent areas with available developable land. Construction of the H-1 and H-2 Freeways supported this western push into Central and West O'ahu. The construction of other highways, such as Farrington, Kamehameha, and Nimitz, helped improve accessibility between West O'ahu and Honolulu.

Present and Reasonably Foreseeable Actions

Three types of actions are present or reasonably foreseeable in the study area:

- One of the project alternatives
- Current development and forecast development as affected by the accessibility provided by the project alternatives
- Infrastructure supporting forecast development, including additional transportation improvements

Cumulative Land Use Impacts by Alternative

No Build Alternative

The cumulative land use impacts of the No Build Alternative will be a continuation of the current development trends. The planned projects in the study area identified in this report are scheduled to be implemented even without the Project. Thus, the prevalent low-density, highway-oriented pattern of development on O'ahu is expected to continue, especially in West O'ahu where there is much vacant land. Higher-density development planned in Central Honolulu is expected to be implemented. The cumulative impacts of the No Build Alternative would be more dispersed than with the Project.

Salt Lake Alternative

The cumulative land use impacts of the Salt Lake Alternative between West Kapolei and UH Mānoa and Waikīkī would be to shift development into the transit corridor as well as to increase planned densities near stations, especially in West O'ahu. Planning policies that encourage TOD, such as in Waipahu, may influence development investments that otherwise may not occur. In addition, large property owners near the transit corridor in the PUC, especially in Kalihi, may accelerate their redevelopment plans because of the Project.

Airport Alternative

The cumulative land use impacts of the Airport Alternative will be the same as the Salt Lake Alternative with four exceptions discussed here. It is possible that the U.S. Navy may be influenced by the Project to build a new facility near the Pearl Harbor Station site. The Project may influence a joint development concept at the terminal at Honolulu International Airport. The Project would have a Section 4(f) impact on Ke'ehi Lagoon Beach Park, because it would displace some of its property.

Airport & Salt Lake Alternative

The cumulative land use impacts of the Airport & Salt Lake Alternative will be the same as the Salt Lake and the Airport Alternatives. Even though the two alignments are separated, they are relatively close so that new induced development will not be dispersed.

Current and Planned Developments

Many significantly large development projects, identified through review of local development plans and interviews with public agencies and private developers, are planned or are under construction within the study area. Most of these developments in Kaka'ako and elsewhere in Central Honolulu are multifamily residential and office towers, often with ground-floor retail. In West O'ahu, the projects are much less dense and low rise, but have mixed uses. In between, there are fewer planned developments because of a lack of vacant land or other factors.

New real estate developments in the transit corridor are listed in Appendix B, Template 11: Supplemental Land Use Information and Supporting Documentation Worksheet, which was prepared as part of the FTA New Starts application in mid-2007. These developments are extensive and concentrated in the PUC and 'Ewa.

Numerous transportation projects are programmed in the study area. They include projects listed in the Fiscal Year 2005–2009 Transportation Improvement Program for the City and other projects with a very high probability of implementation by HDOT and the City in the study area.

The ORTP prepared by O'ahuMPO is focused on improving access and mobility in the 'Ewa-Central O'ahu-PUC development plan areas, which is the same area to be served by the Project. Thirty–six projects for the mid-range period (2006–2015) costing nearly \$7 billion are funded and are expected to be completed by 2015. Thirty-one long-range projects (2016–2030) are expected to be completed by 2030 and will cost almost \$8.3 billion. Seven more “illustrative” projects are not funded yet but would cost almost \$11.4 billion. The cumulative effect of all of these projects when implemented would be to reinforce land use development in existing developed areas on O'ahu, but especially in 'Ewa-Central O'ahu and the PUC. According to population and employment projections used for the ORTP, 80 percent of the growth projected for O'ahu by 2030 (203,000 new residents and 107,000 new jobs) will be in the 'Ewa-PUC development plan areas.

The ORTP mid-range “congestion relief” projects include highway capacity improvements (including for the H-1 Freeway, Farrington Highway, and Kamehameha Highway) and new roadways (in 'Ewa-Kapolei, such as North-South Road and Kapolei Parkway), the Project (East Kapolei to Ala Moana Center), and a high-speed ferry between 'Ewa and Downtown Honolulu. Major long-range projects include continued improvements to the H-1 Freeway, an elevated HOV lane above Nimitz Highway, and more intermodal connections to the Project (transit). The ORTP also includes illustrative projects that are not part of the ORTP, because they are unfunded, but indicate the plan's intentions for the future. Such illustrative projects include a highway tunnel under Pearl Harbor between Downtown Honolulu and 'Ewa, a westerly extension of the elevated HOV lanes in the PUC, as well as the completion of the planned extensions of the Project.

Please see Appendix C, O'ahu Regional Transportation Plan 2030, for a complete list of the proposed projects.

Cumulative Effects

Traffic

The 2030 O'ahuMPO traffic baseline forecasts indicate that locations of significant a.m. peak-hour congestion will occur in the following areas in the study area: major streets in the PUC, Ala Moana, Dillingham, Kalākaua, Kapi'olani, King, Nimitz, eastbound H-1 Freeway and Farrington Highway, eastbound bottleneck of the H-1 Freeway and Kamehameha Highway, and the eastbound H-1 Freeway and Farrington Highway.

Farmland Impacts

Despite recent rapid urbanization, much of the 'Ewa Plain, which was once a major agricultural area primarily used to cultivate sugar cane, is still classified and/or zoned for agricultural use.

As described in the project's *Environmental Baseline Report* (PB 2006), some former sugar-cane fields in the area referred to as East Kapolei have been converted to small-scale, diversified agriculture farms, cultivating a variety of vegetables, fruits, and herbs. Active farms are located between the H-1 Freeway and Farrington Highway on both the east and west sides of the existing Pālehua Road and south of Farrington Highway to the east and west of North-South Road (currently under construction).

These farms have short-term leases with the Estate of James Campbell or the State of Hawai'i Department of Land and Natural Resources, the two major landowners in the area. In addition to the landowners, the agricultural stakeholders in the Project vicinity include Sugarland Farms, Inc.; Aloun Farms, Inc.; A.M. Enterprise, Inc.; and Rocker G. Livestock (ranching). Other potential agricultural lands are either fallow or inactive; much of the area has already been developed.

In the more urbanized corridor along Farrington Highway and Kamehameha Highway in Waipahu and Pearl City, some limited areas are still designated as "prime" or "unique." Two active watercress farms are on or near Kamehameha Highway: Watercress of Hawai'i is just mauka of the Pearl City Peninsula and is part of an area designated as "unique" but otherwise filled with non-agricultural land uses; Sumida Farm is mauka of Kamehameha Highway near Pearlridge Center and is designated "unique." These agricultural uses are surrounded by the dominant commercial and industrial uses in these neighborhoods.

Future development and associated infrastructure would primarily be built on vacant land and some farmland in West and Central O'ahu. The No Build Alternative is likely to displace more farmland than any of the Build Alternatives because lower density, spread-out development is more likely with the No Build Alternative, which requires more land than mixed and higher-density development with the Build Alternatives.

Current development plans and zoning affecting development in the study area, especially in West and Central O'ahu, are relatively consistent with the effects of the No Build Alternative. The Build Alternatives in these more suburban areas would

require revisions in the development plans and zoning to achieve higher density development near the stations. The development plans and zoning in the PUC, in contrast, already allows moderate- to high-density development. However, they also will require revisions in segments of the transit corridor such as in Waipahu, where current TOD planning (January 2008) by the City is considering higher densities and mixed uses near transit station sites.

The pattern of development would differ from community land use plans, with some areas designated in land use plans as agriculture and many areas designated for development remaining agricultural. The patterns of development also would be different between the No Build and Build Alternatives. With the No Build Alternative, population growth would remain concentrated along existing highway corridors. With the Build Alternatives, new growth would tend to concentrate in the transit corridor. Employment growth would tend, in the case of the No Build Alternative, to concentrate along existing highway corridors. With the Build Alternatives, new employment would tend to concentrate around the stations.

Natural and Water Resources

As with induced impacts, the majority of additional land used for development with the No Build and Build Alternatives would be vacant and agricultural lands, especially in West and Central O'ahu. Reuse of existing developed and underdeveloped land would be more common in the PUC. However, other types of natural lands would be used.

Woodlands

As with indirect impacts, where development occurs adjacent to streams, some additional woodland would be used, further fragmenting habitat. The potential spreading of development that could occur with the No Build and Build Alternatives would increase this potential impact. Wooded areas most vulnerable to new development would include Kalaeloa and other parts of West O'ahu. Trees appear to have been planted in residential areas of the former Barbers Point Naval Air Station, now abandoned and awaiting redevelopment.

Wetlands

Wetlands under the jurisdiction of the U.S. Army Corps of Engineers in the study corridor are protected by Federal and State laws and regulations. Accordingly, developers either would be discouraged from filling wetlands because of the cost or would provide mitigation. Most wetlands in the study area are associated with streams and surface waters; however, some are isolated. At this point, it is unclear what wetlands would be affected by what specific development plans since many of them are still being finalized.

As described in the *Environmental Baseline Report* (PB 2006), only a few areas are not directly connected to riverine systems within the study area that are believed to be wetlands, primarily those sites associated with natural springs in the Pearl Harbor area.

These are identified as the Waiau Spring pond, Sumida Watercress Farm, and a drainage ditch at Aolele Street. These resources are near the project alignment.

Several gulches originating on the slopes of the Wai'anāe Mountains form drainages that intermittently cross the study corridor. Generally, these gulches do not exhibit clear indicators of wetlands, and a recent determination by the U.S. Army Corps of Engineers is that Kalo'i Gulch and its tributaries with no ocean outlet will not be regulated. The intermittent Honouliuli Gulch, as with Kalo'i Gulch, has been breached, channelized, or re-routed into culverts at several locations along its alignment. However, because its discharge point is at the West Loch of Pearl Harbor, portions of this stream may be classified as a regulatory wetland.

At Farrington Highway and Kamehameha Highway, several streams discharge into Pearl Harbor. Waikele, Waiawa, Waimalu, Kalauao, and 'Aiea Streams are designated as perennial. Ho'ae'ae, Kapakahi, Makaleha, and Waiau Streams are intermittent.

Two spring-fed wetlands were identified adjacent to Kamehameha Highway: a small pond associated with Waiau Spring and the Sumida Watercress Farm associated with Kalauao Spring.

- The Waiau Spring ponds were previously more extensive and spanned the area mauka and makai of Kamehameha Highway.
- The Sumida Watercress Farm is hydrologically linked to Kalauao Spring approximately 900 feet north of the highway.

The proposed park-and-ride lot at the Waiawa Interchange (H-1/H-2 Freeways) may contain a wetland. See *Honolulu High-Capacity Transit Corridor Project Ecosystems and Natural Resources Technical Report* (RTD 2008b) for discussion on wetlands.

Natural wetlands are present in the basin of the Salt Lake area mauka of the study area.

In the Iwilei to UH Mānoa area, the mouth of Nu'uānu Stream is highly channelized where it discharges to Honolulu Harbor. The surrounding land is comprised of fill at all crossings of this stream, including Nimitz Highway.

Kapi'olani Boulevard crosses two constructed Ala Wai Canal tributaries, which provide drainage for the surrounding urbanized areas.

Historically, the Waikīkī area surrounding the Ala Wai Canal was marshland until its reclamation in the 1920s. Much of present-day Waikīkī rests upon the material created by the original excavation of the canal. The primary sources of water are the perennial Mānoa and Pālolo Streams. Secondary sources are two tributary canals that collect surface runoff.

Streams

Many streams are located within the study corridor. Most of these stream channels have been altered in the lower reaches and are not of high ecological quality. The overall water quality in these urban streams is poor, and many are included on the 303(d) List of Impaired Waters by the Hawai'i State Department of Health.

Navigable streams within the study corridor include Waikele Stream, 'Aiea Stream, Moanalua Stream, Nu'uau Stream, and Ala Wai Canal, as noted in the *Environmental Baseline Report* (PB 2006).

Growth in the study corridor could adjoin additional segments of streams. Development would focus in the H-1 and H-2 Freeway corridors with the No Build Alternative. The No Build Alternative would tend to encourage growth to spread. Actions by land developers and the City, such as advanced wastewater treatment technologies, stormwater treatment, and point source controls, would be needed in the study corridor to avoid aggravating the already poor water quality of streams and surface-water bodies associated with growth and changes in growth patterns associated with both the No Build and Build Alternatives.

Floodplains

The cumulative effects of project-induced development and other development will affect the extensive floodplain areas in the study area.

As described in the *Environmental Baseline Report* (PB 2006), several areas near the study area fall within the 100- or 500-year base floodplains associated with streams, estuaries, and canals. The largest of these floodplain areas are Koko Head of Ward Avenue and 'Ewa of Kapahulu Avenue in the PUC. This area includes Ala Moana Beach Park, the Ala Moana Center, and Waikīkī. The area includes the 100-year base floodplains associated with the Mānoa-Pālolo Stream and the Ala Wai Canal. Planned developments in this Central Honolulu area with or without the Project will affect these floodplains.

Another large area designated as floodplain occurs near Ke'ehi Lagoon in the PUC. The area includes floodplains associated with Moanalua and Kalihi Streams. This floodplain area is less affected by the Project because little induced development is expected. However, the project piers and the Lagoon Drive station are in this floodplain area and may affect it.

Other flood zones within the transit corridor are associated with streams entering Pearl Harbor. Honouliuli, Waikele, Kapakahi, and Waiawa Streams form floodplains where they enter the West and Middle Lochs. Kalauao and 'Aiea Streams have floodplains associated with them as they enter the East Loch of Pearl Harbor. Floodplains are also associated with Kalo'i Gulch, near Kapolei Parkway and North-South Road. This floodplain area is less affected by the Project because little induced development is expected. However, the project piers may affect the floodplains.

Marine Waters

Five large coastal surface water bodies lie within or adjacent to the transit corridor: Pearl Harbor, Ke'ehi Lagoon, Honolulu Harbor, Kewalo Basin, and Ala Wai Canal and Boat Harbor. These water bodies are all highly urbanized and/or altered from their natural state. They are all listed by the Hawai'i State Department of Health as "Water Quality-Limited Segments."

Pearl Harbor

Pearl Harbor is an estuary designated as a Class 2 inland water, with a special set of water quality criteria due to pollution. The abundant rainfall at the heads of the streams that drain into Pearl Harbor results in runoff that transports pollutants from upland forest, agricultural, commercial, industrial, military, and residential lands. Water quality parameters for nitrogen, phosphorus, turbidity, fecal coliform, temperature, and chlorophyll are frequently violated in Pearl Harbor. The narrow entrance channel and the configuration of the Lochs retard flushing of the harbor. Little project-induced development is expected in this area, therefore the cumulative impacts are expected to be minimal.

Ke'ehi Lagoon

Ke'ehi Lagoon is a highly modified water body, designated Class A by the Hawai'i State Department of Health. Point-source discharges to the lagoon include a drainage canal from Honolulu International Airport, adjacent industrial areas, several additional drainage outlets along the southwest shoreline of the lagoon, and the Moanalua and Kalihi Streams.

The currents in O'ahu's southern coastal waters move from Honolulu Harbor into Ke'ehi Lagoon. These currents may transport pollutants into Ke'ehi Lagoon and recirculate suspended matter.

More than 300 vessels (e.g., boats and floating structures) are anchored throughout Ke'ehi Lagoon, and many are live-aboards. Many of the vessels are not seaworthy and cannot propel themselves under their own power.

Project construction in this area may affect this water resource, although storm runoff mitigation is expected.

Honolulu Harbor

Honolulu Harbor is a Class-A marine embayment. It has had recognized water pollution problems dating back to the 1920s. Two streams, Kapālama and Nu'uānu, and numerous ditches and storm drains contribute runoff to the harbor, along with associated pollutants. Water quality in the Kapālama Basin portion of the harbor is particularly poor because of discharges from Kapālama Stream.

Project construction in this area may affect this water resource, although storm runoff mitigation is expected.

Kewalo Basin

Two major storm drains discharge into Kewalo Basin, a Class-A marine embayment. One drain serves Ala Moana Park and Center and the mauka residential and commercial areas. The other drain serves the Ward Avenue-Kaka'ako District, which consists of mostly light industrial and commercial businesses. All areas support heavy vehicular traffic.

Kewalo Basin's design hinders circulation of water in the basin. As a result, the urban pollutants that collect in the basin remain concentrated for extended periods.

Planned developments in this Central Honolulu area with or without the Project will affect this Basin.

Ala Wai Canal and Boat Harbor

The Ala Wai Canal is a Class-2 inland water or estuary and the Ala Wai Boat Harbor, at the mouth of the Ala Wai Canal, is a Class-A marine water body. As the connecting point for the Makiki, Mānoa, Pālolo, and Kapahulu watersheds, the Ala Wai Canal accumulates sediments, nutrients, some heavy metal contaminants, solid waste, and trash. Phytoplankton growth, suspended sediments, and trash are present in the canal. In addition, some incidences of bacterial infection have been reported.

Future development in this Central Honolulu area with or without the Project will affect this Canal.

Indirect and Cumulative Effects Conclusions

Based on the locations of the above resources in proximity to the Project as well as past and foreseeable projects, it is expected that the indirect and cumulative effects would be the conversion of agricultural land to developed land even with the No Build Alternative and especially in West O'ahu. The most notable indirect and cumulative effects of the many planned transportation projects, highways, and the Project would be to concentrate new development between now and 2030 in the Project study area. Future development likely would not be less dense since planned densities are already low anyway, but there is a potential for development to occur in a more scattered and less compact pattern, especially with the No Build Alternative. This phenomenon would increase the potential for new development in areas not slated for development in development plans. This change would put the remaining natural areas, such as isolated wetlands and floodplains, at risk sooner. Only remnants of natural resources remain, and those on private lands are only protected in part by existing local, State, and Federal environmental protection laws and ordinances.

5.3.3 *Avoiding, Minimizing, and Mitigating Indirect and Cumulative Effects*

During the planning of the Project since 2005, alternatives were developed and refined to avoid, minimize, or mitigate adverse indirect and cumulative effects. A multi-disciplinary team evaluated and compared the impacts of alternatives in an iterative process that continually focused on reducing adverse project impacts, including cumulative effects. The Build Alternatives were advanced over other alternatives that may have greater adverse direct impacts on community and natural resources. It is through these decisions that RTD has attempted to reduce the potential for development-related indirect and cumulative impacts of the proposed project. In fact, the alignments have been changed throughout the planning process

to support planned developments by others, such as Kalaeloa, UH West O'ahu, and Ho'opili proposals.

The indirect impacts associated with building the Project and the cumulative impacts of past, present, and future projects are difficult to predict and catalog with any certainty or specificity. The evaluation process involves designating a study area (i.e., the area subject to the project's influence, such as the induced impact area); using forecasts of potential growth in population and employment, in this case based on the O'ahuMPO Travel Model projections; interpreting how this growth will translate into potential future land use near the Project, interviews with land use decision-makers (i.e., private and public developers), and a review of comprehensive plans; and lastly, predicting how the potential future land use could affect area resources. Given the overall uncertainties, the results of the study of indirect and cumulative impacts are generalized and do not name specific areas or resources as requiring mitigation. In addition, the findings reflect reasonably foreseeable tendencies, such as increases in development pressure as a result of improved accessibility increasing the tendency for development to occur in an area, assuming there is market demand for new development in the region. Moreover, Federal environmental regulations do not mention mitigation of indirect and cumulative effects.

Throughout the U.S, including Hawai'i, the guidance of development in a manner that benefits the local community and preserves valued resources traditionally has been addressed by cities and counties through the administration of land use regulations (zoning, site plans, and subdivision regulations), usually based on local master or comprehensive plans. Regarding the Project, the responsibility for mitigating the effects of ongoing growth rests largely with local governments that have jurisdiction over land use, as well as with developers who are carrying out development projects. The City has already taken a proactive planning strategy with the preparation and adoption of development plans that cover the project study area and are currently augmenting those efforts with TOD planning in two station areas as well as promoting a TOD ordinance to be part of the zoning code.

Potential measures that could be implemented by the City to mitigate the effects of growth on the environment associated with both the No Build and Build Alternatives include the following:

- Revise local comprehensive plans to redistribute growth, to allow higher densities than planned, and to impact less agricultural land. Even a slight increase in densities in residential subdivisions, for example, would still result in single-family homes, the predominant market preference, and use less agricultural land.
- Update zoning districts to increase densities near the proposed project, especially station areas, and add a planned community zone and TOD overlay zones. This strategy would continue to encourage mixed-use developments and planned communities, which are already planned in West O'ahu. It also could allow for higher densities in exchange for buffers along area streams and surface-water bodies so that owners can build the same number of homes on their land while preserving natural resources.

- Plan and develop additional parks and open spaces focused on preserving valued natural resources.
- Acquire open space and protect farmland. An open-space acquisition program can help shape and restrict the area of development. The Central O'ahu comprehensive plan, for example, intends to preserve stream beds as open-space links throughout the area. For example, the City could establish an agricultural easement and farmland protection program that would purchase development rights on farms or agricultural easements.
- Engage in more aggressive regional planning efforts. Long-range regional and intercommunity planning efforts would allow the cumulative effects of individual and incremental land use decisions to be better understood and, given the scarcity of native resources and multi-community impacts of development decisions on water quality, the greatest overall benefit can be achieved with a coordinated and consistent regional vision.

Area plans include strategies for reducing the impact of growth. Additional opportunities also exist to reduce the cumulative impacts of growth with and without the Project.

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Appendix A
Land Use Data Sheets and Maps

Appendix A: Land Use Data Sheets and Maps Honolulu High-Capacity Transit Corridor Project

March 6, 2008

Prepared for:
City and County of Honolulu

The following land use data sheets and maps were prepared to augment the *Land Use Technical Report* by providing more detailed information on existing land uses near proposed station sites. In addition, this information can be referenced for subsequent planning for transit-oriented development and station design and access. The attached maps illustrate existing land uses within one-half mile of a proposed station site and are keyed to each station site.

Sources include land use maps prepared by the City and County of Honolulu Department of Planning and Permitting, Parsons Brinckerhoff (PB) field inspections between October 2007 and February 2008, and PB interviews with major private and public landowners and developers in October 2007.

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Table A-1: West Kapolei

Location: Kapolei Parkway, 1, 000 feet west of Kalaeloa Boulevard	
1. Existing Conditions in Corridor	
Land Use Types	Nearby, Farrington Highway and H-1 merge, with the former continuing west to Waianae. The transit corridor is largely vacant with two major exceptions: the <i>Honolulu Advertiser</i> Building at the southwest corner of Kapolei Parkway and Kalaeloa Boulevard and the Home Depot store on the northeast corner of the same intersection. The station will be located west of the <i>Advertiser</i> building.
Density	There is no housing near this site.
Character of Development	Sparse. Highway oriented; not pedestrian oriented. The two buildings mentioned above are surrounded by surface parking. Farther east on Kamokila Boulevard are smaller commercial buildings surrounded by surface parking.
Parcels Available for Development	Many.
Parking Supply	Ample for existing uses.
New Developments	Ongoing commercial (retail/office) development of the "second city" of Kapolei is evident farther east.
Sensitive Uses: Schools, hospitals, parks, residences	None.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area parcels zoned as AG-1, B-2, I-2, BMX-3. Although the area west of the proposed station is largely undeveloped and zoned as AG-1, there is some community level B-2 business development at the corner of Kapolei Parkway and Kalaeloa Boulevard, including a Home Depot and the <i>Honolulu Advertiser</i> Building. The area <i>makai</i> of the proposed station is vacant but slated for intensive industrial development (I-2). The Leeward School District Superintendent building, K-Mart, and the Kapolei Transit Center West are all nearby. Kapolei Regional Park is <i>mauka</i> of the proposed rail station.
Vacant Parcels	Many.
Sensitive Uses	Leeward School District Superintendent building; K-Mart; Kapolei Transit Center West; Kapolei Regional Park; Cardinal Health.
Parking Supply	Extremely abundant, including surface parking.

Table A-1: West Kapolei

Location: Kapolei Parkway, 1, 000 feet west of Kalaeloa Boulevard	
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Future development in the area will eventually build out available parcels. A regional shopping center, Kapolei Commons, is planned between the station site and H-1. It will open by 2010 be located and will include Target and Costco stores. The current development pattern, if continued, is not TOD; it is highly automobile oriented. A 16-acre park-and-ride facility (1,200 spaces) will be located south of the station and behind (west of) the <i>Honolulu Advertiser</i> . A proposed bus transit center will be built before the station is constructed.
Access	A planned interchange with H-1 will provide a new north-south access road to the station, the planned park-and-ride lot and the proposed regional shopping center. Kapolei Parkway is planned to be extended westerly to connect with Ko'Olina, a developing ocean resort area two miles west.
Displacement	None. Land is vacant.
Potential Impacts on Sensitive Environmental Resources	None. However, an unnamed stream flows west of the station area.
Refinements to Plans to Improve TOD	Coordination with the developers of the planned regional shopping center should be initiated to determine if a pedestrian/bikeway link or other physical links could be provided between the center and the station.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	A 16-acre park-and-ride lot is planned south of the station.

Section 1 Number 1

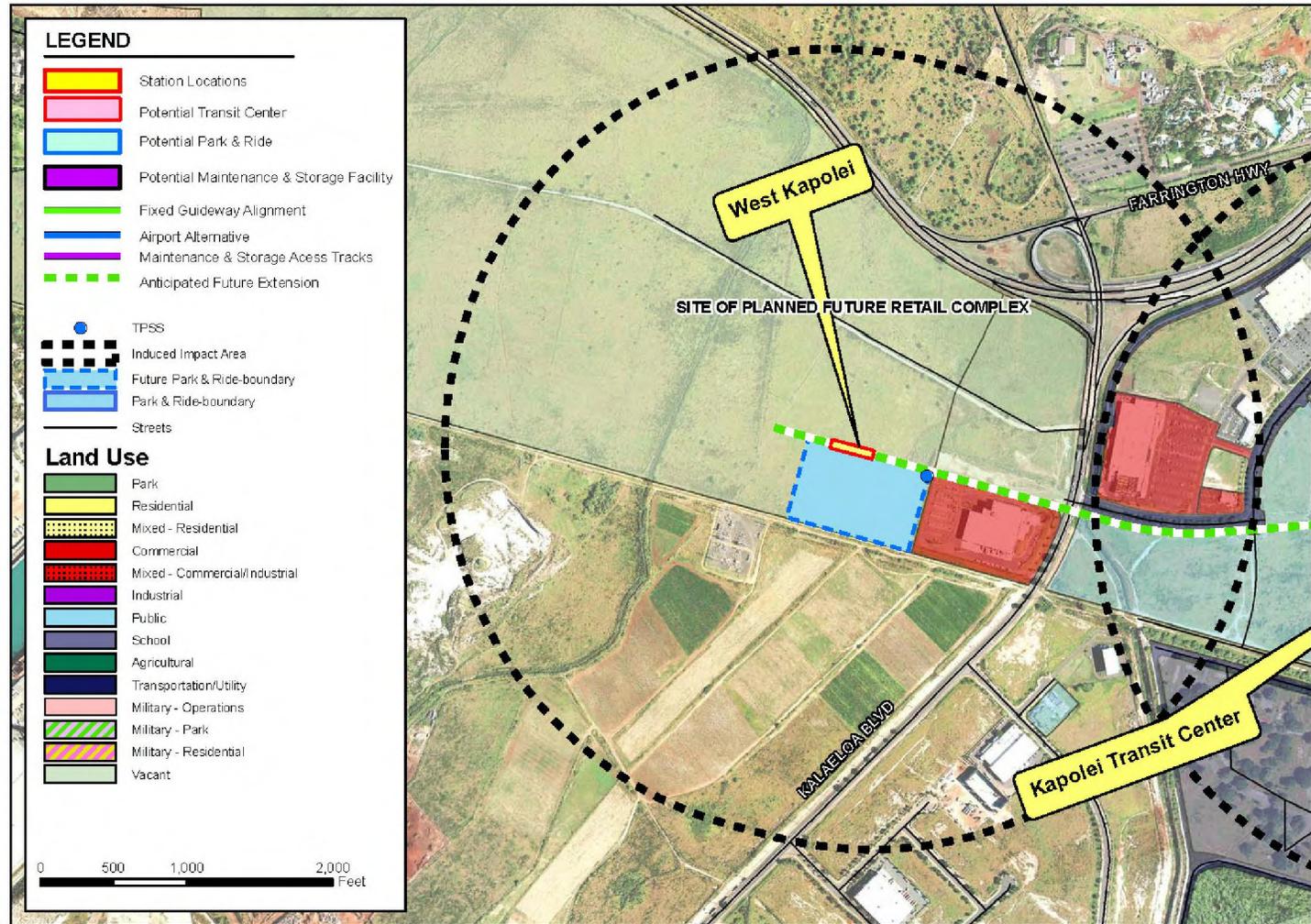


Figure A-1: West Kapolei

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Table A-2: Kapolei Transit Center

Location: Kapolei Parkway and Wakea Street	
1. Existing Conditions in Corridor	
Land Use Types	Largely vacant. Construction is underway at the southwest corner of Kapolei Parkway and Kamokila Boulevard for a judiciary complex. (Approximately 1,600 feet from the station site.) Approximately 800 feet away is a new office building with an adjacent parking lot on Wakea Street.
Density	No residential yet.
Character of Development	Sparse. Highway oriented; not pedestrian oriented. The new building mentioned above has large surface parking. Farther north, closer to Kamokila Boulevard, are several new office buildings, a public library, and a large park. The development character resembles a suburban office park, but with better architectural details.
Parcels Available for Development	Many.
Parking Supply	Ample.
New Developments	Many planned as part of the development of downtown Kapolei.
Sensitive Uses: Schools, hospitals, parks, residences	Kapolei Gulch is close to the station.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area parcels zoned as AG-1, AMX-2, R-5, B-2, P-2, A-1, BMX-3, F-1. Large suburban office park to northwest corner of proposed station location. Area is automobile dependent, not pedestrian friendly. Area <i>makai</i> slated for medium-to-high density apartment/condo mixed-use, low-density apartment complexes, community level business mix-use, as well as single-family detached homes. Area <i>makai</i> of Roosevelt Avenue is military/federal lands, including some low-to-medium density apartment complexes.
Vacant Parcels	Many.
Sensitive Uses	Kapolei HS.
Parking Supply	Ample, including some surface parking lots.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	The station will serve the future downtown Kapolei, which will have a transit center and higher density buildings. The transit center will be built on a 5.2-acre site northeast of the station. Platted roads will be built in next five years (say 2012). The new judiciary complex will be completed in two years and a future Costco big box retail store is planned for the southwest corner of Kapolei Parkway and Komokila Boulevard.

Table A-2: Kapolei Transit Center

Location: Kapolei Parkway and Wakea Street	
Access	Access to the station will be via future extensions of Kapolei Parkway and future unnamed streets.
Displacement	None. Land is vacant.
Potential Impacts on Sensitive Environmental Resources	Potential runoff impacts on Kapolei Gulch.
Refinements to Plans to Improve TOD	Coordination with Kapolei developers is important to provide strong pedestrian connections to surrounding new buildings. To achieve TOD here, the highest density buildings should be located close to this station with reduced parking requirements to encourage walk-in ridership. In addition, mixed uses including housing should be encouraged. Strong pedestrian connections between the station and the transit center will encourage ridership.

Section 1 Number 2

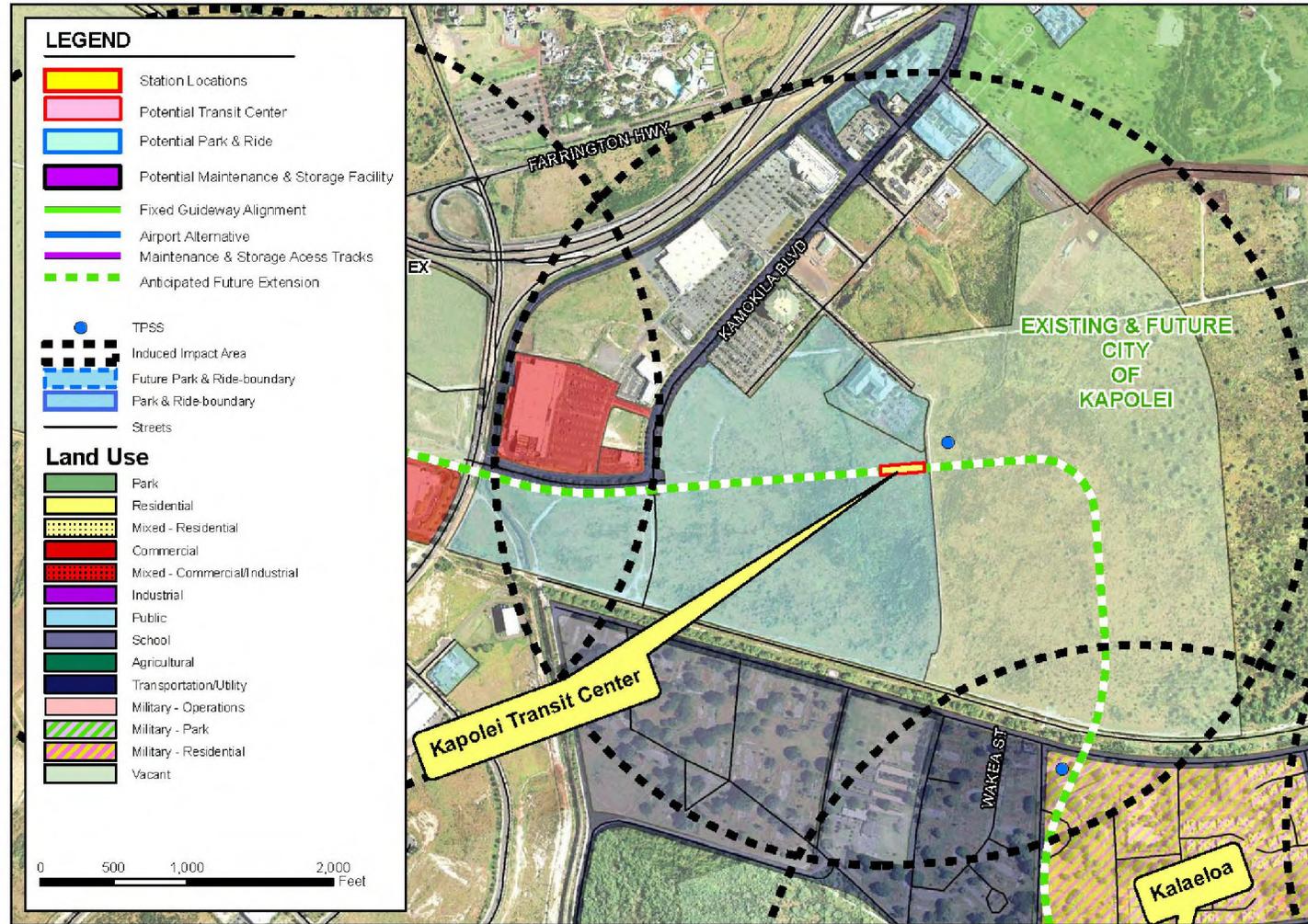


Figure A-2: Kapolei Transit Center

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Table A-3: Kalaeloa

Location: 500 feet southeast of intersection of Saratoga and Hornet Avenues	
1. Existing Conditions in Corridor	
Land Use Types	Abandoned residential buildings of former Barbers Point military base. Other buildings used for public purposes such as recreation.
Density	Low. Single family detached houses.
Character of Development	Abandoned. Extensive tree cover, unusual for this area.
Parcels Available for Development	Parcels are currently owned by several different parties including U.S. Navy, UH, brokers, DHHL, Carmel Partners, Inc. and others. According to HCDA, real development and construction will be based on the completion of conveyances by the Navy. Congressman Abercrombie did pass legislation specifying that conveyances should be completed by September 2008. In the meantime, HCDA is in negotiations with developers to move forward on infrastructure type construction. An optimistic time frame to start construction would be September 2009 or 2010. HCDA acquisition is targeted for the 499+acres also known as the "Brokered Parcels" located to the north along Roosevelt Road. The rest of the lands have been already conveyed or are on target to be conveyed or public sale by September 2008.
Parking Supply	None.
New Developments	None.
Sensitive Uses: Schools, hospitals, parks, residences	Barbers Point Elementary School (not sure if still used.)
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area zoned F-1, AG-1, P-2, R-5. Majority of area owned by military/federal. Kalaeloa Field (John Rodgers Field) <i>makai</i> of proposed rail station. Not pedestrian friendly, limited sidewalks and large distances between buildings. Single-family detached homes dominate the housing structure; many abandoned lots and large amounts of tree cover.
Vacant Parcels	Many.
Sensitive Uses	Kalaeloa field;
Parking Supply	None, possible off-street parking along smaller side roads.

Table A-3: Kalaeloa

Location: 500 feet southeast of intersection of Saratoga and Hornet Avenues	
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Hawaii Community Development Authority plans a mixed-use community as a reuse of part of the abandoned military base. HCDA plans to build out Kalaeloa between 2012 and 2030, in accordance with its Strategic Plan. "High intensity" uses are planned near this station, surrounded by institutional, open space and moderate intensity uses.
Access	Access will be via a new road (an extension of existing Geiger Road) connecting to existing Kalaeloa Boulevard with several cross streets including Wakea Street and Fort Barrette Road.
Displacement	Military buildings in the way will have been removed by HCDA before transit.
Potential Impacts on Sensitive Environmental Resources	Trees.
Refinements to Plans to Improve TOD	Coordination between the project and the HCDA will be necessary to agree to provide for strong pedestrian connections to the station to achieve TOD.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 1 Number 3

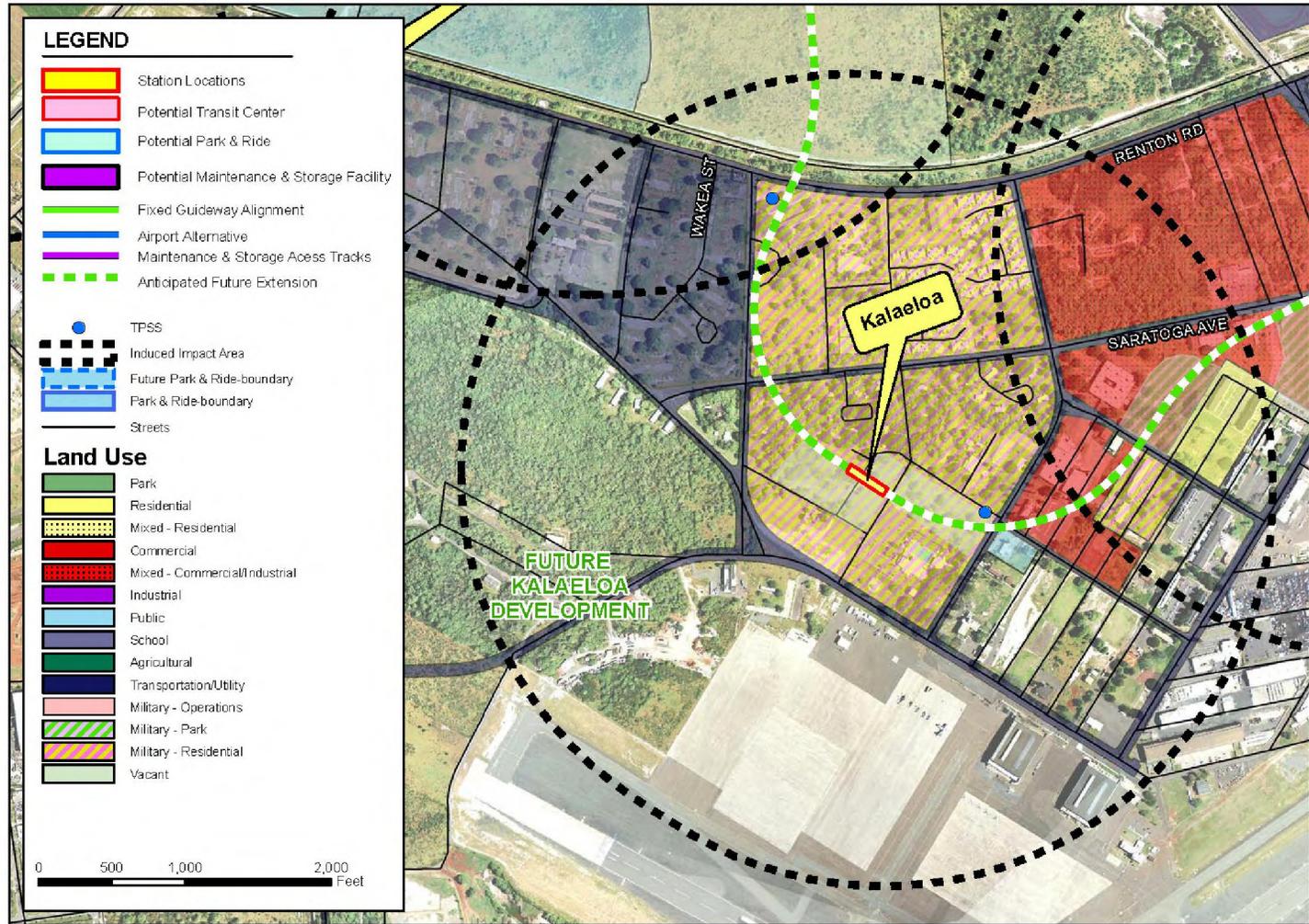


Figure A-3: Kalaeloa

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Table A-4: Fort Barrette Road

Location: Saratoga Avenue and Fort Barrette Road (now Enterprise Road)	
1. Existing Conditions in Corridor	
Land Use Types	Abandoned military buildings and vacant land predominate.
Density	N/A
Character of Development	Barren.
Parcels Available for Development	Many.
Parking Supply	N/A
New Developments	None identified.
Sensitive Uses: Schools, hospitals, parks, residences	North of Saratoga Avenue in vacant area is a stream gulch (visible on aerial photo). However, it is not visible on previously developed military lands where the station would be located.
2. Existing Conditions within ½ mile of station Site	
	Flood zone D. Area parcels zoned as F-1, A-1, R-5, P-2, AG-1. Area is owned by military/federal. Military buildings are predominately the development form. Two baseball diamonds and an athletic field exist to the southwest of the proposed rail station. A stream/gulch runs nearby the proposed rail station. Military apartment complexes exist to the northeast of the proposed rail station. Many undeveloped/dirt roads. The area has many vacant properties and extensive tree cover.
Vacant Parcels	Many
Sensitive Uses	Baseball diamonds and athletic field SW of proposed rail station; stream/gulch; military buildings.
Parking Supply	None. Potential off-street parking along undeveloped roads.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Hawaii Community Development Authority plans a mixed-use community as a reuse of part of the abandoned military base. HCDA plans to build out Kalaeloa between 2012 and 2030, in accordance with its Strategic Plan. "High intensity" uses are planned near this station, surrounded by open space and high intensity commercial uses.
Access	Access will be via a new road (an extension of existing Geiger Road) connecting to existing Kalaeloa Boulevard with several cross streets including Fort Barrette Road.
Displacement	Military buildings in the way will have been removed by HCDA before transit.
Potential Impacts on Sensitive Environmental Resources	Need to confirm existence of stream gulch at station site. Partial impacts to playfield.

Table A-4: Fort Barrette Road

Location: Saratoga Avenue and Fort Barrette Road (now Enterprise Road)	
Refinements to Plans to Improve TOD	Coordination between project and HCDA will be necessary to achieve TOD.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 1 Number 4

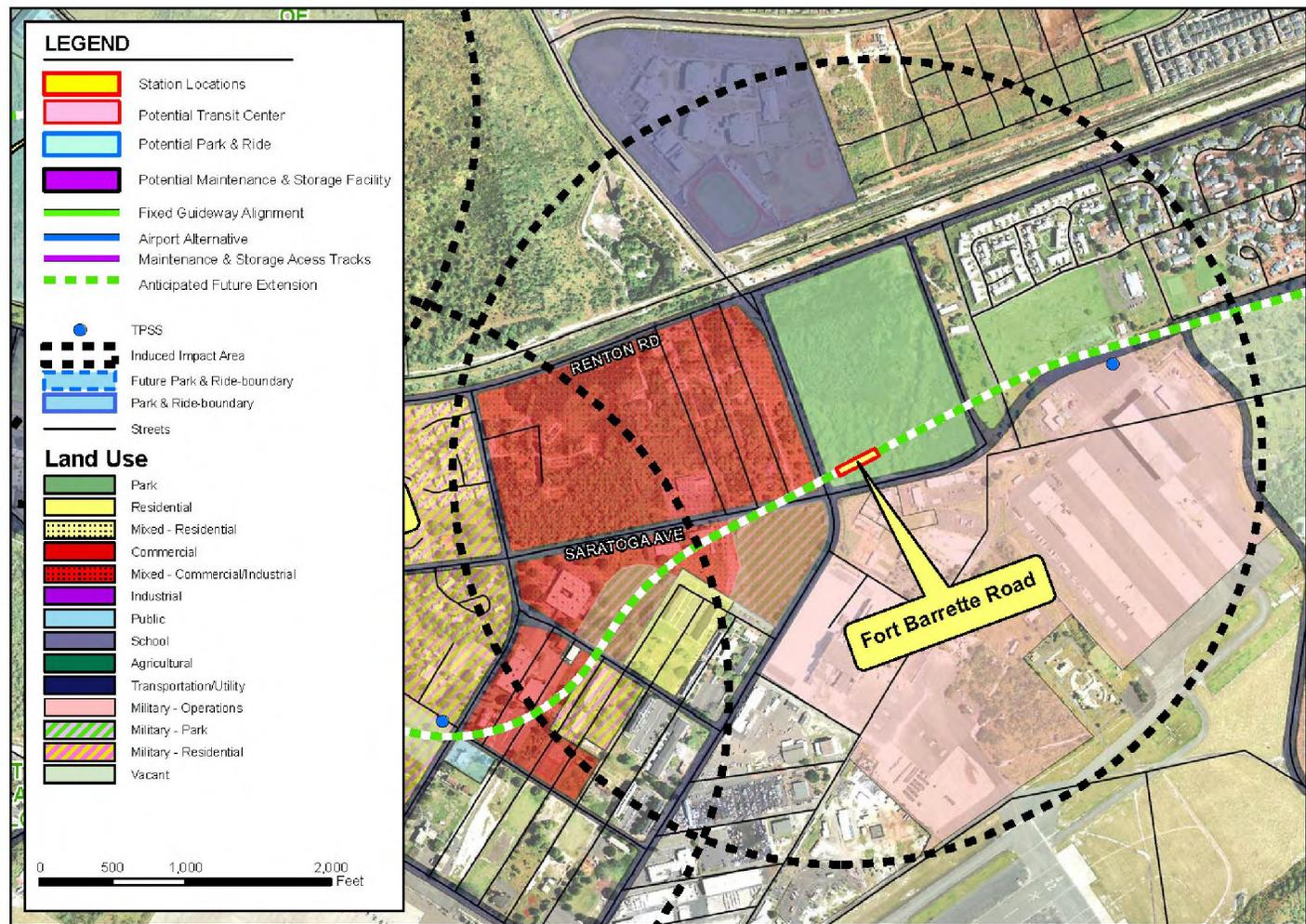


Figure A-4: Fort Barrette Road

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Table A-5: Kapolei Parkway

Location: Kapolei Parkway and North South Road	
1. Existing Conditions in Corridor	
Land Use Types	Vacant land. The station will be on land owned by DeBartolo and integrated with their proposed shopping center.
Density	N/A
Character of Development	None.
Parcels Available for Development	Many.
Parking Supply	N/A
New Developments	None evident.
Sensitive Uses: Schools, hospitals, parks, residences	A large playfield is located southwest of station site across existing Roosevelt Avenue. The historic Oahu Railroad and Canal Company railroad tracks cross the transit alignment near the station.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D, X. Area parcels zoned as F-1, P-2, AG-1, R-5, R-3.5. Majority of area is vacant and federally owned with some dirt roads. What development there is, is restricted to military buildings <i>makai</i> of Roosevelt. A mix of single-family homes and low-to-medium density apartment complexes/condominiums exist to the northwest of the proposed rail station in Kapolei; the Ewa District exists to the east. The Ewa Villages Golf Course is <i>mauka</i> of the proposed rail station.
Vacant Parcels	Many
Sensitive Uses	Ewa Villages Golf Course
Parking Supply	None. Possible off-street parking along side streets, undeveloped roads.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	State Department of Hawaiian Homelands (DHH) plans a regional shopping mall west of station site (developed by DeBartolo), which will include over 1 MSF of mixed use space.
Access	Access will be via proposed North-South Road and Roosevelt Avenue. A large 35-acre park-and-ride lot is planned as part of the transit project to be located south of Roosevelt Road on vacant land.
Displacement	TBD
Potential Impacts on Sensitive Environmental Resources	Historic railroad right of way is near station and alignment.

Table A-5: Kapolei Parkway

Location: Kapolei Parkway and North South Road	
Refinements to Plans to Improve TOD	Coordination between the project, DHH and DeBartolo should take place to maximize opportunities for strong pedestrian connections between the proposed mixed-use regional mall and the station. In addition, strong pedestrian connection between the park-and-ride lot across Roosevelt Avenue and the station will be required.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	35 acres for park-and-ride lot (1,650 spaces).

Section 1 Number 5

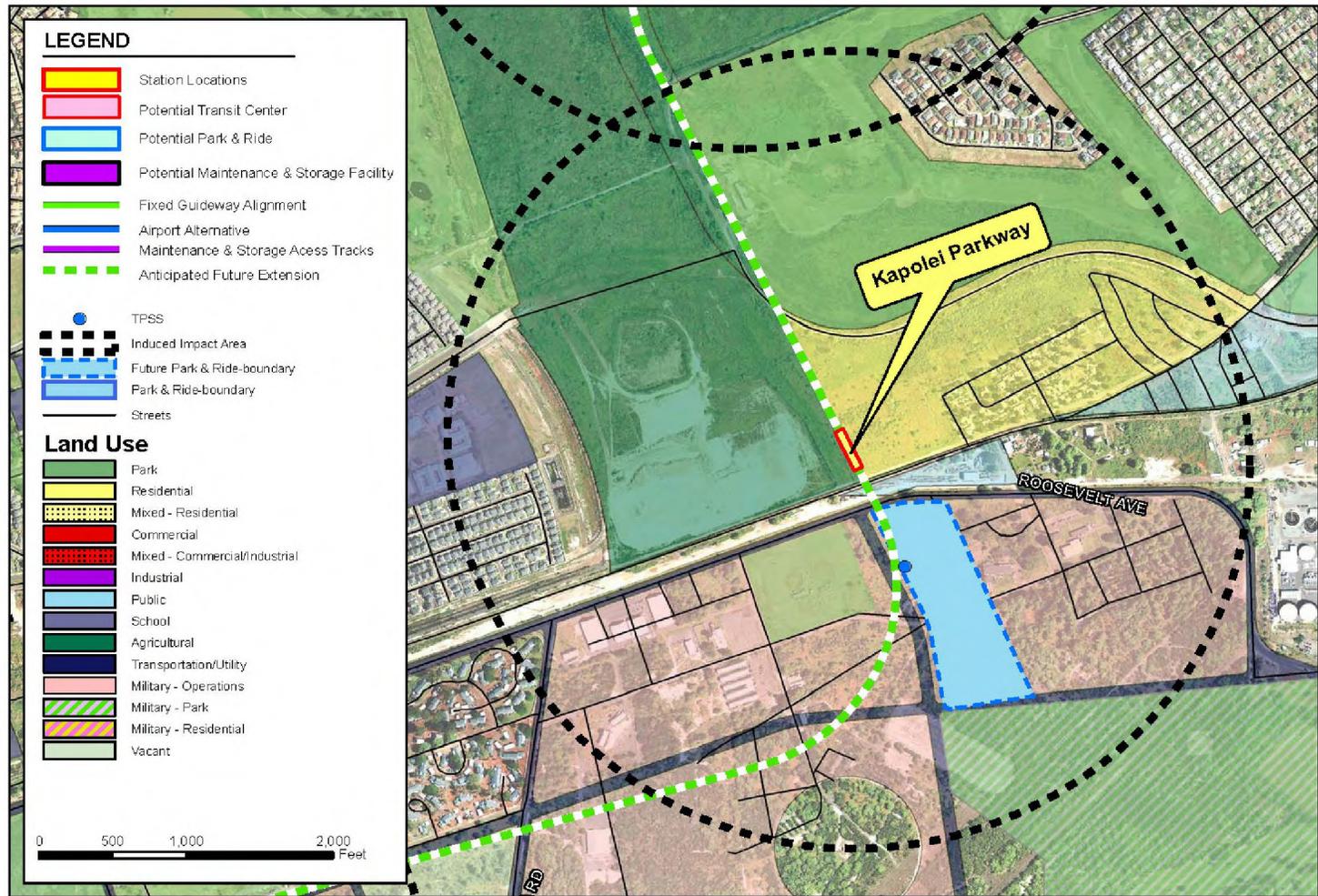


Figure A-5: Kapolei Parkway

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Table A-6: East Kapolei

Location: East Kapolei near Kaloi Gulch	
1. Existing Conditions in Corridor	
Land Use Types	Largely vacant, undeveloped or in agricultural use. Station site and alignment is adjacent to Kaloi Gulch (floodway and detention basin.).
Density	No existing development adjacent to corridor. Moderate density single-family housing beyond corridor.
Character of Development	Largely undeveloped vacant land with some land in agricultural use. Beyond half a mile away is new single-family residential development to the west in Kapolei and to the southeast in Ewa.
Parcels Available for Development	Many
Parking Supply	N/A
New Developments	Beyond half a mile away is new single-family residential development to the west in Kapolei and to the southeast in Ewa. Both Kapolei and Ewa are rapidly developing areas.
Sensitive Uses: Schools, hospitals, parks, residences	None built. Maybe farmland and archaeological resources.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D, AE, X, AEE. Area parcels zoned as AG-1, some P-2. Undeveloped. Area is mostly agricultural with some development Koko Head of the proposed station location. DHHL owns 92 acres and plans on building a single-family lot sub-division called East Kapolei I adjacent to UHWO..
Vacant Parcels	Many
Sensitive Uses	Farmland. Archaeological Resources; Ewa Villages Golf Course; DHHL lands.
Parking Supply	N/A
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Major future planned developments include: 1) largely residential uses by the Department of Hawaiian Home Lands (DHHL) to the southeast; and 2) the new campus of the University of Hawaii West Oahu to the north. Kaloi Gulch (floodway) and nearby detention basin will prevent development adjacent to station on east side unless development spans over the floodway on elevated structure.)
Access	Access will be from the future North-South Road between Farrington Road on the north and from future extension of Kapolei Parkway/Renton Road on the south. Since this will be the west terminal station of the First Project for some time, park-and-ride facilities may be needed to service riders from Kapolei and Ewa.
Displacement	Vacant parcels.

Table A-6: East Kapolei

Location: East Kapolei near Kaloι Gulch	
Potential Impacts on Sensitive Environmental Resources	Loss of farmland and possible disturbance to archaeological resources.
Mitigation Measures	New farmland development elsewhere, documentation of archaeological resources found and avoidance of floodway and detention basin.
Right of Way Impacts	Typical Station Area: ranges from 270 feet X 50 feet=13,500 square feet (SF) to 300 feet X 75 feet= 22,500 SF.
Refinements to Plans to Improve TOD	Coordination with DHHL and UHWO is necessary to provide appropriate pedestrian connections to station and higher density uses near station.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	Possible Park-and-ride Lot since this will be a temporary terminal station of the First Project.

Section 1 Number 6

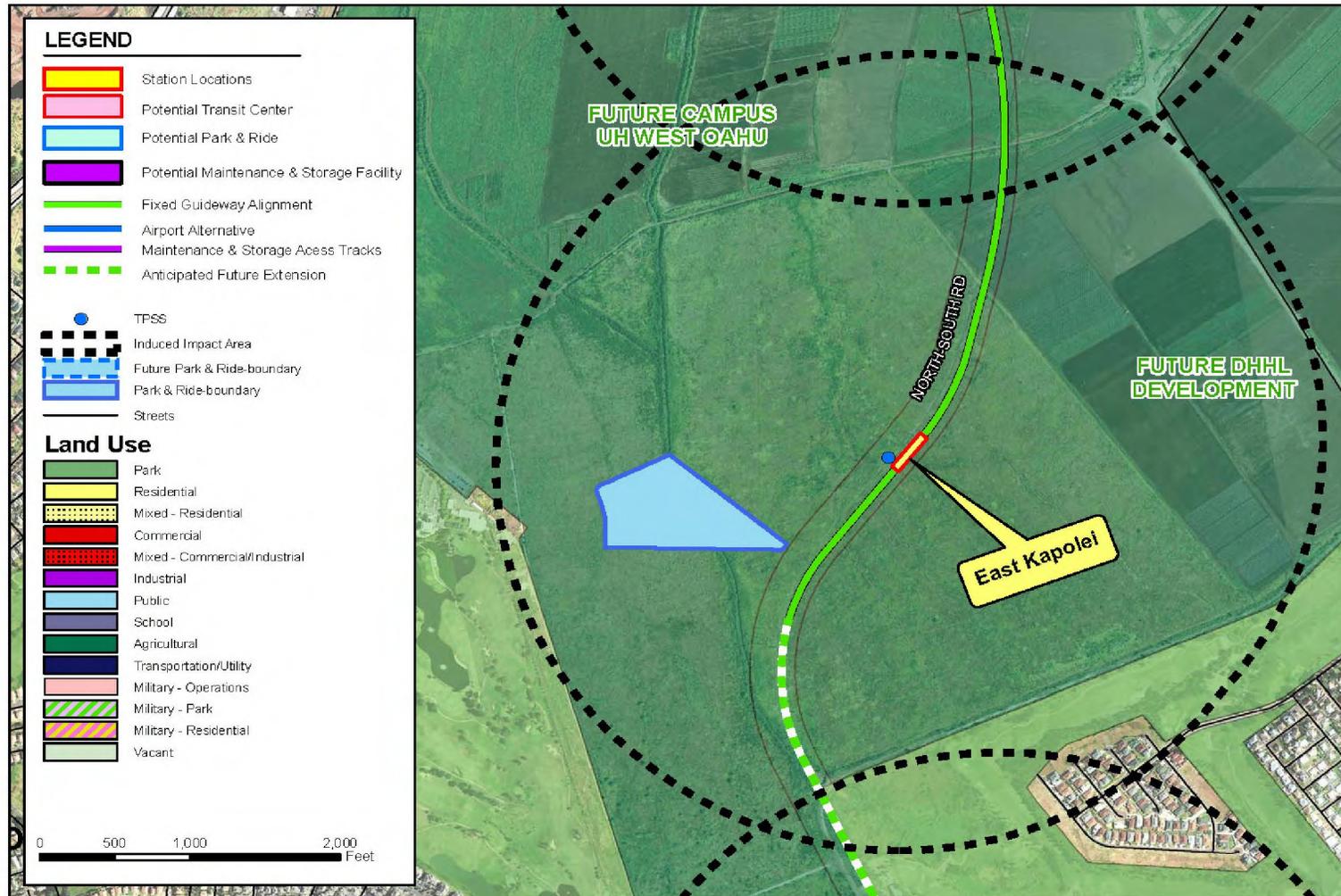


Figure A-6: East Kapolei

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Table A-7: UH West Oahu

Location: East Kapolei near UHWO site but in Ho'opili development site.	
1. Existing Conditions in Corridor	
Land Use Types	Undeveloped, vacant or agricultural. A half-mile away to the west are new large suburban subdivisions of the "second city" of Kapolei.
Density	N/A
Character of Development	The area is undeveloped.
Parcels Available for Development	Many
Parking Supply	N/A
New Developments	In Kapolei to the west
Sensitive Uses: Schools, hospitals, parks, residences	Farmland and possible archaeological uses. Kalo'i Gulch (floodway) is adjacent to Transit ROW and should be avoided.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area parcels zoned as AG-1. Exclusively agricultural, land owned by D.R. Horton.
Vacant Parcels	Many, most land owned by D.R. Horton.
Sensitive Uses	Farmland and potential archaeological resources. Kapolei ~1.5 miles away.
Parking Supply	None.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	A new 76-acre campus for the University of Hawai'i West O'ahu (UHWO) is planned to be located near and southwest of the station. The campus is projected to have 7,500 students at build out and would be a high transit trip generator. A large mixed-use community of different densities is planned around the campus. Mixed-use high-density development is projected surrounding the station. The properties are owned by a mix of private owners and public agency owners. The station would be on land owned by D.R. Horton. D.R. Horton plans a mixed-use community with 11,750 housing units on a 1,555-acre parcel. This community, called Ho'opili, will extend between North-South Road and Fort Weaver Road, the latter next to built up communities of West Loch and Waipahu.
Access	A park-and-ride facility on the east side of the station is planned. Access would be from North South Road from Farrington Highway.
Displacement	N/A

Table A-7: UH West Oahu

Location: East Kapolei near UHWO site but in Ho'opili development site.	
Potential Impacts on Sensitive Environ Resources	Farmland, potential archaeological resources, floodway.
Refinements to Plans to Improve TOD	Coordination between project, UHWO, and D.R. Horton essential to achieve TOD here.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	1,700 space park-and-ride lot.

Section 1 Number 7

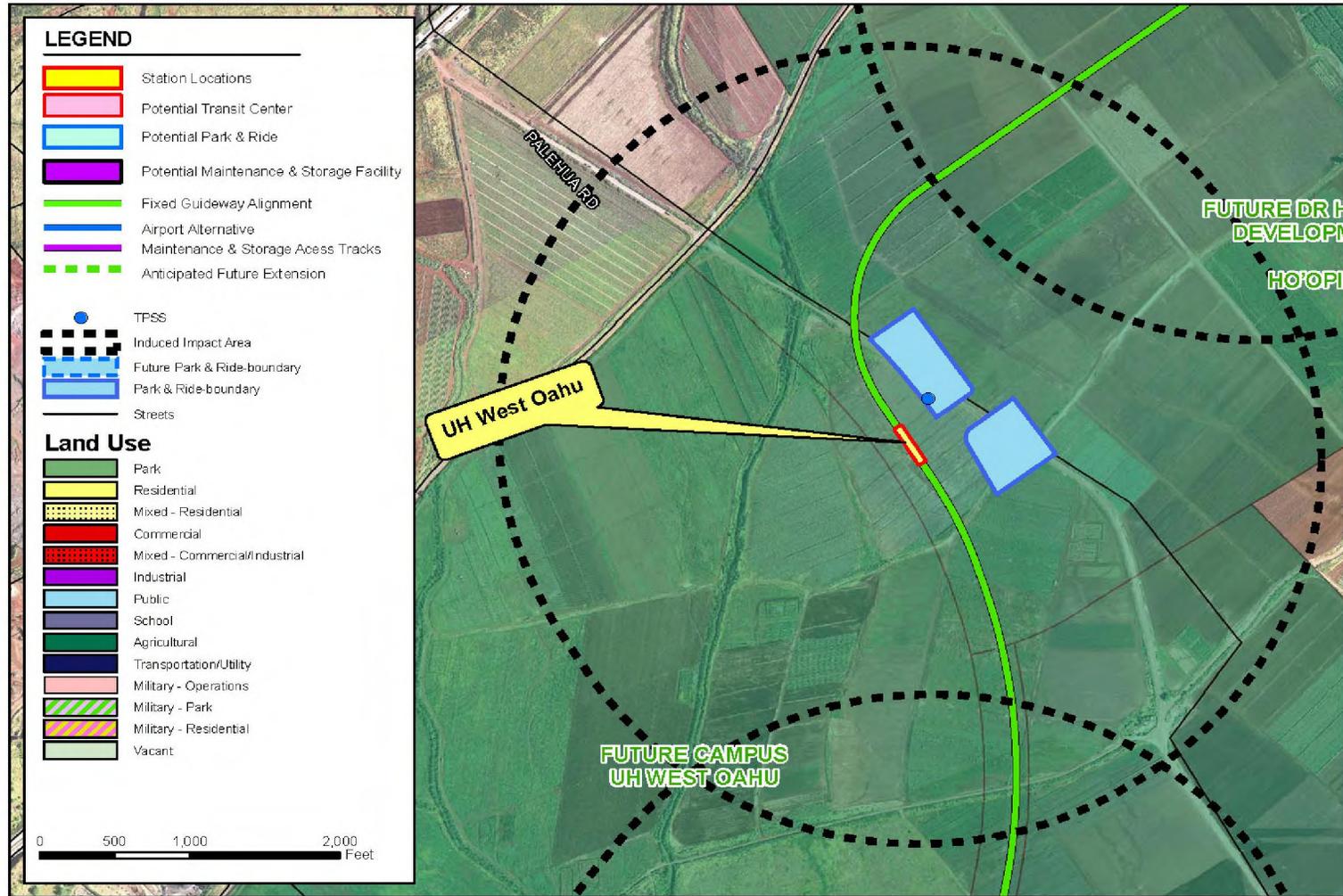


Figure A-7: UH West Oahu

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Table A-8: Ho'opili

Location: East Kapolei (east of UHWO site)	
1. Existing Conditions in Corridor	
Land Use Types	Primarily farmland and vacant land. A Hawaiian Electric substation is located on north side of Farrington Highway. An orchard is located behind the sub station.
Density	N/A
Character of Development	This area is currently undeveloped, but some of the land is used for agriculture
Parcels Available for Development	Many
Parking Supply	None
New Developments	None underway, but planned. See below.
Sensitive Uses: Schools, hospitals, parks, residences	Honouliuli Stream gulch meanders through the area north of the station site.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area parcels zoned as AG-1. Area is mostly agricultural with some limited development outside of the ½-mile buffer and Koko Head of the proposed station location.
Vacant Parcels	Most parcels are vacant, except land in use as an orchard behind substation.
Sensitive Uses	Honouliuli Stream gulch meanders through the area north of the station site. St Francis Medical Center, West Loch Golf Course. Potential archaeological.
Parking Supply	None.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	A potential transit project maintenance and storage facility site is located north of the Hawaiian Electric facility on Farrington Highway. The maintenance facility, if at this location, would require a 50-ft. wide taking on the north side of Farrington Highway. A spur railroad line would extend westerly from approximately Old Fort Weaver Road north of Farrington Highway to the maintenance facility. D.R. Horton plans a mixed-use community with 11,750 housing units on a 1,555-acre parcel that includes the transit right of way and the potential maintenance facility site. This community, called Ho'opili, will extend between North-South Road and Fort Weaver Road, the latter next to built up communities of West Loch and Waipahu, and between the H-1 Freeway and Ewa Villages north of Renton Road..
Access	Access to and from the station would be from Farrington Highway and new roads in the planned community.
Displacement	The 41-acre maintenance and storage facility and the railroad spur would displace the existing orchard and ancillary farm buildings.

Table A-8: Ho'opili

Location: East Kapolei (east of UHWO site)	
Potential Impacts on Sensitive Environmental Resources	The maintenance facility and the railroad spur would displace the orchard, associated farmland and farm buildings and possibly disturb archaeological resources.
Mitigation Measures	Relocate the maintenance facility to avoid the orchard and farm and minimize impacts by the railroad spur.
Right of Way Impacts	Have not been calculated yet.
Construction Footprint	13,500 to 22,500 square feet for the station.
Refinements to Plans to Improve TOD	Ongoing coordination with D.R. Horton should be continued to maximize potentials for TOD.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	41 acres for Maintenance and Storage facility.

Section 1 Number 8

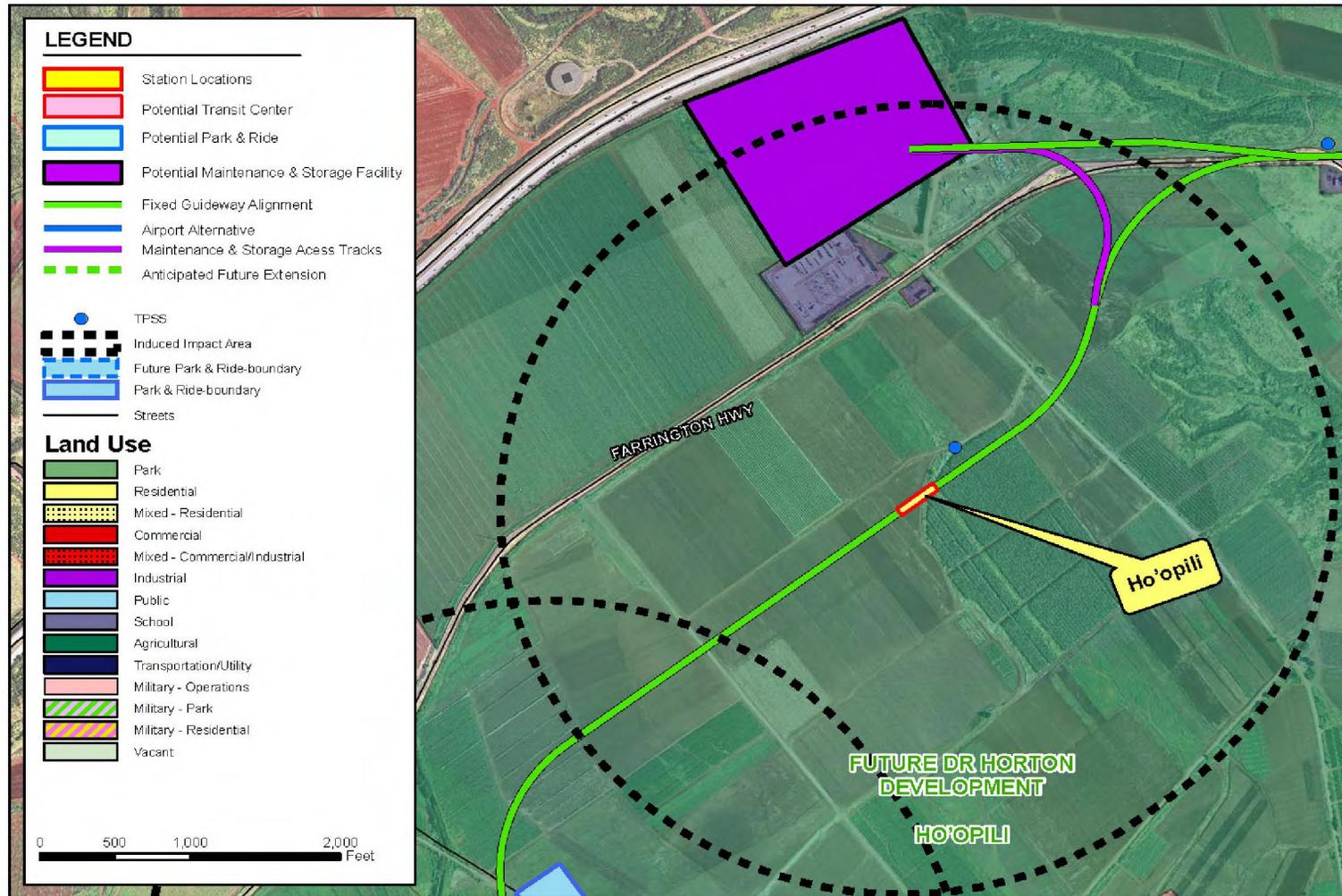


Figure A-8: Ho'opili

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Table A-9: West Loch

Location: Waipahu (Farrington Highway at Leoku Street or Leokane Street)	
1. Existing Conditions in Corridor	
Land Use Types	The Farrington Highway area east of Kunia Road (which merges into Fort Weaver Road farther south) is densely developed with commercial uses, including a large Don Quijote store (like a Japanese Wal-Mart) and the Waipahu Shopping Village. Light industrial and warehouse uses are located south of the Highway. Moderate density residential is beyond.
Density	Despite its distance from central Honolulu, population density exceeds 9,000 people per square mile (p/sm.)
Character of Development	Farrington Highway at these sites has a number of commercial and industrial developments; however, just north of the highway, single-family residences dominate.
Parcels Available for Development	There is little vacant land at either site.
Parking Supply	Parking lots available for customers of retail and other commercial properties.
New Developments	None.
Sensitive Uses: Schools, hospitals, parks, residences	None adjacent. Honowai Elementary School and Park are located three blocks south of Leoku site.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area parcels zoned as AG-1, A-2, B-2, I-2, P-1, R-5. High-density residential <i>mauka</i> of Farrington, with high-density light industrial and retail <i>makai</i> of Farrington. Location of several car dealerships, big box stores (Don Quijote). Large commercial structure at Farrington and Leoku. Mix-use of apartment and commercial <i>mauka</i> side of Farrington.
Vacant Parcels	None.
Sensitive Uses	West Loch Shoreline Park, possibly archaeology; Honowai ES; Waipahu Fire/Police Department; Maurice J Sullivan Family Hospice; St. Francis Medical Center.
Parking Supply	Limited. No parking on Farrington; however, there is limited side-street parking along parallel roads. Parking at commercial sites.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	The City and County of Honolulu's Department of Planning and Permitting has initiated a TOD planning effort with the community. One of the purposes is to determine how best to interface buses with the transit station. In both station options, a proposed transit center is located on the south side of Farrington Highway..
Access	Access would be via Farrington Highway and from Kunia Road between H-1 and Fort Weaver Road. The transit corridor viaduct would pass over Fort Weaver Road. This station has potential as an intermodal facility because of

Table A-9: West Loch

Location: Waipahu (Farrington Highway at Leoku Street or Leokane Street)	
	easy access from Ewa via Fort Weaver Road and from Waianae via H-1.
Displacement	Minimal since station would be in public street right of way. The proposed transit center by others would take a car dealership or other properties.
Potential Impacts on Sensitive Environ Resources	None evident.
Mitigation Measures	N/A
Right of Way Impacts	13,500 to 22,500 square feet for the station.
Construction Footprint	TBD
Refinements to Plans to Improve TOD	TOD plan should consider pedestrian connections to transit station from commercial uses on both sides of Farrington Highway.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 2 Number 9

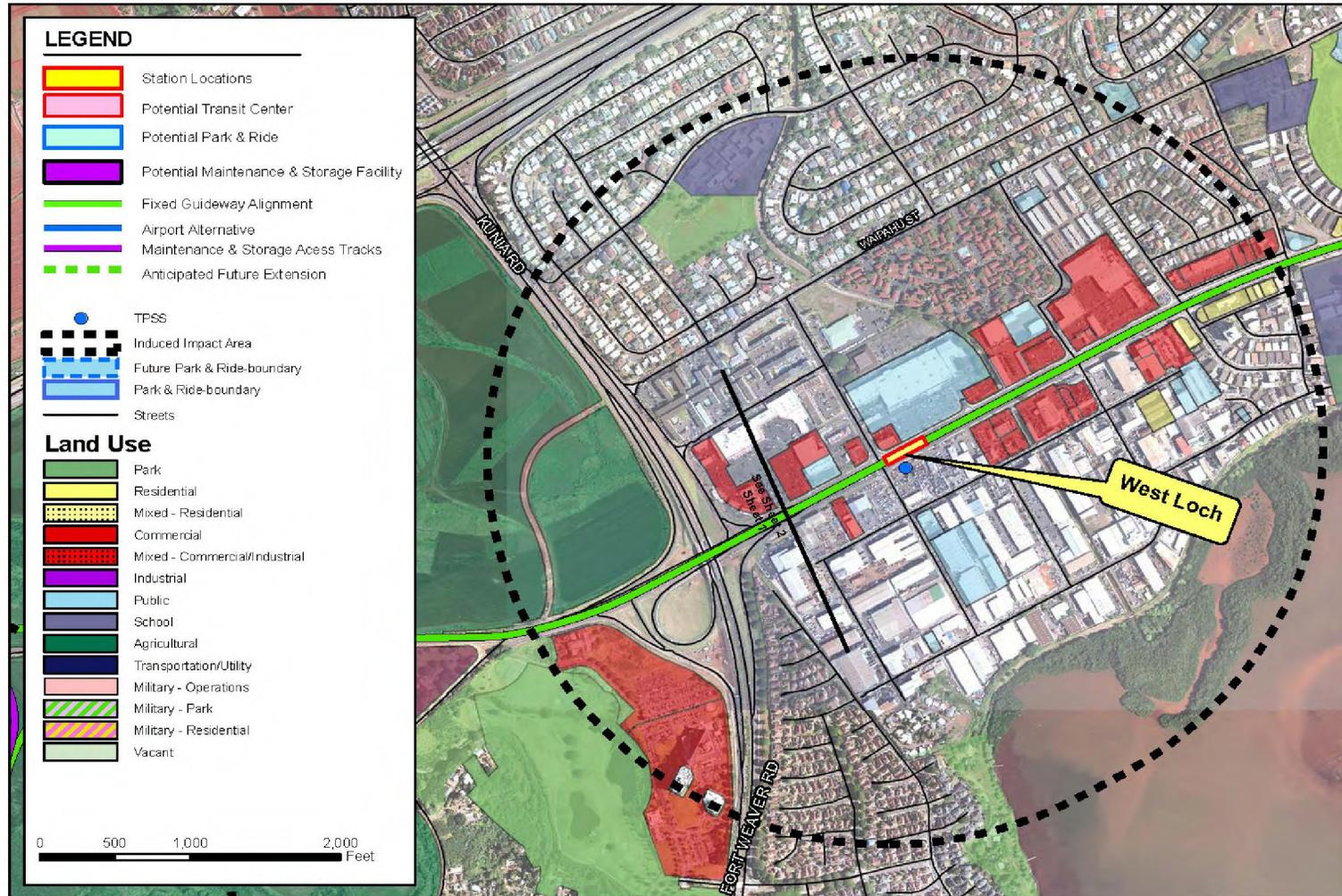


Figure A-9: West Loch

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Table A-10: Waipahu Transit Center

Location: Farrington Highway at Mokuola Street	
1. Existing Conditions in Corridor	
Land Use Types	Commercial and industrial uses flank Farrington Highway and moderate density residential uses are beyond.
Density	Moderate
Character of Development	Land use in the vicinity of this station is similar to the West Loch station sites except that the former O'ahu Sugar Mill is nearby.
Parcels Available for Development	Few visible.
Parking Supply	Limited.
New Developments	The former O'ahu Sugar Mill sugar mill land, considered a brownfield, is being redeveloped for new industrial and commercial uses. New senior housing being developed.
Sensitive Uses: Schools, hospitals, parks, residences	St. Joseph School
2. Existing Conditions within ½ mile of Station Site	
	Flood Zones AE, D, AEF, XS. Parcels zoned A-2, I-2, R-5, B-1, B-2, P-1, P-2. Medium-density, mix-use apartment and light commercial. Some intensive industry <i>makai</i> of Farrington. Some single-family detached homes <i>mauka</i> of Farrington. This station would interface with the existing Waipahu bus transit center. Limited agricultural development Ewa of Waipahu Depot Rd. Leeward YMCA and Hawaii Plantation Village located within ½-mile proximity to proposed station location.
Vacant Parcels	Vacant Parcels along Mokuola and Kauolu.
Sensitive Uses	Ted Makalena Golf Course; Waipio Soccer Complex (<i>makai</i> of Farrington); Pouhala Marsh; Waipahu Cultural Gardens; Waikele Stream; St Joseph ES; Waipahu IS; Waipahu Public Library.
Parking Supply	Limited. No parking on Farrington. Off-street parking along side streets.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	The City and County of Honolulu, Department of Planning and Permitting has initiated a TOD planning effort with the community.
Access	From Farrington Highway.
Displacement	13,500 to 22,500 square feet for the station.
Refinements to Plans to Improve TOD	Pedestrian access is key to achieve good TOD.

Table A-10: Waipahu Transit Center

Location: Farrington Highway at Mokuola Street	
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 2 Number 10

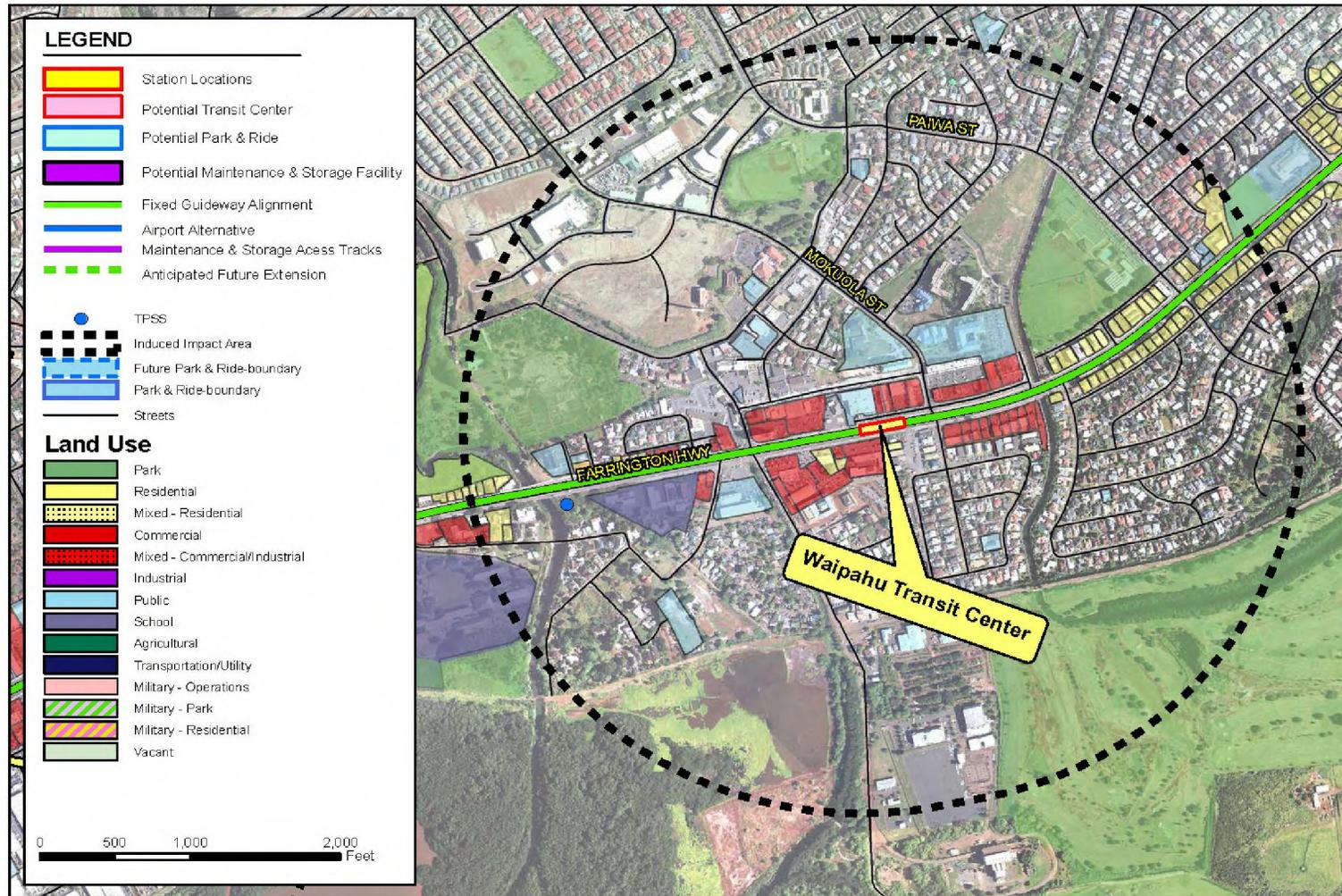


Figure A-9: Waipahu Transit Center

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Table A-11: Leeward Community College

Location: Parking Lot of LCC	
1. Existing Conditions in Corridor	
Land Use Types	Leeward Community College (5,700 students in 2006) is a potential high transit trip generator and has a large parking lot to the north of the main building. Station is located in the LCC parking lot south of the large interchange of Farrington Highway, H-1 and H-2.
Density	No housing is adjacent. There is multi-family housing just east of LCC.
Character of Development	Major existing land uses include Leeward Community College (LCC) and its parking lot, large vacant site to the west (former Navy Drum site), Waipahu High School football field and High School (farther west), and single family residences across from the high school. Commercial uses are located on the other side of the H-1 freeway.
Parcels Available for Development	LCC Parking Lot and large vacant lot to the west.
Parking Supply	Ample.
New Developments	None.
Sensitive Uses: Schools, hospitals, parks, residences	LCC
2. Existing Conditions within 1/2 mile of Station Site	
	Flood zone AE, X, XS, D. Area parcels zoned as P-1, F-1, AG-2, R-5, I-2, IMX-1. Leeward Community College is located along Farrington Highway. Area is divided by H-1 <i>mauka</i> and Farrington Highway Ewa. Sloped (>5%) area between H-1 and LCC. Superblock R-5 zoned residential Ewa of Farrington Highway. Military and federal lands <i>makai</i> of LCC. Pedestrian bridge crosses H-1 from <i>mauka</i> side to LCC. There is some limited agricultural use <i>makai</i> of LCC.
Vacant Parcels	LCC Parking Lot and former Navy Drum Site.
Sensitive Uses	Waipahu HS; Washington MS; LCC; Pearl Harbor; Middle Loch Waterway at Pearl Harbor.
Parking Supply	Abundant parking at LCC
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	The large vacant site west of LCC (i.e., the former Navy Drum site) is the site of the 43.3-acre proposed transit project maintenance and storage facility. A railroad track spur would enter the facility from either direction.
Access	From Farrington Highway and Ala Ike (i.e., the LCC access road).
Displacement	Part of the LCC parking lot and temporary structures would be displaced. Approximately 10% of the existing parking spaces would be displaced for the station. The station footprint will be 13,500 to 22,500 square feet. The railroads spur would displace a small portion of the high school stadium at the north end.

Table A-11: Leeward Community College

Location: Parking Lot of LCC	
Potential Impacts on Sensitive Environ Resources	None.
Refinements to Plans to Improve TOD	Pedestrian access from LCC should be defined.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	Approximately 43 acres are needed for maintenance and storage facility on adjacent vacant and remediated former Navy Drum site.

Section 2 Number 11

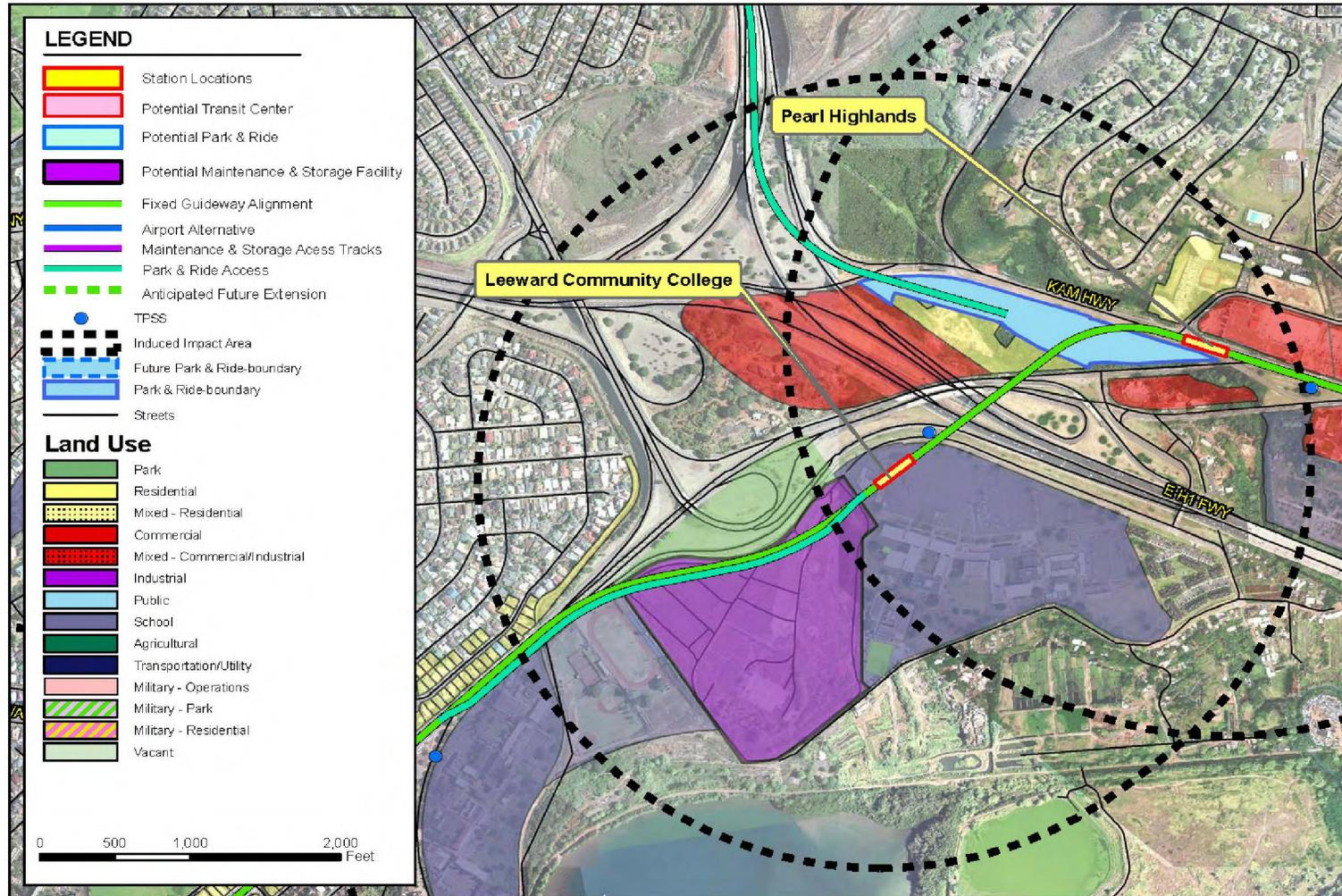


Figure A-10: Leeward Community College

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Table A-12: Pearl Highlands

Location: Kamehameha Highway at Kuala Street	
1. Existing Conditions in Corridor	
Land Use Types	Big Box retail including a Sam's Club in Pearl Highlands Center, a shopping mall, and a Wal-Mart are north of the station site along Kamehameha Highway. South of the Highway is a Home Depot. Beyond are rental apartments including the very tall twin towers called Century Park Plaza, and single-family detached homes.
Density	Moderate.
Character of Development	This station is only 2,500 feet from the LCC station but is separated by the H-1 freeway. The station is located at the Pearl Highland Center, a 400,000 square foot commercial development. Several big box stores, and smaller commercial developments are also present and planned. Also nearby are two high-rise apartment buildings, some mid-rise apartments, and the redeveloping former Mānana Naval Quarters.
Parcels Available for Development	None observed.
Parking Supply	In mall garage and surface lots at big box stores.
New Developments	N/A
Sensitive Uses: Schools, hospitals, parks, residences	On the south side of station, the area is heavily vegetated areas and contains a labor union office and farther west small industrial establishments. Waiawa Stream flows in this location.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone AE, X, XS, AEF, D. Area zoned as IMX-1, F-1, AG-1, AG-2, A-1, A-2, P-2, R-5, B-2. The area <i>mauka</i> of the proposed station is a mix of detached single-family homes, low-to-medium density high-rise apartments, community-level business development and light industry/commercial mix-use. Hawaii Electric Company has a station Koko Head of Puu Poni and <i>makai</i> of Kam Highway. Home Depot, Sam's Club, CompUSA and other big-box establishments exist along Kam Hwy. Hawaii Laborer's Training Program is located between Pearl Highland Center and H-1. Ag lands Ewa.
Vacant Parcels	Numerous undeveloped parcels behind Pearl Highland Center
Sensitive Uses	Bike route going <i>makai</i> and <i>mauka</i> on Kuala St behind Pearl Highland Center; Pearl City Fire/Police Station; Pearl City ES; Lehua Community Park; Pearl City Public Library; Lehua ES; Hawaii Laborer's Training Program
Parking Supply	Parking at Pearl Highland Center. Limited off-street parking behind Pearl Highland Center along connecting streets and surface level parking lots
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Potential development south of station, across Kam Highway, would be difficult to construct due to terrain. However, a 9-acre park-and-ride facility is planned here.

Table A-12: Pearl Highlands

Location: Kamehameha Highway at Kuala Street	
Access	Kamehameha Highway, Kuala Street. Ramps between H-1, H-2 and the park-and-ride facility are planned.
Displacement	13,500 to 22,500 square feet for the station.
Potential Impacts on Sensitive Environ Resources	Waiawa Stream flows adjacent and south of station site.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 2 Number 12

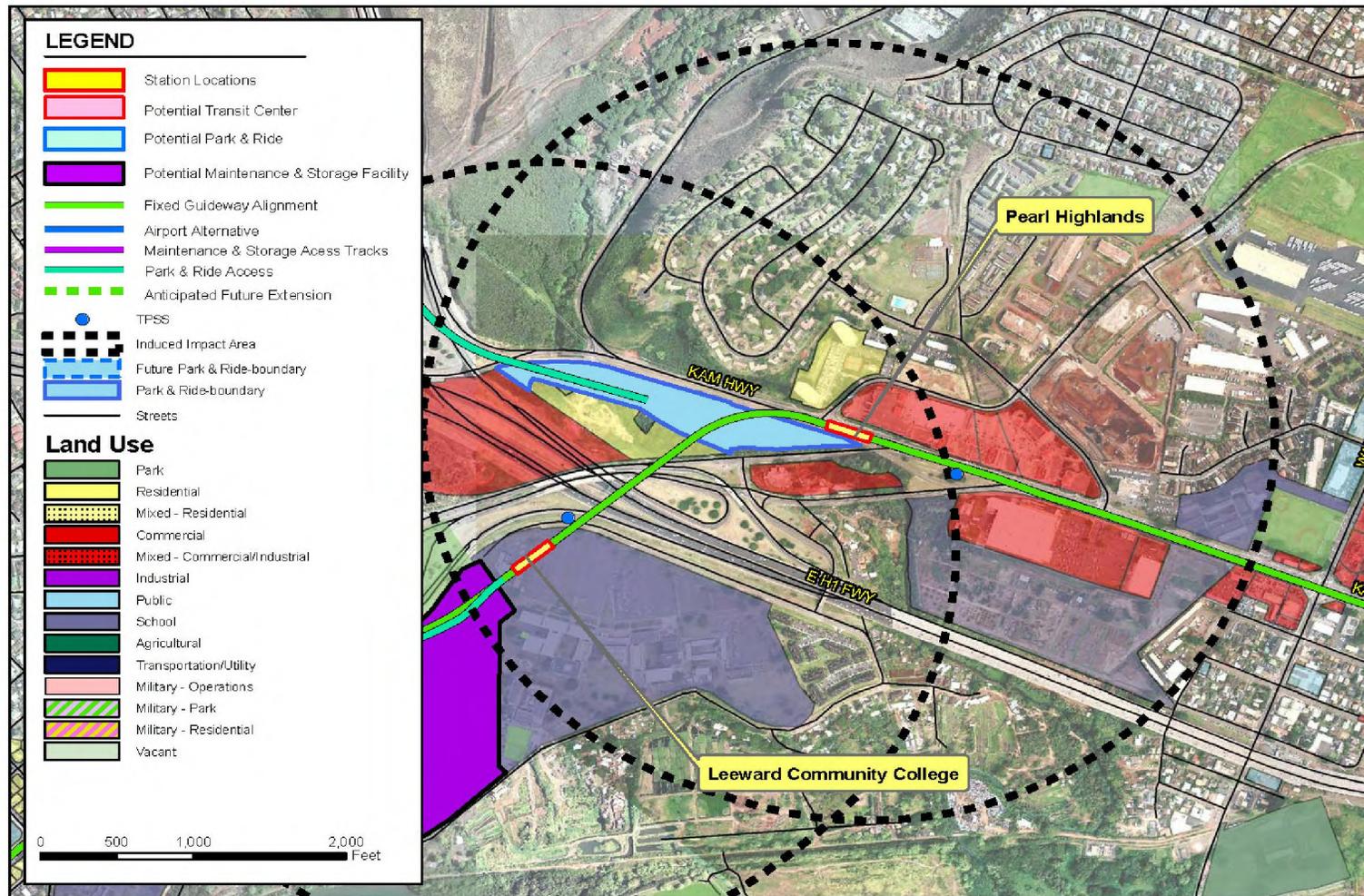


Figure A-11: Pearl Highland

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Table A-13: Pearlridge

Location: Kamehameha Highway at Kaonohi Street	
1. Existing Conditions in Corridor	
Land Use Types	Pearlridge Shopping Center (Sears, Macy's, Circuit City, 170 shops, restaurants and services) is located north of station site. Other commercial and industrial uses are nearby, including Pali Momi Medical Center with 116 beds. An unusual use for this now urbanized location is the historic Sumida Farm, a 10.5-acre watercress farm (surrounded by the retail uses) and a variety of residences beyond.
Density	Population and employment density in this area exceed 10,000 per square mile.
Character of Development	The station is located in Kamehameha Highway amidst a major commercial and retail area, including the Pearlridge Center, a major regional shopping destination.
Parcels Available for Development	An abandoned drive-in theatre site owned by Kamehameha Schools is located north of the shopping center. It is used for surface parking.
Parking Supply	All of the parking in the area is designated for shoppers.
New Developments	Potential new commercial development at the drive-in theatre site.
Sensitive Uses: Schools, hospitals, parks, residences	Potential surface to adjacent Sumida watercress farm and nearby Pearl Harbor. The Pali Moli Medical Center is located nearby.
2. Existing Conditions within ½ mile of Station Site	
	Area parcels zoned as A-1, A-2, B-2, I-2, IMX-1, P-1, R-7.5, R-5. Flood zone D, AE, AEF, XS. Pearlridge Shopping Center is major focal point. High-density urbanized area near Pearl Harbor. Limited to intensive industry <i>makai</i> and <i>mauka</i> of the proposed station area. A variety of car dealerships in industrial area. Medium-to-low density apartment complexes <i>mauka</i> of proposed station. Mixed-use commercial/residential and commercial/industrial <i>mauka</i> of the proposed station. Some military and federal single-family homes Koko Head of the proposed station location. Agricultural use is limited to Sumida Watercress Farm.
Vacant Parcels	Parcel at Moanalua and Kaahumanu St; Recycling Center; Aloha Kam Swap Meet
Sensitive Uses	Pearlridge ES; Waimalu ES; Our Savior Lutheran School; Family Practice Center; Sumida Watercress Farm; Straub Pearlridge Clinic; Pali Momi Medical Center; Neal Blaisdell Park; Bike route along Kanuka and Kam Highway; A'iea Bay
Parking Supply	Limited to off-street parking along parallel roads, roads going through industrial areas. Parking at Pearlridge Shopping Center.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	The City/County, as a separate project, plans a 3-acre bus transit center south of the station site.

Table A-13: PearlrIDGE

Location: Kamehameha Highway at Kaonohi Street	
Access	From Kamehameha Highway, Moanalua Loop and Kaonohi Street.
Displacement	13,500 to 22,500 square feet for the station.
Potential Impacts on Sensitive Environ Resources	Construction period activities could impact watercress farm and Pearl Harbor.
Right of Way Impacts	TBD. Right of way impacts on makai side of station. At H-1 Highway, there are two alternatives, aerial structure above H-1 or on grade. On-grade option would require additional right of way.
Refinements to Plans to Improve TOD	Pedestrian access between retail uses and station is key to successful TOD here.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 2 Number 13

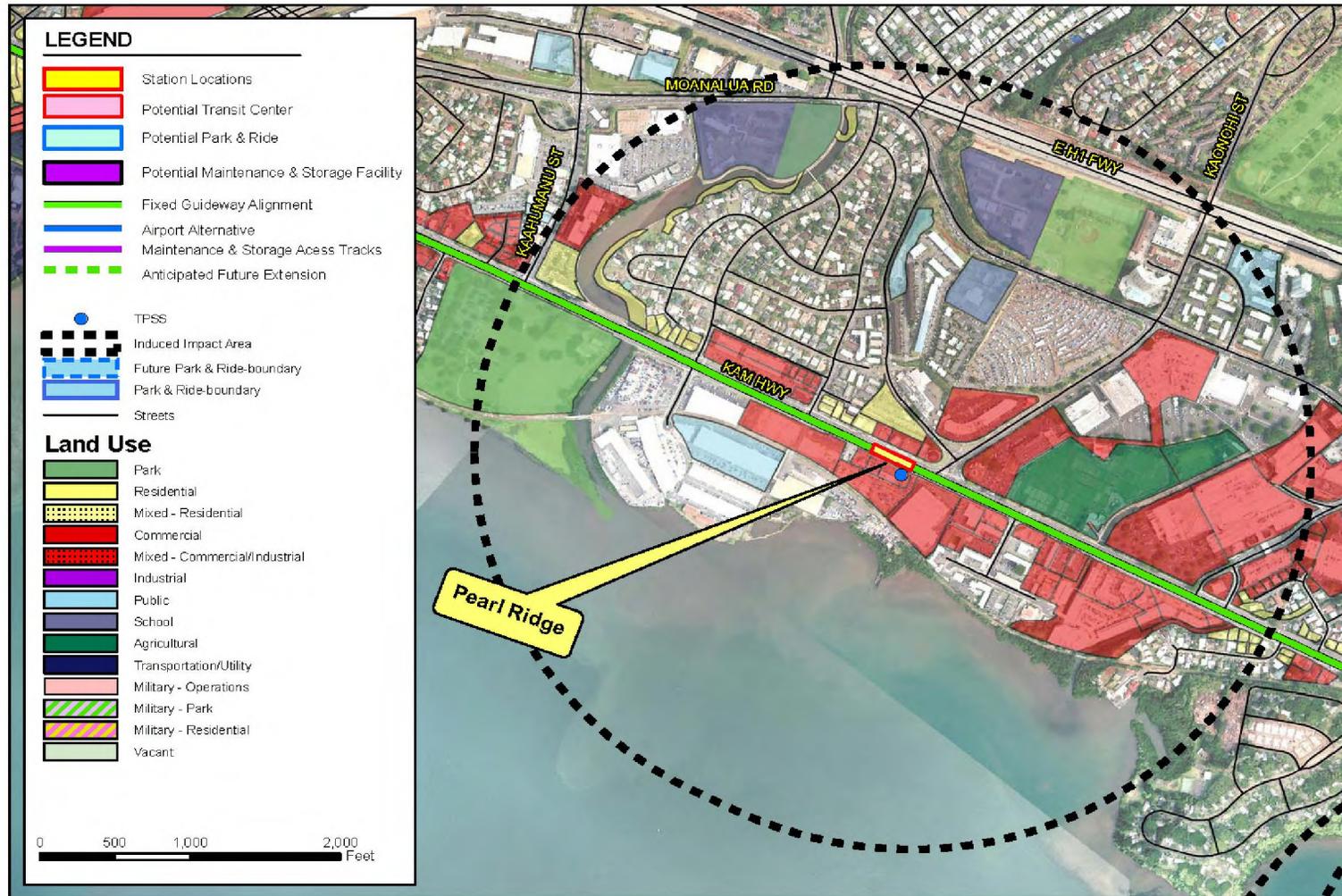


Figure A-12: Pearlridge

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Table A-14: Aloha Stadium (Salt Lake)

Location: Salt Lake Boulevard at Kahuapa'ani Street	
1. Existing Conditions in Corridor	
Land Use Types	Aloha Stadium, which seats 50,000, hosts UH football games, a college bowl game, the NFL Pro Bowl, and local events, such as the Hawai'i High School Athletic Association games, carnivals, fairs, concerts, graduations, large swap meet and other events. It is surrounded by parking fields. A wastewater pump station is located adjacent and north of the station site. South of the station site is the Stadium Mall shopping center opposite Kahuapaani Street. Also nearby is the interchange of H-1 and Lunalilo Freeway. Halawa Stream is located west of the station site and separates stadium parking areas from the stadium (north of Salt Lake) and the Stadium Mall from an adjacent single family neighborhood at Kalaloe Street (south of Salt Lake). Single family residential areas exist both east (Foster Village) and west (Makalapa) of the station site. This station is the closest to the Arizona Memorial, visited by 1.6 million people a year
Density	N/A. The single-family neighborhoods are moderate density.
Character of Development	Aloha Stadium dominates this area and has an 8,000-space parking lot. Other uses in the area are the 200,000 square foot Stadium Mall, schools, and residences. Located nearby are important tourist destinations including the Arizona Memorial via Admiral Clarey Bridge.
Parcels Available for Development	The stadium parking lots may be available for development
Parking Supply	Ample.
New Developments	None evident.
Sensitive Uses: Schools, hospitals, parks, residences	Halawa Stream and Makalapa Neighborhood Park. A historical gravesite is located next to the alignment west of the station but in a seemingly inaccessible triangular parcel by the interchange of Kamehameha Highway and Aiea Access Road.
2. Existing Conditions within ½ mile of Station Site	
Existing Land Uses	Flood zone D. Area parcels zoned as A-1, A-2, B-1, B-2, P-1, P-2, R-5. Mix of detached and attached single-family homes, low-to-medium density apartment complexes, some preserved land along the shoreline, and neighborhood/community businesses. Aloha Stadium is central focus point. There is an inaccessible gravesite between Kam Hwy and Moanalua Freeway
Vacant Parcels	Parcels under and around H-1 split, however, mostly >5% slope.
Sensitive Uses	Makalapa Neighborhood Park; Halawa Stream; gravesite; Aloha Stadium; Pearl Harbor; St. Elizabeth ES;
Parking Supply	Ample around stadium; some off-street parking in adjacent neighborhoods

Table A-14: Aloha Stadium (Salt Lake)

Location: Salt Lake Boulevard at Kahuapa'ani Street	
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Redevelopment to higher density uses may emerge as interest grows in this area as a real estate investment.
Access	Salt Lake Boulevard
Displacement	13,500 to 22,500 square feet for the station.
Potential Impacts on Sensitive Environ Resources	Halawa Stream, which drains into Pearl Harbor, is adjacent. Historical graveyard.
Refinements to Plans to Improve TOD	Pedestrian access may have to accommodate peak pedestrian use during large stadium events. Connections to Mall on other side will stimulate business. TOD potentials could be high here, if large surface parking fields could be redeveloped into "round the clock" mixed uses. This would generate more steady walk-in ridership.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	A 13.8 acres site north of Salt Lake Boulevard, opposite the station, is being considered for a proposed park-and-ride facility. This could be structured parking and/or be part of a future mixed-use development.

Section 3 Number 14 Aloha Stadium (Salt Lake Boulevard)

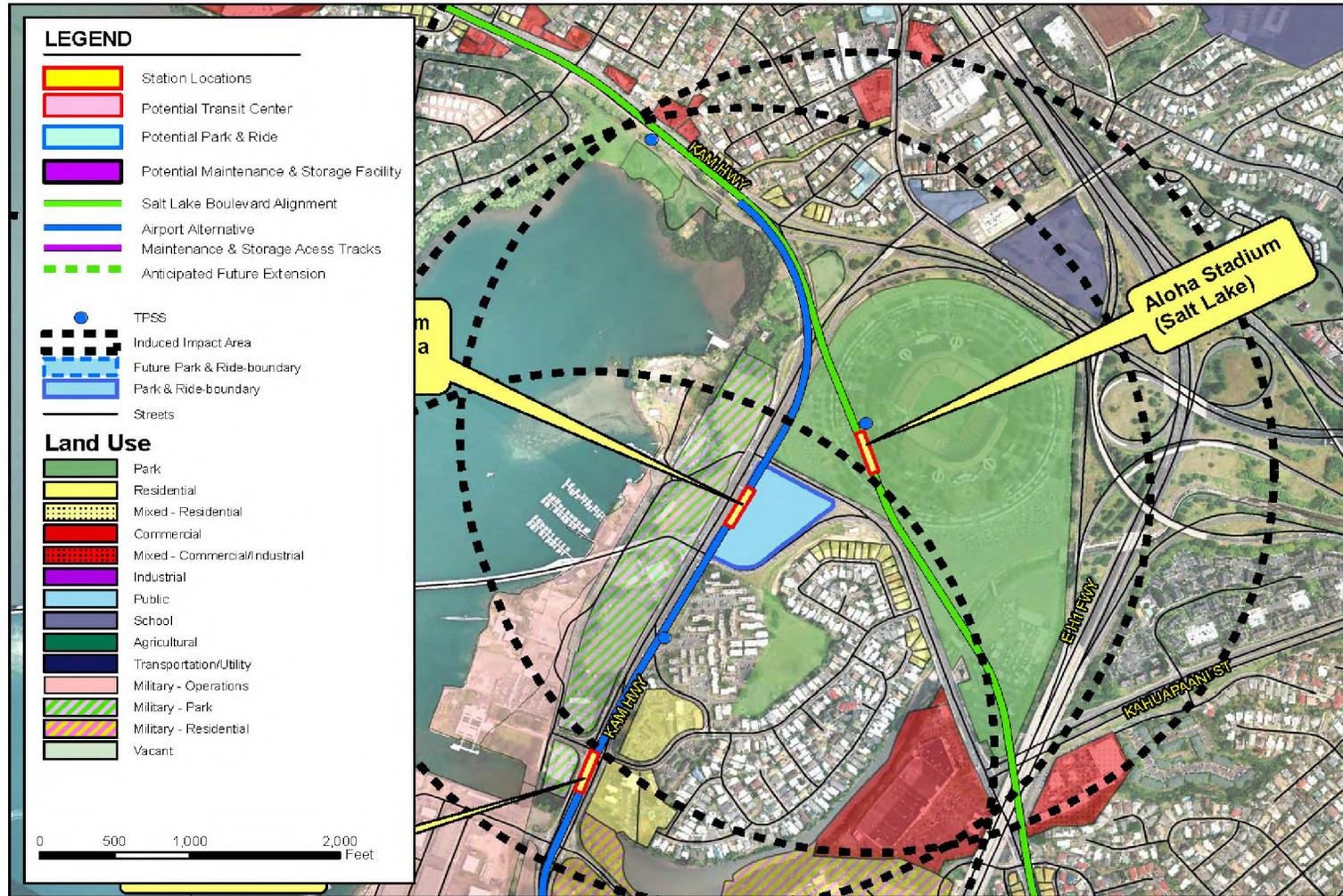


Figure A-13: Aloha Stadium (Salt Lake)

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Table A-15: Ala Lilikoi

Location: Salt Lake Boulevard at Ala Lilikoi Street	
1. Existing Conditions in Corridor	
Land Use Types	Residential development includes civilian single-family homes to rental apartments and condominiums in high rises on the north side of Salt Lake Boulevard. Military housing, the Aliamanu Elementary and Intermediate Schools, and community library are on the south side of Salt Lake Boulevard. The school is directly opposite the station.
Density	The Salt Lake area is a transition zone between the moderate density developments on the west side of Aloha Stadium and the complex dense development east of Middle Street. Population density is very high, 16,800 p/sm but employment density is low, although the Airport and Māpunapuna industrial areas are nearby.
Character of Development	The station is next to the high-rise residential district of Salt Lake, military housing, and the neighborhood Salt Lake Shopping Center.
Parcels Available for Development	One small parcel visible.
Parking Supply	For residents and shoppers.
New Developments	N/A
Sensitive Uses: Schools, hospitals, parks, residences	Salt Lake (a water body) to the north in a golf course. The Aliamanu Schools and library are directly opposite the station site.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area parcels zoned as R-5, A-1, A-2, B-1, F-1, P-1. <i>Mauka</i> of SLB are low-to-medium density high-rise apartment and condominium complexes with some detached single-family homes. Salt Lake Shopping Center is located at SLB and Ala Lilikoi. <i>Makai</i> of SLB are military/federally owned detached single-family homes at Camp Caitlin Naval Base. Honolulu Country Club is <i>mauka</i> .
Vacant Parcels	None.
Sensitive Uses	A well-defined bike route runs along SLB from SLB & Pukoloa to Ala Lilikoi <i>going Ewa</i> , and Arizona to Pukoloa <i>going Koko Head</i> ; Aliamanu ES and MS; Salt Lake Public Library; Concentral Medical Centers.
Parking Supply	No parking on SLB. Off-street parking on side streets <i>mauka</i> of SLB. Parking in commercial areas.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	None known
Access	Salt Lake Boulevard and Ala Lilikoi Street. Note, this is the closest station along the Salt Lake Boulevard alignment to the Honolulu International Airport terminals. Some sort of a shuttle connection between the station and the airport could be considered, especially if the Airport alignment extension is not built.

Table A-15: Ala Lilikoi

Location: Salt Lake Boulevard at Ala Lilikoi Street	
Displacement	13,500 to 22,500 square feet for the station.
Refinements to Plans to Improve TOD	Station is 60 feet above Salt Lake Boulevard. Topography makes site difficult to access by pedestrians.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None

Section 3 Number 15

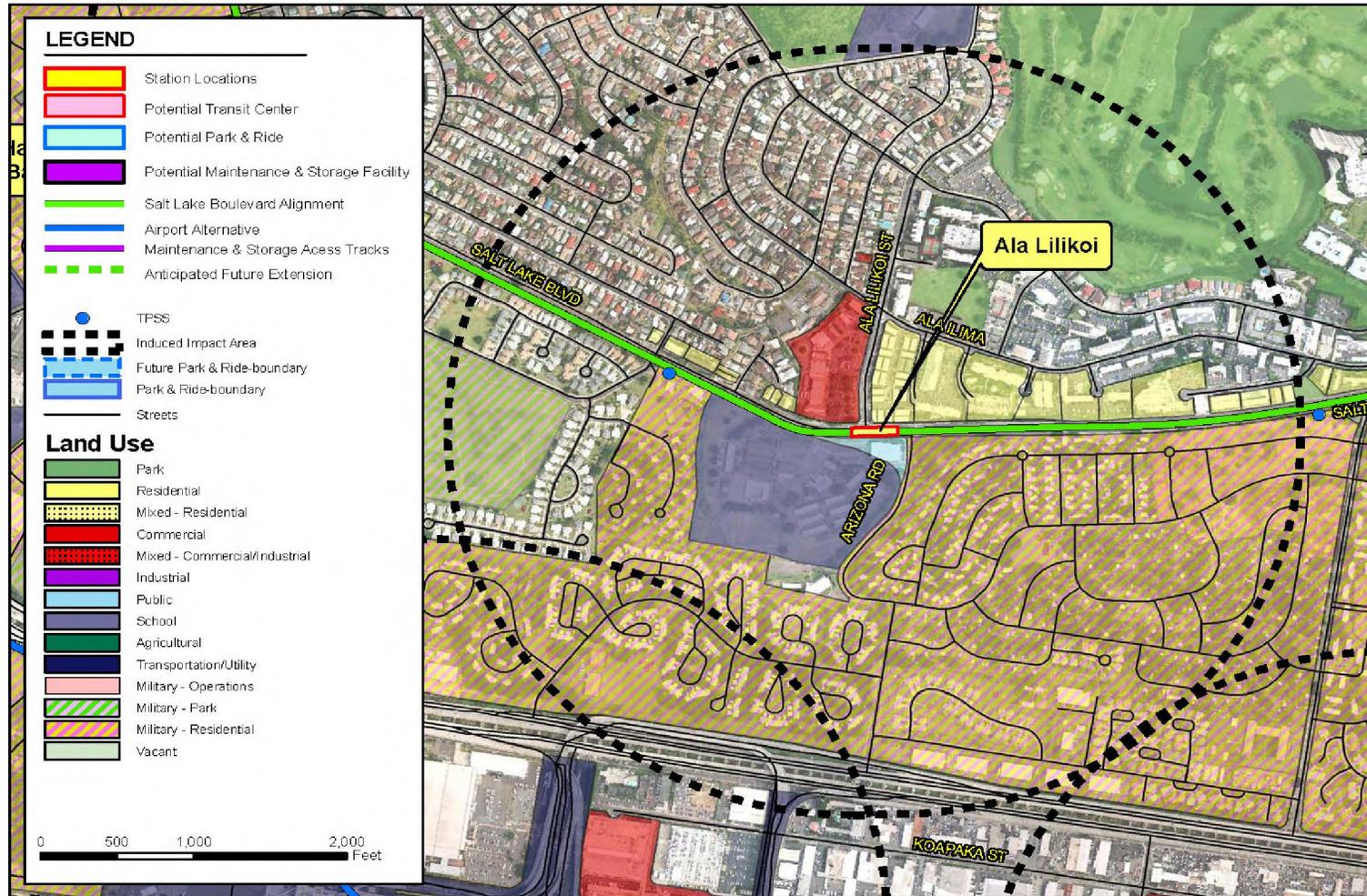


Figure A-15: Ala Lilikoi

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Table A-16: Middle Street Transit Center

Location: Kamehameha Highway at Middle Street Transit Center (adjacent to large interchange between H-1 and Kamehameha Highway)	
1. Existing Conditions in Corridor	
Land Use Types	Mostly industrial and commercial uses, including the 1,000-inmate O'ahu Community Correctional Center. The nearby Middle Street Transit Center is a major bus hub for many lines that serve this central part of Honolulu. It will serve as a major intermodal center in the future. To the west of the station site is the major interchange of H-1 with Nimitz Highway and Kam Highway.
Density	No residential here.
Character of Development	This area is dominated by industrial and commercial uses.
Parcels Available for Development	None visible.
Parking Supply	None. Available parking is committed to existing uses.
New Developments	Do not know.
Sensitive Uses: Schools, hospitals, parks, residences	Kalihi Stream is adjacent to station.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone AO, AE, AEF, XS. Area parcels zone P-1, I-2, B-2, R-5, R-7.5. Majority of area is intense industrial with some federal lands Koko Head of the proposed station. Proposed station location is at the interchange of H-1 with Nimitz Highway and Kam Highway. Some single-family detached residential homes <i>mauka</i> of the proposed station.
Vacant Parcels	None.
Sensitive Uses	Kalihi Stream; Correctional Facility
Parking Supply	Limited to off-street parking on side streets, some off-street parking on Middle Street. Mostly private residence.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Unlikely. Area is a well-established light industrial (warehouse/distribution) sector of the City. A proposed transit center on a 9-acre site north of the station site is planned by the City/County.
Access	Dillingham Boulevard.
Displacement	Station will be in middle of Dillingham Boulevard. There may be takings to facilitate pedestrian access to the Middle Street Transit Center, and possible to the industrial uses.

Table A-16: Middle Street Transit Center

Location: Kamehameha Highway at Middle Street Transit Center (adjacent to large interchange between H-1 and Kamehameha Highway)	
Potential Impacts on Sensitive Environ Resources	Kalihi Stream.
Right of Way Impacts	13,500 to 22,500 square feet for the station.
Refinements to Plans to Improve TOD	TOD potentials are poor because of unavailable parcels. Yet the intermodal transfer opportunities would suggest the reverse. Major redevelopment would be required to achieve TOD, which seems unlikely. This station appears to be sited to orient solely to the bus transit center, to attract bus passengers who will transfer to transit and the reverse. Extensive pedestrian facilities needed, most likely aerial, to connect to bus transit center.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	Unclear what intermodal transfer facilities, other than pedestrian facilities, would be necessary.

Section 3 Number 16

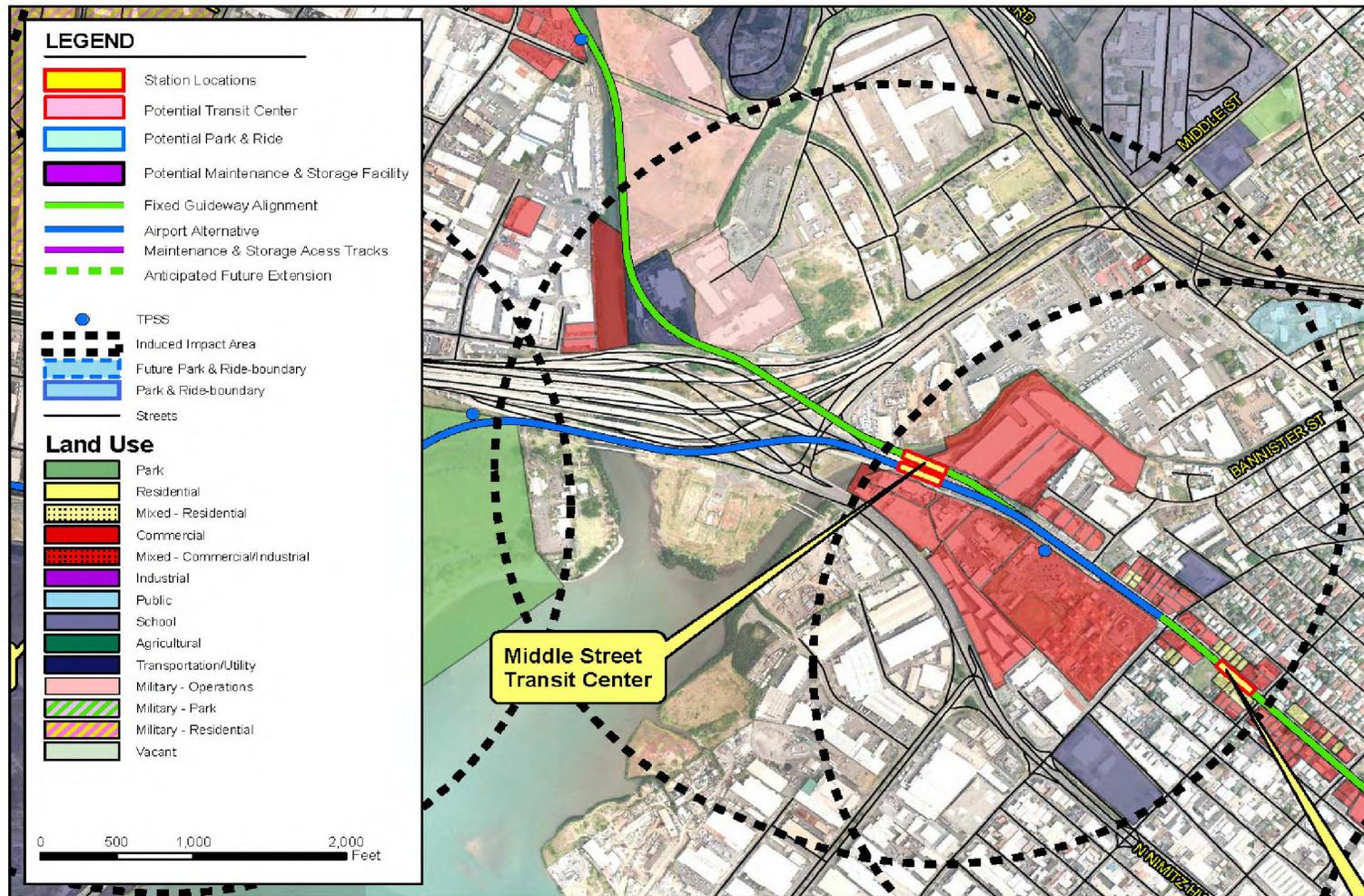


Figure A-16: Middle Street Transit Center

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Table A-17: Kalihi

Location: Dillingham Boulevard between Mokauea Street and Puuhale Road	
1. Existing Conditions in Corridor	
Land Use Types	The station site is dominated by industrial and commercial uses south of Dillingham Boulevard and multifamily residences north of Dillingham Boulevard. Some of the commercial and industrial uses are related to activities at nearby Honolulu Harbor.
Density	Moderate.
Character of Development	Mixed commercial and light industrial uses, with residential and schools. Honolulu Community College is not far.
Parcels Available for Development	None visible.
Parking Supply	None.
New Developments	Unclear. Kamehameha Schools owns much land and buildings in this area.
Sensitive Uses: Schools, hospitals, parks, residences	Kalihi Kai Elementary School. Is closest school. Kapalama Stream is a few blocks to the east.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone X. Area parcels zoned I-2, I-3, P-2, A-1, B-2, IMX-1, BMX-3, R-5. Majority of area is intense industrial with some industrial/commercial mixed-use. Some low-density apartment complexes/condominiums are <i>mauka</i> of Dillingham. The area <i>makai</i> of Dillingham is intensive industrial and industrial-commercial mix use.
Vacant Parcels	1/8 acre on Dillingham between Kalihi and Mokauea.
Sensitive Uses	Kapalama Stream; Puuhale ES; Kalihi Kai ES; Kalakaua ES; Kalakaua District Park; Kalihi and Kalihi Kai Fire Station; St. Anthony School
Parking Supply	Limited to off-street parking along side streets. No parking along Dillingham.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Kamehameha Schools plans to redevelop some of these properties, as leases expire in the next few years, into a media/entertainment industry center with mixed uses including housing.
Access	Dillingham Boulevard.
Potential Impacts on Sensitive Environ Resources	Kalihi Kai Elementary School. Kapalama Stream is too far away to be impacted.
Construction Footprint	13,500 to 22,500 square feet for the station in the middle of Dillingham Boulevard.
Refinements to Plans to Improve TOD	Coordinate with Kamehameha Schools re redevelopment plans.

Table A-17: Kalihi

Location: Dillingham Boulevard between Mokauea Street and Puuhale Road	
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 21

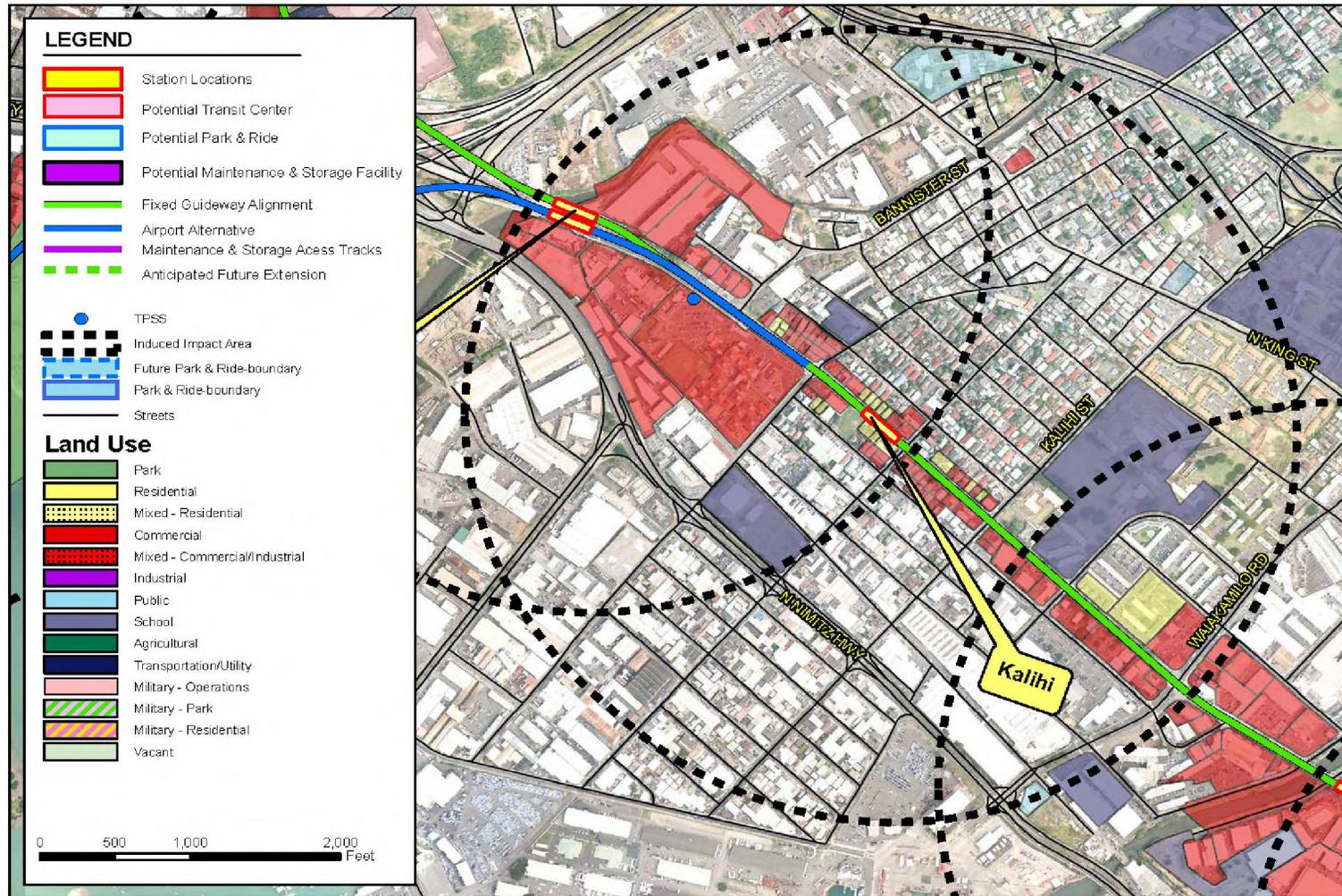


Figure A-17: Kalihi

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Table A-18: Kapalama

Location: Dillingham Boulevard at Kokea Street	
1. Existing Conditions in Corridor	
Land Use Types	Honolulu Community College's main campus (a part of UH) is located on north side of Dillingham Boulevard and had over 4,200 students in 2006. The campus is surrounded by moderate density housing. The south side of Dillingham is commercial and industrial. Power lines straddle both sides of the street. Sprint office building is close. Kapalama Stream is adjacent to the station. A vacant car dealership is nearby. Big box retail stores are also nearby, such as Costco and Home Depot..
Density	Moderate.
Character of Development	Land uses are largely industrial and commercial similar to Kahili Station, except for HCC.
Parcels Available for Development	None visible. Maybe vacant car dealership is available.
Parking Supply	None.
New Developments	Do not know, although Kamehameha Schools owns much property west of HCC.
Sensitive Uses: Schools, hospitals, parks, residences	HCC. Kapalama Stream.
2. Existing Conditions within ½ mile of Station Site	
	Flood area zoned X. Area parcels zoned I-3, P-2, A-1, A-2, B-2, IMX-1, BMX-3, R-5. Honolulu Community College dominates the area. Intense industrial along the waterfront, industrial commercial mixed-use <i>makai</i> . Low-density apartments/condominiums and community mixed-use business centers <i>mauka</i> of proposed station location. Costco located on Alakawa St.
Vacant Parcels	None.
Sensitive Uses	Kapalama Stream; Honolulu Community College; Kaiulani ES; hospice Hawaii; Kapalam Pet Hospital; Straub Clinic and Hospital Kuakini Health System
Parking Supply	Limited side-street parking on Kokea and Kohou. Permit parking at HCC.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Unlikely in the immediate vicinity. However, redevelopment possibilities exist a few blocks east and west.
Access	Dillingham Boulevard.
Potential Impacts on Sensitive Environ Resources	HCC. Kapalama Stream.
Right of Way Impacts	TBD. 13,500 to 22,500 square feet for the station.

Table A-18: Kapalama

Location: Dillingham Boulevard at Kokea Street	
Refinements to Plans to Improve TOD	Coordination with HCC will be necessary to create strong pedestrian connection to College buildings to enhance ridership.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 22

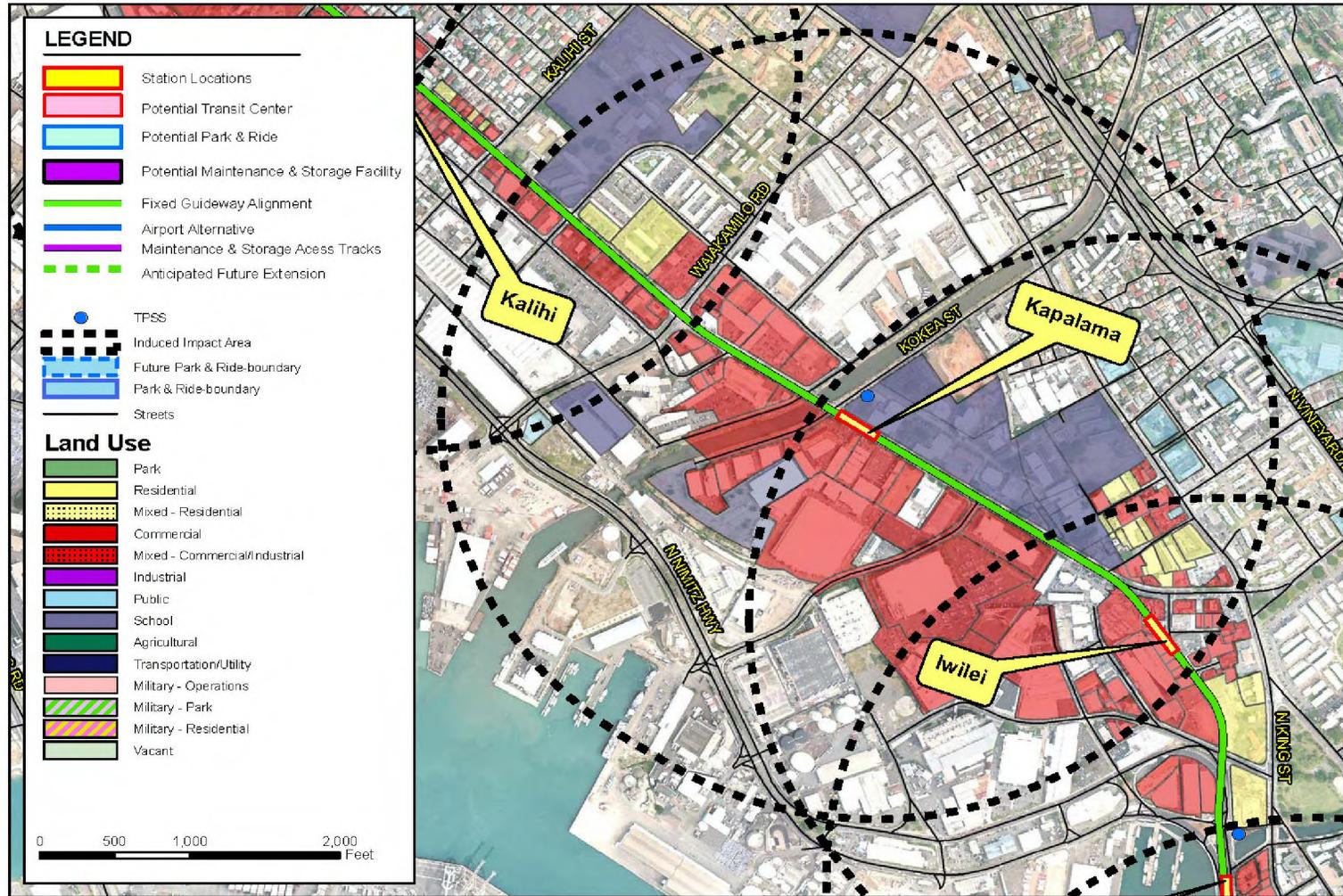


Figure A-18: Kapalama

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Table A-19: Iwilei

Location: Ka'aahi Street near Dillingham Boulevard and North King Street	
1. Existing Conditions in Corridor	
Land Use Types	The area includes a mix of commercial, industrial, and residential uses. The commercial and industrial uses are similar to the two previous stations, but the residential complexes are larger and include Mayor Wright Homes and Kekou'i Gardens, both HUD low-rise affordable housing developments. The HUD developments are located a block north of the station site. A large homeless shelter is nearby.
Density	Moderate to high.
Character of Development	A congested mix of deteriorating commercial buildings near affordable housing developments. Appears ripe for redevelopment. The area is within walking distance of Chinatown and downtown. The historic Oahu Railway Station is a block north of the station.
Parcels Available for Development	None visible.
Parking Supply	None.
New Developments	None.
Sensitive Uses: Schools, hospitals, parks, residences	Kaiulani Elementary School, Oahu historic railroad station and Nu Anu Stream are close by.
2. Existing Conditions within ½ mile of Station Site	
	Area parcels zoned as A-1, A-2, I-3, P-2, BMX-3, BMX-4, IMX-1, B-2. Flood zone X. Intensely developed area with intensive industry along the waterfront. Many blighted buildings may be available for redevelopment. Several affordable housing developments and low-to-medium-density apartment complexes <i>mauka</i> of proposed station.
Vacant Parcels	None.
Sensitive Uses	Historic Oahu rail station; Aala Park; Pauahi Recreation Center; Honolulu City Police Department; Waterfront Fire Station; Kaluwela ES; Beretania Community Park; Honolulu Harbor; Hawaii Theater
Parking Supply	Surface parking at Costco, limited to off-street parking. No parking along Beretania.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Unknown.
Access	From Kaaahi Street a short dead end street off Dillingham Boulevard.
Displacement	13,500 to 22,500 square feet for the station. This will require taking properties since Kaaahi Street is narrow and the buildings are very close to the station site.

Table A-19: Iwilei

Location: Ka'aahi Street near Dillingham Boulevard and North King Street	
Potential Impacts on Sensitive Environ Resources	None, since the elementary school, the historic station and the stream are not adjacent.
Refinements to Plans to Improve TOD	If the area is ripe for development, discussions with property owners should commence. TOD potentials, via redevelopment, are high because of a large transit dependent population nearby and proximity to the CBD.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 23

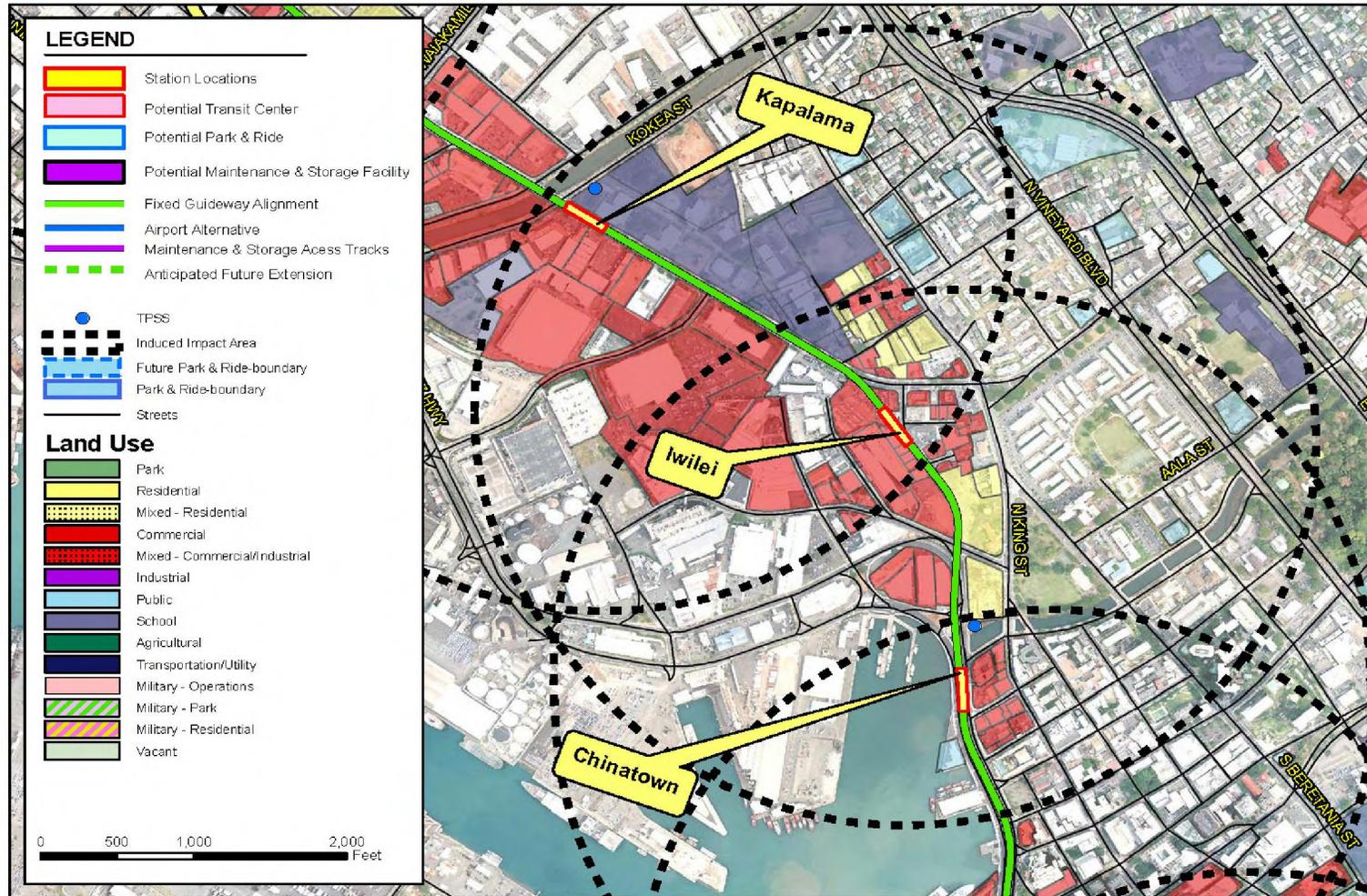


Figure A-19: Iwilei

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Table A-20: Chinatown

Location: Nimitz Highway at Kekaulike Street	
1. Existing Conditions in Corridor	
Land Use Types	This is the first station from the west that would serve downtown Honolulu at its southwest corner. The area immediately adjacent and north is a part of Chinatown and the historic O'ahu food market, itself an important local and tourist attraction. A high-rise residential tower is on the west side of Nu Anu Stream. Honolulu Harbor is adjacent and to the south.
Density	Chinatown (population density of over 26,000 p/sm)
Character of Development	Chinatown is largely small low-rise historic commercial buildings with offices and some housing above. The area has some new restaurants and art galleries. On the south side of the station is Honolulu Harbor, where the Hawaii Super Ferry was docked in October 2007.
Parcels Available for Development	None evident.
Parking Supply	None.
New Developments	None.
Sensitive Uses: Schools, hospitals, parks, residences	Nu Anu Stream, Honolulu Harbor and historic Chinatown.
2. Existing Conditions within ½ mile of Station Site	
	Area parcels zoned as P-2, BMX-4, A-2, I-3, ALOHA TOWER PROJ.. Flood zone X. Gateway to Downtown Honolulu. Many low-rise historic buildings with medium density apartment complexes along Beretania and Aala. Waterfront industry north of Aloha Tower. Central business mixed-use nearby.
Vacant Parcels	None.
Sensitive Uses	Waterfront; Fort Street Mall; Kapiolani Health Connection; Historic Buildings; Chinatown; Irwin Park; Cole Academy; Hotel St
Parking Supply	Limited. No parking along Nimitz. Multi-leveled paid parking buildings in town, paid surface parking lot at Nuuanu and Nimitz; some metered parking along Nuuanu.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	New development would require demolition of existing buildings. This is unlikely in the Chinatown Historic District. Redevelopment may be more likely west of Nu Anu Stream and along harbor front piers.
Access	Nimitz Highway. Four alternate station entrances are under consideration.
Displacement	None anticipated since Nimitz Highway is very wide at this point. 13,500 to 22,500 square feet is required for the station.

Table A-20: Chinatown

Location: Nimitz Highway at Kekaulike Street	
Potential Impacts on Sensitive Environmental Resources	Runoff to Nu Anu Stream and Honolulu Harbor.
Refinements to Plans to Improve TOD	Good pedestrian access to Chinatown is essential. Access to the harbor side will facilitate redevelopment there and serve the Super Ferry..
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 24

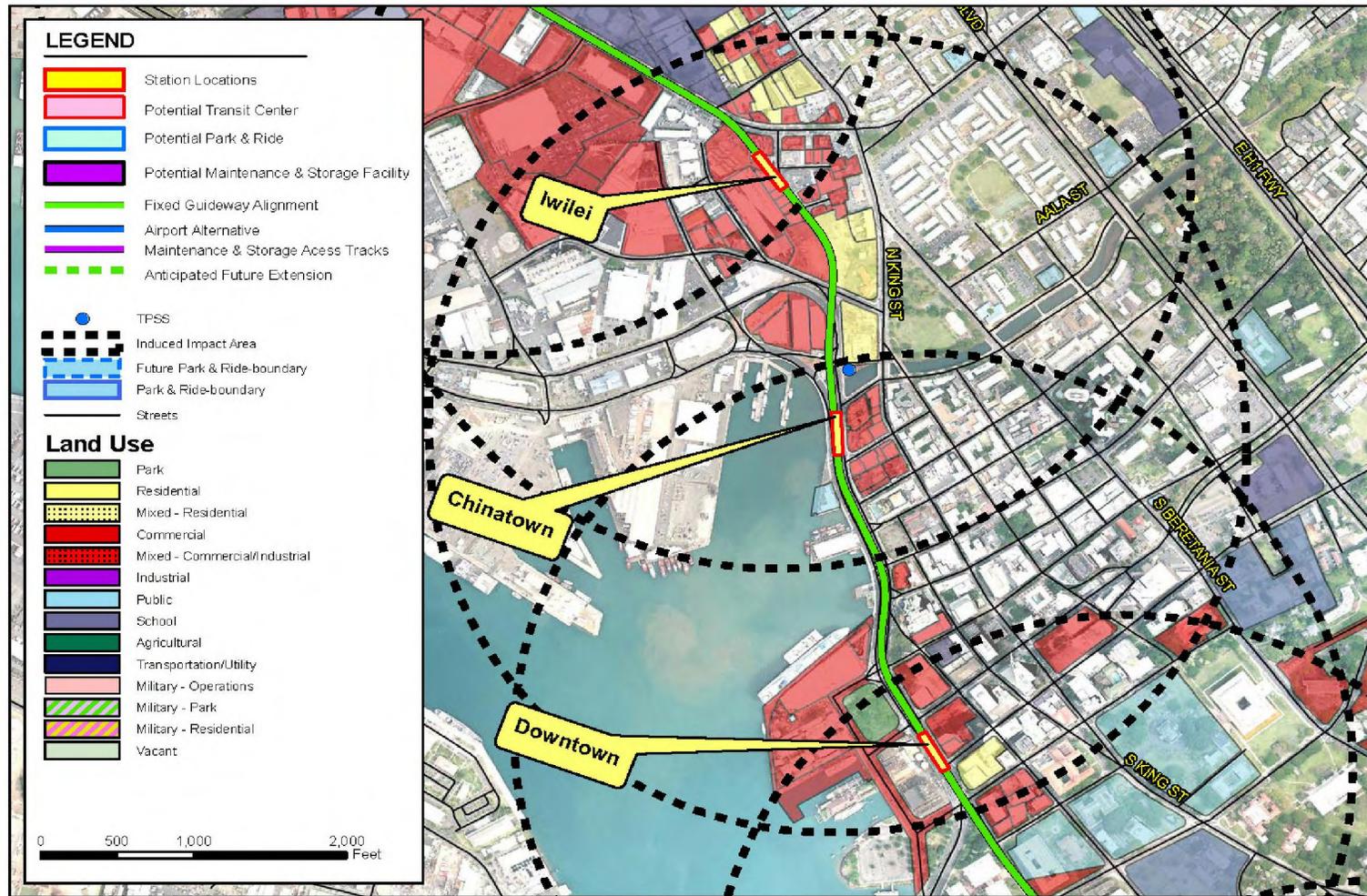


Figure A-20: Chinatown

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Table A-21: Downtown

Location: Nimitz Highway between Bishop and Alakea Streets Street	
1. Existing Conditions in Corridor	
Land Use Types	The central business district of Honolulu is on the north side of the station and contains major office buildings, some retail and residential condominiums. To the southwest is Irwin Park (State-owned), essentially a well-landscaped parking lot. Farther south is the Aloha Tower Market Place (a shopping mall with restaurants oriented to tourists and office workers.). This station will serve the entire downtown Honolulu area including the Fort Street pedestrian mall, Aloha Tower Marketplace, and the cruise ship terminal at Piers 10 and 11 that processed nearly 241,000 passengers in 2005. It also will serve the very densely developed financial district and nearby government offices. The station is flanked on the south side by a power plant, long regarded as a redevelopment site.
Density	This station will serve the densest concentration of jobs in the entire transit corridor. All housing is high density.
Character of Development	High-rise office buildings and condominium towers on the north side. A landscaped park with surface parking, a large power plant and a major passenger cruise terminal on the south side.
Parcels Available for Development	None. The power plant site may be available for redevelopment.
Parking Supply	Surface parking lot. Many of the office buildings have parking garages, some open to the public
New Developments	Unknown
Sensitive Uses: Schools, hospitals, parks, residences	Honolulu Harbor and Irwin Park. A historic office building is on the north side of the station site.
2. Existing Conditions within ½ mile of Station Site	
	Area parcels zoned as I-3, BMX-4, B-1, B-2, P-2 ALOHA TOWER PROJECT, KAKA AKA COMM. DEV. DISTRICT. Flood zone X. Urban core, municipal buildings, and financial district. This area is central to the PUC and is home to high-rise office buildings, low-rise historic buildings with limited condominium towers on the <i>mauka</i> side. Waterfront houses Aloha Tower Marketplace (shopping center with medium-to-high end eating establishments), Honolulu Harbor, and passenger cruise terminal. Power plant is also located near the waterfront. Iolani Palace is close-by.
Vacant Parcels	None
Sensitive Uses	Iolani Palace; Hawaii State Library; Aloha Tower; Central Intermediate School; Hawaii State Capitol; State municipal buildings;
Parking Supply	Limited. No parking along Nimitz. Multi-leveled paid parking buildings in town, some metered parking beginning at Punchbowl.

Table A-21: Downtown

Location: Nimitz Highway between Bishop and Alakea Streets Street	
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	None known. Power plant site may be a possible redevelopment site, which would be a major new opportunity for joint development with the station opposite it.
Access	Nimitz Highway, Alakea Street and Bishop Street (main street of financial district). The station will not touchdown in Irwin Park adjacent to Aloha Tower.
Displacement	None anticipated since Nimitz Highway is very wide.
Potential Impacts on Sensitive Environ Resources	Construction and operational vibration on historic office building at the northeast corner of Bishop Street and Nimitz Highway. Runoff to Honolulu Harbor. Since Irwin Park is a public park, there may be 4 (f) impacts.
Right of Way Impacts	13,500 to 22,500 square feet for the station in middle of Nimitz Highway.
Refinements to Plans to Improve TOD	Pedestrian connections on both sides of station will be important to allow free passage of pedestrians between the waterfront and downtown over very wide and pedestrian unfriendly Nimitz Highway. Connection to passenger cruise ship terminal will encourage tourists to ride the transit.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 25

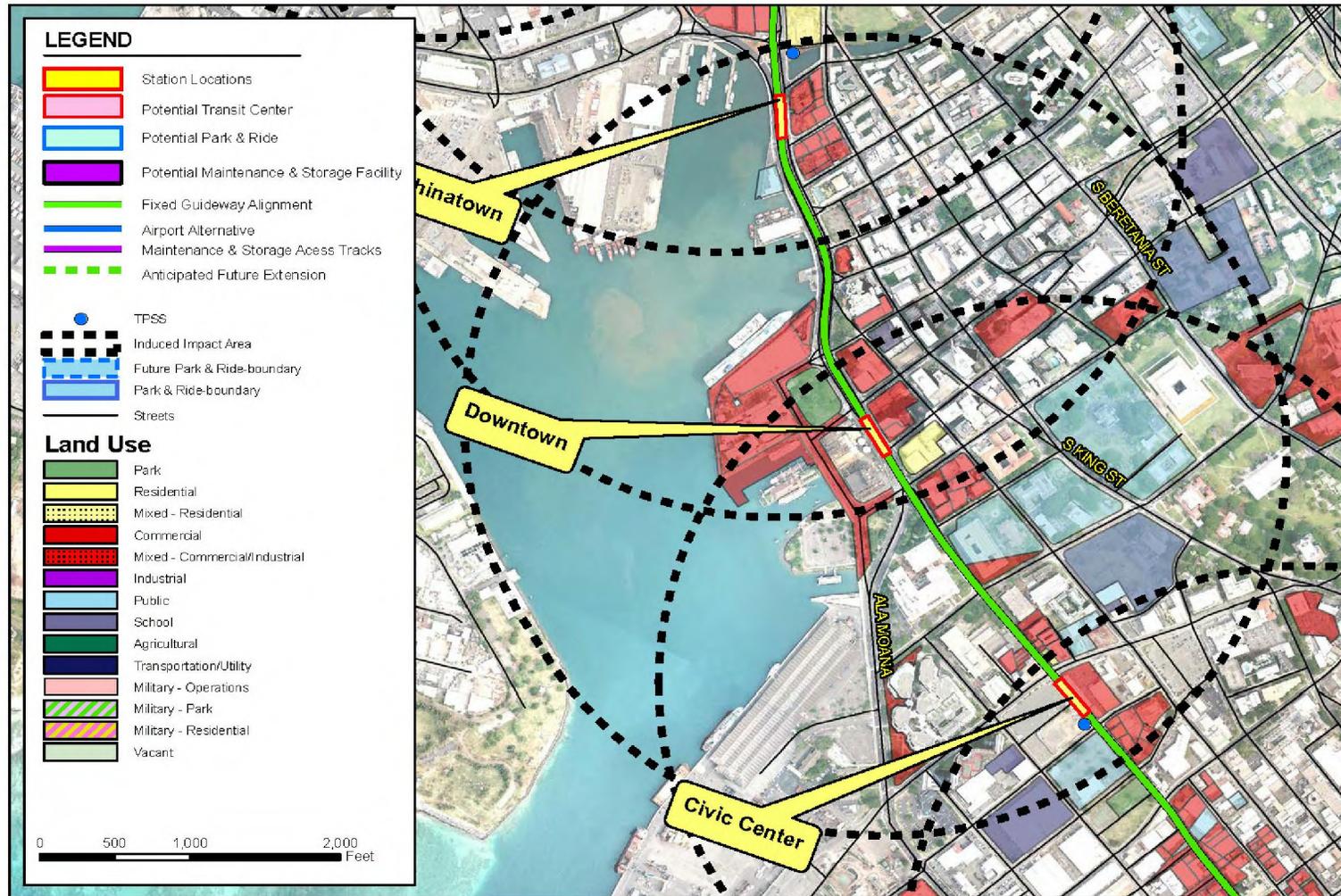


Figure A-21: Downtown

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Table A-22: Civic Center

Location: Halekauwila Street at South Street	
1. Existing Conditions in Corridor	
Land Use Types	This station would serve nearby government offices and an area currently under transition from underutilized commercial and industrial activities to high-density condominium and office uses east of South Street, such as Keola La'i and Halekauwila Place. "Restaurant Row", an office/restaurant complex is within walking distance.
Density	Major contrasts. The new high-rise residential and office towers are very high density. The existing government buildings are primarily six stories but densely populated with office workers. There are few older residential buildings of moderate density.
Character of Development	Traditional style government buildings, surface parking lots and new high-rise construction predominate. Halekauwila Street is lined with large Monkey Pod trees creating an attractive shade canopy.
Parcels Available for Development	Surface parking lots could be developed.
Parking Supply	Ample in surface lots and garages.
New Developments	According to HCDA data, 16 major planned developments (PD) projects with nearly 9.4 MSF have been built in Kakaako Community Development District between 1988 and 2006. The limits of Kakaako are Punchbowl Street on the west and Piikoi Street on the east between King Street on the north and the ocean on the south. These developments include over 5,800 dwelling units, nearly 1.5MSF of commercial (e.g., office and retail) and over 411KSF of industrial (e.g., light, warehouse and distribution). PDs have the following limits depending on lot size; FAR-3.5, height-400 feet. Mauka projects in Kakaako have the following limits; FAR 1.5, height-45 feet.
Sensitive Uses: Schools, hospitals, parks, residences	Monkey Pod trees on the Halekauwila Street. Mother Waldron Playground. Landscaped grounds next to alignment where Halekauwila Street and Ala Moana Boulevard merge.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone A, some AE. Area parcels zoned as A-2, BMX-3, KAKAAKO COMM DEV DISTRICT, WATERFRONT INDUSTRIAL, B-2, P-2, ALOHA TOWER PROJ. Area is largely business mixed-use with traditional low-rise office buildings and high-rise office buildings side-by-side. The area has seen numerous redevelopment projects. Ewa of South Street Halekauwila is lined with Monkey-pod trees. Koko Head of South Street are several surface area parking lots, Mother Waldron Park and intensive industrial usage. There is a mix of high rise condominium and office towers. There is more intense industry along the waterfront. Medium density apartment/condo complexes exist <i>mauka</i> of the proposed station location.
Vacant Parcels	None.
Sensitive Uses	Mother Waldron Park; Kawaiaha'o Church School; Waterfront Towers

Table A-22: Civic Center

Location: Halekauwila Street at South Street	
Parking Supply	Paid surface parking lot at South and Halekauwila and Keawe and Halekauwila. Metered, side-street parking beginning at Halekauwila and Keawe St to Punchbowl. Parking in commercial areas along surface parking lots..
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	An 18-story affordable housing building is planned for a State-owned parking lot opposite the station site between South and Keawe Streets.
Access	From Halekauwila Street.
Displacement	Trees, or parts of trees, will be affected for the alignment segment west of the station. Right of way taking may impact Kam Schools property. There are alternatives on Halekawila Street. Monkey pod trees would be cut back or displaced.
Potential Impacts on Sensitive Environ Resources	Monkey Pod trees. Mother Waldren Park.
Refinements to Plans to Improve TOD	Coordination with State (HCDA), Kamehameha Schools, General Growth and other major property owners is necessary to strengthen TOD potentials for development in current surface parking lot south of station.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 26

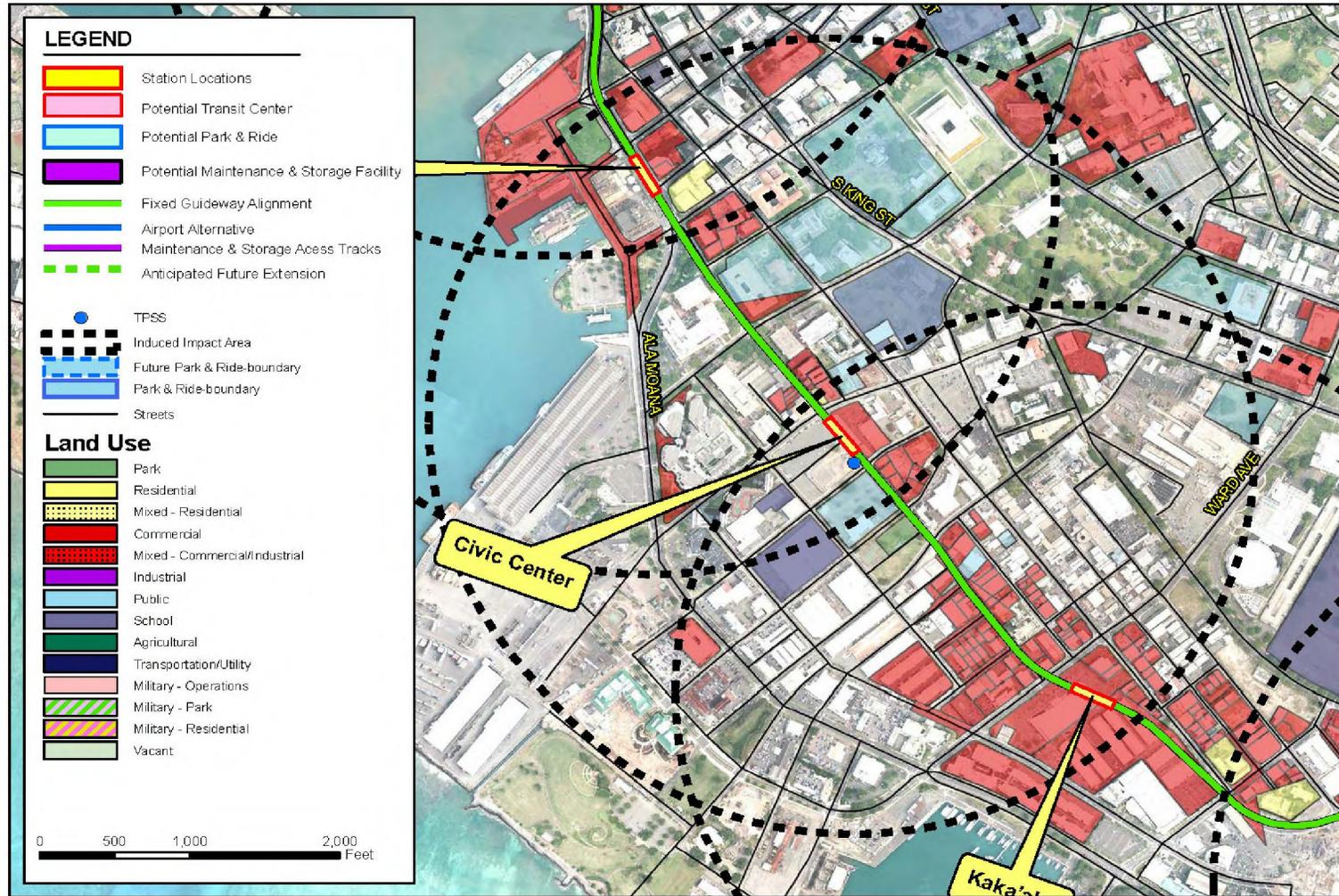


Figure A-22: Civic Center

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Table A-23: Kaka'ako

Location: Halekauwila Street at Ward Avenue	
1. Existing Conditions in Corridor	
Land Use Types	There is an unusual mix of big box retail, cinemas, and restaurants mixed in with older, smaller industrial uses and other small businesses in this area undergoing significant transition to upscale uses. Ward Center, a large retail (Nordstrom Shoes and Rack, Sports Authority, Borders Books and many more) and entertainment complex (movies, restaurants), is located near the station. Neal S. Blaisdell Center (arena seating 8,800 and theatre seating 2,158) is Honolulu's major cultural venue located a few blocks north of station.
Density	There are few residential uses in this commercial/industrial area.
Character of Development	This station site is in transition from low-density commercial uses with surface parking lots to new high-density office and residential uses with garage parking. The station is next to the popular Ward Center retail complex. New projects in the area include Ward Entertainment Center, Ward Village, and Hokua Tower.
Parcels Available for Development	There are no vacant parcels. All parcels appear occupied and would have to be acquired for redevelopment to be possible.
Parking Supply	Ample in surface lots and garages.
New Developments	The 720-unit Moana Pacific Condominium towers on Kapi'olani Boulevard is nearly complete. A new commercial building fronting on Kapi'olani Boulevard has 80,000 square feet of commercial space and creates a pedestrian friendly streetscape. This development replaced a car dealership and a number of low-rise commercial and industrial buildings that had been demolished in the early 1990s.
Sensitive Uses: Schools, hospitals, parks, residences	None.
2. Existing Conditions within ½ mile of Station Site	
	Area parcels zoned as WATERFRONT DEVELOPMENT, KAKAAKO DISTRICT, BMX-3, B-2, P-2. Flood zone A, AE. The Kaka'ako District has a mix of big box stores, limited industry, and the Ward Center, a large shopping plaza that has a cinema, medium-to-high end eating establishments, a Border's Book's store, Pier 1 Imports, Nordstrom, and other retail activities. Ala Moana Regional Park is <i>makai</i> of the proposed rail station. The Neal S. Blaisdell Center is <i>mauka</i> of the proposed station location. Ward Farmer's Market exists off of Auahi St. Strip mall retail exists along Ward Avenue.
Vacant Parcels	None
Sensitive Uses	Kewalo Basin; Ala Moana Regional Park; McKinley HS

Table A-23: Kaka'ako

Location: Halekauwila Street at Ward Avenue	
Parking Supply	Parking is limited to Ward Center, commercial areas along Ward Avenue. There is extensive off-street parking along side streets in the industrial area of Halekauwila, Queen, and other small side streets behind Ward Center. Some is metered; however, most is off-street parking.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	General Growth, HCDA and Kamehameha are major land owners in this area with plans for redevelopment to higher intensity uses.
Access	Halekauwila and Queen Streets and Ward Avenue.
Displacement	Properties would have to be displaced as the alignment and station leaves public right of way. On Halekawila Street, potential right of way takes on mauka side or makai side. No park impacts. Could displace parking lane on one side.
Potential Impacts on Sensitive Environ Resources	None.
Refinements to Plans to Improve TOD	Coordination with land owner, General Growth, is necessary to make certain that the transit project and the owner mutually benefit from redevelopment potentials.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 27

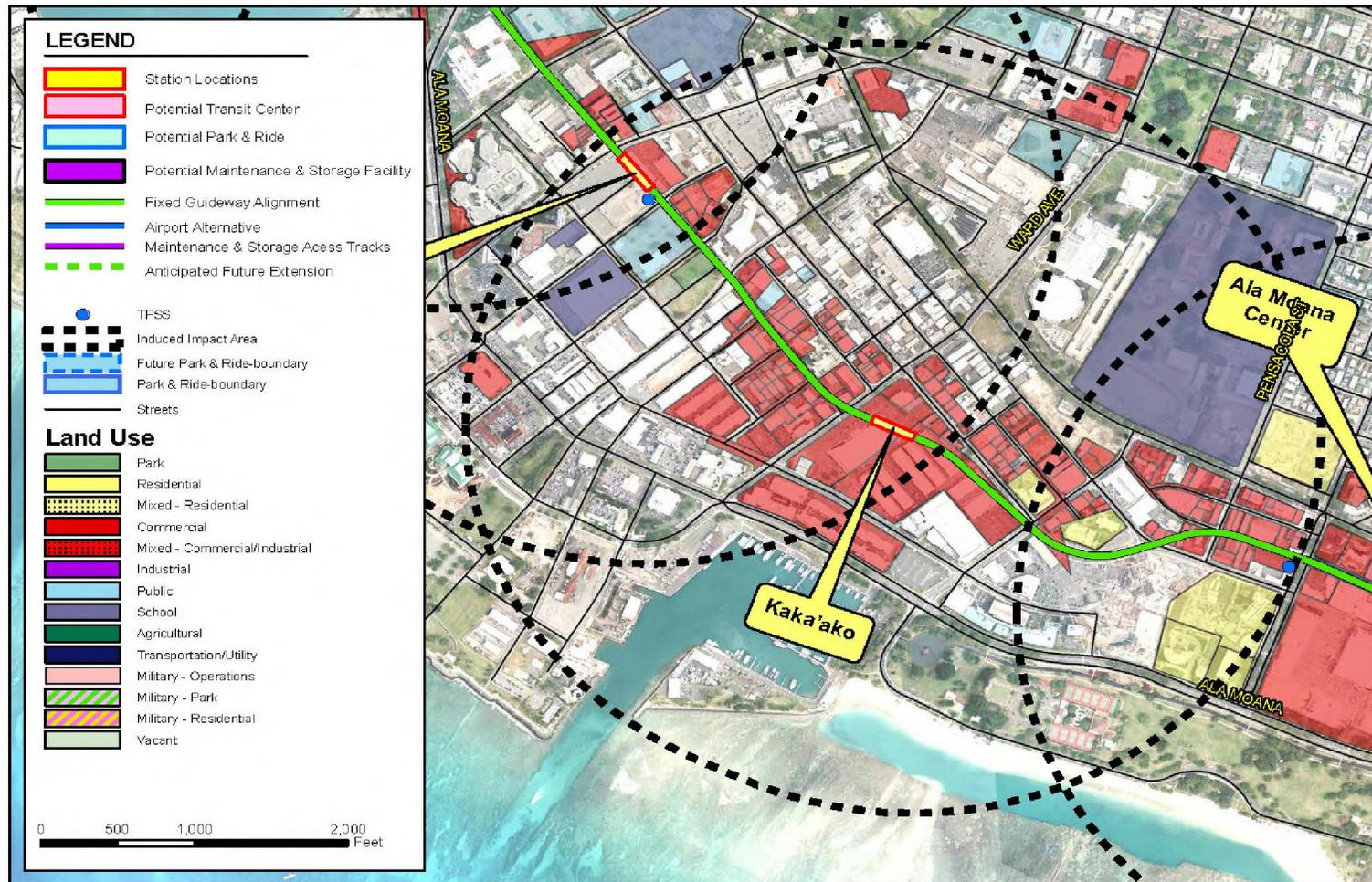


Figure A-23: Kaka'ako

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Table A-24: Ala Moana Center

Location: Kona Avenue at Keeaumoku	
1. Existing Conditions in Corridor	
Land Use Types	Ala Moana Center has 1.8 million square feet of retail space (Macy's, Sears, Neiman Marcus, and others), is one of the largest shopping centers in the U.S., as well as a major bus transit hub. This is the east terminus of the East Kapolei to Ala Moana Center First Project. It will serve a large retail area and expanding and borders the redeveloping Kaka'ako neighborhood. It is adjacent to major hotels and condominiums on the edge of Waikiki, the Honolulu Convention Center, as well as retail and small office uses. The shopping center is also the convergence of many bus lines, and in the future will become a major transfer station for the fixed guideway project. The owner of the Ala Moana Shopping Center has indicated interest in building a direct connection between the station and the adjacent shopping center, a strong example of future joint development at a transit station. The height of the station will be approximately 80 feet above the street adjacent to the mall's parking garage.
Density	There are few residential uses in this largely commercial area.
Character of Development	The character of the existing land uses is largely commercial; large mall and small businesses on the streets. Farther away is the large Ala Moana Hotel.
Parcels Available for Development	Unknown.
Parking Supply	Substantial, in the mall parking garage.
New Developments	New retail construction may link the Ala Moana Center with the future transit station.
Sensitive Uses: Schools, hospitals, parks, residences	None.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone A, AE. Area parcels zoned as BMX-3, A-2, A-3, P-2, AMX-2, AMX-3, KAKAAKO COMM DEV DISTRICT. The area surrounding the proposed station location is mostly commercial/community business mixed-use, the central focus being the Ala Moana Shopping Center. <i>Mauka</i> of the proposed station are medium-to-high density apartment/condominiums. Small mom and pop shops exist alongside a Sam's Club and a Wal-Mart along Keeamoku Street. There is a Don Quijote on Kaheka St. Lap dance, strip clubs, and pornography shops can be found on Atkinson, Kona St, and Kapiolani Avenue. Ala Moana Park sits <i>makai</i> of Ala Moana Shopping Center and the proposed station. The area is largely commercial; however, medium-to-high density apartment/condominiums exist <i>mauka</i> of Ala Moana Shopping Center. Ala Moana Shopping Center is expanding to street frontage on Kapiolani Blvd. There is a YMCA on Atkinson and Ala Moana Blvd.
Vacant Parcels	None.
Sensitive Uses	Ala Moana Regional Park; McKinley HS; Magic Island; Waikiki Harbor; YMCA.

Table A-24: Ala Moana Center

Location: Kona Avenue at Keeaumoku	
Parking Supply	Substantial parking at Ala Moana Shopping Center. Some off-street parking along Piikoi and side streets entering Kakaako District.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	The Nordstrom Department Store under construction opposite the Ala Moana Center will open in early 2008. The store also has frontage on Kapiolani Boulevard, a block away. Other redevelopments of lower intensity uses are probable.
Access	Primarily from Kona Street.
Potential Impacts on Sensitive Environ Resources	None.
Refinements to Plans to Improve TOD	Coordination with General Growth and Nordstrom is necessary to make certain that strong pedestrian connections between the station are made to link the Ala Moana Center, Nordstrom and Kona Street. This station site presents the strongest opportunity for joint development with abutments.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	TBD

Section 4 Number 28

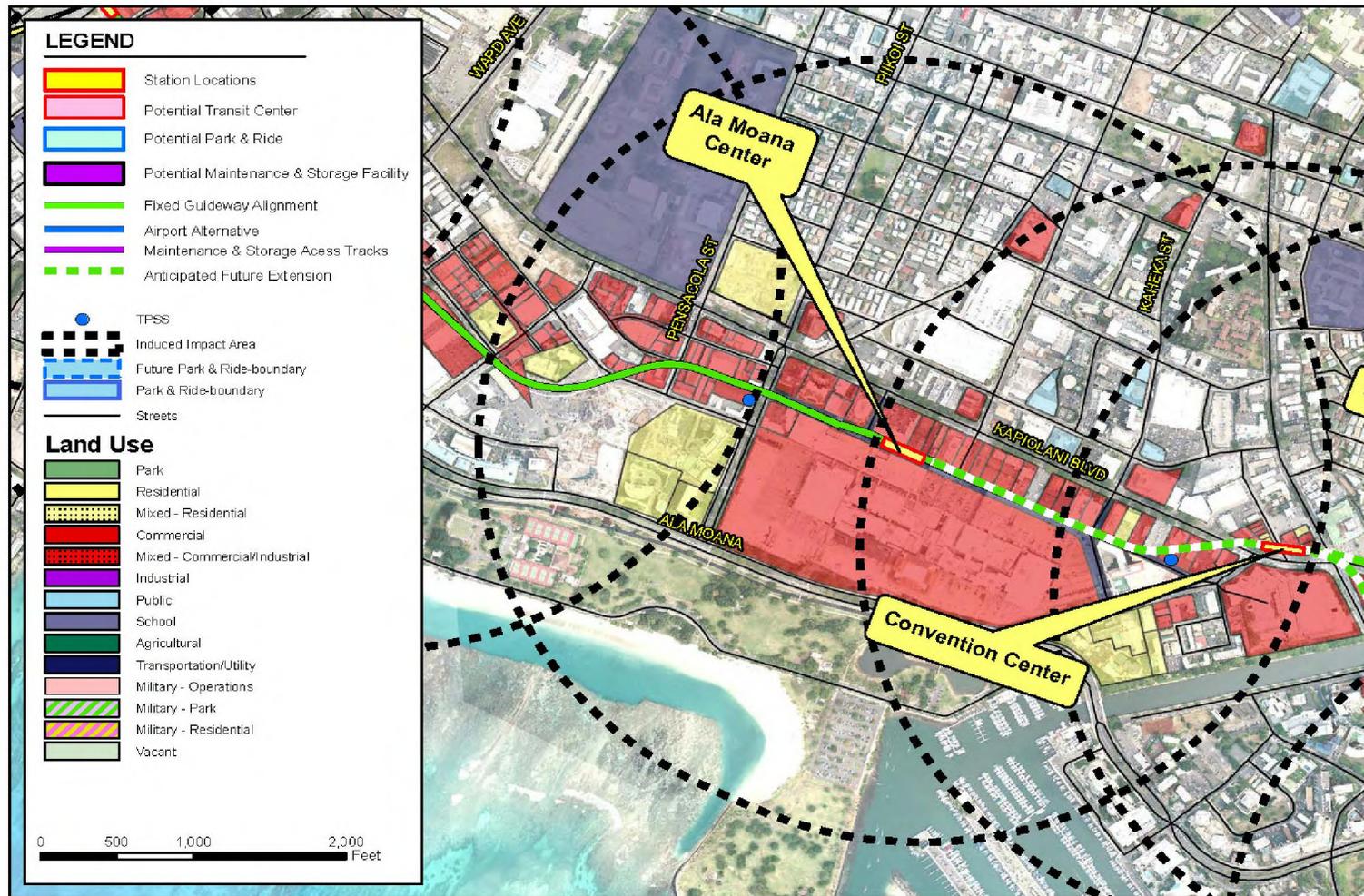


Figure A-24: Ala Moana Center

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Table A-25: Convention Center

Location: Kapiolani Boulevard at Kalakaua Avenue	
1. Existing Conditions in Corridor	
Land Use Types	Large convention center, high rise structures, shopping plaza and individual small commercial establishments. Housing beyond.
Density	Housing density to north is moderate and to the south high.
Character of Development	Very urban. Heavy vehicular traffic.
Parcels Available for Development	None evident. Redevelopment opportunities exist across Kapiolani Boulevard.
Parking Supply	Paid surface parking.
New Developments	Unknown.
Sensitive Uses: Schools, hospitals, parks, residences	Ala Wai Canal.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone AO, A, AE. Area zoned as AMX-2, AMX-3, BMX-3, A-2, A-3, P-2, APARTMENT MIXED USE SUBPRECINCT, RESORT COML SUBPRECINCT. Hawaii Convention Center at Atkinson and Kalakaua, which is the west entrance to Waikiki. Intense development patterns with low-to-high density apartment complexes; apartment-commercial mix-use comprise the area around the proposed rail station. Within Waikiki where there is a mix of resort and apartment development, restaurants and retail. A pedestrian/auto bridge crosses the Ala Wai Canal from the Convention Center to Waikiki. Lap dancing, strip clubs and drinking establishments exist along Atkinson and Kapiolani. A YMCA sits at Ala Moana and Atkinson. Ala Moana Shopping Center is nearby.
Vacant Parcels	None
Sensitive Uses	Ala Wai Canal; Ala Wai Harbor (more likely to be served by Ala Moana Center station).
Parking Supply	Paid surface parking lot on Koluakalani. After hours parking (no parking (6am to 7pm) on Kapiolani.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	No known plans, but redevelopment of nearby former Hard Rock Café parcel and Kapiolani Boulevard parcels are opportunities.
Access	Kalakaua Avenue, Ala Wai Boulevard and Kapiolani Boulevard.
Displacement	Small commercial uses..
Potential Impacts on Sensitive Environmental Resources	Ala Wai Canal.

Table A-25: Convention Center

Location: Kapiolani Boulevard at Kalakaua Avenue	
Refinements to Plans to Improve TOD	Station site is across the street from the convention center. Platform will be over 40 feet high. Aerial pedestrian ways should be considered to cross busy Kapiolani Boulevard to enter the convention center directly and to any new development on the former Hard Rock Café parcel.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

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Table A-26: McCully

Location: Kapiolani Boulevard at McCully Street	
1. Existing Conditions in Corridor	
Land Use Types	Fully built out commercial uses on Kapiolani Boulevard and housing and mixed uses beyond. Shopping centers on both sides of station site. Ala Wai Canal, a major recreational and aesthetic feature, is 300 feet south of the station site.
Density	Housing is moderate density (low rise), punctuated with a few high rise buildings.
Character of Development	Very mixed use urban.
Parcels Available for Development	None evident.
Parking Supply	None.
New Developments	New public storage facility has been built on the canal side of the station.
Sensitive Uses: Schools, hospitals, parks, residences	Ala Wai Canal and Ala Wai School and Park are about 2,500 feet east of the station site.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone AO, A. Area zoned as AMX-2, A-1, A-2, A-3, P-2, APARTMENT MIXED USE SUBPRECINCT, RESORT COML SUBPRECINCT, APT PRECINCT. McCully St offers entrance into Waikiki Special District. A pedestrian/auto bridge crosses the Ala Wai Canal. Intense development patterns constituting apartment/commercial and occasional detached single-family homes dominate the area. Low-to-high density apartment complexes, apartment-commercial mix use and general preservation (Ala Wai Park) comprise the area around the proposed rail station as well. Within Waikiki there is a mix of resort and apartment development. McCully Shopping Center sits <i>mauka</i> of the proposed station. A new storage center is being built at McCully and Kapiolani.
Vacant Parcels	At Fern and Wili Wili St there is a lot with only busses on it.
Sensitive Uses	Ala Wai Park; Ala Wai Canal.
Parking Supply	Limited. Some off-street metered and un-metered parking in Waikiki. Off-street parking along side streets and on McCully. Surface parking lot reserved for shoppers at McCully Shopping Center. Parking along the <i>makai</i> side of the Ala Wai Canal.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	None identified.
Access	Kapiolani Boulevard and McCully Street.

Table A-26: McCully

Location: Kapiolani Boulevard at McCully Street	
Displacement	TBD
Potential Impacts on Sensitive Environmental Resources	Runoff to Ala Wai Canal. Monkey Pod trees on Kapiolani Boulevard.
Refinements to Plans to Improve TOD	For TOD to take place, major redevelopment would be required. Long- range TOD potentials are likely strong because the station site is close (800 feet) to the Hawaii Convention Center and the Canal.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 30

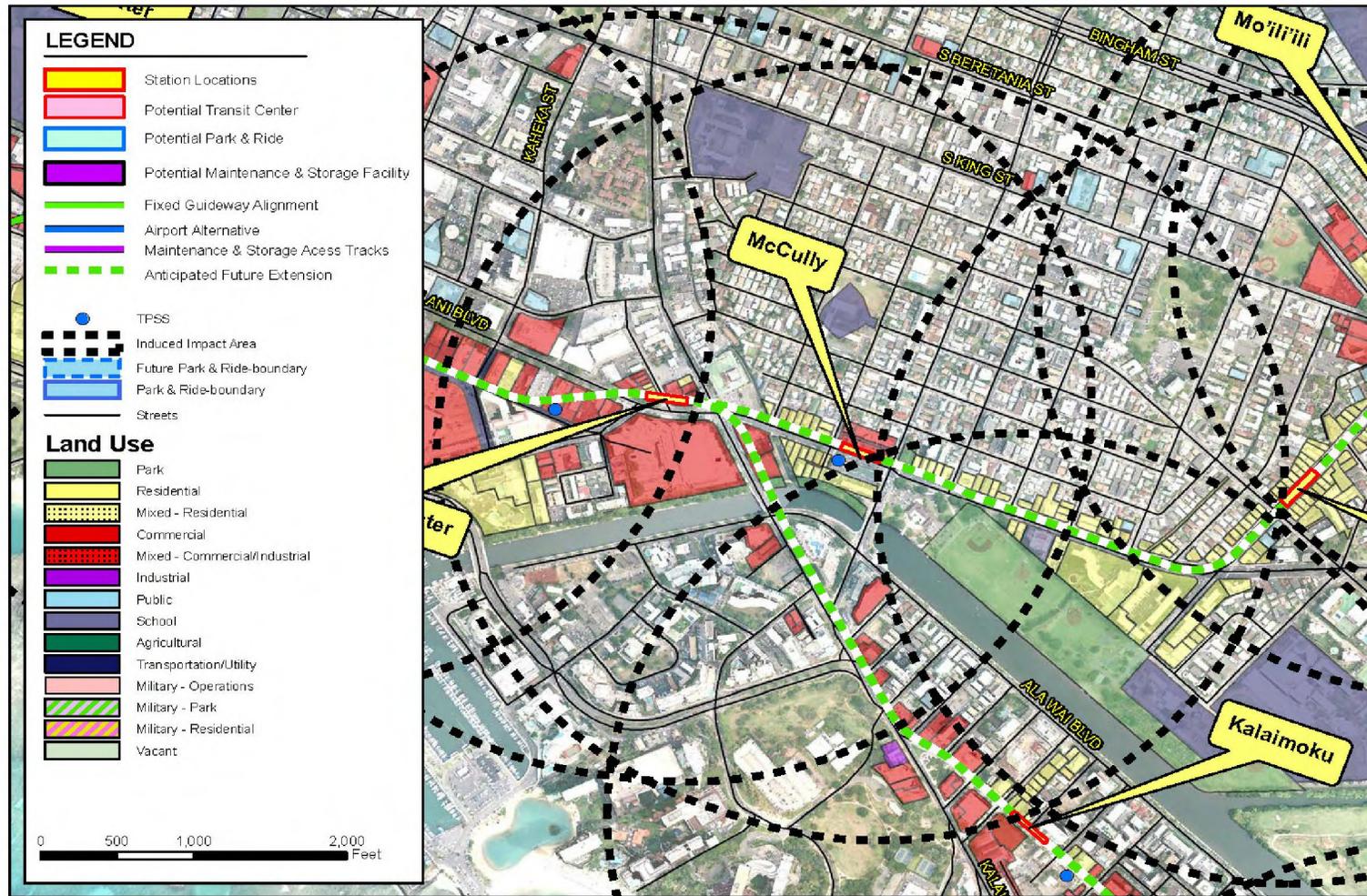


Figure A-26: McCully

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Table A-27: Date Street

Location: University Avenue at Date Street	
1. Existing Conditions in Corridor	
Land Use Types	Fully built out commercial uses on University Avenue and housing and mixed uses beyond.
Density	Moderate density low rise beyond University Avenue with a few high density high rise apartment buildings more distant.
Character of Development	Very urban.
Parcels Available for Development	None evident.
Parking Supply	None.
New Developments	A new fire station is under construction at corner of University and Date.
Sensitive Uses: Schools, hospitals, parks, residences	None.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone A, AE, AO, X, XS. Area parcels zoned as A-1, A-2, A-3, P-2. The area is dominated by intensive, high-density apartment complexes with the occasional non-conforming zoned single-family home. University Avenue leading to UH Manoa and beyond is the main thoroughfare. McCully Fire Station sits at Date and University. Numerous places of worship dot the landscape. Honolulu Stadium State Park (Old Stadium Park) is at Isenberg and King, as well as Moiliili Field; however, they will be better served by the Moiliili station. A mix of neighborhood and community businesses exist where King/Beretania/University merge. Ala Wai ES and Iolani School sit just outside of the ½ mile buffer near the Ala Wai Canal. Regency Tower apartment/condo complex at University and Kapiolani.
Vacant Parcels	None.
Sensitive Uses	Ala Wai ES; Iolani School; Regency Tower
Parking Supply	Limited. Off-street parking during scheduled hours along University Avenue. Off-street parking along side streets running up to University Avenue.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	None planned.
Access	University Avenue and Date Street. This station will be a major bus destination and will serve several bus lines from east Oahu. Bus transfers will be on street level, however. No transit center is planned.
Displacement	TBD. There will be right of way takings on University Avenue.

Table A-27: Date Street

Location: University Avenue at Date Street	
Potential Impacts on Sensitive Environmental Resources	None.
Refinements to Plans to Improve TOD	Since the station will be a major gateway from east Oahu, bus transfer will be at street level. This may have moderate long-term potential for TOD. To achieve TOD, redevelopment would be required since the immediate vicinity is fully built out. The station's proximity to both the convention center and the University of Hawaii and the bus transfer function would support TOD.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 31

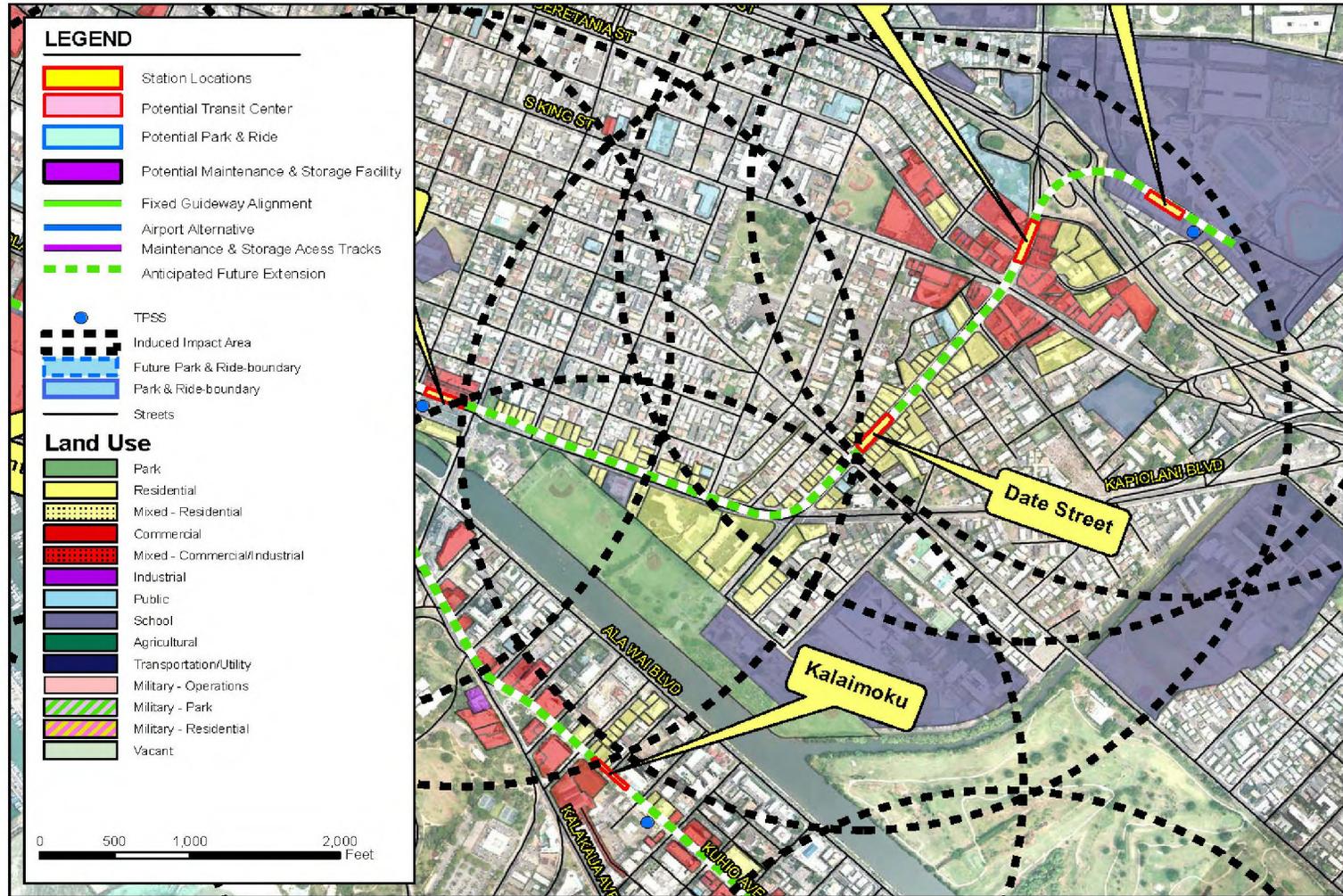


Figure A-27: Date Street

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Table A-28: Mo'ili'i

Location: University Avenue at S. King Street.	
1. Existing Conditions in Corridor	
Land Use Types	Commercial uses oriented to university students including the former Varsity Cinema from University Avenue. Moderate density housing is beyond..
Density	Moderate for housing.
Character of Development	Very urban, if not seedy.
Parcels Available for Development	None. Kamehameha owns much of the property here and has redevelopment plans.
Parking Supply	None.
New Developments	None
Sensitive Uses: Schools, hospitals, parks, residences	None.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone A, AE, AO, X, XS. Area parcels zoned as A-1, A-2, B-1, B-2, BMX-3, P-2, R-5. The area is dominated by intensive, high-density apartment complexes <i>makai</i> of H-1 and moderately expensive detached single-family homes <i>mauka</i> of H-1 in the Manoa area. Occasional non-conforming zoned single-family homes exist <i>makai</i> of H-1. University Avenue leading to UH Manoa and beyond is the main thoroughfare. Puck's Alley is the predominant low-rise commercial area, catering mostly to students at UH; however, there is a variety of medium-to-high end neighborhood restaurants and community level business mix-use. Numerous places of worship with private schools dot the landscape. Honolulu Stadium State Park (Old Stadium Park) is at Isenberg and King, as well as Moiliili Field. A mix of neighborhood and community businesses exist where King/Beretania/University merge. Star Market, Down to Earth, Kokua are local food retail markets. Stan Sheriff Stadium and Duke Paoa Kahanamoku Aquatic Complex are on UH grounds. Pedestrian underpass connects Moiliili area to UH Manoa. Underpass is not lit at night. Another, lit underpass linking Moiliili to UH Manoa, runs along Varsity Circle.
Vacant Parcels	None.
Sensitive Uses	Underpasses connecting Moiliili to UH Manoa; Puck's Alley; Old Stadium Park; Moiliili Field; UH Manoa; Stan Sheriff Stadium; Duke Paoa Kahanamoku Aquatic Complex.
Parking Supply	Limited. Some paid surface level parking lots; off-street parking along University and on smaller streets leading to University. Off-street parking along Coyne.

Table A-28: Mo'ili'ili

Location: University Avenue at S. King Street.	
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Kamehameha Schools owns property along University Avenue north of S. King Street and has plans to redevelop the area into a mixed use, high density, university-oriented community.
Access	University Avenue, S. King Street and Beretania.
Potential Impacts on Sensitive Environmental Resources	None.
Mitigation Measures	TBD
Right of Way Impacts	Kam Schools is concerned that the height of the station will be at the 6 th story of their planned buildings.
Refinements to Plans to Improve TOD	Need to coordinate with Kam Schools so that station and their plans are compatible, particularly regarding pedestrian facilities.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 33

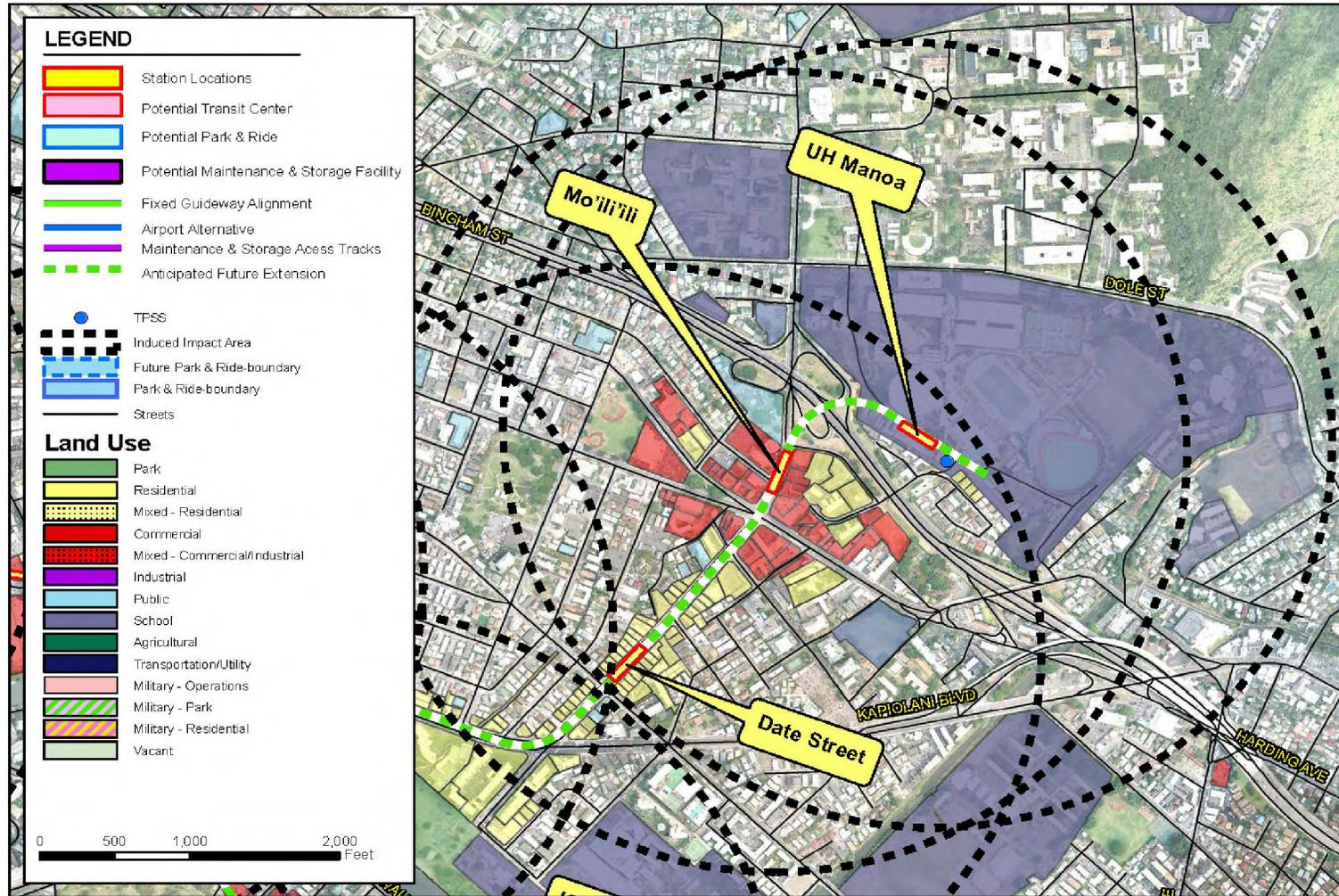


Figure A-28: Mo'ili'ili

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Table A-29: UH Manoa

Location: Lower Campus Road on the UH campus	
1. Existing Conditions in Corridor	
Land Use Types	University buildings and facilities: Arena, swimming pool, baseball stadium, temporary classroom buildings, parking garages and parking lots.
Density	No housing.
Character of Development	Dense, crowded area of campus next to the elevated H-1.
Parcels Available for Development	Area now used for temporary classrooms
Parking Supply	Large parking garage 750 feet to the north.
New Developments	Unknown.
Sensitive Uses: Schools, hospitals, parks, residences	UH facilities.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone XS, AE, X, AEF. Area parcels zoned as BMX-3, P-2, R-5, R-3.5, A-1, A-2, B-2. Area is dominated by buildings related to the University of Hawaii. Residential areas <i>mauka</i> of H-1 are home to some of the most expensive real estate in the world in Manoa Valley. <i>Makai</i> of H-1 is Moiliili and high density apartment/condo complexes with mix-use neighborhood/community businesses. University Avenue leading to UH Manoa and beyond is the main thoroughfare. Puck's Alley is the predominant low-rise commercial area <i>makai</i> of H-1, catering mostly to students at UH; however, there is a variety of medium-to-high end neighborhood restaurants as far <i>mauka</i> as University and Dole. Numerous places of worship with private schools dot the landscape. A mix of neighborhood and community businesses exist where King/Beretania/University merge. Star Market, Down to Earth, Kokua are local food retail markets. Stan Sheriff Stadium and Duke Paoa Kahanamoku Aquatic Complex are on UH grounds. Pedestrian underpass connects Moiliili area to UH Manoa. Underpass is not lit at night. Another, lit underpass linking Moiliili to UH Manoa, runs along Varsity Circle.
Vacant Parcels	None.
Sensitive Uses	UH; Puck's Alley; Stan Sheriff Center; Duke Paoa Kahanamoku Aquatic Complex
Parking Supply	Limited. Surface and lot parking for UH students/faculty. Metered off-street parking along University. Off-street parking on Oahu Avenue and streets within Manoa Valley/Moiliili neighborhoods.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Unknown. No room for new development.
Access	Lower Campus Road from Dole Street as well as from Kalo Place, a small street under H-1.

Table A-29: UH Manoa

Location: Lower Campus Road on the UH campus	
Displacement	Station will displace temporary classroom facilities.
Potential Impacts on Sensitive Environmental Resources	Trees. Visual impacts since station will be 50 feet above the surface street. Alignment will be over elevated H-1 so will be very visible.
Refinements to Plans to Improve TOD	Coordination needed with UH to make sure pedestrian facilities meet their needs. For example, the adjacent sports facilities will generate many transit riders at scheduled events and pedestrian facilities should be designed to accommodate these peak periods safely. TOD potentials are limited because of built up nature of site.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 33

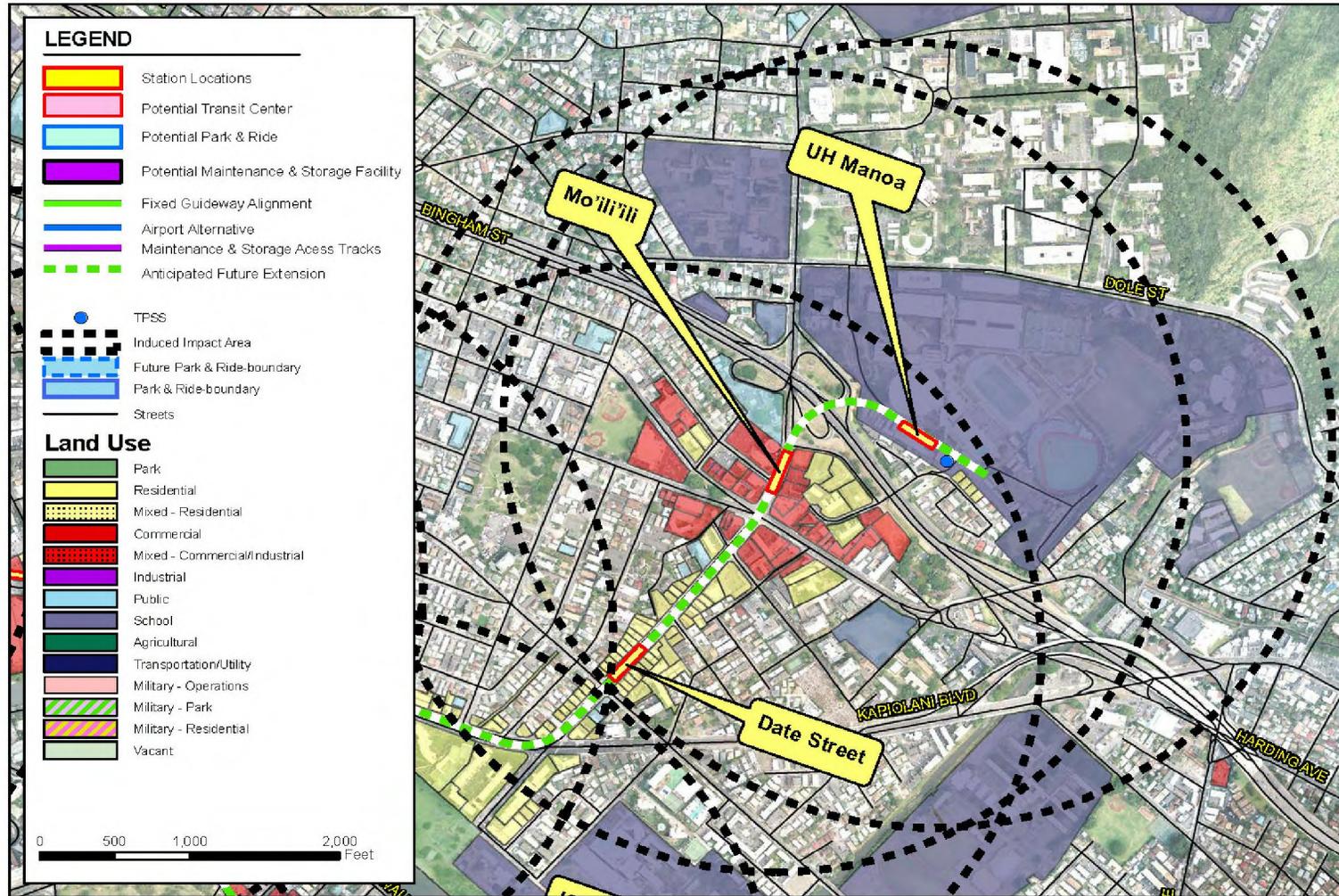


Figure A-29: UH Manoa

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Table A-30: Kalaimoku Street

Location: Kuhio Avenue at Kalaimoku Street, Waikiki	
1. Existing Conditions in Corridor	
Land Use Types	High density residential and hotel uses with ground floor retail catering to residents and tourists along Kuhio Avenue. This is part of Waikiki, Honolulu's major tourist district as it fronts on the ocean. Honolulu's largest resort hotels are located there.
Density	High.
Character of Development	Very urban. Colorful. Mixed Uses. Heavy vehicular and pedestrian traffic. Kuhio Avenue was recently landscaped and is attractive.
Parcels Available for Development	None evident.
Parking Supply	Few spaces not already used. Parking costs are generally high.
New Developments	Unknown
Sensitive Uses: Schools, hospitals, parks, residences	Many high rise apartments.
2. Existing Conditions within 1/2 mile of Station Site	
	Flood area AO, AE, A, X, AEF. Area parcels zoned as APT MIXED USE SUBPRECINCT, RESORT COML PRECINCT, APT PRECINCT, PUBLIC PRECINCT, RESORT MIXED-USE PRECINCT. Area is in tsunami inundation zone. Located in the Waikiki Special District, the proposed rail station is surrounded by intensive development comprising beach resort, low-to-high end retail, eating establishments, and high-density apartment complexes along the Ala Wai.
Vacant Parcels	Niu and Kalakaua (old Jack-in-the-Box); parcel on the corner of Aloha and Seaside; parcel on the corner of Kaiolu and Kuhio.
Sensitive Uses	Kuhio State Beach Park; Fort DeRussy Beach; Waikiki.
Parking Supply	Limited to paid, multi-story parking lots, metered off-street parking, some side-street un-metered parking. Restricted, un-metered parking along Ala Wai.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Unknown.
Access	Kuhio Avenue and multiple short side streets.
Displacement	There will be takings to accommodate touchdowns.
Potential Impacts on Sensitive	None evident, except trees.

Table A-30: Kalaimoku Street

Location: Kuhio Avenue at Kalaimoku Street, Waikiki	
Environmental Resources	
Refinements to Plans to Improve TOD	May be opportunities to have elevated pedestrian links to adjacent buildings.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 34

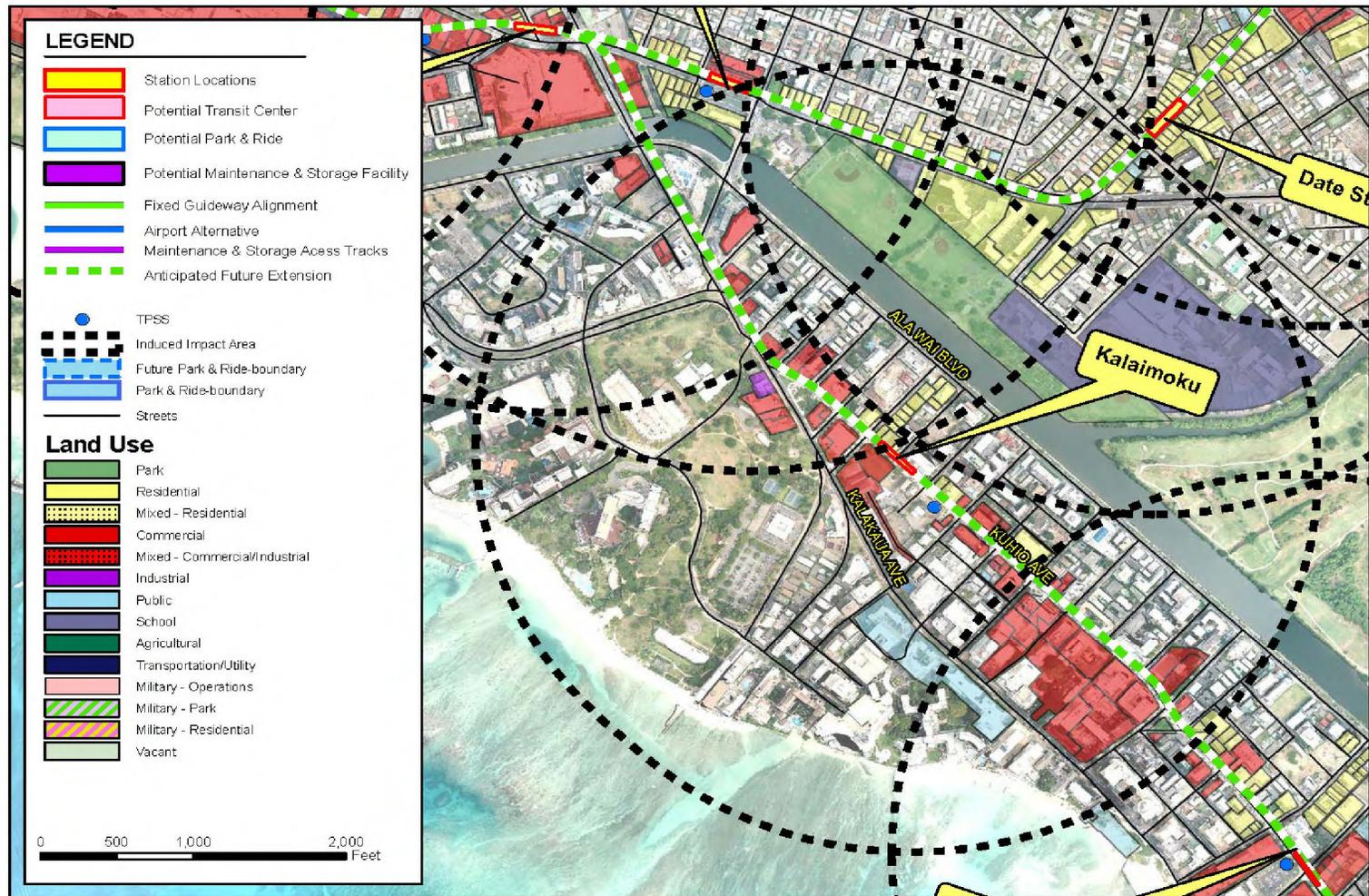


Figure A-30: Kalaimoku Street

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Table A-31: Liliuokalani Avenue

Location: Kuhio Avenue at Liliuokalani Avenue	
1. Existing Conditions in Corridor	
Land Use Types	Very urban mix of high rise hotels and apartment buildings, some single family detached homes and surface parking lots.
Density	High.
Character of Development	Very Urban.
Parcels Available for Development	Surface parking lot across from station may become available for development in the future.
Parking Supply	Very few available spaces. Parking costs are high.
New Developments	Unknown
Sensitive Uses: Schools, hospitals, parks, residences	Jefferson Elementary School is a few blocks east.
2. Existing Conditions within ½ mile of Station Site	
	Flood area AO, AE, A, X, AEF. Area parcels zoned as APT MIXED USE SUBPRECINCT, RESORT COML PRECINCT, APT PRECINCT, PUBLIC PRECINCT, RESORT MIXED-USE PRECINCT. Area is in tsunami inundation zone. Located in the Waikiki Special District, the proposed rail station is surrounded by intensive development comprising beach resort, low-to-high end retail, eating establishments, and high-density apartment complexes along the Ala Wai. Honolulu Zoo and Kapiolani Park exists Diamondhead of the proposed rail station.
Vacant Parcels	
Sensitive Uses	Kuhio State Beach Park; Kapiolani Park; Honolulu Zoo; Jefferson ES; Kamehameha Schools.
Parking Supply	Limited to paid, multi-story parking lots, metered off-street parking, some side-street un-metered parking. Restricted, un-metered parking along Ala Wai. Metered parking at the Honolulu Zoo. Off-street parking at Kapiolani Park.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	None. Fully developed.
Access	Kuhio Avenue from Kapahulu Avenue and side streets. Provision for bus transfers should be considered as this station would be the terminal station.
Displacement	Unknown. Station will be in middle of Kuhio Avenue.

Table A-31: Liliuokalani Avenue

Location: Kuhio Avenue at Liliuokalani Avenue	
Potential Impacts on Sensitive Environmental Resources	Trees.
Refinements to Plans to Improve TOD	None.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 4 Number 35

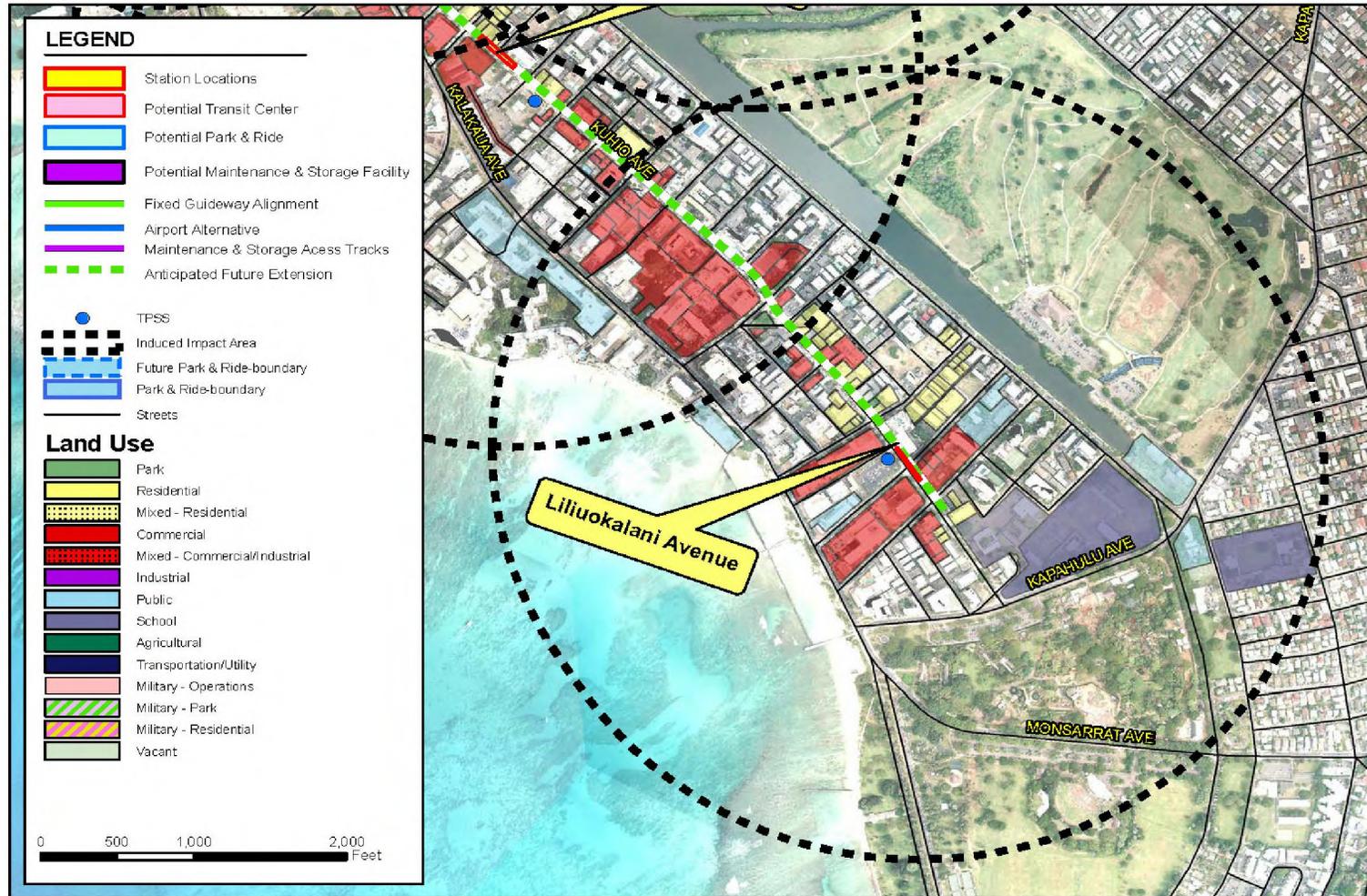


Figure A-31: Liliuokalani Avenue

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Table A-32: Aloha Stadium (Airport Alignment)

Location: Kamehameha Highway at Salt Lake Boulevard and Ford Island Boulevard	
1. Existing Conditions in Corridor	
Land Use Types	Stadium, parking lots and multifamily housing east of Kam Highway. Mostly vacant land, marina and parking lot for marina (Pearl Harbor Yacht Club) on west side of Kam Highway. Historic cemetery in triangular parcel of Kam Highway.
Density	Moderate density for low rise multi family housing.
Character of Development	Open paved areas with housing in the distance. Views to Pearl Harbor.
Parcels Available for Development	Surface parking lot adjacent to station site on east side of highway may possible be available for development in the future.
Parking Supply	Plenty.
New Developments	None evident.
Sensitive Uses: Schools, hospitals, parks, residences	Cemetery is 1,600 feet from station site but is next to alignment. Halawa Stream approximately 2,200 feet south of station site. Closest residences are 400 feet from station site. Pearl Harbor is 500 feet from the station site.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area parcels zoned as F-1, A-1, A-2, B-1, B-2, P-1, P-2, R-5. Mix of detached and attached single-family homes, low-to-medium density apartment complexes/possible condos, some preserved land along the shoreline, and neighborhood/community businesses. Aloha Stadium is central focus point. There is an inaccessible gravesite between Kam Hwy and Moanalua Freeway.
Vacant Parcels	Parcels under and around H-1 split, however, mostly >5% slope.
Sensitive Uses	Makalapa Neighborhood Park; Halawa Stream; gravesite; Aloha Stadium; Pearl Harbor; St. Elizabeth ES
Parking Supply	Ample around stadium; some off-street parking in adjacent neighborhoods.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	No plans known. However, when the station is built there may be interest in redeveloping surface parking lots into structured parking with mixed uses, especially adjacent to the station. Project plans a 7-acre park-and-ride lot east of the station site (1,300 spaces).
Access	Kam Highway, Salt Lake Boulevard and Ford Island Boulevard.
Displacement	Part of parking lot.
Potential Impacts on Sensitive Environmental Resources	Runoff from construction into Pearl Harbor and Halawa Stream may be an issue.

Table A-32: Aloha Stadium (Airport Alignment)

Location: Kamehameha Highway at Salt Lake Boulevard and Ford Island Boulevard	
Mitigation Measures	TBD
Right of Way Impacts	TBD
Refinements to Plans to Improve TOD	TBD, depends if owner of Aloha Stadium parking lot would be interested in the future.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	7-acre park-and-ride lot adjacent to station on east side of highway.

Section 3 Number 14 Aloha Stadium (Kamehameha Highway)

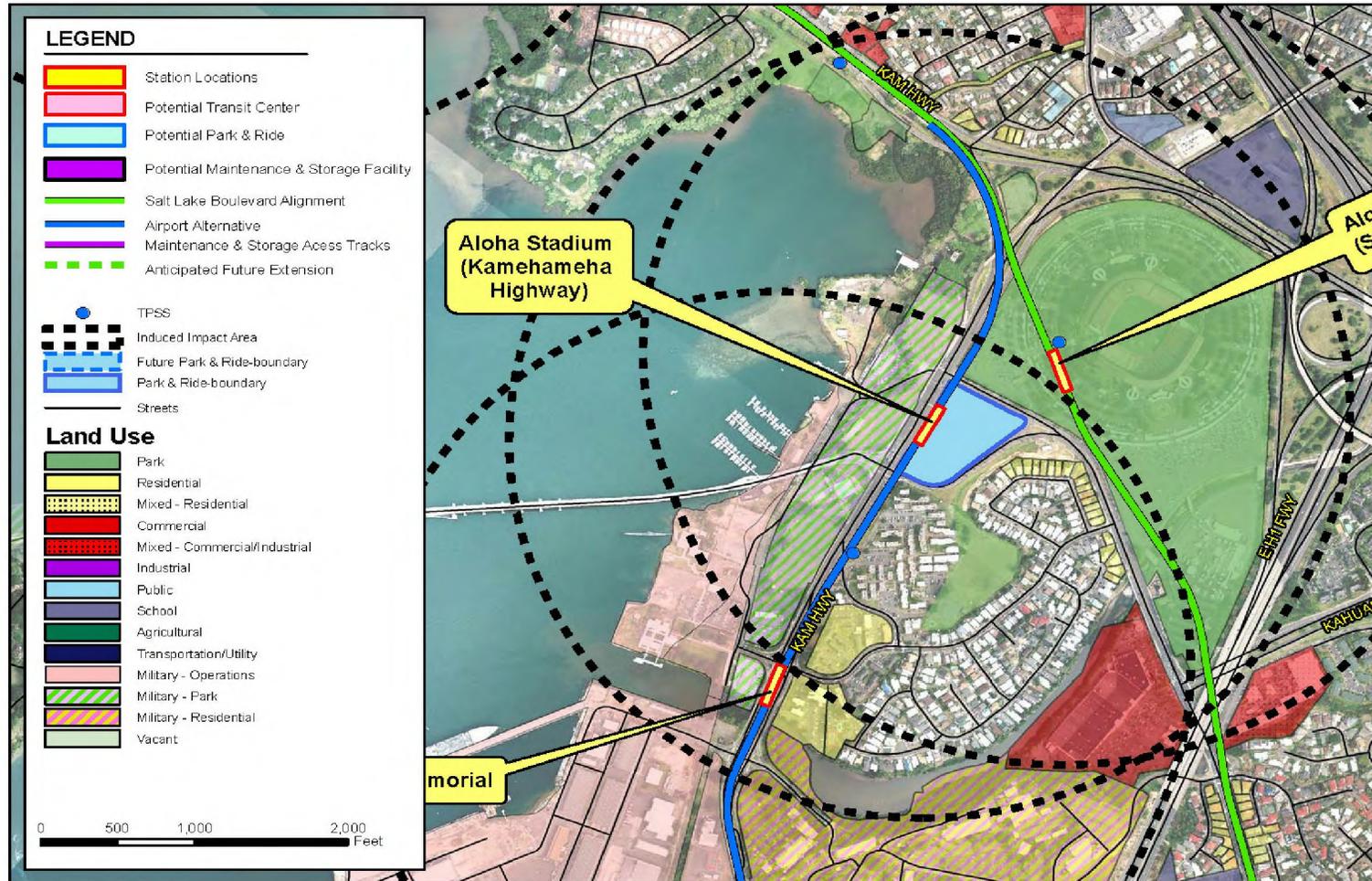


Figure A-32: Aloha Stadium (Airport Alignment)

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Table A-33: Arizona Memorial (Airport & Salt Lake Alternative Only)

Location: Kam Hwy at Kalaloa St	
1. Existing Conditions in Corridor	
Land Use Types	Medium-density apartment complexes, military lands and some small neighborhood park area (Makalapa Park). The area is adjacent to Pearl Harbor, one of the largest military complexes in the world. Nearby is the Arizona Memorial.
Density	Moderate density for low rise multi family housing.
Character of Development	Very urban.
Parcels Available for Development	
Parking Supply	Limited. No off-street parking along Kamehameha Highway.
New Developments	
Sensitive Uses: Schools, hospitals, parks, residences	Makalapa Park and Arizona Memorial. Pearl Harbor and military lands <i>makai</i> of Kam Highway.
2. Existing Conditions within ½ mile of Station Site	
	Area zoned as F-1, A-2, P-1, P-2, B-2. Flood zone D. The area surrounding the proposed station consists of moderate-to-high density low-rise apartment complexes, some single family detached homes, a Kmart and large parcels of military owned land (consisting mostly of Pearl Harbor). Aloha Stadium is northeast of the proposed station. Pearl Harbor Visitor Center is the gateway to the Arizona Memorial. Much of the area <i>makai</i> of the proposed station is military owned.
Vacant Parcels	Some vacant parcels exist <i>mauka</i> of Kam Highway at Kohomua St.
Sensitive Uses	Arizona Memorial; Pearl Harbor; Pearl Harbor Visitor Center; Makalapa Park
Parking Supply	Park-and-ride at Aloha Stadium (Kam Hwy)
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	
Access	
Displacement	
Potential Impacts on Sensitive Environmental Resources	
Refinements to Plans to Improve TOD	

Table A-33: Arizona Memorial (Airport & Salt Lake Alternative Only)

Location: Kam Hwy at Kalaloa St	
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	
Full and Partial Takings (number of takings and land area)	

Section 3 Number 17

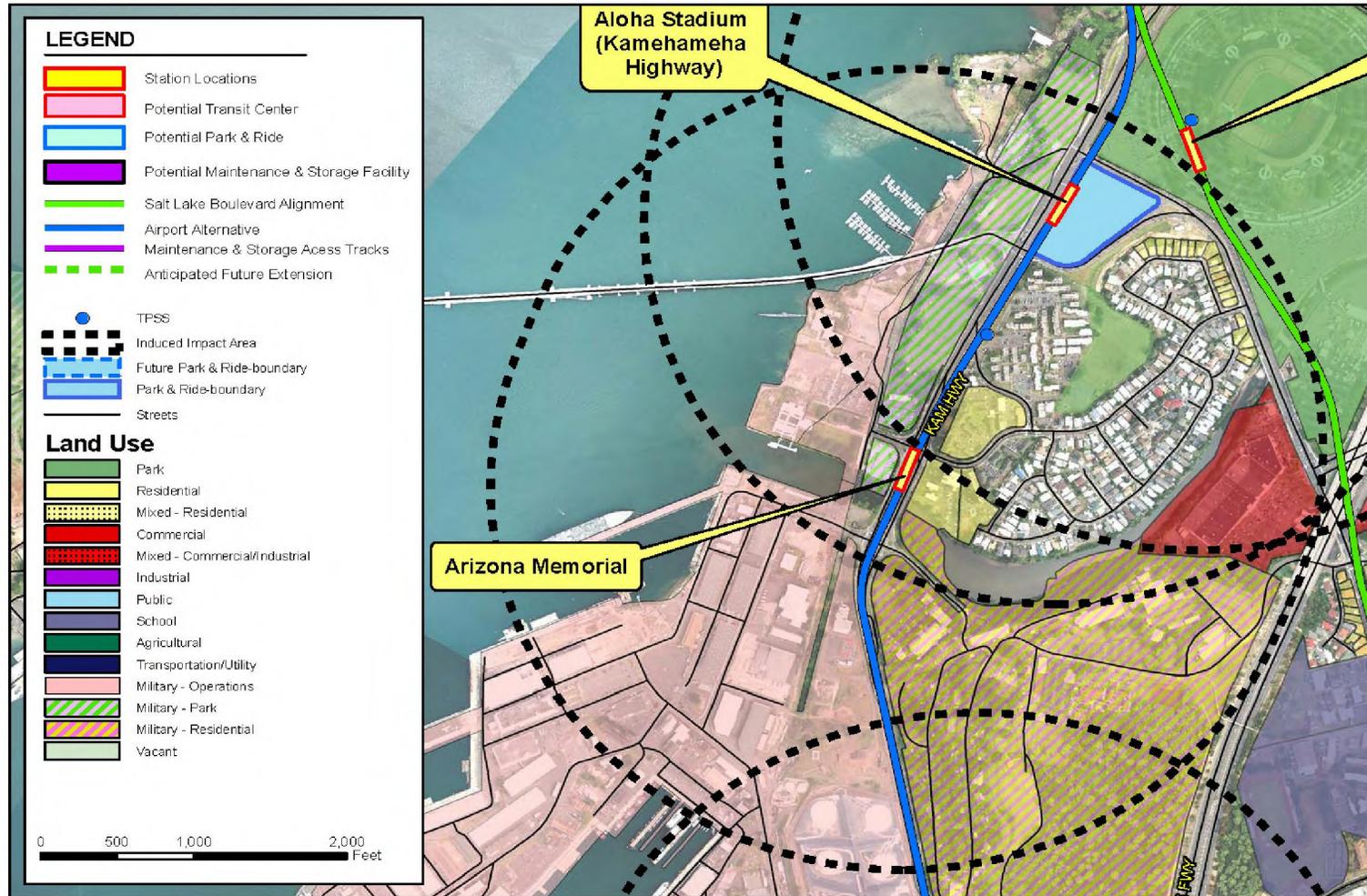


Figure A-33: Arizona Memorial (Airport & Salt Lake Alternative Only)

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Table A-34: Pearl Harbor Naval Base

Location: Kamehameha Highway at Radford Drive and Makalapa Street	
1. Existing Conditions in Corridor	
Land Use Types	Makalapa Navy housing on the east side of Kam Highway and Navy facilities at Makalapa Gate on the west side of the highway.
Density	Low density housing
Character of Development	Dispersed out Navy facilities and heavy tree cover.
Parcels Available for Development	Probably none.
Parking Supply	None.
New Developments	None evident.
Sensitive Uses: Schools, hospitals, parks, residences	None. Closest housing is 1,600 feet away.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area parcels zoned as F-1, P-1, R-5, IMX-1. Majority of area is split by H-1 with the Navy on the west side and the general population east of H-1. Single-family homes constitute all of the residential development, but the closest housing development is 1,600 feet from the proposed rail station. There is a medical clinic on the naval compound. There is some industrial/commercial mix-use on the northeast side of H-1. Pearl Harbor and Nimitz Elementary Schools (ES) sit south of the proposed rail station. 'The Mall at Pearl Harbor,' a retail complex catering to the military, is between Radford Dr and H-1 on the east side of H-1, connected to the west side of H-1 by a pedestrian/auto bridge that crosses over H-1 on Radford Dr.
Vacant Parcels	Vacant parcels exist at Kam Hwy and Center Dr and at Kam Hwy and Radford; however, this is all Navy owned/occupied. There appears to be an unoccupied vacant site southeast of Kam Hwy and Center Dr.
Sensitive Uses	Makalapa Naval Medical Clinic; Nimitz ES; Pearl Harbor ES;
Parking Supply	Limited. No off-street parking along Kam Hwy. Side streets are limited to military personnel.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	Probably none since is Navy Land.
Access	Kam Highway, Radford Drive and Makalapa Street.
Displacement	None since will be in public row.
Potential Impacts on Sensitive Environmental Resources	None evident, but Pearl Harbor is approximately 1,600 feet away from station.

Table A-34: Pearl Harbor Naval Base

Location: Kamehameha Highway at Radford Drive and Makalapa Street	
Refinements to Plans to Improve TOD	Pedestrian access to Navy facilities will ease access and use of station. However, TOD potentials here appear limited due to ownership of land by the Navy.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 3 Number 18

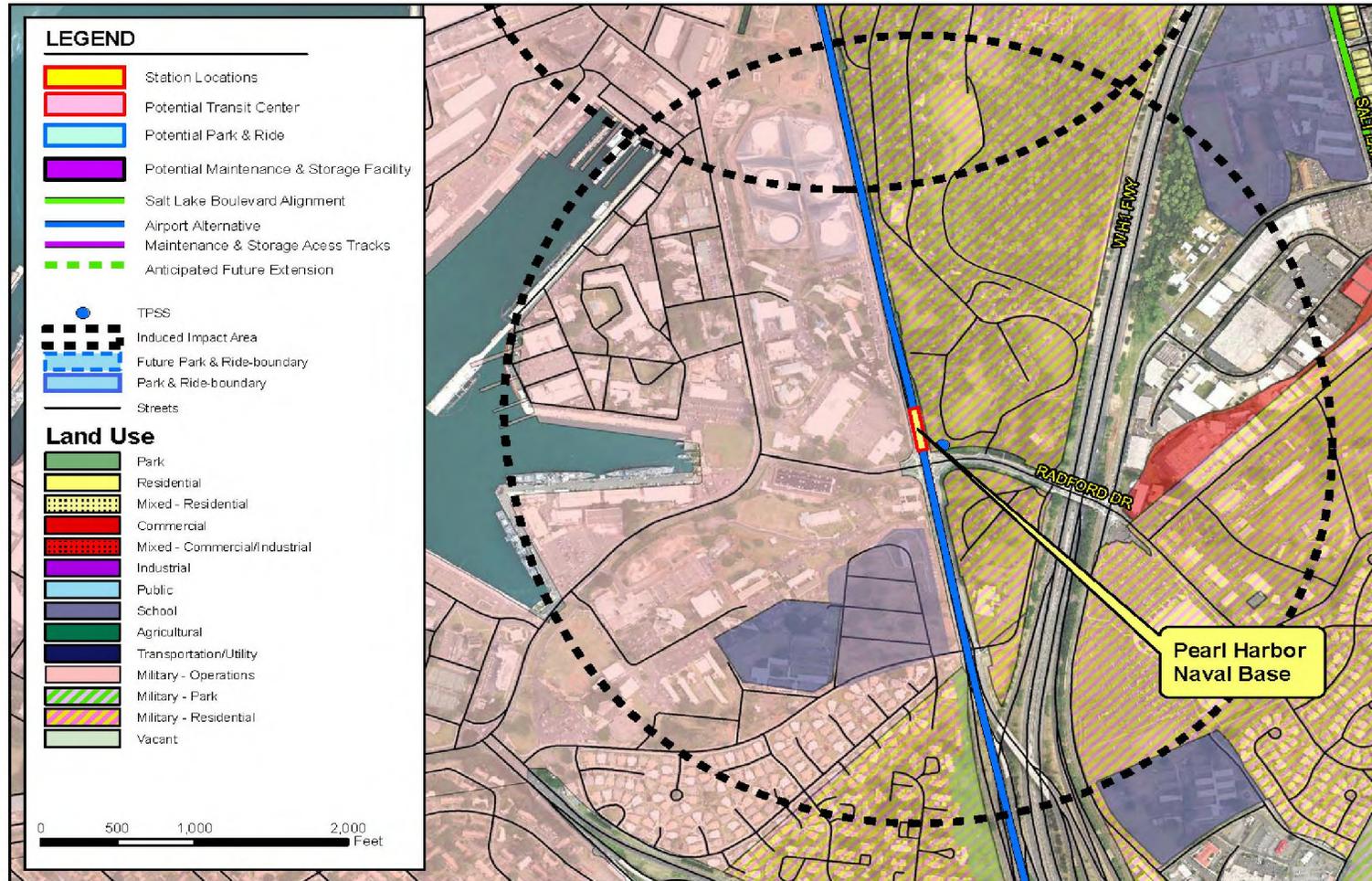


Figure A-34: Pearl Harbor Naval Base

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Table A-35: Honolulu International Airport

Location: Between USPS and surface parking east of new Inter Island Terminal	
1. Existing Conditions in Corridor	
Land Use Types	Airport terminals, surface and garage parking, large USPS facility and access ramps from H-1 and Kam Highway.
Density	Katlin Park Naval Housing is closest residential use but is on the other side of H-1.
Character of Development	Typical airport terminal building/large structure setting and a maze of ramps both surface and elevated.
Parcels Available for Development	None evident.
Parking Supply	Plenty in airport facilities.
New Developments	Airport plans to extend garage into parcel occupied by surface parking, close to station site.
Sensitive Uses: Schools, hospitals, parks, residences	None.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area zoned as IMX-1, I-2, F-1, R-5. The area is dominated by the Honolulu International Airport. There is some industrial-commercial mix-use <i>mauka</i> of the proposed rail station. The Navy-Marine Golf Course sits <i>mauka</i> of the H-1 highway. Some detached single-family homes owned by the military are also located <i>mauka</i> of H-1.
Vacant Parcels	There are some vacant lots <i>mauka</i> of H-1 and Koko Head of Hupua Loop on federal territory.
Sensitive Uses	Honolulu International Airport; Navy-Marine Golf Course
Parking Supply	Ample supply at Honolulu International Airport, some off-street parking along Nimitz and Paiea St.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	New parking garage expansion.
Access	Airport roadway system and ramps to H-1 and Kam Highway.
Displacement	Airport surface parking.
Potential Impacts on Sensitive Environmental Resources	None.
Mitigation Measures	TBD
Right of Way Impacts	TBD
Construction Footprint	TBD

Table A-35: Honolulu International Airport

Location: Between USPS and surface parking east of new Inter Island Terminal	
Refinements to Plans to Improve TOD	TOD is unlikely without redevelopment because of nearby buildings and ramps. An air rights development linked to the station, the Inter Island Terminal and parking lot expansion might be feasible with early coordination with the airport. At the very least strong pedestrian connections (perhaps with moving sidewalks) to the new Inter Island Terminal, the Main Terminal and the new parking garage extension are important to ease transfers. The airport is a major employment center as well as an intermodal passenger transfer facility.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 3 Number 19

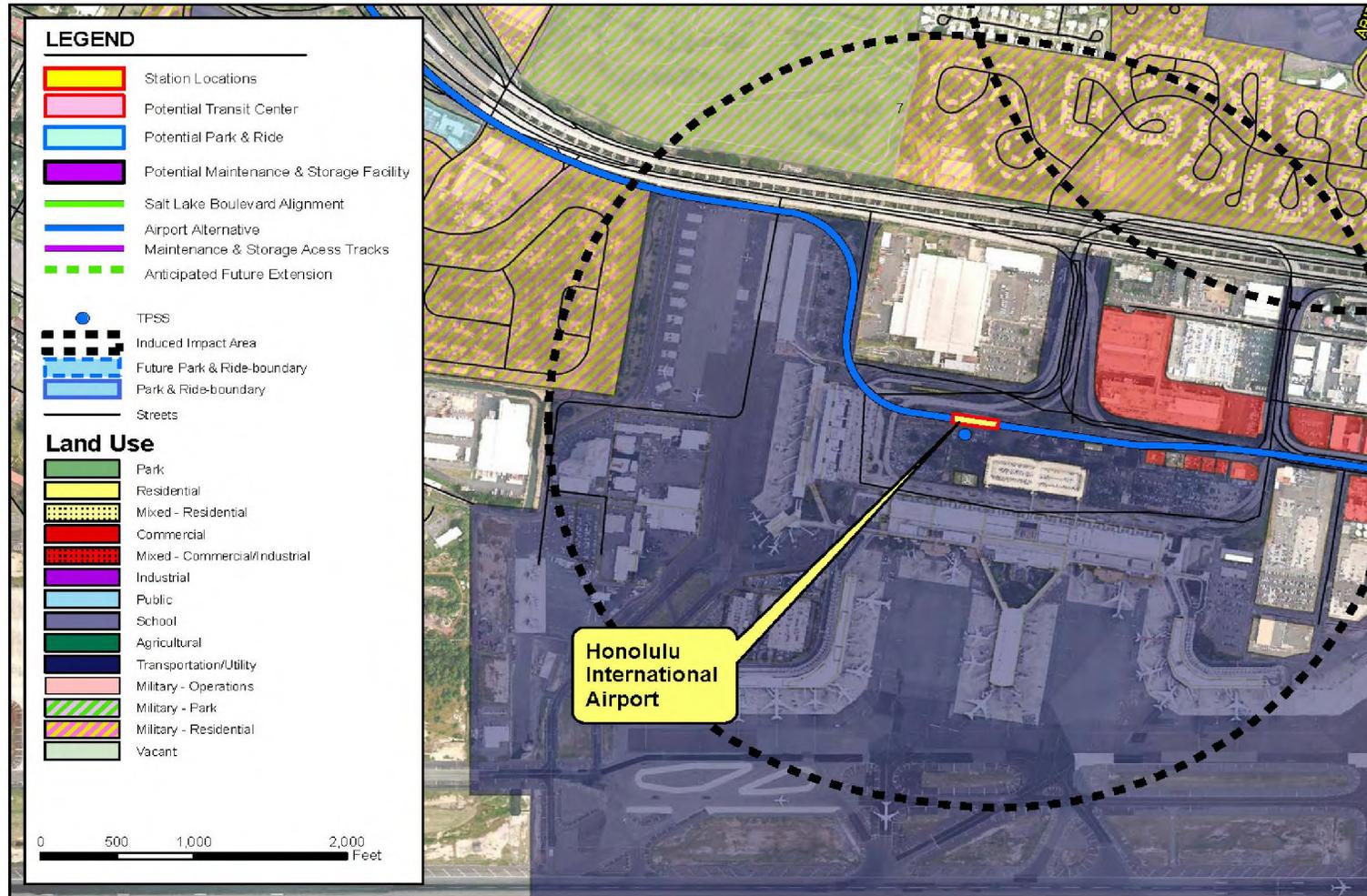


Figure A-35: Honolulu International Airport

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Table A-36: Lagoon Drive

Location: Aolele Street at Lagoon Drive	
1. Existing Conditions in Corridor	
Land Use Types	Airport industrial uses north of Aolele Drive. Airport runways, maintenance facility, bus parking lot and other airside uses on the south. To the east the alignment leaves the Aolele Street right of way and continues through the edge of Lagoon Park and over Moana Stream and Keehi Stream farther east.
Density	No housing nearby. Industrial area is fully built out.
Character of Development	Very densely built up warehouse and distribution industrial district north of Aolele Street. Open airside uses on the south. Large open space area at Keehi Lagoon Park.
Parcels Available for Development	None.
Parking Supply	None, unless bus parking lot can be used in future.
New Developments	None identified.
Sensitive Uses: Schools, hospitals, parks, residences	A drainage canal is on the south side of the bus parking lot and drains into Keehi Lagoon, a part of Honolulu Harbor. The alignment crosses over two streams, Moanalua and Keehi. The alignment will use the edge of the Park, a 4 (f) resource.
2. Existing Conditions within ½ mile of Station Site	
	Flood zone D. Area parcels zoned as I-2, IMX-1, P-1, B-2, P-2. Area dominated by intensive industry and industrial-commercial mix that supports the Honolulu International Airport. Keehi Lagoon and Keehi Lagoon Park sit Koko Head of the proposed station.
Vacant Parcels	None.
Sensitive Uses	Keehi Lagoon & Park; Honolulu International Airport.
Parking Supply	None. Off-street parking along Nimitz, Lagoon Drive and the Puuloa/Mapunapuna area.
3. Potential Land Use Impacts in Corridor and Station Sites	
Changes in Use	None.
Access	Lagoon Drive and Aolele Street.
Displacement	Maybe part of bus parking lot. A strip of parkland at Lagoon Park.
Potential Impacts on Sensitive Environmental Resources	Section 4 (f) impact on Lagoon Park is significant as project will use parkland and parking for the parkland for the right of way. Runoff impacts to the drainage canal and the two streams could be an issue.
Mitigation Measures	TBD. It may be possible that parkland parking could be reconfigured and be provided under the aerial alignment through the park.

Table A-36: Lagoon Drive

Location: Aolele Street at Lagoon Drive	
Right of Way Impacts	Possible at bus parking lot and definitely at the Lagoon Park. TBD.
Refinements to Plans to Improve TOD	None.
Land Areas Needed for Ancillary Facilities (maintenance buildings, park-and-ride lots, intermodal transfer facilities, railroad yards)	None.

Section 3 Number 20

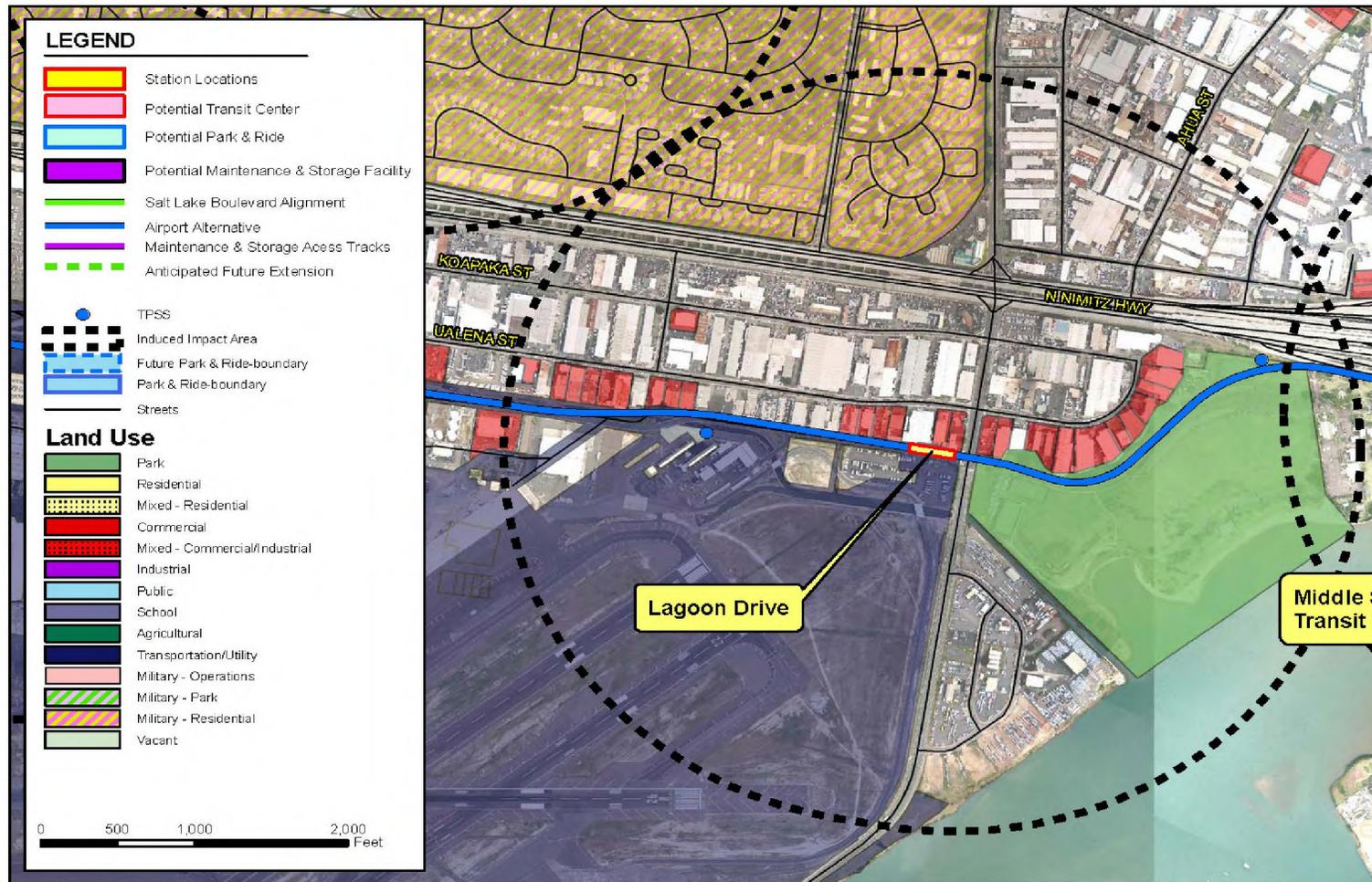


Figure A-36: Lagoon Drive

Appendix B
Template 11: Supplemental Land Use Information
and Supporting Documentation Worksheet

Template 11: Supplemental Land Use Information and Supporting Documentation Worksheet

EXECUTIVE SUMMARY

The Honolulu High-Capacity Transit Corridor Project (HHCTCP) has strong governmental and public support as indicated by support for the fixed guideway alternative from 80 percent of people testifying before the Honolulu City Council during the selection of the locally-preferred alternative (LPA). Residents' desire for smart growth land use development on this small island of O'ahu is a major factor generating project support.

I. EXISTING LAND USE

Existing land use in the East Kapolei to Ala Moana Center fixed guideway corridor is very transit supportive. Moreover, existing official land use policies and a transit oriented development (TOD) ordinance currently in preparation will help make the project successful. The corridor is 20 miles long and extends between fast developing West O'ahu and Ala Moana Center on the east side of downtown Honolulu (Figure S-1).

The existing rates of growth, market acceptance of increased densities, scarce developable land in central Honolulu, and increasing land prices are trends that support a successful transit project. On the island of O'ahu, steep topography to the north limits the availability of developable land in the area of the island that would be directly served by the proposed transit project. Current population and employment densities and other trip generators in the corridor are already sufficient to support a major transportation investment. Moreover, most proposed station sites in already urbanized areas are pedestrian friendly and fully accessible.

Land values in downtown Honolulu are high. In the financial district the assessed value of land only (no building) is approximately \$275 per square foot (sq. ft.) or \$12 million/acre. In adjacent Chinatown, the average is approximately \$175/sq. ft. or \$7.6 million/acre. Within the urban core, prices along the transit alignment do not fall off much from those values. Sale prices vary widely depending on improvements present. For example, in 2004, a downtown 0.6 acre parcel with a class A 25-story office building on it sold for over \$112 million.



Downtown Honolulu, showing where the Nimitz Highway at Fort Street Station will be located.

The pace and size of office space development in the central areas of Honolulu remain strong. Office space is a substantial generator of transit ridership and will make the East Kapolei to Ala Moana Center Fixed Guideway transit investment successful.

According to Colliers, Monroe, Friedlander, Hawai'i's largest commercial real estate firm, nearly 11,400,000 square feet of office space was located in the Honolulu central business district and the

EXECUTIVE SUMMARY (Continued)

immediate areas east (i.e., Kaka‘ako/Kapi‘olani/King areas) at the end of 2006. This amount represents 74 percent of the office floor area on O‘ahu. Vacancy rates in these two areas also are well below the island average of 7 percent. Rents range between \$1.40 and \$1.68/square foot/month. For the fourth consecutive year, Honolulu’s office market posted office floor area absorption gains and reduced vacancy rates, with the central business district serving as the principal driver of this growth.

The cost of parking in the central business district is high and increasing.

At the same time that office space grows and vacancy drops, parking rates in the central business district (CBD) continue to increase. Parking rates, at \$43 a day in the financial district, are among the highest in the nation. In addition, redevelopment in nearby communities, such as Kaka‘ako, has decreased the availability of relatively inexpensive parking near the CBD. Parking is also scarce in Waikīkī near the east end of the East Kapolei to Ala Moana Center Fixed Guideway. As a result of parking costs many office workers are looking to mass transit alternatives to driving and parking.

Population is sufficiently dense to support transit and is growing rapidly.

In 2006, population in the project corridor was nearly 413,000 and is projected to increase over 48 percent by 2030 to nearly 612,000. Population density in the corridor is high at 3,600 persons per square mile (p/sm) and projected to increase to 5,300 p/sm by 2030. Within a ½ mile radius of the 19 station sites, the 2006 population of 99,000 is projected to increase 74 percent by 2030 to 172,500. Population density within ½ mile from the station sites is twice as high as in the entire corridor: 8,100 persons per square mile (p/sm) in 2006 and projected to increase to 14,100 p/sm by 2030.

Employment level is sufficient in size and density to support transit and is growing.

In 2006, employment in the corridor was over 320,000 and is projected to increase over 33 percent by 2030 to nearly 427,000. Employment density in the corridor is 2,800 jobs per square mile (j/sm) and projected to increase to 3,700 j/sm by 2030. Within a ½ mile radius of the 19 station sites, the 2006 employment of over 158,100 is projected to increase 24 percent by 2030 to 196,600. Employment density in the station areas is much higher than in the overall corridor: 12,900 j/sm in 2006 and projected to increase 24 percent by 2030 to over 16,000 j/sm.

Substantial existing trip generators are in the East Kapolei to Ala Moana Center corridor:

- Leeward Community College (5,700 students)
- Pearl Highlands Center (retail center with over half a million square feet)
- Pearlridge Center (retail and commercial complex with over 1.25 million square feet)
- Aloha Stadium (50,000 seats)
- Salt Lake high-rise residential area (population density of nearly 17,000 p/sm)
- Honolulu Community College (4,200 students)



Aloha Stadium

EXECUTIVE SUMMARY (Continued)

- Chinatown (population density of over 26,000 p/sm)
- Downtown Financial District (highest employment density in corridor, 8 million square feet of office space)
- Cruise ship terminals (port of call for cruise ships with approximately 250,000 guests)
- Government center offices (over 3.5 million square feet of office space)
- Kaka‘ako (redeveloping area between downtown and Ala Moana Center)
- Neal S. Blaisdell Center (arena and concert hall)
- Ward Centers (retail within Kaka‘ako)
- Ala Moana Center (1.8 million square feet, the largest shopping facility in Hawaii)



Most station areas are pedestrian friendly and fully accessible.

Currently, sidewalks exist at the 16 station sites in the urbanized areas of the transit corridor. The sidewalks in central Honolulu already have curb ramps to increase accessibility. In the near future, new TOD zoning will require pedestrian facilities to connect the station with adjacent mixed-use developments. Such facilities already are planned as part of new developments near the station sites at the University of Hawai‘i West O‘ahu and at Ala Moana Center, for example.

II. TRANSIT-SUPPORTIVE PLANS AND POLICIES

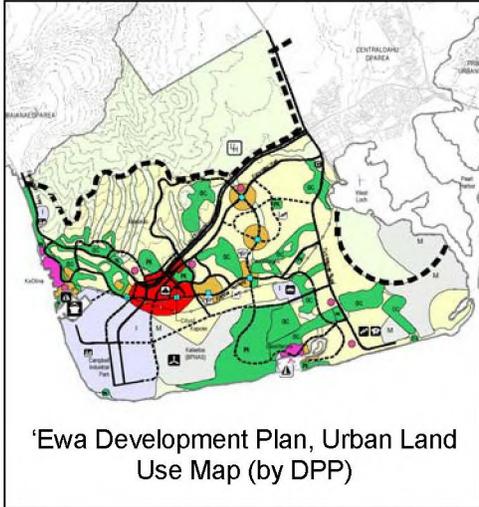
Current planning policies are based on transit supportive principles that are intended to channel smart growth development into targeted areas and prevent development in conservation and primary agricultural areas. These policies will continue to be enforced by zoning and contribute to the success of the transit investment.

Adopted and enforceable growth management and land conservation policies at the State and local government levels are in place and support development in the transit corridor. Existing and projected densities and market trends in the region and corridor are the result of implementation of these policies.

The 1992 O‘ahu General Plan and eight regional plans guide development, as mandated by City Charter. The General Plan provides a statement of the long-range social, economic, environmental, and design objectives for future development on O‘ahu and clearly articulates transit supportive development objectives and policies for the corridor. The regional plans, which include two development plans and six sustainable communities’ plans, encompass the entire island of O‘ahu.

EXECUTIVE SUMMARY (Continued)

Future development in the corridor is guided by “community” level comprehensive plans. As part of the City’s overall strategy to maintain a compact urban core, most of the projected growth is directed



to the Primary Urban Center development plan area, which extends from Kahala to Pearl City, and the ‘Ewa development plan area. Sustainable Communities Plans for Central O‘ahu, East Honolulu, and other parts of the island focus on maintaining the character of these communities and preserving their significant natural, cultural, and scenic resources. The Primary Urban Center and ‘Ewa Development Plans identify urban growth boundaries and incorporate smart growth policies to support transit. The Primary Urban Center Development Plan, for example, concentrates development close to established activity centers served by regional transit. For example, the plans’ emphasis on revitalization of older neighborhoods and shopping centers in the ‘Aiea, Pearl Harbor and Pearl City Town Centers with

pedestrian-oriented and mixed use development is fully compatible with transit service to stations in these locations.

Zoning is the key implementing tool to turn land use planning policies into development, and as such is used to implement these comprehensive plans. A new TOD ordinance under development by the City and County of Honolulu’s Department of Planning and Permitting (DPP) will affect future development near transit.

Recent developments in Honolulu have demonstrated an increasing trend toward “Smart Growth” development under current zoning.

Several recent and planned developments near proposed station locations in the corridor have established a strong trend toward transit oriented design in response to market demand and policies adopted by the City and County of Honolulu Department of Planning and Permitting (DPP) and the Hawai‘i Community Development Authority (HCDA). These projects include multi-use buildings, higher densities, pedestrian-friendly streets, and infill development. Projects, such as Ward Village and Keola La’i, under construction in April 2007, have been permitted under current zoning, while some planned developments, such as Ho‘opili in West O‘ahu, still require permitting approval and hope to benefit from a TOD ordinance being prepared by the DPP. A few examples are highlighted below:

EXECUTIVE SUMMARY (Continued)

New TOD Projects in the East Kapolei to Ala Moana Center Fixed Guideway Corridor		
<p>Keola La’i</p>		<p>A 44-story, 352-unit building with retail space on the ground floor is currently under construction within one block of a proposed transit station on a parcel previously used as a parking lot.</p>
<p>Halekauwila Place</p>		<p>This affordable housing complex is proposed for Halekauwila Street adjacent to a planned transit station, includes an 18-story tower with street level commercial development.</p>
<p>Ward Avenue Commercial Area</p>		<p>Within Kaka’ako, the Ward Avenue neighborhood has been transitioning from industrial to mixed-use residential-commercial. The first of these developments was the Ward Entertainment Center, completed in 2001. The entire area will be within one-half-mile of a transit station. New developments incorporate pedestrian-friendly street fronts, mixed-uses, and many additional TOD features.</p>

EXECUTIVE SUMMARY (Continued)

New TOD Projects in the East Kapolei to Ala Moana Center Fixed Guideway Corridor		
<p>Hokua Tower</p>		<p>Located near the Ward Avenue commercial area, Hokua Tower was recently completed and includes a 41-story tower with 248 luxury condominiums and ground floor commercial space. The development replaces several gas stations and two low-rise office buildings. Five similar condominium towers are located within this one block, with a total of over 1,700 residential units.</p>
<p>Ward Village Development</p>		<p>Adjacent to the Hokua Tower and still under construction is an 18-story, 175-unit apartment building that is part of the Ward Village development. The development, scheduled to open in 2008, will include 224,000 square feet of retail space on two levels and incorporate TOD design. Base zoning modifications approved by the HCDA to promote a mixed-use urban village design included additional building height to 220 feet; encroachments into the view corridor setbacks; and a reduced front yard.</p>

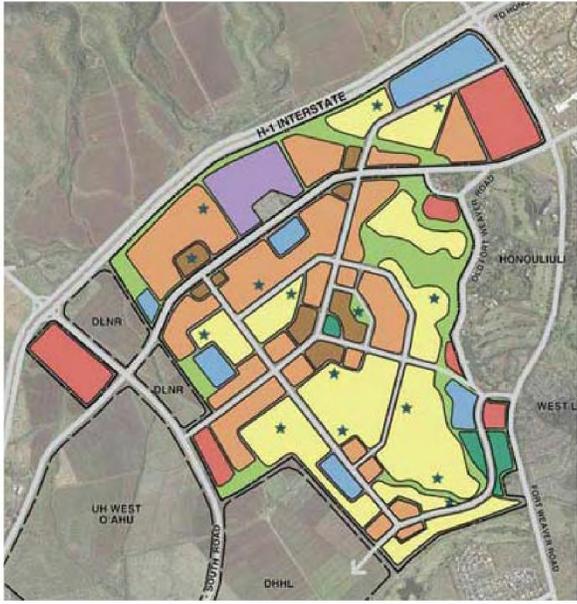
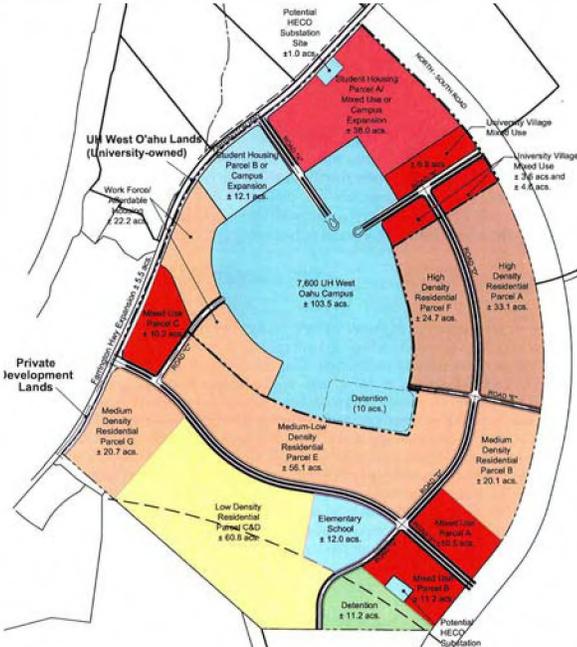
TOD will be further encouraged by new land use ordinance policies in development.

The Ordinances of Honolulu (i.e., the Revised Ordinances) already are highly transit supportive. To supplement the current land use ordinance, the DPP is preparing special transit oriented land use ordinance. The new ordinance will encourage future developments in station areas to incorporate more TOD elements. Conceptual planning for the Ho‘opili and UH West O‘ahu projects at the western end of the project have begun and will include elements of TOD.

The new TOD ordinance will be in place prior to substantial development in the station areas in West O‘ahu. When the locally preferred alternative (LPA) was selected, the City Council wanted to delay further development in station areas until the ordinance was in place. That was considered unreasonable, but illustrates the strong desire to implement TOD zoning in station areas.

EXECUTIVE SUMMARY (Continued)

Planned Projects Incorporating TOD neighborhoods in the East Kapolei to Ala Moana Center Fixed Guideway Corridor

Ho'opili		<p>D.R. Horton plans to build a mixed-use TOD within a one quarter-mile radius of two proposed stations with residential densities of up to 50 dwelling units per acre (50 DU/acre). These higher density mixed-use districts would include commercial, office space, and higher density live/work residential units or residential use above ground floor businesses. Within a one half-mile radius of these TOD areas would be a business park, public schools, mini-parks and open space.</p> <p>The Ho'opili master plan envisions a connected and sustainable community of 10,000 to 15,000 dwellings in the 1,554-acre area. The plan features "traditional neighborhood design" with a grid street pattern and neighborhood facilities. As a result, residents would be able to walk, bike, or take public transportation to area shops, restaurants, schools, parks, and jobs.</p>
UH West O'ahu		<p>The site of the new UHWO campus is located near two proposed transit stations, on the west side of North-South Road across from the proposed Ho'opili development by D.R. Horton. In addition to the college campus, the proposed development on UH West O'ahu lands includes over 4,000 residential units, over 800,000 square feet of commercial floor space, and a number of administrative and classroom buildings in the 500-acre development area. Currently, maximum residential density is 19 DU/acre; however, UH West O'ahu has indicated a willingness to increase the density in the vicinity of transit stations.</p>

III. PERFORMANCE AND IMPACTS OF LAND USE POLICIES

Honolulu's transit supportive development policies are working. Transit supportive housing and employment development already is under construction in the project corridor. Major new retail (i.e., a 200,000 square foot Nordstrom department store), housing and office expansion are currently

EXECUTIVE SUMMARY (Continued)

under development in the corridor between downtown Honolulu and Ala Moana Center. At the opposite end of the corridor, the fast developing second city of Kapolei and other developments in the 'Ewa Plain are under construction, but growth in most other areas of the island is slow, as planned. The major planned developments of University of Hawai'i West O'ahu and the community of Ho'opili are under review and approval processes. Major commercial and residential development are underway elsewhere in the central Honolulu area, such as large in-fill projects in Kaka'ako like Moana Pacific and Keola La'i.

Much land is available for development at transit supportive densities, especially in 'Ewa and Kapolei. Most of the vacant land suitable for development is located in that fast developing area. Elsewhere in the corridor, the downtown and Kaka'ako area is experiencing an in-fill building boom as evidenced by over 10 high-rise condominium and apartment buildings finished or started in the five year period starting 2004. A number of new commercial buildings have also gone up along with the new School of Medicine. Underutilized parcels in this area that are large and zoned for high-density development are now at a premium, and a large number of those left are controlled by a single land owner, Kamehameha Schools. As this central area builds out there will be growing pressure in the future to redevelop portions of Kalihi farther west, especially near station areas. The overall regional effect of the transit line will be to attract even more development interest to the 20-mile corridor than is happening now. Regional planning and market conditions support such transit supportive development.

IV. OTHER LAND USE CONSIDERATIONS

The project corridor is physically perfect for a high capacity transit investment. The unique topography of O'ahu has created an ideal narrow, high-density corridor between the mountains and the Pacific Ocean on the southern shore of O'ahu.

Tourist generated transit ridership will add to resident ridership since the corridor provides access to major destinations of cultural and historic interest. Approximately two-thirds of the visitors to Hawai'i visit O'ahu, representing a large transit ridership opportunity. The corridor includes tourist destinations such as Aloha Stadium, the main cruise ship terminals, the major historic sites and museums, and the largest retail center in Hawai'i. Adjacent to the corridor is the Arizona Memorial at Pearl Harbor. Finally, since the elevated transitway will afford spectacular views of Oahu, the opportunity to tap the tourist market as riders is potentially very strong.

Six strategically located stations along the corridor have the potential for development as intermodal transfer centers because they are close to freeway interchanges or are already the locations of existing major bus transfer facilities.



1

Figure S-1. East Kapolei to Ala Moana Center Fixed Guideway Alignment

1. EXISTING LAND USE

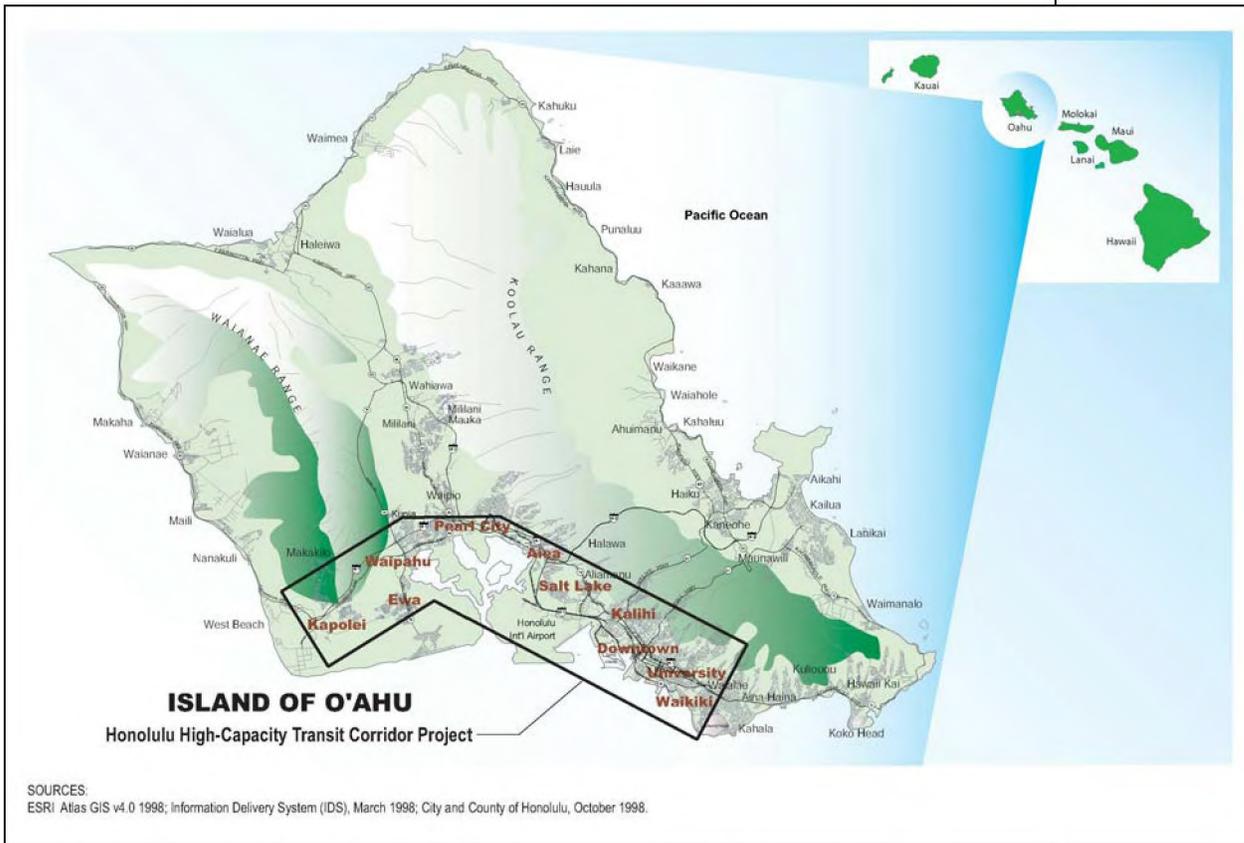
a. Existing Land Use

Documentation Supporting Land Use Criterion	Information Requested
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Description of the Corridor

The project corridor, illustrated below, is 20 miles long between East Kapolei in West Oahu and the Ala Moana Center located between downtown Honolulu and Waikiki and has an area of approximately 116 square miles. The corridor is densely-developed and rapidly growing. The 2005 population of 433,000 is projected to increase 41 percent to nearly 612,000 in 2030. The 2005 employment of nearly 338,000 is projected to increase 26 percent to over 427,000 in 2030. In 2005, there were nearly 3,700 people and 2,900 jobs per square mile in the corridor. In 2030, there would be nearly 5,200 people and 3,700 jobs per square mile.

Existing station area development



The East Kapolei to Ala Moana Center Fixed Guideway alignment and 19 stations are illustrated in See separate file for Figures 1-X.

Figure 1-1, Figure 1-2, and Figure 1-3. The station areas are already densely developed, except in West O'ahu, and, in general, are projected to continue to increase in density. There are three stations planned in the central business

1. EXISTING LAND USE (Continued)

a. Existing Land Use (Continued)

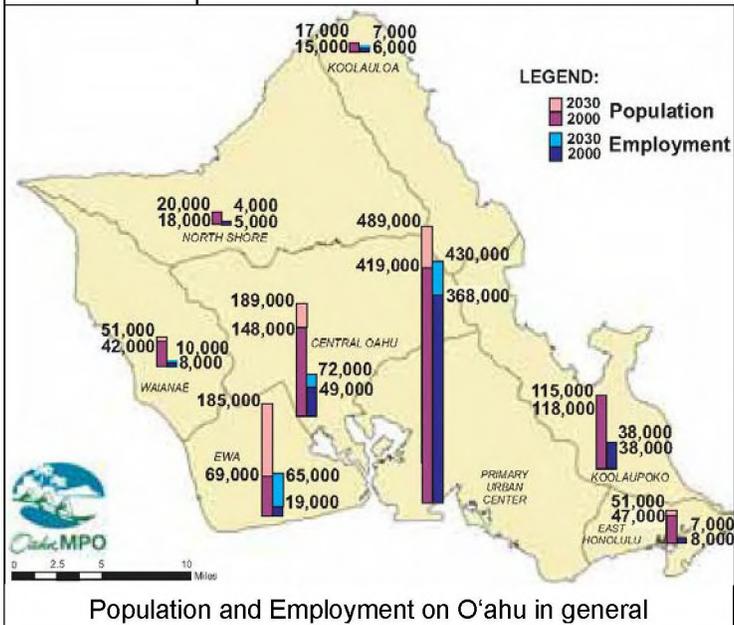
Information Requested	Documentation Supporting Land Use Criterion
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Existing station area development (continued)

district (CBD), one for each of the three districts in the CBD (Figure 1-4), Chinatown, the Financial, and the Capital Districts. Kaka‘ako, the neighborhood just east of the CBD (Figure 1-5), is rapidly redeveloping with high-density infill projects.

The area within ½ mile of the 19 stations is approximately 12.3 square miles. The housing units, population, and employment in this area are discussed in general below. Details for each station area are provided in the Template 12 Quantitative Land Use Information Worksheet.

- In 2005, there were 40,800 housing units within ½ mile of the 19 stations, which are projected to nearly double by 2030 to 77,600 housing units. In 2005 the greatest density was 13,800 units per square mile (u/sm) in Chinatown and the average around the 16 developed stations is 4,200 u/sm. In 2030 the greatest density is projected to be 28,200 u/sm in Chinatown and the average around all 19 stations will be 6,300 u/sm.
- The 2005 population was approximately 101,400 within ½ mile of the 19 stations and is projected to increase to more than 173,100 in 2030. In



2005 the maximum density was 26,700 people per square mile (p/sm) in Chinatown and the average around the 16 developed stations was 10,400 p/sm. In 2030 the maximum density is projected to be 48,300 p/sm in Chinatown and the average around all 19 stations will be 14,100 p/sm.

- Employment within ½ mile of the 19 stations in 2005 was 164,500, which is projected to increase to 196,600 in 2030. In 2005 the maximum employment density was 164,000 jobs per square mile (j/sm) in the

Financial District and the average around the 16 developed stations was 16,800 j/sm. In 2030 the maximum density is project to be 176,000 j/sm in the Financial District and the average around all 19 stations will be 16,000 j/sm.

The project is strategically located to maximize the potential for intermodal transfers because it is located near the major roadway network on Oahu and existing bus transfer points (<http://www.thebus.org/SystemMap/SystemMap.asp>).

1. EXISTING LAND USE (Continued)	
a. Existing Land Use (Continued)	
Documentation Supporting Land Use Criterion	Information Requested
<p>The following six stations have the potential to facilitate intermodal transfers to intercept commuters in automobiles and feeder buses:</p> <ul style="list-style-type: none"> • Station 1, serving the fast developing areas of ‘Ewa, ‘Ewa Beach, and Kapolei; • Station 4, serving commuters from West O‘ahu including Wai‘anae since the station is near the H-1 Interchange with Kunia Road; • Station 6, serving commuters from Central O‘ahu since the station is near the interchange of H-1, H-2, and Kamehameha Highway; • Station 9, serving densely built up ‘Aiea and tourists visiting nearby Arizona Memorial at Pearl Harbor Naval Base, and making use of the vast parking lots at Aloha Stadium; • Station 11, near the existing Middle Street bus transfer facility and near Nimitz Highway; and • Station 19, serving the existing major bus transfer point at the Ala Moana Center that also services the large tourist market in Waikīkī. <p>In conclusion, the corridor has substantial existing and projected density of development, ideal to be served by a high capacity transit system particularly with intermodal transfers.</p> <p>Please see Template 12 Quantitative Land Use Information Worksheet for more detailed data for the corridor including the 19 station areas.</p> <p><u>Existing High Trip Generators</u></p> <p>The high housing unit, population, and employment densities at each of the 16 stations in the currently developed areas would intrinsically generate a large number of transit trips. The areas around the three other stations are being developed, but surrounding populations also would generate many trips through bus transfers and park-and-ride commuters.</p> <p>Beyond the generally high population and employment densities, certain facilities would generate a high number of trips individually. Those include the following:</p> <ul style="list-style-type: none"> • University of Hawai‘i West O‘ahu at Station 2; UH West O‘ahu is projected to have 7,500 students at build out (http://westoahu.hawaii.edu/). • Leeward Community College (LCC) at Station 6; in 2006 LCC had 5,700 students (http://www.hawaii.edu/campuses/leeward.html). 	Existing station area development (continued)

1. EXISTING LAND USE (Continued)

a. Existing Land Use (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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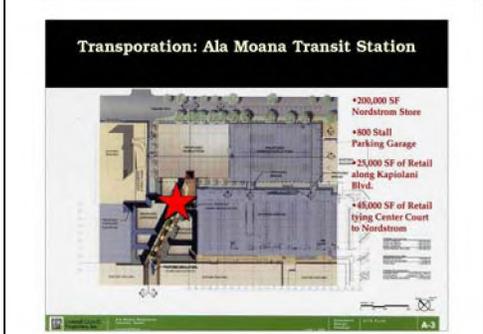
Existing station area development (continued)

- Pearlridge Center at Station 8; Pearlridge includes Sears, Macy’s, 170 shops, restaurants and services, plus an 8-story office building (<http://www.pearlridgeonline.com/>).
- Aloha Stadium at Station 9 seats 50,000. The stadium hosts UH football games, a college bowl game, the NFL Pro-Bowl, Hawai’i High School Athletic Association games, carnivals, fairs, concerts, graduations, a large swap meet and other events (<http://alohastadium.hawaii.gov/events>).



Aloha Stadium

- The Arizona Memorial, located near Station 9, is visited by 1.6 million people a year (<http://www.nps.gov/usar/>).
- Honolulu International Airport, located near Station 10, has nearly 8,000 jobs and serves over 20 million passengers a year (<http://www.hawaii.gov/dot/airports/hnl/index.htm>).
- Honolulu Community College at Station 13 had over 4,200 students in 2006 (<http://honolulu.hawaii.edu/>).



Here's a site plan showing how the new Nordstrom's addition will tie into the existing Ala Moana Center. The red star indicates the probable location of a new transit stop if the new transit line is built, above the present bus stop on Kona Street, with direct pedestrian connections to the Center's mall level.

This slide from a public information meeting on Ala Moana Center's planned expansion illustrates the integration of transit station planning.

- Ward Centers, a large retail (Nordstrom Shoes and Rack, Sports Authority, Borders Books and many more) and entertainment complex (movie theaters, restaurants), is located at Station 18 (<http://www.wardcenters.com/>).
- Neal S. Blaisdell Center (arena seating 8,800 and concert hall seating 2,158), located near Station 18, is Honolulu’s major cultural venue (<http://www.blaisdellcenter.com/>).
- Ala Moana Center at Station 19, has 1.8 million square feet of retail space (Macy’s, Sears, Neiman Marcus, and others), is one of the largest shopping centers in the U.S. (<http://www.alamoanacenter.com/>), as well as a major bus transit hub.

Land Use Ordinance

The existing station area development is a function of the existing land use ordinance. Chapter 21 of the Revised Ordinances of Honolulu (<http://www.co.honolulu.hi.us/refs/roh/index.htm#vol2>) provides the land use

1. EXISTING LAND USE (Continued)

a. Existing Land Use (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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ordinance for the island of O‘ahu, including floor-area ratio (FAR) for each zoning category. Table 1-1 summarizes the existing FARs limits for each zone likely to be near a transit station.

Existing station area development (continued)

Table 1-1. Maximum Floor Area Ratio in Zoning Areas

Use	Zone Code	Maximum FAR
Apartment (low-density) / Mixed use	A-1 / AMX-1	0.9
Apartment (medium-density) / Mixed use	A-2 / AMX-2	1.9
Apartment (high-density) / Mixed use	A-3 / AMX-3	2.8
Business (neighborhood)	B-1	1.0
Business (community)	B-2	3.5
Business mixed use (community)	BMX-3	3.5
Business mixed use (central)	BMX-4	7.5
Industrial (limited)	I-1	1.0
Industrial (intensive) / (waterfront)	I-2 / I-3	2.5
Industrial-Commercial mixed use	IMX-1	2.5

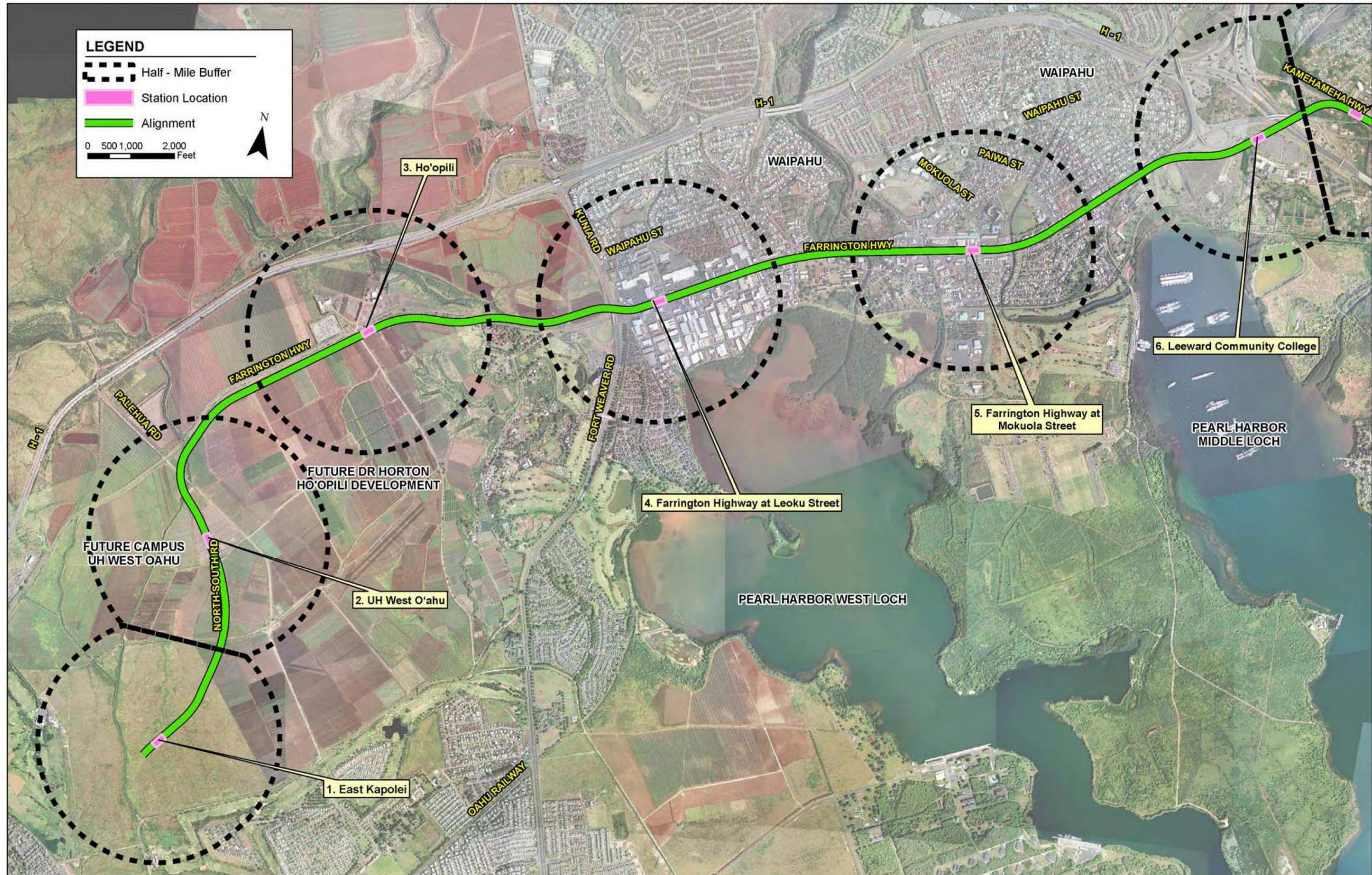


Figure 1-1: East Kapolei to Ala Moana Center Fixed Guideway Alignment and Stations, East Kapolei to Leeward Community College

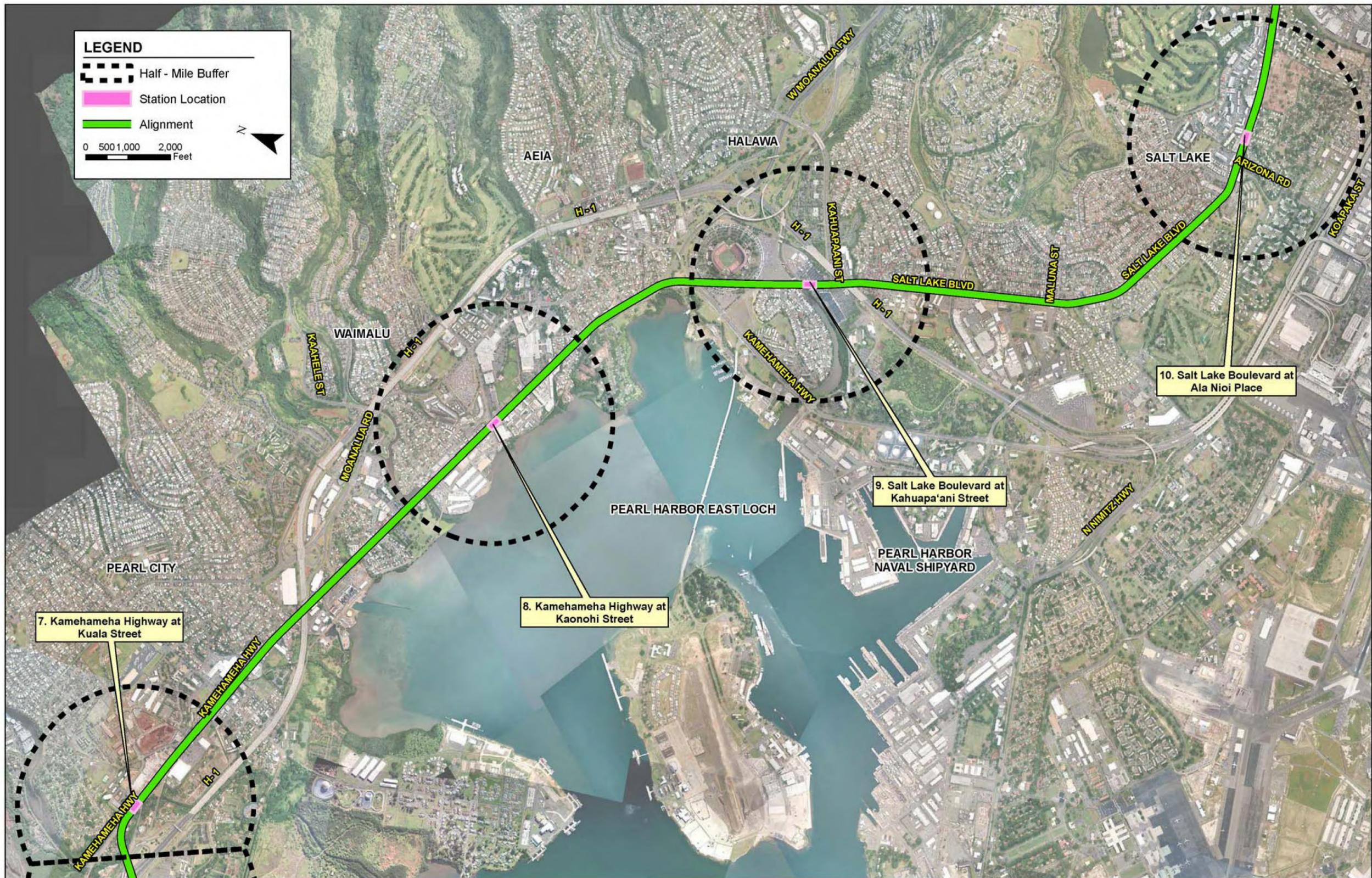


Figure 1-2: East Kapolei to Ala Moana Center Fixed Guideway Alignment and Stations, Pearl City to Salt Lake

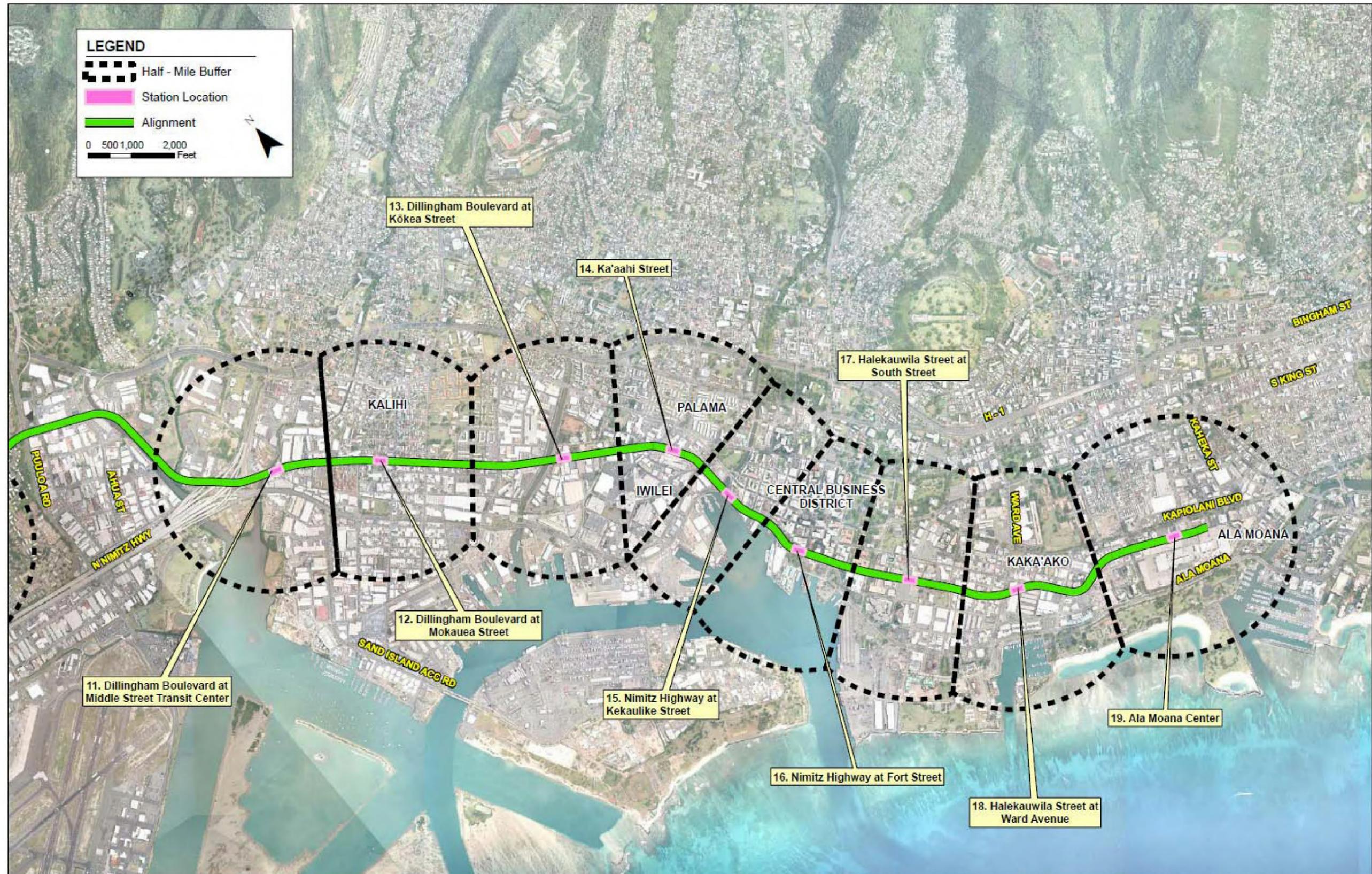


Figure 1-3: East Kapolei to Ala Moana Center Fixed Guideway Alignment and Stations, Mapunapuna to Ala Moana Center



First Hawaiian Bank Center
(tallest building on O'ahu, 1996,
420,000 sq. ft.)



Capitol Place (384 units & commercial)

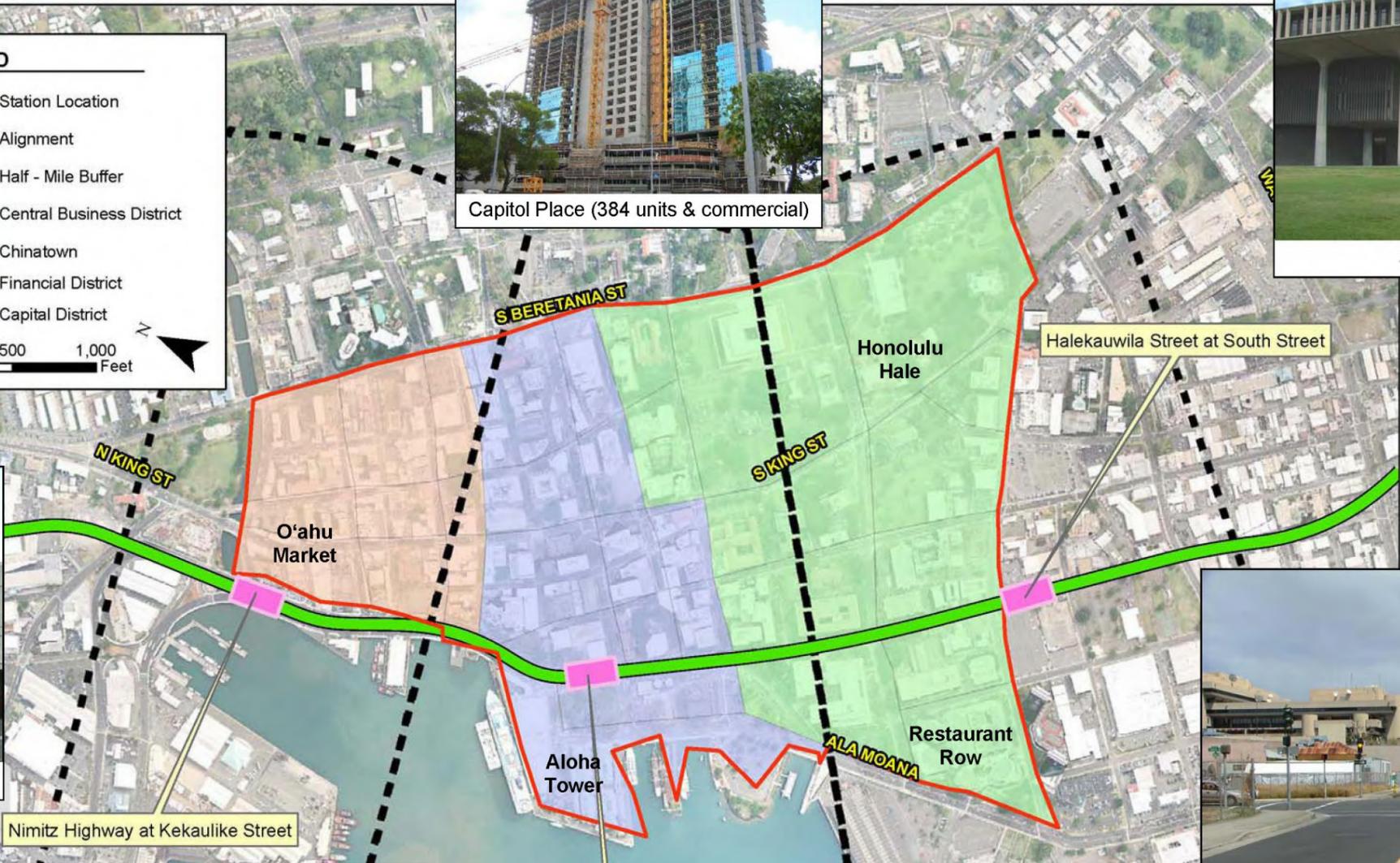


State Capitol Building

LEGEND

- Station Location
- Alignment
- Half - Mile Buffer
- Central Business District
- Chinatown
- Financial District
- Capital District

0 250 500 1,000 Feet



Nimitz at Kekaulike Street

Nimitz Highway at Kekaulike Street



Halekauwila at South Street



Nimitz Highway at Fort Street/Bishop Street

Nimitz Highway at Fort Street



PJKK Federal Building
(Halekauwila Street at Punchbowl Street)

Figure 1-4: Central Business District

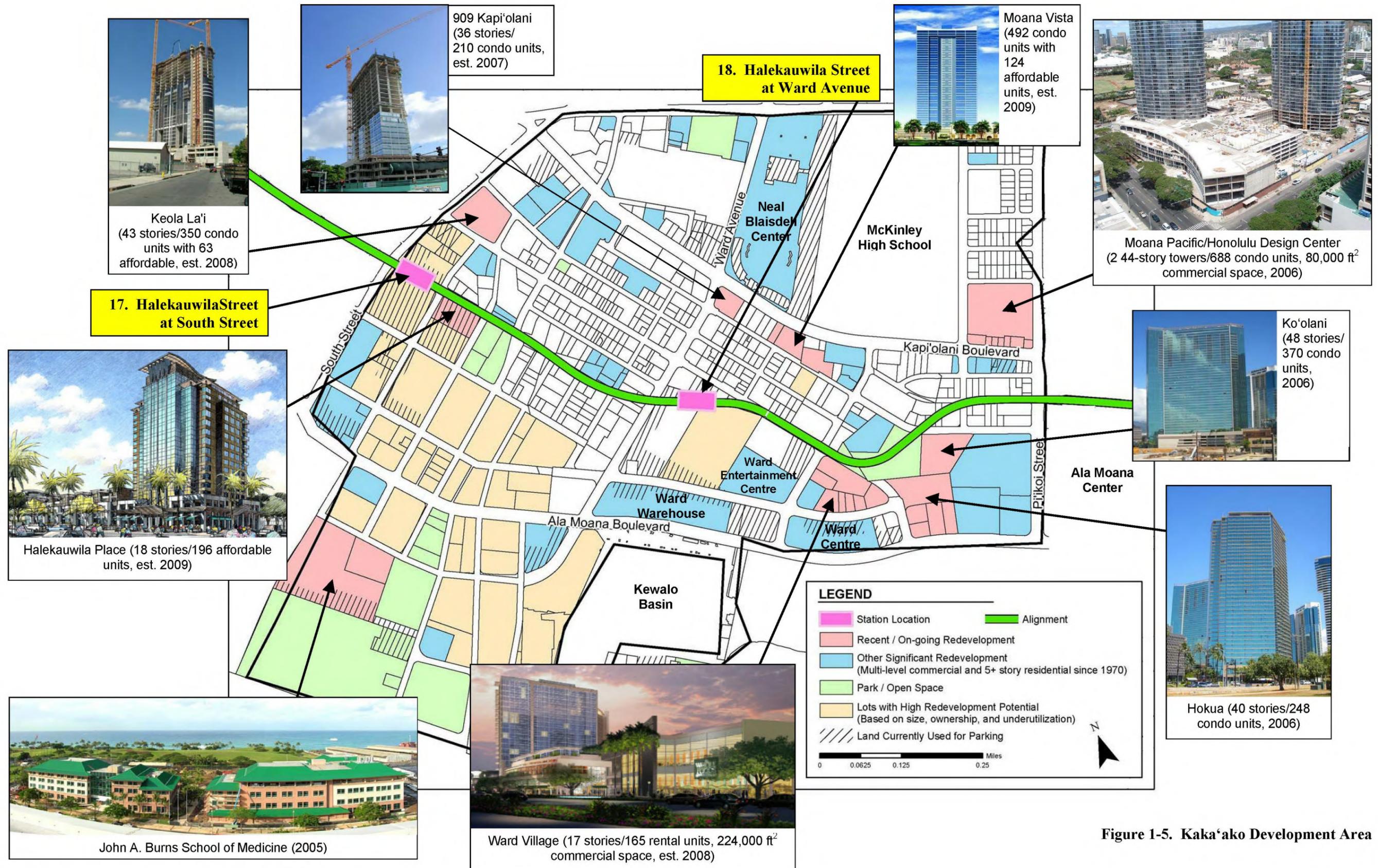


Figure 1-5. Kaka'ako Development Area

1. EXISTING LAND USE (Continued)	
a. Existing Land Use (Continued)	
Documentation Supporting Land Use Criterion	Information Requested

Most of the corridor is developed from Waipahu to Ala Moana Center. This narrow, geographically constrained corridor is where most of O‘ahu’s residents live and work, and it is served by the Island’s major transportation facilities. The highest density developments, such as office, retail, government, residential and hotel towers, are located between Downtown Honolulu and Ala Moana Center. This central Honolulu area is experiencing major redevelopment and construction to even higher densities. The lowest density development in the project corridor, such as single-family detached housing, low-rise office parks, free-standing shopping centers and retail stores, is located farther west in Pearl City and Waipahu. Ongoing in-fill and redevelopment are occurring in the already developed portions of the corridor.

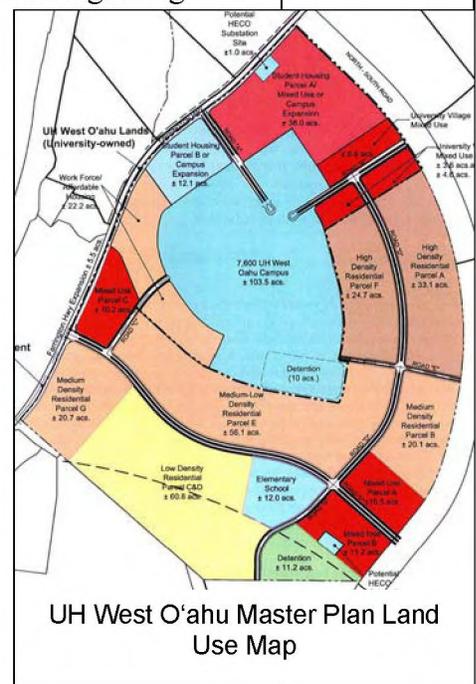
Existing station area development character

Even farther west, the areas of ‘Ewa and Kapolei immediately adjacent to the transit line are either vacant or used for farming with residential and retail developments at greater distances from the proposed line. The more suburban West O‘ahu areas of ‘Ewa and Kapolei are rapidly developing but still include areas of open space, agricultural uses, and the former Barbers Point Naval Air Station (now known as Kalaeloa). The moderately dense built-up area between Waipahu and Downtown Honolulu is relatively stable with little major new construction evident.

Existing land use conditions within ½ mile of potential station sites along the alignment are described below. Maps of the station areas are shown at the end of this section along with ground level or aerial photographs. The Quantitative Land Use Information Worksheet (Template 12) provides details regarding residential units, population, and employment in the vicinity of each station. The existing land use pattern is largely transit supportive.

The ‘Ewa Plain

The ‘Ewa Plain is rapidly urbanizing due to development in Kapolei, ‘Ewa Villages, and elsewhere. Currently, much of the area is undeveloped (Figure 1-1), including Kalaeloa, the site of the former Barbers Point Naval Air Station, which will be redeveloped as part of the Kalaeloa Community Development District (<http://hcdaweb.org/kalaeloa>). Kapolei has been designated the “Second City” on O‘ahu, so named to direct much of O‘ahu’s projected business, residential, and government growth to the ‘Ewa Plain. The City and County of Honolulu and State of Hawai‘i have moved some of their governmental functions to Kapolei to act as a



1. EXISTING LAND USE (Continued)

a. Existing Land Use (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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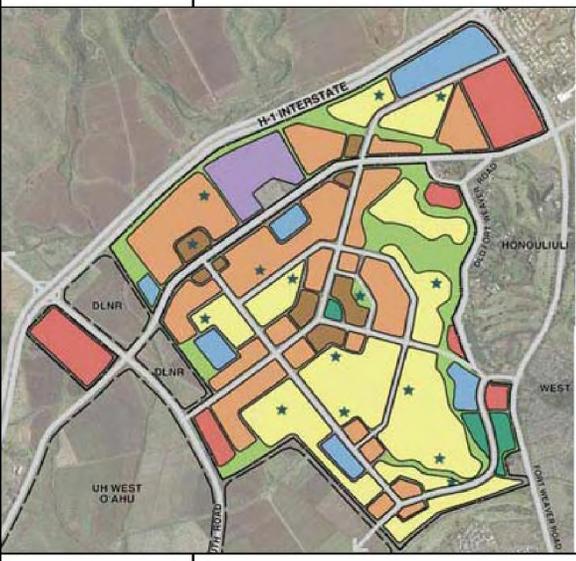
Existing station area development character (continued)

catalyst for further development by the private sector. Moreover, the University of Hawai‘i is planning a new campus, UH West O‘ahu, to serve residents of West O‘ahu and Wai‘anae (<http://westoahu.hawaii.edu/campus>).

The already urbanized areas of the ‘Ewa Plain lie in two distinct sections divided by the alignment of North-South Road, which is under construction. West of the future North-South Road is the City of Kapolei, developed largely between Farrington Highway on the north side and Renton Road on the south side. The future campus of UHWO is located east of Kapolei at the intersection of Farrington Highway and North-South Road. East of North-South Road is the larger, already developed ‘Ewa Villages area along Fort Weaver Road.

The site of the new UHWO campus is located near two proposed transit stations, on the west side of North-South Road across from the proposed Ho‘opili development by D.R. Horton. In addition to the college campus, the proposed development on UH West O‘ahu lands includes over 4,000 residential units, over 800,000 square feet of commercial floor space, and a number of administrative and classroom buildings in the 500-acre development area. Currently, maximum residential density is 19 dwelling units per acre (DU/acre); however, UH West O‘ahu has indicated a willingness to increase the density in the vicinity of transit stations.

D.R. Horton plans to build a mixed-use TOD within a quarter-mile radius of two proposed stations with residential densities of up to 50 DU/acre. These higher density mixed-use districts would include commercial, office space, and higher density live/work residential units or residential uses above ground floor businesses. Within a one half-mile radius of these TOD areas would be a business park, public schools, mini-parks and open space. The planned Ho‘opili development by D.R. Horton plans to take advantage of the TOD zoning



Site Plan for Proposed Ho‘opili Development

D.R. Horton reports it is planning mixed-use TOD within a quarter-mile radius of transit stations with residential densities of up to 50 DU/acre.

LAND USE	Approx. Gross Acres
Low-Medium Density Residential / Live-Work*	535
Mixed Use / Medium Density Residential*	340
Mixed Use / High Density Residential*	50
Business / Commercial	145
Light Industrial / Business	90
Open Space / Buffers*	150
Parks*	90
Neighborhood Parks*	-
Public Facilities	100
Major Roadways* (as shown)	124
TOTAL:	1,554 (Approx.)

*Neighborhood parks and secondary roadways included in residential areas.

ordinance, currently under development. The Ho‘opili master plan envisions a connected and sustainable community of 10,000 to 15,000 dwellings in

1. EXISTING LAND USE (Continued)	
a. Existing Land Use (Continued)	
Documentation Supporting Land Use Criterion	Information Requested
<p>the 1,554-acre area (http://hoopilioahu.com/). The plan features “traditional neighborhood design” with a grid street pattern and neighborhood facilities. As a result, residents would be able to walk, bike, or take public transportation to area shops, restaurants, schools, parks, and jobs.</p> <p>Three stations are planned for the ‘Ewa Plain.</p> <ul style="list-style-type: none"> • Station 1: East Kapolei. The character of the existing land uses is largely undeveloped land. Approximately a quarter mile distant are the large suburban subdivisions in ‘Ewa and the developing city of Kapolei. • Station 2: UH West O’ahu. Currently, the area is undeveloped. A quarter mile distant are the large suburban subdivisions in ‘Ewa and the developing city of Kapolei. A potential park-and-ride facility could be located here. • Station 3: Ho‘opili. This area is currently undeveloped, and some of the land is used for agriculture. <p><u>Waipahu to Aloha Stadium</u></p> <p>This urbanized area consists primarily of residential development and mixed-commercial uses along the main roads, including Farrington Highway and Kamehameha Highway (Figure 1-1 and Figure 1-2). Commercial and industrial uses are concentrated south of the highway. Residential density generally decreases with elevation and distance from the shoreline. Most notably, this area includes Leeward Community College, Pearlridge Center and Aloha Stadium.</p> <p>Overall, residential and employment density in this area is moderate relative to other parts of the corridor. On average, population density is approximately 7,500 p/sm and employment density is 3,500 j/sm. Most commercial developments are on a neighborhood scale, with the exception of Pearl Highlands and Pearlridge Centers.</p> <p>Six stations are planned for this portion of the project</p> <ul style="list-style-type: none"> • Station 4: Farrington Highway at Leoku Street. Farrington Highway at this location, just east of Fort Weaver Road, has a number of commercial and industrial developments; however, just north of the highway, single family residences dominate. There is little vacant land at this site; despite its distance from urban Honolulu, population density exceeds 9,000 p/sm. This station has potential as an intermodal facility because of easy access from ‘Ewa Villages down Fort Weaver Road. • Station 5: Farrington Highway at Mokuola Street. Land use in the vicinity of this station is similar to Station 4 except that the former O’ahu 	<p>Existing station area development character (continued)</p>

1. EXISTING LAND USE (Continued)	
a. Existing Land Use (Continued)	
Information Requested	Documentation Supporting Land Use Criterion
<p>Existing station area development character (continued)</p>	<p>Sugar Mill is nearby. The former sugar mill land, considered a Brownfield, is being redeveloped for new industrial and commercial uses. This station would interface with the existing Waipahu bus transit center.</p> <ul style="list-style-type: none"> • Station 6: Leeward Community College. Major existing land uses include Leeward Community College (LCC), Waipahu High School, and single family residences. Commercial facilities on the other side of the H-1 freeway would be served by Station 7. • Station 7: Kamehameha Highway at Kuala Street. This station is only 2,500 feet from Station 6 but is separated by the H-1 freeway. The station is located at the Pearl Highlands Center, a 400,000 square foot commercial development. Several big box stores, and smaller commercial developments are also present and planned. Also nearby are two high rise apartment buildings, some mid-rise apartments, and the redeveloping Mānana Naval Quarters. • Station 8: Kamehameha Highway at Kaonohi Street. The station is located across the street from Pearlridge Center, a major regional shopping destination. Other commercial and industrial uses are nearby, including Pali Momi Medical Center with 116 beds. Other uses include a 10.5 acre watercress farm and a variety of residences. Population and employment density in this area already exceed 10,000 persons/jobs per square mile. • Station 9: Salt Lake Boulevard at Kahuapa’ani Street. Aloha Stadium dominates this area, hosts a variety of events, seats 50,000, and has an 8,000-space parking lot. Other uses in the area are the 200,000 square foot Stadium Marketplace, schools, and residences. Located nearby are important tourist destinations including the Arizona Memorial and the Admiral Clarey Bridge, which provides access to Ford Island. <p><u>Salt Lake</u></p> <p>The Salt Lake area (Figure 1-2) is a transition zone between the moderate density developments on the west side of Aloha Stadium and the complex dense development east of Middle Street. Population density is high, 16,800 p/sm but employment density is low, although the Airport and Māpunapuna industrial areas are nearby. Residential development includes civilian single family to high rises on the north side of Salt Lake Boulevard and military housing on the south side of Salt Lake Boulevard.</p> <p>There is only one station planned in the area, Station 10: Salt Lake Boulevard at Ala Nioi Place. The station is next to the high rise residential district of Salt Lake, military housing, and the neighborhood Salt Lake Shopping Center.</p>

1. EXISTING LAND USE (Continued)

a. Existing Land Use (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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Middle Street to Ala Moana Center

This is the most complex and densely developed section of the corridor (Figure 1-3). The alignment follows Dillingham Boulevard, a commercial and industrial area, the latter predominantly related to the activities of Honolulu Harbor. North of Dillingham Boulevard, the area is a mixture of medium density residential and mixed commercial/industrial uses. Farther east, the alignment enters the Central Business District (CBD); the CBD includes Chinatown, the Financial District, and the Hawai'i Capital District (Figure 1-4). East of the CBD is the rapidly redeveloping area of Kaka'ako and Oahu's major retail complexes, Ward Centers and Ala Moana Center (Figure 1-5).

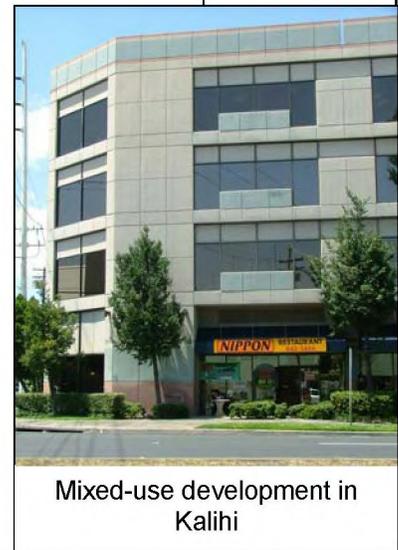
In almost all cases, employment density exceeds population density in the vicinity of the transit stations in this area. Population density in this area averages over 12,000 p/sm within ½-mile of the stations and employment density averages nearly 40,000 j/sm within ½-mile the stations.

Kaka'ako, between the Capital District and Ala Moana Center, is slated for redevelopment to higher density uses by both the City and County of Honolulu and the Hawai'i Community Development Authority. Figure 1-5 illustrates areas that have a relatively high potential for redevelopment. Many of the large lots along Ala Moana Boulevard are currently car dealerships while the large lots nearer the transit alignment are currently warehouse space. One of the car dealerships will be moving to the mixed-use Capitol Place development in the downtown area (Figure 1-4) and the principal land owner in the area, Kamehameha Schools, has plans to build a 400,000 square foot wet lab where another dealership is currently located.

Nine stations are located in this dense corridor:

- **Station 11: Dillingham Boulevard at Middle Street Transit Center.** This area is dominated by industrial and commercial uses, including the 1,000-inmate O'ahu Community Correctional Center. The nearby Middle Street Transit Center is a major bus hub for many lines that serve this central part of Honolulu. It will serve as a major intermodal center in the future.
- **Station 12: Dillingham Boulevard at Mokauea Street.** This location is dominated by industrial and commercial uses south of Dillingham Boulevard and multifamily residences north of Dillingham Boulevard. Some of the commercial and industrial uses are related to activities at nearby Honolulu Harbor.

Existing station area development character (continued)



Mixed-use development in Kalihi

1. EXISTING LAND USE (Continued)	
a. Existing Land Use (Continued)	
Information Requested	Documentation Supporting Land Use Criterion
<p>Existing station area development character (continued)</p>	<ul style="list-style-type: none"> • Station 13: Dillingham Boulevard at Kōkea Street. Land uses are largely industrial and commercial similar to Station 12, but includes Honolulu Community College and less residential area than Station 12. • Station 14: Ka'aahi Street. The area includes a mix of commercial, industrial, and residential uses. The commercial and industrial uses are similar to Stations 12 and 13, but the residential uses are larger and include Major Wright Homes and Kukui Gardens, both HUD low-rise housing developments. • Station 15: Nimitz Highway at Kekaulike Street. This is the first station that would serve Honolulu's CBD (Figure 1-4). The area immediately adjacent the station is part of Chinatown and the historic O'ahu food market, itself an important local and tourist attraction. • Station 16: Nimitz Highway at Fort Street: This station would serve Honolulu's Financial District (Figure 1-4) area including the Fort Street pedestrian mall, Aloha Tower Marketplace, and the cruise ship terminal at Piers 10 and 11, that processed nearly 241,000 passengers in 2005. It also would serve the very densely developed financial district and nearby government offices. This station would serve the densest concentration of jobs in the entire transit corridor. • Station 17: Halekauwila Street at South Street. This station would serve government offices in the Capital District west of South Street (Figure 1-4) and neighboring Kaka'ako (Figure 1-5), an area currently under transition from underutilized commercial and industrial activities to high-density condominium and office uses east of South Street such as the proposed Halekauwila Place. • Station 18: Halekauwila Street at Ward Avenue. This station site is also in Kaka'ako (Figure 1-5), an area of transition from old low-density commercial uses to new high-density office and residential uses. The station is next to the popular Ward Centers retail complex. New projects in the area include Ward Entertainment Center (http://hcdaweb.org/kakaako/projects/private-sector-projects/ward-entertainment-centre/), Ward Village (http://hcdaweb.org/kakaako/projects/private-sector-projects/ward-village-shops-project-1/), and Hokua Tower (http://hcdaweb.org/kakaako/projects/private-sector-projects/hokua-at-1288-ala-
 <p>Proposed Halekauwila Place</p>	
 <p>Ward Village Rendering (under construction)</p>	

1. EXISTING LAND USE (Continued)

a. Existing Land Use (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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New building in Kaka'ako near Kamake'e Street (Ward Village under construction). Photo taken on Queen Street fixed guideway alignment.

[moana/](#)). The five recently built residential towers in the area have a total of over 1,700 residential units.

- **Station 19: Ala Moana Center.** This is the east terminus of the East Kapolei to Ala Moana Center Fixed Guideway project. It would serve one of the largest shopping

Existing station area development character (continued)

centers in the U.S., with more than 1.8 million square feet of retail space and expanding, and borders the redeveloping Kaka'ako neighborhood. It is adjacent to major hotels and condominiums on the edge of Waikīkī, and the Hawai'i Convention Center, as well as retail and small office uses. The shopping center is also the convergence of many bus lines, and in time would become a major transfer station for the Fixed Guideway project. A direct pedestrian connection between the station and the adjacent shopping center is planned; this is a strong example of future joint development at a transit station.

The 720-unit Moana Pacific Condominium towers on Kapi'olani Boulevard near the Ala Moana Center are now complete (<http://hcdaweb.org/kakaako/projects/private-sector-projects/moana-pacific/>). A new commercial building, the Honolulu Design Center (<http://hcdaweb.org/kakaako/projects/private-sector-projects/honolulu-design-center/>), which is part of the Moana Pacific project, fronts Kapi'olani Boulevard and has 80,000 square feet of commercial space and creates a pedestrian friendly streetscape. This development replaced a car dealership and a number of low-rise commercial and industrial buildings.



Moana Pacific

In conclusion, the East Kapolei to Ala Moana Center Fixed Guideway project would link together the highest density employment and residential centers of central Honolulu and the fast-developing area of West Oahu. At the east end, Stations 16 through 19 have the highest population and employment densities among all

1. EXISTING LAND USE (Continued)	
a. Existing Land Use (Continued)	
Information Requested	Documentation Supporting Land Use Criterion
Existing station area development character (continued)	<p>the station areas. Near the mid-point of the system, Pearl Harbor Naval Base with the Arizona Memorial is a major employment center and tourist destination, which attracts over 1.6 million tourists per year. At the west end, the planned Fixed Guideway project is already providing a catalyst for transit-oriented development at the University of Hawai‘i West O‘ahu, and the Ho‘opili new community development. In addition, tourism in Hawai‘i, with a record-breaking \$11.9 billion in spending in 2005, would boost transit ridership and benefit from the new service.</p> <p>Therefore the East Kapolei to Ala Moana Center Fixed Guideway project would be an extremely strong candidate for a major transit investment, not only because of the concentrations of development in the corridor but also the untapped potential of ridership from the tourist economy.</p>

1. EXISTING LAND USE (Continued)

a. Existing Land Use (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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Generally, pedestrian facilities with curb ramps exist along the main streets along the project corridor, except in the 'Ewa Plain west of Fort Weaver Road. Pedestrian facilities are more extensive in some areas than others, with older industrial communities seaward of the alignment having fewer facilities. The City and County of Honolulu had multiple long-running ADA curb-ramp projects on-going in the Winter of 2007. These projects have made significant improvements in urban Honolulu and around the island of O'ahu in general.

The City and County of Honolulu has also announced in 2007 a project to install pedestrian countdown timers at all cross walks. At the same time, the state government is on the verge of appropriating additional funds to the Department of Transportation for pedestrian safety measures such as traffic countdown timers, signals, painting of crosswalks, a public awareness campaign, and grants-in-aid for counties for pedestrian safety (Bill 357). These actions are designed to make Honolulu more pedestrian friendly, as was mandated in a Charter Amendment approved by voters in 2006

(<http://www.honolulu.gov/chc/question8.htm>).

Individuals can also request curb ramps by submitting curb ramp request forms, available on the City and County's Department of Design and Construction web site

(<http://www.co.honolulu.hi.us/parks/civil/curbrampform.pdf>).

The stations areas are described in general below.

Kapolei, Stations 1 through 3: These areas are currently undeveloped and no pedestrian facilities exist. As the main roads in the area are built or widened, pedestrian facilities will be installed. The significant development planned for this area will incorporate pedestrian walkways serving the University of Hawai'i West O'ahu and Ho'opili planned developments.

Waipahu, Stations 4 through 6: Pedestrian facilities are fairly extensive on the mauka side of Farrington Highway, but less prevalent on the makai side of the highway. Due to the number of buses running on Farrington Highway, and the transit center currently located on the highway, pedestrian routes are well established. In addition to the sidewalks in the area, the Pearl Harbor Historic Trail and the OR&L right-of-way bike path are growing in length and connectiveness, providing off-street pedestrian facilities.

Existing station area parking supply

CURB RAMP REQUEST FORM
CITY AND COUNTY OF HONOLULU
DEPARTMENT OF DESIGN AND CONSTRUCTION

This form is to be filled out by or on behalf of a person with a disability who requires the installation/ modification of curb ramps or the modification of existing accessible paths leading to curb ramps within public rights-of-way.

Fill out this form as completely as possible or call 523-4672 (Voice) for assistance. Provide a written description or sketch of the location(s) where curb ramps are needed for programmatic access to City services and/or facilities.

Within two (2) weeks of receiving a request, a representative of the City's Department of Design and Construction will contact the person making the request. A staff person will arrange to meet with the person making the request and the person needing the modification either at the location(s) noted or at an alternate site, if the location(s) are not accessible. Meetings will be held during the hours of 8:30 a.m. to 3:30 p.m., Monday to Friday.

LOCATION: NE NW SE SW ALL
(Please circle appropriate location(s))

STREETS: _____

COMMENTS OR SUGGESTIONS: _____

Please provide a brief statement of why the ramp is needed: _____

Name of Person Needing Curb Ramp Modification: _____ Phone: _____

Contact (if different than above): _____ Address: _____ Zip: _____ Date: _____

Return to: Civil Division
Department of Design and Construction
City and County of Honolulu
650 South King Street, 15th Floor
Honolulu, HI 96813

or FAX to: 527-6103

04-01-02

Curb Ramp Request Form

1. EXISTING LAND USE (Continued)

a. Existing Land Use (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Existing station area parking supply (continued)

Pearl City to Aloha Stadium, Stations 7 through 9: There are sidewalks on Kamehameha Highway and most surrounding streets. In some cases sidewalks do not extend far beyond Kamehameha Highway; however, due to the number of buses operating on Kamehameha Highway and the proposed transit center located near Station 8, pedestrian routes are well established. The Pearl Harbor Historic Trail, still being developed, also provides off-street pedestrian facilities in this area.

Station 10: Salt Lake Boulevard at Ala Nioi Place. There are sidewalks on Salt Lake Boulevard and the cross streets of Ala Liliko'i Street and Arizona Road. Sidewalks are fairly continuous and connected in the private residential areas to the north of Salt Lake Boulevard. In the military residential areas to the south of Salt Lake Boulevard, sidewalks are not continuous and do not provide a complete or direct route to the station location.

Kalihi, Stations 11 through 14: Good sidewalks are generally present on Dillingham Boulevard and major cross streets. Smaller, less-traveled side streets do not all have sidewalks. Similar to other portions of the corridor, pedestrian routes are well established due to the number of buses that now serve Dillingham Boulevard.

Chinatown to Ala Moana Center, Stations 15 through 19: Sidewalks are extensive in this area. The only streets without sidewalks are the smaller, more industrial streets in the Kaka'ako neighborhood. Those streets tend to have a large number of small property owners, are narrower than other streets, and typically have large numbers of driveways/loading bays. The Ala Moana Center station would be integrated with the center, providing direct pedestrian connections to the center. The Ala Moana-Sheridan neighborhood plan also calls for additional pedestrian improvements in the area.

Transportation: Pedestrians

- Improve crosswalks at other key intersections
Atkinson/Ala Moana



- Wide crossing
- Gateway location
- Many visitors
- Recreational users
- Shoppers

The Ala Moana-Sheridan plan area contains 8 of the 15 most dangerous intersections in Honolulu, according to a *Honolulu Advertiser* analysis of Honolulu Police Department accident statistics. The intersection pictured above, along with the Ke'e'amoku-Kapi'olani intersection, is one of them. If it's dangerous for motorists, it is even more so for pedestrians.

On-going planning for pedestrian access around Ala Moana Center.

Generally parking is available in sufficient supply at a low cost or free in the corridor west of the downtown area. As areas redevelop, parking tends to become scarce and increase in cost. This is evident in areas such as Iwilei and Kaka'ako where parking was relatively abundant and inexpensive five years ago compared to current conditions. However, in those areas adjacent to the Central Business District (CBD), parking remains relatively plentiful and inexpensive compared to the CBD.

Parking rates in the CBD, which consists of Chinatown, the Financial District, and the Capital District (Figure 1-4), have steadily increased

1. EXISTING LAND USE (Continued)

a. Existing Land Use (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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over the years as the volume of office space has increased and vacancy has dropped. Daily parking rates in the Financial District stand at approximately \$43 a day currently, among the highest in the nation.

In the Capital District parking rates are lower, primarily due to its proximity to the relative open lots of Kaka‘ako. However, as Kaka‘ako has redeveloped, parking rates have increased and will continue to increase. In Chinatown the number of parking spaces is relatively low, but the City and County of Honolulu owns the bulk of the spaces. The City charges a relatively low daily rate for the spaces (\$21), but generally does not provide monthly parking for non-residents (people not living in the building in which the parking is located).

Table 1-2 summarizes the availability of parking and its cost in the major employment areas in the transit corridor: Chinatown, the Financial District, and the Capital District.

Table 1-2: Parking Supply in the Central Business District

	Chinatown	Financial District	Capital District
Commercial Development Space/Office Space (sq. ft.)	unknown	6,300,000	4,000,000
Number of Employees	3,300	27,500	16,600
Number of Parking Spaces for Employees	1,000	9,900	6,500
Parking Spaces per Sq. Ft. of Office Space	unknown	636	615
Parking Spaces per Employee	0.30	0.36	0.39
Number of Dwelling Units	940	575	300
Number of Residents	3,360	990	450
Number of Parking Spaces for Residents	475	550	280
Parking Spaces per Dwelling Unit	0.50	0.96	0.93
Average Daily Parking Cost	\$27	\$43	\$28

Existing station area parking supply

In the CBD, parking is primarily confined to structured parking. There are only a few small lots that provide street level parking that is not under a building. Many of the parking structures include street-level shops and restaurants. Therefore, the land area devoted to parking in the CBD is relatively small.

The current parking supply is a result of existing parking requirements for developments. Chapter 21-6 of the Land Use Ordinance establishes island-wide off-street parking requirements for a variety of uses with some variations for the special districts within the city. Table 1-3 summarizes those parking requirements.

1. EXISTING LAND USE (Continued)			
a. Existing Land Use (Continued)			
Information Requested	Documentation Supporting Land Use Criterion		
Existing station area parking supply (continued)	<i>Table 1-3: Existing Parking Requirements</i>		
Use	Standard Requirements	In BMX-4 Central Business Mixed Use Zone	In Waikīkī Special District
Commerce and Business			
Office, home improvement center, bank, medical clinics, and others	1/400 sf*	1/600 sf > 4,000 sf	1/800 sf
Convenience, food, and grocery stores	1/300 sf	1/600 sf > 4,000 sf	1/800 sf
Eating and drinking establishments	1/300 sf	1/300 sf dining area >1,500 sf + 1/400 sf other	1/800 sf
Large item sales	1/900 sf	1/1,200 sf	
Shopping centers	1/300 sf		1/800 sf
Dwellings and Lodgings			
Dwellings, detached, duplex, and farm	2/unit + 1/1,000 sf over 2,500 sf		1/unit
Multifamily dwellings <600 sf	1/unit + 1 guest/10 units	1/unit	1/unit
Multifamily dwellings >600 but <800 sf	1.5/unit + 1 guest/10 units	1/unit	1/unit
Multifamily dwellings >800 sf	2/unit + 1 guest/10 units	1/unit	1/unit
Hotel dwelling units	1/unit	1/4 units	0.25/unit
Hotel lodging units	0.75/unit	1/4 units	0.25/unit
Social and Civic Service			
Museums and libraries	1/400 sf		1/300 sf
Arenas, theaters, and auditoriums	1/75 sf or 1/5 seats	1/300 sf or 1/10 seats	
Elementary and middle schools	1/20 students + 1/400 sf office space		1/15 seats in main auditorium
High schools	1/10 students + 1/400 sf office space		1/5 seats in main auditorium or 5/classroom
	*sf = square feet		

2. TRANSIT SUPPORTIVE PLANS AND POLICIES

a. Growth Management

Documentation Supporting Land Use Criterion	Information Requested
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State, regional and community plans and policies are in place and are enforceable through zoning, capital improvement programs, and grant and loan requirements at State and local levels. Because of these policies, existing and planned densities in the project corridor are strongly compatible with transit.

Proactive, community-based plans at the State and local levels establish a comprehensive framework for implementing long-range policies and goals for the future of Oahu, which affect the corridor. “Development Plans” for the Primary Urban Center and ‘Ewa direct new growth and supporting facilities to these areas, while “Sustainable Communities Plans” for East Honolulu, Central O‘ahu, and other parts of the island focus on sustaining the character of these communities as well as preserving their significant natural and cultural resources.

The **Hawaii Statewide Transportation Plan (HSTP;** <http://state.hi.us/dot/stp/hstp.htm>) envisions a multi-modal transportation system and promotes transit supportive development in activity centers along the corridor. As stated in the Vision for Transportation in the 21st Century, “...we envision a multi-modal transportation system that encourages the integration of advanced technology and innovation in providing for the safe, economic, efficient, and convenient movement of people while fostering economic growth and development throughout the state.” The Vision statement also includes “environmentally friendly, automated rapid transit and people mover systems” and “jobs closer to home, and homes clustered around employment centers.” Similarly, the HSTP is supportive of transit oriented development, such as “Improve multi-modal and inter-modal connectivity of the transportation system”, “Enhance inter-modal connectivity”, “Support ‘smart growth’ initiatives in land use planning”.

The **Oahu Regional Transportation Plan 2030 (ORTP;** <http://www.oahumpo.org/ortp/index.html>) focuses on improving mobility with a series of strategies and programs to address future transportation needs. It also recognizes the importance of rail transit: “At the heart of the ORTP 2030 is a rail transit system that will serve the corridor between Kapolei and Honolulu.” The proposed rail transit system from Kapolei to Honolulu “...will become the backbone of the transit system, connecting major employment and residential centers to each other and to downtown Honolulu.” The plan also includes feeder bus services for each station to integrate buses with the rail system.

The **City and County of Honolulu General Plan (1977, as amended;** <http://honoluluodpp.org/planning/OahuGenPlan.asp>) establishes transit-supportive Objectives and Policies for the future of Honolulu. These include:

- Public transportation for travel to and from work, and travel within central Honolulu;

Concentration of development around established activity centers and regional transit

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

a. Growth Management (Continued)

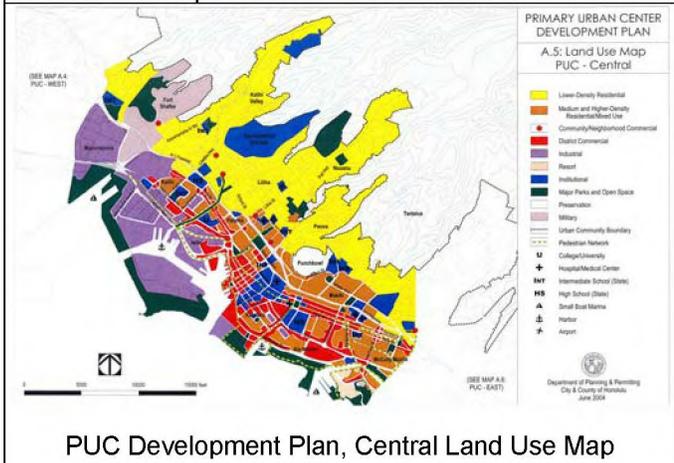
Information Requested	Documentation Supporting Land Use Criterion
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Concentration of development around established activity centers and regional transit (continued)

- Bikeways for recreational activities and trips to work, schools, shopping centers, and community facilities; and
- Pedestrian walkways for getting around Downtown and Waikīkī, and for trips to schools, parks, and shopping centers.”

The Honolulu General Plan also establishes Honolulu (Wai‘alaie-Kāhala to Hālawā), ‘Aiea, and Pearl City as O‘ahu’s primary urban center. Specific policies promote development within the primary urban center: “Stimulate development in the primary urban center by means of the City and County’s capital improvement program and State and Federal grant and loan programs.”

The Primary Urban Center (PUC) Development Plan
http://www.honolulu.gov/planning/DevSust_PrimaryUrbanCenter.asp



PUC Development Plan, Central Land Use Map

establishes the Urban Community Boundary as a primary tool for the long-term organization and guidance of urban growth. The Urban Community Boundary defines and contains the extent of urbanized or “built-up” areas. “The purpose is twofold: (1) to provide adequate lands for facilities or other groupings of built uses needed to support established or developing communities; and (2) to protect lands outside of the Urban Community Boundary that have important natural, cultural, or scenic resource values.”

Examples of policies and guidelines that promote transit use and related transit oriented development include:

- A key element of the plan is to “Develop a Balanced Transportation System.” The PUC plan also supports development of a rapid transit system: “To reduce automobile dependency and elevate quality of life, the Primary Urban Center needs a higher-capacity higher-speed public transit system that can move efficiently through the urban core.” “Full development of the Primary Urban Center, as called for in the General Plan can only be achieved with the support of a well-conceived transportation system that is tightly integrated with land use policies and regulations.”
- The PUC Development Plan links transit with established activity centers. “To attract ridership, proposed rapid transit routes will be within a five-minute walk from central Honolulu’s major activity centers, higher-density neighborhoods, and redevelopment areas. Transit service to the

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

a. Growth Management (Continued)

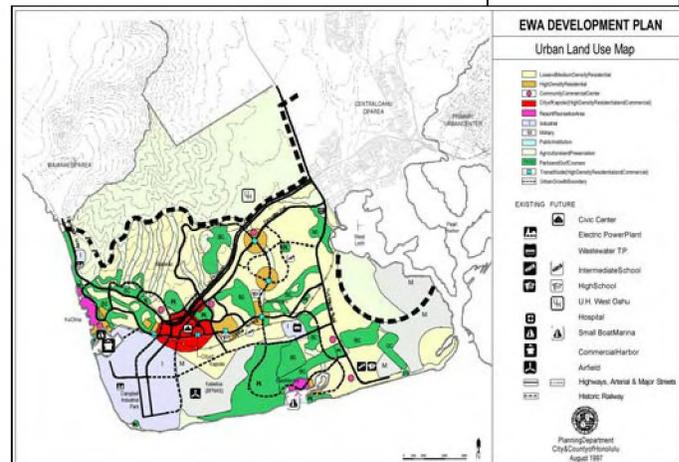
Documentation Supporting Land Use Criterion	Information Requested
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neighborhoods outside the five-minute zone will be supplemented by circulator buses to connect passengers to the rapid transit system at transit centers.”

- The PUC Development Plan supports transit to achieve an integrated transportation system: “Implement land use strategies to achieve a balanced transportation system. To improve the quality of life in the Primary Urban Center and to accommodate growth, development initiatives and regulatory controls should promote the growth of sustainable and appropriate alternative urban travel modes such as transit, walking, and bicycling.”; and “Improve the public transit system, including development of a rapid transit component. Improvements to the transit system should be targeted to accommodating trans-PUC travel and making neighborhood service more convenient. A rapid transit component is needed to serve the high-volume east-west corridor, connect activity centers, and provide transportation capacity in place of increased roadways.”

Concentration of development around established activity centers and regional transit (continued)

The ‘Ewa Development Plan (http://www.honoluluodpp.org/planning/DevSust_Ewa.asp) is a visionary plan for the development of ‘Ewa, Kapolei, the new University of Hawai‘i West O‘ahu campus, and several master planned communities located in southwest O‘ahu. The 1997 Plan establishes an Urban Growth Boundary to protect agricultural lands and open space from urban development. The Plan also reserves a Rapid Transit Corridor with six transit nodes which are to be surrounded by high density residential and commercial development, as shown on the ‘Ewa Development Plan Urban Land Use Map.



‘Ewa Development Plan, Urban Land Use Map

The Central O‘ahu Sustainable Communities Plan (http://honoluluodpp.org/Planning/DevSust_CentralOahu.asp) includes the community of Waipahu and fills the gap in the fixed guideway alignment between the ‘Ewa and PUC Development Plans. The 2002 Central O‘ahu plan establishes an Urban Community Boundary which dove-tails with the adjoining ‘Ewa and PUC Development Plan Urban Growth Boundaries. The plan supports sustaining the unique character, lifestyle, and economic opportunities in the Central O‘ahu communities but targets redevelopment around two transit centers in Waipahu. Another element of the plan is to design communities to encourage access to mass transit and reduce automobile usage. To achieve plan goals,

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

a. Growth Management (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Concentration of development around established activity centers and regional transit (continued)	moderate density/mid-rise housing and commercial development is envisioned within walking distance of two major nodes and transit stops in Waipahu, which are generally the same as Stations 4 and 5 of the East Kapolei to Ala Moana Center fixed guideway project. The Central O'ahu plan also calls for, and reserves open space for high-speed transit along the H-2 corridor to Wahiawā, which is outside of the current study area.
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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

a. Growth Management (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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Honolulu planning policies already include growth management plans that concentrate development (in the transit corridor) and preserve open space.

The City and County of Honolulu General Plan includes policies for land conservation and management, including the following stated goals:

Establish a green belt in the ‘Ewa and Central O‘ahu areas of O‘ahu in the Development Plans.

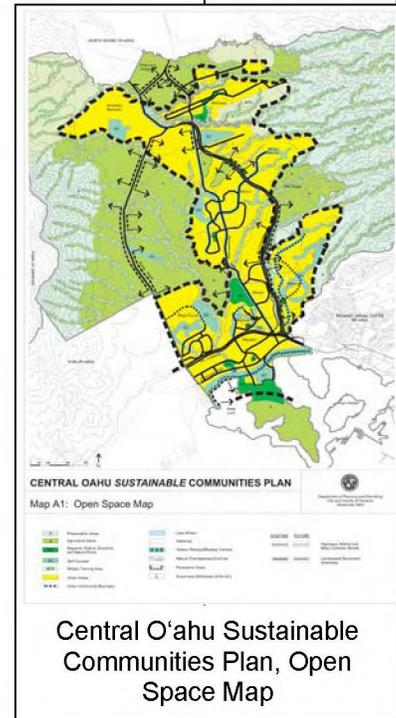
Maintain rural areas as areas which are intended to provide environments supportive of lifestyle choices which are dependent on the availability of land suitable for small to moderate size agricultural pursuits, a relatively open and scenic setting, and/or a small town, country atmosphere

The **Primary Urban Center Development Plan** identifies and protects lands outside the Urban Community Boundary from development, while directing development within the Urban Community Boundary (see illustration in previous section).

The **Central O‘ahu Sustainable Communities Plan** establishes policies that limit growth to protect the community’s natural and scenic, resources as well as replacing aging infrastructure. Similar to the PUC and ‘Ewa Development Plans, land conservation is managed and open space is preserved using a Urban Growth Boundary.

The **‘Ewa Development Plan** protects agricultural land and open space by establishing an Urban Growth Boundary. The Plan also establishes an open space network linking the communities of ‘Ewa (see illustration in previous section).

Land conservation and management



2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

a. Growth Management (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Land conservation and management (continued)

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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

b. Transit Supportive Corridor Policies

Documentation Supporting Land Use Criterion	Information Requested
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The City and County of Honolulu General Plan establishes Honolulu’s Primary Urban Center and a second urban center in ‘Ewa/Kapolei. By channeling more compact development within these zones this plan would increase development at stations in the PUC and ‘Ewa. The transit project would connect these two areas; Stations 1 to 3 are in ‘Ewa/Kapolei and Stations 7 to 19 are in the PUC.

The **PUC Development Plan** reinforces this policy with land use strategies that define lower density and higher density “In-town” residential neighborhoods. The higher density neighborhoods are centrally located in Downtown-Ala Moana-Kaka‘ako-Waikīkī and Pearl City-‘Aiea and are generally closer to major commercial districts and corridors. This policy would result in increased station area development in Pearl City and ‘Aiea at Stations 8 and 9. The PUC Development Plan also promotes mixed-use town centers in Pearl City and ‘Aiea. Specific policies and guidelines are also intended to integrate land use and transit planning within the PUC, such as: “Provide a transit link along the Ala Moana/Kaka‘ako/Downtown corridor.”

The **‘Ewa Development Plan** also establishes and the City of Kapolei as the urban core for the Secondary Urban Center. This Plan defines six districts which include the City Center, Commercial, and Civic Center districts. The City Center development is to be the “high density core of the city” with larger office towers as the predominant form of development. Transit nodes are to be located near the City Center and Civic Center. The Plan states, “As part of the Development Plan vision for a transit corridor linking the City of Kapolei, Waipahu, and the Primary Urban Center, higher density residential and commercial development should be encouraged around the City of Kapolei transit node and the transit corridor...” The Plan also includes policies for developing transit oriented streets and encouraging pedestrian and bicycle travel.

The **Central O‘ahu Sustainable Communities Plan** provides for “medium density residential/commercial mixed use” around Station 4 and a “Regional Town Center” around Station 5. Current zoning in both these areas is Community Business (zone B-2), not mixed use, which would be zone BMX-3. The plan also calls for moderate density/mid-rise housing and commercial development within walking distance of two major nodes and transit stops in Waipahu, Stations 4 and 5.

Plans and policies to increase station area development

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

b. Transit Supportive Corridor Policies (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Plans and policies to increase station area development (continued)

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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

b. Transit Supportive Corridor Policies (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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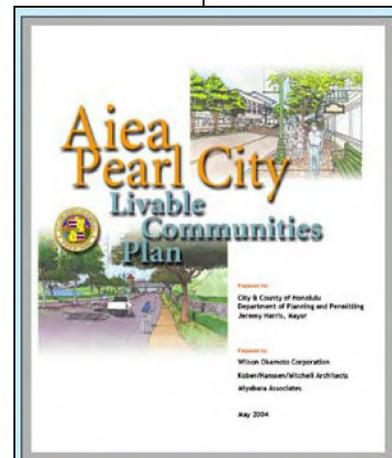
The **PUC Development Plan** vision states: “Livable neighborhoods have business districts, parks and plazas, and walkable streets... Key components of livability include residences within close proximity to employment, businesses, community services and recreational amenities, with facilities integrated in a manner that enhances accessibility and convenience, encourages walking and bicycling as alternative forms of mobility and promotes sidewalk activity.”

Several areas along the transit alignment have produced special area plans such as livable communities plans or master plans which go beyond the larger area development or sustainable communities plans (i.e. ‘Ewa Development Plan and Central O‘ahu Sustainable Communities Plan). Two such plans are discussed below.

The **‘Aiea-Pearl City Livable Communities Plan** (<http://www.honolulu.gov/planning/AieaPearlCityLC/AieaPC/LivableCommunities.pdf>) covers a sub-area of the PUC Development Plan and also promotes a transit-supportive pattern of development and pedestrian-friendly environment. A major component of this Plan, which was developed as part of the Livable Communities Initiative program, is the “identification of potential transit centers and major transfer points with convenient access to retail and service facilities within the town centers; and, pedestrian/bicycle circulation to improve access and safety.”

The **Waipahu Livable Communities Initiative** (<http://www.honolulu.gov/planning/WaipahuLivableCommunities/WaipahuLivableCommunities.pdf>) project (May 1998), covers a sub-area of the Central O‘ahu Sustainable Communities Plan and was also developed as part of the Livable Communities Initiative. The initiative integrates the planning and development of pedestrian-oriented transit services and facilities. Intended to implement the Waipahu Town Plan (<http://www.honolulu.gov/planning/WaipahuTownPlan/WaipahuTownPlan.pdf>), which was adopted by the Honolulu City Council in 1996, the Waipahu Livable Communities Initiative selected the intersection of Mokuola Street and Farrington Highway as the preferred site for a major bus transfer station. This bus transfer station, which is located at Station 5, Farrington Highway at Mokuola Street, was selected based on locational criteria, including proximity to major employment and activity centers, bus routes, Farrington Highway, bikeways and pedestrian paths, as well as proximity to future transit service.

Plans and policies to enhance transit-friendly character of station area development



‘Aiea Pearl City Livable Communities Plan Cover

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

b. Transit Supportive Corridor Policies (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Plans and policies to enhance transit-friendly character of station area development (continued)

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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

b. Transit Supportive Corridor Policies (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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In 2006, an amendment to the charter of the City and County of Honolulu was passed to make Honolulu “pedestrian- and bicycle-friendly” (<http://www.honolulu.gov/chc/question8.htm>). This is now one of the priorities of the City Department of Transportation Services. In April 2007, the City and County of Honolulu announced plans to install pedestrian countdown timers at all crosswalks. This new project, along with ongoing curb-ramp projects, will continue to improve pedestrian facilities throughout Honolulu.

The **Hawai‘i Statewide Transportation Plan (HSTP)** promotes development of a pedestrian-friendly environment. Objectives of the HSTP include “encourage bicycle and pedestrian travel for trips of short distances” and “facilitate and provide walking and bicycling options that meet statewide and community needs”.

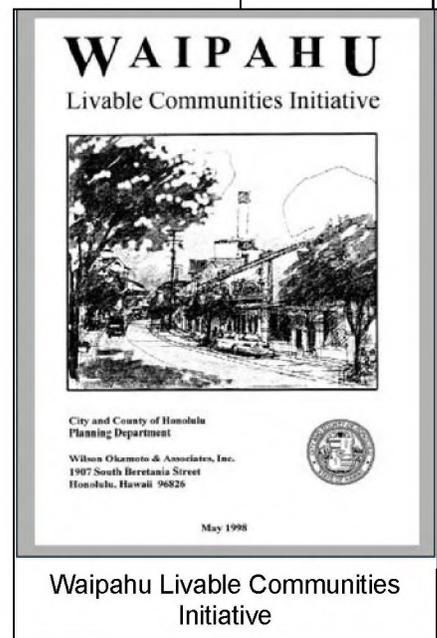
The **O‘ahu Regional Transportation Plan 2030 (ORTP)** includes development of a pedestrian plan for Oahu. The ORTP also incorporates plans for bicycles in a network of on-road bike lanes and off-road shared-use paths, including elements of Bike Plan Hawaii and “Priority One projects” identified in the Honolulu Bicycle Master Plan.

The **Ala Moana-Sheridan Community Plan** (<http://honolulu.dpp.org/Planning/AlaMoana/AlaMoana.pdf>) also reinforces multi-modal transportation with improved pedestrian crosswalks at major intersections and redesigned streets to improve pedestrian safety and provide medians and bike lanes. Planning for the Ala Moana Center Station includes direct pedestrian connections to the Center’s mall level.

The **‘Aiea-Pearl City Livable Communities Plan** improves pedestrian and bicycle circulation to improve access and safety. One of the key goals of this Plan is to “Improve transit, pedestrian, and bicycle access that is compatible with land use, zoning and urban design to reduce dependency on the automobile.”

The **Waipahu Livable Communities Initiative** incorporates a pedestrian/bikeway system that would connect existing segmented facilities and extend connections into the town core. “The proposed pedestrian/bikeway system is intended to effectively serve and connect inter-community routes between major destinations in Waipahu and provide convenient access to the public transit system.”

Plans to improve pedestrian facilities, including facilities for persons with disabilities



2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

b. Transit Supportive Corridor Policies (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Plans to improve pedestrian facilities, including facilities for persons with disabilities (continued)

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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

b. Transit Supportive Corridor Policies (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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The City and County of Honolulu Department of Planning and Permitting (DPP) has established parking requirements that are presented in Chapter 21 of the Land Use Ordinance (http://www.co.honolulu.hi.us/refs/roh/21_990.pdf). The Land Use Ordinance includes island-wide off-street parking requirements with some variations for the special districts within the city (Table 1-3). The existing parking requirements in the Land Use Ordinance are somewhat supportive of transit because they allow for less parking per square foot of development in the Central Business Mixed Use Area (BMX-4).

The **Primary Urban Center Development Plan**, prepared by the DPP, supports parking policies that promote transit:

Develop strategically located public parking facilities to support transit ridership.

To promote transit ridership and increase housing affordability, reduce off-street parking requirements in the transit corridor and consider establishing maximum parking ratios rather than minimum ratios in selected areas.

The DPP currently is drafting a transit-oriented development (TOD) ordinance that would modify planning requirements in the vicinity of the transit system, which likely will include parking strategies.

Park-and-ride facilities will be provided at stations near intermodal and highway connections.

Parking policies

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

b. Transit Supportive Corridor Policies (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Parking policies (continued)

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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

c. Supportive Zoning Regulations Near Transit Stations

Documentation Supporting Land Use Criterion	Information Requested
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The Development Plans for the **Primary Urban Center** and **‘Ewa** as well as the Sustainable Communities Plans, which promote transit-supportive planning, were adopted in the Revised Ordinances of Honolulu (i.e., zoning code). The Revised Ordinances (http://www.co.honolulu.hi.us/refs/roh/21_990.pdf), Chapter 24 establishes procedures for implementing these plans. An example is the following excerpt from Article 2, Primary Urban Center, which encourages development within the urban area and limits development outside this boundary.

Zoning ordinances that promote transit supportive development density in transit station areas

Article 2. Primary Urban Center

Sec. 24-2.3 Adoption of the Primary Urban Center development plan.

Sec. 24.2.5 Consistency.

- a. The performance of prescribed powers, duties and functions by all city agencies shall conform to and implement the policies and provisions of this ordinance. Pursuant to Revised Charter Section 6-1511.3, public improvement projects and subdivision and zoning ordinances shall be consistent with the Primary Urban Center development plan, as adopted.*

Sec. 24-2.6 Implementation.

- a. Implementation of this article relating to the Primary Urban Center development plan will be accomplished by the following: Initiating zoning map and development code amendments to achieve consistency with the policies, principles, and guidelines of the Primary Urban Center development plan;*
- b. Guiding public investment in infrastructure through functional plans which support the vision of the Primary Urban Center development plan.”*

A TOD ordinance being developed by the DPP may revise zoning to allow for greater densities in the vicinity of the transit system.

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

c. Supportive Zoning Regulations Near Transit Stations (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Zoning ordinances that promote transit supportive development density in transit station areas (continued)

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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)	
c. Supportive Zoning Regulations Near Transit Stations (Continued)	
Documentation Supporting Land Use Criterion	Information Requested
<p>TOD Ordinance. The DPP is developing a TOD ordinance at this time. In developing the ordinance, DPP is considering several elements including place-making, public amenities, open space, affordable housing, and improved motorized and non-motorized circulation requirements. There has been considerable support for TOD and Mayor Hannemann has recognized the need for TOD legislation and pledged his support for a TOD ordinance.</p> <p>Examples of this support include:</p> <ul style="list-style-type: none"> • When the locally preferred alternative (LPA) was selected, the City Council wanted to delay further development in station areas until the ordinance was in place, as proposed in Bill 86 (http://www4.honolulu.gov/docushare/dsweb/Get/Document-55544/BILL086(06).htm). The bill was considered unreasonable and did not pass, but illustrates the strong desire to implement TOD zoning in station areas. • The City Council passed Resolution 06-369 (http://www4.honolulu.gov/docushare/dsweb/Get/Document55618/RES06-369.htm) encouraging the DPP to increase density in the PUC by recommending that the maximum appropriate height limit be increased. The resolution passed unanimously on January 25, 2007. Developers and DPP personnel supported the idea, provided that infrastructure is sufficient to support such development. Comments suggested that increased height limits are most likely between Ala Moana Center and Chinatown, but unlikely in Waikīkī where the dominance of Diamond Head would be maintained. • The Urban Land Institute (ULI) sponsored a forum in Honolulu regarding land use and development implications of the East Kapolei to Ala Moana Center Fixed Guideway project as it pertains to two of the largest landowners affected by the project, Kamehameha Schools and D.R. Horton (http://hawaii.uli.org/events/agendas/2007Apr12YL.htm). Presentations by the two landowners highlighted their aspirations for TOD in-fill in the PUC (Kamehameha Schools) and TOD in greenfields (D.R. Horton). The event was widely attended, including by key DPP personnel. 	<p>Zoning ordinances and design guidelines that enhance transit-oriented character of station area development and pedestrian access</p>

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

c. Supportive Zoning Regulations Near Transit Stations (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Zoning ordinances and design guidelines that enhance transit-oriented character of station area development and pedestrian access (continued)

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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

c. Supportive Zoning Regulations Near Transit Stations (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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The existing Land Use Ordinance requires that parking be supplied at the rates outlined in Table 1-3. Reduced levels of parking are acceptable in the Central Business Mixed Use Area (zone BMX-4) and Waikīkī – the districts that have higher densities than others. Currently, it is rare that developers ask for or obtain significant variances from the standards in the Land Use Ordinance.

The TOD ordinance under development by the DPP will review parking strategies in the vicinity of transit facilities.

Zoning ordinances that support reductions in parking

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

c. Supportive Zoning Regulations Near Transit Stations (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Zoning ordinances that support reductions in parking (continued)

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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

d. Tools to Implement Land Use Policies

Documentation Supporting Land Use Criterion	Information Requested
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A public involvement process was undertaken to inform the citizens of O‘ahu about the Honolulu High-Capacity Transit Corridor Project and provide opportunities for participation in land use planning. This process focused on:

- Educating the public and keeping them up-to-date about project progress;
- Collecting and addressing community concerns;
- Building on the public participation programs from previous corridor projects;
- Planning public involvement efforts in cooperation with the Mayor and City staff; and
- Using the news media, community groups, neighborhood associations, and other resources within the corridor and throughout O‘ahu.

Scoping Meetings: Public scoping meetings for the Alternatives Analysis (AA) were held in the study corridor in December 2005. These meetings were conducted in an open-house format that presented the purpose of and need for the project, proposed project alternatives, and the scope of analysis to be included in the AA. Scoping meetings were held in March 2007 for the NEPA Environmental Impact Statement (EIS).

Speakers Bureau: The Honolulu High-Capacity Transit Corridor Project’s public outreach program is centered on a grassroots-oriented Speakers Bureau, staffed by technical professionals. This approach was developed considering the “local style”, where “talking story” continues to be a socially important means of conveying information. The speakers were formally trained and then briefed on a continuing basis as new information emerged. In total, the speakers’ bureau provided approximately 200 presentations to date that were attended by an estimated 5,000 individuals.

Community Updates: In addition to the speakers’ bureau presentations, 13 informational meetings were conducted at locations throughout O‘ahu. At these meetings, the Mayor, technical staff and consultants presented updated technical information about the project and the status of the AA. Participants were then encouraged to return to the stations for further interaction. Approximately 850 people attended these meetings.

Outreach to government agencies and the community in support of land use planning



Community update meeting

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)	
d. Tools to Implement Land Use Policies (Continued)	
Information Requested	Documentation Supporting Land Use Criterion
<p>Outreach to government agencies and the community in support of land use planning (continued)</p>	<p>City & County of Honolulu Neighborhood Boards: In addition, the neighborhood boards within the project corridor were regularly briefed between January and November 2006.</p> <p>Newsletters: Honolulu On The Move, the project bi-monthly newsletter (http://www.honolulutransit.org/more_info/library/files/HOTM%203-07.pdf), provided the public with detailed information on project issues and milestones. A total of seven newsletters were published between December 2005 and November 2006. Each issue of the newsletter reached nearly 20,000 households and businesses islandwide and, in addition, more than 7,000 newsletters were distributed via email.</p> <p>Website www.honolulutransit.org: A dedicated project website was created and maintained for the public to access current project information at all times. It also provides an opportunity for users to input their comments or questions.</p> <p>Information Line: A dedicated transit information line has been operational since November 2005, providing 24-hour access for public inquiry and comment.</p> <p>Media: The media was kept informed about the project through media releases and prepared public service announcements to highlight key project issues or milestones and to publicize upcoming opportunities for public involvement.</p> <p>Transit Solutions Advisory Committee: A Transit Solutions Advisory Committee (TSAC) comprised of more than 30 community leaders was formed to assist the Mayor and City Council in reviewing the technical work for the project and evaluating alignment options.</p> <p>Agency Coordination</p> <ul style="list-style-type: none"> • Scoping: An agency scoping meeting for the AA was held on December 13, 2005 to provide an opportunity for those agencies with stakes in the project, or relevant expertise pertaining to the project, to provide input on the project at an early stage. An agency scoping meeting for the NEPA EIS was held on March 28, 2007. • Ongoing Coordination: Following scoping, agency coordination continued as project details emerged related to the jurisdiction of various agencies. Coordination efforts included formal meetings, written correspondence, and informal telephone and personal communication. • Federal Agency Coordination: Federal agency coordination was a combination of written correspondence and formal meetings. The Federal Transit Administration, the lead Federal agency, was actively kept informed of the progress and was consulted regularly during the travel model development and refinement. The Federal Highway

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

d. Tools to Implement Land Use Policies (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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Administration, Hawai‘i Division, the Department of the Navy, the Department of the Army, the Environmental Protection Agency, the U.S. Fish and Wildlife Service and other environmental agencies were also consulted as necessary to comply with current guidelines and to share information on project progress.

- Hawai‘i State Agency Coordination:** Hawai‘i State agencies included the Hawai‘i Department of Transportation (HDOT), State Historic Preservation Division (SHPD), the Office of Hawaiian Affairs (OHA), the Department of Hawaiian Home Lands (DHHL), the Department of Land and Natural Resources (DLNR), Hawai‘i Community Development Authority (HCDA), and the University of Hawai‘i.
- Coordination with the O‘ahu Metropolitan Planning Organization (OMPO):** Coordination with the OMPO occurred at several levels. Presentations were made to OMPO’s Policy, Citizen Advisory, and Technical Advisory Committees over the course of the development of the AA. Also, OMPO staff were consulted on technical issues, such as environmental justice analysis and long-range land use planning.

Coordination with Local Interest Groups: Local interest groups, including the Outdoor Circle, Kamehameha Schools, and the Pearl Harbor Historic Sites group, were also involved. Coordination meetings were held with each of these groups to discuss their particular area of concern.

Outreach to government agencies and the community in support of land use planning (continued)

2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

d. Tools to Implement Land Use Policies (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Outreach to government agencies and the community in support of land use planning (continued)

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2. TRANSIT SUPPORTIVE PLANS AND POLICIES (Continued)

d. Tools to Implement Land Use Policies (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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The **Primary Urban Center Development Plan** describes implementation strategies for enhancing transit supportive design:

- “To promote the development of higher-density, mixed use (i.e., residential commercial) projects within the rapid transit corridor, provide incentives in the zoning code, such as floor area bonuses, use allocation ratios, and shared use of parking and loading.”
- “To promote pedestrian activity and facilitate transit ridership, establish special land use, design, and development standards for frontage properties along transit-oriented streets, with particular attention to the areas around transit centers and stops. Provide incentives for developers and employers to prepare and implement trip reduction plans.”
- “Density bonuses may be appropriate for new development projects that demonstrate reductions in the number of external trips through provision of mixed uses and transit-oriented design.”

The **TOD Ordinance** currently under development by DPP may include various incentives to promote transit supportive development.

Regulatory and financial incentives to promote transit supportive development

3. PERFORMANCE AND IMPACTS OF LAND USE POLICIES

a. Performance of Land Use Policies

Documentation Supporting Land Use Criterion	Information Requested
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As discussed in Section 2: Transit Supportive Plans and Policies, the existing development plans and sustainable community plans provide a strong backbone to support transit. Most recent cases of developments affected by those transit-supportive policies are located in the Kaka‘ako (Figure 1-5) and Ala Moana areas, where development has been most active. Most projects affected were discussed in Section 1: Existing Land Use. The significant in-fill developments generate increased population and employment density near the Central Business District (CBD) and along the East Kapolei to Ala Moana Center Fixed Guideway corridor. Examples of such projects include:

- Keola La‘i, a 44-story, 352-unit building with retail space on the ground floor with a pedestrian-friendly streetscape and access (<http://hcdaweb.org/kakaako/projects/keola-la-i>). This project is currently under construction within one block of a proposed transit station on a parcel previously used as a parking lot. Although parking is provided at ample ratios, the parking is structured and to the side.
- Halekauwila Place, a proposed affordable housing complex located on Halekauwila Street adjacent to a planned transit station, includes an 18-story tower with street level commercial development (<http://the.honoluluadvertiser.com/article/2007/Mar/13/bz/FP703130332.html>). The project would replace a street-level parking lot.
- Ward Village, still under construction, is an 18-story, 175-unit apartment building and a two-level 224,000 square foot retail development (<http://hcdaweb.org/kakaako/projects/private-sector-projects/ward-village-shops-project-1/>). The commercial development is designed to provide pedestrian friendly streetscapes and access while parking will be situated in the interior of the project out of view. Base zoning modifications approved by the Hawai‘i Community Development Authority (HCDA) to promote a mixed-use urban village design included additional building height to 220 feet; encroachments into the view corridor setbacks; and a reduced front yard.
- Hoku Tower (<http://hcdaweb.org/kakaako/projects/private-sector-projects/hoku-at-1288-ala-moana/>), Moana Vista (<http://hcdaweb.org/kakaako/projects/moana-vista>), and Moana Pacific (<http://hcdaweb.org/kakaako/projects/private-sector-projects/moana-pacific/>), three condominium developments in the vicinity of both Ward Village and Ala Moana Center, provide over 1,300 new residential units, ground floor commercial opportunities, and pedestrian-friendly access.
- The Ke‘eaumoku Wal-Mart/Sam’s Club located in the Sheridan neighborhood just north of Ala Moana Center opened in 2004 on a lot

Demonstrated cases of developments affected by transit supportive policies

3. PERFORMANCE AND IMPACTS OF LAND USE POLICIES (Continued)

a. Performance of Land Use Policies (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Demonstrated cases of developments affected by transit supportive policies (continued)

zoned Community Business District (BMX-3). The project design complies with many of the pedestrian and transit supportive policies in the Ala Moana-Sheridan Community Plan. Density is high, with Sam’s Club located above Wal-Mart (315,000 square feet commercial space), parking (1,700 spots) is structured (3 levels) with accesses on cross streets rather than the main pedestrian street, and an improved pedestrian way was built that includes sidewalk businesses and tables.



Wal-Mart pedestrian-friendly street front on Ke’eaumoku Street



Public Storage pedestrian-friendly street front on Kapi’olani Boulevard

- A Public Storage development in Kaka’ako, which opened in 2006, contains 185,350 square feet of industrial storage space and 6,650 square feet of commercial use on the ground level fronting Kapi’olani Boulevard and Kamakee Street. Along with the ground level commercial space, the project was designed with an open space landscape plaza at the corner of Kapi’olani Boulevard and Kamakee Street. A clock tower feature and meandering walkways were included to welcome people to this portion of Kaka’ako and fit into the pedestrian and transit friendly plans for the area.

The specific TOD ordinance has not been finalized yet. Greenfield development projects in West O’ahu that will be affected by the new rules include Ho’opili (<http://hoopilioahu.com/>) and UH West O’ahu (<http://westoahu.hawaii.edu/campus>), discussed in Section 1. The Ho’opili project is planning residential densities of up to 50 dwelling units per acre (DU/acre) in developments that also include commercial and office space within walking distance of public schools and open space.

3. PERFORMANCE AND IMPACTS OF LAND USE POLICIES (Continued)

a. Performance of Land Use Policies (Continued)

Documentation Supporting Land Use Criterion	Information Requested
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Ala Moana Center Station: The **Ala Moana-Sheridan Community Plan** (<http://honolulu.dpp.org/Planning/AlaMoana/AlaMoana.pdf>) anticipates development of a new rapid transit system and integrates planning for a new Ala Moana Center transit station. Preliminary plans for expansion of the 1.8 million square foot Ala Moana Center would provide a direct pedestrian connection from the new transit station to the mall level of the existing shopping center. The expansion of the shopping center includes a new 200,000 square foot Nordstrom department store, 25,000 square feet of retail space on Kapi‘olani Boulevard, and 45,000 square feet of new retail space connecting Nordstrom to the existing mall. Site plans have been prepared to address pedestrian access and safety issues in this densely developed commercial area.

UH West Oahu Station: This station would be adjacent to the future UH West O‘ahu campus and the future new community of Ho‘opili. This station area is expected to experience rapid development with increasing densities. Recent efforts by the DTS, Department of Planning and Permitting (DPP), UH West O‘ahu, and developers focused on refining options for the location of the UH West O‘ahu transit station.

Station area development proposals and status

3. PERFORMANCE AND IMPACTS OF LAND USE POLICIES (Continued)

a. Performance of Land Use Policies (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Station area development proposals and status (continued)

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3. PERFORMANCE AND IMPACTS OF LAND USE POLICIES (Continued)

b. Potential Impact of Transit Project on Regional Land Use

Documentation Supporting Land Use Criterion	Information Requested
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Vacant land near ‘Ewa Development Plan station sites is adaptable for development since already permitted development is nearby most of them and all land is within the Urban Growth Boundary. There is nearly 1,700 acres of vacant land within a ½ mile radius from the 19 station sites, the majority of which is within the Urban Growth Boundary. This compares to over 5,000 acres of already developed land in this same area. The largest amounts of vacant land potentially available for development are located around Stations 1, 2, and 3 on the ‘Ewa Plain, as expected. Around those three stations there is an average of nearly 500 acres of vacant land. Much of that vacant land, now used for farming, will become Ho‘opili and UH West O‘ahu (Figure 1-1).

The quantity of vacant land was estimated using a GIS analysis. Within the ½-mile radius circles depicted in Figures 1-1 through 1-3, the quantity of land observed to be vacant on the aerial photograph was estimated for each station. Land used for agriculture was counted as vacant unless located outside the Urban Growth Boundary.

In the vicinity of the other 16 stations, there is an average of only 14 acres of vacant land per station. East of the Salt Lake area the average drops to only three acres per station. The small amount of vacant land indicates how developed the project corridor is. The in-fill projects taking place in Kaka‘ako (Figure 1-5) and other communities along the corridor illustrate that land is at a premium but that it is adaptable to redevelopment and TOD. Planning and zoning in Kaka‘ako is the responsibility of HCDA, a state agency.

Adaptability of station area land for development

3. PERFORMANCE AND IMPACTS OF LAND USE POLICIES (Continued)

b. Potential Impact of Transit Project on Regional Land Use (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Adaptability of station area land for development (continued)

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3. PERFORMANCE AND IMPACTS OF LAND USE POLICIES (Continued)	
b. Potential Impact of Transit Project on Regional Land Use (Continued)	
Documentation Supporting Land Use Criterion	Information Requested
<p>In the first quarter of 2007, economic conditions remained positive in Honolulu County as well as throughout all the other counties in Hawaii, according to the Department of Business, Economic Development, and Tourism (DBEDT; http://www.hawaii.gov/dbedt/info/economic/). This strong performance was reflected in growth in tax revenues, civilian labor force, civilian employment and wage and salary jobs in the fourth quarter of 2006 as compared with the same period in 2005.</p> <p>In Honolulu County, the fourth quarter of 2006 saw Net Individual Income Tax collections increase by 6.7 percent above the fourth quarter in 2005. For this same period, General Excise and Use Tax revenues grew by 14.5 percent, the highest rate in Hawaii. In the fourth quarter of 2006, Honolulu added 9,200 wage and salary jobs, or 2 percent over the fourth quarter of 2005. The largest increases were in Professional and Business Services with 3,650 jobs or 6.0 percent, State Government with 2,000 jobs or 3.6 percent, Transportation, Warehousing and Utilities with 1,350 jobs or 5.6 percent. In the fourth quarter of 2006, Honolulu experienced strong growth in the value of permit activity at 9.3 percent over the same period in 2005.</p> <p>The latest quarterly forecast by DBEDT indicates that Hawaii’s economy will maintain moderate growth in 2007. Continued job growth, increases in tourism, and strong growth in non-residential construction are expected to contribute to sustained overall growth.</p> <p>Within the study corridor, several key projects contribute to this favorable economic position; among these are:</p> <ul style="list-style-type: none"> • The newly redeveloped Keola La’i, a 44-story, 352-unit building, with retail space on the ground floor; • Two new condominium towers, Capitol Place (http://www.capitolplace.com/, Figure 1-4) and The Pinnacle (http://www.pinnaclehonolulu.com/), being built on the edge of the CBD; • The recently completed Hokua Tower, with a 41-story tower with 248 luxury condominiums and ground floor commercial space. Nearby, five similar condominium towers total over 1,700 residential units; and • The Honolulu Design Center fronting Kapi‘olani Boulevard, built with the two Moana Pacific towers, has 80,000 square feet of commercial space (http://hcdaweb.org/kakaako/projects/private-sector-projects/honolulu-design-center/). 	<p>Corridor economic environment</p>

3. PERFORMANCE AND IMPACTS OF LAND USE POLICIES (Continued)

b. Potential Impact of Transit Project on Regional Land Use (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Corridor economic environment (continued)

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4. OTHER LAND USE CONSIDERATIONS (Optional)

Documentation Supporting Land Use Criterion	Information Requested
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The topography of O‘ahu is unique and formed the development of a classic and ideal transit corridor (Figures 1-1 to 1-3). Constrained by the mountains and the Pacific Ocean, the flat coastal plain in between is linear and narrow. Through deliberate State and regional policies, development has been concentrated here. Through the years the narrow corridor has been even more densely developed and now again through government policies new development is being directed to West O‘ahu.

Central city redevelopment, especially the area between downtown Honolulu and Waikīkī, is experiencing an unprecedented building boom, which is highly supportive of transit. Many underutilized parcels of land in this area are being developed privately into office and residential towers, as well as more retail space.

Tourist ridership on transit will help make the East Kapolei to Ala Moana Center Fixed Guideway project a successful transit investment. Approximately 4.8 million persons visited O‘ahu in 2005. Hawai‘i’s market in terms of tourism is seasonal. By far the greatest numbers of visitors come in July, according to the *Annual Research Visitors Report, 2005*, by DBEDT. Other summer months (June and August) and the winter months (December through March) are the next busiest season. April, May and September are the slowest months for tourism. By far the largest sources of tourists are the U.S. West and the U.S. East, followed far behind by Japan and Canada. Visitor expenditures reached \$11.9 billion in 2005, a record breaking year. Over 7.5 million visitors came to Hawai‘i in 2005 and the daily visitor census was approximately 185,000. Approximately 64 percent of the visitors arrived in O‘ahu.

Web Site Links

There are many planning documents and other information available on the web. The following is a brief overview of the primary sites where information can be found.

- Transportation plans:
 - Hawai‘i Statewide Transportation Plan: <http://state.hi.us/dot/stp/hstp.htm>
 - O‘ahu Metropolitan Planning Organization (OMPO), including their O‘ahu Regional Transportation Plan (ORTP): <http://www.oahumpo.org/docs.html>
 - TheBus, operated on O‘ahu operated by O‘ahu Transit Service, Inc. for the City and County of Honolulu: <http://www.thebus.org/>

Otherwise unidentified circumstances, conditions, or constraints under which the transit agency operates and which influence local and regional land use policies, plans, and implementation

4. OTHER LAND USE CONSIDERATIONS (Optional) (Continued)

Information Requested	Documentation Supporting Land Use Criterion
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Otherwise unidentified circumstances, conditions, or constraints under which the transit agency operates and which influence local and regional land use policies, plans, and implementation (continued)

- Planning documents:
 - O‘ahu General Plan: <http://www.honoluluodpp.org/Planning/OahuGenPlan.asp>
 - The eight O‘ahu Development/Sustainable Community Plans (the project goes through the ‘Ewa, Central O‘ahu, and Primary Urban Center areas): <http://www.honoluluodpp.org/Planning/DevSustCommPlans.asp>
 - Special Area Plans, such as the ‘Aiea-Pearl City Livable Communities Plan and Waipahu Livable Communities Initiative: <http://www.honoluluodpp.org/Planning/SpecAreaNeighbor.asp>
 - Hawai‘i Community Development Authority (HCDA), which manages development in Kaka‘ako (Figure 1-5) and Kalaeloa (former Barbers Point Naval Air Station): <http://hcdaweb.org/>
- State environmental documents, such as EAs and EISs prepared as required by Chapter 343 of State of Hawai‘i Revised Statutes (HRS), for projects in Hawai‘i are available on the Office of Environmental Quality Control (OEQC) web site: <http://oeqc.doh.hawaii.gov/default.aspx>. For example, the Final EIS for UH West O‘ahu is dated January 8, 2007 and available on this site. The OEQC also publishes an Environmental Notice bimonthly which announces the availability of environmental documents, Current and back issues of the Environmental Notice are available at: <http://www.state.hi.us/health/oeqc/notice/index.html>
- GIS parcel and zoning is available through interactive maps at: <http://gis.hicentral.com/>

Template 12: Quantitative Land Use Information Worksheet

Population and Employment Data – Metropolitan Area, CBD, and Corridor			
Data	Base Year 2005	Forecast Year 2030	Growth (%)
Metropolitan Area			
Total Population	876,156	1,117,300	27.5%
Total Employment	476,207	605,424	27.1%
Central Business District			
Total Employment	48,317	52,356	8.4%
Employment – Percent of Metropolitan Area	10%	9%	
Employment Density (employees/acre)	181.9	197.1	
Corridor			
Total Population	433,427	611,817	41.2%
Total Employment	337,603	427,142	26.5%
Population – Percent of Metropolitan Area	49%	55%	
Employment – Percent of Metropolitan Area	71%	71%	
Corridor Land Area (sq. mi.)	117.66	117.66	
Population Density (persons per sq. mi.)	3,684	5,200	
Employment Density (jobs per sq. mi.)	2,869	3,630	
Population and Employment Data – Station Area (1/2-mile radius)			
Data	Base Year	Forecast Year	Growth %
Total All Station Areas			
Housing Units	40,756	77,809	90.9%
Population	101,358	173,080	70.8%
Employment	164,481	196,593	19.5%
Land Area (sq. mi.)	12.26	12.26	0.0%
Housing Unit Density (units per sq. mi.)	3,325	6,347	90.9%
Population Density (persons per sq. mi.)	8,269	14,119	70.8%
Employment Density (persons per sq. mi.)	13,418	16,038	19.5%
Station Area 1			
East Kapolei			
Housing Units	135	2,318	1623.4%
Population	470	7,825	1565.6%
Employment	707	1,842	160.6%
Land Area (sq. mi.)	0.84	0.84	0.0%
Housing Unit Density (units per sq. mi.)	160	2,757	1623.4%
Population Density (persons per sq. mi.)	559	9,306	1565.6%
Employment Density (persons per sq. mi.)	841	2,191	160.6%

Station Area 2		UH West O'ahu		
Housing Units	8	2,604	32585.5%	
Population	29	8,609	30025.0%	
Employment	739	2,276	207.9%	
Land Area (sq. mi.)	0.84	0.84	0.0%	
Housing Unit Density (units per sq. mi.)	9	3,097	32585.5%	
Population Density (persons per sq. mi.)	34	10,238	30025.0%	
Employment Density (persons per sq. mi.)	879	2,706	207.9%	
Station Area 3		Ho'opili		
Housing Units	1	3,149	363622.2%	
Population	4	10,307	281054.4%	
Employment	36	1,732	4656.7%	
Land Area (sq. mi.)	0.87	0.87	0.0%	
Housing Unit Density (units per sq. mi.)	1	3,613	363622.2%	
Population Density (persons per sq. mi.)	4	11,825	281054.4%	
Employment Density (persons per sq. mi.)	42	1,987	4656.7%	
Station Area 4		Farrington Highway at Leoku Street		
Housing Units	2,044	2,430	18.9%	
Population	7,633	8,641	13.2%	
Employment	4,314	4,287	-0.6%	
Land Area (sq. mi.)	0.81	0.81	0.0%	
Housing Unit Density (units per sq. mi.)	2,538	3,017	18.9%	
Population Density (persons per sq. mi.)	9,478	10,729	13.2%	
Employment Density (persons per sq. mi.)	5,357	5,324	-0.6%	
Station Area 5		Farrington Highway at Mokuola Street		
Housing Units	1,993	2,224	11.6%	
Population	7,832	8,538	9.0%	
Employment	2,905	2,956	1.7%	
Land Area (sq. mi.)	0.87	0.87	0.0%	
Housing Unit Density (units per sq. mi.)	2,286	2,552	11.6%	
Population Density (persons per sq. mi.)	8,985	9,795	9.0%	
Employment Density (persons per sq. mi.)	3,333	3,391	1.7%	
Station Area 6		Leeward Community College		
Housing Units	586	838	42.9%	
Population	2,406	2,969	23.4%	
Employment	355	433	22.1%	
Land Area (sq. mi.)	0.63	0.63	0.0%	
Housing Unit Density (units per sq. mi.)	930	1,329	42.9%	
Population Density (persons per sq. mi.)	3,816	4,708	23.4%	
Employment Density (persons per sq. mi.)	562	687	22.1%	

Station Area 7		Kamehameha Highway at Kuala Street		
Housing Units		1,385	1,553	12.1%
Population		3,611	3,964	9.8%
Employment		1,362	4,482	229.2%
Land Area (sq. mi.)		0.66	0.66	0.0%
Housing Unit Density (units per sq. mi.)		2,091	2,344	12.1%
Population Density (persons per sq. mi.)		5,453	5,986	9.8%
Employment Density (persons per sq. mi.)		2,056	6,768	229.2%
Station Area 8		Kamehameha Highway at Kaonohi Street		
Housing Units		2,778	2,814	1.3%
Population		6,438	6,350	-1.4%
Employment		7,641	8,063	5.5%
Land Area (sq. mi.)		0.62	0.62	0.0%
Housing Unit Density (units per sq. mi.)		4,510	4,568	1.3%
Population Density (persons per sq. mi.)		10,452	10,308	-1.4%
Employment Density (persons per sq. mi.)		12,405	13,090	5.5%
Station Area 9		Salt Lake Boulevard at Kahuapa'ani Street		
Housing Units		1,757	1,906	8.5%
Population		5,671	6,014	6.1%
Employment		3,819	4,020	5.3%
Land Area (sq. mi.)		0.87	0.87	0.0%
Housing Unit Density (units per sq. mi.)		2,030	2,201	8.5%
Population Density (persons per sq. mi.)		6,551	6,947	6.1%
Employment Density (persons per sq. mi.)		4,411	4,643	5.3%
Station Area 10		Salt Lake Boulevard at Ala Nioi Place		
Housing Units		5,751	5,815	1.1%
Population		14,767	14,623	-1.0%
Employment		1,324	1,454	9.8%
Land Area (sq. mi.)		0.87	0.87	0.0%
Housing Unit Density (units per sq. mi.)		6,598	6,671	1.1%
Population Density (persons per sq. mi.)		16,941	16,776	-1.0%
Employment Density (persons per sq. mi.)		1,519	1,668	9.8%
Station Area 11		Dillingham Boulevard at Middle Street Transit Center		
Housing Units		593	713	20.2%
Population		2,180	2,659	22.0%
Employment		6,787	6,957	2.5%
Land Area (sq. mi.)		0.59	0.59	0.0%
Housing Unit Density (units per sq. mi.)		1,002	1,204	20.2%
Population Density (persons per sq. mi.)		3,680	4,489	22.0%
Employment Density (persons per sq. mi.)		11,458	11,745	2.5%

Station Area 12		Dillingham Boulevard at Mokauea Street		
Housing Units		2,635	3,128	18.7%
Population		10,369	12,020	15.9%
Employment		9,352	10,229	9.4%
Land Area (sq. mi.)		0.60	0.60	0.0%
Housing Unit Density (units per sq. mi.)		4,370	5,186	18.7%
Population Density (persons per sq. mi.)		17,193	19,931	15.9%
Employment Density (persons per sq. mi.)		15,508	16,961	9.4%
Station Area 13		Dillingham Boulevard at Kōkea Street		
Housing Units		1,515	2,235	47.5%
Population		4,424	6,169	39.4%
Employment		10,413	12,068	15.9%
Land Area (sq. mi.)		0.58	0.58	0.0%
Housing Unit Density (units per sq. mi.)		2,621	3,865	47.5%
Population Density (persons per sq. mi.)		7,652	10,670	39.4%
Employment Density (persons per sq. mi.)		18,010	20,872	15.9%
Station Area 14		Ka'aahi Street		
Housing Units		2,730	3,391	24.2%
Population		7,747	9,145	18.0%
Employment		5,912	6,968	17.9%
Land Area (sq. mi.)		0.39	0.39	0.0%
Housing Unit Density (units per sq. mi.)		6,971	8,659	24.2%
Population Density (persons per sq. mi.)		19,784	23,355	18.0%
Employment Density (persons per sq. mi.)		15,097	17,793	17.9%
Station Area 15		Nimitz Highway at Kekaulike Street		
Housing Units		4,319	8,865	105.3%
Population		8,378	15,155	80.9%
Employment		7,734	9,747	26.0%
Land Area (sq. mi.)		0.31	0.31	0.0%
Housing Unit Density (units per sq. mi.)		13,754	28,234	105.3%
Population Density (persons per sq. mi.)		26,680	48,264	80.9%
Employment Density (persons per sq. mi.)		24,630	31,042	26.0%
Station Area 16		Nimitz Highway at Fort Street		
Housing Units		1,054	2,367	124.7%
Population		1,636	3,232	97.5%
Employment		37,231	39,843	7.0%
Land Area (sq. mi.)		0.23	0.23	0.0%
Housing Unit Density (units per sq. mi.)		4,642	10,428	124.7%
Population Density (persons per sq. mi.)		7,210	14,238	97.5%
Employment Density (persons per sq. mi.)		164,030	175,537	7.0%

Station Area 17		Halekauwila Street at South Street		
Housing Units	1,496	8,425	463.2%	
Population	3,104	12,512	303.1%	
Employment	20,098	24,132	20.1%	
Land Area (sq. mi.)	0.48	0.48	0.0%	
Housing Unit Density (units per sq. mi.)	3,115	17,547	463.2%	
Population Density (persons per sq. mi.)	6,466	26,060	303.1%	
Employment Density (persons per sq. mi.)	41,860	50,261	20.1%	
Station Area 18		Halekauwila Street at Ward Street		
Housing Units	1,881	7,932	321.6%	
Population	2,800	12,265	338.0%	
Employment	15,360	20,112	30.9%	
Land Area (sq. mi.)	0.50	0.50	0.0%	
Housing Unit Density (units per sq. mi.)	3,793	15,994	321.6%	
Population Density (persons per sq. mi.)	5,646	24,731	338.0%	
Employment Density (persons per sq. mi.)	30,972	40,554	31%	
Station Area 19		Ala Moana Center		
Housing Units	8,095	15,103	86.6%	
Population	11,858	22,082	86.2%	
Employment	28,392	34,992	23.2%	
Land Area (sq. mi.)	0.70	0.70	0.0%	
Housing Unit Density (units per sq. mi.)	11,576	21,599	86.6%	
Population Density (persons per sq. mi.)	16,958	31,579	86.2%	
Employment Density (persons per sq. mi.)	40,603	50,042	23%	

Appendix C
O‘ahu Regional Transportation Plan 2030



Oahu

Regional Transportation Plan

2030

TheBoat
City and County of Honolulu

The Policy Committee of the Oahu Metropolitan Planning Organization approved Amendment #1 to the Oahu Regional Transportation Plan 2030 in May 2007. The Oahu Regional Transportation Plan 2030 was first approved in April 2006.

WHAT IS THE ORTP?



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The Policy Committee of the Oahu Metropolitan Planning Organization (OahuMPO) approved the Oahu Regional Transportation Plan (ORTP) 2030 in April 2006 and modified it through Amendment #1 in May 2007. This document reflects the official plan as of Amendment #1.

The ORTP 2030 is a blueprint that guides us in putting together pieces of the transportation puzzle to address the mobility issues and transportation needs of our community. It is a multifaceted plan that integrates planned growth patterns and reflects available financial resources over the next 25 years. It includes a vision and goals, identifies projects, and provides an implementation program for mid- and long-range investment of the available transportation funds across Oahu in a fair and equitable manner.

The development of the plan helps decision-makers understand the options that are available for improving the transportation system and how they address our mobility needs. Any future transportation improvement for Oahu that receives federal transportation funds must be consistent with the ORTP in order to be eligible for these funds.

This regional planning document is required by a number of state and federal mandates and requirements, which include the Safe, Accountable, Flexible, Efficient Transportation Equity Act – A Legacy for Users (“SAFETEA-LU”). These requirements are mandated by the U.S. Department of Transportation as a means of verifying the eligibility of metropolitan areas for federal funds earmarked for surface transportation systems.

The ORTP is updated at least every five years to ensure that transportation decisions are based on current information and community priorities. As part of each update, future population and employment are projected and corresponding changes in travel patterns, revenue, and construction costs are forecast to validate and test past and new directions for transportation development on Oahu.

FIGURE 1

POPULATION AND EMPLOYMENT GROWTH BY DEVELOPMENT PLAN AREA

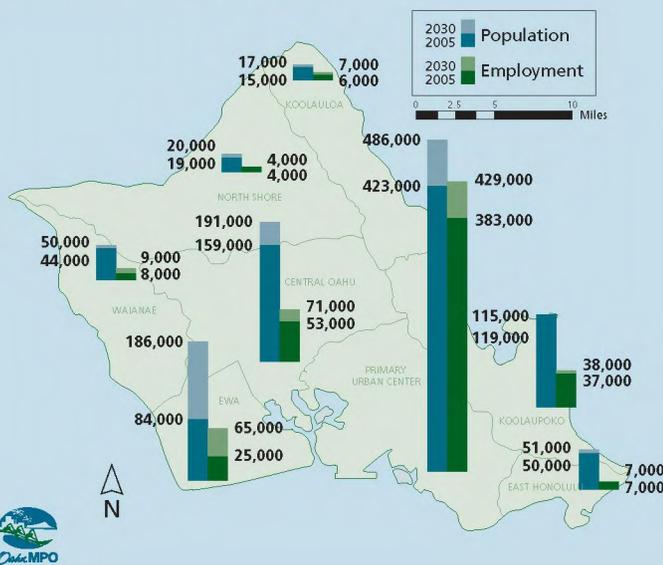
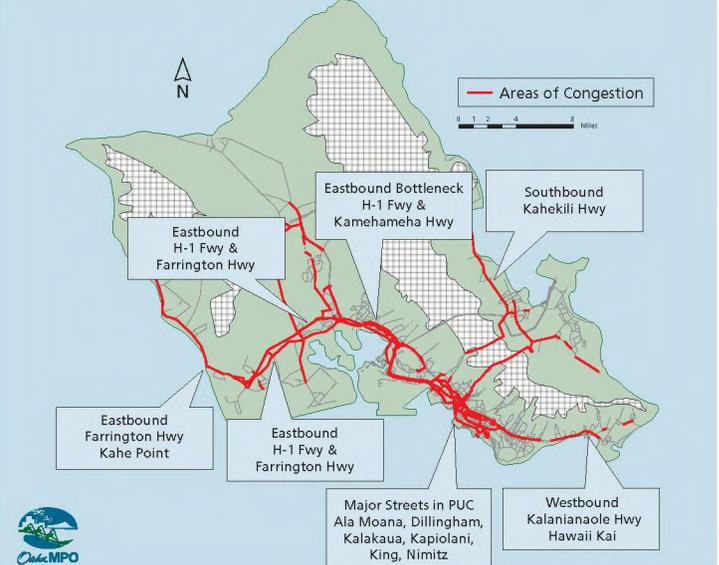


FIGURE 2

LOCATIONS OF SIGNIFICANT AM PEAK HOUR CONGESTION (BASELINE 2030)



LOOKING AT THE FUTURE OF OAHU

The Primary Urban Center (PUC) in Honolulu and the Secondary Urban Center in Kapolei have been designated by the City & County of Honolulu as the projected areas where growth in residential development and employment shall occur over the next 25 years. Additional growth is encouraged in Central Oahu to relieve pressure on the rest of the island.

Figure 1 graphically shows the amount of future growth in residential development and employment expected in each of the eight development plan areas of Oahu. Of the 203,000 new residents and 107,000 new jobs expected on Oahu by 2030, about 80% will be located in the PUC and Ewa.

Transportation and New Growth

As we continue to grow, more people and more employment opportunities mean more and more traffic – more clogged roads and more delays getting to work, school, stores, and the beach. As an illustration of how congested the transportation system could become, a “Baseline 2030” analysis was conducted to estimate future traffic conditions if growth is allowed to occur, but no new transportation facilities are built. Figure 2 shows significantly congested locations on Oahu during the morning peak hour in the Baseline 2030 analysis.

The impact of congested roadways corresponds to an increase in travel time for all Oahu residents; some increases are huge, depending upon where people live and work. Figure 3 shows the morning peak period travel time from each area on Oahu to downtown in the Year 2005. Figure 4 shows the projected morning peak period travel time from each area on Oahu to downtown Honolulu for the Baseline 2030 if nothing is done. Travel times in excess of 80 minutes are projected from the western and some northern portions of the island to downtown Honolulu during the morning peak period.

Challenges Facing Oahu

To solve the transportation puzzle, we must address several challenges that Oahu will face over the next 25 years:

- We will have more people - more people who want to go to work, to school, to shop, and to play - resulting in about 27% more travel.
- Many of our major roadways are congested, especially those within the H-1 travel corridor between Manoa/Waikiki and Kapolei. As a result, residents on the Waianae Coast, on the North Shore, in Ewa, and in Central Oahu are experiencing some of the worst morning commute travel times to downtown.
- Established communities want additional access for times of emergency as well as congestion relief.

FIGURE 3

AM PEAK PERIOD TRAVEL TIME TO DOWNTOWN
(YEAR 2005)

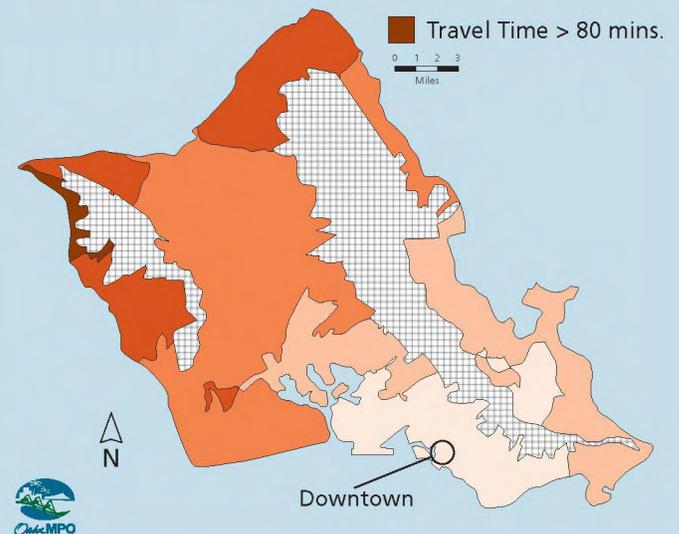


FIGURE 4

AM PEAK PERIOD TRAVEL TIME TO DOWNTOWN
(BASELINE 2030)



- Many of our existing roadways need to be maintained, repaired, and rehabilitated.
- Our numerous transportation needs are constrained by our limited resources.

Our ultimate challenge is to decide how to distribute our limited resources to our various needs. There is only so much money available to fund transportation projects. How much money should be spent to reduce congestion on our roads, make our streets safer, provide more bikeways, create alternate accesses to communities, and maintain our roadways?

OAHU



ORTP VISION

In 2030, Oahu is a place where transportation choices are available and the importance of the H-1 travel corridor is recognized.

The vision for the ORTP 2030 is:

In 2030, Oahu is a place where transportation choices are available and the importance of the H-1 travel corridor is recognized.

The first part of our vision focuses on increasing our mobility options. We recognize that we cannot afford to eliminate congestion. To improve mobility, the ORTP 2030 provides a number of strategies and programs to address the island's future transportation needs. These include major capital improvement projects that add to the system's person-carrying and vehicular capacities; projects that expand on the existing systems and services to optimize their use; increased focus on operational, management, and preservation strategies; and programs that help integrate the transportation system into the land uses of each community.

This vision also acknowledges the importance of the H-1 travel corridor. Projects included in the transportation plan propose numerous ways to address the increased traffic congestion expected along this travel corridor:

- A major component of the ORTP 2030 is a fixed guideway between East Kapolei and Ala Moana.
- Also included in the plan are projects to increase the capacity of H-1 itself with new interchanges, additional High Occupancy Vehicle (HOV) lanes, freeway widenings, and operational improvements at key locations. These major H-1 travel corridor projects are supplemented with projects that provide alternatives to H-1, such as the intra-island commuter ferry from Ewa to downtown Honolulu and the Nimitz flyover HOV facility.
- The ORTP 2030 implements the island's bikeway plan; expands the bus system; and includes several second access/emergency access roadways and projects to maximize the use of existing facilities, and other measures to reduce the need for auto travel.



H-1

GOALS

The ORTP 2030 will advance us toward the vision for addressing future growth and traffic on Oahu. To meet our vision, the island-wide transportation plan for Oahu is defined by three overarching goals.

Transportation Services System:

Develop and maintain Oahu's island-wide transportation system to ensure efficient, safe, convenient, and economical movement of people and goods.

The objectives guiding this goal include increasing capacity of the system; providing an efficient and convenient transit system; providing access to all important destinations; serving all intermodal terminals; ensuring that projects are distributed equitably; ensuring that safety and security are provided; integrating the entire system; supporting economic development; and providing for system preservation.

Environment and Quality of Life:

Develop and maintain Oahu's transportation system in a manner that maintains environmental quality and community cohesiveness.

The objectives associated with this goal are directed at developing a plan that satisfies noise, air, and water quality standards; encouraging energy conservation; preserving cultural integrity and natural resources; developing alternative transportation modes that are environmentally friendly, including pedestrian walkways and bicycle routes; optimizing use of transportation resources; minimizing disruption of neighborhoods; ensuring compatibility with the physical and social character of existing development; incorporating landscaping and public safety; and planning for emergencies.

Land Use and Transportation Integration System Goal:

Develop and maintain Oahu's transportation system in a manner that integrates land uses and transportation.

The objectives that support this goal include reinforcing planned population distribution and land use development policies; encouraging innovation; and encouraging implementation of land use policies that support efficient use of transportation systems.



PALI HIGHWAY

OVERVIEW OF ORTP 2030 PROJECTS

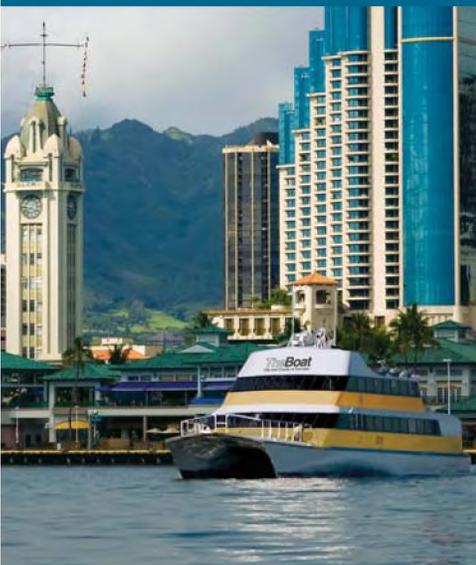
FIXED GUIDEWAY



THEBUS



THEBOAT



The ORTP 2030 is a financially constrained plan that provides \$7.61 billion for capital projects and \$7.64 billion to operate, maintain, and preserve the highway and transit systems. The projects contained in the ORTP 2030 attempt to balance our need for mobility options, congestion relief, safety, second access, and bicycling and pedestrian facilities.

To improve mobility, a number of strategies and programs are proposed. These include new travel options, such as fixed guideway and ferry systems that add to the system's person-carrying capacities; projects that expand upon the existing systems and services to optimize their use; increased focus on operational, management, and preservation strategies; and programs that help integrate the transportation system into the land uses of each community.

With regard to congestion relief, the technical analysis and public input received during this effort highlighted the need to focus on the H-1 travel corridor and the Ewa and Central Oahu areas. Preliminary analysis indicated that island-wide congestion could be significantly addressed by focusing on the H-1 travel corridor. The need for transportation infrastructure in the Ewa area is already apparent and will increase in the future as population and employment are projected to grow substantially. Additional population and employment increases are also projected in Central Oahu.

The following provides descriptions of specific elements of the plan. Individual projects are listed on pages 18 through 22

Fixed Guideway

A key component of the ORTP 2030 is a fixed guideway that will serve the H-1 travel corridor. It is important to note that building a fixed guideway will not eliminate congestion. We will also not be able to eliminate congestion by building more highways, for we do not have the resources to keep up with the demand. The fixed guideway will give priority to moving people rather than cars, will be a major factor in providing mobility options, and will work together with our land use policies in shaping our city.

The proposed fixed guideway from East Kapolei to Ala Moana will become the backbone of the transit system – connecting major employment and residential centers to each other and to downtown Honolulu. This project also includes associated feeder bus services for each station and access ramps and other freeway improvements to facilitate the flow of buses that supplement the fixed guideway.

Transit System Expansion

While fixed guideway is the backbone of the transit system in the ORTP 2030, the existing bus system will continue to be an important element of public transportation. Many fixed guideway passengers are expected to access the system using City buses. Expansion of the bus system will be focused primarily in Ewa, with moderate increases in other parts of Oahu, including express bus service to rural areas. Purchasing and replacing new buses to support service increases are included in the plan.

An additional element of future transit service includes an intra-island express ferry service from Ewa to Honolulu Harbor.

Congestion Relief

The ORTP 2030 acknowledges that auto travel is, and will continue to be, a dominate travel mode and, subsequently, increases in roadway capacity will be required. This is especially true in the H-1 travel corridor and where congestion is forecast to increase significantly if new projects are not constructed. This plan provides an additional 280 lane-miles to Oahu's roadways.

As part of the ORTP 2030, new and expanded roadway projects are proposed for the Ewa area, Central Oahu, and PUC, where the majority of the residential and employment growth is projected. For the Ewa area, these projects include expansion of several roadways like the North-South Road and Kapolei Parkway; new or modified freeway interchanges in Kapolei and Makakilo; and the widening of existing roadways such as Farrington Highway, Fort Barrette Road, and Kunia Road. Examples of roadway projects in the Central Oahu area include expansion of Kamehameha Highway and H-1 between the Waiiau and Waiawa Interchanges; and widening and improvements at the H-1 and H-2 Waiawa Interchange. Several capacity enhancement projects to various sections of H-1 from Pearl City to downtown Honolulu are also programmed.

Bicycle Facilities

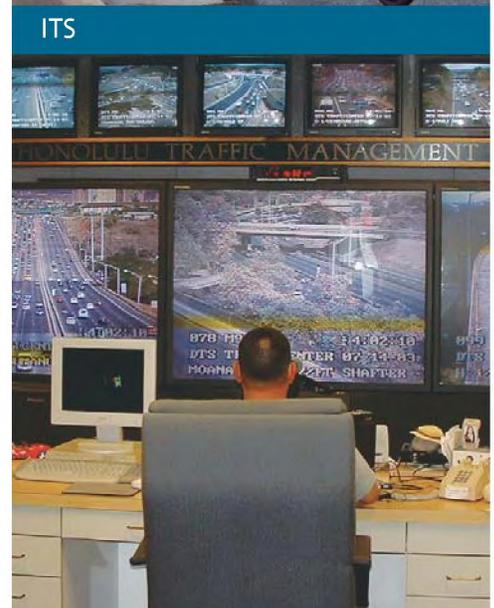
One hallmark of a livable city is that its public spaces are actively used and the outdoors can be enjoyed. Honolulu is a great city for bicycles with its physical beauty, mild year-round climate, relatively flat coastal plain, and compact form. Enhancing the appealing qualities of Oahu can be achieved in part by integrating bicycle facilities as a key component of the transportation system. The ORTP 2030 incorporates the Oahu elements of Bike Plan Hawaii and the "Priority One" projects identified in the Honolulu Bicycle Master Plan. This provides Honolulu with an integrated network of on-road bike lanes and off-road shared-use paths to link people with their favorite destinations.

Pedestrian Facilities

The majority of us walk to get to our cars, catch a bus, and run errands on our lunch breaks. Some of us walk for exercise as well as to get to work and to shop. In past plans, pedestrian facilities were combined with bicycle facilities. We recognize that the needs of pedestrians are, in many cases, different from those of bicyclists. To address this difference, the ORTP 2030 includes the development of a pedestrian plan for Oahu.

Intelligent Transportation Systems

The ORTP 2030 contains an intelligent transportation system (ITS) line item. ITS is a collection of technologies that enable multiple agencies to work together to manage the transportation network better. ITS can include services for highways, transit services, commercial vehicle operations, and emergency service providers. ITS technologies can be used for emergency response and incident management. ITS technologies are effective in lessening the amount of time it takes to clear an accident on the freeway as well as providing travelers with information on traffic conditions and transit schedules.



HANDI-VAN

**TDM and TSM**

Transportation Demand Management (TDM) and Transportation System Management (TSM) programs consist of measures that are designed to reduce demand and increase the efficiency of the transportation system. The TDM and TSM programs for Oahu include facilities to enhance flow, such as HOV lanes on freeways, park-and-ride lots, bus-only lanes on city streets, and even separate HOV facilities. Also included are programs to help form and maintain carpools and vanpools, as well as programs to give people incentives to rideshare.

Second Access Highways

While the coastal plains are relatively flat, Oahu's interior terrain is divided by two primary mountain ranges that can make access between communities difficult. Many of the established communities on the island have only one roadway into and out of the area. Providing a second means of access to these communities serves to increase the capacity to these areas and to provide needed emergency access. Four "second access" projects are included in the ORTP 2030 for Makakilo, Mililani Mauka, Wahiawa, and the Waianae Coast.

BUS SYSTEM

**Operations, Maintenance, and System Preservation**

The ORTP 2030 recognizes the importance of the existing and future roadways and transit systems from the perspective of operations, maintenance, and preservation. The plan includes the allocation of funding for these categories totaling \$7.64 billion, or approximately half of the plan cost. This funding covers both City and State facilities.

City operations and maintenance funding includes operating the public transit system (TheBus, paratransit, the proposed fixed guideway, and the proposed commuter ferry system), and roadway system maintenance and operations. A total of approximately \$5.79 billion is estimated for City operations and maintenance over the 25-year life of the plan – consisting of about \$5.26 billion for transit operations and maintenance and \$532 million for roadway system maintenance and operations.

ROAD RESURFACING



Maintenance and operation of the State's existing and future highway operations and routine maintenance includes, but is not limited to, pavement repair; guardrail and shoulder improvements; lighting improvements; drainage improvements; sign upgrades and replacement; and traffic signal upgrade and retrofit. About \$850 million is allocated in the plan for State maintenance and operations.

The ORTP 2030 allocates \$1.0 billion, over the life of the plan, to preserving the highway system through projects including, but not limited to, bridge replacement and seismic retrofit, pavement preventative maintenance, erosion control, viaduct improvements, and road resurfacing and rehabilitation projects.

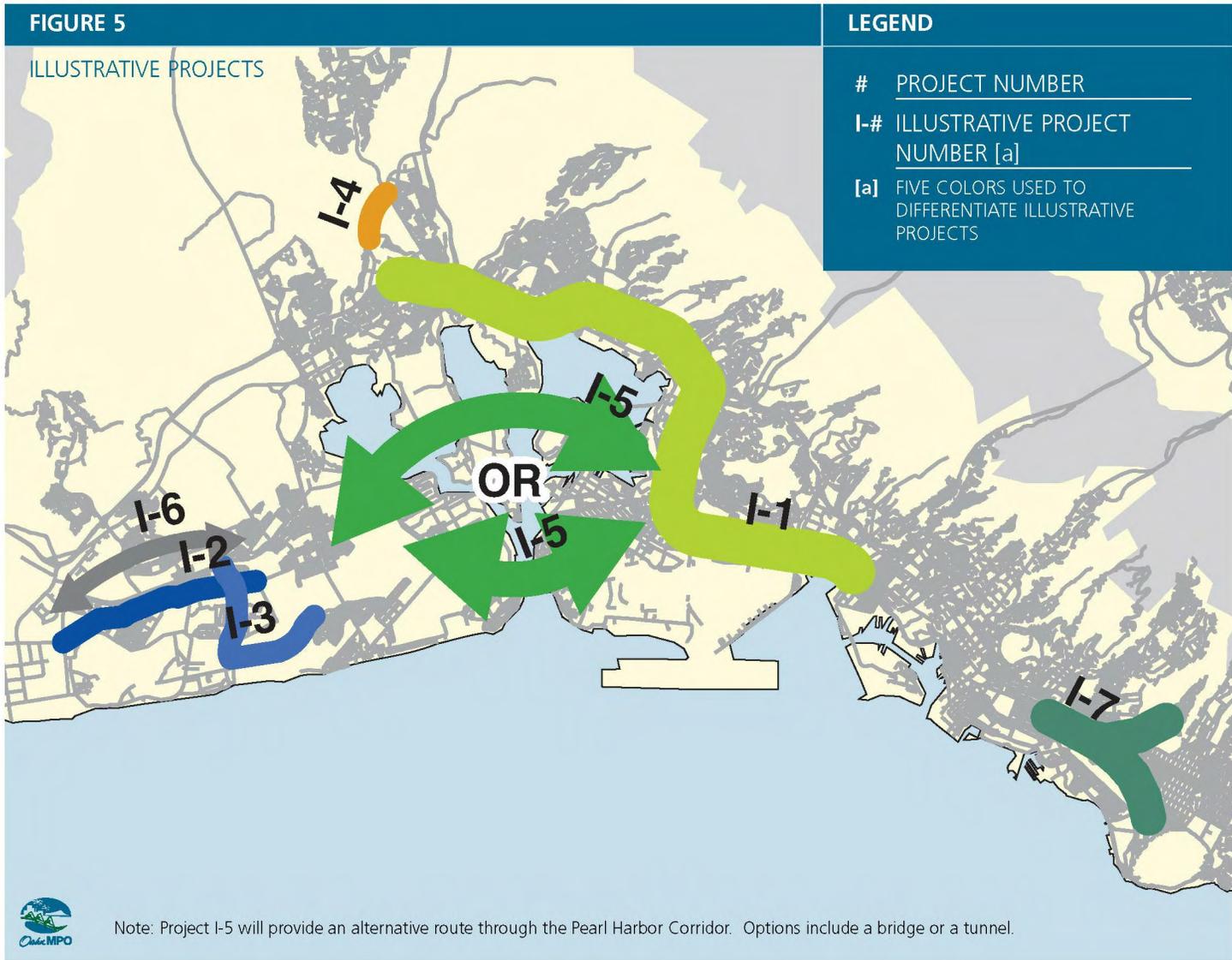
Illustrative Projects

The ORTP 2030 planning process identified many potential projects that could prove beneficial as transportation improvements for the island of Oahu; however, 2030 revenue projections could not support inclusion of these projects in the ORTP 2030 at this time. As part of the endorsement of the ORTP 2030, the OahuMPO Policy Committee identified a subset of those projects as "illustrative projects". Illustrative projects are identified in Figure 5 and Table 2.

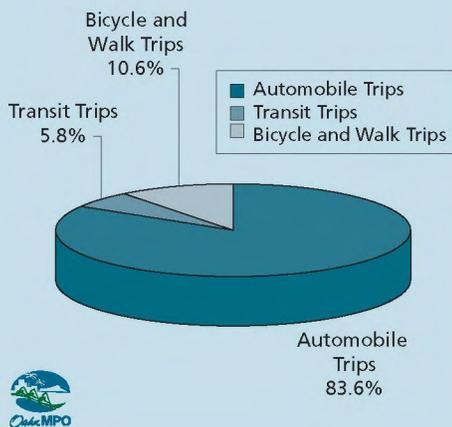
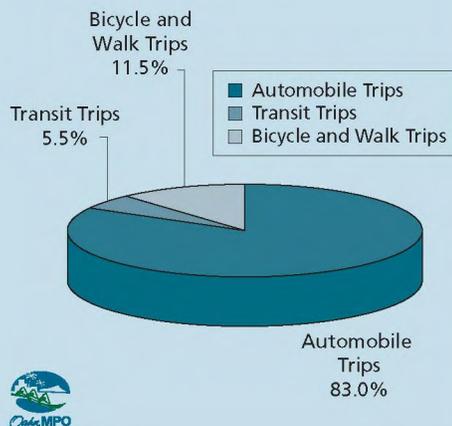
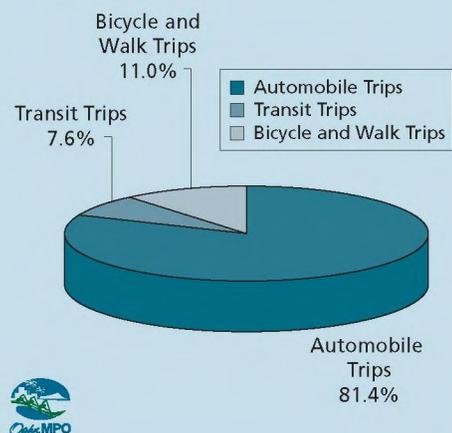
Illustrative projects are those projects that are considered high-priority for inclusion into the regional transportation plan should additional, firmly-established funding revenue sources become available. Illustrative projects are not considered to be a part of the officially endorsed regional transportation plan. Projects considered in the plan development and included on the ORTP 2030 illustrative projects list include fixed guideway segments from West Kapolei to East Kapolei and Ala Moana to Manoa/Waikiki, the concept of a Pearl Harbor crossing (tunnel or bridge), and elevated reversible high occupancy toll ("HOT") lanes within the H-1 travel corridor.

ILLUSTRATIVE PROJECTS

Illustrative projects are those projects that are considered high-priority for inclusion into the regional transportation plan should additional, firmly-established funding revenue sources become available.



HOW THE PROJECTS WORK TOGETHER

FIGURE 6
YEAR 2005 DAILY RESIDENT PERSON TRIPS

FIGURE 7
BASELINE 2030 DAILY RESIDENT PERSON TRIPS

FIGURE 8
ORTP 2030 DAILY RESIDENT PERSON TRIPS


Between 2005 and 2030, we project that the number of trips people will make will increase by about 27%. This means about a fourth more people wanting to go to work, school, stores, beaches, and other places. Travel forecasting models were used to estimate how projects contained in the ORTP 2030 would collectively handle this demand. To help evaluate the quality of our future transportation system, comparisons were made between the ORTP 2030 and the following: 1) Year 2005 conditions and 2) Baseline 2030 conditions.

Comparing the Year 2005 to the ORTP 2030 conditions:

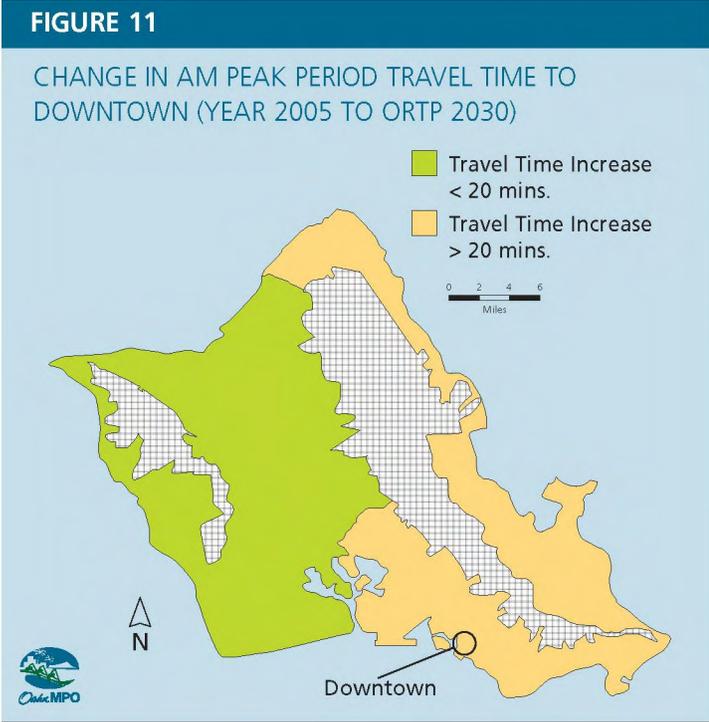
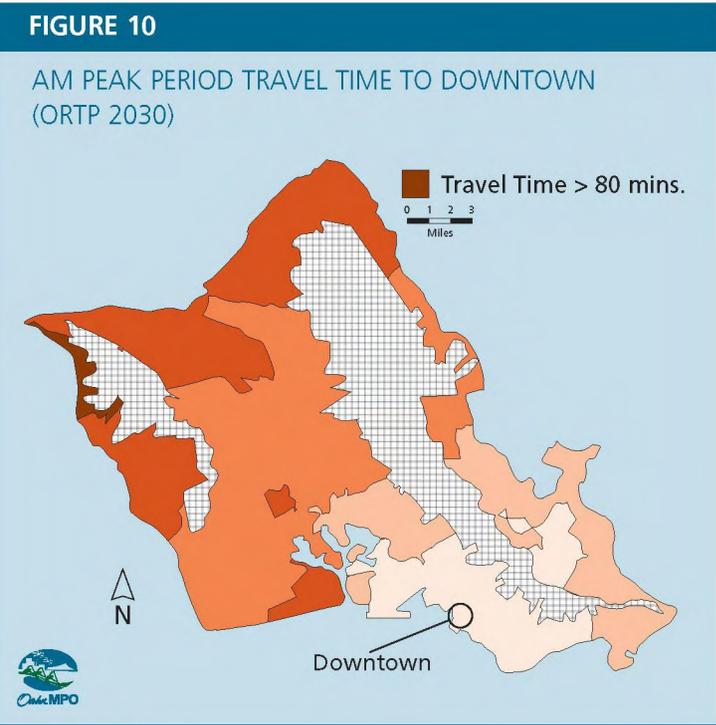
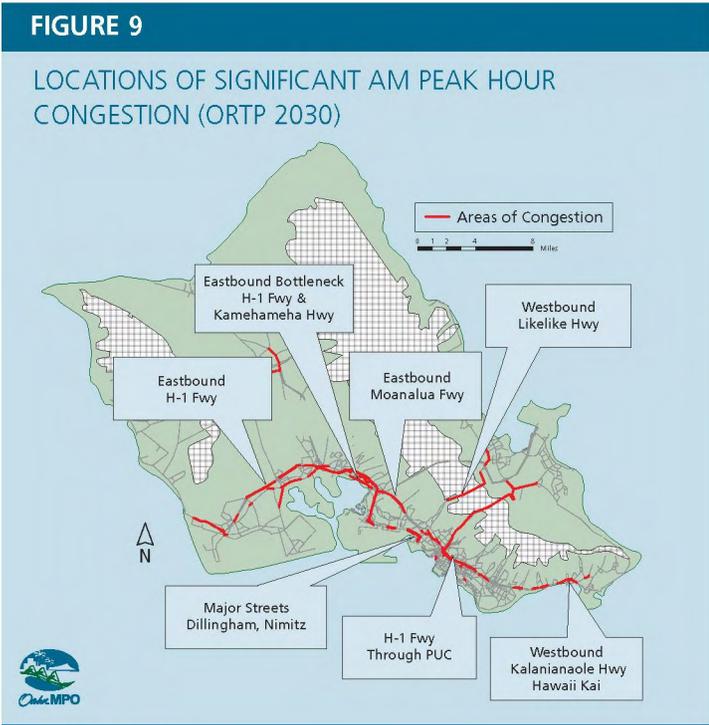
- The percentage of people making trips by auto decreases from 83.6% in 2005 to 81.4% in the ORTP 2030 (Figures 6 & 8). This decrease is offset primarily from an increase in transit trips from 5.8% to 7.6% due to the increase in transit services. This translates to 105,000 additional transit trips (with visitors) as shown in Figure 16. The percentage of people biking or walking increases slightly from 10.6% to 11%. Although the percentage of people making auto trips decreased, there is still projected to be over 540,000 additional auto trips.
- The added population growth in the ORTP 2030 will generate more travel during the day, resulting in a 22% increase in both vehicle miles traveled (VMT) and vehicles hours traveled (VHT), as seen in Figures 13 and 14, respectively. Daily vehicle hours of delay also increases 18% from 50,000 to 59,000 hours, as seen in Figure 15.
- Compared against 2005 conditions, the added transportation improvements in the ORTP 2030 are forecasted to slightly reduce the average travel time per vehicle trip from 12.3 minutes to 12.1 minutes.
- Indicators for traffic congestion during the morning peak period are somewhat poorer.
 - From an island-wide perspective, auto drivers can expect more "bottlenecks".
 - Average travel times from various areas on Oahu to downtown vary slightly between the Year 2005 and the ORTP 2030 when comparing Figure 3 with Figure 10, with the differences highlighted in Figure 11.
 - Average travel time is projected to increase from 23.8 minutes to 26.4 minutes.

Comparing the Baseline 2030 to the ORTP 2030 conditions:

- The percentage of people making trips by auto decreases from 83.0% in Baseline 2030 to 81.4% in the ORTP 2030, resulting in about 44,000 less auto trips. The percentage of people biking or walking also decreases slightly from 11.5% to 11% (Figures 7 & 8). These decreases are offset with an increase in transit trips from 5.5% to 7.6% due to the increase in transit services and reduced levels of congestion. This translates into about 72,000 additional transit trips (with visitors) as shown in Figure 16.

- By providing more roadway capacity for our projected population growth, a 5% decrease in VMT, 22% decrease in VHT, and 62% decrease in daily vehicle hours of delay are projected.
- Indicators for traffic congestion during the morning peak period are positive, suggesting that the ORTP 2030 will alleviate the substantially increased delays and travel times projected in the Baseline 2030.

- From an island-wide perspective, auto drivers can expect fewer “bottlenecks”, as can be seen in comparing Figure 2 with Figure 9.
- Average travel times from the various areas on Oahu to downtown decrease by 13.9 minutes, from 40.3 minutes to 26.4 minutes. As seen in Figure 12, Waianae Coast and Ewa residents realize the greatest travel time savings.



The ORTP 2030 is a financially balanced plan that optimizes projected costs with anticipated revenues. All costs are in Year 2005 dollars.

Sources of Revenue for the ORTP 2030

Primary sources of revenues used to support the surface transportation system for Oahu have been, and will continue to be, the Federal, State, and City governments. We estimate that about \$15.25 billion will be available over the next 25 years for transportation on Oahu as shown in Figure 17.

The federal portion of these funds, which represents about 23% of the total, is provided through highway funds from the Federal Highway Administration (FHWA) and transit funds from the Federal Transit Administration (FTA).

The State portion, which represents about 17% of the total, comes from the Highway Special Fund and the State Capital Improvement Program (CIP). The Highway Special Fund receives its money from the State liquid fuel tax, registration fees, motor vehicle weight tax, and car rental/tour vehicle tax.

Revenues from the City & County of Honolulu will pay for about 48% of the transportation system costs from 2006 to 2030. Figure 18 identifies the various sources of City funds, including the General Fund as well as County fuel tax, County motor vehicle weight tax, and public utility franchise tax. The County's 0.5% general excise tax (GET) 15-year surcharge (beginning in 2007) to fund the fixed guideway component of the Plan is assumed.

FIGURE 13

DAILY VEHICLE MILES TRAVELED

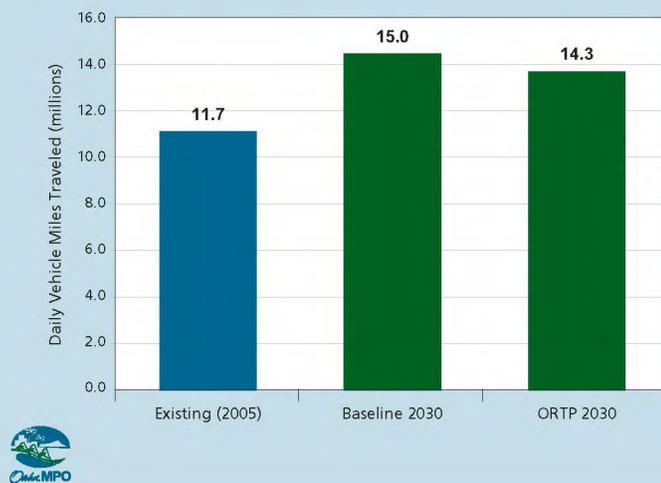


FIGURE 14

DAILY VEHICLE HOURS TRAVELED

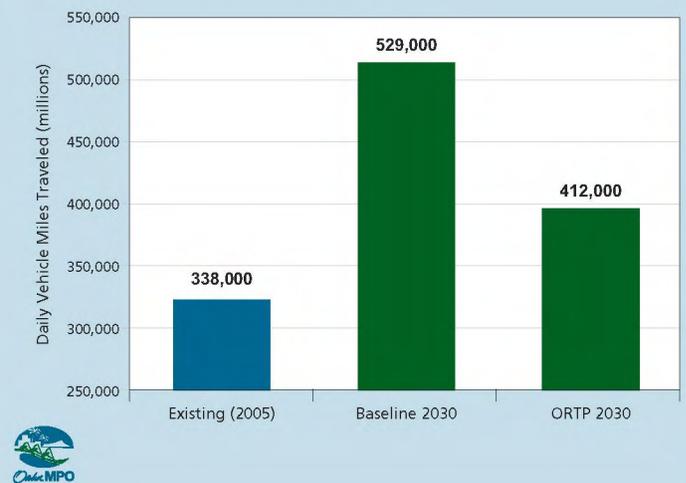


FIGURE 15

DAILY VEHICLE HOURS OF DELAY

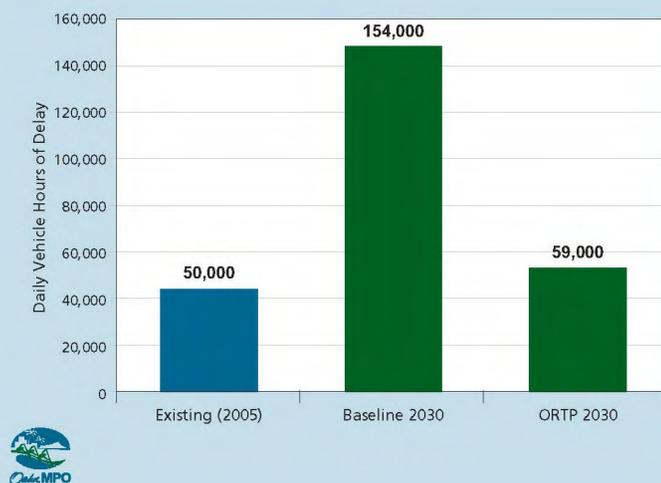
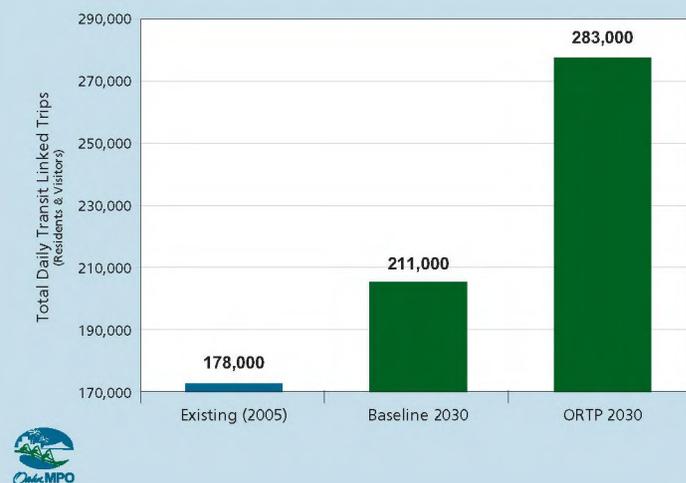


FIGURE 16

DAILY TRANSIT TRIPS (LINKED TRIPS)



The City & County of Honolulu also collects transit fares that cover 27% to 33% of the cost to operate the bus system.

For planning purposes, a portion of the plan is expected to be funded by the private sector to cover some highway projects costs and a portion of the TDM element of the ORTP 2030. Although this source is labeled "developer funding", it is not limited to impact fees and includes other options allowed by State law or County ordinances.

The assumed level of revenues from developer contributions is not intended to establish any developer funding obligations, commitments, or guidelines. Actual funding obligations and commitments will be determined through other planning efforts of the City & County of Honolulu and/or the State.

Revenue Projections

The amount of money that will be available to pay for the capital improvement projects included in the plan and the cost to operate and maintain the system over the 25-year life of the plan were projected using historical trends and future expectations.

Total revenues of approximately \$15.25 billion are anticipated over the 25-year life of the plan. The \$15.25 billion includes \$3.34 billion in Federal funds, \$2.65 billion in State funds, \$7.38 billion in City & County of Honolulu funds, \$1.45 billion in transit fares, and \$0.43 billion in developer funding.

FIGURE 17

ESTIMATED TRANSPORTATION REVENUES: 2006-2030 (MILLIONS OF CONSTANT 2005 DOLLARS)

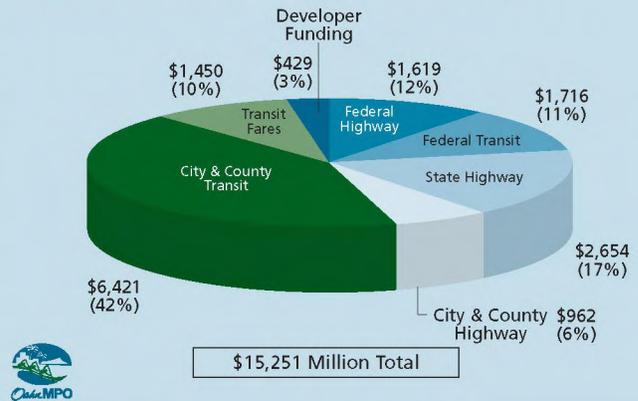


FIGURE 19

ESTIMATED PLAN COSTS: 2006-2030 (MILLIONS OF CONSTANT 2005 DOLLARS)

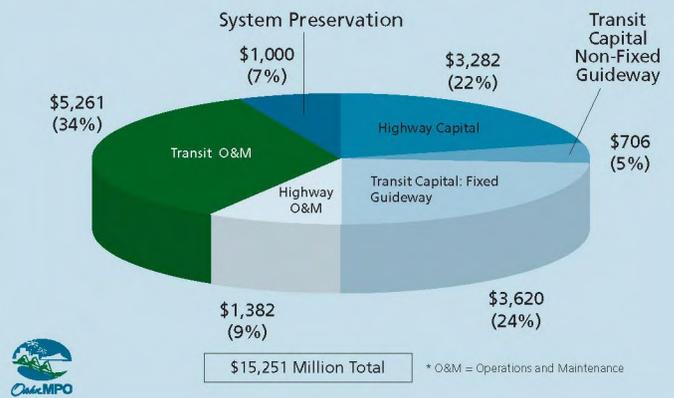
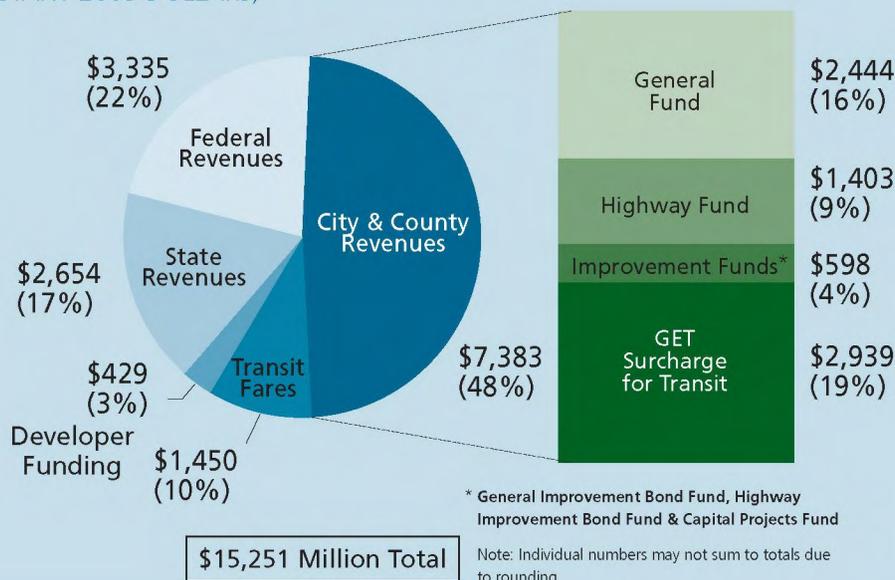


FIGURE 18

BREAKOUT OF CITY & COUNTY CONTRIBUTION TO TOTAL REVENUES: 2006-2030 (MILLIONS OF CONSTANT 2005 DOLLARS)



* General Improvement Bond Fund, Highway Improvement Bond Fund & Capital Projects Fund

Note: Individual numbers may not sum to totals due to rounding



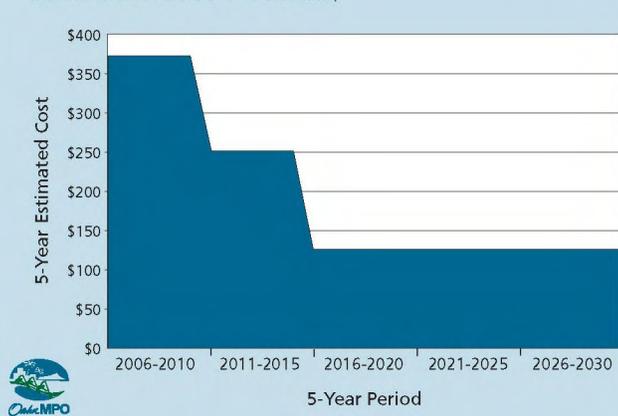
FIGURE 20

PROJECT CAPITAL COSTS BY TYPE (MILLIONS OF CONSTANT 2005 DOLLARS)



FIGURE 21

SYSTEM PRESERVATION COSTS (MILLIONS OF CONSTANT 2005 DOLLARS)



For the ORTP 2030 planning purposes, the following assumptions were made:

- Recent trends for Federal highway and transit funds allocated to Hawaii will continue.
- The City & County of Honolulu will obtain \$681 million in federal funds to assist in the construction costs for the fixed guideway.
- 60% of the State's CIP funds will be spent on Oahu.
- 54% of the federal funds apportioned to the State will be spent on Oahu.

Revenue projections are used to estimate the level of transportation "supply" Oahu can reasonably afford and are based on the best available information. The primary purpose of these projections is to ensure the financial viability of the ORTP 2030 from a regional perspective. As projects

move from the ORTP 2030 to implementation, funding assumptions (e.g., sources of funds, level of funding, etc.) may be modified. Generally, these modifications should not substantially affect the ORTP 2030 financial plan. Revisions to the ORTP 2030 and its financial plan can be made during its regular five-year update cycle or when an action triggers the need for such an adjustment. Amendments to the ORTP 2030 financial plan may be made if major changes are made to the funding assumptions that would affect the plan's financial viability.

Cost of the Plan

The ORTP 2030 is a financially balanced plan; the total cost for the 25-year plan is limited to \$15.25 billion. The cost estimates for the plan include capital improvement projects, costs to operate and maintain the current and expanded transit system, and costs to maintain and preserve the highway system, as identified in Figure 19.

The plan provides \$1.0 billion for highway system preservation. Maintenance and preservation of the transportation system is important because it provides a safe and efficient system for Oahu's roadway users. Without timely maintenance, the life of the transportation system would be shortened, leading to more expensive replacement costs as the system fails prematurely. The plan also sets aside \$1.38 billion for highway operations and routine maintenance (\$0.85 billion for State and \$0.53 billion for the City & County of Honolulu), and \$5.26 billion to operate the transit system (bus, paratransit, ferry, and fixed guideway), of which \$144 million is to operate and maintain the commuter ferry.

The ORTP 2030 includes \$7.61 billion in capital costs, as seen in Figure 20: \$3.28 billion for highway construction; \$0.71 billion to implement a ferry system, purchase new buses, and construct transit centers; and \$3.62 billion to build the fixed guideway.

In order to counter some of the neglect of the past, the plan increases spending for system preservation in the early years, then reduces the amount of spending in later years back to traditional levels, as shown in Figure 21.

The financial plan for the ORTP 2030 is balanced, with projected revenues and estimated costs matched at \$15.25 billion over the 25-year period of the plan.

SUMMARY

The ORTP 2030 provides a multi-prong approach to achieve our vision and address our future travel needs. Forecasted congestion is reduced and mobility options increased. Specifically:

- The H-1 travel corridor is identified as our priority corridor.
- A fixed guideway that will serve the H-1 travel corridor is a key component of the ORTP 2030.
- Capital projects that serve those who do not or choose not to drive, those who require another access to their community, and those who seek some relief from congestion are planned.
- Half of the plan dedicates funding for system preservation projects and operations and maintenance projects.

Although the ORTP 2030 provides significant improvements over the Baseline 2030, we should still expect more bottlenecks in the future and some decrease in average overall travel time to downtown Honolulu during the morning peak period when compared to 2005.

The ORTP 2030 fulfills the Transportation Services System Goal through developing and maintaining Oahu's island-wide transportation system to ensure efficient, safe, convenient, and economical movement of people and goods. The plan increases the capacity of the system, providing an

efficient and convenient transit system serving many destinations across the island. The planned projects are distributed across Oahu, supporting economic development and providing funds to support system preservation.

The ORTP 2030 fulfills the Environment and Quality of Life Goal by developing and maintaining Oahu's transportation system in a manner that maintains environmental quality and community cohesiveness. The plan strives to achieve this goal by improving air quality and encouraging energy conservation through the reduction of VMT; and developing alternative modes of transportation that are environmentally friendly – including transit, pedestrian walkways, and bicycle routes – while optimizing use of transportation resources and minimizing impacts on cultural and natural resources and disruption of neighborhoods. The plan considers compatibility with the physical and social character of existing development, incorporates transportation system enhancements, and includes improvements that address public safety and emergency planning.

The ORTP 2030 fulfills the Land Use and Transportation Integration System Goal by developing and maintaining Oahu's transportation system in a manner that integrates transportation with the City's land use policies. The plan reinforces planned population distribution and land use development policies, encourages innovation, and encourages implementation of land use policies that support efficient use of transportation systems.

HONOLULU



ORTP 2030 PROJECT LIST

FARRINGTON HIGHWAY



THE ZIPPER



KAPOLEI PARKWAY EXTENSION



Each project in the ORTP 2030 is listed in Table 1 and shown on Figure 22. They are prioritized into a “Mid-Range Plan” to be implemented over the next 10 years; and a “Long-Range Plan” to be implemented over the final 15 years of the plan. Projects were placed within each time period based on anticipated funding and the following guidelines:

- Projects of different categories (e.g., island-wide, congestion relief, second access, transit) are placed in both the mid-range and long-range plans. An exception is the placement of all safety projects into the mid-range plan.
- Projects on the FYs 2004-2006 TIP are placed in the mid-range plan.
- Basic elements of projects in the Ewa/Kapolei area are placed in the mid-range plan.

In addition, each project has been given a City and County of Honolulu (“C”) or State of Hawaii (“S”) designation. While the ORTP 2030 identifies projects as falling under the jurisdiction of either the City or the State, it is done so for reasons of financially balancing the project revenues with the order-of-magnitude cost estimates. This designation does not preclude an entity other than the City or the State from constructing the roadway partially or in its entirety.

FIGURE 22

ORTP 2030 PROJECT LOCATION MAP

LEGEND

- # PROJECT NUMBER
- SPOT PROJECTS
- SEGMENT PROJECTS [a]
- - - FERRY
- - - ROW PRESERVATION [b]
- FIXED GUIDEWAY
- [a] FIVE COLORS USED TO DIFFERENTIATE SEGMENT PROJECTS
- [b] FIVE COLORS USED TO DIFFERENTIATE ROW PRESERVATION PROJECTS



Disclaimer: The location of second-access projects will be determined by the implementing agency as part of the planning and design stages of the project implementation.

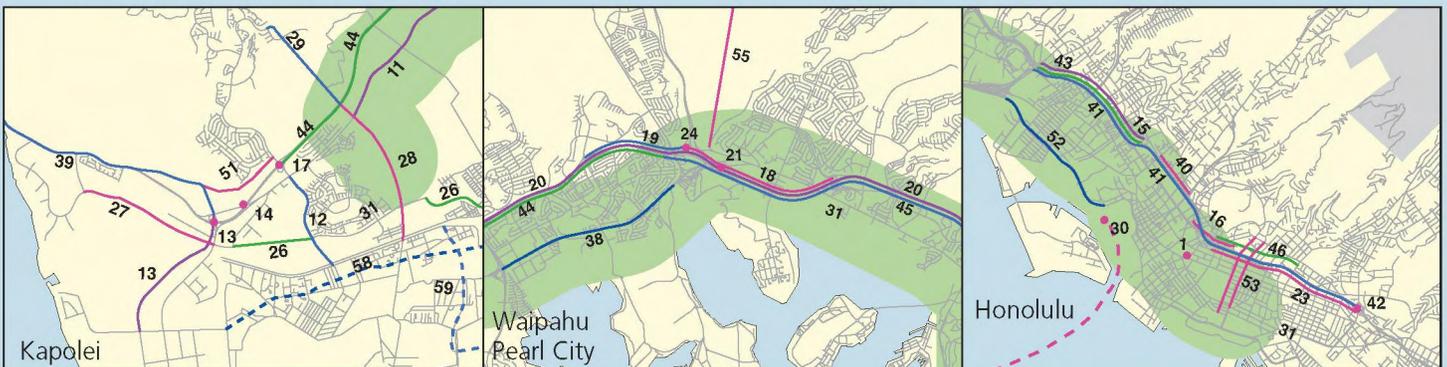


TABLE 1 OAHU REGIONAL TRANSPORTATION PLAN 2030

PROJECT NO.	CITY/ STATE	FACILITY/PROJECT TITLE	PROJECT DESCRIPTION	ESTIMATED COST (Millions of Year 2005 \$)
ISLANDWIDE PROJECTS - 2006 TO 2015				
1	C/S*	Alapai Transit Center & Joint Transportation Management Center	Construct a multi-use facility at Alapai Street to include a transit center, City-State transportation management center, and other operations.	\$30.0
2	C/S*	Bike Plan Hawaii - Oahu	Implement Oahu elements of the State of Hawaii's Bike Plan Hawaii. (Bike Plan Hawaii includes only "Priority One" projects as identified in the Honolulu Bicycle Master Plan.)	\$40.6 of \$101.6 total in 1st 10 years
3	C/S*	Enhancement Projects	Implement enhancement projects, including, but not limited to, projects from the Transportation Enhancement Program for Oahu. Includes development of a pedestrian plan for Oahu.	\$20.0 of \$50.0 total in 1st 10 years
4	C/S*	Intelligent Transportation Systems (ITS)	Implement ITS projects including, but not limited to, those identified in the Oahu Regional ITS Architecture.	\$60.0 of \$150.0 total in 1st 10 years
5	S	Rockfall Protection, Various Locations	Install rockfall protection or mitigation measures along various state highways at various locations.	\$22.5
6	C/S*	Transportation Demand Management (TDM) Program	Develop an aggressive TDM program that could include, but is not limited to: 1. Free real-time online carpool matching, 2. Outreach promotion and marketing of alternative transportation, 3. Emergency ride home program, 4. Major special events, 5. Employer based commuter programs, 6. Emerging and innovative strategies (i.e., car sharing).	\$62.9 of \$152.9 total in 1st 10 years
7	S	Van Pool Program	Continue implementation and expansion of the State's Van Pool Program.	Included as part of project # 6
SAFETY & OPERATIONAL IMPROVEMENT PROJECTS - 2006 TO 2015				
8	S	Kalaniana'ole Highway, Safety & Operational Improvements, Olomana Golf Course to Waimanalo Beach Park	Construct safety and operational improvements along Kalaniana'ole Highway between the Olomana Golf Course and Waimanalo Beach Park. Specific safety and operational improvements include construction of turning lanes, sidewalks, wheelchair ramps, bike paths or bike lanes, traffic signal upgrades, utility relocation, and drainage improvements.	\$19.7
9	S	Kamehameha Highway, Safety Improvements, Haleiwa to Kahaluu	Construct safety improvements along Kamehameha Highway, from Haleiwa to Kahaluu. Safety improvements include turn lanes, guardrails, signage, crosswalks, etc. to improve safety. Widening of Kamehameha Highway will only be in areas where needed for storage/turn lanes safety improvements.	\$115.9
10	S	Kamehameha Highway, Safety & Operational Improvements, Kaalaea Stream to Hygienic Store	Construct safety and operational improvements along Kamehameha Highway, between Kaalaea Stream and Hygienic Store. Safety and operational improvements include passing and turning lanes, modification of signals, installation of signs, flashers, and other warning devices. This project also includes replacement of Kaalaea Stream Bridge and Haialoa Stream Bridge with structures that meet current design standards.	\$18.9
CONGESTION RELIEF PROJECTS - 2006 TO 2015				
11	C	Farrington Highway, Widening, Golf Course Road to west of Fort Weaver Road	Widen Farrington Highway from 2 to 4 lanes, from Golf Course Road to just west of Fort Weaver Road.	\$36.6
12	C	Fort Barrette Road, Widening, Farrington Highway to Franklin D. Roosevelt Avenue	Widen Fort Barrette Road from 2 to 4 lanes, from Farrington Highway to Franklin D. Roosevelt Avenue.	\$24.9
13	C	Hanua Street, Extension, Farrington Highway to Malakole Street; Interstate Route H-1, New On- & Off-Ramps, Palailai Interchange	Hanua Street: • Extend Hanua Street from Malakole Street to Farrington Highway. This new 4-lane roadway will provide access to Kalaheo Harbor. Interstate Route H-1, Palailai Interchange: • Construct new on- and off-ramps at Interstate Route H-1 Palailai Interchange to Hanua Street extension.	\$61.1
14	S	Interstate Route H-1, New Interchange, Kapolei Interchange	Construct new Interstate Route H-1 Kapolei Interchange for Kapolei between the Palailai Interchange and Makakilo Interchange.	\$45.5
15	S	Interstate Route H-1, Widening, Middle Street to Vineyard Boulevard	Widen the Interstate Route H-1 by 1 lane, in the eastbound direction, from Middle Street to Vineyard Boulevard, as identified below: • From 2 to 3 lanes from Middle Street to Likelike Highway off-ramp • From 3 to 4 lanes from Likelike Highway off-ramp to Vineyard Boulevard This project also includes the widening of: • Gulick Avenue overpass to allow 5 lanes to pass under it • Kalihi Interchange overcrossings to allow 4 lanes to pass under it	\$34.8
16	S	Interstate Route H-1, Operational Improvements, Lunalilo Street to Vineyard Boulevard	Modify the weaving movements on the Interstate Route H-1, in the westbound direction, between the Lunalilo Street on-ramp and the Vineyard Boulevard off-ramp.	\$24.3

TABLE 1 OAHU REGIONAL TRANSPORTATION PLAN 2030

PROJECT NO.	CITY/ STATE	FACILITY/PROJECT TITLE	PROJECT DESCRIPTION	ESTIMATED COST (Millions of Year 2005 \$)
CONGESTION RELIEF PROJECTS - 2006 TO 2015 (continued)				
17	S	Interstate Route H-1, New On- & Off-Ramps, Makakilo Interchange	Construct a new eastbound off-ramp and a new westbound on-ramp to the Interstate Route H-1 at the Makakilo Interchange.	\$9.9
18	S	Interstate Route H-1, Widening, Waiiau Interchange to Waiawa Interchange	Widen Interstate Route H-1 in the westbound direction by 1 lane from the Waiiau Interchange to the Waiawa Interchange.	\$137.5
19	S	Interstate Route H-1, Widening, Waiawa Interchange	Widen the Interstate Route H-1 by 1 lane, in the westbound direction, through the Waiawa Interchange. This project will begin in the vicinity of the Waiawa Interchange and end at the Paia Interchange. <ul style="list-style-type: none"> • From 2 to 3 lanes in AM peak • From 4 to 5 lanes in PM peak 	\$6.9
20	S	Interstate Route H-1, Zipper Lane (PM), Keehi Interchange to Kunia Interchange	Construct a Zipper lane on the Interstate Route H-1, in the westbound direction, from Keehi Interchange to Kunia Interchange. This project would be in use during the PM peak.	\$19.9
21	S	Interstate Route H-1, Widening, Waipahu Off-Ramp	Widen the Interstate Route H-1 Waipahu Street off-ramp from 1 to 2 lanes, in the westbound direction, at the Waiawa Interchange.	\$11.7
22	S	Interstate Route H-2, Widening, Waipio Interchange	Widen both on- and off-ramps on Interstate Route H-2, at the Waipio Interchange. This project includes the widening of the Ka Uka Boulevard overpass and intersection improvements to facilitate movement to and from the on- and off-ramps.	\$20.7
23	S	Interstate Route H-1, Operational Improvements, Ward Avenue On-Ramp to University Avenue Interchange	Improve traffic flow on the Interstate Route H-1, in the eastbound direction, from the Ward Avenue on-ramp to the University Avenue Interchange through operational improvements.	\$13.7
24	S	Interstate Routes H-1 & H-2, Operational Improvements, Waiawa Interchange	Modify the Interstate Routes H-1 and H-2 Waiawa Interchange, to improve merging characteristics through operational improvements (e.g., additional transition lanes).	\$45.5
25	S	Kamehameha Highway, Widening, Lanikuhana Avenue to Ka Uka Boulevard	Widen Kamehameha Highway from a 3-lane to a 4-lane divided facility between Lanikuhana Avenue and Ka Uka Boulevard. This project includes shoulders for bicycles and disabled vehicles, bridge crossing replacement, bikeways, etc.	\$78.9
26	C	Kapolei Parkway, Extension, Kamokila Boulevard to Papipi Road	Extend the existing 4-lane Kapolei Parkway by constructing the segments in each of the following areas: <ul style="list-style-type: none"> • Kamokila Boulevard to Fort Barrette Road • Ewa Village boundary to Renton Road • Geiger Road to Papipi Road 	\$78.9
27	C	Kapolei Parkway, Extension & Widening, Aliinui Drive to Kalaeloa Boulevard	Extend the existing 4-lane Kapolei Parkway, from Aliinui Drive to Hanua Street. This project includes widening of Kapolei Parkway from 4 to 6 lanes from Hanua Street to Kalaeloa Boulevard.	\$46.9
28	S	North-South Road, Widening & Extension, Interstate Route H-1 to Franklin D Roosevelt Avenue	Widen and extend North-South Road as follows: <ul style="list-style-type: none"> • From 3 to 6 lanes from Kapolei Parkway to Interstate Route H-1 • Extend from Kapolei Parkway to Franklin D Roosevelt Avenue (6 lanes) 	\$35.3
SECOND ACCESS PROJECTS - 2006 TO 2015				
29	C	Makakilo Drive, Second Access, Makakilo Drive to North-South Road/Interstate Route H-1 Interchange	Extend Makakilo Drive (vicinity Pueonani Street) south to the Interstate Route H-1 Freeway Interchange as 4-lane roadway, connecting Makakilo Drive to North-South Road.	\$32.8
TRANSIT PROJECTS - 2006 TO 2015				
30	C	Ferry, Intra-Island Express Commuter, in the vicinity of Ocean Pointe Marina to Honolulu Harbor	Implement intra-island passenger ferry in the vicinity of the Ocean Pointe Marina in Ewa and Honolulu Harbor.	\$23.2
31	C	Fixed Guideway, East Kapolei to Ala Moana	Plan, design, and construct a fixed guideway system between East Kapolei and Ala Moana. This project includes intermodal connections with TheBus system to provide feeder services to fixed guideway stations. Note that the alignment, system technology, and location of transit stations may be refined during the preliminary engineering, Environmental Impact Statement and subsequent processes.	\$2,644.3 of \$3,620.3 in 1st 10 years
32	C	TheBus Service, Expansion, Islandwide	Expand the bus service through increase of capacity of the existing system to accommodate population growth. Expanded service will be ADA-compliant. This includes: <ul style="list-style-type: none"> • Expansion to and within Ewa, Kapolei, and Central Oahu • Implementation of the Hub and Spoke bus system with transit centers and circuitous routes • Expansion through increase of Express service to the North Shore, Waianae, and Windward Oahu 	\$199.3 of \$606.5 total in 1st 10 years

TABLE 1 OAHU REGIONAL TRANSPORTATION PLAN 2030

PROJECT NO.	CITY/ STATE	FACILITY/PROJECT TITLE	PROJECT DESCRIPTION	ESTIMATED COST (Millions of Year 2005 \$)
TRANSIT PROJECTS - 2006 TO 2015 <i>(continued)</i>				
33	C	Transit Centers, Various Locations	Construct transit centers at various locations islandwide to support the Fixed Guideway and TheBus systems.	\$49.1 of \$76.7 total in 1st 10 years
OPERATIONS, MAINTENANCE & SYSTEM PRESERVATION - 2006 TO 2015				
34	C	City Operations and Maintenance (O&M)	Maintain and operate the City's existing and future roadway, transit and paratransit operations and routine maintenance. Includes, but is not limited to, operation of the transit system (including bus, paratransit, fixed guideway, and ferry), resurfacing, guardrail and shoulder improvements, lighting improvements, drainage improvements, sign upgrades and replacement, etc.	\$1,918.3 in 1st 10 years (\$1,690.3 transit O&M, \$228 roadway O&M)
35	S	State Operations and Maintenance	Maintain and operate the State's existing and future highway operations and routine maintenance. Includes, but is not limited to, pavement repair, guardrail and shoulder improvements, lighting improvements, drainage improvements, sign upgrades and replacement, traffic signal upgrade and retrofit, etc.	\$340 in 1st 10 years
36	S	System Preservation	Preserve the highway system through projects including, but not limited to, bridge replacement and seismic retrofit, pavement preventative maintenance, resurfacing and rehabilitation, etc.	\$625 in 1st 10 years
COST SUBTOTALS: MID-RANGE PLAN (2006 TO 2015)				
				CATEGORIES
				Islandwide Projects
				\$236.0
				Safety & Operational Improvement Projects
				\$154.5
				Congestion Relief Projects
				\$733.0
				Second Access Projects
				\$32.8
				Transit Projects
				\$2,915.9
				Operations, Maintenance, & System Preservation
				\$2,883.3
				All Categories
				\$6,955.5
SUBTOTALS BY JURISDICTION				
				City & County of Honolulu Share of Project Costs *
				\$5,220.8
				State of Hawaii Share of Project Costs *
				\$1,734.7
				Total: All Shares
				\$6,955.5
ISLANDWIDE PROJECTS - 2016 TO 2030				
2	C/S*	Bike Plan Hawaii - Oahu	See description in Mid-Range Plan	\$61.0 in 2nd 15 years
3	C/S*	Enhancement Projects	See description in Mid-Range Plan	\$30.0 in 2nd 15 years
4	C/S*	Intelligent Transportation Systems	See description in Mid-Range Plan	\$90.0 in 2nd 15 years
6	C/S*	Transportation Demand Management Program	See description in Mid-Range Plan	\$90.0 in 2nd 15 years
SAFETY & OPERATIONAL IMPROVEMENT PROJECTS - 2016 TO 2030				
37	S	Farrington Highway, Safety Improvements, Makua Valley Road to Aliinui Drive	Construct safety improvements on Farrington Highway along the Waianae Coast, from Makua Valley Road (Kaena Point) to Aliinui Drive (Kahe Point). This project includes realignment around Makaha Beach Park, between Makau Street and Water Street.	\$69.7
CONGESTION RELIEF PROJECTS - 2016 TO 2030				
38	S	Farrington Highway, Widening, west of Fort Weaver Road to Waiawa Interchange	Widen Farrington Highway from Kunia to Waiawa by 1 lane in each direction, from west of Fort Weaver Road to Waiawa Interchange.	\$67.1
39	S	Farrington Highway, Widening, Hakimo Road to Kalaeloa Boulevard	Widen Farrington Highway from 4 to 6 lanes, from Hakimo Road to Kalaeloa Boulevard, including intersection of Luualalei Naval Road.	\$108.4
40	S	Interstate Route H-1, Widening, Liliha Street to Pali Highway	Widen the Interstate Route H-1 by 1 lane, from 3 to 4 lanes in the eastbound direction, from the Liliha Street on-ramp to Pali Highway off-ramp.	\$3.4
41	S	Interstate Route H-1, On- & Off-Ramp Modifications, Various Locations	Modify and/or close various on- and off- ramps on the Interstate Route H-1 from Middle Street to University Avenue. This project includes modification of auxiliary lanes at various exits and other operational changes to Interstate Route H-1. The identification of the precise improvements to be made will require a separate detailed corridor study.	\$60.0
42	S	Interstate Route H-1, On- & Off-Ramp Modifications, University Avenue Interchange	Modify on- and off-ramps at the University Avenue Interchange on Interstate Route H-1. This project includes the construction of new ramps to allow all movements, safety improvements, including the closure of the eastbound on-ramp at University Avenue Interchange to Interstate Route H-1 and the construction of a new makai-bound off-ramp to University Avenue from Interstate Route H-1.	\$24.0
43	S	Interstate Route H-1, Widening, Vineyard Boulevard to Middle Street	Widen the Interstate Route H-1 by 1 lane in the westbound direction, from Vineyard Boulevard to Middle Street.	\$60.0

MID-RANGE PLAN (2006 TO 2015)

LONG-RANGE PLAN (2016 TO 2030)

TABLE 1 OAHU REGIONAL TRANSPORTATION PLAN 2030

PROJECT NO.	CITY/ STATE	FACILITY/PROJECT TITLE	PROJECT DESCRIPTION	ESTIMATED COST (Millions of Year 2005 \$)
CONGESTION RELIEF PROJECTS - 2016 TO 2030				
44	S	Interstate Route H-1, HOV Lanes, Waiawa Interchange to Makakilo Interchange	Construct 2 new lanes in the freeway median for HOV use, 1 in the westbound direction and 1 in the eastbound direction, on Interstate Route H-1, from the Waiawa Interchange to the Makakilo Interchange.	\$52.5
45	S	Interstate Route H-1, Widening, Waiawa Interchange to Halawa Interchange	Widen the Interstate Route H-1 by 1 lane in the eastbound direction, from the Waiawa Interchange to the Halawa Interchange.	\$251.3
46	S	Interstate Route H-1, Widening, Ward Avenue to Punahou Street	Widen the existing Interstate Route H-1 by 1 lane in the eastbound direction, from Ward Avenue to Punahou Street.	\$24.3
47	S	Interstate Route H-2, New Interchange, Pineapple Road Overpass	Construct a new full-service freeway interchange on Interstate Route H-2, between Meheula Parkway and Ka Uka Boulevard, to accommodate future developments in Central Oahu. This project includes the widening of the existing Pineapple Road Overpass from 2 lanes to 4 lanes; and addition of new on- and off-ramps to and from Interstate Route H-2 at Pineapple Road Overpass.	\$50.0
48	S	Kahekili Highway, Widening, Kamehameha Highway to Haiku Road	Widen Kahekili Highway from 2 to 4 lanes, from Kamehameha Highway to Haiku Road. This project also includes the following improvements: <ul style="list-style-type: none"> • Contraflow in existing right-of-way between Hui Iwa Street and Haiku Road • Intersection improvements at Hui Iwa Street and Kamehameha Highway 	\$30.0
49	S	Kunia Road, Widening and Interchange Improvement, Wilikina Drive to Farrington Highway	Widen Kunia Road as follows: <ul style="list-style-type: none"> • From 2 to 4 lanes, from Wilikina Drive to Anonui Street. • From 2 to 4 lanes, Anonui Street to Kupuna Loop. • From 4 to 6 lanes, Kupuna Loop to Farrington Highway. • Add 1 lane eastbound loop on-ramp at Kunia Road & Interstate Route H-1. 	\$116.3
50	S	Likelike Highway, Widening, Kamehameha Highway to Kahekili Highway	Widen Likelike Highway from 4 to 6 lanes, from Kamehameha Highway to Kahekili Highway.	\$14.6
51	C	Makakilo Mauka Frontage Road, New Roadway, Kalaeloa Boulevard to Makakilo Drive	Construct a new 2-lane Makakilo Mauka Frontage Road, mauka of Interstate Route H-1, from Kalaeloa Boulevard to Makakilo Drive.	\$11.1
52	S	Nimitz Highway, High Occupancy Vehicle (HOV) Flyover, Keehi Interchange to Pacific Street	Construct a new 2-lane elevated and reversible HOV flyover above Nimitz Highway, from the Keehi Interchange to Pacific Street. This project includes the removal of the existing eastbound contraflow lane in the AM peak and restoration of all turning movements on the at-grade portion of Nimitz highway.	\$250.0
53	C	Piikoi-Pensacola Couplet Reversal	Reverse the direction of the existing one-way Piikoi Street and Pensacola Street couplet.	\$4.2
54	C	Puuloa Road, Widening, Pukuloa Road to Nimitz Highway	Widen Puuloa Road, from Pukuloa Road to Nimitz Highway: <ul style="list-style-type: none"> • From 3 lanes (1 lane southbound and 2 lane northbound) to 5 lanes (2 lanes-southbound and 3 lanes northbound), from Pukuloa Road to Kamehameha Highway. 	\$10.0
SECOND ACCESS PROJECTS - 2016 TO 2030				
55	C	Central Mauka Road, Second Access, Mililani Mauka to Waiawa	Construct Central Mauka Road, a new 4-lane road from Mililani Mauka to Waiawa. Road connects Meheula Parkway to Kamehameha Highway in Pearl City; parallel to & mauka of Interstate Route H-2. The new 4-lane north-south road includes connections to Interstate Route H-2 interchanges.	\$160.0
56	C	Wahiawa, Second Access, Whitmore Avenue to Meheula Parkway	Construct a new 2-lane second access road between Whitmore Village and Wahiawa, from Whitmore Avenue to California Avenue. Continue the new 2-lane second access road to Mililani Mauka, from California Avenue to Meheula Parkway.	\$64.4
57	S	Waianae, Second Access, Farrington Highway to Kunia Road	Construct a new 2-lane second access road to Waianae from Farrington Highway in the vicinity of Maili, over the Waianae Mountain Range, to Kunia Road.	\$423.0
TRANSIT PROJECTS - 2016 TO 2030				
31	C	Fixed Guideway, East Kapolei to Ala Moana	Plan, design, and construct a fixed guideway system between East Kapolei and Ala Moana. This project includes intermodal connections with TheBus system to provide feeder services to fixed guideway stations. Note that the alignment, system technology, and location of transit stations may be refined during the preliminary engineering, Environmental Impact Statement and subsequent processes.	\$976.0
32	C	TheBus Service, Expansion, Islandwide	See description in Mid-Range Plan	\$407.2 in 2nd 15 years
33	C	Transit Centers, Various Locations	See description in Mid-Range Plan	\$27.6 in 2nd 15 years

TABLE 1 OAHU REGIONAL TRANSPORTATION PLAN 2030

PROJECT NO.	CITY/ STATE	FACILITY/PROJECT TITLE	PROJECT DESCRIPTION	ESTIMATED COST (Millions of Year 2005 \$)
OPERATIONS, MAINTENANCE & SYSTEM PRESERVATION - 2016 TO 2030				
34	C	City Operations and Maintenance (O&M)	See description in Mid-Range Plan	\$3,874.3 in 2nd 15 years (\$3,570.3 transit O&M, \$304 roadway O&M)
35	S	State Operations and Maintenance	See description in Mid-Range Plan	\$510 in 2nd 15 years
36	S	System Preservation	See description in Mid-Range Plan	\$375 in 2nd 15 years
COST SUBTOTALS: LONG-RANGE PLAN (2016 TO 2030)				
				CATAGORIES
				SUBTOTALS
				Islandwide Projects \$271.0
				Safety & Operational Improvement Projects \$69.7
				Congestion Relief Projects \$1,137.2
				Second Access Projects \$647.4
				Transit Projects \$1,410.8
				Operations, Maintenance, & System Preservation \$4,759.3
				All Categories \$8,295.4
SUBTOTALS BY JURISDICTION				
				City & County of Honolulu Share of Project Costs * \$5,670.3
				State of Hawaii Share of Project Costs * \$2,625.1
				Total: All Shares \$8,295.4
CONGESTION RELIEF PROJECTS - ROW PRESERVATION				
58	C	Kalaeloa East-West Spine Road, New Roadway, Kalaeloa Boulevard to Geiger Road	Establish and preserve right-of-way (ROW) for Kalaeloa East-West Spine Road (new 4-lane east-west spine road within Kalaeloa by realigning and connecting portions of the existing Saratoga Avenue from Kalaeloa Boulevard in the west and to Geiger Road in the east.)	n/a
59	C	Keoneula Boulevard,	Establish and preserve right-of-way (ROW) for Keoneula Boulevard Extension	n/a
ORTP 2030 COST TOTALS: 2006-2030				
				CATAGORIES
				SUBTOTALS
				Islandwide Projects \$507.0
				Safety & Operational Improvement Projects \$224.2
				Congestion Relief Projects \$1,870.2
				Second Access Projects \$680.2
				Transit Projects \$4,326.7
				Operations, Maintenance, & System Preservation \$7,642.6
				All Categories \$15,250.9
SUBTOTALS BY JURISDICTION				
				City & County of Honolulu Share of Project Costs * \$10,891.1
				State of Hawaii Share of Project Costs * \$4,359.8
				Total: All Shares \$15,250.9

Note: * Costs for projects shared by City and State (c/s) allocated equally between the two jurisdictions. The designation is done for reasons of financially balancing projected revenues with the order of magnitude cost estimates.

TABLE 2 OAHU 2030 ILLUSTRATIVE PROJECTS

PROJECT NO.	FACILITY/PROJECT TITLE	PROJECT DESCRIPTION	ESTIMATED CAPITAL COST (Millions of Year 2005 \$)
CONGESTION RELIEF PROJECTS			
I-1	H-1 Corridor, Reversible Highway, Waiawa Interchange to Keehi Interchange	Construct a new, elevated, reversible two-lane highway from west of the Waiawa Interchange to the Keehi Interchange. The new facility could be used for high occupancy vehicles; and a toll could be charged.	\$2,500
I-2	Kalaeloa East-West Spine Road, New Roadway, Kalaeloa Boulevard to Geiger Road	Construct a new 4-lane east-west spine road within Kalaeloa by realigning and connecting portions of the existing Saratoga Avenue from Kalaeloa Boulevard in the west and to Geiger Road in the east.	\$110
I-3	Keoneula Boulevard, Extension, Kapolei Parkway to Franklin D. Roosevelt Avenue	Extend Keoneula Boulevard from Kapolei Parkway to Franklin D. Roosevelt Avenue.	\$85
I-4	Paiwa Street, Extension, Ka Uka Boulevard to Lumiaua Street	Extend Paiwa Street from north of Lumiaua Street, to the intersection of Kamehameha Highway and Ka Uka Boulevard.	\$15
I-5	Pearl Harbor Corridor	Construct an alternative route through the Pearl Harbor corridor to provide direct connection between Honolulu and the Ewa Plain. A new tunnel beneath the mouth of Pearl Harbor and a series of bridges spanning Pearl Harbor are potential options for this route. This project could operate as a toll facility.	\$7,000
I-6	Fixed Guideway, West Kapolei to East Kapolei	Plan, design, and construct a fixed guideway system between West Kapolei to East Kapolei	\$500
I-7	Fixed Guideway, Ala Moana to Manoa/Waikiki	Plan, design, and construct a fixed guideway system between Ala Moana and Manoa/Waikiki	\$1,150
Total (with Pearl Harbor Corridor as Tunnel)			\$11,360



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