Environmental Analysis, Consequences, and Mitigation

This chapter of the Final Environmental Impact Statement (EIS) discusses the environmental analysis, consequences, and mitigation for the No Build Alternative and the Airport Alternative (Project). The analysis is based on Federal and Hawai‘i regulatory requirements as well as Federal and State guidelines. The National Environmental Policy Act (NEPA) and Hawai‘i Revised Statutes (HRS) Chapter 343 require the evaluation of potential effects of proposed government actions on the environment. The U.S. Department of Transportation (USDOT), through the Federal Highway Administration (FHWA) and the Federal Transit Administration (FTA), has adopted regulations to implement NEPA. This Final EIS identifies the Airport Alternative as the Preferred Alternative [23 CFR 771.125(a)(1)].

Chapter 3, Transportation, includes a discussion of potential parking effects, including those to neighborhoods and businesses, and mitigation commitments during operation (Section 3.4.7) and construction (Section 3.5.7).

Section 4.1, Changes to this Chapter since the Draft Environmental Impact Statement, summarizes the changes made to this chapter since publication of the Draft EIS. Sections 4.2 through 4.16 address the regulatory context and methodology by which each resource is studied, the affected environment, and the long-term effects on individual aspects of the environment of the Project. Measures that will be incorporated into the Project to mitigate long-term adverse effects are also identified. These sections are as follows:

4.2 Land Use
4.3 Economic Activity
4.4 Acquisitions, Displacements, and Relocations
4.5 Community Services and Facilities
4.6 Neighborhoods
4.7 Environmental Justice
4.8 Visual and Aesthetic Conditions
4.9 Air Quality
4.10 Noise and Vibration  
4.11 Energy and Electric and Magnetic Fields  
4.12 Hazardous Waste and Materials  
4.13 Ecosystems  
4.14 Water  
4.15 Street Trees  
4.16 Archaeological, Cultural, and Historic Resources  

Section 4.17, Maintenance and Storage Facility, describes the environmental consequences of the preferred site near Leeward Community College and the alternative site near the future Hoʻopili master planned community. Section 4.18, Construction Phase Effects, addresses the construction-phase effects and mitigation that will be considered and the relationship between short-term uses of the environment and long-term productivity. Section 4.19, Indirect and Cumulative Effects, presents the indirect and cumulative effects of the Project, including the effects of prior actions to the future planned extensions and other planned projects. Section 4.20, Irreversible and Irretrievable Commitments of Resources, describes resources that will be used by the Project. Section 4.21, Anticipated Permits, Approvals, and Agreements, includes a list of environmental permits required for the Project and their status as of the date of this Final EIS.

The following technical reports include analyses of the individual environmental topics that have been evaluated for the Project:

- Honolulu High-Capacity Transit Corridor Project Land Use Technical Report (RTD 2008b)
- Honolulu High-Capacity Transit Corridor Project Economics Technical Report (RTD 2008c)
- Honolulu High-Capacity Transit Corridor Project Neighborhoods and Communities Technical Report (RTD 2008d)
- Honolulu High-Capacity Transit Corridor Project Noise and Vibration Technical Report (RTD 2008f)
- Honolulu High-Capacity Transit Corridor Project Air Quality and Energy Technical Report (RTD 2008g)
- Honolulu High-Capacity Transit Corridor Project Electric and Magnetic Fields Technical Report (RTD 2008h)
- Honolulu High-Capacity Transit Corridor Project Ecosystems and Natural Resources Technical Report (RTD 2008j)
- Honolulu High-Capacity Transit Corridor Project Water Resources Technical Report (RTD 2008k)
- Honolulu High-Capacity Transit Corridor Project Street Trees Technical Report (RTD 2008l)
- Honolulu High-Capacity Transit Corridor Project Geology, Soils, Farmlands, and Natural Hazards Technical Report (RTD 2008m)
- Honolulu High-Capacity Transit Corridor Project Archaeological Resources Technical Report (RTD 2008n)
- Honolulu High-Capacity Transit Corridor Project Historic Resources Technical Report (RTD 2008o)
- Honolulu High-Capacity Transit Corridor Project Cultural Resources Technical Report (RTD 2008p)
- Honolulu High-Capacity Transit Corridor Project Wetland and Waters of the U.S. Study (RTD 2009b)
- Honolulu High-Capacity Transit Corridor Project Addendum 01 to the Historic Resources Technical Report (RTD 2009c)
- Honolulu High-Capacity Transit Corridor Project Historic Effects Report (RTD 2009d)
The analyses demonstrated that the Project will not have an adverse effect upon geology, soils, or natural hazards; therefore, they are not addressed in this chapter. The Project will be designed to meet seismic and other design standards related to natural hazards, such as wind forces from tropical storms. The project alignment is outside the tsunami evacuation zones.

The traction power substations were evaluated as part of the analysis of the Project. Most of these facilities will be located in the right-of-way or on properties acquired for stations. Impacts related to traction power substations are discussed in the land use, noise, visual and aesthetic conditions, and hazardous materials sections of this chapter. Geographic areas are discussed in four categories, as appropriate to the resource:

- **Project Region**—the entire Island of O’ahu (Figure 1-1 in Chapter 1, Background)
- **Study Corridor**—the southern coast of O’ahu where the Project is located (Figure 4-1)
- **Project Station Area**—areas within one-half mile of a project station (Figure 4-1); one-half mile is generally considered an acceptable walking distance
- **Project Alignment**—the route of the fixed guideway (Figure 4-1); discussions involving the project alignment include those properties adjacent to the alignment (i.e., properties fronting the roadway along which the guideway will be built)

Table 4-1 summarizes the environmental effects of the Project; mitigation measures to avoid, minimize, or reduce the effects; and probable unavoidable adverse effects that are detailed in this chapter.

The City and County of Honolulu (City) will incorporate mitigation measures required by permits, approvals, and agreements into the Project during final design and construction. During construction, the City will employ an environmental compliance manager to oversee and enforce mitigation commitments.

While the Project will be environmentally preferable regarding effects on air quality, energy use, and water quality, the No Build Alternative is the environmentally preferable alternative based on overall consideration of the criteria listed in 40 CFR 1505.2(b). The No Build Alternative would affect fewer historic and cultural resources and waters of the U.S., have no visual impact, and cause no displacements. However, the No Build Alternative does not meet the Purpose and Need for the Project.

### 4.1 Changes to this Chapter since the Draft Environmental Impact Statement

This chapter has been updated to include analyses of the effects of the Project on the natural and built environments as compared to the No Build Alternative. Table 4-1 includes updated mitigation commitments for the Project and identifies unavoidable adverse environmental effects (see Appendix I, Mitigation and Commitments).

This chapter has been revised to reflect identification of the Airport Alternative as the Preferred Alternative. The Project refers to the Fixed Guideway Transit Alternative via the Airport that was evaluated in the Draft Environmental Impact Statement (EIS). The alignment was refined to transition from Aolele Street to Ualena Street
Figure 4-1  Project Overview
<table>
<thead>
<tr>
<th>Table 4-1</th>
<th>Summary of Direct Environmental Effects and Mitigation Measures to Avoid, Minimize, or Reduce Impacts (continued on next page)</th>
</tr>
</thead>
</table>
| **Land Use, Section 4.2** | **Environmental Effects** | Approximately 160 acres of existing land use will be converted to transportation use. Included are 88 acres of prime and statewide-important farmlands. This is less than one-tenth of one percent of available agricultural land on O`ahu. The Project is consistent with future land use plans and policies.  
The land needed for the Project represents approximately 1 percent of the total acreage within the study corridor. The land uses being converted are agricultural (42 percent), public (35 percent), and commercial (18 percent) with about 5 percent of the land conversions from residential use. |
| **Mitigation Measures** | Since the Project is consistent with adopted land use plans and policies, no mitigation is required. |
| **Probable Unavoidable Adverse Environmental Effects** | No unavoidable adverse environmental effects are anticipated. |
| **Economic Activity, Section 4.3** | **Environmental Effects** | For the Project, property will be acquired from private owners and converted to a transportation use that will be owned by the City. This will result in a direct reduction in annual property tax revenues. These reductions are estimated to be $1.2 million annually. The Project is not expected to result in substantial long-term adverse effects on property tax revenues. |
| **Mitigation Measures** | No mitigation is required. |
| **Probable Unavoidable Adverse Environmental Effects** | No unavoidable adverse environmental effects are anticipated. |
| **Acquisitions, Displacements, and Relocations, Section 4.4** | **Environmental Effects** | Acquisitions: 40 full, 159 partial  
Displacements: 20 residences, 67 businesses, 1 church |
| **Mitigation Measures** | Where acquisition of property will occur, compensation will be provided to affected property owners, businesses, or residents in compliance with all applicable Federal and State laws and will follow the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act. |
| **Probable Unavoidable Adverse Environmental Effects** | No unavoidable adverse environmental effects are anticipated. |
| **Community Services and Facilities, Section 4.5** | **Environmental Effects** | There will be impacts to schools, libraries, churches, parks, and recreational facilities adjacent to the alignment that are detailed below. There will be partial acquisition or use of land at 14 community facilities and displacement of 1 church.  
The Project will not affect the operation of the community facilities where partial acquisition is required, and the church will receive relocation assistance.  
A number of properties owned by utility providers will be affected by partial acquisitions, and some utilities will be relocated and/or modified to accommodate the Project. |
| **Mitigation Measures** | Buildings, parking, lighting, fencing, and other features will be replaced or compensation will be provided.  
Where acquisition of property will occur, compensation will be provided to affected property owners in accordance with all applicable Federal and State laws and will follow the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act. |
<p>| <strong>Probable Unavoidable Adverse Environmental Effects</strong> | No unavoidable adverse environmental effects are anticipated. |</p>
<table>
<thead>
<tr>
<th><strong>Neighborhoods, Section 4.6</strong></th>
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<tr>
<td><strong>Environmental Effects</strong></td>
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<tr>
<td><strong>Mitigation Measures</strong></td>
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<tr>
<td><strong>Probable Unavoidable Adverse Environmental Effects</strong></td>
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<tr>
<th><strong>Environmental Justice, Section 4.7</strong></th>
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<tr>
<td><strong>Environmental Effects</strong></td>
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<tr>
<td><strong>Mitigation Measures</strong></td>
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<tr>
<td><strong>Probable Unavoidable Adverse Environmental Effects</strong></td>
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</tbody>
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<tr>
<th><strong>Visual and Aesthetic Conditions, Section 4.8</strong></th>
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<tr>
<td><strong>Environmental Effects</strong></td>
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<td><strong>Mitigation Measures</strong></td>
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<tr>
<td>Probable Unavoidable Adverse Environmental Effects</td>
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<tr>
<td><strong>Air Quality, Section 4.9</strong></td>
</tr>
<tr>
<td>Environmental Effects</td>
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<tr>
<td>Mitigation Measures</td>
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<tr>
<td>Probable Unavoidable Adverse Environmental Effects</td>
</tr>
<tr>
<td><strong>Noise and Vibration, Section 4.10</strong></td>
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<tr>
<td>Environmental Effects</td>
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<td>Mitigation Measures</td>
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<tr>
<td>Probable Unavoidable Adverse Environmental Effects</td>
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<tr>
<td><strong>Energy and Electric and Magnetic Fields, Section 4.11</strong></td>
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<tr>
<td>Environmental Effects</td>
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<tr>
<td>Mitigation Measures</td>
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<tr>
<td>Probable Unavoidable Adverse Environmental Effects</td>
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<tr>
<td><strong>Hazardous Waste and Materials, Section 4.12</strong></td>
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<tr>
<td>Environmental Effects</td>
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<tr>
<td>Mitigation Measures</td>
</tr>
<tr>
<td>Probable Unavoidable Adverse Environmental Effects</td>
</tr>
</tbody>
</table>
### Table 4-1 Summary of Direct Environmental Effects and Mitigation Measures to Avoid, Minimize, or Reduce Impacts (continued from previous page)

<table>
<thead>
<tr>
<th>Ecosystems, Section 4.13</th>
<th>Environmental Effects</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>There will be “no effect” to threatened, endangered, or protected species or designated critical habitats.</td>
<td>The City will secure a Certificate of Inclusion for the Habitat Conservation Plan from the Hawai<code>i Department of Transportation for Ko</code>oloa`ula (<em>Abutilon menziesii</em>), if needed, and will comply with the measures identified by USFWS in the current and/or amended Habitat Conservation Plan. The City will survey all large canopy trees to be pruned prior to construction to ensure that no trees have white tern chicks.</td>
</tr>
</tbody>
</table>

| Probable Unavoidable Adverse Environmental Effects | No unavoidable adverse environmental effects are anticipated. |

<table>
<thead>
<tr>
<th>Water, Section 4.14</th>
<th>Environmental Effects</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>There will be effects to five streams from construction of guideway support columns below the ordinary high-water mark, which will affect approximately 0.02 acre of waters of the U.S. (linear transportation features) and 0.06 acre of other project features. Effects to wetlands will include shading from the guideway. As a result of rainfall collecting on impervious surfaces where infiltration currently occurs, there will be increases in stormwater runoff, which will be managed with best management practices. There will be no adverse effects to marine waters, groundwater, or floodplains.</td>
<td>Permanent mitigation features to Waialua Stream include enhancement, establishment of water quality basin, ecological restoration with native Hawaiian plantings, extension of existing culvert, and enhancement of floodway capacity conveyance to achieve zero rise in flood zone. Where the Project crosses an estuary reach and placement of columns cannot be avoided, the columns will align with existing columns. Best management practices will be used to control the quality of stormwater runoff.</td>
</tr>
</tbody>
</table>

| Probable Unavoidable Adverse Environmental Effects | No unavoidable adverse environmental effects are anticipated. |

<table>
<thead>
<tr>
<th>Street Trees, Section 4.15</th>
<th>Environmental Effects</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Tree removal will be minimized to the greatest extent possible, but pruning is likely next to the guideway. Twenty-eight “Notable” true kamani trees along Dillingham Boulevard will be removed. Approximately 100 street trees will be pruned, 550 will be removed, and 300 will be transplanted.</td>
<td>Mitigation measures will consist of transplanting existing trees or planting new ones. Pruning will be in compliance with City and County ordinances and require supervision by a certified arborist. The City will coordinate with the State of Hawai`i Department of Transportation landscape architect.</td>
</tr>
</tbody>
</table>

| Probable Unavoidable Adverse Environmental Effects | Street trees will be removed in areas where they are not compatible with the Project. |

<table>
<thead>
<tr>
<th>Archaeological, Cultural, and Historic Resources, Section 4.16</th>
<th>Environmental Effects</th>
<th>Mitigation Measures</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>There will be adverse effects to 33 historic properties and effects to 4 cultural resources.</td>
<td>The draft Section 106 Programmatic Agreement (PA) was developed in consultation among the consulting parties. The Section 106 process identified historic properties potentially affected by the Project, assessed effects, and sought ways to avoid, minimize, or mitigate any adverse effects for properties included in, or eligible for inclusion in, the National Register of Historic Places. The draft PA records the terms and conditions agreed upon to resolve potential adverse effects and is attached to this Final EIS in Appendix H. The Section 106 signatories (FTA, SHPO, and ACHP) clarified the language in the draft PA and, in May 2010, FTA distributed the draft PA to the Section 106 consulting parties for informational purposes. FTA, SHPO, and ACHP, in coordination with the invited signatories, will finalize this draft PA prior to the ROD. FTA will distribute the executed PA to the Section 106 consulting parties and invite their signatures as concurring parties to the PA.</td>
</tr>
</tbody>
</table>

| Probable Unavoidable Adverse Environmental Effects | While mitigation will be provided for all adverse effects, the Project will still require demolition of three historic buildings. |
about 2,000 feet ‘Ewa of the Lagoon Drive Station to avoid the central portion of the runway protection zone at Honolulu International Airport. This design refinement has been evaluated using the same criteria and methodology as all sections in this chapter and will not create any significant effects to the natural and built environment. Extensive coordination with the Federal Aviation Administration (FAA) and the State of Hawai‘i Department of Transportation (HDOT) has been conducted as part of this design refinement.

Since publication of the Draft EIS, design has been advanced, further analysis has been completed, and information has been added in response to comments on the Draft EIS and agency coordination. The sections in Chapter 4 have been renumbered and are listed below using the new Final EIS section number. The changes are summarized below.

Section 4.2, Land Use—acreage of land converted from existing use to transportation use was updated based on design refinement. The Honolulu International Airport Layout Plan (ALP) (HDOT 1995b) was added to this section.

Section 4.3, Economic Activity—no changes.

Section 4.4, Acquisitions, Displacements, and Relocations—the number of partial and full acquisitions and displacements was updated based on design refinement and coordination with property owners. Appendix B, Conceptual Right-of-Way Plans (in the Draft EIS), has been updated and is now Appendix C, Preliminary Right-of-Way Plans, for this Final EIS. Appendix C reflects design revisions since the Draft EIS and includes acquisitions, displacements, and general land use type. This was added to Appendix C to provide additional information to affected property owners.

Section 4.5, Community Services and Facilities—minor updates were made to this section to confirm community facilities adjacent to the alignment. Impacts and mitigation commitments were updated to reflect design refinements.

Section 4.6, Neighborhoods—discussion of the neighborhoods along the Salt Lake Alternative alignment was removed from this section.

Section 4.7, Environmental Justice—public outreach coordination with the O‘ahu Metropolitan Planning Organization (O‘ahuMPO) Environmental Justice populations and the Banana Patch community during the Draft EIS comment period is described, and an Environmental Justice determination was added.

Section 4.8, Visual and Aesthetic Conditions—viewer group responses on the Draft EIS resulted in the refinement of the visual impact rating for several key views. Several additional simulations were added to illustrate project effects discussed in the Draft EIS. Mitigation commitments were updated and include measures to integrate project elements with surroundings. Also, discussion of unavoidable adverse environmental effects was added.

Section 4.9, Air Quality—air quality emission values were updated based on updated vehicle-miles-traveled data. An analysis of greenhouse gas emissions for the Project was added.

Section 4.10, Noise and Vibration—additional noise analysis was completed along the Airport Alternative alignment, for the maintenance and storage facility site options, and at high-rise buildings; mitigation commitments were further detailed. Additional noise analysis was also completed at the Honolulu International Airport when the Airport Alternative became the Preferred Alternative. At the request of the National Park Service, additional noise analysis was completed at three locations at the Arizona Memorial; after mitigation, no impact is expected from the Project.
Section 4.11, Energy and Electric and Magnetic Fields—energy demand was updated based on new vehicle-miles-traveled data.

Section 4.12, Hazardous Waste and Materials—additional information about probable contaminated sites and mitigation commitments was expanded in case hazardous materials are found prior to acquisition of properties.

Section 4.13, Ecosystems—changes were made to reflect agency coordination regarding inclusion in the HDOT Habitat Conservation Plan for ko’ola’ula (Abutilon menziesii) (HDOT 2004) and informal consultation with the U.S. Fish and Wildlife Service (USFWS) on “no effect” to threatened and endangered species or designated critical habitats related to the Project.

Section 4.14, Water—this section was revised to include U.S. Coast Guard (USCG) and U.S. Army Corps of Engineers (USACE) input on navigable waters and waters under the jurisdiction of the USACE. Impacts and mitigation to waters of the U.S. were added based on design refinements and agency coordination since the Draft EIS.

Section 4.15, Street Trees—mitigation was refined to include coordination between the City and HDOT’s highway landscape architect and gives further transplant mitigation details.

Section 4.16, Archaeological, Cultural, and Historic Resources—historic resources in the Area of Potential Effects (APE) were reevaluated following publication of the Draft EIS as a result of ongoing Section 106 consultation. The Historic Effects Report (RTD 2009d) was completed, and an effects determination recommended by the State Historic Preservation Officer (SHPO) was accepted by the FTA for the Project and the properties in the vicinity of the airport that were evaluated based on the refined design. The effects determination of the 81 historic resources are presented; the discussion of Section 106 consultation has been updated; and mitigation was added in accordance with the draft Programmatic Agreement (PA). Note: In the State of Hawai’i, the governor appoints the SHPO. The SHPO is the Chairperson of the Department of Land and Natural Resources (DLNR). The State Historic Preservation Division (SHPD) is a division within DLNR, and it is also where the deputy SHPO is located. In fulfilling Federal and State historic preservation requirements, the Project consulted with the SHPO through the SHPD. SHPD and SHPO are used interchangeably throughout this chapter unless otherwise indicated.

Section 4.17, Maintenance and Storage Facility—the site near Leeward Community College is identified as the preferred site for the maintenance and storage facility. A second site in Ho’opili remains an option. Impacts and mitigation were revised to reflect design refinement of the preferred option.

Section 4.18, Construction Phase Effects—the section was revised to update effects and mitigation based on design refinements, agency coordination, and comments raised during the Draft EIS public comment period. A new section on invasive species was added as a result of agency comments and coordination. An updated schedule and cost estimates was used to estimate the annual employment impacts from construction.

Section 4.19, Indirect and Cumulative Effects—the section was updated to reflect adoption of the new City Transit-Oriented Development Ordinance 09-4 (ROH 2009). Additional detail is included on planned and foreseeable development. The indirect effect of the Project on growth and development and cumulative effects was expanded in the Final EIS.

Section 4.20, Irreversible and Irretrievable Commitments of Resources—irreversible and
irretrievable commitments of natural and cultural resources was added.

Section 4.21, Anticipated Permits, Approvals, and Agreements—this section was revised to include permits, approvals, and agreements needed and notes the status of each permit as of the date of this Final EIS. The table also identifies the party responsible for submitting the permit, approval, or agreement.

4.2 Land Use
This section describes the existing land uses, including farmlands, development trends, and long-term plans for the study corridor. It also evaluates the Project’s consistency with the long-term plans for the study corridor. An assessment of potential changes in land use that could result from the improved mobility that will be provided by the long-term operation of the Project is presented in Section 4.19. For additional information and references, see the Honolulu High-Capacity Transit Corridor Project Land Use Technical Report (RTD 2008b), the Honolulu High-Capacity Transit Corridor Project Neighborhoods and Communities Technical Report (RTD 2008d), and Appendix J, Relationship to Land Use Plans, Policies, and Controls. Farmlands are described in detail in the Honolulu High-Capacity Transit Corridor Project Geology, Soils, Farmlands, and Natural Hazards Technical Report (RTD 2008m).

4.2.1 Background and Methodology
A variety of data sources, including field surveys, were used to record existing land uses on properties adjacent to and within close proximity of the study corridor.

For farmlands, this investigation documented the location of existing properties that are actively cultivated and also checked information published by the U.S. Department of Agriculture (USDA), Natural Resources Conservation Service (NRCS), to determine if properties in the study corridor have been designated as prime, unique, or of statewide importance.

Additionally, government documents related to planned transportation improvements and land development were reviewed to assess the future context of the Project in the urban environment. The Project was also evaluated to determine consistency with adopted coastal zone management and development plans and policies.

4.2.2 Affected Environment

Existing Land Use
Table 4-2 provides an overview of existing land use within the study corridor in the planning areas delineated by the City and County of Honolulu General Plan (as amended) (DPP 2002a). Figure 4-2 illustrates the location of these planning areas and shows the future planned land uses. The corridor traverses through three major planning areas—‘Ewa, Central O‘ahu, and the Primary Urban Center (PUC).

The ‘Ewa Development Plan (DPP 2000) was the first of the conceptual development plans to be adopted by the City. Significant growth in population and employment are projected for the ‘Ewa area by 2030.

The ‘Ewa region is a rural and agricultural area that is undergoing urbanization and includes Kapolei, which is developing as O‘ahu’s “second city.” The Wai‘anae terminal station for the Project is at East Kapolei. The Wai‘anae end of the Project will serve the area where both population and employment are forecasted to grow by approximately 400 and 300 percent, respectively. Some of the new developments in this area include the University of Hawai‘i (UH) at West O‘ahu campus, the Salvation Army Kroc Center, and the Ho‘opili master planned development.

Commercial space in ‘Ewa is anticipated to increase to 7.1 million square feet (compared
<table>
<thead>
<tr>
<th>Planning Area</th>
<th>Land Use Overview</th>
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</thead>
<tbody>
<tr>
<td><code>Ewa—includes Kapolei-</code>Ewa and Makakilo</td>
<td>`Ewa, previously a predominantly agricultural area, is now being developed rapidly into single-family and garden-style apartment residential uses, as well as some light industrial and commercial uses. A number of State and Local government offices, as well as some light industry, have moved to Kapolei.</td>
</tr>
<tr>
<td>Central O<code>ahu—includes Waipahu-Waik</code>ele and Waiawa²</td>
<td>Waipahu, the portion of the Central O<code>ahu planning region nearest the Project, is comprised of moderate-density residential, commercial, and light industrial uses. Waipahu’s commercial and light industrial uses are mostly clustered along Farrington Highway. Other portions of the Central O</code>ahu planning region within the study corridor include lower-density residential developments and some commercial and light industrial areas in Waik`ele and Kunia. The Waiawa and Koa Ridge areas remain largely undeveloped at this time.</td>
</tr>
<tr>
<td>Primary Urban Center—includes Pearl City-<code>Aiea, Salt Lake-Āliamanu, Airport-Pearl Harbor, Kalihi-Iwilei, Palama-Liliha, Downtown, Kaka</code>ako, Makiki-Mānoa, Mō<code>ili</code>ili-`Ala Moana</td>
<td>The Primary Urban Center is a wide-ranging development region stretching from Pearl City through Salt Lake, Honolulu International Airport, Downtown, and Kaka<code>ako to the Koko Head end of the study corridor. The uplands in this area are dominated by single-family residential uses while the coastal plain has a broader range of uses. Land uses in the Pearl Highlands and Pearlridge Station areas include big-box retail, a regional shopping center, health services, smaller commercial and industrial uses, and apartments. The Aloha Stadium Station area is dominated by the stadium and nearby military uses, but some civilian residential development and neighborhood shopping centers are also present. All the station areas along the Airport Alignment are dominated by military, military housing, airport, or light industrial uses. As the corridor approaches Downtown, moderate- to high-density uses become more prominent. The four station areas in Kalihi and Iwilei are dominated by residential and commercial uses with commercial uses generally increasing closer to Downtown. The Chinatown and Downtown areas are comprised of high-density uses, including major office buildings, retail, and high-density condominiums. Federal, State, and Local government offices are also located near the Downtown and Civic Center Stations. Adjacent to Downtown, Kaka</code>ako contains a mix of large retail uses, industrial uses, restaurants, and theaters. Ala Moana Center has 1.8 million square feet of retail space; this area is dominated by this shopping center. Big-box retailers, medical, smaller commercial development, hotel, and residential uses are also in this area.</td>
</tr>
</tbody>
</table>

¹ Land uses described include current uses within the study corridor.
² Planning area extends beyond the study corridor.
Figure 4-2  Planning Regions and Planned Land Use
to 8.4 million square feet existing in Honolulu today). The new UH West O‘ahu campus will support pedestrian access to and from a major transit node on North-South Road. The campus is projected to have 7,600 students and 800 staff and faculty by 2020. Central O‘ahu has a suburban development pattern encompassing smaller cities and community centers. Only part of the Central O‘ahu planning area is within the study corridor. The Central O‘ahu Sustainable Communities Plan (DPP 2003) establishes a Central O‘ahu Urban Community Boundary (UCB) that protects agricultural lands and open space and focuses planned urban development within its boundaries. This plan calls for moderate density/mid-rise housing and commercial development within walking distance of two major nodes and transit stations in Waipahu.

The PUC Development Plan (DPP 2004a) area encompasses the most urbanized part of the island, including Downtown Honolulu. Figures 4-3 through 4-6 show existing land uses within one-half mile of the project alignment. The ‘Aiea-Pearl City Livable Communities Plan (DPP 2004b) and the Kaiāulu ‘o Kaka‘ako Master Plan (HCDA 2008) are two of the special community plans within the PUC.

**Farmlands**

Much of the study corridor is currently developed, and only a small portion of the corridor—primarily in the ‘Ewa Development Plan area—consists of land that is currently used for agriculture.

The ‘Ewa Plain, which is contained within the ‘Ewa Development Plan area and includes properties surrounding the Project, was once a major agricultural area. Prior to 1995, the primary crop had been sugar cane. Despite recent rapid urbanization, much of the ‘Ewa Plain is still classified or zoned for agricultural use by either the State of Hawai‘i or the City. Much of ‘Ewa that is not developed is also classified as “prime agricultural land.” The ‘Ewa Development Plan (DPP 2000) includes an agricultural preservation area as illustrated on Figure 4-7. A small amount of agricultural land located near Pearl Highlands Station is illustrated in Figure 4-8.

**Future Land Use Plans and Policies**

State, regional, and community plans and policies affecting future land use are currently in place and enforced through zoning and other requirements at State and Local levels. Proactive neighborhood-based plans establish a comprehensive framework for implementing long-range land use policies and goals for O‘ahu’s future. The plans that are relevant to the goals and objectives of providing improved transit services within the study corridor include the following:

- **Hawai‘i Statewide Transportation Plan** (HDOT 2002)—this plan envisions a multi-modal transportation system and promotes transit-supportive development (TSD) in activity centers along the corridor.
- **O‘ahu Regional Transportation Plan 2030** (O‘ahuMPO 2007)—this plan focuses on improving mobility with a series of strategies and programs to address future transportation needs. Within the 2030 planning horizon, this plan calls for a rail transit system that will serve the corridor between Kapolei and Honolulu.
- **City and County of Honolulu General Plan (as amended)** (DPP 2002a)—this plan establishes...
Figure 4-5: Existing Land Use (Aloha Stadium to Kalihi)
Figure 4-7  Designated Agricultural Lands (East Kapolei to Fort Weaver Road)
Figure 4-8 Designated Agricultural Lands (Fort Weaver Road to Aloha Stadium)
transit-supportive objectives and policies for Honolulu’s future and directs future growth on O’ahu to the PUC, Central O’ahu, and ‘Ewa.

Development plans for the PUC and ‘Ewa direct new growth and its supporting transit facilities and TOD to these areas. Sustainable community plans for East Honolulu, Central O’ahu, and other parts of the island focus on supporting the character of these communities and preserving their natural and cultural resources.

The City passed a TOD special district amendment to a land use ordinance (ROH 2009) in March 2009. TOD special districts will restrict development in agricultural and open-space areas and encourage mixed-use, high-density, walkable communities around transit stations. The special districts also encourage public input into the design of TOD neighborhood plans to reflect unique community identities. TOD planning is underway and will occur before the fixed guideway stations are constructed. Developers who desire to build in TOD special districts will be subject to applicable Local, State, and Federal land use laws, which may include compliance with environmental impact statement laws.

4.2.3 Environmental Consequences and Mitigation

**Environmental Consequences**

**Land Use**

No Build Alternative

Under the No Build Alternative, the Project would not be built and would not have any impacts to existing land use. It is assumed that the projects in the ORTP will be built and their environmental impacts will be studied in separate documents. The No Build Alternative is not consistent with local and regional long-range plans.

Project

Approximately 160 acres will be affected by the Project where existing land use will be converted to a transportation use. Only those parcels that will be completely acquired (full acquisition) will result in changes in land use resulting directly from the Project. For some properties, only a small portion of the parcel will be required (partial acquisition), and existing land uses will remain unchanged by the Project. The preferred maintenance and storage facility site option near Leeward Community College is vacant, previously industrial land. The largest potential effect would be displacement of Aloun Farms mauka of Farrington Highway for the proposed 41-acre maintenance and storage facility Ho’opili site option. Traction power substations will be located approximately every mile along the project alignment. A description of the substations is provided in Section 2.5.9. The substations have been placed in roadway rights-of-way, vacant lots, or in rights-of-way that will be acquired for stations and station features. Acquisitions and displacements are discussed in Section 4.4 and included in Appendix C. General land use categories for land that will be acquired or obtained by easement are included in Appendix C.

The acquired acreage for the Project will be approximately 160 acres, which represents approximately 1 percent of the total acreage within the study corridor. A majority of the land uses being converted to a transportation use represent agriculture (42 percent), public (35 percent), and commercial (18 percent). The remaining land conversions (about 5 percent) will be from residential land uses.

Farmlands

No Build Alternative

Under the No Build Alternative, the Project would not be built and would not have any impacts to farmlands designated prime, unique, or agricultural lands of statewide importance. Although the projects in the ORTP are assumed to be built,
their environmental impacts will be studied and reported in separate documents. The adopted 'Ewa Development Plan (DPP 2000), however, has recognized that agricultural lands adjacent to the project alignment will be developed in the future.

Project

The only farmlands that will be acquired for the Project are in the 'Ewa Plain. Because the properties are relatively large, only a small portion of each agricultural parcel will be acquired (Figures 4-7 and 4-8). These figures show the agricultural lands currently in cultivation, as well as agricultural lands that have been designated by USDA, NRCS, or the State of Hawai‘i as prime, unique, or of statewide importance. Some of the designated lands are not currently in active cultivation. Approximately 80 acres of prime farmland and 8 acres of statewide-important farmlands will be acquired by the Project, of which 70 acres are actively cultivated. This acreage is designated for agriculture by County zoning.

All of the affected properties designated as prime, unique, or of statewide importance and/or actively being farmed are owned by individuals, corporations, or agencies that plan to develop them in conformance with the 'Ewa Development Plan (DPP 2000). About half of the agricultural property needed would be for the Ho‘opili maintenance and storage facility. The preferred site for the maintenance and storage facility is, however, the former Navy fuel storage and delivery facility near Leeward Community College. If the Project can acquire this site, about 47 acres of agricultural land designated prime or of statewide importance will be acquired for the Project.

The City coordinated with the Hawai‘i State Office of the NRCS, pursuant to the Farmland Protection Policy Act (USC 1981). As shown on the NRCS-CPA-106 Form for the Project, the total of points is below the established threshold (Appendix F, Record of Agency Correspondence and Coordination).

The 2002 Census of Agriculture (USDA 2004) reported that there are more than 70,000 acres of agricultural land in cultivation on O‘ahu, including those designated as prime, unique, or of statewide importance. The displacement of agricultural lands as a result of the Project represents less than one-tenth of one percent of available agricultural land. Considering that the amount of affected farmland is such a small proportion of all agricultural lands on O‘ahu, including those designated as prime, unique, or of statewide importance, the effect will not be substantial and no mitigation will be required.

Future Land Use Plans and Policies

No Build Alternative

Under the No Build Alternative, a transit system would not be constructed. However, this is not consistent with transportation and land use components in planning documents that support the development of a central transit system within the study corridor. Future projects on the ORTP are assumed to be constructed, and separate environmental documents will be prepared for those projects.

Project

The Project is consistent with the transportation and land use elements of adopted State and Local government plans (see Appendix J, Relationship to Land Use Plans, Policies, and Controls, for more information). The transit system will link Honolulu with outlying developing areas and activity centers that have been designated to receive increasing amounts of future residential and employment growth. The system will provide reliable rapid transit within the study corridor that will serve all population groups, improve transit links, and offer an alternative to the use of private automobiles.
Coastal Zone Management Program
The Federal Coastal Zone Management Act of 1972 (CZMA) was enacted to encourage states to preserve, protect, develop, and, where possible, restore or enhance valuable natural coastal resources. Pursuant to 15 CFR 930.32, federally permitted, licensed, or assisted activities undertaken in or affecting Hawai’i’s coastal zone must be consistent with the CZMA objectives and policies.

The Hawai’i Coastal Zone Management (CZM) program was enacted in 1977 and codified in HRS Chapter 205A and is administered by the State of Hawai’i Department of Business, Economic Development and Tourism (DBEDT) Office of Planning. The Hawai’i CZM area encompasses the entire state, including all marine waters.

Other important elements of the Hawai’i CZM program include a permit system to control development within the Special Management Area (SMA), a relatively narrow zone along the coastline. The SMA permit is administered by the counties of Hawai’i.

The goals of the Hawai’i CZM program are to
- Protect valuable resources
- Preserve management options
- Ensure public access to beaches, recreational areas, and natural reserves

A full CZM consistency assessment will be reviewed by the DBEDT Office of Planning, the agency administering the State’s CZM program, when the City applies for Federal grants and Federal permits to allow construction.

The Project
The Project is consistent with the objectives and policies of the State’s CZM program, as described in the following text.

Recreational Resources
The Project will not affect the existing coastal recreational resources or their uses by the public. Overall, the Project will improve the availability of access to existing and future parks and recreational facilities along the alignment.

Historic Resources
Section 4.16 provides the regulatory context that governs archaeological, cultural, and historic resources and identifies the historic properties eligible for the National Register of Historic Places (NRHP). The City will comply with Federal and State archaeological, cultural, and historic preservation laws and regulations. There are 33 adverse effects on historic properties. A draft PA was prepared in coordination with the SHPO and the Section 106 consulting parties to outline measures to minimize and mitigate Project effects on these resources.

Scenic and Open Space Resources
Section 4.8 identifies the protected mauka and makai views in the study corridor and identifies impacts and mitigation to those views. The Project will introduce a new linear visual element to the corridor and, as a result, changes to some views will be unavoidable. Depending on the degree of view obstruction or blockage, some changes in view will be significant. The View changes will be less notable in wider vista or panoramic views where the project elements are smaller components of the larger landscape. Generally, the project elements will not be dominant features in these views that include the shoreline.

The Coastal View Study (DLU 1987) also considers the creation of new views along with the preservation of existing views. Transit users on the elevated guideway will have expansive panoramic views of the shoreline except where disrupted by trains traveling in the opposite direction, station structures, and multi-story buildings. These views will be similar to those from the street below, but
better due to the elevated perspective (as described in Section 4.8).

**Coastal Ecosystems**

Portions of the Project are in the SMA. An SMA permit will be obtained from DPP for four areas as described in Section 4.21. The only project element in the Shoreline Setback Area will be the stormwater outfall from the maintenance and storage facility preferred site option near Leeward Community College that will drain into Pearl Harbor.

Stormwater discharge into Pearl Harbor will meet water quality requirement for the estuary. Permanent impacts are discussed in Section 4.14.3, and temporary impacts during construction that could affect coastal water quality will be mitigated as described in Section 4.18.

**Economic Uses**

To accomplish the economic development objectives for O’ahu’s urban corridor, suitable infrastructure must be developed as described in Section 4.3.

**Coastal Hazards**

The Project is not located in a tsunami evacuation zone and is being designed to applicable standards and specifications regarding storm weather, seismic events, and associated risks. The Project will not affect coastal erosion (RTD 2008m).

**Managing Development**

The Project will require Federal, State, and City permits and approvals that include provisions for public participation and ensure protection of coastal resources (see Section 4.21). The Project will also provide necessary infrastructure to accommodate existing and planned future travel demand. The Project is consistent with the transportation and land use elements of adopted State and Local government plans.

**Public Participation**

Agencies, non-governmental groups, and the public have been engaged throughout the Project’s planning process, as required by Federal and State law. For more details on public participation opportunities, see Chapter 8, Comments and Coordination.

**Beach Protection**

The Project will not have a direct impact on O’ahu’s beaches and will not affect coastal erosion.

**Marine Resources**

The Project does not affect the sustainability of marine and coastal resources.

**Airport Layout Plan**

The ALP shows the existing airport layout and proposed future development at the airport. The refined alignment was identified by HDOT-Airport Division in an updated ALP and submitted to the FAA for review of airport design standards. The FAA accepted the ALP on April 28, 2010, indicating the ALP shows an acceptable alignment at the airport. The Project will not conflict with airport uses. A preliminary airspace review also indicates that, based on the DTS-submitted rail heights, there are no conflicts with airspace at the airport. An ALP review also indicates the guideway is compatible with airport-related uses.

**Mitigation**

Based on the relatively small number of parcels affected by full acquisitions, the effects on different types of land uses in the study corridor will be minimal. No mitigation measures will be needed.

**4.3 Economic Activity**

This section describes the effect of the Project on regional economics in the study corridor. Existing and future employment and growth in the study corridor were considered in the analysis. In addition, the anticipated changes to property tax revenues that will result from acquisition of
property for the Project were evaluated. Economic effects related to construction are discussed in Section 4.18, and the Project’s financial analysis is presented in Chapter 6, Cost and Financial Analysis. For additional information and references, see the Honolulu High-Capacity Transit Corridor Project Economics Technical Report (RTD 2008c).

4.3.1 Background and Methodology

Regulatory Context

Regulations applicable to this analysis are as follows:

- Definition of Real Property Tax Rates—Real Property Tax Rate Tables, City of Honolulu, Department of Budget and Fiscal Services, Real Property Assessment Division
- Definitions of Real Property Tax Classifications—Revised Ordinances of Honolulu, Chapter 8

Methodology

Employment trends and forecasted growth were reviewed for the three development and sustainable plan areas in the study corridor—PUC, ‘Ewa, and Central O’ahu. The data were obtained from the O’ahu Regional Transportation Plan data and DBEDT.

Based on land acquisition information identified in Section 4.4, changes in tax revenue were estimated using the City’s 2008 tax rates.

4.3.2 Affected Environment

Employment

The PUC has more jobs than any area on O’ahu or in the State, accounting for 74 percent of the State’s total non-farm employment. Employment is primarily dependent on the tourism industry, although the professional and business services sectors are growing and currently account for 14 percent of total non-farm employment.

In general, employment in O’ahu and in the study corridor is expected to increase at a compound annual growth rate of approximately 1 percent per year between 2000 and 2030 (Table 4-3). In particular, growth in high-tech jobs in the sectors of biotechnology, research and development, and professional and business services is expected. According to DBEDT’s second-quarter 2008 forecasts, visitor arrivals will decrease in 2008 and stabilize in 2009. However, tourism will continue to be the largest industry and job generator on O’ahu.

As O’ahu’s emerging “second city,” the ‘Ewa and Kapolei areas are expected to experience the most growth in the study corridor (DPP 2000). This is due in large part to several major residential, governmental, and education projects currently under development. In particular, residential growth in West O’ahu is expected to result in the need for additional population-serving employment, such as retail and service jobs.

**Real Property Tax**

For the fiscal year ending June 30, 2007, real property tax revenues totaled $685,868,000. This comprised approximately 70 percent of total revenues for the General Fund, which is the primary funding source for the City’s operating budget, and accounts for more than 60 percent of all City revenues. Other budget funds, including the Highway Fund, Sewer Fund, and Liquor Commission Fund, have different sources of revenue and collectively comprise less than 40 percent of the total budget.

<table>
<thead>
<tr>
<th>Table 4-3</th>
<th>Forecast Employment for the Project Region and Study Corridor</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2000</td>
</tr>
<tr>
<td>O’ahu</td>
<td>501,100</td>
</tr>
<tr>
<td>Study corridor</td>
<td>399,300</td>
</tr>
</tbody>
</table>

Source: O’ahu Regional Transportation Plan Data, Department of Business, Economic Development and Tourism.
4.3.3 Environmental Consequences and Mitigation

Environmental Consequences

No Build Alternative

Under the No Build Alternative, the Project would not be constructed. There would not be a conversion of property and associated reduction in tax base. This alternative would result in increased traffic congestion and delays with an associated loss in productivity.

Project Employment

The Project will require the acquisition of some commercial and industrial properties. This will displace the businesses using the properties as well as their employees. However, it is anticipated that these businesses will be relocated to new sites.

Once constructed, the Project will employ workers for maintenance and operation of the system. It is anticipated that workers will be hired from the existing local labor force and trained to meet job requirements. The number of new workers will be small compared to the total labor force on O‘ahu and is included in the operating and maintenance costs for the Project. Workforce costs are included in the operating and maintenance cost estimates discussed in Section 6.4.1. Employment related to construction of the Project is discussed in Section 4.18.

Real Property Tax

For the Project, property will be acquired from private owners and converted to a transportation use that is owned by the City. This will result in a direct reduction in annual property tax revenues. These reductions are estimated to be $1.2 million as a result of the Project. A more detailed table of results is included in the Economics Technical Report (RTD 2008c). Section 4.19 discusses the potential indirect economic effects of new development and redevelopment near the project alignment and around the stations, which could have a beneficial effect on the regional economy.

Mitigation

The Project is not expected to result in long-term adverse effects on the economy or property tax revenues. No mitigation measures will be needed.

4.4 Acquisitions, Displacements, and Relocations

This section documents the effects on properties from required right-of-way acquisition for the Project. For additional information and references, see the Honolulu High-Capacity Transit Corridor Project Land Use Technical Report (RTD 2008b) and the Honolulu High-Capacity Transit Corridor Project Neighborhoods and Communities Technical Report (RTD 2008d).

4.4.1 Background and Methodology

Regulatory Context

Federal and State laws govern the acquisition of property for transportation projects. The Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (49 CFR 24), requires all Federal agencies to meet certain standards for the fair and equitable treatment of persons displaced by federally supported actions. The USDOT’s regulations implementing this act require that relocation and advisory assistance be provided to all individuals and businesses displaced and that it be done in accordance with the provisions set forth in 49 CFR 24. Comparable housing that is decent, safe, and sanitary must be available and affordable for displaced persons, and commercial space must be available for displaced businesses. It also prohibits discrimination with regard to appraisals and acquisitions of properties. HRS Chapter 101, Eminent Domain, and HRS Chapter 113, Land Acquisition Policies for Federally Assisted Programs, encompass these Federal regulations.
**Methodology**

The parcels that could be affected by the Project were identified based on preliminary engineering drawings prepared for the Project. Generally, if only a portion of the property will be required and remain usable, then it is considered a partial acquisition. However, if a substantial amount of the land or the primary structure is located within the portion of the parcel to be acquired, then the entire property will be purchased. This is referred to as a full acquisition. For residential properties, if the right-of-way line comes within approximately 5 feet of a residential structure, it is considered a full acquisition. If the right-of-way line is more than 5 feet away, it is generally considered a partial acquisition. For commercial properties, including situations where the commercial property could lose its function, full acquisition will be considered. Once it is determined that a parcel will be acquired, the displacement and relocation of residences, businesses, and uses will be analyzed. Lands needed for the guideway columns and other project features are considered property acquisitions and will be processed within the limits of the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970. DTS will coordinate with property owners with regard to acquisition, easement, or lease of land. Information regarding the amount of acreage needed for the Project, the number of parcels to be acquired, the type of acquisition (partial or full), the type of uses affected, and the number of dwelling units and businesses that will be relocated were included in the analysis.

Most of the information used to assess the types of land uses that will be affected by displacements and relocations was based on property tax assessment records. This information was used to determine land use type, including residential structures and units, commercial-type structures, and square footage. In addition to reviewing real property tax records, a windshield survey was conducted in May 2009 to determine the number of businesses and, in some cases, residential units that will be acquired.

**4.4.2 Affected Environment**

The project alignment traverses a variety of different land uses and different urban, suburban, rural, and agricultural environments as described in Section 4.2.

Some land within the study corridor has been designated as ceded land. Ceded lands are those crown, public, and government lands that were once held by the Kingdom of Hawai‘i. With the annexation of Hawai‘i in 1896, 1.8 million acres were ceded to the Federal government. In 1959, the Federal government granted absolute title to approximately 1.2 million acres of ceded lands to the State. These lands are held by the State as a public trust.

**4.4.3 Environmental Consequences and Mitigation**

**Environmental Consequences**

**No Build Alternative**

Under the No Build Alternative, the Project would not be built and would not have any impacts to residential or commercial properties. Although the projects in the ORTP will be built, their environmental impacts will be studied in separate documents.

**Project**

Table 4-4 summarizes the number of partial and full parcel acquisitions required for the Project. Appendix C provides information on a parcel-by-parcel basis for partial and full acquisitions anticipated for the Project.

A partial acquisition typically is either a narrow strip of land or a more substantial portion of a large parcel. It is assumed that for the properties that will be partially acquired, existing land uses will not change.
Full acquisition of land will result in displacements and relocations. Displacement means that the land, including any structures, will be acquired and converted to transportation use and the user of that property will be relocated.

Table 4-4 also shows the number of residential units, commercial and industrial businesses, and a church located on the parcels that will be displaced as a result of the anticipated full acquisitions.

Considering that there are approximately 780 parcels adjacent to the alignment, the full acquisitions and displacements from the Project will be a small change to the commercial and residential elements along the alignment. While displacements of residential and commercial properties may be difficult for the individuals involved, the number of displacements for a project of this length and magnitude will not have a substantial effect.

For land designated as ceded lands within the project right-of-way, ownership of these lands will not change. The City will obtain the appropriate permissions from the State for any ceded lands needed for the Project.

**Mitigation**

Where relocations will occur, compensation will be provided to affected property owners, businesses, or residents in compliance with all applicable Federal and State laws and will follow the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act (49 CFR 24). The following measures will be implemented for relocations:

- The City will assist all affected persons in locating suitable replacement housing and business sites within an individual’s or business’s financial means.
- A minimum 90-day written notice will be provided before any business or resident will be required to move.
- Relocation services will be provided to all affected business and residential property owners and tenants without discrimination; persons, businesses, or organizations that are displaced as a result of the Project will be treated fairly and equitably.
- Where landscaping, sidewalks, and driveway access will be affected by the Project, coordination will occur with the landowner, and these property features will be replaced and/or the property owner will be compensated in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.

### 4.5 Community Services and Facilities

This section describes the community services and facilities, public services, and utilities in the study corridor and the potential effects on these resources for the Project as compared to the
No Build Alternative. Community facilities are schools, libraries, religious institutions, cemeteries, government institutions, and military installations. Public and private parks and recreational facilities include pedestrian trails, golf courses, regional recreational complexes, community and neighborhood parks, memorial parks, and a major sports stadium. Public services include police, fire, hospitals and emergency medical services, and transit (bus). Utilities include electricity, natural gas, telecommunications, and surface water management. For additional information and references, see the *Honolulu High-Capacity Transit Corridor Project Neighborhoods and Communities Technical Report* (RTD 2008d).

**4.5.1 Background and Methodology**

**Regulatory Context**

Section 6(f) of the *Land and Water Conservation Fund Act of 1965* (16 USC 4601 et seq.) was created to preserve, develop, and increase accessibility of outdoor recreational resources. In the case of a transportation project, Section 6(f) protects recreational properties that were constructed with Land and Water Conservation Fund (LWCF) funds from being converted to transportation use. Section 4(f), as amended, of the USDOT Act of 1966 (49 USC 303) protects public parks and recreational lands, wildlife refuges, and historic sites of National, State, or Local significance.

The National Park Service’s Federal Lands to Parks program conveys surplus Federal land to communities under Section 203(k)(2) of Public Law 91-485, as amended (40 USC 484). The program helps ensure continued public access and stewardship of resources and, for public park and recreational purposes, is usually done at no cost.

**Methodology**

Community services and facilities within one-half mile of the project alignment were identified via Geographic Information System (GIS) information provided by the City, Internet sources, and field verification. Parks and recreational facilities within one-half mile of the alignment were identified based on information from the City General Plan (DPP 2002a), the Department of Planning and Permitting (DPP), the Department of Parks and Recreation (DPR), land use and zoning plans, DLNR, and field visits. Public services within one-half mile of the project alignment also were identified from the information above. These included fire stations, police stations, and hospitals.

Right-of-way acquisition and displacement impacts were analyzed to assess if community services and facilities, public service buildings, and/or public services would be disrupted or changed as a result of long-term operation of the Project. If right-of-way would be required, it was then determined whether full or partial acquisition would be required and the types of facilities and amenities that would be displaced by property acquisition (see Section 4.4 for information on acquisitions).

**4.5.2 Affected Environment**

The following sections describe existing community facilities, parks and recreational facilities, public services, and utilities within one-half mile of and along the project alignment. Figures 4-9 through 4-12 illustrate the general location of existing religious institutions, police and fire services, hospitals and medical facilities, libraries, schools, parks, and recreational facilities within one-half mile of the project alignment. These figures identify, by name, facilities affected by the Project.

**Community Facilities**

Many community facilities are within one-half mile of the project alignment and station areas. Some are on large parcels with associated recreational amenities or large parking facilities. Others are buildings or structures located on small parcels. Only a few community facilities are located in the 'Ewa area because of its rural,
Figure 4-9  Community Resources and Facilities within One-half Mile (East Kapolei to Fort Weaver Road)
Figure 4-10  Community Resources and Facilities within One-half Mile (Fort Weaver Road to Aloha Stadium)
Figure 4-11  Community Resources and Facilities within One-half Mile (Aloha Stadium to Kalihi)
Figure 4-12 Community Resources and Facilities within One-half Mile (Kalihi to Ala Moana Center)
agricultural environment. In contrast, substantial numbers of community facilities are clustered in Central O’ahu and the PUC, including the dense urban environment of Downtown Honolulu.

Many different types of community facilities are within one-half mile of the project alignment. These include schools, libraries, churches, hospitals, parks and recreational areas, and cemeteries. Each is noted below.

**Schools**
There are 46 schools within one-half mile of the project alignment. The following 11 schools are adjacent to the alignment:

- Waipahu Intermediate
- St. Joseph Elementary (private)
- Waipahu High School
- Leeward Community College
- UH Mānoa Urban Garden Research Center
- Pearl City Elementary
- Joy of Christ Preschool (private)
- Holy Family Catholic Academy (private)
- Kalihi Kai Elementary
- Kalākaua Middle School
- Honolulu Community College

Public schools also typically have recreational amenities, including baseball diamonds, soccer fields, and gymnasiums. However, these types of recreational resources are considered a community facility, not a park, because their primary use is public education, not recreation.

**Libraries**
Five libraries are within one-half mile of the project alignment. There are no libraries adjacent to the Project.

**Religious Institutions**
Approximately 82 religious institutions are within one-half mile of the project alignment. Fifteen of these are adjacent to the project alignment. They are listed in Table 4-5 with addresses.

**Cemeteries**
Five cemeteries are located within one-half mile of the project alignment. One cemetery near Aloha Stadium and one near Waimano Home Road are adjacent to the project alignment.

**Government and Military Facilities**
For many decades, a sizable Federal government presence has been located on O’ahu. The project alignment is adjacent to Pearl Harbor Naval Station, Hickam Air Force Base, and Fort Shafter Military Reservation. Land uses within these installations nearest the project alignment are primarily for housing, offices, or recreation.

There are both Local government and Federal office buildings adjacent to the project alignment, as well as Honolulu International Airport (a State facility). In addition, a correctional facility, a post office, and several public housing complexes are in the study corridor.
In addition to military facilities, the following government-owned facilities are adjacent to the project alignment:

- Pearl City Post Office
- Honolulu Post Office
- Honolulu International Airport
- Ke'ehi Transfer Station
- O'ahu Community Correctional Facility
- Prince Jonah Kūhiō Kalaniana'ole Federal Building

**Parks and Recreational Facilities**

There are approximately 53 parks and recreational facilities within one-half mile of the project alignment, including two future parks. These parks and recreational resources are scattered throughout the area and include large regional or community facilities exceeding 100 acres, as well as smaller neighborhood resources less than one-half acre in size. They include pedestrian trails, golf courses, regional recreational complexes, community and neighborhood parks, memorial parks, national monuments, and a major sports stadium. These facilities include publicly owned resources, some of which are on military bases where public access is restricted, as well as resources that are privately owned. Of these 53 facilities, 14 are directly adjacent to the project alignment right-of-way:

- West Loch Golf Course (public)
- Pearl Harbor Bike Path
- Future Middle Loch Park
- Neal S. Blaisdell Park (public)
- 'Aiea Bay State Recreation Area (public)
- Walker Park (public)
- Irwin Memorial Park (public)
- Mother Waldron Neighborhood Park (public)
- Aloha Stadium (public)
- Ke'ehi Lagoon Beach Park (public)
- Pacific War Memorial Site (DAV Ke'ehi Lagoon Memorial)
- Future Queen Street Park (public)
- Richardson Field (military)
- Pearl Harbor historic sites (public and private)
- Nimitz Field (military)

The Pearl Harbor historic sites (USS Bowfin Submarine Museum and Park, Pacific Aviation Museum, Battleship Missouri Memorial, and World War II Valor in the Pacific National Monument [formerly the USS Arizona Memorial]) receive more than 1.5 million visitors a year, making them among the most visited destinations in the Pacific. These resources are adjacent to the Project.

**Section 6(f) Resources**

The Division of State Parks under DLNR and DPR were contacted in September 2008. Two parks adjacent to the alignment have received LWCF funding and are, therefore, Section 6(f) resources. They are the Neal S. Blaisdell Park and 'Aiea Bay State Recreation Area. No Section 6(f) lands will be converted to a project use. For this reason, they are not considered in Section 4.5.3.

**Aloha Stadium**

Aloha Stadium, owned and maintained by the State, comprises 97 acres. Approximately 56 acres of this property was originally owned by the U.S. Department of the Interior and was transferred to the City on June 30, 1967. The Quitclaim Deed for that transfer contains use conditions and covenants that require the land to be used and maintained for public recreational purposes. The Quitclaim Deed also states that “the property shall not be sold, leased, assigned, or otherwise disposed of except to another local governmental agency that the Secretary of the Interior is satisfied can ensure the continued use and maintenance of the property for the aforesaid purposes.” The Quitclaim Deed further states that if any condition or covenant is breached, regardless of cause, the property is to revert to the United States upon demand in writing by the Secretary of the Interior.

In October 1970, with the approval of the Department of the Interior, the property was transferred to the State with similar provisions as the
Quitclaim Deed. Aloha Stadium was then developed on the property, along with other parcels of land the City had obtained from private sources, and transferred to the State (DTS 1992).

**Emergency Services**
The Island of O‘ahu is governed by the City, which provides a number of public services to both residents and businesses. The City has 18 emergency management centers that are typically located at either fire stations or hospitals and provide advanced life support, ambulance, and paramedic services. In addition, the Honolulu Department of Emergency Services has responsibility over Homeland Security and natural disasters caused by thunder and lightning, hurricanes, tropical storms, tsunamis, high surf conditions, floods, and earthquakes.

**Police**
The Honolulu Police Department provides public safety to residents and businesses via eight patrol districts. The project alignment traverses District 1 Downtown, District 3 Pearl City, District 5 Kalihi, District 7 East Honolulu, and District 8 Kapolei.

The police stations listed below are within one-half mile of the alignment, but none of them are adjacent to the alignment.
- Waipahu Police Department
- Pearl City Police Station
- Central Honolulu City Police Department
- Honolulu City Police Department Alapa‘i Headquarters

**Fire**
The Honolulu Fire Department has 5 battalions, or districts, on O‘ahu and 42 individual fire stations; 11 of these are within one-half mile of the alignment. Two are adjacent to the alignment:
- Waterfront Fire Station
- No. 8 Mokulele Fire Station

**Hospitals and Medical Facilities**
There are 21 hospitals and medical facilities within one-half mile of the alignment. Five of these are adjacent to the project alignment:
- Kahi Mohala Behavioral Health
- St. Francis Medical Center West
- Waipahu Medical Center
- Y. Makalapa Branch Medical Clinic
- Dillingham Medical Building

**Buses**
O‘ahu Transit operates the bus system in the project region. The company works closely with the Honolulu Police Department. Individual bus operators are provided with two-way communication equipment and can call for assistance should there be a problem on a bus. In addition, the company participates with the Honolulu Police Department in the Mobile Watch Program. This program provides assistance to anyone in need of help. Anyone can board a bus and inform the bus operator of his or her need for either public safety or emergency medical assistance.

**Utilities**
Both public and private utilities operate within or adjacent to the study corridor and within the project alignment. The City provides many urban services. The Honolulu Board of Water Supply provides drinking water. The Department of Environmental Services (DES) provides solid waste, wastewater, and stormwater services. The Hawaiian Electric Company (HECO), an investor-owned utility regulated by the Hawai‘i Public Utilities Commission, provides electricity to residential, commercial, and industrial customers. The Gas Company is also an investor-owned utility regulated by the Hawai‘i Public Utilities Commission and provides synthetic natural gas manufactured at Campbell Industrial Park to mostly commercial and industrial customers on O‘ahu. Telecommunications services are provided by Hawaiian Telecom. Cable services are provided by Oceanic Time Warner Cable.
Much of the project alignment is along heavily urbanized roadways. Many utilities and associated infrastructure are located in the study corridor. Typically, overhead utility lines and buried conduits and pipelines are installed in the right-of-way for those roadways. At-grade utility facilities, such as substations, pumping stations, pressurizing stations, and gas odorizing stations, are on parcels adjacent to the right-of-way.

### 4.5.3 Environmental Consequences and Mitigation

#### Environmental Consequences

**No Build Alternative**

Under the No Build Alternative, the Project would not be built and, therefore, would not have any impacts to community services and facilities, parks and recreational facilities, public services, or utilities. However, continued congestion within the project alignment would impact emergency response times. Although the projects in the ORTP are assumed to be built, their environmental impacts will be studied and reported in separate documents.

**Project Community Facilities**

Section 4.5.2 lists schools, libraries, churches, parks and recreational facilities, and cemeteries adjacent to the alignment. Of these, one church will be displaced by the Project. Land from 14 community facilities will be partially acquired by the City. Table 4-6 lists community, government, and military facilities that will be affected by the Project. No cemeteries or known burial sites will be affected by the Project.

The schools that will be affected by partial acquisitions from the Project are Honolulu Community College, Waipahu High School, Leeward Community College, UH Mānoa Urban Garden Research Center, Religious Institutions, Parks and Recreational Facilities.

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**Table 4-6**  Affected Community, Government, and Military Facilities (continued on next page)

<table>
<thead>
<tr>
<th>Community Facility</th>
<th>Effect</th>
<th>Mitigation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Honolulu Community College</td>
<td>Partial acquisition of land (0.3 acre); 7 light posts will be removed and impacts a lawn area.</td>
<td>Light posts will be replaced. Property use agreement or acquisition will be negotiated with the University of Hawai‘i System.</td>
</tr>
<tr>
<td>Waipahu High School</td>
<td>Partial acquisition of land (1.4 acres); relocation of portable classroom buildings and area near the football field.</td>
<td>The affected portable buildings will be replaced or relocated on school property. A retaining wall and a new access road to the football field will be provided.</td>
</tr>
<tr>
<td>Leeward Community College</td>
<td>Partial acquisition of land (2.5 acres); affected area includes portable administration buildings and parking lot; 180 parking spaces will be removed.</td>
<td>The portable administration buildings and parking spaces will be relocated. There will be no net loss of parking. Property use agreement or acquisition will be negotiated with the University of Hawai‘i System.</td>
</tr>
<tr>
<td>UH Mānoa Urban Garden Research Center</td>
<td>Partial acquisition of land (0.2 acre); an urban agricultural research garden owned and operated by UH Mānoa.</td>
<td>Property use agreement or acquisition will be negotiated with the University of Hawai‘i System.</td>
</tr>
<tr>
<td>Religious Institutions</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Alpha Omega Christian Fellowship Church</td>
<td>Displacement of community church located in the area being acquired for the Pearl Highlands Station.</td>
<td>Property will be acquired in accordance with the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act.</td>
</tr>
<tr>
<td>Parks and Recreational Facilities</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pearl Harbor Bike Path</td>
<td>Temporary impact to construct a 280-foot-long underground stormwater outfall that will drain into Pearl Harbor from the maintenance and storage facility.</td>
<td>The City will provide a temporary crossing over the trench to maintain bikeway access during construction. The bicycle path will be repaved in the affected area, and surrounding plantings disturbed by construction will be restored.</td>
</tr>
</tbody>
</table>
Community College, and the UH Mānoa Urban Garden Research Center. The Alpha Omega Christian Fellowship will be displaced as part of full acquisition of the building where this facility is located.

**Government and Military Facilities**

Additional community facilities affected by partial property acquisition will involve various parcels owned by the State and Federal governments. The Project will require partial acquisition or use of land from parcels associated with government or military facilities. These are the Pearl City Post Office (0.1 acre), Honolulu Post Office (0.1 acre), the Prince Kūhiō Kalanianaʻole Federal Building/Courthouse (0.3 acre), and the Oʻahu Correctional Facility (0.2 acre). Partial acquisitions will be required from the Pearl Harbor Naval Reservation and Hickam Air Force Base. The military properties include lands used for military opera-
tions as well as residential accommodations for enlisted personnel and their families.

**Parks and Recreational Facilities**

The Project will affect Ke‘ehi Lagoon Beach Park and Nimitz Field.

The City-owned Ke‘ehi Lagoon Beach Park is a 70-acre park located at Lagoon Drive near Honolulu International Airport. It contains 12 tennis courts, a baseball diamond, walking trails, picnic areas, and restrooms. The project guideway will cross over approximately 1 acre of the park at its mauka edge and have no direct effect on the tennis courts nearby. Approximately 10 guideway support columns will be placed in the park at 120-foot intervals in the vicinity of the access road. The guideway will cross above the park, just makai of the four lighted mauka tennis courts near Nimitz Highway. Given their proximity to the guideway, these tennis courts will be closed during construction and re-opened once this portion of the Project is completed. To mitigate temporary impacts to these lighted mauka tennis courts, DTS will coordinate with DPR during Final Design to provide lighting and associated resurfacing for the tennis courts near the park entrance prior to construction so that nighttime tennis court use will be maintained during construction and after project completion. The lighting will be designed and constructed in accordance with regulatory requirements. During construction, there will be a temporary loss of approximately 10 percent of the parking spaces. During construction, DTS will temporarily provide additional bus service from existing City transit centers or parking lots for major events. After construction, the parking area will be restored and there will be no net loss of parking.

Nimitz Field consists of five baseball diamonds on 10 acres on a larger military-owned property. Use or partial acquisitions of the grass fields near the fence line along Kamehameha Highway will be required for guideway supports.

**Aloha Stadium**

Aloha Stadium will be affected by the Project by construction of an elevated guideway and rail transit station through a portion of the Aloha Stadium parking area along the ‘Ewa edge of the property parallel to Kamehameha Highway. The Project will affect approximately 2.0 acres of land that is either under the guideway or station and the existing unpaved stadium event overflow parking area Koko Head of Salt Lake Boulevard.

The elevated guideway will be about 35 to 40 feet above the ground through this area and 28 to 30 feet wide. It will be supported by columns that are about 6 to 8 feet in diameter, placed about 120 feet apart. The base of each of the columns will impact approximately 100 square feet of area. The elevated guideway will pass over a small portion of the main parking lot, next to Kamehameha Highway. Approximately four columns will be placed in the main parking lot to support the guideway, requiring removal of approximately four parking spaces. The guideway will cross over Salt Lake Boulevard at Kamehameha Highway, continuing above the existing gravel overflow parking lot, supported by approximately six columns. In the overflow lot, the City will construct a rail station and bus transit center to serve the stadium and will pave and stripe the existing gravel lot. Approximately 600 paved parking spaces will be for use by stadium patrons during stadium events. Currently, the gravel overflow lot is not used for stadium parking except during events, when attendants are required to help guide cars and collect parking fees.

Approximately six additional guideway support columns will be located on the strip of Aloha Stadium property south of the overflow parking lot next to Kamehameha Highway. At the request of the State of Hawai‘i Department of Accounting and General Services (DAGS), a third track on the
A elevated guideway will be constructed for trains to park in this area to provide more frequent service before and after stadium events. This will benefit stadium patrons by providing additional transit service during stadium events to accommodate the anticipated demand.

This Project will provide transportation benefits to Aloha Stadium that will enhance its ability to provide recreational opportunities to users, offering additional transit choices, greater transit capacity, and improved service. The recreation use of the site will not change as a result of the Project. The Stadium will be 1 of 21 station stops on the 20-mile system that will be used by more than 100,000 riders on an average weekday. Trains will arrive every few minutes, and extra trains can be coordinated to accommodate peak demand during Aloha Stadium events. Normally, the system will provide capacity for more than 6,000 riders per hour in each direction, but this could be greatly increased to meet demand during Stadium events or other peak periods. In addition to providing train service, the City will also improve automobile access by transforming the existing gravel overflow parking area into a paved, striped parking lot and bus transit center. This will enhance the existing auto access to the overflow parking lot. In addition, buses, shuttles, and taxis will be able to pull off-street to serve the station and Aloha Stadium, providing a multi-modal transit center that will provide access from all directions. The lot will continue to be set aside for the exclusive use of stadium patrons during events, but at other times would be available for commuters. The project will provide additional transportation options and increase overall accessibility for stadium property users.

The Aloha Stadium Authority, Aloha Stadium Manager, and DAGS have participated in the planning of the Project through the Aloha Stadium property, including the elevated guideway, parking area, and station elements, to minimize impact to the stadium property. In the context of the original land transfer, DAGS requested Federal Lands to Parks program concurrence that this Project is an acceptable transportation improvement and provides value in supporting the recreational use of Aloha Stadium. The effects on Section 4(f) recreational resources are discussed in more detail in Chapter 5, Section 4(f) Evaluation.

**Public Services**

For all public services, response time during emergencies is critical and, for most of them, access to the sites of emergencies requires the use of public roadways. The Project will improve the operation of the roadway network as compared to the No Build Alternative by reducing congestion and will improve emergency response times. The Project will not affect police, fire, or emergency medical facilities adjacent to the alignment. A Maintenance of Traffic (MOT) Plan will also be developed during final design to manage traffic and emergency services during construction (see Chapter 3 for more information about the MOT Plan).

Section 4.5.2 lists two fire stations and six hospitals and medical facilities adjacent to the alignment. There will be no effect on these facilities.

**Utilities**

A number of properties owned by utility providers will be affected by partial acquisitions. This includes two properties owned by HECO and one owned by HDOT. A narrow strip of land will be acquired from each. Coordination will occur to further assess these effects during preliminary and final engineering.

In addition to the direct effects on utilities from project right-of-way acquisitions, the construction of a new fixed guideway transit system will involve relocation and modification of existing utilities. These construction effects are discussed in more detail in Section 4.18.
Mitigation
Measures to mitigate effects to community, government, and military facilities are summarized in Table 4-6.

Community Facilities
Mitigation efforts will involve coordination with individual property owners as necessary to appropriately address effects to community facilities. Effects on access, signage, or parking will be replaced or compensation will be provided. In addition, all property will be acquired following the Federal Uniform Relocation Assistance and Real Property Acquisition Policies Act and applicable State regulations.

The City will coordinate and consult with other agencies and stakeholders on the final design of the streetscape affected by the Project.

Parks and Recreational Facilities
Effects to parks and recreational resources from partial acquisitions will be mitigated in coordination with parkland property owners. Table 4-6 lists mitigation measures for each affected resource. A separate evaluation has also been conducted for each publicly owned parkland property that meets Federal criteria as a Section 4(f) resource (see Chapter 5).

Public Safety and Security
As described in Section 2.5.4, the Project includes safety and security measures to protect public services and facilities. Additional mitigation measures will include:

- Design and architectural details to enhance safety
- Use of closed-circuit television cameras and lighting included as a specific design measure
- Security patrols of transit property and vehicles, ongoing train safety awareness education, and ongoing public security awareness education

4.6 Neighborhoods
This section describes the neighborhoods adjacent to the project alignment and the anticipated effects on these neighborhoods from the long-term operation of the Project. Effects on neighborhoods include adverse and beneficial effects on neighborhood character, quality of life, and cohesion. For additional information and references, see the Honolulu High-Capacity Transit Corridor Project Neighborhoods and Communities Technical Report (RTD 2008d).

4.6.1 Background and Methodology
Neighborhood board boundaries were used to define neighborhood divisions. Neighborhood boards were created by City Charter to facilitate citizen participation on the island and in regional planning activities. Only those neighborhoods adjacent to the project alignment are discussed in this section. Figure 4-13 illustrates the neighborhood boundaries. The discussion of local neighborhoods is focused on their individual demographics and character.

4.6.2 Affected Environment Neighborhoods
The Project transects eight city-designated neighborhoods (Figure 4-13). In 2000, the population within the study corridor was about 552,100. The area had experienced moderate growth over the previous decade with less than 1 percent average annual growth per year.

Residents in the neighborhoods of the study corridor are very diverse with 60 to 80 percent of Asian ancestry. However, based on the 2000 census, the Airport and Waikīkī neighborhoods are more than 50 percent White, including military personnel and their dependents, as well as people who have moved from the mainland. In general, there is a wide diversity of household sizes throughout the study corridor, ranging from studio apartments to larger multi-family households.
Figure 4-13  Corridor Neighborhoods
Due to their location in the urban core, the Kalihi-Palama, Downtown, Ala Moana-Kaka’ako, Waikiki, and McCully-Mō’ili’ili neighborhoods are distinct from the ‘Ewa O’ahu neighborhoods, which are predominantly comprised of single-family residences. Households in these urban core neighborhoods tend to be smaller with more than 40 percent of individuals living alone.

The following paragraphs describe the general land use, character, and unique physical or social attributes of the study corridor neighborhoods.

‘Ewa
‘Ewa is one of O’ahu’s suburban growth centers and is experiencing rapid change. It encompasses the communities of Kapolei (the “second city”), ‘Ewa Villages, ‘Ewa by Gentry, Honouliuli, ‘Ewa Beach, Ocean Pointe, and Iroquois Point. Between 1990 and 2000, the population of this neighborhood doubled as sugar cane lands were developed into housing and commercial uses. Despite ongoing development, some former sugar cane land is being used for diversified agriculture.

Waipahu
Historically, the Waipahu community makai of Interstate Route H-1 (H-1 Freeway) was a sugar plantation town, and the community retains strong identity to this historic economic activity. Newer apartment buildings and strip retail plazas are generally limited to the fringes of the commercial district along Farrington Highway. Waipahu has a recreational center, health clinics, churches, and social services offices. Many residents travel outside of the community for employment.

Pearl City
The Pearl City area consists of residential development, mixed-commercial uses, and military housing and facilities. The community was originally developed by Benjamin Dillingham in the 1890s as Hawai‘i’s first planned city and suburban development for affluent and independent farmers. Retail and commercial venues include the Pearl City Shopping Center and the Pearl Highlands Center. Neal S. Blaisdell Park at the edge of Pearl Harbor (East Loch) is a regional recreational amenity that is popular for outdoor community activities. A small area known as the Banana Patch lies within the Pearl City neighborhood boundary. This neighborhood is unique in that, while it is in an urban region, residents are able to maintain an agricultural, subsistence lifestyle. The community, which is discussed in more detail in Section 4.7, has a high concentration of Filipinos.

‘Aiea
This community consists of residential development, mixed-commercial uses, and military housing and facilities. Most of the residential subdivisions are mauka of Kamehameha Highway. The makai areas tend to be commercial, light industrial, and military. Pearlridge Center is a major employment center and tourist destination. Many ‘Aiea residents work at nearby Pearl Harbor Naval Base, Hickam Air Force Base, and Marine Corps Base Camp Smith.

Airport
The Airport neighborhood is characterized by non-residential land uses. The Airport Commercial District, located makai of the Nimitz Viaduct, is primarily an industrial, commercial, service-oriented district. The Māpunapuna Light Industrial District, between the Moanalua Freeway, Moanalua Stream, Nimitz Highway, and Pu’uloa Road, includes primarily light industrial businesses with some retail and commercial businesses and offices. The Fort Shafter Military Reservation, mauka of the H-1 Freeway in Moanalua, is an active military base. The Pearl Harbor Naval Base residential housing area (known as Catlin Park Housing) is bounded by Salt Lake Boulevard, Pu’uloa Road, Nimitz Highway, and Namur Road/Valkenburgh Street.
**Kalihi-Palama**

The Kalihi-Palama neighborhood contains a wide variety of land uses with unique community identities, such as Kalihi Kai, Kapālama, and Iwilei. The Kalihi-Palama communities makai of the H-1 Freeway are a mix of residential, business, retail, and industrial-commercial land uses. Residential housing is generally more prevalent in the mauka areas, and commercial and industrial businesses are more prevalent in the makai areas. Businesses vary in size from “mom-and-pop” stores to big box retail establishments, such as Costco and Best Buy, as well as Dole Cannery Mall. The Bishop Museum (mauka of the H-1 Freeway) is a popular tourist attraction that houses an extensive collection of Hawaiian artifacts and royal family heirlooms.

**Downtown**

Downtown Honolulu is a vibrant city center and one of the State’s largest employment centers. It is experiencing substantial redevelopment to higher-density land uses. It is the State’s principal government office and business center, as well as the location of many tourist attractions. It continues to have a substantial residential population. The Hawai‘i Capital District is the seat of City and County, State, and Federal government offices and includes a number of historic mid-19th century buildings. The historic Chinatown District is a popular attraction for O‘ahu residents and tourists. High-rise condominiums and apartments are interspersed throughout Downtown. Fort Street Mall is a major gathering place for Hawai‘i Pacific University students, downtown workers, and residents.

**Ala Moana-Kaka‘ako**

The Kaka‘ako community encompasses the 614-acre Kaka‘ako Community Development District from the shoreline makai of South King Street and between Pi‘ikoi and Punchbowl Streets. Redevelopment is replacing old one- and two-story warehouses and light industrial uses with new urban mixed-use development. The area between Ke‘eaumoku and Pensacola Streets mauka of Kapi‘olani Boulevard is characterized by two- and three-story walk-up apartments in a quieter residential environment. The neighborhood’s shopping and retail centers, especially the Ala Moana and Ward Centers, are popular with residents as well as tourists staying in nearby Waikiki. These centers are being expanded and redeveloped. Other activity centers include a number of popular parks, the Neal S. Blaisdell Center and Concert Hall, and the Hawai‘i Convention Center.

**Demographic Characteristics**

Table 4-7 presents economic and racial characteristics for each neighborhood based on the 2000 census data. It illustrates considerable variation in neighborhood population size and median household income. Racial characteristics vary less widely. Military housing areas in the Airport neighborhood have higher percentages of White and Black residents in comparison to the racial composition of O‘ahu.

**4.6.3 Environmental Consequences and Mitigation**

**Environmental Consequences**

This section evaluates potential effects on neighborhoods adjacent to the project alignment. A discussion of neighborhood safety and security issues is found in Section 4.5. Aesthetic issues and their effect on adjacent land uses are discussed in Section 4.8.

**No Build Alternative**

Under the No Build Alternative, the Project would not be built and would not have any impacts to neighborhoods. The quality of life, however, would be reduced by increased congestion, increased travel time, and reduced mobility affecting single-occupancy vehicles, high-occupancy vehicles, and bus transit passengers.
**Project**

The Project will provide people living and working in the neighborhoods within the study corridor with increased mobility. The Project will provide an alternative to traveling by personal vehicle or bus transit within the existing transportation corridors. Passengers using the new transit system will experience reduced travel time to other neighborhoods and growth centers along the project alignment and near transit stations. The Project will provide a reliable and efficient travel mode for accessing the region’s current and future jobs, shopping, and social resources, particularly those in Kapolei and Downtown—the major urban centers of the study corridor in the future. This increase in mobility for neighborhood residents will generally improve the quality of life, especially for those with limited financial resources and those who may be transit-dependent.

The transit agency could experience three types of crimes—crimes against persons, crimes involving transit property, and other crimes committed on transit property. To reduce the potential for crime, the FTA requires the development and implementation of a Safety and Security Management Plan (SSMP) for new fixed guideway projects (49 CFR 633). The SSMP addresses the technical and management strategies for analyzing safety or determining security risks throughout the life of the Project. The SSMP commits that the highest practical level of operational safety and security will be used. In addition, it lays the foundation for future safety and security once the Project is operating. The Honolulu Police Department, the Honolulu Fire Department, the Department of Emergency Management, the Honolulu Emergency Services Department, and other State and Federal agencies, as appropriate, will be involved in preparing and implementing the SSMP. The SSMP is reviewed and updated regularly throughout the life of the Project.

Potential new development and redevelopment along the project alignment, as well as the scale of the transit system itself, may affect the character of development along the alignment. This change in character will not have a substantial effect on the existing development patterns or community character within the surrounding neighborhoods. Currently, most of the residential housing is more prevalent within the mauka areas, and commercial

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**Table 4-7 Year 2000 Demographic Characteristics of Neighborhoods**

<table>
<thead>
<tr>
<th>Neighborhood</th>
<th>Household Median Income</th>
<th>White</th>
<th>Black</th>
<th>American Indian &amp; Alaska Native</th>
<th>Asian</th>
<th>Native Hawaiian &amp; Pacific Islander</th>
<th>Other</th>
<th>Two or More Races</th>
</tr>
</thead>
<tbody>
<tr>
<td>’Ewa</td>
<td>$58,230</td>
<td>17%</td>
<td>2%</td>
<td>0.2%</td>
<td>50%</td>
<td>7%</td>
<td>1%</td>
<td>23%</td>
</tr>
<tr>
<td>Waipahu</td>
<td>$60,270</td>
<td>9%</td>
<td>2%</td>
<td>0.2%</td>
<td>62%</td>
<td>9%</td>
<td>1%</td>
<td>18%</td>
</tr>
<tr>
<td>Pearl City</td>
<td>$66,500</td>
<td>16%</td>
<td>2%</td>
<td>0.2%</td>
<td>56%</td>
<td>6%</td>
<td>1%</td>
<td>18%</td>
</tr>
<tr>
<td>‘Alea</td>
<td>$55,240</td>
<td>18%</td>
<td>2%</td>
<td>0.3%</td>
<td>49%</td>
<td>9%</td>
<td>1%</td>
<td>21%</td>
</tr>
<tr>
<td>Airport</td>
<td>$41,000</td>
<td>61%</td>
<td>12%</td>
<td>1.0%</td>
<td>11%</td>
<td>1%</td>
<td>4%</td>
<td>9%</td>
</tr>
<tr>
<td>Kalihi-Palama</td>
<td>$31,630</td>
<td>4%</td>
<td>1%</td>
<td>0.1%</td>
<td>66%</td>
<td>14%</td>
<td>1%</td>
<td>14%</td>
</tr>
<tr>
<td>Downtown</td>
<td>$29,950</td>
<td>22%</td>
<td>1%</td>
<td>0.2%</td>
<td>58%</td>
<td>6%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Ala Moana-Kaka‘ako</td>
<td>$30,620</td>
<td>19%</td>
<td>1%</td>
<td>0.2%</td>
<td>62%</td>
<td>4%</td>
<td>1%</td>
<td>12%</td>
</tr>
<tr>
<td>Total O‘ahu</td>
<td>$52,280</td>
<td>21%</td>
<td>2%</td>
<td>0.2%</td>
<td>46%</td>
<td>9%</td>
<td>1%</td>
<td>20%</td>
</tr>
</tbody>
</table>

*Source: Department of Planning and Permitting, City and County of Honolulu, 2006. Selected Economic Characteristics: 2000 by Neighborhood Area.*
and industrial businesses are primarily within the makai areas. The Project will not substantially change this development pattern. Since the transit system will be elevated, it will not create a physical barrier to pedestrian or other forms of travel within the study corridor. It also will not pose a barrier to the social network of the community since it will be located within an existing transportation corridor or in the ‘Ewa area, along a planned future transportation system.

The following paragraphs describe the Project’s effects on individual neighborhoods.

‘Ewa
The three transit stations in ‘Ewa—East Kapolei, UH West O‘ahu, and Ho‘opili—as well as the project alignment will not affect community character and cohesion in ‘Ewa because the affected area is undeveloped and primarily used for agriculture (see Section 4.2 for more information on farmlands). The area is planned to be developed into urban land uses, and the Project will support these development plans.

Waipahu
The project alignment follows Farrington Highway through the Waipahu neighborhood. The area is urbanized, with land uses along the highway consisting primarily of commercial uses, strip retail plazas, and both mid-rise and medium-density apartments. The Koko Head end of Farrington Highway in Waipahu consists mostly of single-family housing but also includes Waipahu High School. Most of the residential communities are oriented away from this heavily traveled roadway. Because Farrington Highway functions as both a major arterial and collector road, and varies in width from four to six lanes with a landscaped median, the transit facility will not create an access or transportation barrier between the makai and mauka sides of the road. As an elevated structure, which will span all intersections, it will not prevent pedestrians and motorists from conducting their normal travel patterns within the community. Potential redevelopment along the project alignment, and in particular at the station locations, may represent an asset to the neighborhood by providing new resources and an accessible transit option.

Pearl City
The project alignment extends through the Pearl City neighborhood, along the median of Kamehameha Highway, a heavily traveled roadway with adjacent multi-story commercial uses near the Pearl Highlands Station. The surrounding residential uses will not be affected by property acquisitions and, being located within the highway median, the Project will not form a barrier to adjacent residential communities as residences are oriented away from the highway. In addition, being an elevated structure, the transit system will not create a physical barrier to pedestrians or other forms of travel within the community. The Project will not affect community identity or cohesion as the transit system will be compatible with the existing community character along the alignment. The Project will impact the Banana Patch community, which is discussed in Section 4.7.

‘Aiea
The route through the ‘Aiea neighborhood continues to follow Kamehameha Highway, and the effects will be very similar to those described for the Pearl City and Waipahu neighborhoods. Most of the residential areas are mauka of Kamehameha Highway with land uses makai of the highway being primarily commercial or military. As such, the Pearlridge Station will not create a barrier to adjacent communities nor will it limit pedestrian or other travel modes within these communities. As the transit route passes Aloha Stadium, there are very few buildings adjacent to the alignment due to the expanse of the stadium parking. Few residential communities are located nearby.
Airport

The Project will travel along busy, heavily traveled Kamehameha Highway and enter the Airport on Aolele Street. The neighborhood is primarily characterized by military and industrial uses and Honolulu International Airport. Most of the residential land uses are mauka of the Nimitz Viaduct. The Project will require acquisition of some businesses on Ualena Street and Waiwai Loop and no changes in current land uses. The guideway is not expected to be a visual or physical barrier in the neighborhood and will not affect community identity or cohesion.

Kalihi-Palama

The Project through the Kalihi-Palama neighborhood follows Dillingham Boulevard. The boulevard is a major arterial that travels through smaller, well-established residential communities, but also functions as a major collector for neighborhood circulation. Small-scale commercial businesses and a few historic land uses line the boulevard. Dillingham Boulevard is a much narrower roadway than either the Farrington or Kamehameha Highways. As a result, the Project will require widening the roadway to maintain the same number of travel lanes while accommodating the guideway’s support columns. Several true kamani trees will also be removed by the Project. Impacts will occur to historic properties, as discussed in Section 4.16.

Downtown

The Project will continue through the Downtown neighborhood within the median of Nimitz Highway. This highway is similar to Farrington and Kamehameha Highways as it is a heavily traveled roadway with limited cross traffic. As such, the highway already represents a physical barrier to the neighborhoods on each side. The Project will not create a new barrier or affect the physical character of adjacent communities. Within the Downtown area, the Project will pass the historic districts of Chinatown and Merchant Street. Nimitz Highway is located along the perimeter of these two districts between the Downtown uses and Honolulu Harbor; therefore, the transit system will have little effect on their uses. However, it will contrast with their historic character. As the alignment transitions to Halekauwila Street, a relatively narrow city street, the adjacent buildings become primarily mid-rise government office buildings with little or no open space between them. Views of the alignment will be limited to short segments as the guideway crosses city streets since high-rise buildings and tall trees already obstruct views. The transit system will be elevated so it will not affect the flow of traffic, bicyclists, or pedestrians within the Downtown neighborhood.

Ala Moana and Kaka'ako

The Project will extend to Ala Moana Center traveling mostly along Halekauwila and Kona Streets. The transition between these streets will require property acquisitions and displacements. Land uses adjacent to the alignment include two- and three-story walk-up apartments and commercial uses within the Kaka'ako area and newer urban mixed-use development within the Ala Moana area. In general, land uses are less dense than in the Downtown neighborhood. Kaka'ako has been designated a redevelopment area, which may result in a change in character along the Project alignment. However, substantial development has recently occurred in the neighborhood; several high-rise condominium developments have been built, and additional residential and commercial developments are planned. The elevated transit structure will not create a barrier to pedestrian or other modes of travel.

Mitigation

Since there will be no adverse effects to these neighborhoods, no mitigation is required. Ongoing coordination efforts with the public will help develop design measures that will enhance the interface between the transit system and the surrounding community.