CHAPTER 3

ENVIRONMENTAL CONSEQUENCES

3 ENVIRONMENTAL CONSEQUENCES

This section of the EA describes the potential impacts of the project on social, cultural and historic, natural and physical resources. Included in each subsection is a description of the existing environment along the project Corridor as it relates to each subject area, and an assessment of potential impacts for the project alternatives analyzed. Mitigation measures, to reduce or eliminate potential environmental impacts, are described where necessary.

As outlined in the Preface of this EA and Chapter 2, the "Full Build" in this report is defined as the 60.8 mile Full Build alignment from DeLand Amtrak to Poinciana Industrial Park with all 16 stations, the addition of approximately 42 miles of 2nd track and more DMU equipment to support the increase in service to 15 minute headways. This represents the worst case from the point of view of assessing the project environmental impacts.

The Preface also stated that in support of this CFCRT project, FDOT and the project sponsors have been negotiating freight traffic density and train operating patterns on the "A" line with CSXT. A fundamental component of the negotiation is a Memorandum of Understanding (MOU) that eliminates freight traffic during the time of the proposed CFCRT service through this Study Corridor. Also mentioned was CSXT's intent as part of its Statewide Strategic Plan, to shift freight traffic to the "S" line to the west of central Florida, and to designate the "A" line for passenger traffic.

A key measure in evaluating the environmental impacts resulting from the addition of CFCRT service is the change in delay times that occur at railway grade crossings and noise and vibration impacts along the corridor. As a result of the MOU, this analysis assumed that existing rail freight traffic volumes operating on the CSXT "A" line in the 2025 No-Build will not continue to operate in peak hours on this line in the 2025 Full Build Alternative. There is no reduction to the present overall CSXT freight traffic levels in this EA analysis, only shifting of freight trains to operate outside of the peak period. This EA analysis is consistent with the CSXT initiated operational shift and policy direction.

3.1 Land Use and Related Socio-Economic Characteristics

3.1.1 Land Use

The Central Florida Commuter Rail Corridor includes stations in 12 different municipalities: the cities of DeLand, DeBary, Lake Mary, Longwood, Altamonte Springs, Winter Park, Orlando and Kissimmee, as well as portions of unincorporated Volusia, Seminole, Orange, and Osceola Counties. To facilitate analysis of zoning and land use conditions, information has been generalized to allow basic land uses to be analyzed consistently across jurisdictional boundaries.

Florida's 1985 Growth Management Act requires municipalities to maintain consistency between adopted policies of a comprehensive plan and the regulations that implement them. The zoning and existing land use are determined exclusively by the adopted land use element of the comprehensive plan, which must be developed consistently with other plan elements dealing with such issues as transportation, capital improvements, and

resource protection. In this regard, both zoning and future land use must be considered in a land use analysis, as the Growth Management Act establishes both as official, legally binding series of regulations.

One of the key components of the growth management system in Florida is the requirement that infrastructure and public services such as roads, schools, hospitals, police and fire protection, and several other public resources, have the capacity to support a new development before that development is approved. Due to the interconnections between comprehensive plans and zoning ordinances, the capability of infrastructure and public services to support development can determine how much and what types of development occur.

Methodology

Data for the analysis of existing land use was compiled through interpretation of existing zoning and future land use maps, interviews with municipalities directly impacted by the Corridor, extrapolation from municipal sources and property appraiser records, and from a generalized map of future land use designations throughout the Central Florida region prepared by the East Central Florida Regional Planning Council.

For both the existing and future land use analyses, data were compiled, generalized, and analyzed within a ½-mile radius of the rail alignment and from each proposed station site.

Existing Conditions

Land use patterns vary across the Corridor. The following analysis divides the Corridor by the counties that it serves and briefly discusses each station, with the included stations listed for each county. Detailed existing land use mapping for each of the proposed CRT station areas is included in Appendix B - Land Use and Community Cohesion. Figure 1-7 in Chapter 1 illustrates generalized land use patterns along the entire CRT corridor.

Volusia County: DeLand Amtrak and DeBary/Saxon Boulevard Extension Stations. These stations are in primarily agricultural areas with considerable amounts of undeveloped, vacant land. The DeLand Amtrak station is located west of the city in an area with light industry and lower-intensity uses. The DeBary/Saxon station is located along a planned extension to Saxon Boulevard, allowing access to a larger service area of the city of DeBary along US 17/92.

Seminole County: Sanford/SR46, Lake Mary, Longwood and Altamonte Springs Stations. Due to the existing use of the CSXT "A" line rail alignment for freight service, much of the area along the Corridor in Seminole County is commercial and industrial. The rail line served the historic town centers of Lake Mary, Longwood, and Altamonte Springs and those areas retain a mix of civic, commercial, and industrial uses.

The Sanford station is in an area of largely vacant parcels and any development requires the property to be rezoned to a planned unit development (PUD), in which development standards may be defined to best accommodate a rail station. The Lake Mary station is in a more developed area, although adjacent zoning allows greater flexibility of redevelopment. The station is adjacent to Lake Mary's civic facilities. The Longwood station is near its historic center, which includes its municipal buildings, non-governmental

civic facilities, and a commercial district. The Altamonte Springs station is near its municipal buildings, and has adjacent residential areas and commercial development.

Orange County: Winter Park/Park Avenue, Florida Hospital, LYNX Central Station, Church Street, Orlando Amtrak/ORMC, Sand Lake and Meadow Woods Stations.

Orange County's existing land use varies according to the urban context. In the more densely developed areas of Orlando and Winter Park, corridor land use is largely employment-oriented with offices, commercial establishments, institutional facilities, and industrial uses. In areas south of Orlando, corridor land uses are predominantly industrial and residential.

Winter Park's station is adjacent to its main retail and business district as well as many of its civic and institutional facilities. Zoning currently permits the development of business, retail, office, and residential uses.

The four proposed Orlando stations are located adjacent to high-intensity activity and employment centers: the Florida Hospital and Orlando Amtrak/Orlando Regional Medical Center (ORMC) stations are located near large regional hospitals and concentrations of medical offices. The LYNX Central Station and Church Street stations are within Orlando's central business district, the largest single employment concentration in the region.

The Sand Lake and Meadow Woods stations are near industrial and commercial areas, although development potential around each station is high: agricultural/vacant use account for one-fifth of the Sand Lake Road station area and over one-third of the Meadow Woods area.

Osceola County: Osceola Parkway, Kissimmee Amtrak, and Poinciana Industrial Park Stations.

The stations in Osceola County are all located near employment centers: office and retail areas near the Osceola Parkway; government, civic, and commercial uses around the Kissimmee station; and commercial and industrial uses near the Poinciana Boulevard station. Residential areas lie outside of the immediate station areas for all three stations.

Future Land Use and Development Patterns

Future land uses across the Corridor vary, although the more mature, high-intensity urban environments are generally designated for mixed-use centers combining employment, commerce, and residential areas. Future land use mapping for areas surrounding each of the proposed CRT stations is included in Appendix B – Land Use and Community Cohesion.

Volusia County: DeLand Amtrak and DeBary/Saxon Boulevard Extension Stations.

The majority of the designated future land use in each of these stations is employment-oriented, most of it industrial, with some areas planned for residential development. In the vicinity of the DeBary/Saxon Boulevard Extension Station, over two-thirds of designated residential areas are planned for higher-density development than exists currently.

Seminole County: Sanford/SR 46, Lake Mary, Longwood and Altamonte Springs Stations .

The areas around each of the Seminole stations include areas planned for mixed use activity centers combining residences and businesses. A majority of the area around the Sanford/SR 46 Station calls for this kind of mixed use development, and each of the Lake Mary, Longwood, and Altamonte Springs station areas plan for at least one-third of employment uses to be in activity centers. These activity center plans include street enhancements, the addition of pedestrian amenities, reductions in on-site parking requirements, and encouragement of mixed-use development.

Orange County: Winter Park/Park Avenue, Florida Hospital, LYNX Central Station, Church Street, Orlando Amtrak/ORMC, Sand Lake and Meadow Woods Stations.

Future land use in the Orange County station areas is generally oriented to higher-intensity uses that reflect and enhance the area's current level of urban development. Nearly half of the area around the Winter Park/Park Avenue station designated for residential uses call for higher densities than what presently exists, and nearly half of the station area in general is planned for employment-based uses. The Florida Hospital and Orlando Amtrak /ORMC stations are both in areas near large and expanding hospitals. Future land use around these stations is designated for increased intensity of development, density of housing, and a mix of uses to take advantage of the large employment centers near each station. The LYNX Central Station and the Church Street stations are in Orlando's Central Business District, in which over 3,000 residential units are planned or currently seeking approval in a downtown area with an existing inventory of over 10 million square feet of office space.

The Sand Lake Road and Meadow Woods stations are in areas with greater development potential, with future land use oriented to neighborhood commercial, light manufacturing and other industrial uses.

Osceola County: Osceola Parkway, Kissimmee Amtrak, and Poinciana Industrial Park Stations.

The Osceola Parkway station is designated as a mixed use future land use area with an emphasis on employment. Office, retail, and light industrial uses have been approved for the station site. The Kissimmee Amtrak station is located in an area of downtown mixed use adjacent to future land use designations planned for increased residential density and recreational facilities. The Poinciana Industrial Park Station is surrounded by industrial with some general commercial and low density residential land uses.

Impacts and Benefits

Long-term impacts on existing land use and zoning may seem similar for each of the Alternatives, but it is important to remember that zoning does not guarantee immediate development rights in most cases: development approval must be concurrent with available capacity in public infrastructure to support that development.

No-Build Alternative

The No-Build Alternative will not have direct impacts on existing land use and zoning. Future development will be limited by the ability of local infrastructure to serve its communities efficiently. Various measures of traffic and level of service on roads in the area will continue to worsen as traffic increases with urban growth, and the failure to address transportation alternatives may limit the potential development that is allowed as of right in existing zoning and future land use policies.

Future land use designations according to each government's comprehensive plan are consistent with provisions of the transportation plan. Areas that have been designated for higher-density, transit-supportive development will most likely not have the same development density without the construction of a fixed-route transit system. The No-Build Alternative provides a lower capacity transportation network and is less capable of supporting transit-oriented development (TOD) than the Full-Build Alternative.

TSM Alternative

As the TSM Alternative may place some station facilities (including parking) in the same locations as the proposed rail stations in the Full-Build Alternative, zoning changes would be required, at minimum, in the municipalities of Sanford and Altamonte Springs. The ability of the TSM alternative to support local land use and economic development is limited due, in part, to the lack of permanence of the bus alternative.

Full-Build Alternative

The Full-Build Alternative would utilize the existing CSXT ROW. Impacts on existing land use and zoning are limited to the station sites. In most communities with proposed stations along the Corridor, existing zoning permits the development of transit stations subject to conditional approval.

The Full-Build Alternative would construct a railway system consistent with future land use and transportation elements of local comprehensive plans and thus would have future land use benefits through the realization of the transportation/land use integration plans that are included in many of the local comprehensive plans. The Lake Mary, Longwood, Winter Park/Park Avenue, Florida Hospital, LYNX Central Station, Church Street, Orlando Amtrak/ORMC, and Kissimmee Amtrak stations are all in areas designated for higher-intensity, transit-supportive land use specifically intended to foster mixed use development.

Mitigation

The zoning districts encompassing the Florida Hospital, LYNX Central Station, Church Street, Orlando Amtrak/ORMC and Sand Lake Road stations allow public transit stations as of right, and as such require no mitigation. The stations in Sanford and Altamonte Springs would require land to be rezoned to accommodate the stations, and the Meadow Woods and Osceola Parkway stations will require amendments to existing planned unit development (PUD) zoning. The PUD zoning allows permitted uses and development standards to be defined for each particular development.

Although no administrative changes or amendments are required with any of the affected future land use maps, the effectiveness of the Full-Build Alternative would be increased by coordinating future land use map amendments throughout the Corridor that reflect transit-supportive land uses and development standards. Local governments are required by the Florida Department of Community Affairs to amend their comprehensive plans every 5 years based on the effectiveness of the plans as instruments of growth management. The Evaluation and Appraisal Reports and the recommended amendments are an opportunity for local governments to address major changes to their communities, such as rail development. Construction and operation of a commuter rail system could engender land use changes in the Corridor municipalities and could provide a policy foundation for stronger transit-oriented development and increased ridership.

3.1.2 Community Cohesion

Community impact assessment is a process to evaluate the effects of a transportation action on a community and the quality of life in that community or neighborhood. The purpose of this section is to determine the effect of the alternatives on the quality and cohesion of the established neighborhoods within the Corridor. A community facility is defined as a place or location that provides access to recreation, education, house of worship and/or government services.

Methodology

For this assessment, neighborhoods were identified by County and are often aggregated in small groups of adjacent, similar neighborhoods. Neighborhood demographics are summarized by county and presented in tables included in Appendix B. Maps of the neighborhood locations, community facilities and landmarks are included in Appendix B. The effects to neighborhoods are described for each alternative and include benefits and adverse impacts.

Neighborhoods have been divided so that portions in different Census block groups are associated with the demographic characteristics of that block group only. The identification of each neighborhood included identification of physical barriers, notable landmarks and community services. Physical barriers include: major roadways, bodies of water or structures that may physically separate or split neighborhoods or community facilities, isolate a portion of a neighborhood and/or change the quality of life or character of a neighborhood. Landmarks include buildings, structures and attractions that are associated with a specific area and recognized as contributing to the character of the community. Community services are important to the function and operation of a neighborhood and include schools, libraries, fire stations and parklands.

A neighborhood is considered to be served by the project if there is a station within 1/2 mile radius of the neighborhood, and without major barriers to pedestrian travel. Neighborhood impacts associated with the project alternatives are assessed in terms of the effects on neighborhood integrity and potential changes to quality of life or resident satisfaction. Impacts to neighborhood integrity are based on the potential effects of each of the project alternatives on the following:

- Access to emergency and public services (Section 3.1.4);

- Location of the commuter rail project relative to the neighborhood boundaries, number of relocations and contribution of the relocations to the community character and cohesion (Section 3.1.6);

- Connectivity and circulation patterns including pedestrian and bicycle access, traffic levels and potential changes in existing traffic patterns (Section 3.3.1);

- Noise levels (Section 3.3.4);

- Vibration levels (Section 3.3.6);

- Improved mobility or access to transit service provided to the community activity, business or population center.

Existing Conditions

Volusia County - The project Corridor occurs in the southwest portion of this coastal County and is situated at the western edge of the incorporated cities of DeLand, DeBary, Orange City and Deltona. The Corridor also lies east of regionally significant natural areas that act as physical barriers such as the Lake Beresford Greenway, Blue Springs State Park, Hontoon Island State Park, Lower Wekiva River Preserve State Park and Konomac Lake. At the southern terminus, near Orange City, physical barriers include Gemini Springs County Park just east of the Corridor and the St. Johns River to the west and south. US 17-92 runs parallel along the east side of the corridor.

There are 38 areas designated as neighborhoods along the corridor in Volusia County, from approximately one-half mile north of the DeLand Amtrak Station to the Volusia/Seminole County line at the St. Johns River. Table B-1 in Appendix B illustrates the race and ethnicity, income level, and transit dependency of the households in each neighborhood. Of the 38 neighborhoods in Volusia County, none are classified as minority, low income or transit dependent. A detailed summary of the community facilities with associated maps is included in Table B-1 in Appendix B.

Seminole County - The existing rail corridor traverses four incorporated Cities including Sanford, Lake Mary, Longwood, and Altamonte Springs as well as unincorporated portions of Seminole County. There are 119 areas designated as neighborhoods located within the project area in Seminole County.

Major transportation corridors include Interstate 4, SR 46, CR 46A, Airport Boulevard and the Central Florida Green Way (SR 417),US 17-92, SR 434, SR 436. Interstate 4, SR 46, and SR 417 are elevated corridor crossings while CR 46A and Airport Boulevard are at grade crossings.

Table B-2 in Appendix B illustrates the race and ethnicity, income level, and transit dependency of the households in each neighborhood. Of the 119 neighborhoods in Seminole County, 65 can be classified as minority, 53 can be classified as low income and 54 as transit dependent. All of the transit dependent neighborhoods can also be classified as minority and low income.

Notable landmarks include the Interstate 4 bridge over the St John's River, Lake Monroe, the Hidden Harbour Marina, the Central Florida Zoo, CSXT Rand Yard, Amtrak Auto

Train Station and Maintenance Facility, Orlando Regional South Seminole Hospital and Wicklow Elementary School. A detailed summary of the community facilities and services with associated maps is presented in Table B-2 in Appendix B.

Orange County - Generally, the project Corridor extends through the central portion of the County through four incorporated cities including Maitland, Winter Park, Orlando and Edgewood, as well as unincorporated portions of the county. There are 203 areas designated as neighborhoods located within the project area.

Major transportation corridors include I-4, US 17-92, SR 50 (Colonial Drive), SR 408 (East-West Expressway), SR 528 (Beachline Expressway), Florida's Turnpike, and SR 417 (Central Florida Greenway).

Table B-3 in Appendix B illustrates the race and ethnicity, income level, and transit dependency of the households in each neighborhood. Of the 203 neighborhoods in Orange County, 22 can be classified as minority, 10 as low income and 31 as transit dependent. Several neighborhoods can be classified under two or more demographic indicators: 23 can be classified as low income and transit dependent; 19 as minority, low income and transit dependent; and 1 can be classified as both minority and transit dependent.

Notable landmarks include Lake Lily Park and Fort Maitland Park, the Winter Park Club and Golf Course, the College Quarter District in Winter Park, Orwin Manor Park, Gaston Edwards Park, Orange County Courthouse, Heritage Square, City Commons Plaza, and Orlando City Hall, and the Orlando Regional Medical Center. A detailed summary of the community facilities with associated maps is included in Table B-3 in Appendix B.

Osceola County - The project Corridor extends through the western portion of the county through the City of Kissimmee and unincorporated portions of the County. There are 48 areas designated as neighborhoods located within the project area.

Major transportation corridors include Florida's Turnpike, John Young Parkway, and the Orange Blossom Trail. Florida's Turnpike runs through the northeastern portion of this area while John Young Parkway and Orange Blossom Trail run north and south, generally adjacent to the project Corridor.

Table B-4 in Appendix B illustrates the race and ethnicity, income level, and transit dependency of the households in each neighborhood. Of the 49 neighborhoods in Osceola County, 9 are classified as minority, 1 as low income and 10 as transit dependent. Nine (9) are classified as minority and transit dependent, 5 low income and transit dependent and 5 are low income, minority and transit dependent.

Notable landmarks include the Osceola County Courthouse, the Kissimmee Historic District, the Johnson-Stefee House, the Osceola County Civic Center, the Kissimmee All States Tourist (KAST) Club, Community House Park, Kissimmee Lakefront Park, Yacht Club Park, Lakeshore Recreation Center Park and the Toho Marina. A detailed summary of the community facilities with associated maps is included in Table B-4 in Appendix B.

Impacts and Benefits

No-Build Alternative

The level of traffic increase expected over the next 20 years will have an effect on existing neighborhood quality, community cohesion and the level of service on local roadways. Increasing employment in the existing transportation corridors will cause an increase in the number of cars traveling throughout each County and resulting in increased congestion without an alternative means of travel. Although most of the major congestion will occur on arterial highways that already form major barriers between neighborhoods, increased traffic on major arterials will also result in increased cut-through traffic within the neighborhoods.

Benefits offered by the Full-Build Alternative, such as, improved mobility, affordable transportation and potential redevelopment opportunities would not be realized with the No-Build Alternative.

TSM Alternative

Some of the benefits offered by the Full-Build Alternative would be provided in minor ways with implementation of the TSM Alternative. Redevelopment opportunities, increased mobility and transportation benefits would be much less than those realized by the Full-Build Alternative.

The TSM Alternative would not result in adverse impacts to neighborhood connectivity and circulation patterns as the proposed TSM routes will use existing roadways and will not impose additional barriers to existing circulation patterns. Displacements and relocation impacts are expected to be minor compared to the Full-Build Alternative, and no residential displacements are anticipated. No adverse noise and vibration impacts are expected for the TSM Alternative as the minimal amount of additional bus traffic on roadways will be offset by a reduction in the total number of vehicles on the regional roadway network.

Benefits offered by the Full Build Alternative, such as increased mobility, would not be fully realized with the TSM Alternative since TSM routes will use existing roadways and will be subjected to traffic delays and congestion.

Full-Build Alternative

With the exception of the proposed commuter rail stations, the Full-Build Alternative will be constructed within the existing CSXT ROW; therefore, the project can be constructed with little disruption to the cohesion and circulation patterns of the neighborhoods along the corridor. Chapter 4, section 4.1 describes traffic and roadway analyses leading to these conclusions. The impacts associated with the Full-Build Alternative are described by County below. Any community facilities that may be impacted are specifically named.

Volusia County - There are no intersections in Volusia County that will experience increased delay times as a result of the Full-Build Alternative.

Of the 38 areas designated as neighborhoods in the Volusia County portion of the corridor, 13 of these are within walking distance of a proposed station location.

The introduction of a new station site at both the DeLand Amtrak and DeBary Saxon stations will not create a physical barrier that will lead to community isolation/exclusion/separation. Each of the 6 parcels identified for acquisition in Volusia County are currently vacant and will not adversely impact existing community cohesion and/or character.

Seminole County - As described in Chapter 4, the Full-Build Alternative will result in traffic delay for two at-grade crossings: Lake Mary Boulevard and Altamonte Drive, without mitigation. Adequate mitigation is described in Chapter 4 for these impacts.

Of the 119 areas designated as neighborhoods in the Seminole County portion of the Corridor, 40 of these are within walking distance of a proposed station location. Of these 40 neighborhoods, 22 are designated as low income, 16 are designated as transit dependent, and 19 are designated as minority.

The Full-Build Alternative will require 13 residential relocations in Seminole County, including: Lake Mary Station (7 occupied residences); Longwood Station (3 occupied residences); and Altamonte Springs Station (2 occupied residences). In addition, relocation of seventeen businesses will be required: Sanford/SR 46 (1 business); Lake Mary (1 warehouse); Longwood (3 occupied businesses); and Altamonte Springs (13 occupied businesses and 1 business parking lot).

Seven residential acquisitions are proposed for the west side of Palmetto Street at the Lake Mary Station. This will result in a low to moderately negative impact to community cohesion and character. Input received from the City of Lake Mary to design the station to reflect architectural elements from the downtown master plan will be considered to ensure a seamless fit between the station, downtown Lake Mary to the west and the residential community to the east. The Longwood Station site requires the purchase of 3 occupied residences and 3 active businesses. Although this may result in a moderately negative effect to community cohesion and character, this station will have a positive effect on the surrounding communities by providing better access and mobility choices. The City of Longwood indicated support of the station and proposes joint-use developments: the city envisions the station will supply parking to the historic downtown area and during special events.

The Altamonte Springs station will result in the acquisition of 27 parcels: 2 occupied residences, 13 active businesses and 1 business parking lot. This station, located within the predominately low-income, minority and transit-dependent community of East Altamonte, will result in a negative effect to the community cohesion and character. However, the introduction of the proposed station would have a positive effect on the community through increased access and mobility choices.

Orange County - There are no intersections in Orange County that will experience increased delay times as a result of the Full-Build Alternative.

Of the 203 areas designated as neighborhoods in the Orange County portion of the Corridor, 58 of these are within walking distance of a proposed station location. Of these 58 neighborhoods, 23 are designated as low income, 22 are designated as transit dependent, and 23 are designated as minority.

The Full-Build Alternative will not require any residential relocations but does require two commercial relocations in Orange County, including two fast food restaurants at the proposed Sand Lake Road Station site.

Two active businesses will need to be relocated within the boundaries of Orange County at the Sand Lake Road station. This station site is located within an active industrial/commercial district; therefore there will be no negative effect to community character and cohesion. Positive impacts at this location would be realized through increased mobility.

Osceola County - The Full-Build Alternative will increase traffic delay at one of the at-grade crossings without mitigation: Poinciana Boulevard. Adequate mitigation is described in Chapter 4 for this impact.

Of the 38 areas designated as neighborhoods in the Osceola County portion of the corridor, 13 of these are within walking distance of a proposed station location. Of these 13 neighborhoods, 4 are designated as low income, 9 are designated as transit dependent, and 6 are designated as minority.

The Full-Build Alternative will not result in residential relocations, nor does it result in commercial relocations in Osceola County. Vacant commercial and industrial land will be acquired at both the Osceola Parkway and Poinciana Industrial Park stations.

Mitigation

No permanent impacts to the neighborhoods along the Corridor have been identified, therefore no mitigation is required. Temporary impacts would result during construction of new rail facilities, but there would also be long-term benefits. For many neighborhoods without strong activity centers, the rail stations provide opportunities to: focus new development; enhance bicycle and pedestrian access and connectivity; and institute streetscape improvements and other benefits associated with the transit stations and station areas. The Full Build Alternative would benefit the region by increasing mobility choices and improve access to employment centers, education facilities, activity centers and shopping.

3.1.3 Environmental Justice

This section identifies how areas protected under the Environmental Justice Executive Order (EO) 12898 were defined and the extent to which areas of low-income and minority population would be affected by the alternatives under evaluation in this EA.

Legal and Regulatory Requirements

EO 12898 on Environmental Justice (Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations, February 11, 1994) requires that federal agencies consider and address disproportionate adverse environmental effects of proposed federal projects on minority and low-income communities.

The intent of the Department of Transportation (DOT) Final Order on Environmental Justice (DOT Order 5680.1, “Environmental Justice,” February 15, 1997) is to integrate the goals of Executive Order 12898 into DOT operations including: NEPA, Title VI,

SAFETEA-LU and other DOT-applicable statutes; regulations and guidance that concern planning; social, economic, or environmental matters; public health or welfare; and public involvement.

To meet the requirements of NEPA and EO 12898, this section addresses the characteristics of the affected communities, potential effects on minority and low-income populations, and potential mitigation measures.

Methodology

Year 2000 Census block group data were used to define areas of minority, low-income, or transit-dependent populations adjacent to the proposed CRT Corridor. The impact assessment area for the alternatives under evaluation is defined as any census block group within one-half mile of the rail alignment.

Minority Populations are defined as those populations that are:

- Black (having origins in any of the black racial groups of Africa);
- Hispanic (Mexican, Puerto Rican, Cuban, Central or South American or other Spanish culture or origin, regardless of race);
- Asian American (having origins in any of the original people of the Far East, Southeast Asia, the Indian Subcontinent or the Pacific Islands); or
- American Indian and Alaska Native (having origins in any of the original people of North America and who maintains cultural identification through tribal affiliation or community recognition).

As the 2000 Census discontinued the practice of defining Hispanic origin as an exclusive category and now defines Hispanic individuals as being of any race, minority areas were identified by subtracting the number of white, non-Hispanic individuals from the total population for whom race is determined (the "minority rate"). If the minority rate for a block group was greater than the minority rate for the entire county in which that block group is located, the block group was classified as having greater than average minority population.

Low-income areas are defined as those block groups for which 1999 median household income is at or below 80 percent of median household income for the entire county.

Transit-dependent areas are defined by calculating the number of households with no access to a vehicle as a percentage of the total number of households (the "transit-dependent rate"). This calculation is made for each block group and for the entire county. If the transit-dependent rate for a block group exceeds the rate for the entire county, the block group is classified as having greater than average transit dependency.

Neighborhood designations are the same as described in Section 3.1.2 above and as illustrated on the figures included in Appendix B - Land Use and Community Cohesion. The locations of minority, low-income, or transit-dependent populations along the Corridor are illustrated for each of the four counties in Figure 3-1 through Figure 3-4.

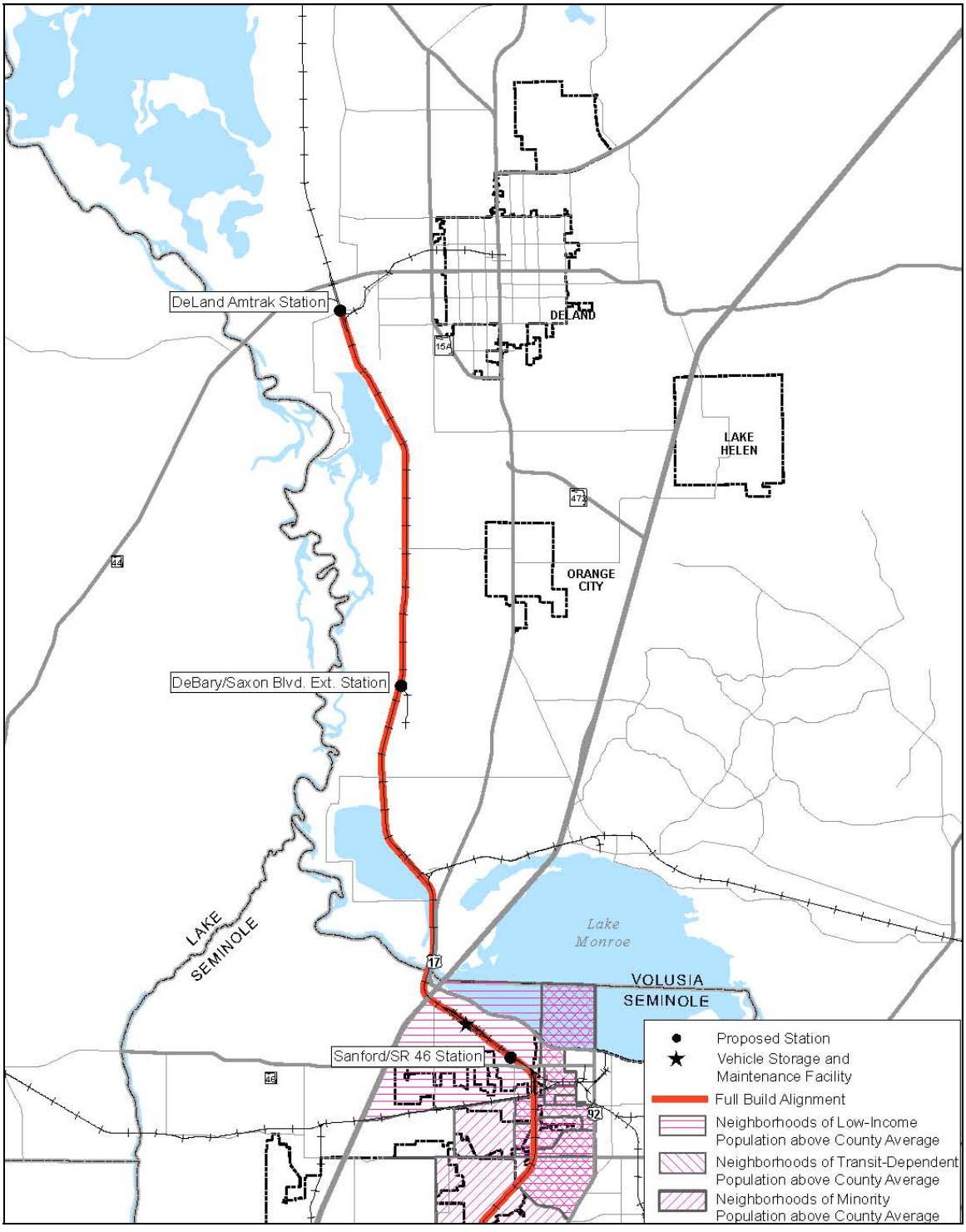

Figure 3-1 Demographic Indicators – Volusia

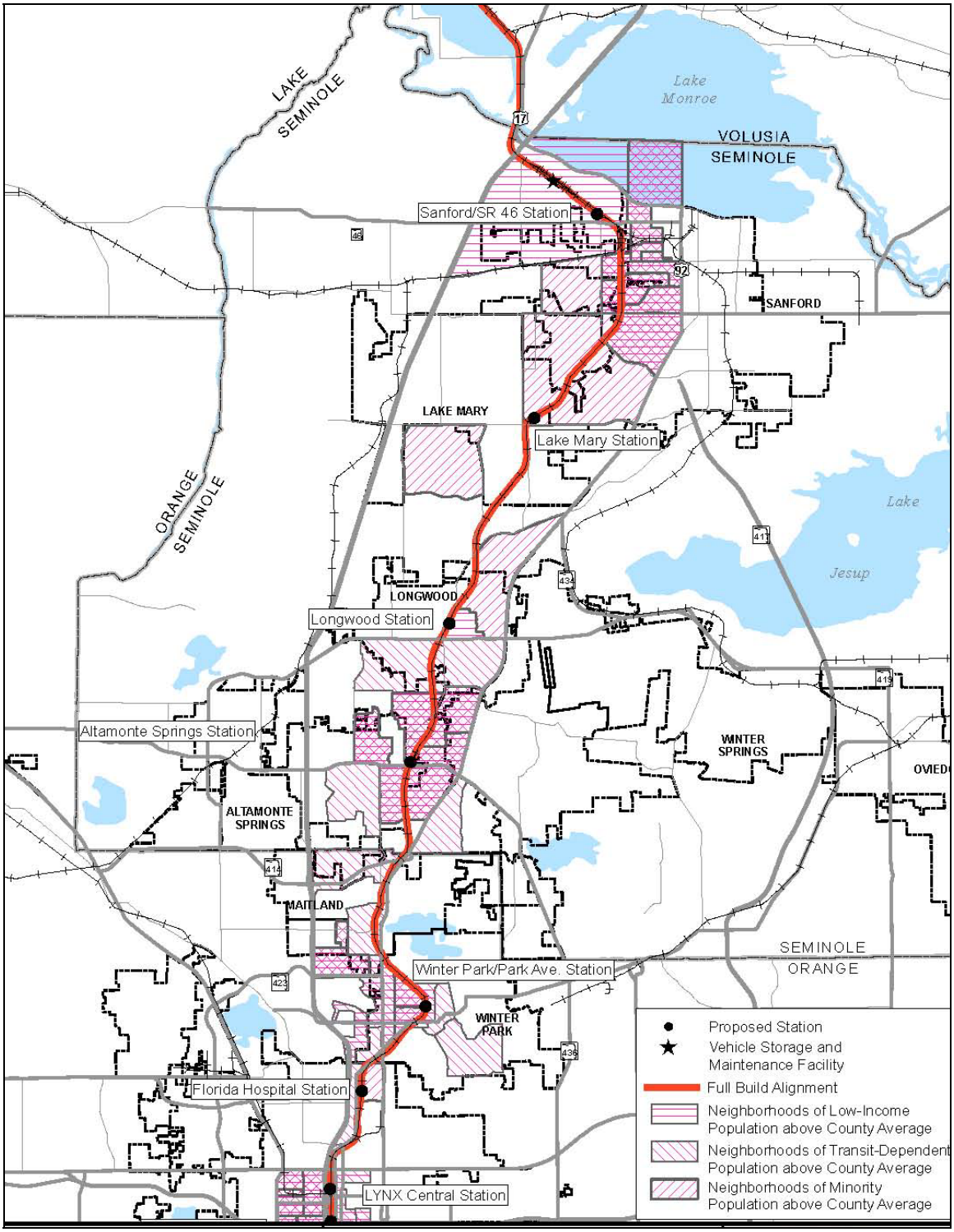

Figure 3-2 Demographic Indicators – Seminole

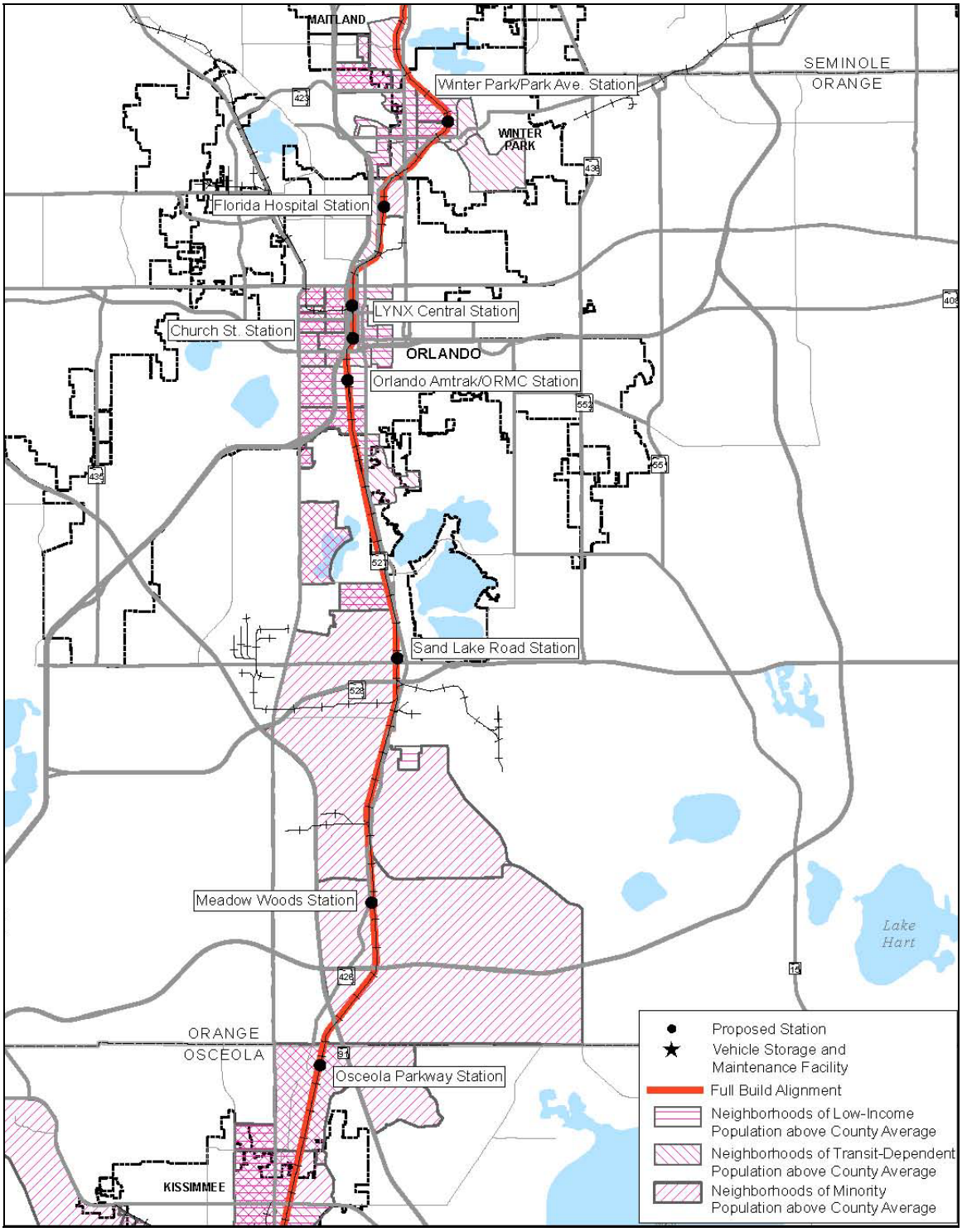

Figure 3-3 Demographic Indicators - Orange

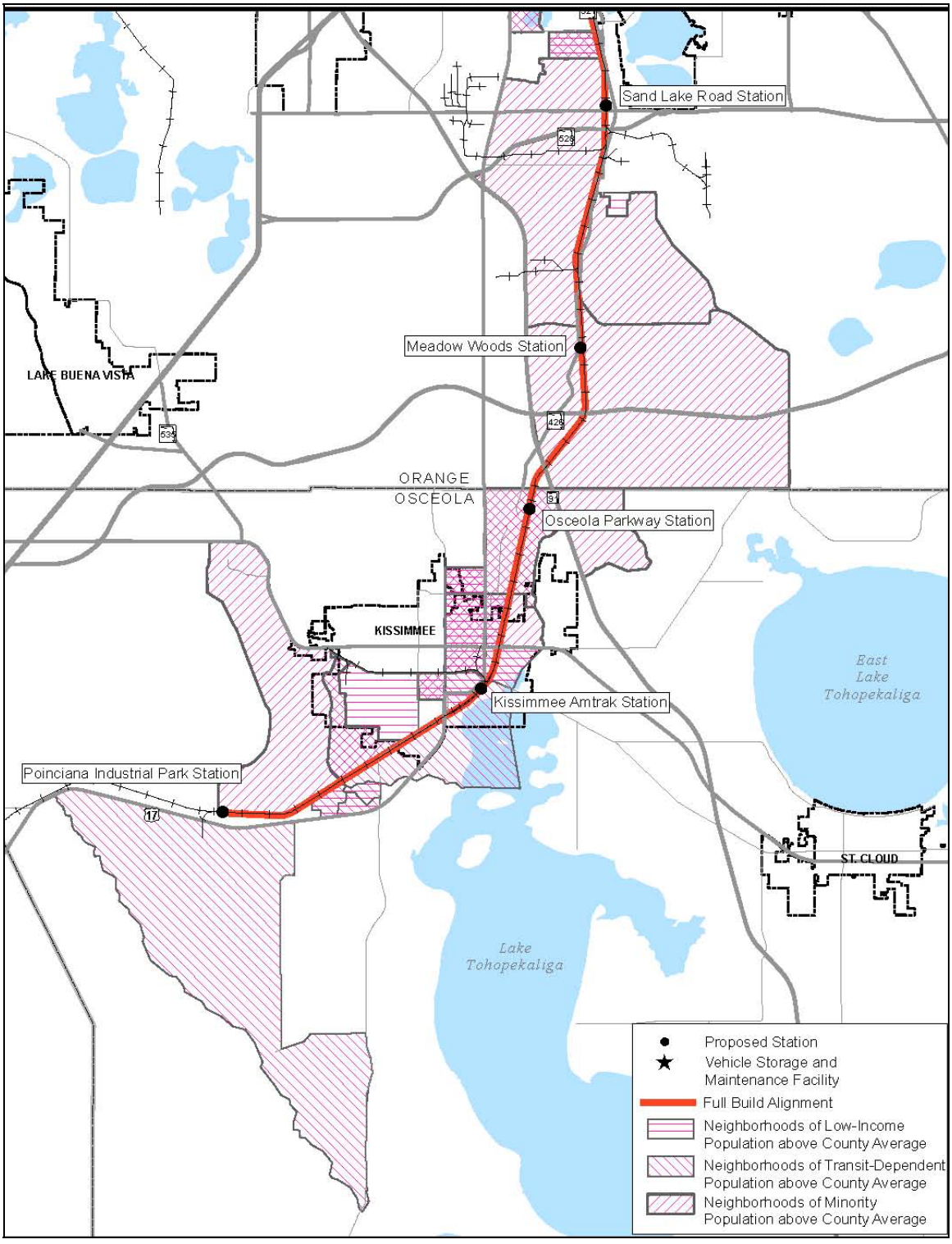

Figure 3-4 Demographic Indicators - Osceola

Existing Conditions

Income characteristics throughout the Corridor are summarized in Table 3-1. Table 3-2 lists all neighborhood areas within the low-income block groups. No block groups in Volusia County were classified as low-income.

Table 3-1 Low Income Population by County: Corridor-wide

County	Block Groups in Corridor with Low Median Household Income (MHI)	Number of Block Groups where MHI is Low Income (≤ 80%)	Number of Block Groups in the Corridor Area
Volusia	No	0	11
Seminole	Yes	16	36
Orange	Yes	31	80
Osceola	Yes	12	27

Table 3-2 Total Number of Low-Income Neighborhoods by County

Volusia	Seminole	Orange	Osceola
0	40	47	17

Areas of minority population are summarized in Table 3-3 and Table 3-4 No block groups in Volusia County were classified as minority areas.

Table 3-3 Minority Population by County

Corridor County	Block Groups in Corridor with Primarily Minority Population	Total Population in Corridor	Minority Population in Corridor	Percent Minority Population	Countywide Minority Average
Volusia	No	20,504	1,626	7.9%	18.1%
Seminole	Yes	90,346	27,320	30.2%	24.8%
Orange	Yes	116,693	43,877	37.6%	42.5%
Osceola	Yes	58,647	23,413	39.9%	40.4%
ALL	**Yes**	**286,190**	**96,236**	**35.1%**	**N/A**

Table 3-4 Total Number of Minority Neighborhoods by County

Volusia	Seminole	Orange	Osceola
0	67	49	17

In assessing the impacts on minority and low-income populations, it is important to account for impacts on transit-dependent populations as well. The four counties are summarized in terms of their transit dependency in Table 3-5 and Table 3-6. In Seminole, Orange, and Osceola Counties, the percentage of transit-dependent households in the project Corridor area is higher than the countywide average. Neighborhoods with a greater amount of transit dependency than in the county at-large are shown in Table 3-6 for Seminole, Orange, and Osceola Counties. No neighborhoods

had a greater amount of transit dependency than the countywide average in Volusia County.

Table 3-5 Transit-Dependent Population by County

Corridor County	Total Households in County	Transit-Dependent Households in Corridor	Percentage of Transit-Dependent Households in Corridor	Countywide percentage transit-dependent
Volusia	8,498	309	0.4%	7.1%
Seminole	34,574	2,151	6.2%	4.5%
Orange	46,645	5,070	10.9%	7.3%
Osceola	20,948	1,539	7.3%	5.7%
ALL	**110,665**	**9,069**	**8.2%**	

Table 3-6 Total Number of Neighborhoods with a Primarily Transit-Dependent Population by County

Volusia	Seminole	Orange	Osceola
0	55	85	33

Impacts and Benefits

No-Build

The No-Build Alternative will have no impact on the Corridor area in terms of land acquisition or facility construction. It will indirectly affect areas of greater minority population and low-income population through limited transit options, foregone street and pedestrian amenity improvements associated with the Full-Build Alternative, and a greater dependence on existing transit service and road infrastructure. If existing transit service levels must accommodate population growth and increased travel demand, the transit-dependent population of the study area will be impacted through reduced transit capacity and service availability.

TSM Alternative

The TSM Alternative increases bus service throughout the study area and will modestly benefit areas with higher concentrations of transit-dependent population. It does not offer the same level of benefits as the Full-Build Alternative and will result in negative impacts in limited transit options and foregone street and pedestrian amenity improvements envisioned for the Full-Build Alternative.

Full-Build Alternative

According to U.S. census data, by the year 2025, 18 percent of the U.S. population will be 65 and older and many will be unable to drive. One-fifth of today's seniors 65 years and older do not drive. A 2004 AARP/Surface Transportation Policy Project report found that 50% of non-drivers age 65 and older stay home on any given day partially because they lack transportation options, making 15% fewer trips to doctors, and 65% fewer trips for social, family and religious activities. By 2025 the percentage of total population over age 65 in Florida is expected to rise to 25-30%, the highest percentage in the nation.

In general, residential and commercial displacements under the Full-Build Alternative will be concentrated in proposed station locations. Proposed station locations in the Full-Build Alternative are located near areas with the greatest concentrations of minority population, low-income population, and transit-dependent population, with transit-dependent populations within a ½ mile radius of the proposed stations being a higher percentage than their corresponding countywide proportions, given the methodology employed.

The Full-Build Alternative would provide benefits to transit-dependent populations along the Corridor by increasing mobility and improving access to employment centers throughout the Corridor. As noted, the percentage of transit-dependent populations along the Corridor is higher than the corresponding countywide proportions and the transit-dependent population within the Corridor area is better served by the transit provided by the Full-Build Alternative.

Unmitigated noise impacts associated with the Full-Build Alternative are estimated to exceed the FTA "severe impact" criteria at 54 locations along the Corridor. Most of the impacted locations are residential locations and many of these exceedances occur within areas that have been identified as Environmental Justice areas. However, these areas are already impacted by noise from the warning horns from the existing CSXT freight trains and Amtrak trains. Presently, up to 26 passenger and freight rail trains a day travel along the CSXT corridor, including 10 through trains and up to 10 local trains (depending on location) that travel various segments of the project corridor. From an Environmental Justice standpoint, a noise sensitive site is considered to be negatively or disproportionately impacted if the area is located within a block group that has been identified as either, or with any combination of minority, low-income, or transit dependent populations and is not located within reasonable walking or driving distance to a commuter rail station. Of the identified locations for severe noise impacts, four locations were determined to be negatively impacted (without mitigation) by the Full-Build Alternative, including one location in Lake Mary, one location in Altamonte Springs and two locations in the vicinity of Florida Hospital.

The potential impacts of the Full Build Alternative are summarized in Table 3-7 below.

Mitigation

To avoid disproportionate impacts to low-income, minority or transit-dependent populations, noise abatement/mitigation measures are required. To lower the noise level throughout the corridor to acceptable levels (resulting in no "severe" noise impacts), FDOT is committed to outfitting the CRT DMU trains with a specially designed horn that will be shrouded and muffled so as to reduce noise impacts to noise receptors along the CSXT corridor in the vicinity of grade crossings. With the inclusion of the shrouded and muffled train horn there are no severe noise impacts anywhere along the corridor. FDOT is committed to additional noise mitigation if additional analysis of the effectiveness of the shrouded and muffled train horn shows that mitigation is required. FDOT will install sound insulation as required at any remaining impacted noise receptors to mitigate the potential noise impacts of the CFCRT project. Specific locations and applications of these mitigation measures will be identified and evaluated as the project design progresses.

Table 3-7 Summary of Impacts to Low-Income, Minority and/or Transit-Dependent Populations

County	Station Name	Noise Impacts (mitigated)		Displacement / Relocation		Parkland Impacts		SUMMARY		
		Total Impacted	Minority, Low Income and/or Transit-Dependent	Total Impacted	Minority, Low Income and/or Transit-Dependent	Total Impacted	Minority, Low Income and/or Transit-Dependent	Impacts to Low-Income, Minority and/or Transit-Dependent Populations	Transit Access Benefit Provided to Low-Income, Minority and/or Transit-Dependent Populations (located within 1/2 mile)	Disproportionate Impacts to Low-Income, Minority and/or Transit-Dependent Populations
Volusia	DeLand Amtrak	0	-	0	-	0	-	-	-	-
	DeBary / Saxon Boulevard Extension	0	-	0	-	0	-	-	-	-
Seminole	Sanford / SR 46	0	0	1 business	1 business	0	0	1 business	Yes	No
	Lake Mary	1	1	7 occupied residences and 1 warehouse	0	0	0	1 noise receptor	Yes	No
	Longwood	0	0	3 occupied residences and 3 active businesses	0	0	0	0	Yes	No
	Altamonte Springs	1	1	2 occupied residences, 13 active businesses and 1 business parking lot	2 occupied residences, 2 active businesses	0	0	1 noise receptor 2 occupied residences, 2 active businesses	Yes	Yes (Moderate)
Orange	Winter Park / Park Avenue	0	0	0	0	0	0	0	Yes	No
	Florida Hospital	2	2	0	0	0	0	2 noise receptors	Yes – 1 noise receptor No – 1 noise receptor	No
	LYNX Central Station	0	0	0	0	0	0	0	Yes	No
	Church Street	0	0	0	0	0	0	0	Yes	No
	Orlando Amtrak / ORMC	0	0	0	0	0	0	0	Yes	No
	Sand Lake Road	0	0	2 active businesses	0	0	0	0	Yes	No
	Meadow Woods	0	0	0	0	0	0	0	Yes	No
Osceola	Osceola Parkway	0	0	0	0	0	0	0	Yes	No
	Kissimmee Amtrak	0	0	0	0	0	0	0	Yes	No

County	Station Name	Noise Impacts (mitigated)		Displacement / Relocation		Parkland Impacts		SUMMARY		
		Total Impacted	Minority, Low Income and/or Transit-Dependent	Total Impacted	Minority, Low Income and/or Transit-Dependent	Total Impacted	Minority, Low Income and/or Transit-Dependent	Impacts to Low-Income, Minority and/or Transit-Dependent Populations	Transit Access Benefit Provided to Low-Income, Minority and/or Transit-Dependent Populations (located within 1/2 mile)	Disproportionate Impacts to Low-Income, Minority and/or Transit-Dependent Populations
	Poinciana Industrial Park	1	0	0	0	0	0	0	Yes	No
Corridor Summary		5	3	12 residences 19 businesses 1 business parking lot	2 residences 3 businesses	0	0	3 noise receptors 2 residences 3 businesses	Yes	**No**

Notes: 1. Assessment area for each station includes to mid-point between adjacent stations.
2. "-" Indicates no defined EJ population within station assessment area.
3. This analysis was based on Census Tract designations for low income, minority and transit-dependent populations. Status of specific impacted property and business owners relative to being minority, low-income, or transit dependent has been verified by field survey at Altamonte Springs Station only.

3.1.4 Public Safety, Security and Community Services

This section discusses the potential impact the project may have on public safety, security and community services along the project study corridor. The impact of the proposed project on the safety and security of pedestrians, bicyclists, and motorists was assessed. Community services considered include emergency vehicles and travel to/from schools and hospitals. This assessment utilized traffic information summarized in Chapter 4 No-Build Alternative.

The No-Build Alternative will result in no direct impacts to public safety, security, and community services along the corridor. Upgrades to existing grade crossing surfaces, protection devices, and other infrastructure planned as part of the proposed project would not occur. Absent implementation of the proposed commuter rail operation during weekdays, the existing freight train operations which include long freights that block grade crossings for extended periods of time would continue with freight train volumes likely to increase over time. Crossing gate down time associated with long freight trains is significantly longer and less predictable than gate down times associated with the proposed commuter rail operation. The length of the freight trains results in numerous grade crossings being blocked concurrently along long segments of the corridor. As a result, each incident of crossing delay is lengthy and unpredictable, and the ability of emergency responders to use alternative crossing points is limited.

TSM Alternative

The TSM Alternative would not change the infrastructure or operation of the rail line. Therefore, the impacts of the TSM Alternative on public safety, security, and community services along the corridor would be similar to the No-Build Alternative.

Full-Build Alternative

When CRTs travel through an at-grade roadway crossing, emergency and community services (as well as general traffic) may experience a slight additional delay when travel is required from one side of the railroad tracks to the other. Vehicle delay may be experienced at both at-grade crossings and at adjacent intersections. Vehicle delay will only occur when a train is present. It should be noted that this delay is not of the magnitude currently experienced with regard to CSXT freight trains and AMTRAK passenger trains.

In Chapter 4 section 4.1.4 (Roadways) the results of vehicle delay are summarized. Throughout the Corridor the vehicle delay created by the CRT operations through grade crossings will be minor except for some locations where grade crossings are located immediately adjacent to proposed CRT stations.

The Build Alternative improves the safety and security for pedestrians, bicyclists, and motorists by improving the crossing surfaces and protection devices at existing grade crossings, and by installing fencing along sections of the railroad right-of-way to prevent trespassing and intrusion. The rescheduling of freight train operations away from weekdays in the Build Alternative will improve public safety and security by reducing exposure of the general public to those operations. Additionally, crossing delays associated with the long through freight trains will be eliminated from weekdays when most community service related transportation, including school buses, is in operation. While the frequency of operations in the proposed CRT will be higher than in the No-Build, the delay at grade crossings will be predictable and of durations comparable to traffic signal phases.

Delays at at-grade crossings adjacent to stations will be reduced or eliminated through mitigation and routing measures such as:

- Identification of alternative routes, where practical, to avoid the most congested areas.
- Identification of areas where capacity and signal improvements can reduce delays at grade crossings and intersections.
- Provision of signal pre-emption where applicable to reduce delay at intersections.
- Coordination of Intelligent Transportation Systems (ITS) technology so emergency responders can adjust routes to avoid congested areas.

3.1.5 Economic Impacts

The social and economic impacts and benefits of the project are summarized in this section. A brief overview is provided, with an emphasis on the initial loss of revenue that will be experienced by cities and counties served by the project due to conversion of land from private to public ownership. Since the majority of the project is located within an existing railroad ROW, only minor amounts of land will be purchased for the proposed project to accommodate stations, parking and stormwater management facilities.

Methodology

Data collected for the community impact assessment and property acquisition estimates for each proposed station are the basis for this analysis. Taxable value per acre and millage rates for each county were used to calculate the amount of land that is currently taxable and will be converted to non-tax revenue generating lands if the Full-Build Alternative is implemented. The taxable value per acre was based on tax assessments that occurred by the municipality or unincorporated area between 2003 and 2005. Taxable value per acre was identified for representative parcels in each of the station areas; an average value was used for stations with multiple parcels with different taxable value.

Existing Conditions

The various municipalities and counties in the study area collect tax revenue on land within their jurisdiction. If this land is converted from private to public ownership, the municipality will lose the tax revenue that was previously generated for that particular parcel of land. The 2005 millage rates for the municipalities within the project study area range from 19.95 in Seminole County to 22.6 in Volusia County.

Impacts and Benefits

No-Build Alternative

No additional land would be acquired for the No-Build Alternative, therefore, no land will be converted from tax revenue generating to non-revenue generating. Therefore, no loss in tax revenues is anticipated with the No-Build Alternative.

TSM Alternative

Only minor amounts of land are anticipated to be acquired for the TSM Alternative. As specific parcels have not been identified, no analysis of the lost property tax revenues is currently available. It is expected that the amount of land takings, and thus the amount of taxable land converted to public ownership, would be less than the Full-Build Alternative. Consequently, the direct economic impact of the TSM Alternative is less than the Full-Build Alternative.

Full-Build Alternative

The CRT is expected to result in isolated short-term loss in taxable property where privately owned land is needed for stations, offset by significant economic benefits during construction, operations, and increased economic development. The loss in taxable revenue associated with the Full-Build Alternative is estimated at $672,072.22. (This loss in tax revenue is based on the conversion of land from private, or tax-revenue generating status, to public ownership, which does not generate tax revenues. These estimates were based on the 2005 millage rates for each county. If a city's millage rate was less than the county, the county rate was used to generate a worst-case estimate of revenue lost.) The tax revenue lost by the counties range from $416 in Volusia County to $429,814 in Orange County (and the associated cities).

The Full Build Alternative would result in a $473.5 million capitol investment in the region. Materials and labor for the construction would be purchased within the four county region. The revenue from local purchases of material and labor would far outweigh the taxable revenue lost.

The positive economic impacts of transit are well documented and can be expected to outweigh the short term reduction in tax base at some station locations. New public transportation-oriented development expands business revenues, leading to new jobs and higher wages and salaries, thus increasing the tax base and revenues flowing to local and state governments. Studies show that, nationwide, residential and commercial property values rise with proximity to rail public transportation systems and stations.[1]

The Washington Metrorail system is expected to generate $2.1 billion in tax revenues for the Commonwealth of Virginia between 1977, when the first station opened in Virginia, and 2010.[2] In addition, the increase in taxable value of properties located near Dallas' DART transit stations between 1994 and 1998 was 25 percent higher than elsewhere in the metropolitan area.

3.1.6 Utilities

Existing Conditions

The existing rail corridor to be modified and used by the commuter rail Full-Build Alternative crosses the service areas of many public and private utility owners. The proposed improvements necessary to implement commuter rail service in the Corridor may affect the locations of existing utilities. Existing utilities have been installed along and crossing the ROW in both aerial and buried configurations. The general locations of the existing facilities were identified using information provided by some utility owners, using available GIS databases, reviewing aerial photography, reviewing CSXT valuation maps indicating known utility easements, and field visits. The known utilities in the rail corridor were grouped into the following categories.

- Cable television;
- Power;
- Telecommunications;
- Sewer;
- Water;
- Gas;
- Municipalities; and
- Counties.

[1] Porter, Douglas R., Synthesis of Transit Practice 20: Transit-Focused Development, Transit Cooperative Research Program, Transportation

[2] KPMG Peat Marwick, Fiscal Impact of Metrorail on the Commonwealth of Virginia, November 1994

Impacts and Benefits

The No-Build Alternative would make no change to any utilities, and the TSM Alternative would have only minor utility coordination issues at proposed park and ride facilities. The utility relocations associated with the Full-Build Alternative are feasible. The exact locations of the utility systems in the rail corridor will be determined during subsequent design phases of this project, and conflicts with these systems will be further identified and addressed at that time. The final design of the proposed commuter rail service will be coordinated with the utility owners who have facilities within the project Corridor. Proper coordination during design will minimize relocation adjustments and disruptions of service to the public. Contact information for each utility category is provided in Appendix C.

3.1.7 Railroads

Existing Conditions

The study corridor is traversed by a primary railroad track, referred to as the "A" line, which is owned, operated, and maintained by CSX Transportation. The CSXT "A" line begins in Jacksonville, Florida, passes through the study corridor, and ends in Auburndale, Florida. Track charts indicate that the "A" line is primarily a single track with some segments that are double tracked. The "A" line provides access for commercial, industrial, and passenger rail services. Rail yards within the study area exist at Rand Yard in Sanford, Kaley Yard in Orlando, and Taft Yard south of Sand Lake Road in Orange County. Many commercial and industrial sidings exist throughout the study area. A major spur track intersects the "A" line in downtown Orlando. The spur line is owned by CSXT, but leased and operated by the Florida Central Railroad and provides access to areas near Mount Dora in west Orange County. A second major spur line intersects the "A" line south of Taft Yard in Orange County. This spur line is owned and operated by Orlando Utilities Commission (OUC) and allows coal supplies to access the OUC power plant located east of Orlando International Airport.

The National Railroad Passenger Corporation, operating under the service mark Amtrak, provides long-distance intercity rail passenger service over the CSXT-owned "A" line. As of October 31, 2005 Amtrak operates two trains (the Silver Meteor and Silver Star) daily in each direction serving passenger stations in DeLand, Winter Park, Orlando, and Kissimmee. A third train, the transcontinental Sunset Limited, normally provides service 3 days per week to DeLand, Winter Park and terminating at Orlando, but was suspended due to hurricane damage along the Gulf Coast. Additionally, the Amtrak Auto Train uses the northern portion of the "A" line, terminating at Sanford.

Impacts and Benefits

The No-Build and TSM Alternatives do not utilize the existing rail line and therefore have no potential impact on either the railroads or the utilities that share the rail corridor. The commuter rail Full-Build Alternative would upgrade the rail track and signal infrastructure along the "A" line between DeLand and Poinciana Boulevard in tandem with implementation of an operating plan enabling the line to provide the proposed commuter rail service.

The addition of approximately 42 miles of new double track along the existing CSXT right-of-way (ROW) will be required to accommodate the Full Build CRT service from

DeLand to Poinciana Boulevard. There will be no double track through Maitland (1.5 miles) and at the St Johns River Bridge. The location of additional track for the Full Build Alternative is illustrated on Figure 2-5.

The improved rail infrastructure and proposed operating plan will maintain the ability of CSXT and other rail freight operators to provide service to commercial and industrial rail users, and will continue to accommodate Amtrak long-distance intercity passenger services. For freight services, the Full-Build Alternative provides capacity to accommodate through trains as well as local switching train movements by shifting freight operations to times of day that do not interfere with the commuter rail service, which is focused on the morning and evening peak commuting periods. The few existing Amtrak trains that operate through the corridor do so during off-peak time periods and are accommodated in the plan.

Passenger platforms at each of the 16 proposed stations in the commuter rail Full-Build Alternative will be designed to be compliant with applicable FRA regulations pertaining to rail lines with freight and passenger operations. Where proposed, the overhead pedestrian bridges at stations will meet applicable horizontal and vertical clearance requirements consistent with continued operation of freight and Amtrak service on the line. See Section 2.3.6 for additional details on the proposed CRT station details.

3.1.8 Displacements and Relocations

Acquisition of property for the CRT project is governed by the procedures established by the Uniform Relocation and Real Property Acquisition Act of 1970, as amended and regulations promulgated at 49 CFR Part 24, Uniform Relocation Assistance and Real Property Acquisition for Federal and Federally Assisted Programs.

The acquisition and relocation program will be conducted in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, and relocation resources will be available to all relocated business and residents without discrimination.

The Florida Department of Transportation Real Estate Acquisition Process (effective April 1, 2006) is implemented by Department Right of Way Specialists assigned to work with the business and property owners and guide them through what can be a tramatic ordeal. These representatives provide documentation and explain the procedures to be followed as well as the benefits the Department offers to reduce the detrimental impacts on their businesses and/or home relocation. The details outline the approach that will be followed in negotiating the purchase of property, definition of eligible business damages resulting from the acquisition and benefits available throughout the transition that begin prior to the property purchase price negotiation and ending with a mutually satisfactory re-location.

No-Build Alternative

Implementation of the No-Build Alternative would not require property takings or relocations.

TSM Alternative

Parking will not be provided at all TSM locations, primarily downtown Orlando stops and at proposed stops in Winter Park and downtown Kissimmee. These TSM stops with no parking will not require land takings. Three locations associated with the TSM Alternative are located at identical locations as CRT stations for the Full-Build Alternative, including Sand Lake Road, Osceola Parkway and Poinciana Industrial Park and are assumed to have similar land taking requirements to the proposed CRT stations at these locations.

For the three CRT/TSM locations and the remaining additional eleven TSM stop locations where parking will be provided, the total area required to construct the TSM stops is estimated at approximately 80.4 acres.

Full-Build Alternative

A total of 130.2 acres of property on 98 separate parcels will be directly affected for the Full-Build Alternative along the corridor, which includes parcels in both public and private ownership. Table 3-8 summarizes the proposed takings for the Full-Build Alternative along the Corridor. The table does not include the VMSF which is entirely within CSXT property. Appendix L contains a listing of impacted parcels and potential relocations.

Without exception, proposed takings are associated with the construction of the proposed CRT stations, although not all proposed stations will require property takings (e.g., Winter Park/Park Avenue, Florida Hospital, LYNX Central Station Church Street and Orlando Amtrak/ORMC stations do not include parking facilities and will be constructed entirely within existing CSXT or publicly held ROW.)

Table 3-8 Summary of Property Takings for Full-Build Alternative

County	Station	Parcel Area (AC)	Take Area (ac)	Relocations Required?
Volusia County	DeLand Amtrak	86.19	5.77	No
	DeBary/ Saxon Boulevard Extension	179.44	16.30	No
Seminole County	Sanford/ SR-46	15.52	15.52	Yes – 1 business
	Lake Mary	10.82	10.82	Yes – 7 occupied residences and 1 warehouse
	Longwood	6.43	4.38	Yes – 3 occupied residences and 3 active businesses
	Altamonte Springs	26.22	13.24	Yes - 2 occupied residences and 13 active businesses plus one business parking lot
Orange County	Winter Park/ Park Avenue	0.00	0.00	No
	Florida Hospital	0.00	0.00	No
	LYNX Central Station	0.00	0.00	No
	Church Street	0.00	0.00	No
	Orlando Amtrak/ ORMC	3.31	1.52	No
	Sand Lake Road	12.45	12.45	Yes – 2 active businesses
	Meadow Woods	35.49	34.77	No
Osceola County	Osceola Parkway	22.80	7.82	No
	Kissimmee Amtrak	4.82	3.89	No
	Poinciana Industrial Park	14.77	3.26	No
	TOTALS	**455.95**	**130.23**	**------**

3.2 Cultural and Historical Resources

3.2.1 Archaeological and Historic Resources

This section summarizes the findings of separate aboveground historic property and archaeological reconnaissance surveys conducted for the CRT Corridor. The results and recommendations of these surveys are intended to provide information that will facilitate consultation between the project sponsors and the responsible review agencies to determine whether the construction of the project has the potential to adversely affect any of the properties judged to be potentially eligible for the National Register of Historic Places (NRHP). The purpose of the archaeological and historical/architectural surveys was to provide information to assist in the avoidance of National Historic Landmark properties and archaeological sites and historic resources which are listed, determined eligible, or considered potentially eligible for listing in the NRHP.

Legal and Regulatory Requirements

A Cultural Resource Assessment Survey (CRAS) was completed to assist in complying with the NEPA of 1969; Section 106 of the National Historic Preservation Act (NHPA) of 1966 (Public Law 89-655, as amended), as implemented by 36 CFR 800 (Protection of Historic Properties, revised January 2001); and Section 4(f) of the DOT Act of 1966 (Public Law 89-670, as amended). This study was conducted in accordance with Chapters 253, 267, and 872 of the Florida Statutes, and Part 2, Chapter 12 (Archaeological and Historic Resources) of the FDOT Project Development and Environment Manual (revised). The NHPA, as amended, was enacted by Congress in 1966 to preserve and protect the Nation's historic buildings, neighborhoods, landscapes, and archaeological sites. The NHPA established the NRHP and created the Advisory Council on Historic Preservation (ACHP). Under Section 106 of the NHPA, Federal agencies are responsible for identifying National Register listed or eligible resources and assessing the effects of the their actions on them. The procedures prescribed in Section 106 are referred to as the "Section 106 process" and are set forth, in regulations issued by the ACHP, "Protection of Historic Properties" (36 CFR 800).

Section 4(f) of the DOT Act of 1966 (49 USC 303) and implementing regulations (23 CFR 771.135) (Section 4(f) as it is commonly known) provides that the Secretary of Transportation may not approve a project that involves use of land from a significant publicly owned park, recreation area, wildlife or waterfowl refuge, or any significant historic site unless: (1) there is no feasible and prudent alternative to the use of the land; and (2) the proposed action includes all possible planning to minimize harm to the property from such use.

Methodology

The historical/architectural and archaeological field surveys, conducted between April and July 2005, were conducted within the project Area of Potential Effect (APE), defined as the zone within approximately 100 feet from the edge of each side of the existing CSXT ROW and the footprint and immediately adjacent property of each proposed station and other ancillary facility. The APE and survey methodology were approved by the State Historic Preservation Officer (SHPO) in April 2005.

Once the APE and methodology were approved, all archaeological and historical resources within the APE were identified through background research and field survey. The resulting Cultural Resource Assessment Survey Report[3], reviewed by the FDOT and the SHPO, has been prepared as a stand alone technical report.

Existing Conditions and Survey Results

Archaeological Resources

Archaeological background research, including a review of the Florida Master Site File (FMSF) and the NRHP, indicated that seven previously recorded prehistoric and historic period archaeological sites are located within or proximate to the project APE. These include a single artifact site (8VO4715), a sand mound (8VO52), and five historic period resources (8VO2594, 8SE1720, 8OR4308, 8OR9620 and 8OR9622). Site 8OR4308, the Winter Park Golf Course, is NRHP-listed as a contributing resource within the Winter Park Country Club and Golf Course Historic District (8OR4307/4308).

Of the other six sites, 8VO4715 was evaluated as ineligible for listing in the NRHP by the SHPO; the remaining sites were not evaluated. As a result of field survey, one new historic period archaeological site, the Old Monroe Road Site (8SE1934), was identified within the project APE, and three of the previously recorded sites (8OR4308, 8OR9620, and 8OR9622) were located and assessed. The Old Monroe Road Site, a historic roadway segment, is considered ineligible for listing in the NRHP. Sites 8OR9620 and 8OR9622, segments of a historic trail and railroad, respectively, have insufficient information to determine potential NRHP eligibility. As located within the project APE, they do not appear to meet the NRHP eligibility criteria.

Historic Resources

A total of 157 historic resources were previously identified within the project APE, including 27 which are no longer extant, and 29 which were never officially entered into the FMSF. Of these recorded sites, 11 historic resources are NRHP-listed or determined eligible. These include historic districts in Kissimmee (8OS1724), Downtown Orlando (8OR422), and Longwood (8SE585); the Old Orlando Railroad Depot (8OR25); three commercial structures in Orlando (8OR20, 8OR183, and 8OR3447); residences in Orange County (8OR177 and 8OR469) and Volusia County (8VO5162); plus the Winter Park Country Club and Golf Course (8OR4307 and 8OR4308).

Background research and historical/architectural field survey resulted in the recording of 229 newly identified historic resources, and the updating of 79 previously identified historic resources. Of these, 16 historic resources are considered potentially NRHP-eligible. These include:

- Three potential historic districts: the Orange Avenue Commercial District (8OR6075) in Orlando; Orwin Manor Historic District (8OR6074) at the boundary of Orlando and Winter Park; and; the College Quarter Historic District (8OR6073) in Winter Park.

[3] Archaeological Consultants, Inc., *Cultural Resources Assessment Survey Report,* [date of final report]

- Five railroad stations/depots [Kissimmee ACL Railroad Station (8OS415), Orlando ACL Railroad Station (8OR139), Winter Park ACL Freight Depot (8OR9358), Sanford Railroad Station (8SE2079), and the DeLand Railroad Station (8VO2653)];

- Four residences including the Johnson-Steffe House (8OS42), W.B. Makinson House (8OS501), Pine Crest Villa (8OR2263), and the Wise-Taliaferro Residence (8OR2265);

- One religious structure, the Episcopal Church of the Good Shepherd (8OR250);

- One industrial resource, the Orlando Water and Light Company (Dr. Phillips Center for the Performing Arts; 8OR182; and

- The Lake Monroe School (8SE1192), also appear to meet the eligibility criteria for listing in the NRHP. Expanded FMSF forms for these 16 properties were prepared to request a determination of NRHP eligibility.

The Orlando ACL Railroad Station (8OR139) and the Orlando Water and Light Company (8OR182) were previously identified as potentially NRHP-eligible during the CRAS of the Central Florida Light Rail Transit System (Janus Research 1998). However, the documentation was never submitted to the SHPO and the buildings were not officially determined NRHP-eligible by the SHPO.

The total 26 NRHP-listed, determined eligible, and potentially eligible historic resources are listed in Table 3-9 and shown on Figure 3-5 and Figure 3-6.

Detailed corridor mapping is included in the *Cultural Resources Assessment Survey Report*.

Table 3-9 NRHP Listed, Determined Eligible and Potentially Eligible Historic Resources

FMSF No.	Name	Location	NRHP Status
8VO2653	DeLand ACL Railroad Station	2491 Old New York Avenue, DeLand	Potentially Eligible
8VO5162	Louis P. Thursby House	Blue Spring State Park, Volusia County	NRHP-Listed in 2000
8SE1192	Lake Monroe School	4009 School Street, Lake Monroe	Potentially Eligible
8SE2079	Sanford Railroad Station	2195 West 8th Street, Sanford	Potentially Eligible
8SE585	Longwood Historic District	Longwood	NRHP-Listed in 1990
8OR2265	Wise-Taliaferro Residence	230 West Ventris Avenue, Maitland	Potentially Eligible
8OR2263	Pine Crest Villa	720 South Central Avenue, Maitland	Potentially Eligible
8OR469	William H. Waterhouse Residence	820 South Lake Lily Drive (South Orlando Avenue), Maitland	NRHP-Listed in 1983
8OR250	Episcopal Church of the Good Shepherd	331 Lake Avenue, Maitland	Potentially Eligible
8OR4307, 8OR4308	Winter Park Country Club and Golf Course	761 Old England Avenue, Winter Park	NRHP-Listed in 1999 (Locally Listed)
8OR9358	Winter Park ACL Freight Depot	200 West New England Avenue, Winter Park	Potentially Eligible (Locally Listed)
8OR6073	College Quarter Historic District	Winter Park	Potentially Eligible (Locally Listed)
8OR6074	Orwin Manor Historic District	Orlando	Potentially Eligible
8OR6075	Orange Avenue Commercial District	Orlando	Potentially Eligible
8OR182	Orlando Water & Light Company Building (Dr. Phillips Center)	1111 North Orange Avenue, Orlando	Potentially Eligible (Locally Listed)
8OR177	Judge Cheney House	715 N. Garland Avenue (105 West Colonial Drive), Orlando	Determined NRHP-Eligible in 1998 (Locally Listed)
8OR3447	Colonial Garage	62-70 West Colonial Drive, Orlando	Determined NRHP-Eligible in 1998
8OR183	Harry P. Leu, Inc.	100 West Livingston Street, Orlando	Determined NRHP-Eligible in 1998
8OR20	Bumby Hardware	100-102 West Church Street, Orlando	Determined NRHP-Eligible in 1999, Contributing Resource within the Downtown Orlando Historic District; (Locally Listed)
8OR25	Old Orlando Railroad Depot	76 West Church Street, Orlando	NRHP-Listed in 1976, Contributing Resource within the Downtown Orlando Historic District; (Locally Listed)
8OR422	Downtown Orlando Historic District	Orlando	NPS-certified in 1982, (Determined Eligible)
8OR139	Orlando ACL Railroad Station	1400 Sligh Boulevard, Orlando	Potentially Eligible (Locally Listed)
8OS501	W.B. Makinson House	407 East Lake Street, Kissimmee	Potentially Eligible
8OS415	Kissimmee ACL Train Depot	111 East Dakin Avenue, Kissimmee	Potentially Eligible
8OS42	Johnson-Steffe House	404 South Vernon Avenue Kissimmee	Potentially Eligible
8OS1724	Kissimmee Historic District	Kissimmee	NRHP-Listed in 1994

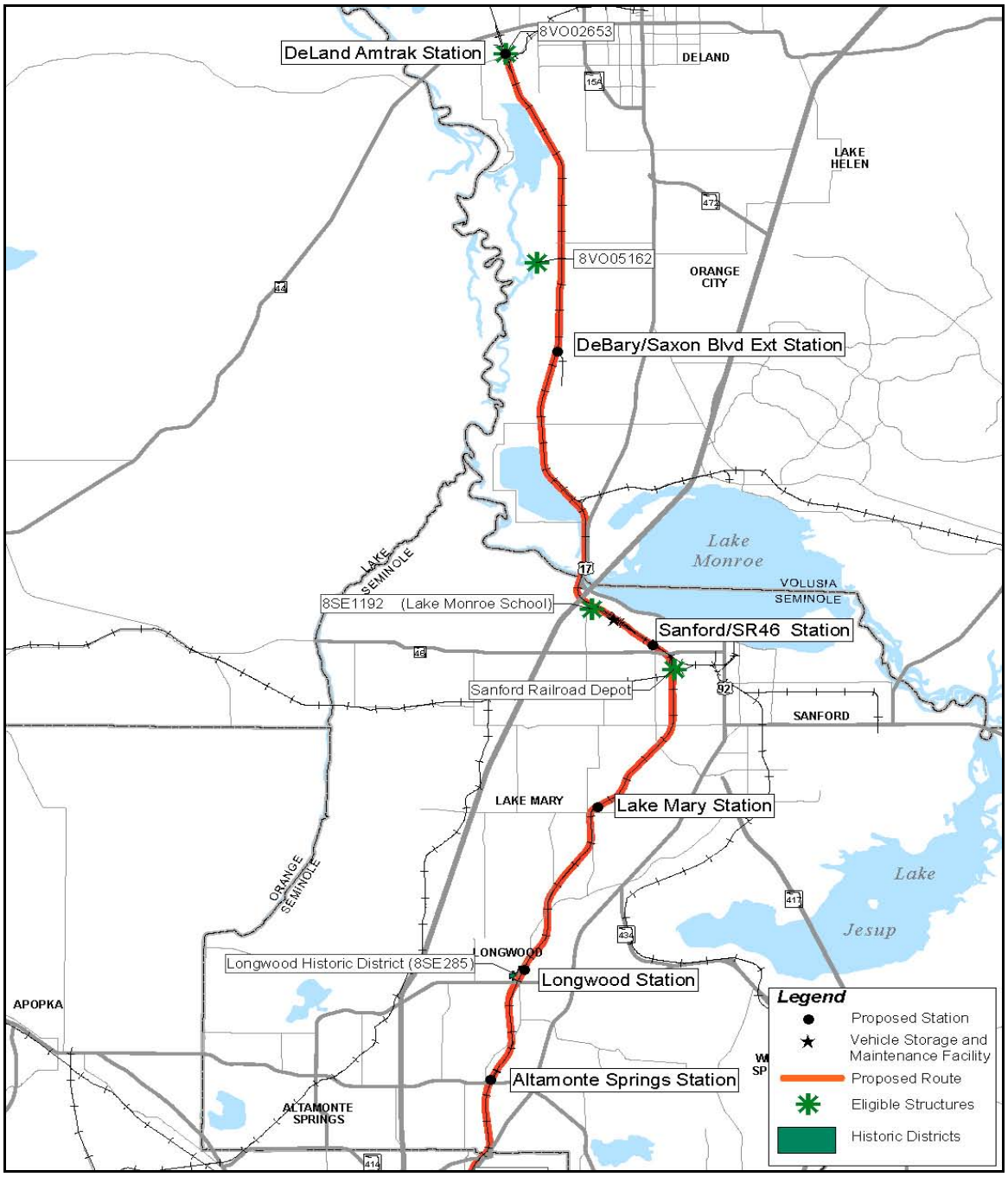

Figure 3-5 Historic Resources – Sheet 1 of 2

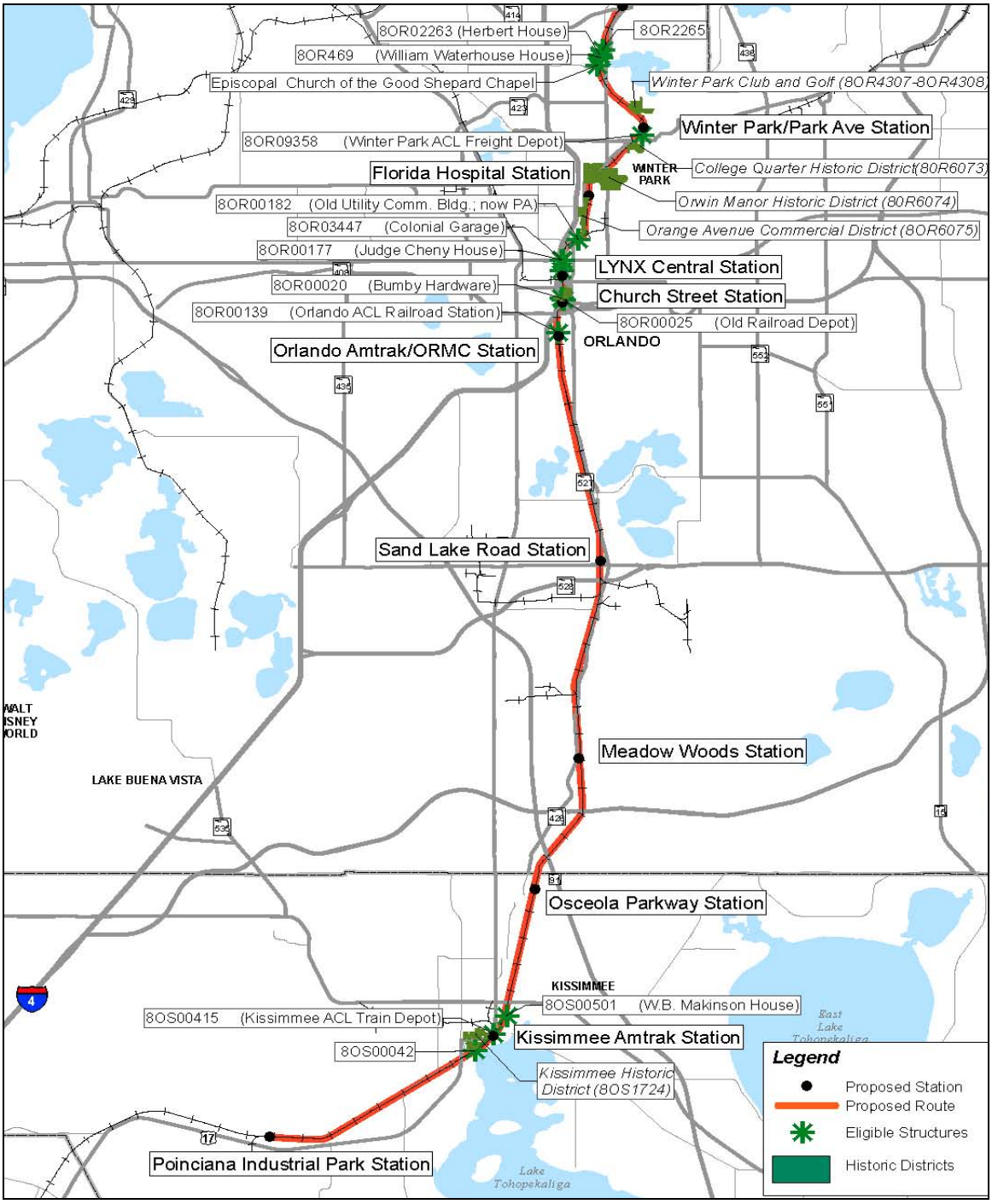

Figure 3-6 Historic Resources – Sheet 2 of 2

Impacts and Benefits

No-Build Alternative

No direct or indirect impacts to historic structures will result from implementation of the No-Build Alternative.

TSM Alternative

No detailed analysis of the potential historic and archaeological impacts of the TSM sites was conducted. It is assumed that, because of the limited amount of construction required to implement the TSM Alternative, that there is little potential for impacts to extant historic structures throughout the project area. TSM stops, including larger Park-n-Ride stops, can be located to avoid direct impacts to standing historic structures. No significant excavation is required, and the TSM stops are generally located in existing commercial areas along major regional arterial highways, the potential for impacts to archeological sites is considered very minimal.

Full-Build Alternative

Based on conceptual design plans no direct physical impacts to structures are identified. Indirect physical impacts to standing structures may occur through noise and through vibration, although it is extremely rare for vibration from transit operations to cause any type of building damage, even minor cosmetic damage.

A corridor site visit was conducted with the SHPO staff on January 5, 2006 to review the potential effects of station construction on nearby significant historic properties at six locations. Locations visited and the associated historic resources included: DeLand Amtrak Station (DeLand ACL Railroad Station); Florida Hospital Station (Orange Avenue Commercial District); LYNX Central Station (Harry P. Leu, Inc.); Church Street Station (Downtown Orlando Historic District); Orlando Amtrak/ORMC Station (Orlando ACL Railroad Station); and Kissimmee Amtrak Station (Kissimmee ACL Railroad Station, Kissimmee Historic District – NRHP-listed).

The SHPO concurred, on a preliminary basis, that the CRT Project would have "No Effect" on historic properties in the vicinity of several CRT station sites, including the Florida Hospital, LYNX Central Station, Orlando Amtrak/ORMC, and Kissimmee Amtrak stations. The SHPO suggested that careful station design including use of compatible elements and materials would minimize any potential visual impacts.

The FDOT will continue to coordinate the design of the proposed improvements (e.g., stations) with the SHPO staff so that potential visual and aesthetic effects can be avoided or minimized, and to ensure that historic integrity at nearby historic properties and districts is maintained.

The FDOT is committed to provide a high level of design treatment for proposed improvements. Such treatments may include ensuring that the design of station platforms and canopies are architecturally and aesthetically compatible with the design of nearby historic resources; as well as using landscaping to reduce the potential visual effects of parking lots.

FDOT, in compliance with Section 106 of the National Historic Preservation Act of 1966 and in consultation with the State Historic Preservation Officer, has determined that the proposed action will have no adverse effect on the DeLand ACL Railroad Station (8VO2653), the Orlando ACL Railroad Station (8OR139), the Old Orlando Railroad Depot (8OR25), and the Downtown Orlando Historic District (8OR422). Refer to Appendix E for a copy of the letter received from SHPO dated March 9, 2007.

Mitigation

The following commitments have been made to ensure that potential adverse effects are avoided or minimized:

1. Provide design plans of the proposed DeLand Amtrak, Orlando Amtrak/ORMC and Church Street stations at the 30, 60, and 90 percent stages of completion for SHPO review and comment. The FDOT will coordinate with the SHPO office so that potential visual and aesthetic effects to the above-mentioned historic properties (8VO2653, 8OR139, 8OR422 and 8OR25) can be avoided or minimized. The plans will show the exact location of platforms and other improvements, including proposed parking areas. The SHPO will have a period of 30 days upon receipt of acceptable plans to complete their review.

2. Provide a sensitive design treatment for the three proposed stations and will ensure that the design, materials and locations of station platforms and canopies are architecturally and aesthetically compatible with the design of nearby historic resources.

3. Consult with SHPO office to determine appropriate landscaping treatments designed to reduce the potential visual effects of parking lots and ancillary features at the proposed stations.

4. Make every reasonable effort to maintain the rural character of the DeLand Amtrak Station through the use of environmentally compatible elements, such as vegetative screening, in the design of parking lots and sidewalks.

5. Make every reasonable effort to minimize physical alterations to the historic properties. Where required, alterations will be made in accordance with the *Secretary of the Interior's Standards for the Treatment of Historic Properties* (36 CFR Part 68).

6. Should there be any changes to previously reviewed and agreed upon design plans, FDOT will contact SHPO and provide the opportunity for review and comment. The SHPO will have a period of 30 days upon receipt of acceptable plans to complete their review.

3.2.2 Recreation and Parkland Resources

This section summarizes the potential impacts of the project on existing recreation and parkland resources along the project Corridor.

Legal and Regulatory Requirements

Since the mid-1960s, federal transportation policy has required that transportation agencies make a concerted effort to preserve the beauty and integrity of publicly owned public parks and recreation areas, waterfowl and wildlife refuges, and historic sites considered to have national, state or local significance.

The United States Department of Transportation Act of 1966, Section 4(f) as amended (49 USC 303), protects public parks, and recreation lands, wildlife habitat and historic sites of national, state and local significance from acquisition and conversion to transportation use. Within the guidelines of Section 4(f), the use of publicly owned lands for transportation purposes would receive approval only if:

- There is no feasible or prudent alternative to the use of the land; and
- The proposed action includes all possible planning to minimize harm to the land resulting from such use.

The FTA regulations implementing Section 4(f) are codified at 23 Code of Federal Regulations 771.135.

Methodology

Existing parklands mapping and site investigations along the CRT corridor were used to identify existing public parks, recreation areas and wildlife refuges. Information on park size, ownership, existing facilities and use, and any future plans or improvements was gathered. All of the parks and recreation areas identified lie in close proximity to the project Corridor and generally are visible from the rail ROW or afford park users views of the rail ROW.

Existing Conditions

Table 3-10 lists the 34 parks and recreation areas identified along the CRT Corridor. The location of the parks is noted on Figure 3-7 and Figure 3-8. There are no publicly-owned wildlife refuges located along the corridor.

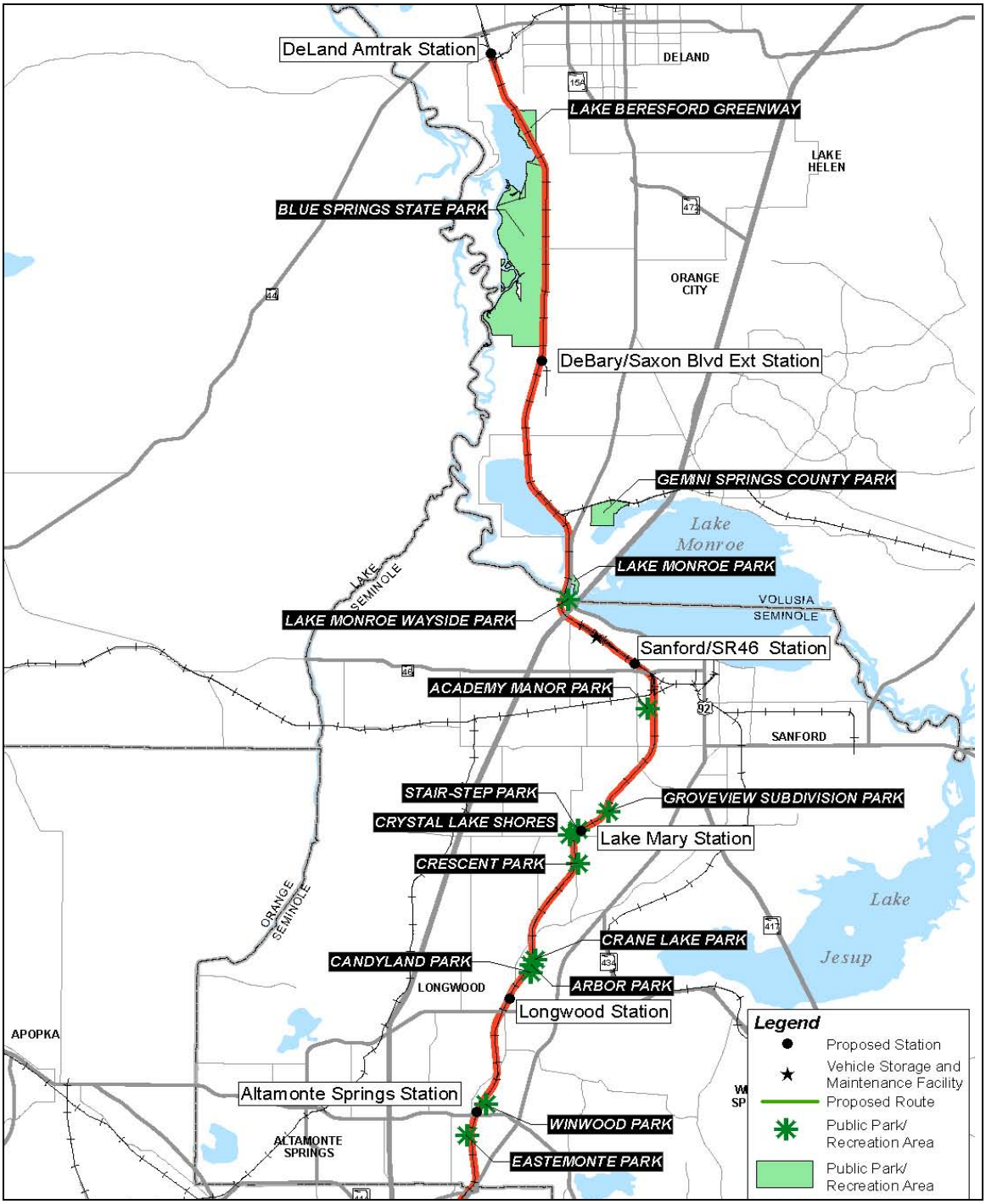

Figure 3-7 Publicly-Owned Parks & Recreation Areas – Sheet 1 of 2

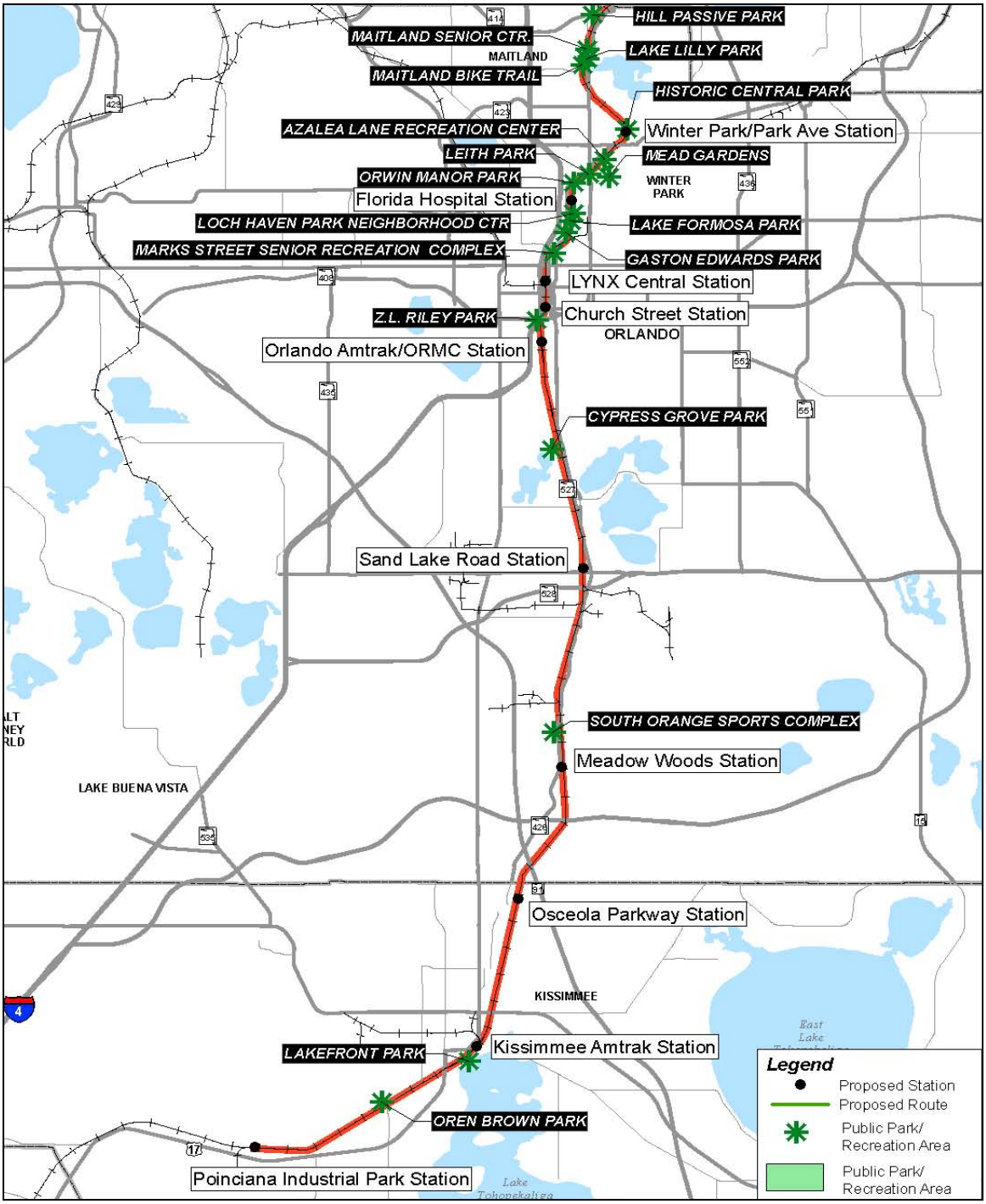

Figure 3-8 Publicly-Owned Parks & Recreation Areas – Sheet 2 of 2

Table 3-10 Parks and Recreation Areas Located Along the CRT Corridor

Name	Location	Jurisdiction	Activities
Lake Beresford Greenway	DeLand	Volusia County	Nature park
Blue Springs State Park	DeLand	Florida Park Service	Camping, boating, swimming, nature observation
Gemini Springs County Park	DeBary	Volusia County	Camping, picnicking, swimming, scuba diving, canoeing and educational programs
Lake Monroe Park	DeBary	Volusia County	Camping, fishing, boat ramp, picnic tables, playground, volleyball
Lake Monroe Wayside Park	Sanford	Seminole County	Fishing, boat ramp, picnic tables
Academy Manor Park	Sanford	City of Sanford	Neighborhood park, playground
Groveview Subdivision Park	Sanford	City of Sanford	Neighborhood park, playground
Stair step Park	Lake Mary	City of Lake Mary	Open space
Crystal Lake Shores	Lake Mary	City of Lake Mary	Neighborhood park, playground
Crescent Park	Lake Mary	City of Lake Mary	Neighborhood park, playground
Crane Lake Park	Longwood	City of Longwood	Neighborhood park, playground
Arbor Park	Longwood	City of Longwood	Neighborhood park, playground
Candyland Park	Longwood	City of Longwood	Baseball, tennis, playground, playing field, picnic tables
Winwood Park	Altamonte Springs	Seminole County	Baseball, basketball, playground, rec. center
Eastmonte Civic Rec. Center	Altamonte Springs	City of Altamonte Springs	Baseball, racquetball, tennis, basketball, racquetball, playground, picnic area, rec. center
Hill Passive Park	Maitland	City of Maitland	Undeveloped parcel that, by deed restrictions, must remain in its natural state
Maitland Senior Center	Maitland	City of Maitland	Shuffleboard, horseshoes, picnic area, passive recreation (Quinn Strong parcel)
Lake Lily Park	Maitland	City of Maitland	Playground, boardwalk, bicycle trail, wedding gazebo
Maitland Bike Trail	Maitland	City of Maitland	"Blue Line" trail parallels CSXT ROW south of Lake Lily Park
Winter Park Country Club	Winter Park	City of Winter Park	Golf course
Central Park	Winter Park	City of Winter Park	Open space
Azalea Lane Rec. Center	Winter Park	City of Winter Park	Playground, tennis, rec. center
Mead Gardens	Winter Park	City of Winter Park	Amphitheatre, butterfly garden, boardwalk, bike trail, greenhouse, picnic tables
Leith Park	Winter Park	City of Winter Park	Open Space
Orwin Manor Park	Orlando	City of Orlando	Open space
Loch Haven Park	Orlando	City of Orlando	Open space, museums, walking trails
Lake Formosa Park	Orlando	City of Orlando	Scenic area, open space
Gaston Edwards (Lake Ivanhoe) Park	Orlando	City of Orlando	Waterfront, boating, water skiing, jet skiing, volleyball, picnic area
Marks Street Senior Rec. Complex	Orlando	City of Orlando	Rec. center
Z. L. Riley Park	Orlando	City of Orlando	Open Space
Cypress Grove Park	Orlando	Orange County Parks and Recreation	Open space, weddings
South Orange Sports Complex	Orlando	Orange County	Baseball
Lakefront Park	Kissimmee	City of Kissimmee	Basketball, picnic area, boating, fishing, horseshoes, playground, volleyball, walking
Oren Brown Park	Kissimmee	Osceola County	Baseball

Impacts and Benefits

No-Build and TSM Alternatives

There will be no direct impacts to any identified publicly-owned park or recreation area from the No-Build or TSM Alternatives for the CRT project. Construction activities for the TSM Alternative will also not directly impact any park or recreation area. No TSM facility construction is planned on any parcel identified as a public park or recreation area.

Full-Build Alternative

The Full-Build Alternative alignment directly abuts several identified parks, including: Blue Spring State Park and Lake Beresford Park in Volusia County; Lake Monroe Wayside Park and Academy Manor Park in Sanford; Candyland Park in Longwood; Hill Passive Park, the Maitland Civic Center and Lake Lily Park in Maitland; Central Park and Leith Park in Winter Park; and Cypress Grove Park in Orlando. No project construction activities for the Full-Build Alternative will directly affect any of the identified parks and recreation areas. Rail construction activities will be contained within the existing CSXT right-of-way limits. Proposed station construction along the corridor, including the Winter Park/Park Avenue station which is located within Central Park, will not directly impact any identified park or recreation area.

Temporary construction activities will be controlled so they do not affect access to the parks adjacent to the CSXT right of way along the corridor. Construction activities would be limited to the side of the park adjacent to the CSXT right of way. Construction impacts that could temporarily affect park and recreational experiences include increased noise, dust, and truck traffic.

Full-Build Alternative CRT service is not planned for weekend or holiday periods when the parks and recreation areas along the corridor are most heavily used with the exception of the rare occasion of special events when limited duration weekend service may be provided.

The Full-Build Alternative also has the potential to provide improved access to several parks and recreation areas along the project corridor through construction of commuter rail stations:

- Lake Mary station would provide direct access to Stairstep Park, directly adjacent to the station site to the east. Crystal Lake Shores neighborhood park would be within walking distance of the station site.

- The Winter Park/Park Avenue station is located within the boundaries of Central Park in downtown Winter Park. The Winter Park Golf Course is located within walking distance of the station site.

- Florida Hospital Station would provide easy walking access to Loch Haven Park in Orlando as well as the museums located within the park.

- LYNX Central Station and Church Street Stations would provide easy walking access to downtown parks including Lake Eola and the parks and civic attractions located to the west of I-4.

- Kissimmee Amtrak Station would also provide easy walking access to Lakefront Park on Lake Tohopekaliga.

Section 4(f) and Constructive Use

A constructive use only occurs in those situations where, including mitigation, the proximity impacts of a project on the Section 4(f) property are so severe that the activities, features or attributes that qualify the property or resource for protection under Section 4(f) are substantially impaired.

Since no significant indirect impacts to any identified publicly-owned park or recreation area are anticipated from the operation of the Full-Build or TSM Alternatives, no "constructive use," as defined at 23 CFR 771.135(p) will result. No appreciable noise or vibration impacts will occur at any of the identified parks and recreation areas from the operation of the Full-Build Alternative. Visual impacts are also not anticipated at any of the parks and recreation areas.

The proposed action will not require the use of any properties as defined by Section 4(f) of the U.S. Department of Transportation Act. FTA has determined that Section 4(f) does not apply.

Section 6(f) – Land and Water Conservation Fund

Two parks identified along the project corridor were purchased, in part, with Federal Land and Water Conservation funds: Lake Monroe Park on the St. Johns River in Volusia County (located to the east of the corridor across Routes 17/92) and Lakefront Park in Kissimmee in Osceola County (located to the southeast of the corridor). None of the alternatives for the CRT project will impact either of these parks therefore, Section 6(f) of the Land and Water Conservation Act of 1965 does not apply to this project.

Mitigation

No adverse impacts from operation of the Full-Build Alternative are anticipated, therefore, no mitigation measures are required. Potential temporary construction period impacts (noise, dust, access restrictions) will be minimized to the greatest extent possible.

3.3 Natural and Physical Impacts

3.3.1 Pedestrian and Bicycle Facilities/Access

Several stations will be located in residential or activity areas where pedestrian and bicycle facilities are already provided. The CRT project will take advantage of existing facilities as well as provide additional pedestrian/bicycle facilities and improvements.

Existing Conditions

In the vicinity of stations located within close proximity to Downtown Orlando, such as the LYNX Central Station, Church Street, and Orlando Amtrak/ORMC stations, surrounding areas will likely experience increased pedestrian and bicycle activity, particularly during peak commuter hours. Automobile traffic generated by the proposed CRT stations at

these downtown stations is minimal and would not be expected to contribute to pedestrian or bicycle impacts.

Winter Park and Kissimmee also provide excellent existing pedestrian facilities which the project can utilize. The residential area of Meadow Woods has the potential to encourage non-automobile travel to/from the station by developing safe and efficient pedestrian and bicycle facilities.

The more remote stations, such as DeLand, Sanford SR 46, and Poinciana Industrial Park stations will likely be accessed primarily by automobile, and therefore impacts to pedestrian/bicycle facilities in surrounding areas will be minimal. Existing local policies can be used to plan, promote and develop pedestrian and bicycle facilities that can improve safety and encourage non-automotive travel.

Within the study area, several pedestrian and bicycle improvements are planned by the CRT project and others. These projects are anticipated to improve "travel conditions" for pedestrians and bicyclists, and are described below.

- Saxon Boulevard Extension - Volusia County is developing plans to construct a bicycle and recreation path as part of the proposed multi-use "Spring to Spring" trail along the proposed Saxon Boulevard Extension.
- Florida Hospital – The *Year 2025 Long Range Transportation Plan* describes a funded shared-use path along Route US 17/92. A vertical access to the overhead walkway is expected to be completed at start-up of the CRT project. An overhead walkway above the CSXT tracks will connect to the existing overhead walkway and connect two parking garages.
- LYNX Central Station – A 10-foot wide pathway to be called "Gertrude's Walk" will be developed next to the surface parking at LYNX Central Station and parallel to the right-of-way for the CSXT tracks. This project is being examined by the city of Orlando as part of a Downtown Transportation Study, and may result in restrictions/impacts on the LYNX Central station site.

In addition to planned pedestrian and bicycle projects in the project study area, several communities have policies that promote and foster the development of pedestrian and bicycle facilities. These include:

- The City of Sanford through various elements of their Comprehensive Plan;
- The City of Lake Mary identifies a pedestrian trail as part of their plan for the redevelopment of the downtown area to the west and north of the proposed station site;
- The City of Longwood Comprehensive Plan specifies the city's intent to identify and implement pedestrian connections between neighborhoods and shopping areas, schools and parks;
- The City of Altamonte Springs City Plan 2020 specifies several methods for implementation of a sidewalk program with priority given to linking neighborhoods to schools, regional bicycle trails, transit stops and Activity Centers; to eliminate

physical impediments to walking and bicycling along transportation corridors; and to mandate site designs that accommodate pedestrian, bicycle and transit use.

- The City of Orlando Growth Management Plan Transportation Element includes objectives intended to encourage wide accessibility to new transit systems.

Impacts and Benefits

No-Build Alternative

The No-Build Alternative will not affect existing pedestrian or bicycle paths and trails in the study area. The No-Build Alternative will also not result in the improvements to pedestrian and bicycle facilities that would result from the Full-Build Alternative.

TSM Alternative

Implementation of the TSM Alternative would also not affect pedestrian or bicycle paths and trails in the study area. As with the No-Build Alternative, implementation of the TSM Alternative would not result in improvements to pedestrian and bicycle facilities.

Full-Build Alternative

The CRT project will benefit pedestrian and bicycle facilities and access. The obvious advantage of the project is providing a transit alternative that will encourage commuters to walk and bike to transit as an alternative to driving. However, the CRT project also provides a unique opportunity to maximize the use of existing pedestrian and bicycle facilities. Many of the proposed CRT stations are located within existing activity areas where pedestrian and bike facilities are already provided. The proposed station sites, with the exception of the DeBary/Saxon Boulevard Extension, Sanford SR 46, and Poinciana Industrial Park stations, generally have existing pedestrian infrastructure such as sidewalks, crosswalks, and pedestrian signals. The extent of Americans with Disabilities Act (ADA) compliance at existing facilities varies depending on location.

This project also provides opportunities to develop additional pedestrian/bicycle facilities and improvements. Where appropriate, new sidewalks and crosswalks with pedestrian signals will be constructed at the new stations, and pedestrian signage will be provided to clearly mark pedestrian paths to and from parking areas. Bicycle racks will also be provided at each station. Additionally, improved pedestrian crossings will be installed at appropriate at-grade crossings as they are upgraded. Sidewalks would continue across the tracks and no longer stop at the CSXT ROW. Pedestrians would no longer be required to cross rail ballast or walk in the roadway to cross the tracks. Thus, for most locations, pedestrian facilities will improve with construction of the project and no mitigation is needed.

In addition, bicycle racks will be provided on CRT trains to accommodate bicycle commuters who may wish to commute to the CRT stations on bicycle. Similar bicycle accommodations are provided on existing LYNX bus routes within the CRT corridor.

Impacts and benefits to pedestrian and bicycle facilities for specific CRT stations are discussed below.

DeLand Amtrak Station – The existing DeLand Amtrak station and train platforms are handicap accessible. While some sidewalks are provided in the area, it is expected that most commuters would drive to this station.

DeBary/Saxon Boulevard Extension Station – This site is located in an undeveloped area with no existing pedestrian access. It is anticipated that planned extension of Saxon Boulevard will include construction of a section of the Volusia County "Spring to Spring" multi-use trail. Access to the proposed Saxon Boulevard Extension Station will be designed to avoid impacting the proposed trail and pedestrian/bicycle facilities will be provided where appropriate at the station.

Sanford/SR 46 Station – This station is located in an industrial area adjacent to the north side of SR 46 with no existing sidewalks or other pedestrian access. Although most commuters will likely drive to this station, pedestrian and bicycle facilities will be provided where appropriate.

Lake Mary Station – This station site is located adjacent to residential and commercial areas. Sidewalks are provided along existing local streets with handicap ramps at intersections along Lake Mary Boulevard to the south of the station site. Lake Mary Boulevard is a designated school route. Pedestrians accessing the new CRT station will have the benefit of existing sidewalks, and pedestrian and bicycle activity may increase in areas surrounding the station.

Longwood Station – In the vicinity of this station, sidewalks are currently provided along existing streets with handicap ramps at intersections. Existing sidewalks would be available for pedestrians accessing the site.

Altamonte Springs Station – Sidewalks are provided along existing streets with handicap ramps at intersections. Pedestrian signals and crosswalks are provided at the intersection of Altamonte Parkway and Reagan Boulevard. Pedestrians accessing this site will utilize existing sidewalks and pedestrian signals to access the station. Pedestrian and bicycle activity will likely increase in the vicinity of the station.

Winter Park/Park Avenue Station – This location provides a pedestrian-friendly atmosphere with a grid street pattern that discourages high vehicle speeds. Sidewalks are provided along local streets with handicap ramps at intersections. The existing Winter Park Amtrak station and train platforms are handicap accessible. Unimpeded wheelchair access is provided from the adjoining municipal parking lot. Pedestrians accessing the new CRT station will have the benefit of the existing pedestrian facilities provided for the Amtrak station and the surrounding area may experience increased pedestrian and bicycle activity.

Florida Hospital Station – Sidewalks are currently provided along Lake Estelle Drive to the east of the station site (although hospital construction at the time of this writing has temporarily eliminated the sidewalk). There is no sidewalk along Sanitarium Avenue to the west of the station site. Other local streets providing access to the station site provide sidewalks with handicap ramps at intersections. Pedestrians accessing the new CRT station will have the benefit of the existing pedestrian facilities provided for the Hospital. Additional pedestrian and bicycle facilities will be provided to improve access between the hospital and the new station site.

LYNX Central Station – Sidewalks are provided along local streets with handicap ramps at intersections. LYNX Central Station multi-modal terminal is fully compliant with ADA requirements and is fully handicapped accessible. Pull-outs are provided at the station for passenger drop-off/pick-up. Since this station is located in an active area, the project will likely result in additional pedestrians and bicycles using existing facilities.

Church Street Station - Sidewalks are provided along local streets with handicap ramps at intersections. Because this station is located within an activity area, the project will result in additional pedestrians (and bicycles) using existing facilities.

Orlando Amtrak/ORMC Station – Sidewalks are provided along local streets with handicap ramps at intersections. The existing Orlando Amtrak station and train platforms are handicap accessible. Provisions for bus and taxi transfers are provided on-site. Pedestrians accessing the new CRT station will have the benefit of the existing pedestrian facilities provided for the Amtrak station, and the surrounding area will likely experience increased pedestrian and/or bicycle activity.

Sand Lake Road Station – The station site is located in a commercial area adjacent to Sand Lake Road and Orange Avenue. While sidewalks are provided on roadways in the vicinity of the station site, most commuters will most likely drive to this station. New sidewalks will be constructed as part of the project to provide a safe pedestrian facility connecting to Orange Avenue.

Meadow Woods Station – This station is located in a dense residential area that provides excellent potential to encourage pedestrian and bicycle travel. Sidewalks are located on many of the local roadways in the area.

Osceola Parkway Station – This station is located in a commercial area that is continuing to develop. While there are some existing sidewalks and crosswalks in the area, there is the potential to develop future pedestrian facilities linking with Osceola Parkway.

Kissimmee Amtrak Station – Sidewalks are provided along local streets and handicap ramps at intersections in a pedestrian environment surrounding the Amtrak station. Pedestrians will have the benefit of using the existing pedestrian facilities provided in the area and for the Amtrak station.

Poinciana Industrial Park Station – There are generally limited pedestrian and bicycle facilities provided in the vicinity of the Poinciana station. The station is located in a developing industrial area that is likely to generate most of its trips via automobile. Nonetheless, there are opportunities to provide safe pedestrian connections and crossings at adjacent roadways and intersections.

3.3.2 Visual and Aesthetic Resources

Existing Environment

The CRT corridor runs through a varied landscape of natural areas and suburban and urban environments. Increasing suburban development in the northern and southern ends of the corridor is resulting in changes to the existing landscape, but there remain

areas of protected natural lands and important aesthetic resources throughout the corridor.

Volusia County - Beginning in DeLand, the corridor runs south through undeveloped land throughout western Volusia County. Significant natural landscapes in this section of the corridor include:

- Lake Beresford;
- Blue Springs State Park; and
- The St. Johns River.

Commuter rail passengers would be subject largely to views of undeveloped and wooded lands in this section of the corridor. There is little residential development along the corridor in western Volusia County, although residential development is increasing as the corridor approaches the St. Johns River in the city of DeBary. Views of the rail corridor from adjacent areas in this section of the corridor are limited to the few grade crossings and areas immediately adjacent to the St. Johns River.

Seminole County - Crossing the St. Johns River into Seminole County, the corridor immediately passes through the Lake Monroe Wayside Park, but views to and from the rail corridor to the park are dominated by the US 17/92 St. Johns River Bridge that passes to the immediate east of the Corridor. Crossing under Route 17/92, the Corridor passes through the existing Rand railroad yard before entering an area of largely suburban residential, scale commercial and light industrial development throughout Sanford.

Traveling south through the remainder of Seminole County, the corridor passes through largely residential areas. Befitting the denser development of this portion of the Corridor, views of the rail alignment are frequent for abutters. Through Lake Mary, the Corridor passes through a stretch of undeveloped and wooded lands south of Lake Mary Boulevard. Residential and commercial uses then predominate along the Corridor through Longwood and Altamonte Springs.

Orange County - Entering Orange County at Maitland, the Corridor passes through increasingly dense residential and commercial development. Views from the Corridor are of generally restricted to the immediate vicinity of the Corridor due to the density of land development, and likewise, views from abutting areas to the Corridor are generally restricted to immediately adjacent areas and parcels. The rail corridor does pass in close proximity to several public parks and recreation areas in Orange County, including Lake Lilly Park in Maitland, Central Park in Winter Park, and Cypress Grove Park in Orlando. Brief views of several additional visual resources and parks in Orlando are visible from the Corridor, including Lake Formosa Park near the proposed Florida Hospital station.

Leaving downtown Orlando the Corridor parallels South Orange Avenue and passes through light industrial and commercial areas. One important visual resource in this area is Cypress Grove Park on the shores of Lake Jessamine, which borders the ROW south of West Holden Avenue. Passing into southern Orange County, the Corridor again traverses largely industrial and commercial areas including the Taft railroad yard south of Sand Lake Road. At Meadow Woods, the Corridor passes adjacent to residential development and then along vacant land into Osceola County.

Osceola County - Entering Osceola County, the Corridor passes into Kissimmee where residential development predominates into commercial downtown Kissimmee. Kissimmee Lakefront Park is visible from the Corridor to the east, and park users have views of the Corridor from several areas of the park.

South of downtown Kissimmee, the Corridor passes Osceola Park and Oren Brown Park, southwest of Pleasant Hill Road. Both parks are clearly visible from the Corridor, and users of the parks have clear views of the Corridor.

The final portion of the Corridor in Osceola County parallels Old Tampa Highway and passes through largely rural residential and undeveloped natural areas. The Corridor crosses Shingle Creek, the second largest water crossing along the Corridor after the St. Johns River. The Corridor ends at Poinciana Boulevard, an industrial area.

Impacts and Benefits

No-Build Alternative

Under the No-Build Alternative, no new structures would be constructed and no changes to the existing visual character of the corridor would occur.

TSM Alternative

For the TSM Alternative, a minimal amount of new construction would occur; several proposed TSM Park & Ride stations would require construction of new parking lots and bus shelters on undeveloped lots. With one exception, all TSM Park & Ride locations are located in developed commercial areas and no visual impact is expected.

The one exception is the proposed TSM park-n-ride at the interchange of SR 42 (Howland Boulevard) and I-4 in Orange City in Volusia County. At this location, a currently vacant and wooded parcel would be cleared and a new parking lot constructed. As this location is located directly adjacent to an existing interstate highway, the visual impact is expected to be minor at this location.

Overall, construction and implementation of the TSM Alternative is expected to result in no visual impact in the project area.

Full-Build Alternative

To assess the potential visual impact of the Full-Build Alternative, visual impact analyses were completed at selected locations along the project Corridor where new structures would be constructed or where important visual or historic resources exist. Photographs of these locations were taken, and the relevant elements of the proposed commuter rail project were superimposed on the photograph. These locations include:

- The St. Johns River drawbridge as seen from Lake Monroe Wayside park in Sanford;
- The Winter Park Golf Course in Winter Park;
- The Orlando Amtrak Station; and
- The Kissimmee Amtrak Station.

Figure 3-9 through Figure 3-12 illustrate before and after representations of the visual environment and potential visual impacts for the Full-Build Alternative at each of the selected locations.

At the existing St. Johns River drawbridge, the presence of CRT trains is not expected to result in additional visual impacts beyond the existing impacts posed by the Amtrak and freight trains that currently travel over the bridge.

The Winter Park Golf Club is listed on the NRHP, and the project Corridor passes directly to the west of the club. The visual impact analysis shows that the CRT trains will be visible along the rail corridor from portions of the golf course.

At the Orlando Amtrak station, the proposed Full-Build Alternative station will be constructed to the north of the existing station and will not directly impact the view of the historic station buildings. The number and size of new station elements (shelters, benches, lighting, etc.) will be minimal and designed to include the use of compatible elements and materials to complement the existing historic character of the station.

At Kissimmee, the proposed Full-Build Alternative station will be located adjacent to the existing Amtrak station. Absent the proposed CRT trains, the visual impact of the new station elements at this location is minimal.

The proposed CRT train consists of up to three diesel-multiple units (DMUs) and is much shorter in length than Amtrak passenger trains and CSXT freight trains that currently use the Corridor. Because of the shorter train length, the total amount of time that the CRT trains will be visible from any visual vantage point along the corridor is comparatively minor compared to the Amtrak and CSXT trains, minimizing the potential visual impact of the proposed project. Train dwell time at stations will also be minimal and is not expected to result in a measurable visual impact.

Mitigation

No negative visual impacts are anticipated; therefore, no specific mitigation measures are necessary.

Existing

Proposed

Figure 3-9 St. Johns River Drawbridge

Existing

Proposed

Figure 3-10 Winter Park Country Club

Existing

Proposed

Figure 3-11 Orlando Amtrak Station

Existing

Proposed

Figure 3-12 Kissimmee Amtrak Station

3.3.3 Air Quality

This section summarizes the air quality study performed on the project alternatives. The air quality study consisted of two main components: an emissions inventory (or mesoscale) analysis for the project study area, and a dispersion modeling (ambient concentrations or microscale) "hot spot" analysis to estimate ambient carbon monoxide (CO) concentrations at key roadway intersections in the study area. The study included the existing conditions and the three future alternatives: the No-Build, TSM, and the Full-Build Alternative.

Methodology

Emissions Inventory Analysis

The emissions inventory was prepared in order to compare the relative impacts of the project alternatives for purposes of disclosure and public information as mandated under the NEPA. As the project region is not in a nonattainment area for any criteria air pollutant, the EPA Transportation Conformity Rule does not apply and the emission inventory is not required for conformity purposes.

The emissions inventory was developed for motor vehicles, including transit buses, on affected roadways and for DMU railcars in the Project Corridor. The roadway network for the analysis was defined based on the project traffic studies. The emission inventory was prepared in accordance with guidance issued by EPA, FDOT, and the Florida DEP.

Emissions were calculated for CO, volatile organic compounds (VOCs), nitrogen oxides (NO_x), sulfur dioxide (SO_2), and particulate matter less than 10 microns or 2.5 microns diameter (PM_{10}/$PM_{2.5}$). The emission factors used to estimate the vehicle emissions were calculated using the most recent approved version of the EPA MOBILE program (currently MOBILE6.2). The specific MOBILE6.2 input values were developed from DOT and DEP guidance. Emission factors for DMUs were calculated from engine and emissions data provided by Colorado Railcar Manufacturing, LLC, a potential supplier of the CRT DMU.

Regional summary level emissions were calculated by multiplying the ADT volumes by vehicle type as supplied from regional model outputs.

Ambient Concentrations Analysis

The intersections modeled in the ambient concentrations analysis are listed in Table 3-11 below. The dispersion modeling analysis demonstrates the air quality impacts of the project in the vicinity of selected roadway intersections included in the transportation analysis (Chapter 4), for the same project alternatives as the emission inventory. A three-step screening and analysis process was used.

In the initial step of the process, local air pollutant levels associated with the Project were evaluated in terms of potential CO concentrations. Motor vehicles emit CO at high rates when they are operating at low speeds or idling in queues. For this reason, the potential for adverse air quality impacts is greatest at intersections where traffic is most congested. EPA has specified criteria based on traffic level of service (LOS) and volume for screening the intersections in the study area and selecting locations for detailed air quality analysis. This initial or "worst-case" EPA screening criterion is the first step of the analysis process and is accepted by FDOT.

Level of service is a measure of the performance of the intersection in processing the volume of vehicles attempting to pass through it. Level of service is expressed as a letter rating based largely on the overall average delay during the highest volume hour at the intersection, where LOS A is best and LOS F worst. The EPA's criteria state that intersections that currently operate at LOS D or worse, or would operate at LOS D or worse under future conditions, should be considered for air quality analysis. Adverse air quality impacts are extremely unlikely at locations that operate at LOS C or better, and EPA and FDOT do not require air quality analysis of such locations.

In applying the EPA/FDOT screening procedure to the project, the intersections in the traffic study area that were ranked LOS D or worse were selected for further air quality analysis. Table 3-11 lists the locations that were ranked LOS D or worse in this step. These intersections were selected for modeling in the second step of the ambient concentrations analysis.

Table 3-11 Intersections Selected for Air Quality Screening Modeling

Location/ ***Station Name***	**Intersection Description**	**Municipality/County**
Sanford	SR46/Airport Blvd	Sanford/Seminole
Lake Mary	Lake Mary Blvd/Country Club Rd	Lake Mary/Seminole
Longwood	Reagan Blvd/Church Ave	Longwood/Seminole
Altamonte Springs	Longwood/Reagan Blvd (427)/Altamonte Dr (436)	Altamont Springs/ Seminole
Lynx Central Station	Garland/Amelia	Orlando/Orange
Lynx Central Station	Orange/Livingston	Orlando/Orange
Lynx Central Station	Garland/Robinson	Orlando/Orange
Sand Lake Road	Sand Lake Rd (SR 525)/Orange Ave	Orange/Orange
Sand Lake Road	Jetport/Orange Ave	Orange/Orange
Osceola Pkwy	Osceola Pkwy/Michigan Ave	Kissimmee/Osceola
Kissimmee	Broadway/Drury	Kissimmee/Osceola
Kissimmee	Monument/Central/Broadway	Kissimmee/Osceola
Poinciana Blvd	Poinciana Blvd/17-92 (S. Orange Blossom Trail)	Poinciana/Osceola
Non-Station Locations		
Longwood	Sanlando Springs (SR 434)/Reagan Blvd (CR 427)	Longwood/Seminole
At-Grade Crossing #3 (CR 427)	Reagan Blvd (CR 427)/Longwood Lake Mary Rd	Longwood/Seminole
At-Grade Crossing #4/ Lynx	N. Orange/Colonial 50	Orlando/Orange

The second step is the use of COSCREEN, FDOT's official screening model, to estimate maximum CO concentrations at the intersections identified in the initial screening. The most recently approved version of COSCREEN (currently CO Florida 2004) was used to evaluate each intersection. The CO Florida 2004 default input values for the Central Florida region were used for meteorology inputs, MOBILE6.2 parameters, persistence factors, and background CO concentrations. The screening modeling was applied for the same alternatives and analysis years as described above for the emission inventory. The output of this step is the predicted maximum CO concentration at each intersection. Predicted concentrations were compared to the NAAQS and the Florida Ambient Air Quality Standards for CO. The National and Florida standards are the same for CO.

The third step is detailed dispersion modeling. If predicted concentrations at any of the intersections had exceeded the NAAQS, detailed site-specific analysis for those intersections would have been conducted using the EPA CAL3QHC and MOBILE6.2 models in accordance with EPA, FDOT, and DEP guidance. However, since none of the intersections that were analyzed in the screening analysis exceeded the NAAQS, the detailed analysis was not necessary

The results of the emission inventory analysis consist of the total emissions in tons per year of CO, VOCs, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ for motor vehicles and DMUs in the study area. The results of the dispersion modeling analysis consist of maximum one-hour and eight-hour CO concentrations at each intersection analyzed.

Air Quality Assessment Results

Emissions Inventory

Year 2025 Emissions of VOCs, NO_x, SO_2, PM_{10}, and $PM_{2.5}$ with the No-Build Alternative are compared to emissions from the TSM Alternative and the Full-Build Alternative in Table 3-12, which identifies and assesses the relative emissions impacts of the project alternatives.

For the No-Build Alternative, VOC emissions are higher than for either the TSM or Full-Build Alternatives, reflecting the higher VMT on regional roadways for this alternative. NOx emissions are slightly higher than the TSM Alternative, but slightly lower than the Full-Build Alternative. This reflects the higher NOx emissions estimated for the Full-Build Alternative DMUs. For other pollutants, the No-Build Alternative is virtually identical (although minimally higher) than the TSM Alternative, and slightly lower than the Full-Build Alternative for particulate matter emissions (again reflecting the impact of the diesel powered DMUs).

For the TSM Alternative, total annual emissions are similar for VOC emissions and SO_2 emissions, and slightly lower for NOx and particulate matter emissions than the Full-Build Alternative.

For the Full-Build Alternative, the total annual emissions of NOx and particulate matter are slightly higher than that of either the No-Build or TSM Alternatives. As noted, this reflects the use of diesel-powered DMUs in the analysis. VOC emissions are slightly lower than the No-Build Alternative, reflecting the lower VMT projected on regional roadways for the Full-Build Alternative.

Ambient Concentrations Analysis

Modeled 1-hour and 8-hour CO concentrations are compared to the NAAQS in and Table 3-14. The results show there are no CO concentrations above the standards. The area is designated as attainment for all pollutants; therefore the conformity rules do not apply.

Table 3-12 CRT Emissions Analysis

Pollutant	Total Emissions (tons/year) - 2025		
	No-Build	TSM	Full-Build
VOC	17,256	17,249	17,248
NOx	12,947	12,945	13,119
SO_2	351	351	351
PM_{10}	1,009	1,008	1,015
$PM_{2.5}$	1,009	1,008	1,015

Table 3-13 Maximum Predicted 1-Hour CO Concentrations

Location/ Station	Intersection Description	Municipality/County	No-Build	TSM	Full-Build
Sanford	SR46/Airport Blvd	Sanford/Seminole	7.7	6.7	6.7
Lake Mary	Lake Mary Blvd/Country Club Rd	Lake Mary/Seminole	8.8	8.8	8.8
Longwood	Reagan Blvd/Church Ave	Longwood/Seminole	7.3	7.3	7.3
Altamonte Springs	Longwood/Reagan Blvd (427)/Altamonte Dr (436)	Altamont Springs/ Seminole	9.9	10.0	10.0
Lynx Central Station	Garland/Amelia	Orlando/Orange	9.5	9.5	9.5
Lynx Central Station	Orange/Livingston	Orlando/Orange	9.2	9.2	9.2
Lynx Central Station	Garland/Robinson	Orlando/Orange	9.6	9.7	9.7
Sand Lake Road	Sand Lake Rd (SR 525)/Orange Ave	Orange/Orange	10.0	10.0	10.0
Sand Lake Road	Jetport/Orange Ave	Orange/Orange	6.9	7.0	7.0
Osceola Pkwy	Osceola Pkwy/Michigan Ave	Kissimmee/Osceola	8.7	8.8	8.8
Kissimmee	Broadway/Drury	Kissimmee/Osceola	7.2	7.3	7.3
Kissimmee	Monument/Central/Broadway	Kissimmee/Osceola	7.3	7.4	7.4
Poinciana Blvd	Poinciana Blvd/17-92 (S. Orange Blossom Trail)	Poinciana/Osceola	7.2	7.3	7.3
Non-Station Locations					
Longwood	Sanlando Springs (SR 434)/Reagan Blvd (CR 427)	Longwood/Seminole	8.4	8.4	8.4
At-Grade Crossing #3 (CR 427)	Reagan Blvd (CR 427)/Longwood Lake Mary Rd	Longwood/Seminole	6.7	6.7	6.7
At-Grade Crossing #4/ Lynx	N. Orange/Colonial 50	Orlando/Orange	9.1	9.1	9.1
National and Florida Ambient Air Quality Standard			35.0	35.0	35.0

Table 3-14 Maximum Predicted 8-Hour CO Concentrations

Location/ Station	Intersection Description	Municipality/County	No-Build	TSM	Full-Build
Sanford	SR46/Airport Blvd	Sanford/Seminole	4.6	4.0	4.0
Lake Mary	Lake Mary Blvd/Country Club Rd	Lake Mary/Seminole	5.3	5.3	5.3
Longwood	Reagan Blvd/Church Ave	Longwood/Seminole	4.4	4.4	4.4
Altamonte Springs	Longwood/Reagan Blvd (427)/Altamonte Dr (436)	Altamont Springs/ Seminole	6.0	6.0	6.0
Lynx Central Station	Garland/Amelia	Orlando/Orange	5.7	5.7	5.7
Lynx Central Station	Orange/Livingston	Orlando/Orange	5.5	5.5	5.5
Lynx Central Station	Garland/Robinson	Orlando/Orange	5.8	5.8	5.8
Sand Lake Road	Sand Lake Rd (SR 525)/Orange Ave	Orange/Orange	6.0	6.0	6.0
Sand Lake Road	Jetport/Orange Ave	Orange/Orange	4.2	4.2	4.2
Osceola Pkwy	Osceola Pkwy/Michigan Ave	Kissimmee/Osceola	5.3	5.3	5.3
Kissimmee	Broadway/Drury	Kissimmee/Osceola	4.3	4.4	4.4
Kissimmee	Monument/Central/Broadway	Kissimmee/Osceola	4.4	4.5	4.5
Poinciana Blvd	Poinciana Blvd/17-92 (S. Orange Blossom Trail)	Poinciana/Osceola	4.3	4.4	4.4
Non-Station Locations					
Longwood	Sanlando Springs (SR 434)/Reagan Blvd (CR 427)	Longwood/Seminole	5.1	5.1	5.1
At-Grade Crossing #3 (CR 427)	Reagan Blvd (CR 427)/Longwood Lake Mary Rd	Longwood/Seminole	4.0	4.0	4.0
At-Grade Crossing #4/ Lynx	N. Orange/Colonial 50	Orlando/Orange	5.5	5.5	5.5
National and Florida Ambient Air Quality Standard			9.0	9.0	9.0

Mitigation

No exceedences of the either the 1-hour or 8-hour CO standards are projected, therefore the analysis results show no air quality mitigation is needed for any of the alternatives considered.

This project is in an area which has been designated as attainment for all the air quality standards under the criteria provided in the Clean Air Act Amendments of 1990, therefore conformity does not apply.

3.3.4 Noise

A detailed noise and vibration assessment was performed along the project Corridor, from DeLand in Volusia County to Poinciana Boulevard in Osceola County. This section assesses the existing noise environment along the project corridor, evaluates the potential noise impact that would be generated by the project, and identifies potential mitigation measures that can be implemented to eliminate or minimize identified potential noise impacts.

Methodology/Criteria

The noise and vibration analyses were performed in accordance with the methodology contained in the FTA Transit Noise and Vibration Impact Assessment[4] guidelines and in the FDOT Project Development & Environmental Manual (PD&E) and Rail Noise Standards at 40 CFR Part 201[5]. However, the FTA guidelines are more stringent and relevant to transit projects. As a result, the noise and vibration analyses for this project were performed in accordance with the more stringent FTA guidelines to ensure that the analysis meets or exceeds the requirements of all applicable criteria. Additionally, the Federal Railroad Administration (FRA) horn noise model was used to calculate the noise levels from the use of warning horns at grade crossings.

The FTA guidance manual sets forth the basic concepts, methods, and procedures for documenting the extent and severity of noise and vibration impacts from transit projects. In general, FTA noise criteria are based on the existing background noise levels. As a result, noise measurements were obtained at a number of representative noise-sensitive receptor locations along the project Corridor to determine the existing noise environment.

The existing noise environment was described for the various land-use categories defined by the FTA. FTA characterizes noise sensitive uses in three categories: Category 1 receptors are tracts of land where quiet is an essential element in their intended use (such as outdoor amphitheaters); Category 2 receptors include residences and buildings where people normally sleep and where nighttime sensitivity to noise is assumed to be of utmost importance; and Category 3 includes institutional receptors (such as schools, churches, and parklands) with primarily daytime and evening use.

Table 3-15 summarizes the FTA noise impact criteria applicable to the three categories of land use.

Table 3-15 FTA Land Use Categories and Noise Metrics

Land-use Category	Noise Metric	Description
1	$L_{eq}(h)$	Tracts of land set aside for serenity and quiet, such as outdoor amphitheaters, concert pavilions, and historic landmarks.
2	L_{dn}	Buildings used for sleeping such as residences, hospitals, hotels, and other areas where nighttime sensitivity to noise is of utmost importance.
3	$L_{eq}(h)$	Institutional land-uses with primarily daytime and evening uses including schools, libraries, churches, museums, cemeteries, historic sites, and parks, and certain recreational facilities used for study or meditation.
Source: Transit Noise and Vibration Impact Assessment - Final Report, FTA, Washington, D.C., April 1995		

The FTA noise criteria are based on the existing background level as well as the land-use category of the noise receptor. Following the FTA methodology, 24-hour day-night

[4] "Transit Noise and Vibration Impact Assessment", Federal Transit Administration, (DOT-T-95-16), April 1995.

[5] FDOT 40 CFR 201 Rail Noise Standards, Updated July 1 2001.

noise levels are used to characterize the existing background at Category 2 residential receptors while peak-hour noise levels are used for Category 1 and Category 3 receptors. These time intervals are representative of the periods of the day that impact a given category of receptor the most.

Because residential receptors are most noise sensitive during the nighttime hours, the day-night noise level is used to describe impact to account for sleep disturbances. At non-residential or institutional receptors such as schools, libraries, and churches, adverse noise impacts are assessed during the daytime when these receptors or facilities are occupied. In general, the FTA noise criteria are established so that when the overall project noise levels are added to the existing background, the total noise level will not lead to an annoyance condition. It is the increase in *cumulative* noise (when project generated noise is added to existing noise) that is the basis of the impact assessment. Since the L_{eq} and L_{dn} metrics are measures of total noise, any new noise source will cause an increase in cumulative noise, and that new cumulative noise level is then compared to the impact thresholds for each land use category.

As shown in Figure 3-13 the FTA noise impact criteria are defined by two curves that allow increasing project noise levels as existing noise increases up to a point, beyond which impact is determined based on project noise alone. The FTA noise criteria are delineated into two categories: *moderate impact* and *severe impact*. The *moderate impact* threshold defines areas where the change in noise is noticeable but may not be sufficient to cause a strong, adverse community reaction. The *severe impact* threshold defines the noise limits above which a significant percentage of the population would be highly annoyed by new noise.

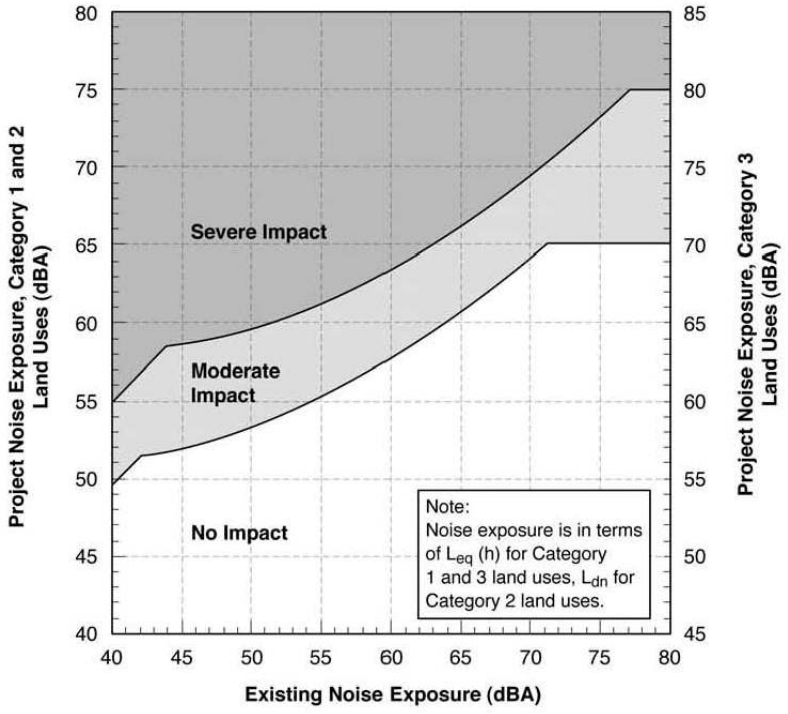

Figure 3-13 FTA Noise Impact Criteria for Transit Projects

Existing Conditions

Existing noise levels along the project Corridor are currently dominated by CSXT freight rail and Amtrak intercity passenger rail operations, and traffic noise from nearby highways and along local streets. In addition, the noise measurements also include noise from train horns for locations within approximately a ¼ mile of grade crossings.

A total of 12 receptor locations were selected to be representative of typical land-use types found along the project Corridor. Noise measurement locations were selected based on several criteria including land-use type, a receptor's location relative to other noise sources such as highway traffic that could affect the receptor's existing noise environment, distribution along the project Corridor, and municipality. A description of measurement locations is given in Table 3-16 with general locations shown in Figure 3-14.

Table 3-16 Predicted CRT Train Operational Noise Levels at Receptor Locations in the CRT Project Corridor

No.	Measurement Locations Receptor Description	Town	FTA Category	Date	Start Time	Duration	Measured Ambient Noise Level (dBA)	FTA Moderate Impact** Criterion (dBA)	FTA Severe Impact** Criterion (dBA)
1	25 Jason Drive*	DeBary	2	5/10/05	0715 hrs	24-hours	68 L_{dn}	63 L_{dn}	68 L_{dn}
2	121 Yale Drive	Sanford	2	5/11/05	1500 hrs	24-hours	70 L_{dn}	65 L_{dn}	69L_{dn}
3	202 Melissa Court	Sanford	2	5/9/05	1830 hrs	24-hours	70 L_{dn}	65 L_{dn}	69L_{dn}
4	115 West Pine Avenue	Longwood	2	5/6/05	1800 hrs	24-hours	74 L_{dn}	66 L_{dn}	72 L_{dn}
5	425 Lake Seminary Circle	Maitland	2	5/6/05	1700 hrs	24-hours	68 L_{dn}	63 L_{dn}	68 L_{dn}
5B	Lake Lily Park	Maitland	3	5/9/05	1400 hrs	1-hour	56 $L_{eq}(h)$	56 Leq(h)	62 Leq(h)
6	719 Nottingham Street	Orlando	2	5/9/05	1700 hrs	24-hours	70 L_{dn}	65 L_{dn}	69L_{dn}
7	Near Orlando Amtrak Station	Orlando	2	5/6/05	1530 hrs	24-hours	74 L_{dn}	66 L_{dn}	72 L_{dn}
7B	Cypress Grove Park	Orlando	3	5/7/05	1230 hrs	1-hour	66 $L_{eq}(h)$	62 $L_{eq}(h)$	67 $L_{eq}(h)$
8	12165 Sandal Creek	Orlando	2	5/5/05	1230 hrs	24-hours	69 L_{dn}	64 L_{dn}	69 L_{dn}
9	42 Neptune Road	Kissimmee	2	5/4/05	1630 hrs	24-hours	66 L_{dn}	62 L_{dn}	67 L_{dn}
10	4894 Old Tampa Highway	Kissimmee	2	5/4/05	1540 hrs	24-hours	68 L_{dn}	63 L_{dn}	68 L_{dn}

** Total Noise Level = Logarithmic sum of Measured + Predicted CRT train operational noise level without warning horns.
Source: KM Chng Environmental Inc.

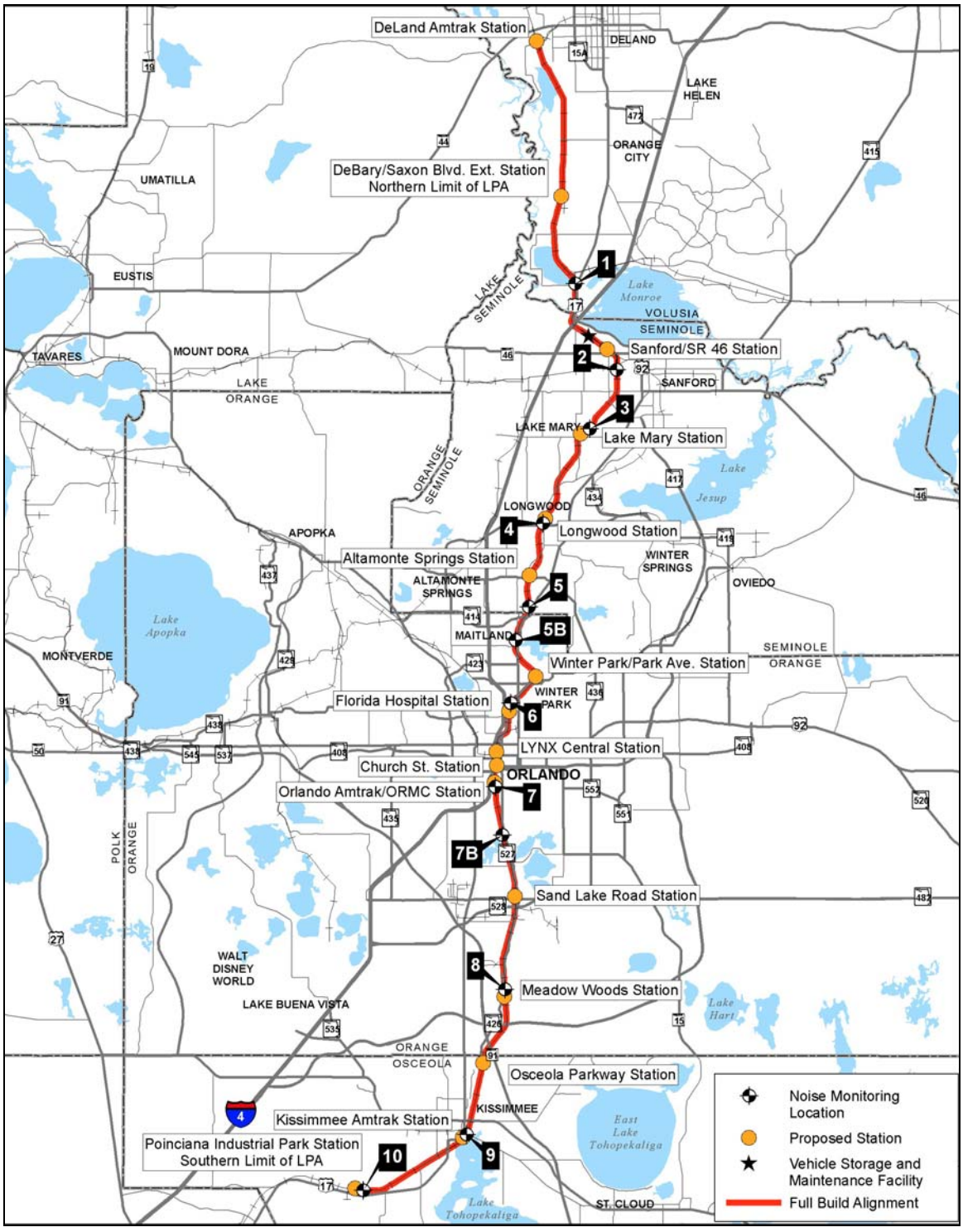

Figure 3-14 Noise & Vibration Monitoring Locations

Most of the locations are residential, for which the FTA land-use category for each location is Category 2. Continuous 24 hour noise levels were measured at each of these residential receptor locations. In addition, two park locations (FTA land-use Category 3 receptors) were also selected for which hourly Leq measurements were obtained.

Residential (or FTA Category 2) receptors that were selected include single-family dwellings, and multi-family housing. Although the project Corridor is lined with numerous commercial buildings, the FTA does not consider them to be noise-sensitive receptors. Several of the measurement locations are close to proposed commuter rail stations, and six of the measurement locations are within ¼ mile of a grade crossing and therefore, are also subject to noise from train horns. The analysis showed that no land uses in Category 1 and Category 3 would be adversely affected due to the introduction of the transit project.

Impacts

The two categories of potential noise impact assessed were train operational noise and train warning horn noise when trains approach grade crossings. Together, these two categories are referred to as the combined operational noise impacts.

No-Build Alternative

Under the No Build Alternative, no CRT train trips would be added to the Corridor and there would be no CRT noise impacts.

TSM Alternative

Implementation of the TSM Alternative would result in additional bus traffic on local highways and roadways. Because the increase in bus traffic would be a negligible increase compared to existing highway and roadway traffic, no perceptible increase in existing noise levels along the TSM Alternative routes or in the vicinity of TSM Alternative station locations is expected. As with the No-Build, no CRT train trips would be added to the Corridor in the TSM Alternative and there would be no CRT noise impacts.

Full-Build Alternative

The FTA noise prediction guidelines contain mathematical algorithms that allow for the computation of project generated noise levels at receptor locations along the project Corridor.

The model requires inputs such as the reference noise level at a distance of 50 feet for each of the noise sources used in the modeling analysis. These noise sources included the DMU rail cars (80 dBA L_{max} during a train passby at 50 mph; and 72 dBA when idling at the station), and grade crossing signals (73 dBA L_{max}). In accordance with the Federal Rail Administration's Final Rule on the *Use of Locomotive Horns at Highway-Rail Grade Crossings* (49 CFR Parts 222 and 229; April 2005), the minimum allowable warning horn L_{max} level of 96 dBA at a distance of 100 feet was used for the DMUs in the noise modeling analysis.

Transit noise impacts include noise resulting from train operations (the noise generated by the trains as they travel along the tracks) as well as the noise resulting from the sounding of train warning horns as trains approach grade crossings.

Combined Operational Noise Impacts

Train noise during operation includes a combination of propulsion noise, horn noise and wheel and vibration noise. The combined noise level is what is used to determine the magnitude of the impact from the FTA impact criteria curves.

Table 3-17 indicates that the predicted CRT project combined operational noise levels are generally below the measured existing noise levels. However, based on the FTA moderate impact and severe impact criteria curves shown in Figure 3-13, the predicted noise levels at receptor locations 1, 2, and 6 are predicted to exceed the FTA moderate impact criterion, while receptor location 7 is predicted to exceed the FTA severe impact criterion. The predicted project CRT Ldn noise levels in Table 3-17 range from 48 dBA at receptor location 10 to 74 dBA at receptor location 7. This range in noise level is primarily due to the receptor's proximity to a grade crossing where the noise from the warning horns result in the higher predicted CRT project noise levels.

Table 3-17 also indicates that when the predicted CRT project combined operational noise levels are logarithmically added to the measured existing ambient noise levels, the total corridor noise level is expected to increase by one to three dBA at four of the 12 test sites. A 3 dBA Ldn increase in the cumulative noise level is generally considered to be a minor change in noise level at low ambient levels. However, this is a transportation corridor where ambient noise exposure is high and people already exposed to high levels of noise can be annoyed by even small increases in cumulative noise levels. Therefore, it is not reasonable to expect the community to tolerate the annoying cumulative effect of low project noise increases. The intermittent DMU passbys and train horns will be audible above the existing noise levels along the project corridor.

Table 3-17 Predicted CRT Combined Operational Noise Levels at Receptor Locations in the CRT Project Corridor

No.	Receptor Description	Town	FTA Category	Measured Noise Level (dBA)	Predicted CRT Noise Level (dBA)***	Total Noise Level (dBA)****
1	25 Jason Drive	DeBary	2	68 L_{dn}	**66 L_{dn}**	70 L_{dn}
2	121 Yale Drive*	Sanford	2	70 L_{dn}	**68 L_{dn}**	72 L_{dn}
3	202 Melissa Court*	Sanford	2	70 L_{dn}	50 L_{dn}	70 L_{dn}
4	115 West Pine Avenue	Longwood	2	74 L_{dn}	63 L_{dn}	74 L_{dn}
5	425 Lake Seminary Circle*	Maitland	2	68 L_{dn}	56 L_{dn}	68 L_{dn}
5B	Lake Lily Park**	Maitland	3	56 $L_{eq}(h)$	68 Leq(h)	68 Leq(h)
6	719 Nottingham Street*	Orlando	2	70 L_{dn}	**67 L_{dn}**	72 L_{dn}
7	Near Orlando Amtrak Station	Orlando	2	74 L_{dn}	***74* L_{dn}**	77 L_{dn}
7B	Cypress Grove Park*,**	Orlando	3	66 $L_{eq}(h)$	57 $L_{eq}(h)$	66 $L_{eq}(h)$
8	12165 Sandal Creek**	Orlando	2	69 L_{dn}	50 L_{dn}	69 L_{dn}
9	42 Neptune Road*	Kissimmee	2	66 L_{dn}	62 L_{dn}	67 L_{dn}
10	4894 Old Tampa Highway	Kissimmee	2	68 L_{dn}	48 L_{dn}	68 L_{dn}

* Predicted CRT Project Noise Levels: **Bold** = FTA Moderate Impact; ***Bold Italic*** = FTA Severe Impact.
** Total Noise Level = Logarithmic sum of Measured + Predicted CRT noise level with horns.
Source: KM Chng Environmental Inc.

Note that the measured Leq(h) noise level at Lake Lily Park in Maitland represents the noise level during a one-hour period when no rail activity occurred. Lake Lily Park directly borders the CSXT right-of-way and noise levels from existing CSXT and Amtrak trains currently impact park users.

With train activity, the measured Leq(h) noise level would have been similar to the noise level measured at Cypress Grove Park (Leq(h)=66dBA). Hence, the predicted CRT operational noise level would fall in the range from zero to three dBA The analysis showed that no land uses in categories 1 and 3 would be adversely affected due to the introduction of the CRT project. The following sub-sections compares the two separate components (train operations noise and train warning horn noise) of the combined operational noise impacts.

Train Operational Noise

Procedures outlined in FTA's Transit Noise and Vibration Assessment (USDOT, 1995) were used to predict train pass-by noise levels at noise sensitive locations along the proposed alignment. Noise sensitive land uses that might be impacted by the operation of the proposed project include single family residences, multifamily residences, mobile homes, and parks.

CRT intends to use Federal Railroad Administration (FRA) compliant self-propelled commuter railcars combining a commuter railcar and a diesel locomotive unit (DMU). A baseline sound emission level of 84 dBA (80 dBA L_{max}) was used in the operational noise analysis.

Train operational noise typically comes from the train engine, steel wheels, vibrations and track imperfections. Train pass-by noise levels at the sensitive locations were calculated using the operational schedule, speed, consist size, topographic information and distance to the centerline of the proposed track alignment that was available at the time of study. Train operations include 1, 2, or 3 DMU train consists with an average of 56 scheduled trains per 24-hour period. The calculated noise levels were then compared to the "moderate impact" and "severe impact" criteria established according to the ambient noise conditions.

Table 3-18 Predicted CRT Train Operational Noise Levels provides results of the calculations at the sensitive receptors and the degree of impact. According to results of the noise modeling there would be no moderate or severe noise impacts on residential or commercial structures as a result of train operational noise.

Train Warning Horn Noise

The Project Corridor was divided into 16 segments that correspond to the areas of the Corridor containing each of the station locations. Because of the additional sounding of the DMU train horns at each of the grade crossings all project related noise impacts are within ¼-mile of the grade crossings. Table 3-19 shows the number of receptors within each of the 16 segments of the rail corridor that exceed the FTA's moderate or severe impact criteria.

Table 3-18 Predicted CRT Train Operational Noise Levels at Receptor Locations in the CRT Project Corridor

No.	Receptor Description	Town	FTA Category	Distance to Center Line (feet)	Operational Speed (mph)	Measured Ambient Noise Level (dBA)	Predicted CRT Train Operational Noise Level (dBA)	Total Noise Level (dBA)**	FTA Moderate Impact** Criterion (dBA)	FTA Severe Impact** Criterion (dBA)	Degree of Impact From Train Operational Noise***
1	25 Jason Drive	DeBary	2	55	40	68 L_{dn}	55 L_{dn}	68 L_{dn}	63 L_{dn}	68 L_{dn}	None
2	121 Yale Drive	Sanford	2	89	20	70 L_{dn}	54 L_{dn}	70 L_{dn}	65 L_{dn}	69L_{dn}	None
3	202 Melissa Court	Sanford	2	76	50	70 L_{dn}	50 L_{dn}	70 L_{dn}	65 L_{dn}	69L_{dn}	None
4	115 West Pine Avenue	Longwood	2	102	50	74 L_{dn}	55 L_{dn}	74 L_{dn}	66 L_{dn}	72 L_{dn}	None
5	425 Lake Seminary Circle	Maitland	2	55	50	68 L_{dn}	56 L_{dn}	68 L_{dn}	63 L_{dn}	68 L_{dn}	None
5B	Lake Lily Park	Maitland	3	80	40	56 $L_{eq}(h)$	68 Leq(h)	68 Leq(h)	56 Leq(h)	62 Leq(h)	None
6	719 Nottingham Street	Orlando	2	67	20	70 L_{dn}	57 L_{dn}	70 L_{dn}	65 L_{dn}	69L_{dn}	None
7	Near Orlando Amtrak Station	Orlando	2	49	20	74 L_{dn}	66 L_{dn}	74 L_{dn}	66 L_{dn}	72 L_{dn}	None
7B	Cypress Grove Park	Orlando	3	100	40	66 $L_{eq}(h)$	57 $L_{eq}(h)$	66 $L_{eq}(h)$	62 $L_{eq}(h)$	67 $L_{eq}(h)$	None
8	12165 Sandal Creek	Orlando	2	72	50	69 L_{dn}	50 L_{dn}	69 L_{dn}	64 L_{dn}	69 L_{dn}	None
9	42 Neptune Road	Kissimmee	2	101	40	66 L_{dn}	55 L_{dn}	66 L_{dn}	62 L_{dn}	67 L_{dn}	None
10	4894 Old Tampa Highway	Kissimmee	2	202	50	68 L_{dn}	48 L_{dn}	68 L_{dn}	63 L_{dn}	68 L_{dn}	None

** Total Noise Level = Logarithmic sum of Measured + Predicted CRT train operational noise level without warning horns.
*** Degree of Impact is determined by comparing the Predicted CRT Train Operational Noise Level with the FTA impact criteria.

Source: KM Chng Environmental Inc.

Although the addition of the CRT project will cause some shift in the freight rail operations along the Project Corridor, no additional freight operations will occur during the nighttime hours (10 p.m. to 7 a.m.). As a result, the existing L_{dn} noise levels along the project Corridor from both the CSXT freight rail and Amtrak trains will remain essentially unchanged. The typical noise levels from the diesel locomotives (92 dBA L_{max}) and rail cars (82 dBA L_{max}) at a distance of 50 feet and traveling at a speed of 50 mph, are higher than the DMU rail car noise level of 80 dBA L_{max}. In the vicinity of the grade crossings where the DMU warning horns and CSXT and Amtrak locomotive warning horns will be sounded, the additional noise from the DMU warning horns will result in impacts at receptors along the rail corridor located within a ¼-mile of the grade crossings.

As shown in Table 3-19, the number of predicted unmitigated FTA noise impacts along the project corridor is 163 moderate and 54 severe *impacts*.

Because of the additional sounding of the DMU warning horns at the grade crossings, almost all the project related noise impacts are along the project corridor and located within ¼-mile of the grade crossings. However, these areas are already impacted by noise from the warning horns from the existing CSXT freight trains and Amtrak trains. Presently, up to 26 passenger and freight rail trains a day travel along the CSXT corridor, including 10 through trains and up to 10 local trains (varies depending on location along corridor and day of week) that travel various segments of the project corridor. The model conservatively assumed 20 passenger and freight trains per day.

Table 3-19 FTA Noise Impacts from the CRT Project due to Warning Horns without Mitigation

Region	Description/Station Area	Number of Moderate Impacts	Number of Severe Impacts
1	DeLand	2	0
2	DeBary/Saxon	0	0
3	Sanford	18	3
4	Lake Mary	16	2
5	Longwood	6	0
6	Altamonte Springs	20	20
7	Winter Park	19	8
8	Florida Hospital	16	7
9	Orlando LCS	20	5
10	Church Street	0	0
11	ORMC/Amtrak	1	0
12	Sand Lake	0	0
13	Meadow Woods	12	2
14	Osceola	0	0
15	Kissimmee	26	7
16	Poinciana	7	0
Totals		**163**	**54**

The addition of the DMU warning horns will increase the total noise levels at the grade crossings by approximately 2-3 dBA. In general, this degree of change in the existing noise level would be considered a moderate noise increase. However, many of these locations are already experiencing existing horn noise levels of 75 dBA or higher, and no additional noise exposure from CRT DMU horns can be tolerated before being considered as an impact.

It is important to note that the DMUs will utilize warning horns with lower volume horns (96 dBA L_{max} 100 feet in front of train) as allowed under 2005 FRA rulemaking. Thus, the horn noise produced by the DMU will be lower than the warning horns currently in use by the CSXT and Amtrak locomotives (102 dBA L_{max} at 100 feet).

In summary, this is an existing freight and passenger corridor with 126 active at-grade crossings, 10 through freight trains, 6 Amtrak trains, and up to 10 local switcher trains traveling and sounding their horns throughout the entire line 24 hours a day, 7 days a week. The CRT represents an increase in the existing type and volume of noise, and will

result in trains and warning horns being heard more frequently along the corridor during the week. The total amount of community noise exposure is already at a high level and people already exposed to high levels of noises can be annoyed by even small increases in cumulative noise levels. Should some CSXT through freight trains be redirected off the line in the future the cumulative operational and train horn noise levels along the line for freight that were used in this analysis would be lower.

Mitigation

As shown in Table 3-19, the number of predicted FTA noise impacts along the project corridor is 163 moderate impacts and 54 severe impacts due to the use of the DMU warning horns at the grade crossings. To further reduce these noise impacts, the DMU warning horns could be modified or re-designed to reduce the sideline noise while still maintaining the FRA's minimum noise requirement of 96 dBA Lmax measured at a distance of 100 feet from the centerline of the horn. The FEIS prepared for the Utah Transit Authority Weber County to Salt Lake City Commuter Rail Project (April 2005), based the results of the noise analysis using a sheet metal shroud packed with 4-inch foam rubber as mitigation. The sideline noise levels from the train horns were estimated to be reduced by up to 22 dBA while maintaining full level of on-axis output and would be consistent with FRA requirements. Applying this mitigation technique or similar redesign of the horn to reduce sideline noise of the DMU warning horns can be expected to eliminate all moderate impacts and severe impacts of the CRT. Table 3-20 presents the recommended mitigation plan to eliminate all noise impacts along the project corridor through the use of custom modified train horns on the proposed DMU fleet.

Table 3-20 FTA Severe Noise Impacts from the CRT Project with Proposed Mitigation

Region	Description/ Station Area	Number of Severe Impacts Before Mitigation	Proposed Mitigation	Number of Severe Impacts After Mitigation
1	DeLand	0	Modify train horn	0
2	DeBary/Saxon	0	Modify train horn	0
3	Sanford	3	Modify train horn	0
4	Lake Mary	2	Modify train horn	0
5	Longwood	0	Modify train horn	0
6	Altamonte Springs	20	Modify train horn	0
7	Winter Park	8	Modify train horn	0
8	Florida Hospital	7	Modify train horn	0
9	Orlando LCS	5	Modify train horn	0
10	Church Street	0	Modify train horn	0
11	ORMC/Amtrak	0	Modify train horn	0
12	Sand Lake	0	Modify train horn	0
13	Meadow Woods	2	Modify train horn	0
14	Osceola	0	Modify train horn	0
15	Kissimmee	7	Modify train horn	0
16	Poinciana	0	Modify train horn	0
Totals		**54**		**0**

3.3.5 Project Start-up Noise Monitoring

FDOT is committed to constructing a commuter rail project that will not have adverse noise impacts on a corridor community with existing high noise exposure. During the start-up period of commuter rail operations, FTA, with the assistance of FDOT, will prepare a detailed noise assessment. This assessment will verify the predicted project noise levels in the EA and test the efficacy of its operational and horn noise analysis and mitigation measures to ensure that there will be minimal community noise impacts from this project. The sheet metal shroud and foam rubber insulation shall be installed on all locomotives as described in the Mitigation section of this EA.

Prior to project start-up, all on-board horns will be calibrated to sound at the FRA minimum noise requirement of 96 dBA L_{max} measured at a distance of 100 feet. As a part of the project start-up noise testing, corridor noise monitoring will be carried out that replicates the monitoring conducted in May 2005, using the same 12 noise sensitive receptors at the train speeds indicated.

A written technical evaluation of the start-up operational noise monitoring will be prepared for FTA. If the detailed noise analysis determines that the presence of the CRT project has no impact on project noise, the FTA and FDOT will be satisfied that all noise mitigation measures have been successful.

If noise monitoring during the start-up period reveals that the selected mitigation does not adequately control noise, the project sponsor is committed to adopting additional measures to reduce noise. In this case, the goal will be to eliminate all impacts in the "severe" range and to minimize the number of impacts in the "moderate" range. Such an outcome is consistent with FTA's FONSI for the project.

The cost of this testing will be included in the CRT project budget.

3.3.6 Vibration

The following section describes the results of the vibration assessment that was performed for the CRT project.

Criteria

The FTA criteria were used to assess annoyance due to ground-borne vibration from the DMU transit operations. The FTA criteria are related to ground-borne vibration levels expressed in VdB that are expected to result in human annoyance. The FTA vibration criteria levels are defined in terms of human annoyance for different land-use categories such as high sensitivity receptors (Category 1 – buildings where low ambient vibration is essential for interior operations) where the FTA impact criterion level is 65 VdB; residential receptors (Category 2 – which includes buildings where people normally sleep) where the FTA impact criterion is 80 VdB, and institutional receptors (Category 3 – schools, libraries, and churches with primarily daytime and evening use) where the FTA impact criterion is 83 dBA. In general, the threshold of human perceptibility of vibration is 65 VdB. These vibration levels are well below the damage criteria levels of 95 to 100 VdB for sensitive historic buildings. It is extremely rare for vibration from transit operations to cause any type of building damage, even minor cosmetic damage, especially in an existing, active freight rail corridor.

Vibration Measurements

In addition to the background noise measurements, ground-borne vibration levels were also measured along the project corridor at six locations during an existing train pass-by (either a freight or Amtrak passenger train). These six measurement locations and the maximum VdB vibration levels measured at each location are described in Table 3-21. The measured vibration levels ranged from 74 to 83 VdB depending on train speed and the distance from the measurement location to the rail corridor.

Impact Assessment

As with noise, the FTA guidelines were used to predict vibration levels from the proposed CRT project. The FTA vibration model uses various algorithms to estimate transit vibration levels along average soil conditions. The FTA's typical surface vibration curves were used to predict ground-borne vibration levels from the DMU rail car passbys at sensitive receptor locations along the project corridor. For each segment along the project corridor, the input data to the vibration model included vehicle speed, and the distance from the receptor to the rail corridor. The model then computes root mean square (RMS) vibration levels at each identified receptor location for a single-event train passby. These computed vibration levels are then compared with the FTA ground-borne vibration impact criteria to determine the onset of impact. Typical vibration levels from the DMU rail cars traveling at a speed of 50 mph is 73 VdB at a distance of 50 feet from the rail corridor. Using the FTA vibration curves, for an impact condition to occur at a residential receptor (80 VdB), the receptor would have to be located within 20 feet of the rail corridor. Since no residential receptors are located within this distance, no vibration impacts are expected from the DMU operations along the project corridor.

However, in areas where special track work such as switches and crossovers are located, vibration levels will increase by approximately 10 VdB. As a result, any new switches and crossovers should not be located near residential receptors.

Table 3-21 Description of Vibration Measurement Locations Along the CRT Corridor

No.	Receptor Description	City	FTA Category	Measured Vibration Level (VdB)	Predicted CRT Vibration Level (VdB)
2	121 Yale Drive	Sanford	2	74.3	69.0
3	202 Melissa Court	Sanford	2	82.3	74.0
5	425 Lake Seminary Circle	Maitland	2	80.8	79.0
6	719 Nottingham Street	Orlando	2	75.3	69.0
7B	Cypress Grove Park	Orlando	3	78.5	73.0
9	42 Neptune Road	Kissimmee	2	83.4	72.0

In addition, the existing vibration levels generated by the freight and Amtrak trains along the project corridor are approximately 10 to 12 VdB higher than the vibration levels generated by the DMU vehicles due to the much heavier weight of the locomotives. For example, a freight or Amtrak locomotive traveling at a speed of 50 mph will generate a vibration level of 84 VdB at a distance of 50 feet from the rail corridor, while the DMU vehicle traveling at the same speed will generate a vibration level of 73 VdB at a distance

of 50 feet. Since the freight and Amtrak train operations will remain unchanged, these train operations will continue to generate the same vibration levels that are currently experienced at receptor locations along the project corridor. Depending on the speed of the freight and Amtrak trains along each section of the project corridor, these vibration levels will be significantly higher than the vibration levels generated by the DMU vehicle passbys.

Mitigation

No vibration impacts are anticipated as a result of CRT operations, therefore no mitigation measures are required.

3.3.7 Ecosystems

In accordance with FTA requirements and the NEPA of 1969, as amended, an evaluation regarding important natural features, habitats, and protected species occurrence within the proposed project area was conducted.

In order to determine occurrence and potential occurrence of important natural features, habitats, and state and/or federally protected plant and animal species within the study area, preliminary data were collected and field investigations were conducted. The CRT Endangered Species Biological Assessment Report (ESBAR)[6] provides a detailed description of the methodology used to identify and quantify the type and acreage of each habitat and listed species within the Corridor. The ESBAR is provided separately as a technical support document.

Natural Communities

Natural areas recognized as ecologically viable areas representative of Florida's natural ecosystems occur adjacent to the study area. The proposed project's utilization of existing disturbed railroad corridor, which has existing active freight activity will result in minimal or no impacts to these areas.

Wetlands as natural communities are addressed in Section 3.3.8 and thoroughly discussed in the CRT Wetlands Evaluation Report, provided as a separate technical support document.

Blue Spring State Park is located immediately west of the northern portion of the project area and contains portions of the existing rail right of way. This park is managed by the Florida Department of Environmental Protection (FDEP). Lake Beresford, managed by Volusia County Government, is adjacent to the project area. Given the location of the proposed project along an existing active rail corridor and within existing CSXT ROW, neither of these managed areas is expected to be significantly affected by the proposed project.

Potential Natural Areas (PNAs) identified along the project area include areas of upland mixed forest and scrub. While upland mixed forest and scrub habitats were observed adjacent to the project area, the existing disturbed nature of the CSXT corridor results in

[6] Vanasse Hangen Brustlin, Inc. *Draft Endangered Species Biological Assessment Report for the Central Florida Commuter Rail Transit.* (January 2006).

no direct impacts and only limited potential secondary impacts to areas designated as PNAs.

Through compliance with federal, state, and local regulations as described in the Wetlands and Water Quality Sections of this document, this project and all described alternatives are expected to have no significant adverse impacts on natural communities.

Threatened and Endangered Species

Based on preliminary data collection efforts and field surveys, a number of potentially occurring and documented protected species are recognized for the area of the CRT project. Table 3-22 presents a list of potentially occurring or recorded protected species for the study area, based on field observations and Florida Natural Areas Inventory (FNAI) results regarding element occurrence within 1 mile of the existing corridor, as well as impact findings for the proposed project as presented in the ESBAR.

In addition to the above, protected wading bird colonies were considered for the project area. While no colonies were observed for the study area, various wading birds were observed foraging within the study area. Transient groups of wading birds may include various protected species (Species of Special Concern), and as such, potential impacts to wading bird foraging areas were evaluated. While some impact to seasonal wading bird foraging areas are expected as a result of the wetland impacts, appropriate wetland mitigation is expected to offset these impacts.

While the proposed project and alternatives are estimated to, at worst, possibly "affect, but not likely to adversely affect" the species indicated for the study area, protection measures and guidelines as referenced in the ESBAR will be followed for all design and construction phases of this project or alternatives. Additionally, the following measures and permitting requirements are indicated in the ESBAR.

In order to assure that adverse impacts to the protected species within the vicinity of the project will not occur, the FDOT will abide by the following commitments:

- Florida scrub-jay (Aphelocoma coerulescens) - Comprehensive scrub jay surveys will be carried out near the confirmed location (S. of Konomac Lake, near DeBary) based on U.S. Fish and Wildlife Service (USFWS) guidelines as adopted from Fitzpatrick, et.al., (1991). These surveys will determine the extent and quality of habitat and occupied territory within the project area. Based on the results of these surveys, the FTA will contact USFWS to coordinate appropriate mitigation measures, including timing of construction, if necessary, outside of nesting season.

- Eastern indigo snake (Drymarchon corais cooperi) - To assure the protection of the eastern indigo snake during construction, all design and construction will follow the established guideline "Standard Protection Measures for the Eastern Indigo Snake" in the CFCRT ESBAR Appendix D.

Table 3-22 Summary of Potential Impact for Protected Species for the CRT Study Area

Scientific Name	Common Name	Report Finding of Impact
Ammodramaus savannarum floridanus	Florida grasshopper sparrow	No effect
*Aphelocoma coerulescens**	Florida scrub jay	May affect, not likely adverse
Aramus guarauna	Limpkin	May affect, not likely adverse
*Egretta rufescens**	Reddish egret	May affect, not likely adverse
Egretta thula	Snowy egret	May affect, not likely adverse
*Egretta caerulea**	Little blue heron	May affect, not likely adverse
*Egretta tricolor**	Tricolored heron	May affect, not likely adverse
*Eudocimus albus**	White Ibis	May affect, not likely adverse
Grus canadensis pratensis	Florida sandhill crane	May affect, not likely adverse
Haliaeetus leucocephalus	Bald eagle	No effect
Mycteria americana	Wood stork	May affect, not likely adverse
Pandion haliaetus ♦*	Osprey	No effect
Picoides borealis	Red cockaded woodpecker	No effect
Platalea ajaja	Roseate spoonbill	May affect, not likely adverse
Polyborus plancus audubonii	Crested caracara	May affect, not likely adverse
Rostrhamus sociabilis coerulescens	Snail kite	No effect
Sterna antillarium	Least tern	Not likely to affect
Alligator mississippiensis	American alligator	No effect
Eumeces egregious lividus	Bluetail mole skink	May affect, not likely adverse
*Gopherus polyphemus**	Gopher tortoise	May affect, not likely adverse
Drymarchon corais cooperi	Eastern indigo snake	May affect, not likely adverse
Neoseps reynoldsi	Sand skink	May affect, not likely adverse
*Ursus americanus floridanus**	Florida black bear	May affect, not likely adverse
Trichechus manatus latirostris	Manatee	May affect, not likely adverse
Bonamia grandiflora	Florida bonamia	No effect
Deeringothamnus pulchellus	Beautiful pawpaw	No effect
Nemastylis floridana	Celestial lily	No effect
Nolina brittoniana	Britton's beargrass	No effect

♦ = non-listed for project area but protected under Migratory Bird Treaty Act, * = observed during field evaluations,
T = Threatened, E = Endangered, SSC = Species of Special Concern

- Gopher tortoise (Gopherus polyphemus) - The FDOT will resurvey the project corridor for gopher tortoises and their burrows immediately prior to construction and coordinate permitting and mitigation with the Florida Fish and Wildlife Conservation Commission (FFWCC). As detailed in the CFCRT ESBAR, this may include incidental take permits or relocation.

- Bald eagle (Haliaeetus leucocephalus) and Crested caracara (Polyborus plancus audubonii) - The FDOT will resurvey the project corridor for the presence of bald eagle and caracara nests during the final design and permitting phases of this project. The results of these surveys will provide a basis for modification of construction activities, if necessary. The FDOT will coordinate with USFWS throughout this process to establish adequate protection measures.

- Florida black bear (*Ursus americanus floridanus*) - As data from ongoing studies of the Ocala population of the Florida black bear become available, the FDOT will continue to review project involvement with the Florida lack bear. If the need arises

following construction, FDOT may initiate studies to assess potential effects of the increased rail trips.

Nearly all potential effects described for this project are associated with habitat and known occurrence throughout the corridor. Because the TSM alternative relies on many of the same station sites for park and ride locations, the effect determination for the TSM alternative are the same as those described for the CFCRT Build Alternative.

Considering the mitigation measures proposed, no significant adverse impacts are anticipated to the regional populations of the federally or state-listed species protected by the Endangered Species Act of 1973, amended (16 U.S.C. 1531 et seq.). Refer to Appendix E for a copy of the letter received by USFWS dated February 21, 2007. This finding fulfills the requirements of the Act.

3.3.8 Wetlands

Pursuant to Presidential Executive Order 11990 entitled "Protection of Wetlands," the United States Department of Transportation (USDOT) has developed a policy (USDOT Order 5660.1A, Preservation of the Nation's Wetlands, dated August 24, 1978), which requires all federally funded highway and railroad projects to protect wetlands to the fullest extent possible. In accordance with this policy, the CRT corridor was evaluated for any wetlands that have potential involvement with the proposed improvements. This assessment documents the extent of wetlands within the Corridor, potential impacts of the Project Alternatives studied, and efforts to avoid, minimize, or mitigate those impacts to the greatest extent practicable. The Wetland Evaluation Report (WER)[7] for the CRT provides backup documentation regarding the wetland and open water features associated with the study area. The WER is provided separately as a technical support document.

To assess potential impacts to existing wetland systems, wetland identification and evaluations were extended to a 250-foot wide corridor along the length of the existing Corridor. The WER provides a detailed description of the methodology used to identify and quantify the type and acreage of each wetland within the Corridor.

Wetland Communities

Where the Corridor passes through natural systems, the existing active freight and passenger rail generally represents a disturbed fringe environment, with changes in vegetative community composition and structure. The existing wetland systems include a range of wetlands typical of Central Florida; emergent, scrub shrub, forested, and open water. In many portions of the study area, the historic hydrologic conditions have been altered by previous ditching, dredge and fill activities, as well as the construction of the existing rail. Most of the wetland systems encountered exhibit some degree of pre-existing alteration and/or fragmentation, and subsequent encroachment of non-native and nuisance plant species. Up to 85 percent of the wetlands recorded in the study area may be described, to some degree, as disturbed wetland fringe.

[7] Vanasse Hangen Brustlin, Inc. *Draft Wetland Evaluation Report for the Central Florida Commuter Rail Transit.* (January 2006).

Field investigations revealed 15 Florida Land Use Cover and Forms Classification System (FLUCFCS) codes representing a total of 458 wetland and open water features totaling of 218.16 acres. Table 3-20 lists the classification codes and descriptive title of all types of wetland habitats recorded for the study area cross-referenced between the United States Fish & Wildlife Service (USFWS) and FLUCFCS classification systems. Location and approximate wetland boundaries within the study area are presented in the WER. A description of the characteristics and dominant vegetative species for each classification of the project wetland and open water features by FLUCFCS codes are provided in the attached WER.

Table 3-20 USFWS Codes/Classifications and Corresponding FLUCFCS Codes/Categories for Wetlands and Surface Waters Identified in the CRT Study Area

USFWS Code	USFWS Description	FLUCFCS Code	FLUCFCS Description
PEM1	Palustrine, emergent vegetation, persistent	640 641	Vegetated Non-forested Wetlands Freshwater Marshes
PFO	Palustrine, forested	630	Wetland Forest Mixed
PFO1	Palustrine, forested, broad leaved deciduous	613	Gum Swamp
		617	Mixed Hardwoods
		619	Exotic Hardwoods
PFO2	Palustrine, forested, needle leaved deciduous	621	Cypress
PFO3	Palustrine, broad leaved, evergreen	611	Bay Swamp
PFO4	Palustrine, forested, needle leaved evergreen	622	Pond Pine
		625	Hydric Pine Flatwoods
		627	Slash Pine Swamp Forest
PSS1	Palustrine, scrub-shrub, broad leaved deciduous	618	Willow and Elderberry
POW	Palustrine, open water	510	Streams and Waterways
		523	Lakes > 10 acres
		534	Reservoirs < 10 acres

Impact Assessment

Proposed impacts for the Full-Build Alternative were estimated based on preliminary 'limits of grading' for the proposed 60.8 mile project and proposed station locations. The limits of grading include sections of new track installation. All wetland and water features within this 'limits of grading' and station locations were assumed as direct impacts.

The maximum (worst case) direct impacts to wetlands and other surface waters by the proposed project are estimated at 23.56 acres based on the limits of grading and station boundaries. These impacts are proposed to highly disturbed wetland fringes within the existing railroad corridor and station locations.

Other potential impacts by the proposed project to the study area may include secondary and cumulative impacts as well as temporary impacts associated with construction activities. Temporary impacts are negligible and would likely be limited to impacts to vegetation. Secondary and cumulative impacts to protected species and their habitats, as relates to the wetlands recorded for this report, are negligible and are addressed in Section 3.3.6 and the ESBAR. Other secondary and cumulative impacts relating to other wetland functions are generally considered by the state to be offset or fully mitigated if mitigation for direct impacts is carried out in the same drainage basin. Secondary and

cumulative impacts are expected to be minimal or non-existent given the condition of the existing rail corridor and the proposed limits of grading.

Impacts

Alternatives considered for this study included a No-Build Alternative, TSM Alternative, and the Full-Build Alternative.

As no construction will occur for the No-Build Alternative, there will be no impacts to wetlands. The TSM Alternative is estimated to impact 15.10 acres of wetlands and other surface water. No new road construction will be required to implement the TSM Alternative. Some TSM park and ride station locations are proposed for existing parking areas that will not require additional construction. In the locations where new parking lots will be required, efforts would be made to avoid direct impacts to any extant wetland resources.

Full-Build Alternative wetland and other surface water feature impacts are estimated at 23.56 acres. Of these impacts, 18.21 acres are directly associated with station locations. In the locations where new parking lots will be required, efforts would be made to avoid direct impacts to any extant wetland resources. Table 3-24 summarizes wetland acreage and potential impacts for the proposed alternatives.

Table 3-24 Alternatives Matrix for Wetland Impacts by FLUCFCS Code in Acres

FLUCFCS Code	Existing Wetlands Within Corridor	No-Build Impacts	TSM Impacts	Full-Build Impacts
510	16.99	0	0	3.12
523	3.16	0	0	0
534	22.42	0	0	0.81
611	26.61	0	0	1.39
613	0.44	0	0	<0.1
617	33.61	0	8.48	8.50
618	35.72	0	0	1.47
619	0.48	0	0	0
621	53.42	0	4.44	4.78
622	0.68	0	0	0
625	<0.1	0	0	0
627	5.91	0	0	0.55
630	2.49	0	0	<0.1
640	0.13	0	0.45	<0.1
641	16.09	0	1.73	2.9
Total	**218.18**	**0**	**15.10**	**23.56**

Avoidance and Minimization

Avoidance and minimization of impacts to wetlands is a requirement of Section 404 of the Clean Water Act as jointly administered by the United States Environmental Protection Agency (EPA) and the United States Army Corps of Engineers (USACOE). Within the State of Florida, the six districts of the FDEP and five Water Management Districts

(WMDs) have similar avoidance and minimization requirements. For the CRT project, the selection of the highly developed and disturbed existing active freight and passenger rail CSXT Corridor constitutes initial avoidance of wetland impacts. Further, the design of areas for double tracking was based to a large degree on avoidance of wetlands identified.

For all project alternatives involving construction on, over, or adjacent to wetlands, avoidance and minimization will be accomplished to some degree through careful design and implementation of best management practices during construction. Specifically, the wetland impacts for the Full-Build Alternative station locations conservatively estimate that 100% of the wetlands identified are impacted and can be considered as a worst case analysis. As the station development advances through the design phases, emphasis will be placed on avoiding impacts to wetlands.

Mitigation

The FDOT mitigation program was established by the Florida Legislature in 1996 (Florida Statutes (FS) 373.4137) to replace mitigation on a project-by-project basis with a broader approach to mitigation to offset the impacts to wetlands by transportation projects. The goal of the FDOT mitigation program is "to offset wetland impacts of FDOT transportation projects by implementing regional, combined-project mitigation." The WMDs develop annual mitigation plans for projects that FDOT or a transportation authority (established pursuant to Chapter 348 or 349, FS) expect to implement in the coming fiscal year. Mitigation plans must receive preliminary approval by the WMD's Governing Board and are then submitted to FDEP for review and final approval. Upon approval by FDEP, the plan is deemed to satisfy the legislative mitigation requirements and any other mitigation requirements imposed by local, regional, and state agencies. Changes may be made to the approved plans in order to achieve compliance with federal permitting requirements.

Wetland impacts, which will result from the construction of this project, will be mitigated pursuant to S. 373.4137 FS to satisfy all mitigation requirements of Part IV Chapter 373, F.S. and 33 U.S.C.s. 1344. Under S. 373.4137 F.S., mitigation of FDOT wetland impacts will be implemented by the appropriate WMD where the impacts occur. Each WMD will develop a regional wetland mitigation plan on an annual basis to be approved by the Florida State Legislature which addresses the estimated mitigation needs of FDOT. The WMD will then provide wetland mitigation for specific FDOT project impacts through a corresponding mitigation project within the overall approved regional mitigation plan. FDOT will provide funding to the WMD for implementation of such mitigation projects.

Based upon the above considerations, it is determined that there is no practicable alternative to the proposed new construction in wetlands and that the proposed action includes all practicable measures to minimize harm to wetlands which may result from such use.

3.3.9 Water Quality

Outstanding Florida Waters

The project coincides with Outstanding Florida Waters near its northern terminus, in Volusia County: Blue Spring State Park and the Wekiva River Aquatic Preserve. Proposed components of the project for this area consist primarily of minor grading and

additional track construction to be accommodated entirely within the existing active freight and passenger railroad ROW; there will be no direct impacts to the abutting Blue Spring State Park or Wekiva River Aquatic Preserve. Therefore, there will be no impacts to these Outstanding Florida Waters.

Wild and Scenic Rivers

There are no Federal Wild and Scenic Rivers located along or adjacent to the project Corridor.

Aquatic Preserves

The Wekiva River Aquatic Preserve is adjacent to the proposed project area. As noted in the discussion on Outstanding Florida Waters, no impacts to Aquatic Preserves are expected.

Coastal Zone Management (CZM) and Coastal Barrier Resources

The Advance Notification response from Volusia County, the only coastal county containing portions of the proposed project, indicates that "…The project is consistent and in accordance with the state's CZM Program." No response was received from the Department of Community Affairs on the Advanced Notification for the project.

There are no impacts to coastal resources associated with this project; therefore, there will be no impacts to the Florida coastal zone from implementation of the No-Build, TSM or Full-Build Alternatives.

The Project will be implemented in a manner consistent with the Florida CZM program. All required environmental permits and approvals will be obtained for the Project, and the Project will be operated in compliance with all regulatory requirements.

The Florida Department of Environmental Protection, through the Florida State Clearinghouse, has determined that this project is consistent with the Florida Coastal Zone Management Plan (refer to Appendix E for a copy of the advance notification response letter dated March 30, 2005). In addition, the Volusia County Growth and Resource Management Department, indicates that the proposed project is consistent and in accordance with the state's Coastal Zone Management Program (refer to Appendix E for a copy of the advance notification response letter dated March 20, 2005).

Point Source Pollution and Stormwater

The most significant water quality issues and regulation for the proposed project involve point source pollution. These include EPA powers as established under the Clean Water Act, subsequent partial delegation to the FDEP, and local agreements relating to the National Pollutant Discharge Elimination System (NPDES) permitting. Water quality impacts, if any, are addressed in urban sections of the project under local MS4 requirements and WMD drainage and stormwater requirements for treatment of runoff from impervious area. As secondary or cumulative impacts, these effects will be negligible through compliance with the appropriate regulatory agency requirements during design and construction.

The proposed stormwater facilities design will include, at a minimum, the water quantity requirements for water quality impacts as required by the South Florida WMD and

St. Johns River WMD in Rules 40E-4, Florida Administrative Code (F.A.C.), and 40C-4, F.A.C. The Water Quality Impact Evaluation (WQIE) checklist and references are provided in Appendix D for consistency with EA requirements.

No significant degradation of water quality is anticipated. The proposed stormwater facilities design will include, at a minimum, the water quantity requirements for water quality impacts as required by the South Florida Water Management District and the St. Johns River Water Management District in Rules 40E-4, Florida Administrative Code (F.A.C.), and 40C-4, F.A.C.

Floodplains

In support of the environmental analysis, the 100-year floodplain was analyzed along the entire rail corridor. The track crosses the 100-year floodplain in relatively few locations, none of which are within a regulatory floodway. In these locations, the area of the encroachment was estimated using geographical information system mapping. A summary of the estimated floodplain encroachments is given below in Table 3-25. Zone A is defined as areas inundated by the 100-year flood with no base flood elevation determined. Zone AE is defined as areas inundated by the 100-year flood with base flood elevations determined.

Table 3-25 Summary of Estimated Floodplain Encroachment by County for the Full-Build Alternative

CENTRAL FLORIDA COMMUTER RAIL TRANSIT		
FLOODPLAIN IMPACT SUMMARY		
	Zone	
County	A	AE
Orange	0.19 acres	0.73 acres
Osceola	0.20 acres	1.74 acres
Seminole	0.08 acres	1.29 acres
Volusia	0.80 acres	0.62 acres
Total	*1.27 acres*	*4.38 acres*
	Combined Total	
	5.65 acres	

Figure 3-15 and Figure 3-16 show the CRT project corridor and the associated 100-year floodplain.

Based upon the estimated impacts identified above, the following discussion is provided.

- Flood Risks Associated with, or Resulting from, the Proposed Action: Flood risks associated with the proposed action are minimal to none. The floodplain will be encroached upon in relatively few areas and in those areas compensatory storage will be provided at a 1:1 ratio.

- Impacts on Natural and Beneficial Floodplain Values: The impacts on the natural and beneficial values of the floodplain will be negligible because the floodplain encroachments are minimal and will be compensated for in facilities that mimic

the natural floodplain behavior, such as the stormwater detention ponds on the station sites.

- Degree to which the Action Provides Direct or Indirect Support for Incompatible Development in the Base Floodplain: Since the project is a modification to an existing active freight and passenger railroad line, it does not provide any additional incompatible development support (direct or indirect) than the existing line.

- The Potential for Significant Interruption or Termination of Community's Only Evacuation Route or Facility for Emergency Vehicles: The potential for significant interruption or termination of the communities' evacuation routes is minimal to none because the floodplain is affected in relatively few areas. Measures, such as 1:1 compensating storage, will be in place to ensure that the floodplain adjacent to such routes will be unaffected.

- Measures to Minimize Floodplain Impacts Associated with Each Alternative: In areas where the project is near floodplains, shifts in track alignment and steeper tie-in grading slopes were used to minimize the area of the floodplain encroachment. Also compensating storage will be provided at a 1:1 ratio where impacts were unavoidable even with said measures.

- Measures to Restore and Preserve the Natural and Beneficial Floodplain Values that are Impacted: In areas adjacent to wetlands, track alignment and grade shifts were implemented to avoid wetland and associated floodplain impacts. Floodplains that are impacted will receive 1:1 compensation as close as possible to the impacted areas. This will ensure that the floodplain behaves the same in the pre-development and post-development condition. At the station sites where the floodplain is impacted, the floodplain compensation will be provided in the stations' stormwater detention pond in order to preserve the natural and beneficial floodplain values in those areas

Based on the preliminary evaluation, the encroachments to the floodplain are not anticipated to have an adverse effect. A more detailed analysis will be conducted during the preliminary design phase of the project. Mitigation will be required for impacts to the 100-year floodplain on a 1:1 ratio for compensatory storage. Typically, any encroachments proposed within a regulatory floodway, such as Shingle Creek, will require an analysis to show a no "net rise" in the base (100-year) flood elevation for the creek. In summary, any required mitigation measures for floodplain and floodway encroachment will result in no net impact for the Full-Build Alternative.

Pursuant to Executive Order 11988, "Floodplain Management", the proposed action was determined to be within the base floodplain associated with low areas. Impacts associated with the encroachment have been evaluated and determined to be minimal. Therefore, the proposed action does not constitute a significant encroachment.

No-Build and TSM Alternatives

The No-Build Alternative will not result in encroachments in the floodplain. The TSM Alternative will result in only minimal floodplain impacts. The need for the construction of new facilities for the TSM Alternative will result in very minor encroachment in association

with a single park and ride location and this impact would be mitigated as described above.

Figure 3-15 Floodplains Sheet 1 of 2

Figure 3-16 Floodplains Sheet 2 of 2

3.3.10 Contamination

There is a substantial potential liability associated with acquisition of property that is contaminated. Additionally, contamination can have a substantial impact on construction, particularly dewatering, since any contaminated groundwater that may be encountered would require treatment and special permitting. Contaminated soil would require special treatment and disposal and could not likely be used as fill.

A Contamination Screening Evaluation Report (CSER) was prepared for the 16 station sites and the maintenance facility site that will be acquired for the construction of the Full Build Alternative. The CSER or Level I Contamination Assessment was conducted in general accordance with Chapter 22 of the FDOT PD&E Manual. The CSER is provided as a separate technical report.

The purpose of this contamination screening evaluation was to evaluate the risk of encountering petroleum or hazardous substance contamination of soil, groundwater, surface water, or sediment in the vicinity of the station and maintenance facility locations that could adversely affect property acquisition, permitting, and construction of this project. The evaluation of the railroad operations was not included within the scope of this study.

There are no hazardous waste disposal sites regulated under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) located along the project Corridor, and construction of the Full-Build Alternative would not interfere with existing remediation activities at any existing remediation site.

Impacts and Benefits

No-Build Alternative

Under the No-Build Alternative, there would be no rail line or station construction activities at discrete locations along the project Corridor, thus there would be no potential impacts to contaminated soils and/or groundwater from identified oil and hazardous materials sites. At locations where rail or station construction for the Full-Build Alternative would be expected to result in remediation of contaminated soils and/or groundwater, no such remediation activities would result and the contamination would remain.

TSM Alternative

Specific analysis of proposed TSM station locations was not performed. However, several TSM stations are identical to Full-Build Alternative commuter rail stations, including:

- Florida Hospital, Orlando
- LYNX Central Station, Orlando
- Church Street, Orlando
- Orlando Amtrak, Orlando

- South Orange Avenue/Sand Lake Road, Orlando
- Kissimmee Amtrak, and
- Poinciana Industrial Park.

No parking will be provided for the four Downtown Orlando and Kissimmee TSM stops, it is assumed that no construction will be required and therefore no possibility to encounter soil and/or groundwater contamination exists at these locations. Four other TSM stops will also have no parking: Downtown Sanford; South Orange Avenue; and Florida Mall.

At the South Orange Avenue/Sand Lake Road and Poinciana Industrial Park locations, parking will be provided. It is assumed that the footprint of the proposed TSM stop is similar to that of the proposed commuter rail stations at these locations; therefore the possibility of encountering contamination at these locations is identical to that of the Full-Build Alternative.

Full-Build Alternative

In general accordance with the applicable definitions provided in the FDOT PD&E Manual, the proposed station and maintenance facility locations were assigned Low-, Medium-, and High-contamination risk potential ratings. The CSER data collection activities included a review of publicly available regulatory files, a review of available historical data sources, and site reconnaissance of the project study area.

The following presents the contamination risk potential ratings assigned to each proposed facility at this time.

- DeLand Amtrak Station – Medium;
- DeBary Saxon Boulevard Extension Station – Low;
- Rand Yard Maintenance Facility – High;
- Sanford/SR 46 Station – High;
- Lake Mary Station – High;
- Longwood Station – Medium;
- Altamonte Springs Station – High;
- Winter Park/Park Avenue Station – Low;
- Florida Hospital Station – Low;
- LYNX Central Station – Low;
- Church Street Station – Medium;
- Orlando Amtrak/ORMC Station – Medium;
- Sand Lake Road Station – Medium;
- Meadow Woods Station – High;
- Osceola Parkway Station – Low;
- Kissimmee Amtrak Station – High; and

- Poinciana Industrial Park Station – Low.

Figure 3-17 shows the locations of the stations and presents the contamination risk potential ratings assigned to each station.

For locations classified as having a low contamination risk potential, it is recommended that an updated review should be conducted for those sites prior to ROW acquisition and construction. The update should include a re-review of the public record to determine if any significant changes in status have occurred since this report was prepared.

For locations classified as having a medium or high contamination risk, a further review into the Public Record with regard to any contamination assessment or remedial action plans which were generated in the interim period between the date of this report and the date of property acquisition and construction, should be performed. A preliminary soils screening evaluation including auger borings and Organic Vapor Analyzer (OVA) screening of soils, as well as soil and groundwater sampling and testing, should be performed to detect the presence of contaminants in soil or groundwater prior to acquisition of property, or initiation of construction activities.

If contaminated media are encountered, additional investigations may be necessary to implement mitigation activities required to support construction.

Such activities may include design and operation of on-site groundwater treatment equipment, implementing special handling, characterization, and disposal procedures for contaminated soils or implementation of engineering controls (slurry walls, infiltration trenches, etc.) to prevent affecting natural fate and transport parameters of existing groundwater contaminant plumes. Additionally, the results of the contamination assessment activities would be utilized to assess the need for performance of a Level III contamination assessment or Remedial Action Plan for the potential contamination sites. Depending of the nature and extent of contamination impacts as determined by the Level II and/or Level II contamination assessment activities, risk analysis for impacts to the project and the general public could be performed, cost estimates for remediation could be developed, and a communication plan with applicable regulatory agencies could be devised.

Specific general recommendations for each Medium- and High- ranked station locations are provided below.

DeLand Amtrak Station (Medium) Conduct soil and groundwater investigations near the southwest portion of the site to assess the potential for petroleum contamination impacts from an off-site historic gasoline station.

Rand Yard Maintenance Facility (High) Conduct soil and groundwater investigations at the area of miscellaneous surface debris including stained poles located west of the former Ice House. Conduct soil and groundwater investigations at the area of buried paper and wood products and at the area of 5-gallon buckets labeled hazardous materials located to the east of the former Ice House. All asphalt and railroad ties should be properly characterized and disposed of properly. Subsurface investigations are recommended in the central portion of the site, where former tracks were located to assess the potential for buried items that could impact construction.

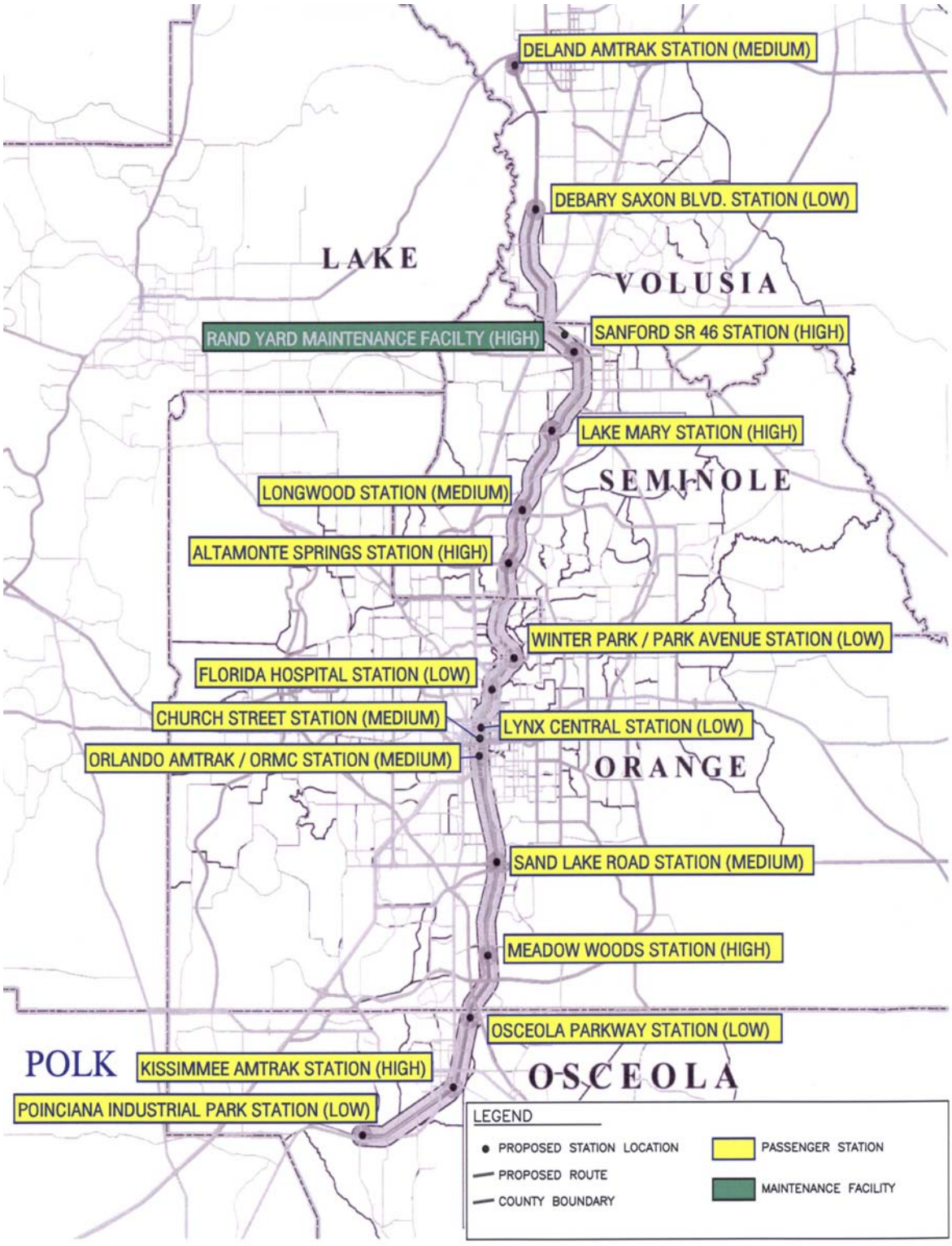

Figure 3-17 Station Contamination Risk Potential Ratings

Sanford/SR 46 Station (High) Conduct soil and groundwater investigations near maintenance areas of the active commercial businesses located on-site.

Conduct soil and groundwater testing in the south-central portion of the site to assess the potential for petroleum contamination impacts associated with a historic gasoline station that may have been at this location. Subsurface geophysical investigations could also be conducted in this area to assess the potential for buried tanks and foundations.

Lake Mary Station (High). Conduct soil and groundwater investigations near the western portion of the site to assess the potential for petroleum contamination impacts from the 7-Eleven Gas Station.

Longwood Station (Medium). Conduct soil and groundwater investigations on the auto/trailer maintenance property located at the intersection of Church Street and Longwood Avenue, specifically around the maintenance bays and surrounding equipment staging areas. Conduct soil and groundwater investigations at Blue OX Services Repair facilities.

Altamonte Springs Station (High). Conduct soil and groundwater investigations at Auto Body Service, Driver Tire, and Courtesy Towing. Conduct soil and groundwater investigations at the Altamonte Springs Public Works Building around the underground storage tanks (USTs) to assess the potential for petroleum contamination.

Orlando Amtrak/ORMC Station (Medium). Conduct soil and groundwater investigations near the east portion of the subject site across from the former Culligan Water Conditioning Facility to assess the potential for petroleum and solvent contamination.

Church Street Station (Medium). Conduct soil and groundwater investigations near the northwestern portion of the subject site, nearest the historic off-site commercial facilities, to access the potential for petroleum and/or solvent contamination.

Sand Lake Road Station (Medium). Conduct soil and groundwater investigations in the northwest corner of the subject property to assess the potential for contamination from discarded 55-gallon drums.

Meadow Woods Station (High). Conduct soil and groundwater investigations along the northeastern portion of the property to assess the potential for petroleum contamination from the Speedy Market Gas Station.

Kissimmee Station (High). Conduct soil and groundwater investigations in the area of the historical dry cleaners (intersection of Dakin Avenue and Pleasant Street) and the historical auto repair shop (western end of the subject property.)

3.3.11 Farmlands

The Farmland Protection Policy Act (FPPA), codified at 7 USC §§ 4201 et. seq., requires a federal agency that is expending funds (for technical or financial assistance, but not planning assistance) on a project that will convert farmland to a non agricultural use to determine the impact of the conversion to the resource base.

"Important Farmlands" include prime farmland and unique farmland as well as additional important farmlands as identified by state or local governments. The components of Important Farmlands are: Prime Farmland, Unique Farmland, Additional Farmland of Statewide Importance, and Additional Farmland of Local Importance.

Prime Farmland is land that has the best combination of physical and chemical characteristics for producing food, feed, forage, fiber, and oilseed crops, and is also available for these uses (the land could be cropland, pastureland, rangeland, forest land, or other land, but not urban built-up land or water). It has the soil quality, growing season, and moisture supply needed to economically produce sustained high yields of crops when treated and managed, including water management, according to acceptable farming methods. In general, prime farmlands have an adequate and dependable water supply from precipitation or irrigation, a favorable temperature and growing season, acceptable acidity or alkalinity, acceptable salt and sodium content, and few or no rocks. They are permeable to water and air. Prime Farmlands are not excessively erodible or saturated with water for a long period of time, and they either do not flood frequently or are protected from flooding.

Unique Farmland is the second component of Important Farmland. Unique Farmland is land other than Prime Farmland that is used for the production of specific high value food and fiber crops. It has the special combination of soil quality, location, growing season, and moisture supply needed to economically produce sustained high quality and/or high yields of a specific crop when treated and managed according to acceptable farming methods. Examples of such crops are citrus, tree nuts, olives, cranberries, fruit, and vegetables.

Additional Farmlands of statewide and local importance are the remaining components of Important Farmland. This is land, in addition to prime and unique farmland, that is of statewide or local importance for the production of food, feed, fiber, forage, and oilseed crops. Criteria for defining and delineating Additional Farmland of Statewide Importance are determined by appropriate state agencies.

Impacts and Benefits

The state of Florida has not established criteria for defining and delineating Additional Farmland of Statewide Importance; therefore, Additional Farmland of Statewide Importance does not exist in the state. Criteria for defining and delineating Additional Farmland of Local Importance are determined by appropriate county agencies. Some counties have established criteria for defining and delineating Additional Farmland of Local Importance.

There will be no impacts to Important Farmlands for the Full-Build Alternative, including commuter rail station locations. This conclusion is based on the use of the existing rail ROW for the proposed project. For the proposed station locations for the Full-Build Alternative, analysis of soil map units revealed that no soils meeting criteria for Prime Farmlands occur within any of the proposed station locations.

Through coordination with the Natural Resources Conservation Service (NRCS), it has been determined that the project study area, which passes through the urbanized areas of Deltona, Orlando, and Kissimmee, does not meet the definition of farmland as defined in 7 CFR 658. Therefore, the provisions of the Farmland Protection Policy Act of 1984 do not apply to this project.

No-Build and TSM Alternatives

There will be no impacts to Important Farmlands for either the No-Build Alternative or the TSM Alternative. As no construction will occur for the No-Build Alternative, there will be no impacts to Important Farmlands. For the proposed park and ride locations for the TSM Alternative which are not already parking lots, analysis of soil map units revealed that no soils meeting criteria for Prime Farmlands occur within any of the proposed park and ride locations.

3.3.12 Energy

Transportation is Florida's second largest energy use sector with 36 percent of the total. Automobile and truck use make up the vast majority of the transportation energy use total.

Transportation energy use is further broken down by fuel type to include individual data sets for aviation fuel and motor gasoline. Motor gasoline and diesel fuel make up more than 87 percent of Florida's transportation energy costs, with aviation fuel accounting for less than 10 percent. (Florida Solar Energy Center 2004).

Impacts and Benefits

The CRT project will result in both direct and indirect impacts to the regional energy system. Direct impacts are characterized by the energy that would be used for the construction and operation of the rail system. Indirect impacts include changes in energy use by the regional transportation system (including automobiles, buses, trucks and motorcycles) that would be caused by operation of the CRT project.

Direct impacts include the energy consumed by operation of the CRT DMUs, lighting for stations and parking lots, and lighting and HVAC energy for the proposed Rand Yard maintenance facility. Because of the relatively minor size of the CRT project in comparison to the Central Florida regional economy, and the conceptual status of project design, no detailed estimation of direct energy impacts has been performed for the project.

The direct energy impacts of the CRT project were judged to be minor and the difference between the Full-Build and TSM Alternatives is inconsequential. The Full-Build Alternative is likely to consume more energy during construction as the Full-Build Alternative will require more physical construction (e.g., additional rail and more physical station construction) over a longer period (up to 2 years) than the TSM Alternative, but the additional energy consumed is assumed to be a very small percentage of the total regional annual energy consumption. Because of the dynamic nature of the Central Florida economy, it is likely that the construction energy use assumed for the CRT Full-Build or TSM Alternatives would be consumed on other regional construction projects in the No-Build Alternative.

Indirect energy impacts can be estimated for the study area based on the estimated changes in Vehicle Miles Traveled (VMT) for the project study area. Table 3-26 presents a comparison between project annual transportation energy usage (in British thermal units [BTUs]) for the Full-Build Alternative compared to the No-Build and TSM Alternatives in the year 2025 for the CRT study area. Changes in VMT in the study area between the alternatives are calculated in accordance with the methodology used for estimation of environmental benefits for the Section 5309 New Starts Criteria.

Change in regional energy consumption in the forecast year is measured in BTUs, comparing the Full-Build Alternative to the TSM Alternative. This measure reflects the net impact on energy savings as a result of changes in automobile and commercial travel in the region, offset in part by the energy requirements for operation of the proposed transit investment. Note that this measure reports BTU consumption for transportation operations (transit, auto, and commercial) only, and does not consider energy consumed for construction, equipment manufacturing, and heavy maintenance activities.

The Full-Build Alternative includes the use of an existing rail corridor and the amount of new rail construction is limited along the project Corridor, and a limited amount of construction is proposed at new station sites (shelters, kiosks at all sites and rail crossover structures at three stations (Sanford, Florida Hospital and Sand Lake Road).

The results presented in Table 3-26 indicate that the Full-Build Alternative will result in a greater reduction in transportation energy use in the CRT study area for the year 2025 compared to the No-Build Alternative and the TSM Alternative. This is a result of a greater projected decrease in VMT in the study area for the Full-Build Alternative.

Table 3-26 Indirect Energy Impacts of CRT Project Alternatives – Year 2025

Alternative	Regional VMT/Year (millions) – 2025	Change in BTU/year (millions) – Full-Build versus No-Build or TSM
No-Build	733,970	- 59,451.26
TSM	733,955	- 68,526.57
Full-Build	733,938	–

Source: Earth Tech, Inc.

Mitigation

Because the implementation of the Full-Build Alternative would result in a reduction in indirect energy usage in the project study area, no mitigation measures are required.

3.3.13 Construction Impacts

This section presents an evaluation of the impacts of construction of the CRT project along the project Corridor. Impacts evaluated include: Air Quality; Noise and Vibration; Water Quality; and Contamination.

Air Quality

Direct emissions from construction equipment would not be expected to produce adverse effects on local air quality, provided that all equipment is properly operated and maintained. Appropriate mitigation requirements, if warranted by local conditions, could consist of assurance of proper operation and maintenance, specification of low-emissions

equipment (EPA Tier 2 or Tier 3 compliant, alternative-fueled, or retrofit with emissions controls), and prohibition of excessive idling of engines. Compared with emissions from other motor vehicle sources in the study area, emissions from construction equipment and trucks are generally insignificant with respect to compliance with the National Ambient Air Quality Standards.

Implementing appropriate traffic management techniques during the construction period can mitigate increased emissions from traffic congestion due to lane closures, detours, and construction vehicles accessing the sites. Examples of these techniques include development of site-specific traffic management plans; temporary signage and other traffic controls; designated staging areas, worker parking lots (with shuttle bus service if necessary), and truck routes; and prohibition of construction vehicle travel during peak traffic periods.

Fugitive dust impacts can be mitigated through good "housekeeping" practices such as water sprays during demolition; wetting, paving, landscaping, or chemically treating exposed earth areas; covering dust-producing materials during transport; limiting dust-producing construction activities during high wind conditions; and providing street sweeping and tire washes for trucks leaving the site. Construction and earth-moving activities can result in short-term impacts on ambient air quality. These potential impacts include fugitive dust emissions, increased emissions from motor vehicles on the streets due to traffic disruption, and direct emissions from construction equipment and trucks. These impacts will be temporary and will affect only the immediate vicinity of the construction site, its access routes, and any detour routes.

Noise and Vibration

Noise

Noise levels from construction activities along the Project Corridor, although temporary, may create a nuisance condition at nearby sensitive receptors. Exposure to excessive noise levels varies depending on the types of construction activity and the types of equipment used for each stage of work. Potential activities include railway construction and CRT station construction.

The distances at which an exceedance of the FTA daytime noise limits are predicted during construction activities ranges from 15 feet at commercial receptors to less than 50 feet at residential receptors.

Vibration

Vibration levels from construction activities along the Project Corridor, although temporary, may create a nuisance condition at nearby sensitive receptors. Exposure to excessive vibration levels varies depending on the types of construction activity and the types of equipment used for each stage of work.

The distances at which ground-borne vibration levels are predicted to exceed the FTA annoyance criteria ranges from less than 133 feet at FTA Category 3 receptors (such as schools and churches) to 187 feet at FTA Category 2 receptors (such as residences).

Mitigation

Noise and vibrations impacts will be from the heavy equipment movement and construction activities such as pile driving and vibratory compaction of embankments. Noise control measures will include those contained in FDOT's "Standard Specifications for Road and Bridge Construction" in addition to those recommended in the Noise (Section 3.3.4) and Vibration (Section 3.3.6) impact sections of this document. Adherence to local construction noise and/or construction vibration ordinances by the contractor will also be required where applicable.

Water Quality

Construction of the Full-Build Alternative will directly impact surface water resources, including jurisdictional wetlands, along the project Corridor. A Stormwater Pollution Prevention Plan, including an Erosion and Sedimentation Control Plan, will be prepared and implemented during construction. The plan will specify measures to be implemented to minimize sedimentation impacts to surface waters and municipal drainage systems that are ultimately tributary to surface waters. The plan will be legally binding through the NPDES construction stormwater General Permit to be obtained for the project.

Water quality impacts resulting from erosion and sedimentation will be controlled in accordance with FDOT's "Standard Specifications for Road and Bridge Construction" and through the use of Best Management Practices.

Contamination

As detailed in Section 3.3.9, there is potential for encountering contaminated soils and/or groundwater at proposed TSM or Full-Build Alternatives station sites. Discovery of potentially hazardous materials may be beneficial because an existing contaminated site may be cleaned up during project construction. Adverse impacts may occur if cleanup activities create an opportunity for public exposure or contact with contaminated soils and groundwater, and if dewatering during construction causes migration of contaminated groundwater.

Cleanup and remediation efforts during construction include removal of contaminated soil and/or groundwater. Contaminated soil typically will be stockpiled in designated areas along the alignment, then transported from the stockpile area for further treatment or disposal. Contaminated groundwater removed as a result of dewatering may be stored in tanks on the construction site, discharged to a local storm drain or sewer in compliance with discharge permit requirements, or transported from the site for treatment or disposal.

3.4 Summary

This section summarizes the potential environmental consequences of the Full-Build Alternative for the CRT project. In brief, the Full-Build Alternative, when compared to the No-Build and TSM Alternatives, does not result in adverse impacts for most of the issue areas analyzed in this chapter.

The Full-Build Alternative does not cause adverse impacts to existing or future land use in the vicinity of the proposed station sites. Most community comprehensive plans include provisions to encourage commuter rail development and to focus transit-oriented

development around station sites. The stations in Sanford and Altamonte Springs would require land to be rezoned to accommodate the stations and the Meadow Woods and Osceola Parkway stations will require amendments to existing planned unit development (PUD) zoning. Construction and operation of a commuter rail system could result in land use changes in the Corridor municipalities and could provide a policy foundation to encourage additional transit-oriented development and increased ridership.

The Full-Build Alternative does not result in adverse impacts to community cohesion in neighborhoods along the corridor. No permanent impacts to the neighborhoods along the Corridor have been identified; therefore no mitigation is required. Temporary impacts would result during construction of new rail facilities, but there would also be long-term benefits. For many neighborhoods without strong activity centers, the rail stations provide an opportunity to focus new development, enhance bicycle and pedestrian access and connectivity, streetscape improvements and encourage other benefits associated with the transit stations and station areas.

The Full-Build Alternative results in no disproportionate Environmental Justice (EJ) impacts for both noise impacts and displacements in minority, low-income and/or transit-dependent areas. Proposed station locations in the Full-Build Alternative are located near areas with the greatest concentrations of minority population, low-income population, and transit-dependent population, with a higher percentage of transit-dependent populations within a ½ mile radius of the stations than in the surrounding county populations. Most of these areas would also benefit by increased mobility and improved access to employment and other activity centers throughout the Corridor. With respect to Public Safety, Security and Community Services, vehicle delay created by the CRT operations through grade crossings will be minor except for some locations where grade crossings are located immediately adjacent to proposed CRT stations. Adequate mitigation measures, as described in Chapter 4, have been proposed to minimize these impacts.

Utility and railroad impacts are expected to be minor from the Full-Build Alternative. Any required utility relocations are anticipated to be minor and will be fully coordinated during construction. The Full-Build Alternative will result in improved rail infrastructure and a proposed operating plan to maintain the ability of CSXT and other rail freight operators to provide service to commercial and industrial rail users, and will accommodate existing Amtrak long-distance intercity passenger services. For freight services, the Full-Build Alternative provides capacity to accommodate through trains as well as local switching train movements by shifting freight operations to times of day that will not interfere with the commuter rail service.

The Full-Build Alternative is not expected to result in adverse impacts to archaeological resources. Coordination is ongoing with the Florida State Historic Preservation Officer (SHPO). FDOT determined and the SHPO concurred, on a preliminary basis, that the Full-Build Alternative would have “No Effect” on historic properties in the vicinity of several CRT station sites, including the Florida Hospital, LYNX Central Station, Orlando Amtrak/ORMC, and Kissimmee Amtrak stations. The SHPO suggested that careful station design, including use of compatible elements and materials, would minimize any potential visual impacts at these locations. For the DeLand Amtrak, Orlando Amtrak/ORMC and Church Street stations, FDOT

concluded and the SHPO concurred that there is No Adverse Effect from the CRT Project. Careful station design, including use of compatible elements and materials to the historic DeLand Amtrak station and the Downtown Orlando historic district are part of the commitments by FDOT and the SHPO.

The Full-Build Alternative will not result in direct impacts to publicly-owned parks and recreation areas along the corridor. Temporary construction activities will be controlled so they do not affect access to the parks. Construction impacts that would temporarily affect park and recreational experiences include increased noise, dust, and truck traffic. These impacts will be minor and mitigated. The Full-Build Alternative will benefit park users by providing improved access to several significant parklands and recreation areas along the corridor.

The Full-Build Alternative will result in benefits to pedestrian and bicycle facilities and access along the corridor providing a transit alternative that will encourage commuters to walk and bike to transit as an alternative to driving. The Full-Build Alternative also provides an opportunity to maximize the use of existing pedestrian and bicycle facilities and to develop additional pedestrian/bicycle facilities and improvements. Where appropriate, new sidewalks and crosswalks with pedestrian signals will be constructed at the new stations, and pedestrian signage will be provided to clearly mark pedestrian paths to and from parking areas. Bicycle racks will also be provided at each station.

Impacts to existing visual and aesthetic resources along the corridor are expected to be minor. The smaller size of the CFCRT DMU train set, when compared to the existing CSXT freight trains and the Amtrak passenger trains and the Auto Train, results in a much smaller intrusion into the visual landscape.

The Full-Build Alternative will result in minor additional amounts of total annual emissions of nitrogen oxides and particulate matter than that of either the No-Build or TSM Alternatives. This reflects the use of diesel-powered DMUs for the project, and is not considered to be a significant impact. Emissions of volatile organic compounds are slightly lower than the No-Build Alternative, reflecting the lower Vehicles Miles Traveled on regional roadways for the Full-Build Alternative. The Full-Build Alternative does not result in exceedences of either the 1-hour or 8-hour National Ambient Air Quality Standard for carbon monoxide at any intersection analyzed within the study area.

Without mitigation, the Full-Build Alternative would result in significant noise impacts to sensitive receptors according to the FTA criteria - 163 *impacts* and 54 *severe impacts.* The addition of the CRT project trains will cause the noise levels along the corridor to increase by less than 1 dBA, which is essentially an imperceptible change in noise level. However, in the vicinity of the grade crossings, the additional noise from the DMU warning horns will result in impacts at receptors along the rail corridor located within a ¼-mile of the grade crossings. FDOT has committed to installation of DMU warning horns modified with the installation of a sheet metal shroud packed with foam insulation to reduce sideline noise impacts. This mitigation measure is expected to eliminate all *severe impacts.* Additional reductions in horn noise levels to eliminate all but two *impact* locations in the vicinity of Florida Hospital may also be possible with the installation of the shrouded and muffled DMU warning horn. FDOT has committed to additional noise mitigation, such as installation of sound installation at remaining noise *impact* locations, if necessary.

The Full-Build Alternative will not result in adverse vibration impacts along the corridor.

As the Full-Build Alternative will be constructed along the existing CSX right of way, an existing active freight and passenger rail corridor, it is expected to have no significant adverse impacts on natural communities. Without mitigation, the Full-Build Alternative is estimated to, at worst, possibly "affect, but not likely to adversely affect" several threatened and endangered species known to occur along the corridor. Additional protective measures and permitting requirements are indicated for the Florida Scrub-Jay, the Gopher Tortoise, the Bald Eagle and Crested Caracara, and the Florida Black Bear. FDOT commits to conduct comprehensive Florida Scrub Jay surveys near the confirmed location near DeBary and the Saxon Boulevard Extension Station site. Based on the results of these surveys, and if required, FDOT will coordinate with USFWS to determine appropriate mitigation measures, such as conducting project construction activities outside of the active breeding season. FDOT will also follow established guidelines as specified in "Standard Protection Measures for the Eastern Indigo Snake" to ensure protection of the eastern indigo snake habitat in the project corridor. FDOT will also survey appropriate areas of the project corridor for the presence of Bald Eagle and Caracara nests during the final design phase. If necessary as a result of this survey, FDOT will coordinate with the USFWS to determine appropriate mitigation. Finally, FDOT will continue to review potential impacts from project activities as data from ongoing studies of the Ocala population of the Florida Black Bear becomes available.

Full-Build Alternative wetland and other surface water feature impacts are estimated at 23.56 acres. Of these impacts, 18.21 acres are directly associated with station locations. In these locations, efforts will be made through final design of the stations to avoid direct impacts to wetland resources. Unavoidable wetland impacts will be mitigated pursuant to S. 373.4137 FS to satisfy all mitigation requirements of Part IV Chapter 373, F.S. and 33 U.S.C. s. 1344.

A total of 5.65 acres of encroachment to the 100-year floodplain is expected for the Full-Build Alternative. The encroachments to the floodplain are not anticipated to have an adverse effect. Compensatory flood storage at a 1:1 ratio of mitigation to impacts will be provided where necessary.

For the Full-Build Alternative, all potentially contaminated sites within 300 feet of the 16 proposed stations and the VSMF at Rand Yard were identified. Six station locations were assigned a Low Contamination Risk Potential Rating (CRPR), and 11 station locations and the proposed VSMF facility were assigned either a Medium or High CRPR. Appropriate Mitigation measures, dependent on the results of additional site specific assessments of soils and groundwater, will be developed during project design and implemented prior to construction.

Benefits of the Full Build Alternative

Implementation of the Full Build Alternative for the CRT project will result in numerous environmental benefits as detailed in previous sections of this Chapter. In brief, the benefits include:

- Construction of a commuter railway system that is consistent with future land use and transportation elements of the local comprehensive plans required under Florida law. Specifically, future land use benefits would accrue through the