CENTRAL FLORIDA EXPRESSWAY AUTHORITY

FINAL
NOISE STUDY REPORT

PROJECT DEVELOPMENT AND ENVIRONMENT STUDY
SR 408 Eastern Extension
From SR 50 to SR 50/SR 520 Intersection
Orange County, Florida

CFX Project Number: 408-254

Prepared for

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

Prepared by
Metric Engineering, Inc.
615 Crescent Executive Court, Suite 524
Lake Mary, FL 32746

JULY 2018

METRIC ENGINEERING

EXECUTIVE SUMMARY

The Central Florida Expressway Authority (CFX) is presently evaluating the potential to expand State Road (SR) 408 from its current eastern terminus at SR 50, locally known as East Colonial Drive, to the vicinity of the SR 50 and SR 520 interchange in northeastern Orange County. This new seven-mile eastern extension of SR 408 would constitute the first stage towards providing a east-west high-speed corridor with future connectivity to I-95, enhancing safety, capacity, and mobility for the region and CFX's customers.

A traffic noise analysis was performed following Code of Federal Regulations Title 23 Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*[1], using methodology established by the Florida Department of Transportation (FDOT) in the *Project Development and Environment Manual*[2], Part 2, Chapter 18 (dated June 14, 2017). The purpose of the noise study is to identify noise-sensitive sites that would be impacted with the proposed project and evaluate abatement measures at impacted noise-sensitive sites.

The FHWA has established Noise Abatement Criteria (NAC) for seven land use activity categories. These criteria determine when an impact occurs and when consideration of noise abatement is required. Maximum noise level thresholds have been established for five of these activity categories. These maximum thresholds, or criteria levels, represent acceptable traffic noise level conditions. Descriptions of the defined Activity Categories and associated NACs are presented in the table on the following page.

This space has been intentionally left blank

Noise Abatement Criteria

[Hourly A-Weighted Sound Level-Decibels (dB(A))]

ACTIVITY CATEGORY	ACTIVITY Leq(h)[1]	EVALUATION LOCATION	DESCRIPTION OF ACTIVITY CATEGORY
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	Exterior	Residential
C[2]	67	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[2]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	–	–	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	–	–	Undeveloped lands that are not permitted.

(Based on Table 1 of 23 CFR Part 772)
[1] The Leq(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.
[2] Includes undeveloped lands permitted for this activity category.

Noise abatement measures must be considered when predicted noise levels approach or exceed the NAC levels or when a substantial noise increase occurs. Following the FDOT procedure, “approach” is defined as within one dB(A) of the FHWA criteria. A substantial noise increase is defined as when the existing noise level is predicted to be exceeded by 15 dB(A) or more as a result of the transportation improvement project.

Traffic noise levels were predicted for the noise-sensitive locations along the project corridor for the 2015 (existing) conditions, and for the 2045 (Design Year) No build Alternative and Build Alternative. Approximately 824 residences, including single-family homes and mobile homes, were identified as being sensitive to traffic noise along the proposed SR 408 Eastern Extension within the limits of this project. Also, seven non-residential or special-use noise-sensitive sites, including a sports field, a recreation center, community playgrounds, and a medical office, were identified along the project corridor. Design Year traffic noise levels at nearby residences are predicted to range from 45.3 to 75.0 dB(A). The Build Alternative noise levels at special land use sites are predicted to range from 39.7 dB(A) at an interior location at the Orlando Center for Women’s Health to 64.6 dB(A) at the Deerwood Manufacuered Home Park pool area during the Design Year. Noise impacts are predicted to occur at 159 residences. No other noise-sensitive sites within the project study area are predicted to experience traffic noise

levels equal to or exceeding the Noise Abatement Criteria (NAC). Three hundred forty-seven (347) residences and 3 Special Land Uses (SLUs) (Waterford Creek Playground, Bridgewater Recreation Center, and Deerwood Manufactured Home Park pool) are expected to experience a substantial noise level increase [i.e., greater than 15.0 dB(A) over existing levels] with the Build Alternative.

Noise barriers were considered for all noise-sensitive receptor sites where Design Year traffic noise levels were predicted to equal or exceed the NAC. As such, noise barriers were considered at 13 locations to mitigate noise impacts. Since traffic management and alignment modifications were determined to not be viable abatement measures, noise barriers were determined to be the only potentially viable abatement measure that could be implemented for this project.

Nine noise barriers are predicted to benefit 526 residences, including 417 that are predicted to be impacted by improvements planned with this project, at a cost below the cost reasonable criteria ($42,000 per benefited sites). The recommended noise barriers will be further considered as the design plans and more detailed elevation data for the planned improvements to extend SR 408 described in this report are developed. The noise barriers recommended are summarized in the table on the following page and graphically shown in the appendices of this report.

Noise abatement is not feasible and/or reasonable for the remaining 89 impacted residences because of isolated impacted homes and/or unreasonable cost.

Recommended Noise Barriers

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
Noise Barrier for Crest at Waterford Lakes													
NC-CWL-03	14	2,500	Right of Way	39	2	0	78	80	23	103	9.1	$1,050,000	$10,194
Noise Barrier for Waterford Lakes, Bridgewater, and Waterford Creek													
NC-WL-04	Varies 8-14	8,400	Mainline Shoulder	111	1	2	108	111	48	159	9.3	$3,523,800	$22,162
Noise Barrier for Deerwood Manufactured Park Homes (South of SR 408 Extension)													
NC-DWS-02	14	2,000	Mainline Shoulder	56	5	11	36	52	6	58	7.1	$840,000	$14,483
Noise Barrier for Deerwood Manufactured Park Homes (North of SR 408 Extension)													
NC-DWN-03	Varies 8-16	2,000	Mainline Shoulder	45	4	16	25	45	0	45	7.0	$810,000	$18,000
Noise Barrier for Waterford Trails and Single-Family Homes (South of SR 408 Extension)													
NC-WTS-03	Varies 8-14	5,600	Mainline Shoulder	47	9	9	19	37	27	64	7.0	$2,118,000	$33,094
Noise Barrier for Waterford Trails and Single-Family Homes (North of SR 408 Extension)													
NC-WTN-04	Varies 8-14	5,000	Mainline Shoulder	51	5	25	15	45	24	69	5.9	$1,794,000	$26,000
Noise Barrier for Seaward Plantation Estates (North of SR 408 Extension)													
NC-SP-03	Varies 8-14	1,850	Mainline Shoulder	10	2	3	2	7	7	14	5.1	$588,000	$42,000
Noise Barrier for Pine Island Mobile Villas (North of SR 408 Extension)													
NC-PIMHP-03	Varies 16-20	900	Right of Way	12	6	0	6	12	0	12	5.8	$504,000	$42,000
Noise Barrier for Bithlo (North of SR 408 Extension)													
NC-C-04	Varies 8-18	3,500	Mainline Shoulder & Right of Way	76	10	19	47	76	3	79	5.8	$1,488,000	$18,835

TABLE OF CONTENTS

LIST OF FIGURES

LIST OF TABLES

APPENDICES

LIST OF ACRONYMS

BMP	Best Management Practice
CFR	Code of Federal Regulations
CFX	Central Florida Expressway Authority
CR	County Road
DRA	Drainage Retention Area
ERHB	Econlockhatchee River Hydrologic Basin
ERP	Environmental Resource Permit
FDEP	Florida Department of Environmental Protection
FDOT	Florida Department of Transportation
FEMA	Federal Emergency Management Agency
FHWA	Federal Highway Administration
FLUCCS	Florida Land Use Cover and Forms Classifications System
GIS	Geographic Information System
LIDAR	Light Detection and Ranging
M-WRAP	Modified-Wetland Rapid Assessment Procedure
NAC	Noise Abatement Criteria
NAD 83	North American Datum 1983
NEPA	National Environmental Policy Act
NOAA	National Oceanic and Atmospheric Administration
NRE	Natural Resources Evaluation
NRCS	National Resources Conservation Service
NWI	National Wetland Inventory
OFW	Outstanding Florida Water
OSW	Other Surface Waters
PD&E	Project Development and Environment
ROW	Right-of-Way
SLU	Special Land Use
SFWMD	South Florida Water Management District
SJRWMD	St. Johns River Water Management District
SR	State Road
USACE	United States Army Corps of Engineers
USGS	United States Geological Survey
WRAP	Wetland Rapid Assessment Procedure

1.0 INTRODUCTION

The purpose of the SR 408 Eastern Extension Project Development and Environment (PD&E) Study is to develop a proposed improvement strategy that is technically sound, environmentally sensitive and publicly acceptable. As with every PD&E Study, emphasis has been placed on the development, evaluation, and documentation of detailed engineering and environmental studies including data collection, conceptual design, environmental analyses, project documentation, and the preparation of a Preliminary Engineering Report.

The Central Florida Expressway (CFX) is presently evaluating the potential to extend State Road (SR) 408 from its current eastern terminus at SR 50, locally known as East Colonial Drive, to the vicinity of the SR 50 and SR 520 interchange in northeastern Orange County. This new approximately seven-mile eastern extension of SR 408 would constitute the first stage towards providing a east-west high-speed corridor with future connectivity to I-95, enhance safety, and increase capacity and mobility for the region and CFX's customers.

This report documents a traffic noise study identifying noise-sensitive areas that may be affected by the proposed improvements, and evaluates noise barriers as an abatement measure for sensitive areas expected to be impacted as a result of the planned improvements. This traffic noise analysis was performed following Code of Federal Regulations Title 23 Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*[1], using methodology established by FDOT in the *Project Development and Environment Manual*[2], Part 2, Chapter 18 (dated June 14, 2017).

PROJECT BACKGROUND/DESCRIPTION

The vision of this enhanced east-west corridor has been documented in prior concept studies prepared by CFX including the SR 408 Eastern Extension Concept Development and Evaluation Study completed in 2008. This study evaluated potential corridors for a new, limited-access facility between east Orange County and north Brevard County. The

original study area generally paralleled SR 50 from east of SR 434 to I-95. After a preliminary corridor evaluation, four viable corridors were determined to meet the criteria and were further evaluated. These corridors are shown on **Figure 1-1**. The results of the previous study indicated that, "Corridor 3B (along SR 50) met the transportation need west of SR 520, providing relief of the existing and projected future traffic congestion along SR 50 from Alafaya Trail/SR 434 to SR 520. This alternative diverted the greatest number of trips, had the lowest estimated cost, and had the fewest potential impacts to environmental and community resources of any of the viable corridors considered at that time. This corridor also provided for a potential future extension of the proposed limited-access facility southeast along either the SR 520 or SR 50 corridors, affording system linkage between east Orange County and Brevard County."

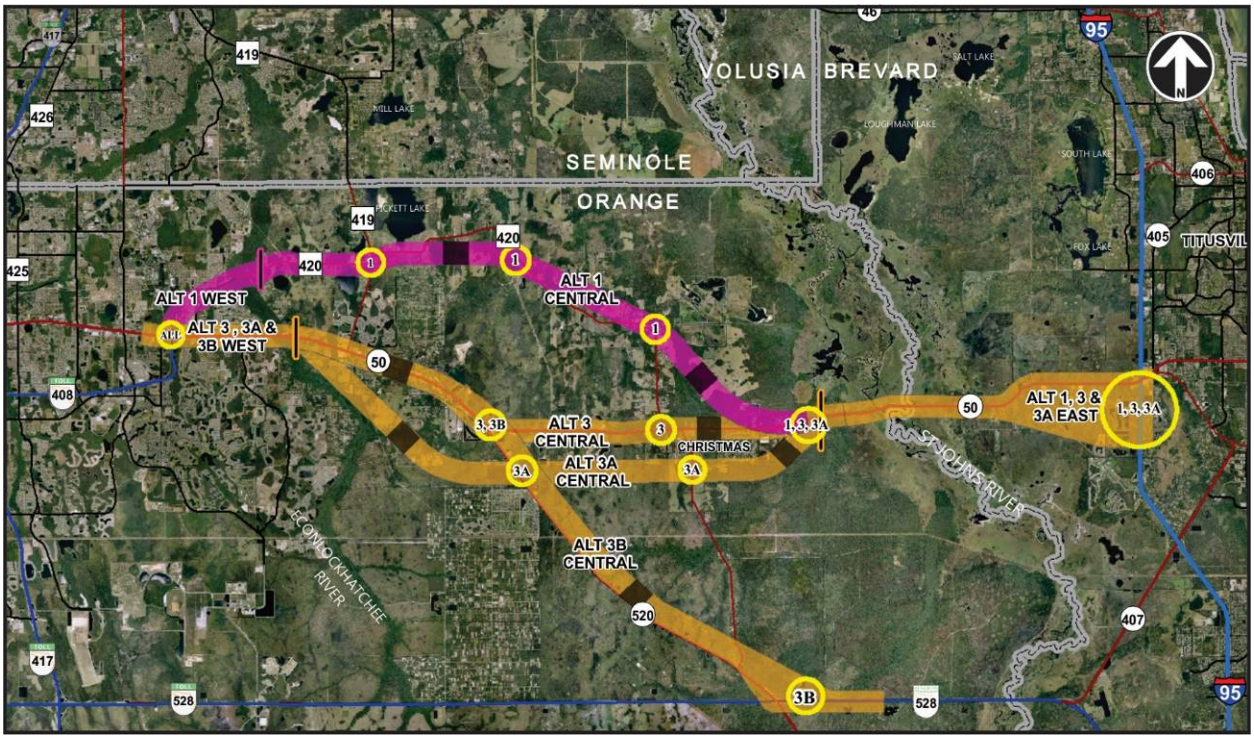


Figure 1-1 2008 Study Previously Identified Viable Corridors

As part of the SR 408 Eastern Extension PD&E Study, a preliminary corridor evaluation was initially performed in 2015, in which different viable alternatives were considered. Those alternatives that met the basic project objectives were further evaluated and presented in a final report which recommended that the proposed SR 408 extension be co-located within the existing SR 50 corridor. However, in May 2016, the Florida

Department of Transportation (FDOT) notified CFX that there are issues with CFX utilizing FDOT right-of-way for the SR 408 extension. As a result, new transportation corridors were developed that avoid SR 50 and that will address the transportation needs while minimizing impacts to the natural, physical and cultural environments.

2.0 PROJECT AREA DESCRIPTION

The project is within Orange County, east of the City of Orlando, and crosses the Econlockhatchee River. Immediately west of the project is the highlydeveloped urban area of University Park. Lands to the east of the project are mostly undeveloped and include several preserves and conservation lands as well as the community of Christmas, Florida. East of the Econlockhatchee River, the area surrounding the project is predominantly residential, with scattered wetlands and commercial land along SR 50. The area west of the Econlockhatchee River contains a mix of larger, undeveloped agricultural areas and single-family residences. East River High School occurs immediately east of the Econlockhatchee River off East River Falcons Way. Orlando Speed World Dragway, a large racing complex that stages auto racing events, is near the project at its eastern terminus.

The Econlockhatchee River crosses the project approximately 2.2 miles from the western project terminus. The Econlockhatchee River is a 54.5-mile-long tributary of the St. Johns River and the riparian zone around it is predominantly forested, providing a relatively continuous corridor of habitat for wildlife. SR 50 currently contains two bridges across the Econlockhatchee River, one for eastbound and one for westbound traffic. Before the construction of the SR 50 bridge over the Econlockhatchee River, there was a bridge at Old Cheney Highway. A dirt road currently runs down to the river from both east and west at this former crossing. The Econlockhatchee River is considered an Outstanding Florida Water (OFW), is in a St. Johns River Water Management District (SJRWMD) Riparian Habitat Protection Zone (RHPZ), and has associated Special Basin Criteria that must be met for permit issuance.

Another notable feature in the project vicinity is the community of Bithlo. Bithlo is currently an unincorporated area around SR 50, east of Chuluota Road. At one point Bithlo was an incorporated town, but financial hardships caused it to cease functioning as a town in 1929. The un-incorporation of Bithlo was finalized in 1982 after resolving issues with

outstanding bonds and legal problems. Bithlo now contains multiple neighborhoods and residences both north and south of SR 50.

In this document, the term “project corridor” describes the footprint of the preferred alternative. The term “project area” describes a larger expanse that encompasses the project corridor and includes all land within 500 feet of the centerline. Land use in the project corridor is shown on **Figures 2-1** to **2-3** along with the location of 40 proposed stormwater ponds. Additional details on the alternatives considered in this PD&E study are provided in Section 4.0.

LAND USE

Land use cover descriptions provided for both uplands and wetlands are classified using the *Florida Land Use Cover and Forms Classifications System* (FLUCCS) designation. Existing land use in the project area was initially determined utilizing United States Geological Survey (USGS) maps, historical images, aerial photographs, and land use mapping from the SJRWMD (2012). Land use categories reported by SJRWMD were verified in the field. Field reviews generally confirmed the SJRWMD land use mapping, with minor updates to account for recent development or where natural land cover type differs from that reported by SJRWMD.

Land use categories mapped by SJRWMD are shown on **Figures 2-1** through **2-3** and land use categories in the project corridor are described below. Descriptions of FLUCCS codes are taken primarily from FDOT (1999) and SFWMD (2009). Land uses in the project area vary from undeveloped natural areas to highly-developed residential and commercial areas. Immediately west of the project limits are Commercial and Services (FLUCCS 1400), Residential Medium Density (FLUCCS 1200), and Pine Flatwoods (FLUCCS 4110) land use types. Immediately east of the project limits are Shrub and Brushland (FLUCCS 3200), Pine Flatwoods (FLUCCS 4110), and Freshwater Marshes (FLUCCS 6410) land use types.

Land use map data was inconsistent with broader conditions encountered during field inspections in three locations. The area mapped as a Phosphate Mine (FLUCCS 1633)

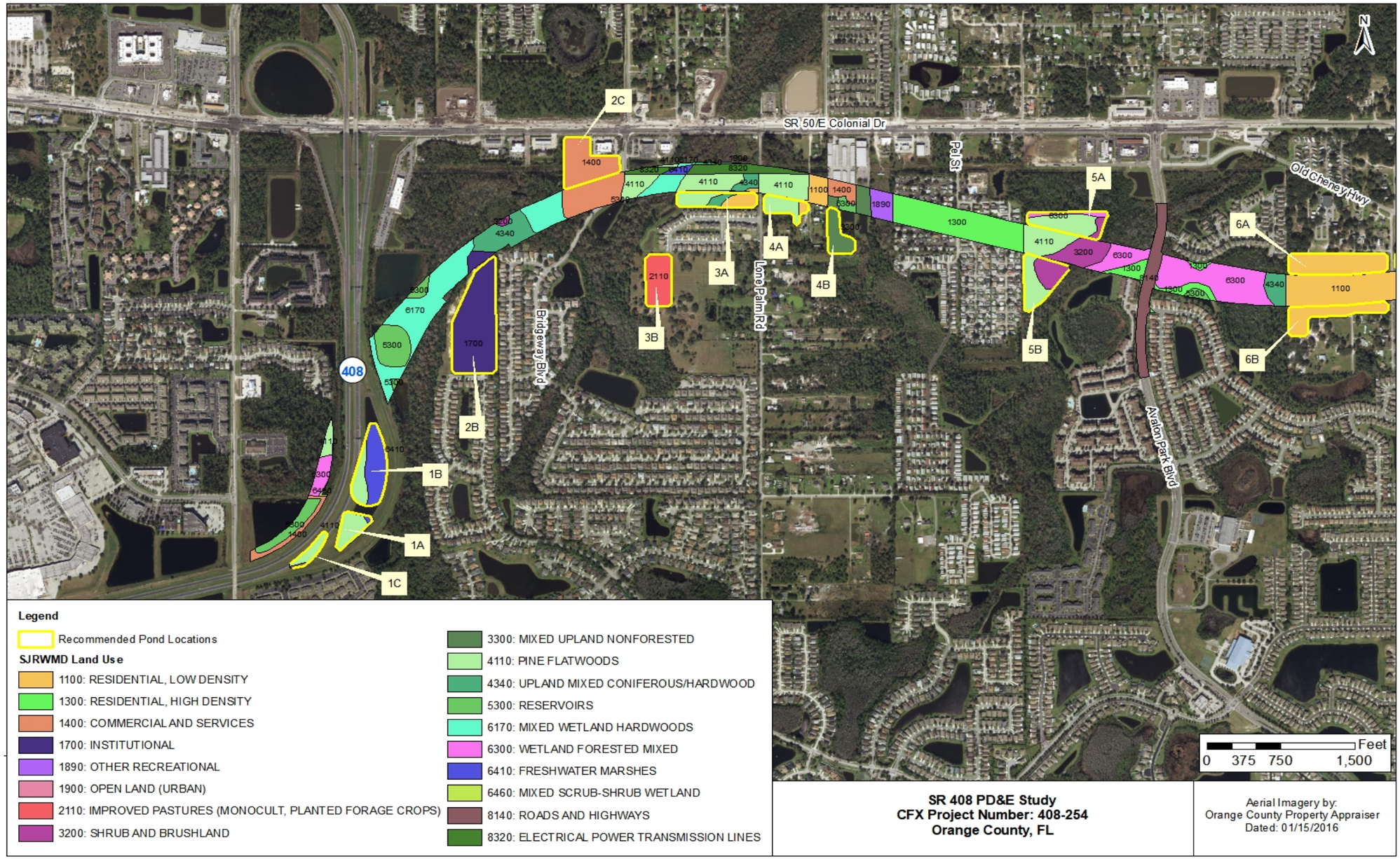


Figure 2-1 Land Use in Western Third of Project Corridor

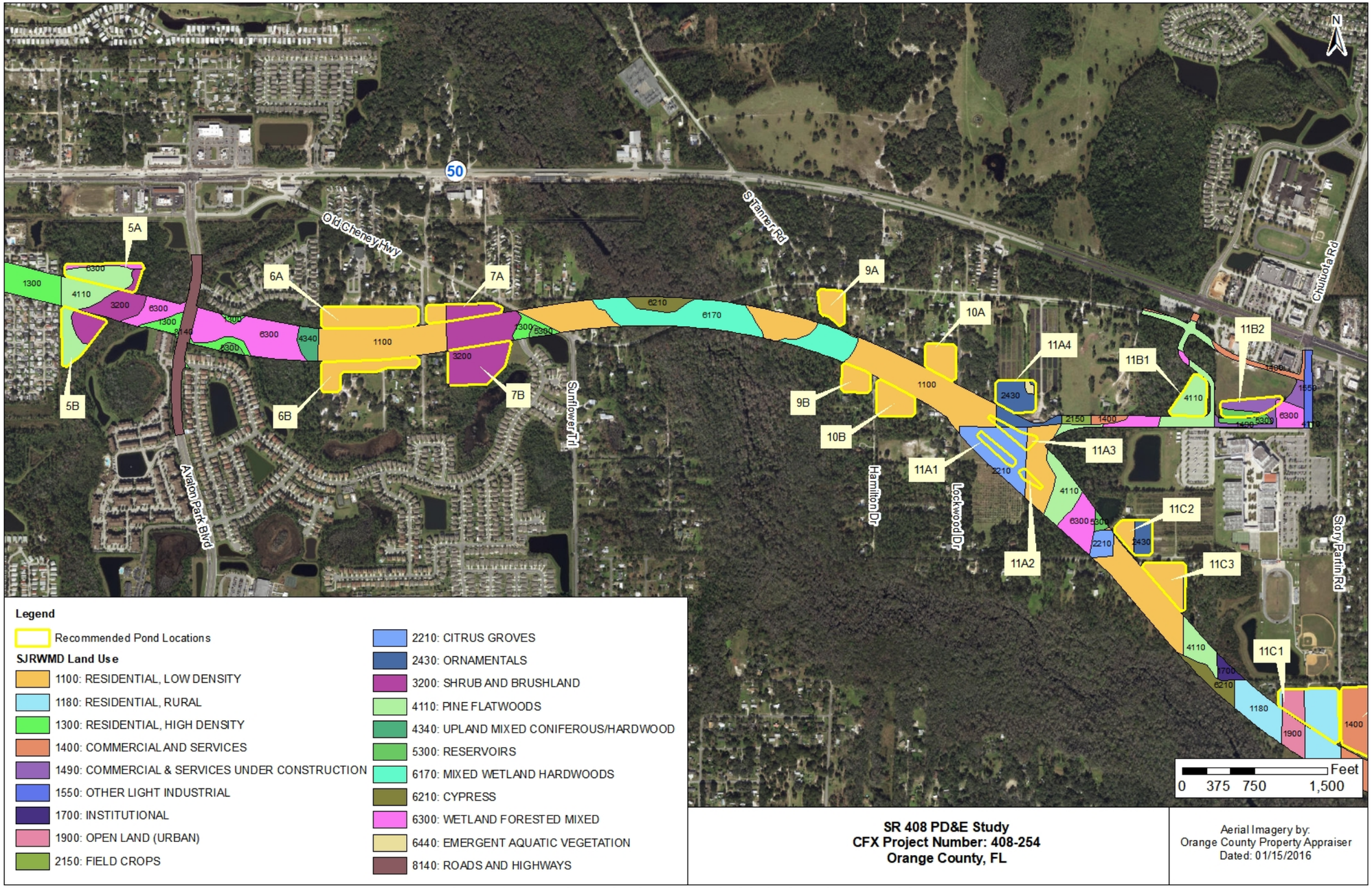


Figure 2-2 Land Use in the Central Third of Project Corridor

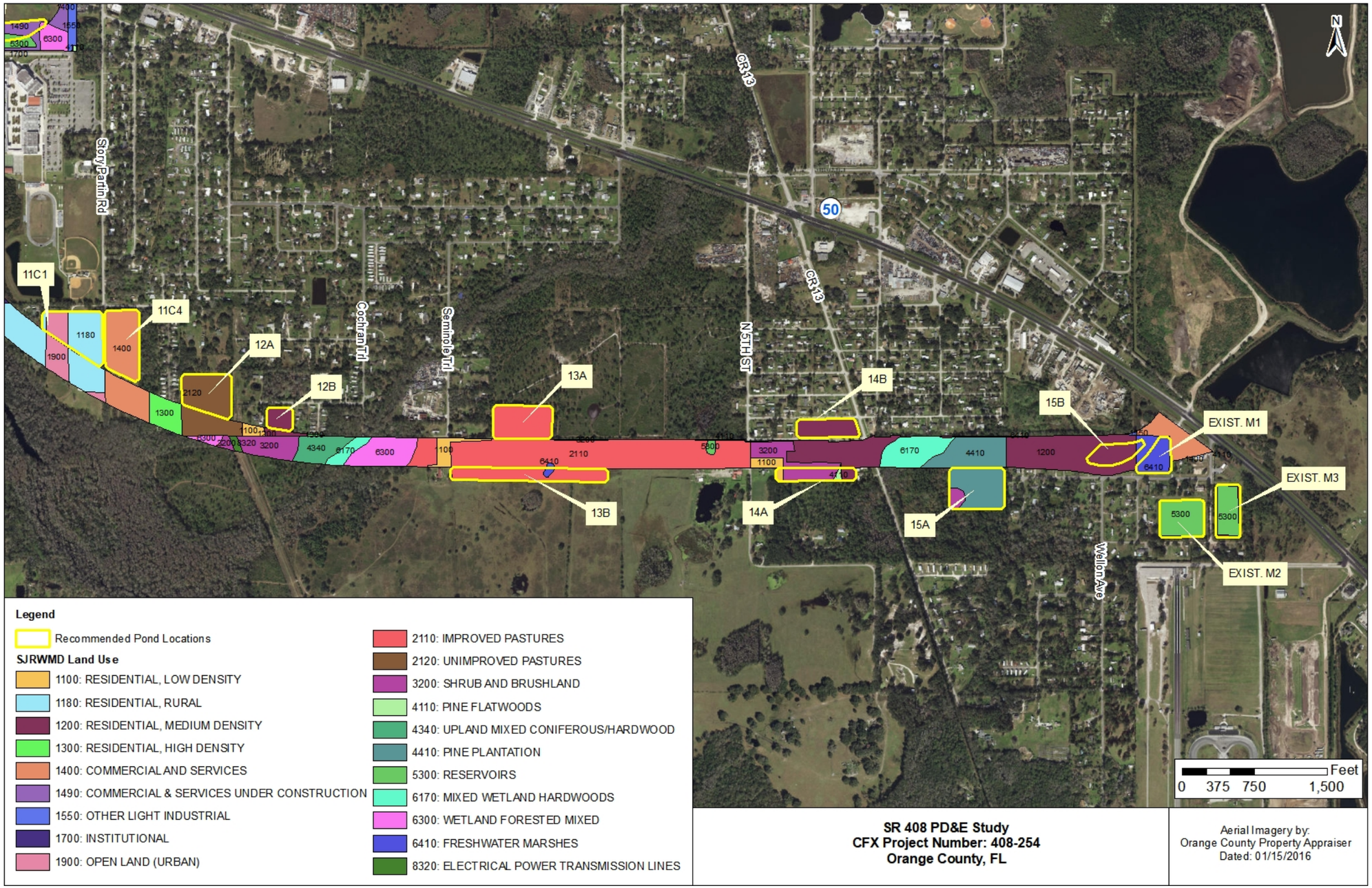


Figure 2-3 Land Use in Eastern Third of Project Corridor

just west of the project terminus actually mines fill dirt, not phosphates. Outside the project area, a broad expanse mapped as Pine Flatwoods (FLUCCS 4110) south of SR 50 at its interchange with SR 520 contains habitat that more closely matches descriptions of mixed forested wetland plant communities. An area adjacent to the project mapped as Freshwater Marsh (FLUCCS 6410), immediately east of the southern part of 9th Street in Bithlo, is a highly-disturbed site that is a designated brownfield. Its elevation is substantially higher than the surrounding areas and it is bordered by canals.

Residential Classification

Residential communities in the project area are classified as Low Density (FLUCCS 1100), Rural (FLUCCS 1180), Medium Density (FLUCCS 1200), or High Density (FLUCCS 1300). Low density residential land cover generally has less than two dwelling units per acre. Medium density residential land cover represents areas containing two to five dwelling units per acre. High density residential land cover consists of more than five dwelling units per acre. This class can include single-family units, duplexes, townhomes, and mobile home parks. Dwellings are often located in large urban areas or on an urban-rural fringe. These residential communities occur throughout the project area, particularly west of the Econlockhatchee River and around Bithlo.

Commercial and Services (FLUCCS 1400)

Commercial areas are linked with the distribution of products and services, and this designation includes a broad spectrum of developed locations. Easily identifiable areas include commercial strip developments, warehouses, and shopping centers. This land use type occurs in multiple locations throughout the project area, particularly associated with businesses along SR 50 and other major streets. Commercial and Services Under Construction (FLUCCS 1490) is a subcategory of Commercial and Services.

Other Light Industrial (FLUCCS 1550)

This classification is used primarily for fabrication industries. These specific facilities use products from other processing and manufacturing industries to make parts and finished

products. This land use type occurs in two places in the project area, at the Chulouta Road interchange and at the project terminus along SR 50.

Phosphates (FLUCCS 1633)

This classification is a subclass of Rock Quarries (FLUCCS 1630). Phosphate mining operations tend to be larger, intensive operations with characteristic site geometry, massive equipment, and settling ponds. A mine is located north of SR 50, northeast of Old Cheney Highway, and includes a series of large ponds. However, interviews with the mine staff revealed that the mine extracts fill dirt and soil, not phosphates.

Institutional (FLUCCS 1700)

Educational, religious, health, and military facilities are typical components of this category. It includes all buildings, grounds, and parking lots that compose the facility and are specifically related to the purpose of the institution. Institutional land occurs in multiple locations in the project area, particularly East River High School.

Race Tracks (FLUCCS 1830)

This classification includes a variety of racing operations that are readily distinguishable on aerial photography. Examples are auto and motorcycle racing, drag strips, horse racing, and dog racing. The mapping unit includes all features associated with the operation, including parking facilities, stadium and stands, storage and staging areas, and open areas that are inside the operational boundary. Race Track land use is mapped near the project at the Orlando Speed World Dragway. It is south of SR 50 and east of Avenue C Union, near the project's eastern terminus.

Other Recreational (FLUCCS 1890)

This is a subcategory of Recreational (FLUCCS 1800), which are areas whose physical structure indicates that active user-oriented recreation is or could be occurring. Other Recreational applies to areas which do not have a separate specific Recreational FLUCCS code and includes uses such as riding stables, go-cart tracks, skeet ranges, and others. Other Recreational land occurs in the project area south of SR 50, approximately one-half-mile west of Avalon Park Boulevard.

Open Land (Urban) (FLUCCS 1900)

This category includes open, undeveloped land within urban areas that have transitional or uncertain land use. This land use type occurs in three small parcels in the project area.

Improved Pastures (FLUCCS 2110)

Improved Pastures are the most intensively managed of the pastureland classes. They are usually cleared, tilled, reseeded with specific grass types, and periodically improved with brush control and fertilizer application. In most cases, they show some direct evidence of cattle, such as watering ponds, feed bunkers, fencing, corrals, barns, or cow trails. Large Improved Pastures occur in the project area east of the Econlockhatchee River, near the southern end of Seminole Trail and extending south and east.

Unimproved Pastures (FLUCCS 2120)

This category includes cleared land with major stands of trees and brush where native grasses have been allowed to develop. Normally, this land will not be managed with brush control and/or fertilizer application. This land use type is found in multiple locations in the project vicinity. One area is immediately east of Pine Isle Drive and a particularly large Unimproved Pasture occurs near the project's eastern terminus, north of SR 50.

Field Crops (FLUCCS 2150)

Wheat, oats, hay, and grasses are the primary types identified as Field Crops. Field Crops are mapped in a few small locations in the project area.

Citrus Groves (FLUCCS 2210)

This class is for active tree cropping operations that produce fruit, nuts, or other resources, not including wood products. It is mapped in three locations in the project area, but these locations do not appear to currently be under citrus production.

Shrub and Brushland (FLUCCS 3200)

This is one of three land use cover classes used for upland, nonagricultural, non-forested lands which contain no evidence of cattle grazing. Specifically, the Shrub and Brushland classification is used for areas that have over 67 percent shrub cover and less than 33 percent herbaceous (this proportion ignores any forested patches, which may cover up to 25 percent of the total area). This cover class includes areas where tree species are regenerating naturally after clear cutting or fire, but are less than 20 feet tall. This land use type is found in multiple places in the project area, particularly east of the Econlockhatchee River.

Mixed Upland Non-forested (FLUCCS 3300)

This class is used for upland non-forested landscapes in which neither herbaceous plants nor shrubs cover over two thirds of the area. This cover class may include areas where tree species are regenerating naturally after clear cutting or fire, but are less than 20 feet tall. This includes native hardwood and coniferous species, but does not apply to plantations. Mixed Upland Non-forested land occurs in one location, west of the Econlockhatchee River.

Pine Flatwoods (FLUCCS 4110)

This class is for naturally generated pine flatwoods. The canopy closure must be 25 percent or more and the trees must average over 20 feet tall. Pine Flatwoods are dominated by either slash pine, longleaf pine, or both. Common understory species include saw palmetto, wax myrtle, gallberry, and a wide variety of herbs and brush. Pine Flatwoods are the most prevalent community in natural areas. Most Pine Flatwoods in the SJRWMD are on broad, low, flat areas with seasonal high-water tables, but not on hydric soils. They transition into mesic flatwoods and hardwood communities on higher ground and into hydric flatwoods, cypress, and other wetlands on lower edges. Hydric and mesic areas of this land use type occur throughout the project area in large and small patches.

Upland Mixed Coniferous/Hardwood (FLUCCS 4340)

This designation is used for forested areas that include communities of oak-pine-hickory, wax myrtle-willow, and slash-longleaf-sand pines. Neither upland conifers, nor hardwoods, will achieve two thirds canopy dominance in this classification. Mixed forests often occur adjacent to streams or surrounding wetland depressions at upland areas. This land use type occurs throughout the project area in large and small patches.

Pine Plantation (FLUCCS 4410)

Pine Plantations are artificially generated by planting seedling stock or seeds. The stands are characterized by high numbers of trees per acre and uniform appearance. Row patterns are almost always apparent. One area, just east of CR 13, is mapped as Pine Plantation.

Reservoirs (FLUCCS 5300)

These are artificial impoundments of water used for irrigation, flood control, municipal or rural water supply, recreation, and hydro-electric power generation. Reservoirs occur throughout the project area as stormwater ponds.

Mixed Wetland Hardwoods (FLUCCS 6170)

This classification may have species mixtures ranging from relatively homogeneous stands, such as those dominated by red maple or willows, to a wide diversity of different species. Species in the mixtures may include red maple, black gum, water oak, sweetgum, willows, cabbage palm, water hickory, water tupelo, water ash and bays. Cypress is often present but not dominant (under 67 percent). This land use type is found in several main locations throughout the project area, near the project start, just east of SR 408, in the Econlockhatchee River basin, and along its tributaries.

Cypress (FLUCCS 6210)

Cypress is a subcategory of Wetland Coniferous Forests (FLUCCS 6210) which is dominated by cypress trees. It is mapped in the project area in the Econlockhatchee River corridor, its tributaries, and in multiple isolated stands.

Wetland Forested Mixed (FLUCCS 6300)

This classification is designated by forested systems composed of hardwood and coniferous tree mixtures. Species adapted to wet environments such as water oak, cabbage palm, red maple, bay trees, and conifers grow well in these habitats. Wetland Forested Mixed areas exist in a variety of moist soil conditions, from permanently wet to seasonally or infrequently wet. This land use type is located throughout the project area in large and small stands. Some are isolated and some are part of the Econlockhatchee River corridor or are along tributaries and major drainageways. These wetlands straddle Avalon Park Drive and occur in a large area just west of Seminole Trail.

Freshwater Marshes (FLUCCS 6410)

This classification is used for wetland communities having a representative suite of plant species such as sawgrass, cattail, arrowhead, maidencane, buttonbush, cordgrass, switchgrass, needlerush, common reed, arrowroot, and bulrush. Freshwater Marshes tend to be open expanses of grasses, sedges, rushes, and other types of herbaceous plants. Periods of inundation are intermediate between deep marshes (Emergent Aquatic FLUCCS 6440) and Wet Prairies (FLUCCS 6430), and these sites are usually covered with water at least two months of the year, undergoing prolonged periods of soil saturation**.** Freshwater Marsh is mapped in multiple locations throughout the project area, and some of these locations are actually manmade stormwater ponds with relatively little vegetation. An area mapped as Freshwater Marsh immediately east of the southern part of 9th Street in Bithlo is actually a highly disturbed site and is a designated brownfield. Its current elevation is substantially higher than the surrounding areas and it is bordered by canals.

Wet Prairie (FLUCCS 6430)

This category is considered a special classification and some systems have combined it with Freshwater Marshes (FLUCCS 6410). This land use type is mapped at one location near but outside the project corridor, in a shrubby pasture east of Seminole Trail.

Emergent Aquatic Vegetation (FLUCCS 6440)

This category is for flooded areas with emergent or floating vegetation. It includes communities otherwise known as deep marsh or floating marsh. In the absence of vegetation these areas would be classified as water bodies. This category of land use is mapped in two locations in the project area, one west of the Econlockhatchee River and one east of the river in an ornamental nursery.

Mixed ScruC-Shrub Wetland (FLUCCS 6460)

This class is used for wetlands that are dominated by woody vegetation less than 20 feet in height. It is most common in disturbed communities on drier sites. Mixed ScruC-Shrub Wetlands occur at one location in the project area, just west of the existing SR 408.

Roads and Highways (FLUCCS 8140)

This category includes roads and highways that exceed 100 feet in width over long segments and have four or more lanes and median strips. SR 50, Avalon Park Boulevard, and SR 408 within the project area are mapped as Roads and Highways.

Electrical Power Transmission Lines (FLUCCS 8320)

This category is for high-voltage power transmission lines carried on towers. Electrical Power Transmission Lines are mapped in a corridor south of SR 50 and west of the Econlockhatchee River and in another corridor just east of the river and southeast of Seminole Trail.

ELEVATION AND HYDROLOGIC FEATURES

Figure 2-4 shows elevation maps created with data collected using LIDAR in North American Datum 1983 (NAD 83). The project area has a ground elevation ranging between approximately 25 and 80 feet. The eastern and western ends of the project area sit at elevations ranging from approximately 60 to 80 feet, and the elevation dips along the Econlockhatchee River basin.

Hydrologic features and wetland areas mapped by the USFWS National Wetlands Inventory are shown on **Figure 2-5** through **2-5.** The nearest major water features besides

the Econlockhatchee River are Lake Tanner and Corner Lake, both located approximately one mile north of the project corridor. According to the groundwater flow-pattern map from SJRWMD, groundwater flow in the project area is generally to the south-southeast.

Based on a review of data from the Florida Department of Health (2015), 71 potable wells are present within or adjacent to the project area. Most of these wells are concentrated in the eastern half on the project area and are associated with residential communities and commercial establishments. The project is not underlain by a Sole Source Aquifer as identified by the U.S. Environmental Protection Agency (USEPA).

According to the Federal Emergency Management Agency (FEMA) Flood Insurance Rate Map (updated December 4, 2012), a large portion of the project corridor is located within Flood Zone X, which is a flood zone that has a 0.2 percent annual flood chance. Small portions of the project area are located within flood zones A and AE, which are flood zones that are inundated by the 100-year flood. There are many naturally occurring streams and drainageways located throughout the project area.

SOILS

The Natural Resources Conservation Service (NRCS) (2015) indicates that twelve soil types occur in the project area (**Table 2-1**, and **Figures 2-7** and **2-8**). Three hydric soil types, Sanibel muck, Samsula muck, and Wauberg fine sand, are mapped in the project area.

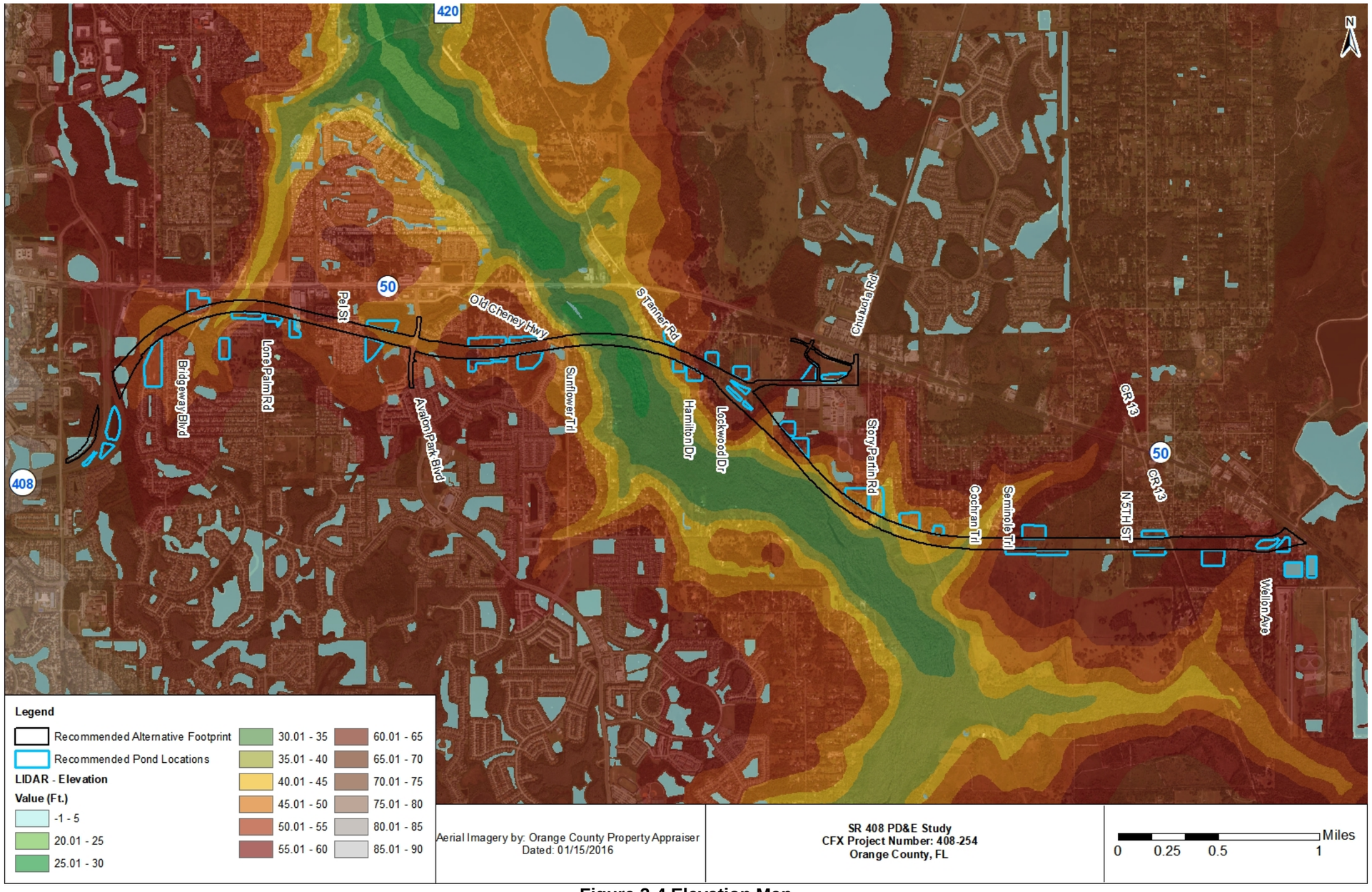


Figure 2-4 Elevation Map

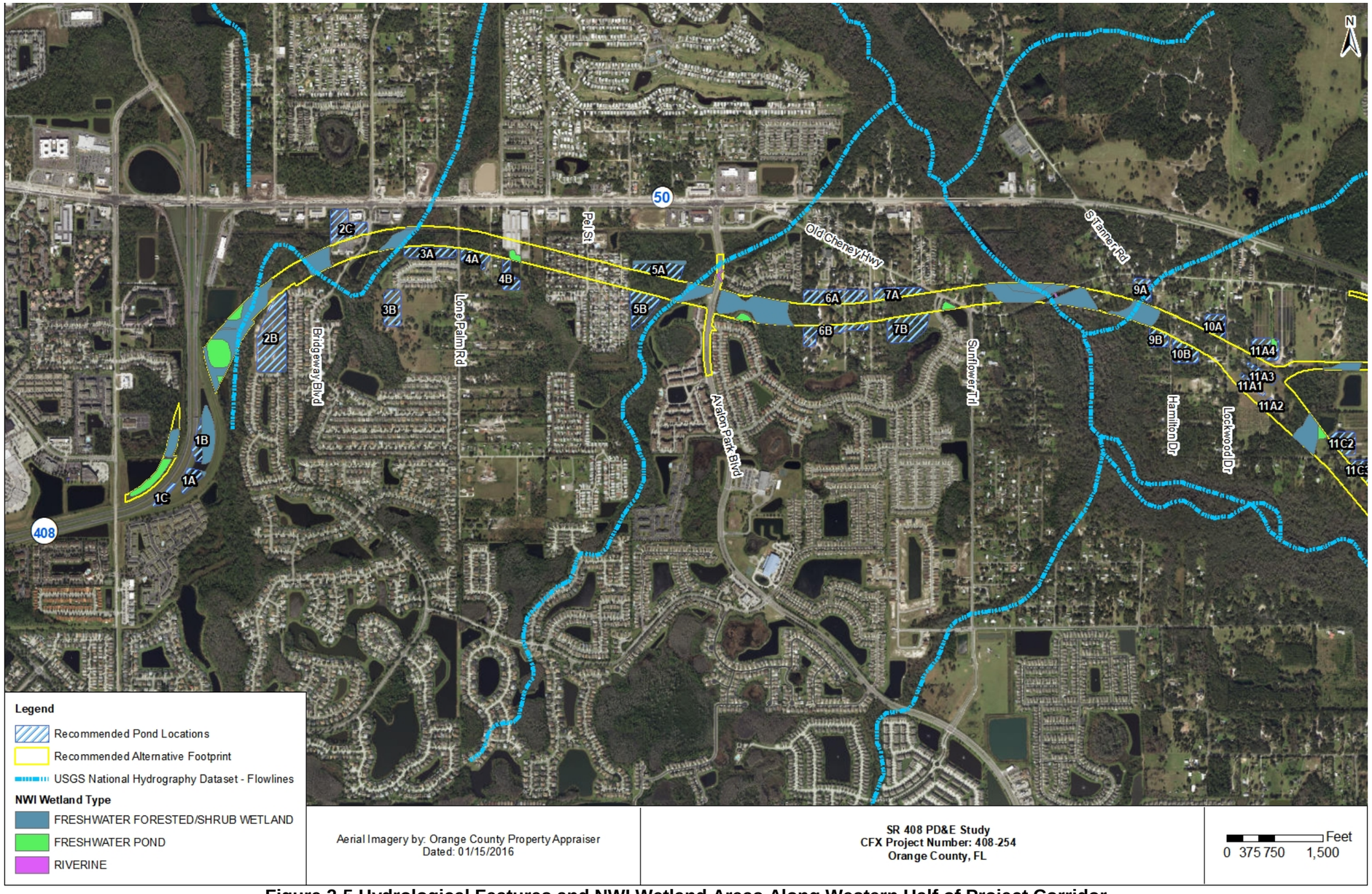


Figure 2-5 Hydrological Features and NWI Wetland Areas Along Western Half of Project Corridor

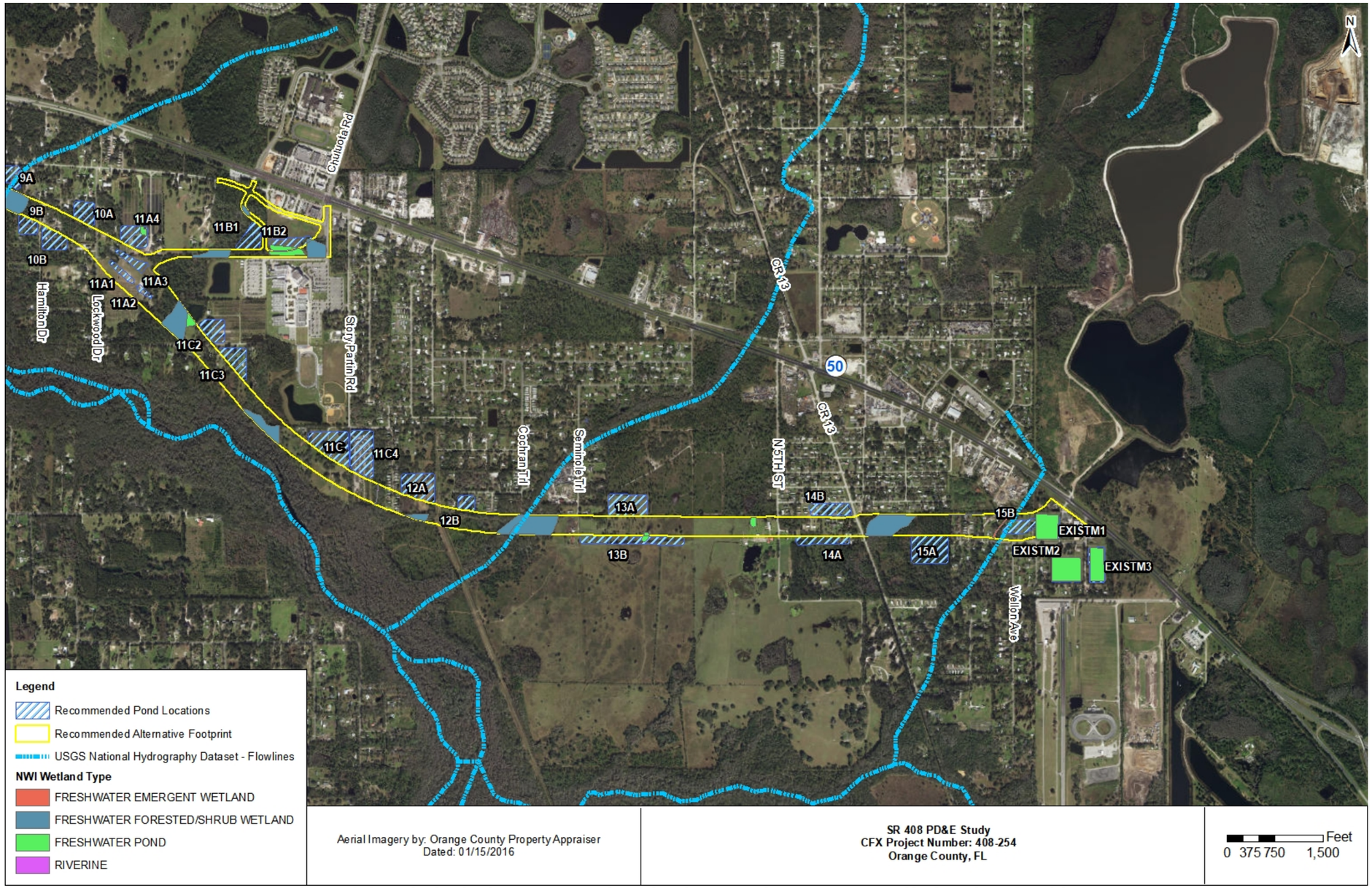


Figure 2-6 Hydrological Features and Wetland Areas Along Eastern Half of Project Corridor

Table 2-1 Soils

Soil Type	Slope	Characteristics
Felda fine sand	0 to 2 Percent	This soil consists of very deep, poorly drained and very poorly drained, moderately permeable soils in drainage ways, sloughs, depressions, flood plains, and low flats of the southern flatwoods and the southern central Florida ridge. They formed in sandy and loamy marine deposits. Permeability is rapid to very slow depending on soil horizon. This is not a hydric soil.
Ona fine sand	0 to 2 Percent	This type consists of poorly drained, moderately permeable soils that formed in thick sandy marine sediments. They are in the flatwood areas of central and southern Florida. Permeability is moderate. This is not a hydric soil.
Basigner fine sand	0 to 2 Percent	This type consists of very deep, very poorly and poorly drained, rapidly permeable soil in low flats, sloughs, depressions, and poorly defined drainage ways. They formed in sandy marine sediments. Permeability is rapid. This is not a hydric soil.
Pomello-Urban land complex	0 to 2 Percent	This soil type consists of nearly level, moderately well drained sandy soil that has been altered for use as building sites and is urban land or covered by houses, streets, driveways, buildings, and parking lots. Permeability is moderate where infrastructure is absent. This is a not a hydric soil.
St. Johns fine sand	0 to 2 Percent	This soil type consists of very deep, very poorly or poorly drained, moderately permeable soils on broad flats and depressions of the lower Coastal Plain. They formed in sandy marine sediments. Permeability is moderate. This is not a hydric soil.
Smyrna-Smyrna wet fine sand	0 to 2 Percent	This soil type consists of very deep, poorly to very poorly drained soils formed in thick deposits of sandy marine material. Permeability is rapid to moderate. This is not a hydric soil.
Wabasso fine sand	0 to 2 Percent	This soil type consists of very deep, very poorly and poorly drained, slowly permeable soils on flatwoods, flood plains, and depressions in the southern Florida flatwoods, and to a less extent in the south-central Florida ridge, southern Florida lowlands, and Florida Everglades and associated areas. They formed in sandy and loamy marine sediments. Permeability ranges from rapid to slow depending on soil horizon. This is not a hydric soil.
Sanibel muck	>2 Percent	This soil type consists of nearly level, deep, very poorly drained soil that has a muck surface layer over sandy mineral material located in ponds, drainageways, and low broad flats. Permeability is rapid. **This is a hydric soil**.
Zolfo fine sand	0 to 5 Percent	This soil type consists of very deep, somewhat poorly drained soils that formed in thick beds of sandy marine deposits. These soils are on low broad landscapes that are slightly higher than adjacent flatwoods on the lower coastal plain of central Florida. Permeability is rapid to moderate. This is not a hydric soil.
Immokalee fine sand	0 to 5 Percent	This soil type consists of very deep, very poorly and poorly drained soils on flatwoods and in depressions primarily in the southern Florida flatwoods, but also occurs in the south-central Florida ridge, Florida Everglades and associated areas, and the southern Florida lowlands of peninsular Florida. They formed in sandy marine sediments. Permeability is very rapid to moderate. This is not a hydric soil.
Samsula muck	>2 Percent	This soil type consists of very deep, very poorly drained, rapidly permeable soils that formed in moderately thick beds of hydrophytic plant remains and are underlain by sandy marine sediments in narrow to broad swamps and depressional areas in the flatwoods. Permeability is rapid. **This is a hydric soil.**
Wauberg Fine Sand	0 to 2 Percent	This soil type is nearly level, poorly drained, and found in low areas on the flatwoods. Permeability is very slow, forming thick beds of loamy marine sediments within large prairie areas. Water capacity is low to medium in the surface layer, subsoil, and substratum. It is very low to low in the subsurface. This soil is well suited to improved pasture grasses, but has severe limitations for building site development, sanitary facilities, and recreational uses. **This is a hydric soil.**

*Source NRCS 2015

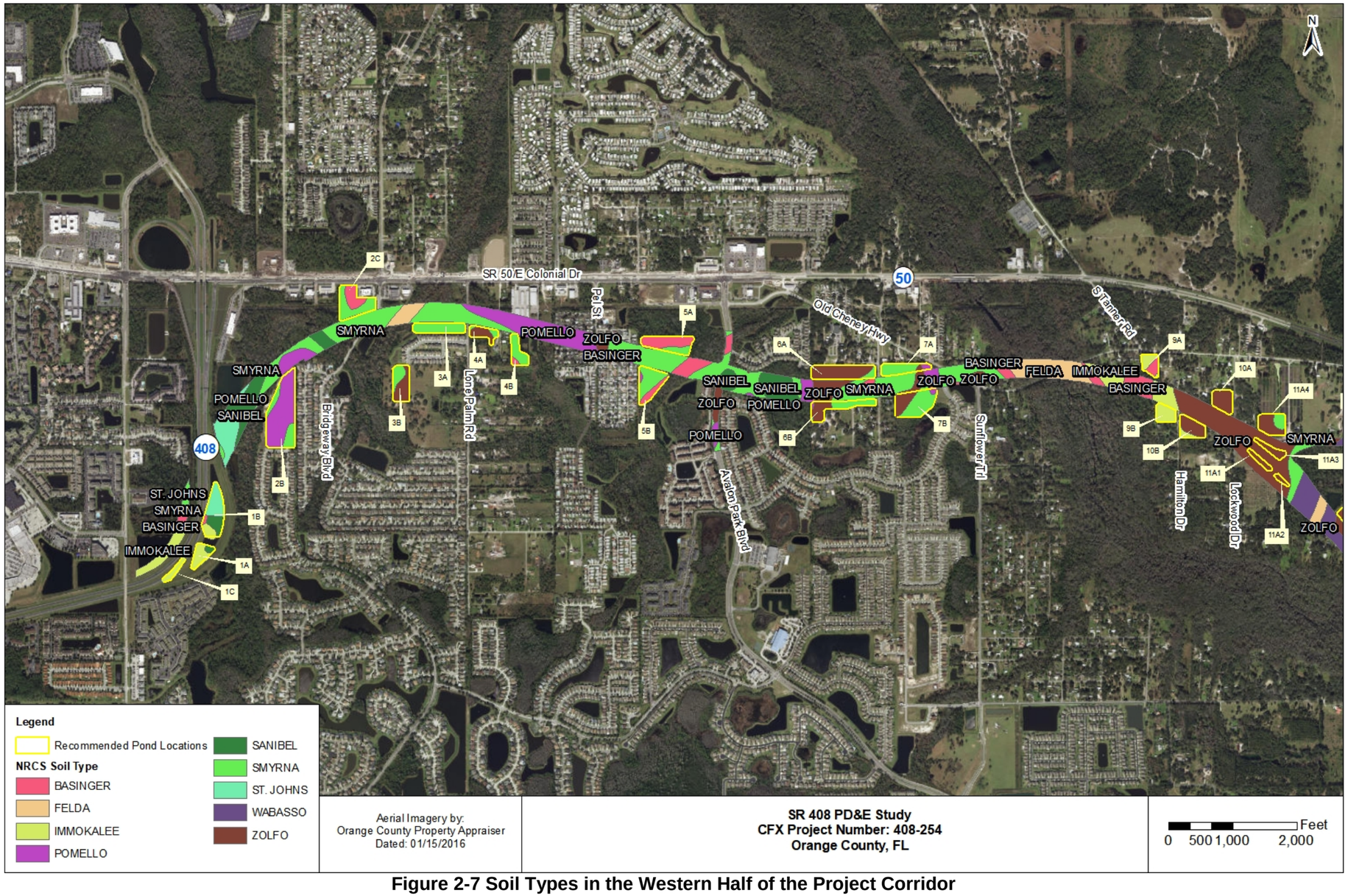


Figure 2-7 Soil Types in the Western Half of the Project Corridor

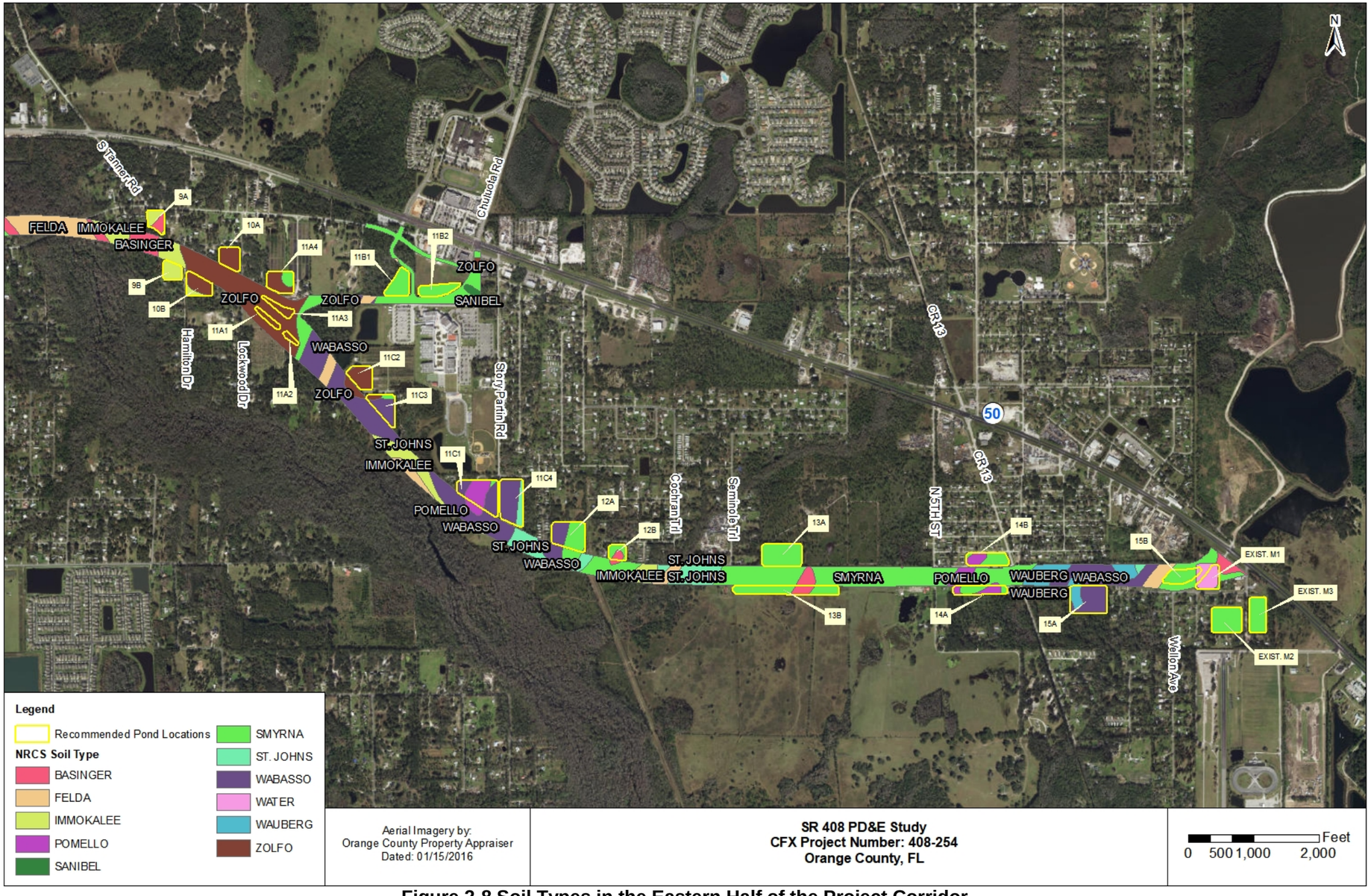


Figure 2-8 Soil Types in the Eastern Half of the Project Corridor

3.0 PROJECT ALTERNATIVES

The alternatives considered for the eastern extension of SR 408 include the No Build Alternative and several Build Alternatives. A multiphase alternative development evaluation and selection process was employed to properly assess all alternatives considered for the proposed SR 408 eastern extension.

NO BUILD ALTERNATIVE

The No Build Alternative would result in the retainage of the existing SR 408 facility without providing an eastern extension. The only existing principal arterial facility (i.e., SR 50) within the project confines is inadequate in terms of meeting future capacity needs, and failure to provide a SR 408 eastern extension would not solve any of the stated project goals. These goals include the provision of additional east-west capacity, desirable redundancy in evacuation and emergency response, and the required additional regional connectivity to I-95 on the east. Although the No Build Alternative does not solve any of the project deficiencies, it does provide a baseline condition by which other project alternatives can be compared throughout the project alternative selection process.

BUILD ALTERNATIVES

Several alternative corridors were developed based on constraint mapping and input from the Project and Environmental Advisory Groups. Each alternative corridor represents a 400-foot-wide area for the purpose of assessing community and environmental impacts. The need for enhancement is related to the predicted unsatisfactory future operating conditions, as reflected in the traffic analysis, if no action is taken. In addition, each alternative corridor was evaluated for its ability to satisfy the purpose and need, and their effect with respect to engineering, cost, socio-economic, and environmental issues.

A preliminary evaluation determined that Alternative Corridors 1, 4, 4-2, 4-3, 4-6, 5 and 5-4 warranted further evaluation (see **Figure 3-1**). In order to check the validity of the analysis, a multi-objective approach using weighted numerical/descriptive technique was used for the remaining seven alternative corridors. The results obtained showed that

Alternative Corridors 1, 4-3, 4-6, and 5 were clearly inferior and thus eliminated from further consideration.

Table 3-1 illustrates the general performance of the three remaining competing alternative corridors. According to the table, Alternative Corridor 5-4 is the best option in terms of engineering features, but the worst in terms of socio-economic and right-of-way impacts. In addition, it will most likely generate significant controversy due to its high right-of-way and community cohesion impacts. Alternative Corridors 4 and 4-2 are mostly similar within the first two segments, with Alternative Corridor 4 performing slightly better within Segment 3 in terms of minimizing right-of-way impacts.

In summary, results indicate that Alternative Corridor 4 is the best choice to fulfill the project objectives. This option is generally in close proximity to the SR 50 corridor and could provide an effective limited-access eastern extension of SR 408 from its present western terminus just west of SR 434 to the vicinity of the SR 50 and SR 520 junction. Most of the local trips within this alternative corridor would be serviced by SR 50 while the proposed SR 408 extension would greatly enhance the mobility and linkage needs of the project area. It should be noted that this alternative corridor does offer the possibility to provide future extension options, further increasing the system linkage between east Orange County and Brevard County.

The next steps involve the generation of various alternatives within the selected alternative corridor which strive to minimize the projected impacts and deficiencies, and optimize the provision of an effective SR 408 eastern extension.

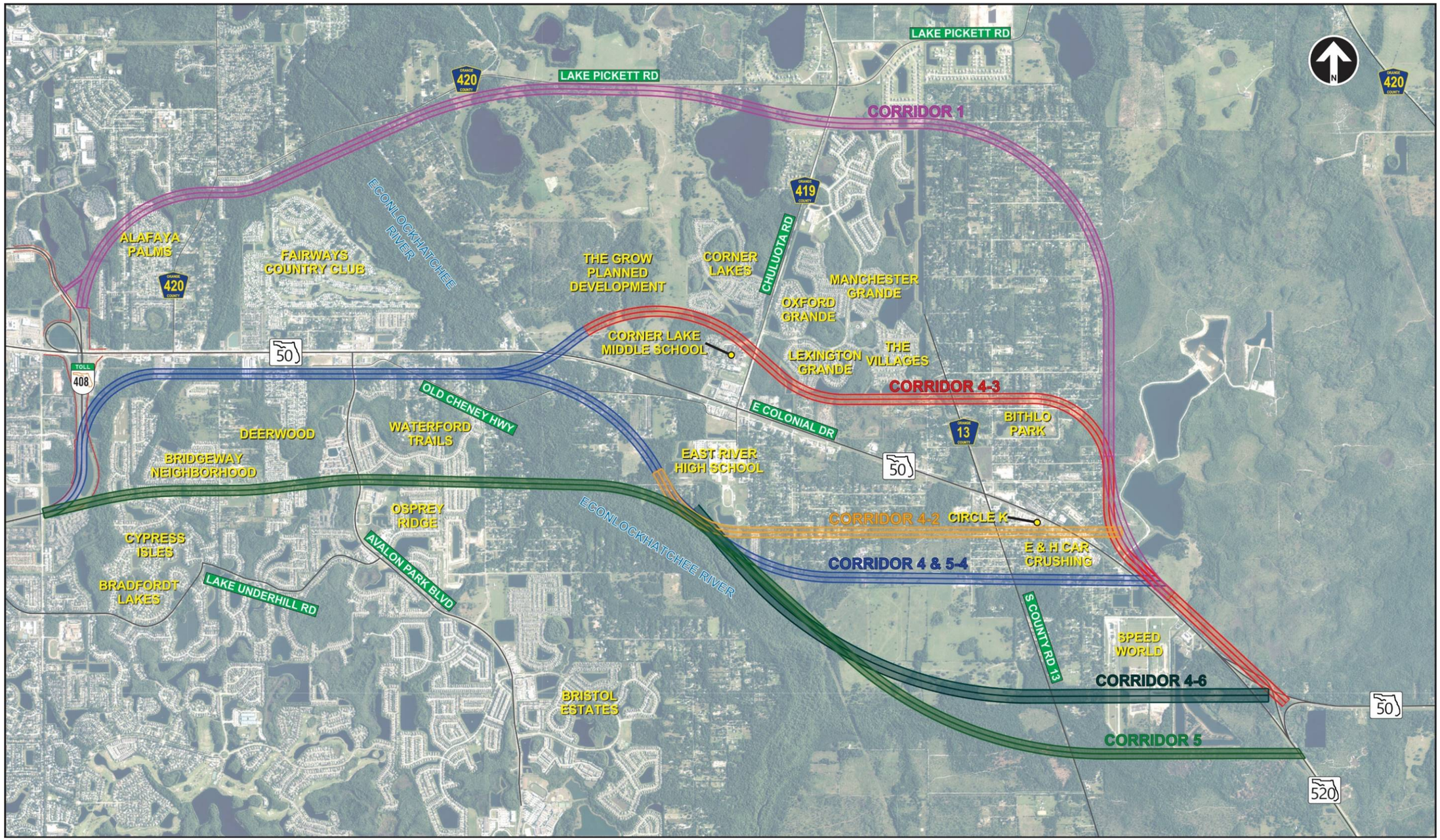


Figure 3-1 Alternative Corridors

Table 3-1 Pre-Final Alternative Corridor Results

DECISONAL COMPONENTS / ALTERNATIVES	ENGINEERING	ENVIRONMENTAL	SOCIO-ECONOMIC	COST
4	• Provides high traffic attraction and congestion relief to SR 50 • Relatively minor utility conflicts	• Good alternative with only minor impacts to ecological connectivity, Outstanding Florida Waters, SJRWMD land management easements, and water/wastewater/ solid waste facilities	• Generally, the best option in terms of minimizing or avoiding right-of-way impacts to private and public properties, historic/ archaeological sites, etc.	• Modestly higher construction cost than the other two options but with much lower right-of-way impacts (204 total parcel impacts)
4-2	• Generally, similar to Alternative 4 for first two segments. Slightly less effective within Segment 3 in terms of traffic attraction and congestion relief to SR 50 • Similar to Alternative 4 in terms of utility conflicts	• Generally, the best option due to minimum impacts to wetlands wildlife and habitat, ecological connectivity, Outstanding Florida Waters, SJRWMD land management, and regulatory easements and water/wastewater/ solid waste facilities	• Generally, similar to Alternative 4 for first two segments, but slightly less effective within Segment 3 • Similar to Alternative 4 in terms of controversy potential within the first two segments with more right-of-way impacts to private and public properties in Segment 3 due to the slightly northern shift of the corridor	• Lowest construction cost of remaining options, but significant right-of-way impacts to approximately 313 parcels
5-4	• Generally, the best option in terms of higher traffic attraction and provision of congestion relief to SR 50 • Relatively minor utility conflicts	• Generally, comparable with Alternative 4	• Generally, the worst option due to its significant impacts to residential and commercial properties. • Corridor negatively affects community cohesion and is contrary to future land use plans. • Major controversy potential expected due to its high right-of-way and cohesion impacts	• Generally, similar construction cost than Alternative 4-2 but with the highest right-of-way impacts of all options (343 total parcel impacts)

Project Segmentation

The project area was divided into distinct segments to ensure that the generated alternatives are more responsive to the needs of each segment rather than only to the generalized project's needs. Each segment has rather unique characteristics as well as potential differences in environmental, engineering, and socio-economic features.

- Segment 1 (from begin of project to Avalon Park Boulevard) is generally more urbanized and exhibits a higher traffic demand than Segments 2 and 3.
- Segment 2 (from Avalon Park Boulevard to CR 419 (Chuluota Road)) is more rural in nature and generally serves a lower density area with higher expected development growth.
- Segment 3 (from Chuluota Road to the eastern project terminus) has mostly industrial and low density residential development with a lower traffic demand.

PREFERRED ALTERNATIVE

After a comprehensive evaluation process, one alternative was selected as being the most effective option within each of the project's segments. This alternative is illustrated on **Figure 3-3**. In general, the preferred alternative is the result of the generation and evaluation of various typical sections and horizontal and vertical alignment combinations along the three project segments, as well as various interchange configurations at each access point.

The typical sections for the preferred alternative are depicted on **Figure 3-3**.

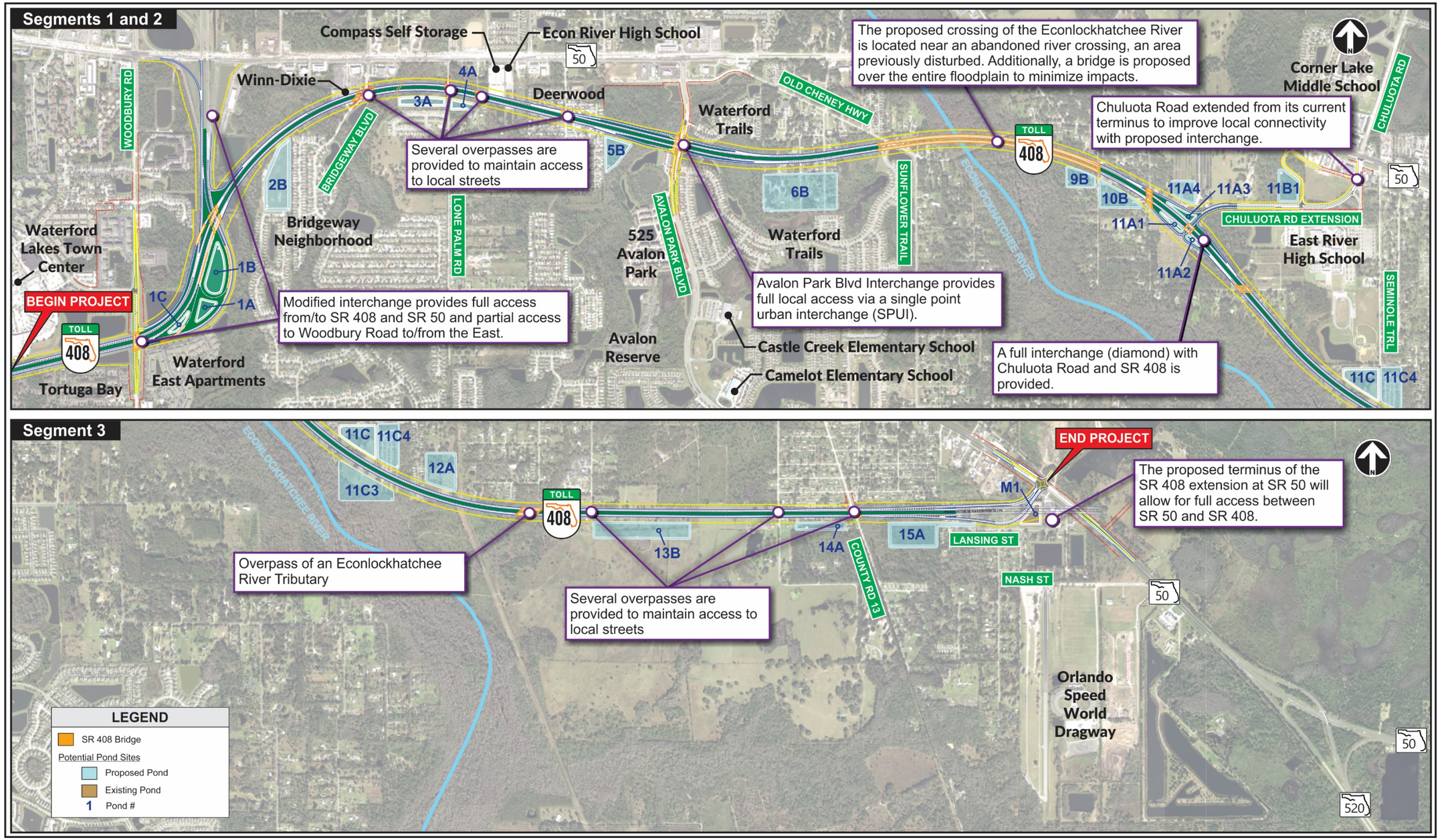


Figure 3-2 Preferred Alternative

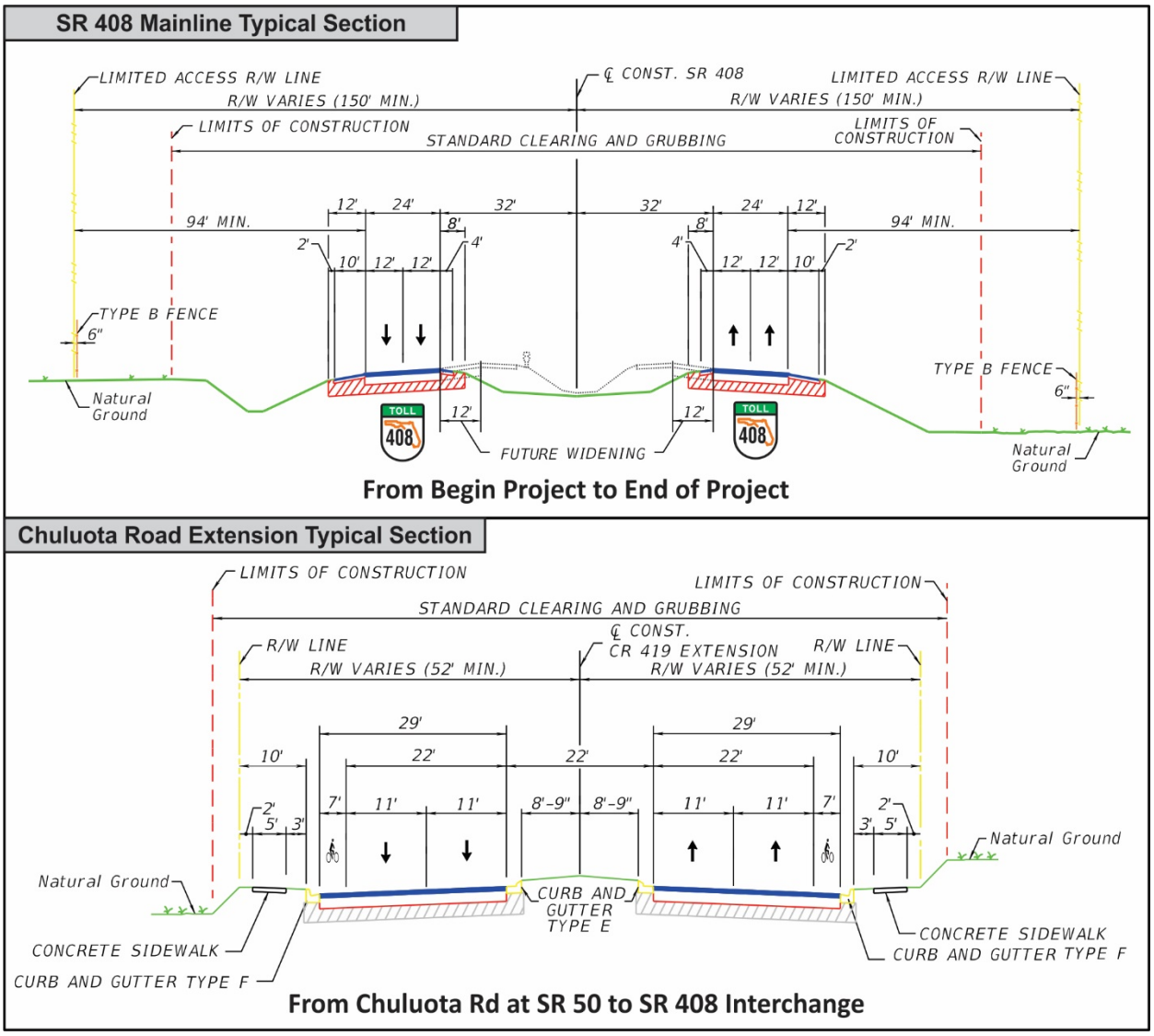


Figure 3-3 Preferred Alternative Typical Sections

A brief description of the preferred alternative per segment follows.

- Segment 1 (the study area west of the Econlockhatchee River): Within Segment 1, the preferred alternative features a four-lane rural expressway typical section with 12-foot travel lanes, 12-foot outside shoulders, a 64-foot divided median, and a 94-foot border width. The section will feature several grade separations in order to provide access to local streets. There has also been a modification at the SR 408 and SR 50/Challenger Parkway interchange to provide full access between SR 50/Challenger Parkway and SR 408. There is an additional half interchange at Woodbury Road (Woodbury Road to Eastbound SR 408 and Westbound SR 408

to Woodbury Road). Based on the results of the traffic analysis, a single point urban interchange is proposed at Avalon Park Boulevard. **Figure 3-2** (top) shows some of the most distinctive features of this option within segment 1, and **Figure 3-3** (top panel) shows the typical section. Eight (8) potential ponds are located in Segment 1 (see **Table 3-2**).

- Segment 2 (the area between the Econlockhatchee River and County Road 419 (Chuluota Road)): Within Segment 2, the preferred alternative continues the same typical section previously described under Segment 1. Based on traffic projections and to minimize impacts to East River High School, Chuluota Road/CR 419 is extended westward to intersect with the SR 408 Extension with a full diamond interchange. The extension of Chuluota Road features an urban typical section with 11-foot travel lanes, curb and gutter, and 5-foot sidewalks on both sides of the roadway. **Figure 3-2** (top panel) shows some of the most distinctive features of the alternative within Segment 2 and **Figure 3-3** (top panel) shows the typical section for the mainline of SR 408 and **Figure 3-3** (bottom panel) shows the typical section for the Chuluota Road extension. Seven (7) preferred ponds are located in Segment 2 (see **Table 3-2**).
- Segment 3 (from Chuluota Road to the eastern project terminus): Within Segment 3, the preferred alternative continues the same typical section previously described under Segment 1. Some of the most important attributes within Segment 3 are shown on **Figure 3-2** (bottom panel) and **Figure 3-3** (top panel) shows the typical section. Seven (7) preferred ponds are located in Segment 3 (see **Table 3-2**).

In addition to the preferred alternative, the Pond Siting Report associated with this PD&E study proposed 22 stormwater ponds. Those proposed stormwater pond locations are shown in **Table 3-2** and **Figures 2-1** to **2-8** and are evaluated in this document.

Table 3-2 Summary of Preferred Pond Sites

Segment	Basin	Pond Name	Preliminary Pond Site (ac)	Remarks
1	Basin 1	Pond 1A	1.98	Existing CFX Pond expanded
		Pond 1B	5.06	Existing CFX Pond expanded
		Pond 1C	1.10	CFX Property
	Basin 2	Pond 2B	10.23	Orange County School Board
	Basin 3-4	Pond 3A	3.06	Private Property
		Pond 4A	1.80	Private Property
	Basin 5	Pond 5B	4.10	Private Property
	Basin 6-8	Pond 6B	19.73	Private Property
2	Basin 9-10	Pond 9B	3.38	Private Property
		Pond 10B	5.00	Private Property
	Basin 11A	Pond 11A1	0.92	Private Property
		Pond 11A2	0.45	Private Property
		Pond 11A3	1.16	Private Property
		Pond 11A4	3.24	Private Property
	Basin 11B	Pond 11B1	3.98	FDOT Property
3	Basin 11C	Pond 11C	5.70	Private Property
		Pond 11C3	8.85	Private Property
		Pond 11C4	5.50	Private Property
	Basin 12	Pond 12A	6.88	Private Property
	Basin 13	Pond 13B	10.45	Private Property
	Basin 14	Pond 14A	2.57	Private Property
	Basin 15	Pond 15A	8.92	Private Property

4.0 METHODOLOGY

This traffic noise analysis has been conducted following Code of Federal Regulations Title 23 Part 772 (23 CFR 772), *Procedures for Abatement of Highway Traffic Noise and Construction Noise*[1], using methodologies established by the FDOT in the *Project Development and Environment Manual*[2], Part 2, Chapter 18 (June 14, 2017). The analysis was conducted in accordance to the methodologies contained in the most recent version of FDOT's *Traffic Noise Modeling and Analysis Practitioner's Handbook*[3]. For the purposes of this analysis, "Build Alternative" refers to the preferred Build Alternative. "Existing Year" is defined as 2015 and "Design Year" is defined as 2045.

Prior to conducting a detailed noise analysis, a desktop review of the project was performed to determine if noise levels will likely increase as a result of the proposed improvements, if noise-sensitive receptor sites are located within the project area, or if noise impacts are likely to occur. The desktop review indicated that the proposed project improvements were likely to cause Design Year traffic noise levels to approach or exceed the Federal Highway Administration (FHWA) NAC at noise-sensitive sites within the project limits. Therefore, following the procedures in Chapter 18, a more detailed noise analysis was performed. The methods and results of this analysis are summarized within this section and involved the following procedures:

- Identification of noise-sensitive receptor sites,
- Field measurement of noise levels and noise model validation,
- Prediction of existing and future noise levels,
- Assessment of traffic noise impacts, and
- Consideration of noise abatement measures.

The FHWA's *Traffic Noise Model* (TNM) Version 2.5 (February 2004) was used to predict traffic noise levels and the effectiveness of various noise barrier design concepts. It should be noted that the official release of FHWA's TNM Version 3.0 is still pending at the time of this analysis and report. This model estimates the acoustic intensity at a noise-sensitive site (the receptor) from a series of roadway segments (the source). Model-predicted noise levels are influenced by several factors, such as vehicle speed and

distribution of vehicle types. Noise levels are also affected by characteristics of the source-to-receptor site path, including the effects of intervening barriers, obstructions (houses, trees, etc.), ground surface type (hard or soft), and topography.

NOISE METRICS

Noise levels developed for this analysis are expressed in decibels (dB) using an "A"-scale [dB(A)] weighting. This scale most closely approximates the response characteristics of the human ear to typical traffic noise levels. All reported noise levels are hourly equivalent noise levels [Leq(h)]. The Leq(h) is defined as the equivalent steady-state sound level that, in an hourly period, contains the same acoustic energy as the time-varying sound level for the same hourly period. These noise metrics are consistent with those established in 23 CFR 772.

NOISE ABATEMENT CRITERIA

The FHWA has established NAC for seven land use activity categories. These criteria determine when an impact occurs and when consideration of noise abatement is required. Maximum noise level thresholds have been established for five of these activity categories. These maximum thresholds, or criteria levels, represent acceptable traffic noise level conditions. Descriptions of the defined Activity Categories and associated NACs are presented in **Table 4.1**.

Table 4-1 Noise Abatement Criteria

[Hourly A-Weighted Sound Level-Decibels (dB(A))]

ACTIVITY CATEGORY	ACTIVITY Leq(h)[1]	EVALUATION LOCATION	DESCRIPTION OF ACTIVITY CATEGORY
A	57	Exterior	Lands on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential if the area is to continue to serve its intended purpose.
B[2]	67	Exterior	Residential
C[2]	67	Exterior	Active sports areas, amphitheaters, auditoriums, campgrounds, cemeteries, day care centers, hospitals, libraries, medical facilities, parks, picnic areas, places of worship, playgrounds, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, recreational areas, Section 4(f) sites, schools, television studios, trails, and trail crossings.
D	52	Interior	Auditoriums, day care centers, hospitals, libraries, medical facilities, places of worship, public meeting rooms, public or nonprofit institutional structures, radio studios, recording studios, schools, and television studios.
E[2]	72	Exterior	Hotels, motels, offices, restaurants/bars, and other developed lands, properties, or activities not included in A-D or F.
F	–	–	Agriculture, airports, bus yards, emergency services, industrial, logging, maintenance facilities, manufacturing, mining, rail yards, retail facilities, shipyards, utilities (water resources, water treatment, electrical), and warehousing.
G	–	–	Undeveloped lands that are not permitted.

(Based on Table 1 of 23 CFR Part 772)
[1] The Leq(h) Activity Criteria values are for impact determination only, and are not design standards for noise abatement measures.
[2] Includes undeveloped lands permitted for this activity category.

Noise abatement measures must be considered when predicted noise levels approach or exceed the NAC levels or when a substantial noise increase occurs. Following the FDOT procedure, "approach" is defined as within one dB(A) of the FHWA criteria. A substantial noise increase is defined as when the existing noise level is predicted to be exceeded by 15 dB(A) or more as a result of the transportation improvement project. Typical noise levels associated with common indoor and outdoor activities are shown in **Table 4.2**.

Table 4-2 Typical Noise Levels

COMMON OUTDOOR ACTIVITIES	NOISE LEVEL dB(A)	COMMON OUTDOOR ACTIVITIES
	---110---	Rock Band
Jet Fly-over at 1000 ft		
	---100---	
Gas Lawn Mower at 3 ft		
	---90---	
Diesel Truck at 50 ft, at 50 mph		Food Blender at 1 m (3 ft)
	---80---	Garbage Disposal at 1 m (3 ft)
Noise Urban Area (Daytime) Gas Lawn Mower at 100 ft	**---70---**	Vacuum Cleaner at 10 ft
Commercial Area		Normal Speech at 3 ft
Heavy Traffic at 300 ft	**---60---**	
		Large Business Office
Quiet Urban Daytime	**---50---**	Dishwasher Next Room
Quiet Urban Nighttime Quiet Suburban Nighttime	**---40---**	Theater, Large Conference Room (Background)
	---30---	Library
Quiet Rural Nighttime		Bedroom at Night, Concert Hall (Background)
	---20---	
	---10---	
Lowest Threshold of Human Hearing	**---0---**	Lowest Threshold of Human Hearing

Source: California Dept. of Transportation Technical Noise Supplement, Oct. 1998, Page 18.

TRAFFIC DATA

Traffic data used in the TNMs for this project was provided by the CFX's traffic consultant. Peak-hour traffic volumes for the Existing Year, and Design Year No Build and Build alternatives were evaluated to identify the worst-case conditions for traffic noise. These

data are provided in **Appendix A.** According to Chapter 18 of the PD&E Manual, “Maximum peak-hourly traffic representing Level of Service (LOS) "C", or demand LOS of "A", "B", or "C" will be used (unless analysis shows that other conditions create a "worst-case" level).” In cases where traffic volumes on project roadways were predicted to operate at a LOS lower than LOS C (i.e., LOS D, E, or F), the LOS C project data were used. A vehicle volume resulting in LOS C operating conditions is considered the maximum volume that allows vehicles to travel at the speed limit and, consequently, produces the worst-case traffic noise environment. Therefore, noise levels are predicted using LOS C conditions when forecasted demand volumes exceed LOS C conditions. If forecasted demand volumes are less than LOS C volumes, demand traffic volumes are used to predict noise levels. An hourly truck factor of 2.0 percent was used for SR 408 and the major local cross streets.

ELEVATION DATA

The relationship between the elevation of the road, and the ground elevation at nearby receptor sites and for potential noise barriers can affect predicted noise levels and the effectiveness of noise barriers. Roadway elevations for SR 408 were taken from the project’s conceptual roadway profiles. Roadway elevations for the major local cross streets were estimated based on information from Google Earth Pro, LIDAR, or the U.S. Geological Survey. Ground elevations of other features were based on information contained in the roadway plans, from Google Earth Pro, or the U.S. Geological Survey.

RECEPTOR DATA

Representative receptor sites were used in the TNM inputs to estimate noise levels associated with Design Year project-build conditions within the project study area. These sites were chosen based on noise sensitivity, roadway proximity, anticipated impacts from the proposed project, and homogeneity (i.e., the site is representative of other nearby sites). For single-family residences, traffic noise levels were predicted at the edge of the dwelling unit closest to the nearest primary roadway. Where residences are clustered together, single receptor points were analyzed as representative of a group of sites with similar characteristics. For other noise-sensitive sites that may be impacted, traffic noise levels were predicted where the exterior activity occurs. Receptor points for Activity

Category D interior sites are located adjacent to the edge of the building closest to SR 408. Receptor sites were modeled five feet above the local ground elevation. Noise-sensitive receptors above the groundfloor were modeled at an additional 10 feet/floor.

NOISE ABATEMENT CONSIDERATION

Noise abatement is considered when the NAC is approached or exceeded. The most common and effective noise abatement measure for projects such as this is construction of a noise barrier as close as possible to the impacted sites or along the outside edges of the elevated segments of the expressway. Noise barriers reduce noise by blocking the sound path between a roadway and a noise-sensitive area. To be effective, noise barriers must be long, continuous, and have sufficient height to block the path between the noise source and the receptor site. Noise barriers are evaluated as follows:

- Primary consideration is generally given to ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites. This location is typically within 5 to 15 feet of the ROW line. Heights ranging from 8 to 22 feet are evaluated in 2-foot increments. According to the FDOT *Plans Preparation Manual*[4] referenced for this analysis, a noise barrier located outside of the clear zone should not exceed a maximum height of 22 feet.

- If a ground-mounted noise barrier located outside of the roadway's clear recovery zone cannot provide at least a 5 dB(A) reduction to an impacted noise-sensitive site or is not construction feasible, then a noise barrier located along the highway shoulder would be evaluated. According to the FDOT *Plans Preparation Manual*, a shoulder-mounted noise barrier should not exceed 14 feet in height when on fill (i.e., embankment) or 8 feet in height when on structure.

- Finally, the length and height of the noise barrier is optimized based on the benefit provided at residences where predicted noise levels approach or exceed the NAC.

A wide range of factors are used to evaluate the feasibility and reasonableness of noise abatement measures.

Feasibility primarily concerns the ability to reduce noise levels by at least 5 dB(A) at the impacted receptor sites using standard construction methods and techniques. In order to be considered feasible by the CFX, a noise barrier must provide a 5 dB(A) reduction for at least two impacted receptors. Engineering considerations typically assessed during the feasibility analysis include access, drainage, utilities, safety, and maintenance.

Reasonableness implies that common sense and good judgment were applied in a decision related to noise abatement. A reasonableness analysis includes consideration of the cost of abatement, the amount of noise abatement benefit, and consideration of the viewpoints of the impacted and benefited property owners and residents. The CFX uses FDOT's current statewide average noise barrier unit cost, $30 per square foot. To be deemed reasonable at residential properties, a noise barrier must, at a minimum, meet two important criteria:

- The estimated construction cost cannot exceed a reasonable cost criteria of $42,000 per benefited receptor site, and
- The noise barrier must reduce noise levels by at least 7 dB(A) at one or more impacted receptor sites.

The reasonableness and feasibility of noise abatement measures for non-residential/special use sites were assessed in accordance with the FDOT report *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations*[5] (updated July 22, 2009).

Noise barriers were evaluated based on the benefit provided to residences where the predicted Design Year Build Alternative traffic noise levels approached or exceeded the NAC, or resulted in a substantial increase above existing worst-case traffic noise levels. In order to provide the most cost-effective noise barrier for the maximum number of impacted noise-sensitive sites, various noise barrier design concepts were evaluated to determine the most effective location, length, and height. At some locations, a noise barrier may also benefit additional non-impacted noise-sensitive sites. Since 23 CFR 772 does not require consideration of noise abatement for non-impacted sites, the noise

barriers were not specifically designed to benefit them. However, the additional non-impacted sites were included in the cost reasonableness evaluations.

5.0 TRAFFIC NOISE ANALYSIS

The traffic noise analysis includes existing field-monitored noise levels, noise model validation, and prediction of noise levels for Design Year Build Alternative. Field monitoring sites and model receptor locations representing noise-sensitive sites were established by field review, survey of aerial images, and Google Earth Pro images.

FIELD MONITORING

All field measurements were conducted following procedures documented in FHWA's *Measurement of Highway-Related Noise*[5]. The results for all of the field measurements are provided in **Table 5.1**. Field monitoring sheets documenting all monitoring events are provided in **Appendix C**.

All measurements were collected using a CEL-246 noise meter. The noise meter was calibrated before and after all measurements using a field calibrator. All measurements were taken at a height of 5 feet above ground level. Traffic data, including vehicle counts, classifications, and speeds, were collected during the sampling periods where necessary by the field team.

Ambient Noise Level Measurement

Since most of this project will be constructed along a new roadway alignment, field measurements of ambient noise levels in areas where existing traffic noise either does not exist or is a minor element of the overall noise level were necessary. Ambient noise levels were collected on July 5, 2017 at five locations adjacent to the proposed roadway alignment. Each site was representative of a nearby noise-sensitive receptor with a noise environment similar to most areas along that particular section of the alignment. The measurement at site FM-5 was repeated due to an inquiry from a concerned citizen during the initial measurement period. Other short-term noise events from passing aircraft or barking dogs were noted; however, none were of a duration long enough to affect the noise measurements.

Table 5-1 Field Measurement Data

TYPE OF MEASUREMENT	FIELD RECEPTOR SITE NUMBER - LOCATION	SAMPLE RUN	TIME	DISTANCE FROM EDGE OF NEAR TRAVEL LANE (Feet)	MEASURED NOISE LEVEL [dB(A)]	AVERAGE MEASURED NOISE LEVEL [dB(A)]	MODELED TRAFFIC NOISE LEVEL [dB(A)]	DIFFERENCE (Measured - Modeled) [dB(A)]
Ambient Noise Level Monitoring	**FM-1** – Northern terminus of Jade Forest Ave., Station 412+00.	1	07/05/17 10:18 AM	N/A	45.1	45.3	N/A	N/A
		2	07/05/17 10:29 AM		44.9		N/A	N/A
		3	07/05/17 10:41 AM		44.9		N/A	N/A
Ambient Noise Level Monitoring	**FM-2** – Northeast limit of Acorn Ridge Dr., Station 481+30.	1	07/05/17 11:13 AM	N/A	44.2	44.9	N/A	N/A
		2	07/05/17 11:24AM		44.9		N/A	N/A
		3	07/05/17 11:34 AM		45.4		N/A	N/A
Ambient Noise Level Monitoring	**FM-3** – Intersection of Hamilton Dr. and Morris Dr., Station 568+50.	1	07/05/17 11:56 AM	N/A	50.3	48.7	N/A	N/A
		2	07/05/17 12:06 PM		49.7		N/A	N/A
		3	07/05/17 12:16 PM		43.6		N/A	N/A
Ambient Noise Level Monitoring	**FM-4** – Southwest extent of Story Partin Rd., Station 628+20.	1	07/05/17 12:49 PM	N/A	49.9	50.4	N/A	N/A
		2	07/05/17 12:59 PM		48.7		N/A	N/A
		3	07/05/17 1:09 PM		51.9		N/A	N/A
Ambient Noise Level Monitoring	**FM-5** – Intersection of N 5th St. and 17th Ave. Station 701+50.	1	07/05/17 1:39 PM	N/A	45.9	45.7	N/A	N/A
		2	07/05/17 1:52 PM		40.8		N/A	N/A
		3	07/05/17 2:03 PM		47.0		N/A	N/A
Noise Model Validation	**FR-1** – Intersection of Avalon Park Blvd. and Perdido Dr., Station 497+40.	A	07/15/17 8:55 AM	50	67.5	N/A	68.7	1.2
		B	07/15/17 9:19 AM		65.7	N/A	68.8	2.1
		C	07/15/17 10:06 AM		65.8	N/A	68.2	1.4

Model Validation

To validate the accuracy of the computer noise model for the project area, noise monitoring was performed on July 15, 2017 at a location along Avalon Park Boulevard. All monitoring events for model validation were ten minutes in duration, consistent with FHWA and FDOT procedures.

For the model validation site (FR-1), the variance between measured and predicted noise levels was less than 3 dB(A). Therefore, the noise model is predicting within the level of accuracy specified in Chapter 18.

NOISE-SENSITIVE SITES

Within the project limits, noise-sensitive land uses along the future SR 408 Extension that are specified in the NAC include:

- **Activity Category B** (residential areas) – Includes 10 named single-family home residential communities, 22 individual single-family homes not in named communities, 5 mobile home parks and 3 apartment/condominium complexes.

- **Activity Category C** – Includes a playground at the Waterford East Apartments, Bridgewater recreation center, Waterford Creek Playground, Deerwood Manufactured Home Park pool, and a sports field and a baseball diamond at East River High School.

- **Activity Category D** – Includes interior spaces of the Orlando Center for Women's Health.

No Activity Category A lands, which are sites on which serenity and quiet are of extraordinary significance and serve an important public need, and where the preservation of those qualities is essential for the area to continue to serve its intended purpose, are found along the project corridor. There are no Activity Category E properties such as outdoor seating areas at restaurants along the proposed roadway corridor. Also, the eastern end of the corridor includes sites such as retail businesses, warehouses, and industrial facilities that fall into Activity Category F and do not require a noise analysis as stipulated in 23 CFR 772.

Three hundred and seventy-two (372) model receptor locations representative of the approximately 824 residential noise-sensitive sites and the seven non-residential/special land use sites described above were input into the TNM. These locations are described in a table found in **Appendix B**. The identifiers for each model receptor generally include the first several letters of the community or site name along with sequential numbering for sites where more than one model receptor is located. Each line item in the table is a single receptor which represents one or more noise sensitive sites. These locations are also shown on aerial images in **Appendix C**

PREDICTED NOISE LEVELS

Traffic noise levels predicted along the project corridor for the Existing Conditions and the Design Year No Build and Build Alternatives are presented in **Appendix B**. During the Design Year, traffic noise levels with the planned improvements are predicted to approach or exceed the relevant NAC at 159 residences. Compared to existing conditions, traffic noise levels for the Design Year Build Alternative are predicted to substantially increase at 347 nearby residences and 3 SLUs (Waterford Creek Playground, Bridgewater Recreation Center, and Deerwood Manufactured Home Park pool). The feasibility and reasonableness of providing noise barriers to reduce traffic noise has been evaluated for all of the noise-sensitive sites predicted to be impacted due to the proposed improvements.

This space has been intentionally left blank

NOISE BARRIER ANALYSIS

The discussions that follow analyze noise abatement for noise-sensitive areas along the corridor from west to east, first on the south side of the existing section of SR 408, next on the east side of the existing SR 408 and ramps to the planned SR 408 Eastern Extension, and finally along the north and south sides of the planned SR 408 Eastern Extension.

Crest at Waterford Lakes and Tortuga Bay

Crest at Waterford Lakes and Tortuga Bay (**Appendix C**, **Aerial Sheet C-1**) are apartment communities located south of the existing section of SR 408 east of Woodbury Road between Station (Sta.) 355+00 and 388+00. With the planned improvements, the nearest travel lane will be up to approximately 15 feet closer to these homes. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 60.7 to 75.0 dB(A). Eighty-one (81) homes, all in the first and second row of buildings nearest to existing SR 408, are expected to experience Design Year noise levels with the planned improvements that approach or exceed the NAC [67.0 dB(A)]. The predicted Design Year, Build Alternative traffic noise levels are expected to increase by no more than 5.0 dB(A) above the existing levels. Therefore, traffic noise levels in this community are not expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this community are summarized in **Table 5.2.** Only noise barriers located away from the roadway shoulder were considered in order to avoid conflicts with potential future improvements to SR 408. Also, the noise barrier design concepts evaluated closer to the limited-access right-of-way line are predicted to be very effective for these communities.

The recommended noise barrier design concept, referred to as NC-CWL-03, is highlighted in **Table 5.2** and shown on **Sheet C-1** in **Appendix C**. This 2,880-foot-long, 14-foot-tall noise barrier would be located between Sta. 352+00 and 380+80. The estimated cost of this noise barrier design concept is $1,050,000 overall and $10,194 per benefited site, which is within the $42,000 per benefited site cost criteria.

Table 5-2 Noise Barrier Analysis – Crest at Waterford Lakes and Tortuga Bay

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
NC-CWL-01	12	2880	Right of Way	81	4	8	68	80	23	103	7.8	$1,036,800	$10,066
NC-CWL-02	18	2500	Right of Way		2	0	78	80	23	103	11.2	$1,350,000	$13,107
NC-CWL-03	14	2500	Right of Way		2	0	78	80	23	103	9.1	$1,050,000	$10,194

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modelling for Barrier CWL (includes 54 Receptor Points in the Crest at Waterford Lakes and Tortuga Bay communites):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modelled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. At a height of 14 feet, 80 of the 81 impacted residences are benefited (i.e., reduction of 5 dB(A) or more).
4. Depending on barrier height, noise reduction at up to 78 of the impacted residences would meet the FDOT noise reduction design goal of 7 dB(A).
5. Unit cost of $30ft^2 for noise barriers. All estimated costs rounded to the nearest dollar.
6. A 2,500-foot-long, 14-foot-high noise barrier is shown in **Appendix C**, **Aerial Sheet C-1,** and highlighted above.

The cost per benefited residence (i.e., reduction ≥ 5 dB(A)) for NC-CWL-03 is $10,194 which is less than the FDOT cost reasonable limit of $42,000 per benefited residence.

Waterford Lakes, Bridgewater, and Waterford Creek

Waterford Lakes, Bridgewater, and Waterford Creek (**Appendix C**, **Aerial Sheet C-2, C-3, and C-4**) are a communities of single-family homes located east of the existing SR 408 and south of the proposed SR 408 Eastern Extension between Jadestone Circle and Lone Palm Road (Sta. 391+00 and 456+00). With the planned improvements, the nearest travel lane will be approximately 420 feet closer to homes in Waterford Lakes. The nearest travel lane for the planned SR 408 Eastern Extension will be approximately 290 feet away from homes in Bridgewater and Waterford Creek. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 51.9 to 65.1 dB(A). One hundred and eleven (111) homes, all in the first and second row of homes nearest the roadway, are expected to experience Design Year substantial noise levels increases greater than 15.0 dB(A). The predicted Design Year, Build Alternative traffic noise levels are expected to increase up to 19.8 dB(A) above the existing levels. Therefore, traffic noise levels in these communities are expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this community are summarized in **Table 5.3.** Because of the elevated lanes of the SR 408 Eastern Extension and SR 408 EB on-ramp from Woodbury Road, noise barrier design concepts were considered along the elevated mainline shoulder of the eastbound lanes of the SR 408 Eastern Extension.

The recommended noise barrier design concept, referred to as NC-WL-04, is highlighted in **Table 5.3** and is shown on **Sheets C-2, C-3** and **C-4** in **Appendix C**. This 8,400-foot long, 8 to 14-foot tall noise barrier would be located on the edge of the eastbound mainline shoulder between Sta. 396+00 and Sta. 465+00. The heights of the noise barrier concept are as follows: 14 feet from Station 396+00 to 405+00; 8 feet from Station 405+00 to 408+00 (on-structure); 14 feet from Station 408+00 to 465+00; and 14 feet from Station 1015+00 to 1030+00 (SR 408 eastbound on-ramp from Woodbury Road). This noise barrier design concept is predicted to benefit all 111 of the impacted residences in this community. The estimated cost of this noise barrier design concept is

Table 5-3 Noise Barrier Analysis – Waterford Lakes, Bridgewater, and Waterford Creek

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
NC-WL-01	8	8,900	Mainline Shoulder	111	46	63	2	108	21	129	5.0	$2,136,000	$16,558
NC-WL-02	Varies 8-14	8,400	Mainline Shoulder		33	68	10	111	31	142	5.2	$2,358,000	$16,606
NC-WL-03	Varies 8-14	8,400	Mainline Shoulder		4	32	75	111	42	153	7.2	$2,700,000	$17,647
NC-WL-04	Varies 8-14	8,400	Mainline Shoulder		1	2	108	111	48	159	9.3	$3,523,800	$22,162

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modelling for Barrier WL (includes 66 Receptor Points in the Waterford Lakes, Bridgewater, and Waterford Creek Communities):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modelled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. Under NC-WL-02, NC-WL-03 and NC-WL-04, 111 of the 111 impacted residences are benefited (i.e., reduction of 5 dB(A) or more).
4. Depending on barrier height, noise reduction at up to 108 of the impacted residences would meet FDOT noise reduction design goal of 7 dB(A).
5. Unit cost of $30ft^2 for noise barriers. All estimated costs rounded to the nearest dollar.
6. An 8,400-foot long, 8-14-foot high noise barrier is shown in **Appendix C**, **Aerial Sheets C-2 thru C-4,** and highlighted above.

The cost per benefited residence (i.e., reduction ≥ 5 dB(A)) for NC-WL-04 is $22,162 which is less than the FDOT cost reasonable limit of $42,000 per benefited residence.

$3,523,800 overall and $22,162 per benefited site, which is within the $42,000 per benefited site cost criteria. Although NC-WL-02 also benefits all impacted receptors and has an overall lower cost per benefited receptor, NC-WL-04 provides much greater reductions in noise levels with a total of 108 homes, achieving a noise level reduction greater than 7.0 dB(A).

Deerwood Manufactured Home Park (south of SR 408 Extension)

The Deerwood Manufactured Home Park (**Appendix C**, **Aerial Sheet C-5**) is a manufactured home community located south of the proposed SR 408 Eastern Extension at Pel Street west of Avalon Park Boulevard (from Sta. 470+00 to 484+00). With the planned improvements, the nearest travel lane will be approximately 70 feet away from these homes, necessitating removal of four rows of manufactured homes. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 58.6 to 67.5 dB(A). Eleven of the nearby residences are expected to experience Design Year noise levels with the proposed improvements to approach or exceed the NAC [67.0 dB(A)]. Forty-five (45) homes are expected to experience Design Year substantial noise levels increases greater than 15.0 dB(A). The predicted Design Year, Build Alternative traffic noise levels are expected to increase up to 22.6 dB(A) above the existing levels. Therefore, traffic noise levels in this community are expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this community are summarized in **Table 5.4.** Because of the elevated lanes of the SR 408 Extension, noise barrier design concepts were considered along the elevated mainline shoulder of the eastbound lanes of the SR 408 Eastern Extension and eastbound exit to Avalon Park Boulevard.

The recommended noise barrier design concept, referred to as NC-DWS-02, is highlighted in **Table 5.4** and is shown on **Sheet C-5** in **Appendix C**. This 2,000-foot long, 14-foot tall noise barrier would be located on the edge of the eastbound mainline shoulder and eastbound off-ramp to Avalon Park Boulevard between Sta. 467+00 and

Table 5-4 Noise Barrier Analysis – Deerwood Manufactured Park Homes (South of SR 408 Extension)

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
NC-DWS-01	8	2,000	Mainline Shoulder	56	16	11	0	27	0	27	4.9	$480,000	$17,778
NC-DWS-02	14	2,000	Mainline Shoulder		5	11	36	52	6	58	7.1	$840,000	$14,483
NC-DWS-03	Varies 8-16	2,000	Mainline Shoulder		13	13	29	55	6	61	7.0	$816,000	$13,377

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modelling for Barrier DWS (includes 30 Receptor Points in the Deerwood Community):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modelled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. At a height of 14 feet, 52 of the 56 impacted residences are benefited (i.e., reduction of 5 dB(A) or more).
4. Depending on barrier height, noise reduction at up to 36 of the impacted residences would meet the FDOT noise reduction design goal of 7 dB(A).
5. Unit cost of $30ft^2 for noise barriers. All estimated costs rounded to the nearest dollar.
6. A 2,000-foot long, 14-foot high noise barrier is shown in **Appendix C**, **Aerial Sheet C-5,** and highlighted above.

The cost per benefited residence (i.e., reduction ≥ 5 dB(A)) for NC-DWS-02 is $14,483 which is less than the FDOT cost reasonable limit of $42,000 per benefited residence.

Sta. 487+00. This noise barrier design concept is predicted to benefit 52 of the impacted residences in this community. The estimated cost of this noise barrier design concept is $840,000 overall and $14,483 per benefited site, which is within the $42,000 per benefited site cost criteria. In addition, it is recommended to further consider NC-DWS-03 as it benefits 55 out of the 56 impacted residences and costs $13,377 per benefited receptor; however, a design variance may be required for the barrier section between Station 479+00 and Station 487+00 that has a height of 16 feet, exceeding the 14 foot limit for barriers on-shoulder. Further refinement of the noise barrier concept will be performed during the design when survey and more detailed elevation data is available.

Deerwood Manufactured Home Park (north of SR 408 Extension)

The Deerwood Manufactured Home Park (**Appendix C**, **Aerial Sheet C-5**) is a manufactured home community located north of the proposed SR 408 Extension at Pel Street west of Avalon Park Boulevard (from Sta. 470+00 to 484+00). With the planned improvements, the nearest travel lane will be approximately 70 feet away from these homes, necessitating removal of four rows of manufactured homes. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 61.9 to 67.8 dB(A). Eight of the nearby residences are expected to experience Design Year noise levels with the proposed improvements to approach or exceed the NAC [67.0 dB(A)]. Thirty-six (36) homes and the Deerwood community pool are expected to experience Design Year substantial noise levels increases greater than 15.0 dB(A). The predicted Design Year, Build Alternative traffic noise levels are expected to increase up to 22.9 dB(A) above the existing levels. Therefore, traffic noise levels in this community are expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this community are summarized in **Table 5.5.** Because of the elevated lanes of the SR 408 Extension, noise barrier design concepts were considered along the elevated mainline shoulder of the westbound lanes of the SR 408 Extension and westbound entrance from Avalon Park Boulevard.

Table 5-5 Noise Barrier Analysis – Deerwood Manufactured Park Homes (North of SR 408 Extension)

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
NC-DWN-01	8	2,180	Mainline Shoulder	45	16	16	2	34	0	34	5.3	$523,200	$15,388
NC-DWN-02	Varies 8-12	2,080	Mainline Shoulder		3	21	17	41	0	41	5.6	$733,400	$17,888
NC-DWN-03	Varies 8-16	2,000	Mainline Shoulder		4	16	25	45	0	45	7.0	$810,000	$18,000

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modelling for Barrier DWN (includes 24 Receptor Points in the Deerwood Community):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modelled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. Under concept NC-DWN-03, 45 of the 45 impacted residences are benefited (i.e., reduction of 5 dB(A) or more).
4. Depending on barrier height, noise reduction at up to 25 of the impacted residences would meet the FDOT noise reduction design goal of 7 dB(A).
5. Unit cost of $30ft^2 for noise barriers. All estimated costs rounded to the nearest dollar.
6. A 2,000-foot long, 8 to 16-foot high noise barrier is shown in **Appendix C**, **Aerial Sheet C-5,** and highlighted above.

The cost per benefited residence (i.e., reduction ≥ 5 dB(A)) for NC-DWN-03 is $18,000 which is less than the FDOT cost reasonable limit of $42,000 per benefited residence.

The recommended noise barrier design concept, referred to as NC-DWN-03, is highlighted in **Table 5.5** and is shown on **Sheet C-5** in **Appendix C**. This 2,000-foot long, 8 to 16-foot tall noise barrier would be located on the edge of the westbound mainline shoulder and westbound on-ramp from Avalon Park Boulevard between Sta. 467+00 and Sta. 487+00. The heights of the noise barrier concept are as follows: 12 feet from Station 467+00 to 476+00; 8 feet from Station 476+00 to 477+00 (on-structure); 14 feet from Station 477+00 to 480+00; and 16 feet from Station 480+00 to 487+00. The increase in height of the barrier wall is required along the westbound on-ramp in order to break the lines of sight with the mainline that is increasing in elevation in order to bridge Avalon Park Boulevard. This noise barrier design concept is predicted to benefit all 45 of the impacted residences in this community. The estimated cost of this noise barrier design concept is $810,000 overall and $18,000 per benefited site, which is within the $42,000 per benefited site cost criteria. It should be noted that a design variance may be required for the barrier section between Station 480+00 and Station 487+00 that has a height of 16 feet, exceeding the 14-foot limit for barriers on-shoulder. Further refinement of the barrier concept will be performed during the design when survey and more detailed elevation data is available.

Waterford Trails and Single-Family Homes (south of SR 408 Extension)

Waterford Trails (**Appendix C**, **Aerial Sheets C-6 and C-7**) is a community of single-family homes located east of Avalon Park Boulevard at Perdido Drive (Station 497+00, south of the planned SR 408 Extension). The nearest travel lane for the planned SR 408 Eastern Extension will be approximately 180 feet away from homes in Waterford Trails. In addition, there are single-family homes located south of the planned SR 408 Eastern Extension along Caudle Street and Colonial Drive. The nearest travel lane for the planned SR 408 Eastern Extension will be approximately 120 feet away from these residences. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 55.3 to 71.0 dB(A). Twenty (20) of the nearby residences are expected to experience Design Year noise levels with the proposed improvements to approach or exceed the NAC [67.0 dB(A)]. Twenty-seven (27) homes are expected to experience Design Year substantial noise levels increases greater than 15.0 dB(A). The predicted

Design Year, Build Alternative traffic noise levels are expected to increase up to 21.3 dB(A) above the existing levels. Therefore, traffic noise levels in this community are expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this community and single-family homes are summarized in **Table 5.6.** Because of the elevated lanes of the SR 408 Eastern Extension, noise barrier design concepts were considered along the elevated mainline shoulder of the eastbound lanes of the SR 408 Eastern Extension and eastbound on-ramp from Avalon Park Boulevard.

The recommended noise barrier design concept, referred to as NC-WTS-03, is highlighted in **Table 5.6** and is shown on **Sheets C-6** and **C-7** in **Appendix C**. This 5,600-foot long, 8 to 14-foot tall noise barrier would be located along the edge of the eastbound mainline shoulder and eastbound on-ramp from Avalon Park Boulevard between Sta. 489+00 and Sta. 545+00. The heights of the noise barrier concept are as follows: 14 feet from Station 489+00 to 495+00; 8 feet from Station 495+00 to 498+00 (on-structure); 14 feet from Station 498+00 to 535+00; and 8 feet from Station 535+00 to 545+00 (on-structure). This noise barrier design concept is predicted to benefit 37 of the impacted residences in this community. The estimated cost of this noise barrier design concept is $2,118,000 overall and $33,094 per benefited site, which is within the $42,000 per benefited site cost criteria.

Waterford Trails, Single-Family Homes, and Big Econ Mobile Home Park (north of SR 408 Eastern Extension)

Waterford Trails (**Appendix C**, **Aerial Sheets C-6 and C-7**) is a community of single-family homes located east of Avalon Park Boulevard at Faberg Drive (Station 497+00, north of the planned SR 408 Eastern Extension). The nearest travel lane for the planned SR 408 Eastern Extension will be approximately 80 feet away from homes in Waterford Trails. In addition, there are single-family homes located north of the planned SR 408 Eastern Extension along Caudle Street, Orleans Avenue, and Colonial Drive. The nearest travel lane for the planned SR 408 Eastern Extension will be approximately 110 feet away from these residences. Big Econ Mobile Home Park is located along Old Cheney Highway north of the planned SR 408 Eastern Extension at approximately Station 532+00.

Table 5-6 Noise Barrier Analysis – Waterford Trails and Single-Family Homes (South of SR 408 Extension)

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
NC-WTS-01	8	5,600	Mainline Shoulder	47	13	5	2	20	16	36	5.9	$1,344,000	$37,333
NC-WTS-02	Varies 8-10	5,600	Mainline Shoulder		9	17	2	28	22	50	5.3	$1,602,000	$32,040
NC-WTS-03	Varies 8-14	5,600	Mainline Shoulder		9	9	19	37	27	64	7.0	$2,118,000	$33,094

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modelling for Barrier WTS (includes 36 Receptor Points):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modelled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. Under concept NC-WTS-03, 37 of the 47 impacted residences are benefited (i.e., reduction of 5 dB(A) or more).
4. Depending on barrier height, noise reduction at up to 19 of the impacted residences would meet the FDOT noise reduction design goal of 7 dB(A).
5. Unit cost of $30ft^2 for noise barriers. All estimated costs rounded to the nearest dollar.
6. A 5,600-foot long, 8 to 14-foot high noise barrier is shown in **Appendix C**, **Aerial Sheets C-6** and **C-7,** and highlighted above.

The cost per benefited residence (i.e., reduction ≥ 5 dB(A)) for NC-WTS-03 is $33,094 which is less than the FDOT cost reasonable limit of $42,000 per benefited residence.

The nearest travel lane for the planned SR 408 Eastern Extension will be approximately 250 feet away from these mobile homes. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 58.6 to 67.3 dB(A). Six of the nearby residences are expected to experience Design Year noise levels with the proposed improvements to approach or exceed the NAC [67.0 dB(A)]. Forty-five (45) homes are expected to experience Design Year substantial noise levels increases greater than 15.0 dB(A). The predicted Design Year, Build Alternative traffic noise levels are expected to increase up to 22.3 dB(A) above the existing levels. Therefore, traffic noise levels in this community are expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this community and single-family homes are summarized in **Table 5.7.** Because of the elevated lanes of the SR 408 Eastern Extension, noise barrier design concepts were considered along the elevated mainline shoulder of the westbound lanes of the SR 408 Eastern Extension and westbound off-ramp to Avalon Park Boulevard.

The recommended noise barrier design concept, referred to as NC-WTN-04, is highlighted in **Table 5.7** and is shown on **Sheets C-6** and **C-7** in **Appendix C**. This 5,000-foot long, 8 to 14-foot tall noise barrier would be located along the edge of the westbound mainline shoulder and westbound off-ramp to Avalon Park Boulevard between Sta. 495+00 and Sta. 545+00. The heights of the noise barrier concept are as follows: 8 feet from Station 495+00 to 498+00 (on-structure); 14 feet from Station 498+00 to 535+00; and 8 feet from Station 535+00 to 545+00 (on-structure). This noise barrier design concept is predicted to benefit 45 of the impacted residences in this community. The estimated cost of this noise barrier design concept is $1,794,000 overall and $26,000 per benefited site, which is within the $42,000 per benefited site cost criteria.

This space intentionally left blank

Table 5-7 Noise Barrier Analysis – Waterford Trails and Single-Family Homes (North of SR 408 Eastern Extension)

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
NC-WTN-01	8	5,000	Mainline Shoulder	51	8	5	0	13	15	28	5.6	$1,200,000	$42,857
NC-WTN-02	Varies 8-10	5,000	Mainline Shoulder		24	14	2	40	20	60	5.0	$1,420,000	$23,675
NC-WTN-03	Varies 8-12	5,000	Mainline Shoulder		12	17	16	45	24	69	5.7	$1,608,000	$23,304
NC-WTN-04	Varies 8-14	5,000	Mainline Shoulder		5	25	15	45	24	69	5.9	$1,794,000	$26,000

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modelling for Barrier WTN (includes 38 Receptor Points):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modelled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. Under concept NC-WTN-03 and NC-WTN-04, 45 of the 51 impacted residences are benefited (i.e., reduction of 5 dB(A) or more).
4. Depending on barrier height, noise reduction at up to 15 of the impacted residences would meet FDOT noise reduction design goal of 7 dB(A).
5. Unit cost of $30ft^2 for noise barriers. All estimated costs rounded to the nearest dollar.
6. A 5,000-foot long, 8 to 14-foot high noise barrier is shown in **Appendix C**, **Aerial Sheets C-6** and **C-7,** and highlighted above.

The cost per benefited residence (i.e., reduction ≥ 5 dB(A)) for NC-WTN-04 is $26,000 which is less than the FDOT cost reasonable limit of $42,000 per benefited residence.

Seaward Plantation Estates (north of SR 408 Eastern Extension)

Seaward Plantation Estates (**Appendix C**, **Aerial Sheet C-8**) is a neighborhood of single-family homes located along Old Cheney Highway between Stations 555+00 and 580+00, north of the planned SR 408 Eastern Extension. The nearest travel lane for the SR 408 Eastern Extension will be approximately 160 feet away from homes in Seaward Plantation Estates. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 54.6 to 65.5 dB(A). Ten homes are expected to experience Design Year substantial noise levels increases greater than 15.0 dB(A). The predicted Design Year, Build Alternative traffic noise levels are expected to increase up to 15.8 dB(A) above the existing levels. Therefore, traffic noise levels in this community are expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this community and single-family homes are summarized in **Table 5.8.** Because of the elevated lanes of the SR 408 Eastern Extension, noise barrier design concepts were considered along the elevated mainline shoulder of the westbound lanes of the SR 408 Eastern Extension and westbound on-ramp from Chuluota Road Extension.

The recommended noise barrier design concept, referred to as NC-SP-03, is highlighted in **Table 5.8** and is shown on **Sheet C-8** in **Appendix C**. This 1,850-foot long, 8 to 14-foot tall noise barrier would be located along the edge of the westbound mainline shoulder and westbound on-ramp from Chuluota Road Extension between Sta. 559+50 and Sta. 578+00. The heights of the noise barrier concept are as follows: 8 feet from Station 559+50 to 568+00 (on-structure); 14 feet from Station 568+00 to 576+00; and 8 feet from Station 576+00 to 578+00. This noise barrier design concept is predicted to benefit seven of the impacted residences in this neighborhood. The estimated cost of this noise barrier design concept is $588,000 overall and $42,000 per benefited site, which meets the $42,000 per benefited site cost criteria.

Table 5-8 Noise Barrier Analysis – Seaward Plantation Estates (North of SR 408 Eastern Extension)

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
NC-SP-01	Varies 8-10	2,800	Mainline Shoulder	10	4	0	0	4	6	10	5.1	$720,000	$72,000
NC-SP-02	Varies 8-10	2,400	Mainline Shoulder		5	2	0	7	3	10	5.6	$624,000	$62,400
NC-SP-03	Varies 8-14	1,850	Mainline Shoulder		2	3	2	7	7	14	5.1	$588,000	$42,000

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modelling for Barrier SP (includes 15 Receptor Points):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modelled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. Under concept NC-SP-03, 7 of the 10 impacted residences are benefited (i.e., reduction of 5 dB(A) or more).
4. Depending on barrier height, noise reduction at up to 2 of the impacted residences would meet the FDOT noise reduction design goal of 7 dB(A).
5. Unit cost of $30ft^2 for noise barriers. All estimated costs rounded to the nearest dollar.
6. A 1,850-foot long, 8 to 14-foot high noise barrier is shown in **Appendix C**, **Aerial Sheet C-8,** and highlighted above.

The cost per benefited residence (i.e., reduction ≥ 5 dB(A)) for NC-SP-03 is $42,000 which meets the FDOT cost reasonable limit of $42,000 per benefited residence.

Pine Island Mobile Villas (north of SR 408 Eastern Extension)

Pine Island Mobile Villas (**Appendix C**, **Aerial Sheet C-10**) is a neighborhood of mobile homes located along Pine Island Drive at Station 641+00, north of the planned SR 408 Eastern Extension. The nearest travel lane for the planned SR 408 Eastern Extension will be approximately 110 feet away from the residences in Pine Island Mobile Home Villas. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 62.0 to 69.0 dB(A). Ten of the nearby residences are expected to experience Design Year noise levels with the proposed improvements to approach or exceed the NAC [67.0 dB(A)]. Two homes are expected to experience Design Year substantial noise levels increases greater than 15.0 dB(A). The predicted Design Year, Build Alternative traffic noise levels are expected to increase up to 18.6 dB(A) above the existing levels. Therefore, traffic noise levels in this community are expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this mobile home neighborhood are summarized in **Table 5.9.** Noise barrier concepts considered were evaluated closer to the limited-access right-of-way line as they are predicted to be very effective for this neighborhood.

The recommended noise barrier design concept, referred to as NC-PIMHP-03, is highlighted in **Table 5.9** and is shown on **Sheet C-10** in **Appendix C**. This 900-foot long, 16 to 20-foot tall noise barrier would be located along the edge of the westbound mainline right-of-way between Sta. 636+00 and Sta. 645+00. The heights of the noise barrier concept are as follows: 20 feet from Station 636+00 to 642+00; and 16 feet from Station 642+00 to 645+00. This noise barrier design concept is predicted to benefit all 12 of the impacted residences in this neighborhood. The estimated cost of this noise barrier design concept is $504,000 overall and $42,000 per benefited site, which is meets the $42,000 per benefited site cost criteria.

Table 5-9 Noise Barrier Analysis – Pine Island Mobile Villas (North of SR 408 Eastern Extension)

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
NC-PIMHP-01	12	1,360	Right of Way	12	0	0	2	2	0	2	7.0	$489,000	$244,800
NC-PIMHP-02	22	1,360	Right of Way		0	4	8	12	4	14	7.5	$897,600	$56,100
NC-PIMHP-03	Varies 16-20	900	Right of Way		6	0	6	12	0	12	5.8	$504,000	$42,000

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modelling for Barrier PIMHP (includes 10 Receptor Points):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modelled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. Under concept NC-PIMHP-03, 12 of the 12 impacted residences are benefited (i.e., reduction of 5 dB(A) or more).
4. Depending on barrier height, noise reduction at up to 6 of the impacted residences would meet the FDOT noise reduction design goal of 7 dB(A).
5. Unit cost of $30ft^2 for noise barriers. All estimated costs rounded to the nearest dollar.
6. A 900-foot long, 16 to 20-foot high noise barrier is shown in **Appendix C**, **Aerial Sheet C-10,** and highlighted above.

The cost per benefited residence (i.e., reduction ≥ 5 dB(A)) for NC-PIMHP-03 is $42,000 which meets the FDOT cost reasonable limit of $42,000 per benefited residence.

Bithlo (north of SR 408 Eastern Extension)

Bithlo (**Appendix C**, **Aerial Sheets C-6 and C-7**) is a neighborhood of single-family homes located at North CR 13 (Station 715+00, north of the planned SR 408 Eastern Extension). The nearest travel lane for the SR 408 Eastern Extension will be approximately 120 feet away from homes in Bithlo. The Design Year, Build Alternative traffic noise levels at these homes are predicted to range from 59.1 to 65.3 dB(A). Two of the nearby residences are expected to experience Design Year noise levels with the proposed improvements to approach or exceed the NAC [67.0 dB(A)]. Seventy-four (74) homes are expected to experience Design Year substantial noise levels increases greater than 15.0 dB(A). The predicted Design Year, Build Alternative traffic noise levels are expected to increase up to 20.6 dB(A) above the existing levels. Therefore, traffic noise levels in this community are expected to substantially increase above the existing conditions.

The results of the noise barrier evaluation for this community and single-family homes are summarized in **Table 5.10.** Because of the elevated lanes of the SR 408 Eastern Extension, noise barrier design concepts were considered along the elevated mainline shoulder of the westbound lanes of the SR 408 Eastern Extension and closer to the limited-access right-of-way line of the westbound on-ramp from SR 50.

The recommended noise barrier design concept, referred to as NC-C-04, is highlighted in **Table 5.10** and is shown on **Sheets C-12** through **C-14** in **Appendix C**. This 3,500-foot long, 8 to 18-foot tall noise barrier would be located along the edge of the westbound mainline shoulder and transition closer to the limited-access right-of-way line of the westbound on-ramp from SR 50 between Station 697+00 and Station 732+00. The heights of the noise barrier concept are as follows: 14 feet from Station 697 +00 to 701+00; 8 feet from Station 701+00 to 702+00 (on-structure); 14 feet from Station 702+00 to 713+00; 8 feet from Station 713+00 to 715+00 (on-structure); 14 feet from Station 715+00 to 726+00; and 18 feet from Station 726+00 to 732+00. This noise barrier design concept is predicted to benefit all 76 of the impacted residences in this

Table 5-10 Noise Barrier Analysis – Bithlo (North of SR 408 Eastern Extension)

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost[4]	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
NC-C-01	8	3,900	Mainline Shoulder	76	23	3	0	26	0	26	5.5	$936,000	$36,000
NC-C-02	Varies 8-10	3,900	Mainline Shoulder		21	20	9	50	0	50	5.1	$1,152,000	$23,040
NC-C-03	Varies 8-18	3,500	Mainline Shoulder & Right of Way		10	32	34	76	3	79	5.6	$1,398,000	$17,696
NC-C-04	Varies 8-18	3,500	Mainline Shoulder & Right of Way		10	19	47	76	3	79	5.8	$1,488,000	$18,835

[2] Residences with a predicted noise level that approaches or exceeds the NAC. [3] Not impacted benefited receptors

Notes on Noise Barrier Modelling for Barrier B (includes 35 Receptor Points):

1. Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway right-of-way to the impacted noise-sensitive sites.
2. Impacted residences are defined as residences where the modelled noise levels exceed the Noise Abatement Criteria (≥ 66 dB(A)) or when traffic noise levels are predicted to increase by at least 15 dB(A) from existing noise levels.
3. Under concept NC-C-03 and NC-C-04, 76 of the 76 impacted residences are benefited (i.e., reduction of 5 dB(A) or more).
4. Depending on barrier height, noise reduction at up to 47 of the impacted residences would meet the FDOT noise reduction design goal of 7 dB(A).
5. Unit cost of $30ft^2 for noise barriers. All estimated costs rounded to the nearest dollar.
6. A 3,500-foot long, 8 to 18-foot high noise barrier is shown in **Appendix C**, **Aerial Sheets C-12** thru **C-14,** and highlighted above.

The cost per benefited residence (i.e., reduction ≥ 5 dB(A)) for NC-C-04 is $18,835 which is less than the FDOT cost reasonable limit of $42,000 per benefited residence.

neighborhood. The estimated cost of this noise barrier design concept is $1,488,000 overall and $18,835 per benefited site, which is within the $42,000 per benefited site cost criteria.

Additional Impacted Receptors

Additional impacted receptor areas for which noise abatement was considered but did not meet feasibleness or reasonableness criteria include:

- Isolated Seaward Plantation Estates residence represented by receptor SP-24 located north of the planned SR 408 Eastern Extension at Station 606+00.

- Isolated Partin Oaks single-family home represented by receptor PO-1, although isolated, this receptor was also considered in the Pine Islands Mobile Villas noise environment and noise abatement consideration.

- Brantley's Trailer Park and Mobile Home Park located north of the planned SR 408 Eastern Extension at Station 656+00. Noise abatement was considered but did not meet design noise reduction goal of 7 dB(A) and cost per benefited receptor criteria.

- Bithlo located south of the planned SR 408 Eastern Extension at approximately Station 730+00. Noise abatement was considered but did not meet design noise reduction goal of 7 dB(A) and cost per benefited receptor criteria.

6.0 SUMMARY AND RECOMMENDATIONS

Traffic noise levels were predicted for the noise-sensitive locations along the project corridor for the 2015 (existing) conditions, and for the 2045 (Design Year) No Build Alternative and Build Alternative. Approximately 824 residences, including single-family homes and mobile homes were identified as being sensitive to traffic noise along the proposed SR 408 Eastern Extension within the limits of this project. Also, seven non-residential or special-use noise-sensitive sites, including a sports field, a recreation center, community playgrounds, and a medical office were identified along the project corridor. Design Year traffic noise levels at nearby residences are predicted to range from 45.3 to 75.0 dB(A). The Build Alternative noise levels at special land use sites are predicted to range from 39.7 dB(A) at an interior location at the Orlando Center for Women's Health to 64.6 dB(A) at the Deerwood Manufactured Home Park pool area during the Design Year. Noise impacts are predicted to occur at 159 residences. No other noise-sensitive sites within the project study area are predicted to experience traffic noise levels equal to or exceeding the NAC. Three hundred forty-seven (347) residences and 3 SLU (Waterford Creek Playground, Bridgewater Recreation Center, and Deerwood Manufactured Home Park pool) are expected to experience a substantial noise level increase [i.e., greater than 15.0 dB(A) over existing levels] with the Build Alternative.

Noise barriers were considered for all noise-sensitive receptor sites where Design Year traffic noise levels were predicted to equal or exceed the NAC. As such, noise barriers were considered at 13 locations to mitigate noise impacts. **Table 6.1** summarizes the results of the noise barrier analyses for the recommended noise barriers. Also, the locations where noise barriers were considered and/or proposed are depicted on the figures in **Appendix C**.

Table 6-1 Recommended Noise Barriers

Barrier Alternative	Barrier Height (feet)	Est, Barrier Length[1] (feet)	Barrier Location	Number of Impacted Residences	Number of Impacted Residences Within a Noise Reduction Range			Number of Benefited Residences				Total Estimated Cost	Cost Per Benefited Residence
					5-5.9 dB(A)	6-5.9 dB(A)	≥ 7 dB(A)	Impacted[2]	Other[3]	Total	Average Reduction dB(A)		
Noise Barrier for Crest at Waterford Lakes													
NC-CWL-03	14	2,500	Right of Way	39	2	0	78	80	23	103	9.1	$1,050,000	$10,194
Noise Barrier for Waterford Lakes, Bridgewater, and Waterford Creek													
NC-WL-04	Varies 8-14	8,400	Mainline Shoulder	111	1	2	108	111	48	159	9.3	$3,523,800	$22,162
Noise Barrier for Deerwood Manufactured Park Homes (South of SR 408 Extension)													
NC-DWS-02	14	2,000	Mainline Shoulder	56	5	11	36	52	6	58	7.1	$840,000	$14,483
Noise Barrier for Deerwood Manufactured Park Homes (North of SR 408 Extension)													
NC-DWN-03	Varies 8-16	2,000	Mainline Shoulder	45	4	16	25	45	0	45	7.0	$810,000	$18,000
Noise Barrier for Waterford Trails and Single-Family Homes (South of SR 408 Extension)													
NC-WTS-03	Varies 8-14	5,600	Mainline Shoulder	47	9	9	19	37	27	64	7.0	$2,118,000	$33,094
Noise Barrier for Waterford Trails and Single-Family Homes (North of SR 408 Extension)													
NC-WTN-04	Varies 8-14	5,000	Mainline Shoulder	51	5	25	15	45	24	69	5.9	$1,794,000	$26,000
Noise Barrier for Seaward Plantation Estates (North of SR 408 Extension)													
NC-SP-03	Varies 8-14	1,850	Mainline Shoulder	10	2	3	2	7	7	14	5.1	$588,000	$42,000
Noise Barrier for Pine Island Mobile Villas (North of SR 408 Extension)													
NC-PIMHP-03	Varies 16-20	900	Right of Way	12	6	0	6	12	0	12	5.8	$504,000	$42,000
Noise Barrier for Bithlo (North of SR 408 Extension)													
NC-C-04	Varies 8-18	3,500	Mainline Shoulder & Right of Way	76	10	19	47	76	3	79	5.8	$1,488,000	$18,835

[1] Noise barrier design is one of two alternatives: mainline shoulder or ground-mounted noise barriers located outside of the roadway's clear recovery zone and as close as possible within the roadway fno-buiright-of-way to the impacted noise sensitive sites.
[2] Residences with a predicted noise level that approaches or exceeds the NAC.
[3] Not impacted benefited receptors

Additional impacted receptor areas for which noise abatement was considered but did not meet feasibleness or reasonableness criteria include:

- Isolated Seaward Plantation Estates residence represented by receptor SP-24 located north of the planned SR 408 Eastern Extension at Station 606+00.
- Isolated Partin Oaks single-family home represented by receptor PO-1, although isolated, this receptor was also considered in the Pine Islands Mobile Villas noise environment and noise abatement consideration.
- Brantley's Trailer Park and Mobile Home Park located north of the planned SR 408 Eastern Extension at Station 656+00. Noise abatement was considered but did not meet design noise reduction goal of 7 dB(A) and cost per benefited receptor criteria.
- Bithlo located south of the planned SR 408 Eastern Extension at approximately Station 730+00. Noise abatement was considered but did not meet design noise reduction goal of 7 dB(A) and cost per benefited receptor criteria.

Therefore, noise barriers are not recommended for further consideration or construction at these locations. Based on the noise analyses performed to date, there are no apparent solutions available to mitigate the noise impacts at the remaining 4 areas. The traffic noise impacts to these noise-sensitive sites are considered to be an unavoidable consequence of the project.

7.0 REFERENCES

1. *Procedures for Abatement of Highway Traffic Noise and Construction Noise*; Title 23 Code of Federal Regulations Part 772; FHWA; July 2010.

2. *Project Development and Environment Manual, Part 2, Chapter 18*; FDOT; June 14, 2017.

3. *Traffic Noise Modeling and Analysis Practitioners Handbook; FDOT Environmental Management Office; January 2016*

4. *Plans Preparation (Topic No. 625-000-007) Manual Volume 1, Chapter 32, Noise Walls and Perimeter Walls; FDOT;* January 2016

5. *A Method to Determine Reasonableness and Feasibility of Noise Abatement at Special Use Locations;* University of Central Florida, 2009, Roger L. Wayson and John M. MacDonald. July 22, 2009 Update

6. FHWA Report Number FHWA-PD-96-046, *Measurement of Highway-Related Noise;* FHWA, Cynthia S.Y. Lee and Gregg Fleming; May, 1995.

APPENDIX A: TRAFFIC DATA & FIELD MEASUREMENT SHEETS

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	Woodbury Road to East of Avalon Park Boulevard
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	0.07	% of Design Hour Vol.
Posted Speed:	-	MC=	0.29	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	0.07	% of Design Hour Vol.
Posted Speed:	-	MC=	0.29	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	3,020	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	2,345	B=	0.07	% of Design Hour Vol.
Posted Speed:	70	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	Avalon Park Boulevard to East of Chuluota Road
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	0.07	% of Design Hour Vol.
Posted Speed:	-	MC=	0.29	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	0.07	% of Design Hour Vol.
Posted Speed:	-	MC=	0.29	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	3,020	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	1,565	B=	0.07	% of Design Hour Vol.
Posted Speed:	70	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):
FPID Number(s): 408-254
State/Federal Route No.: SR 408
Road Name: SR 408 East Extension
Project Description: Project Development and Environment Study
Segment Description: Chuluota Road to SR 50
Section Number:
Mile Post To/From:

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	0.07	% of Design Hour Vol.
Posted Speed:	-	MC=	0.29	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	0.07	% of Design Hour Vol.
Posted Speed:	-	MC=	0.29	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	3,020	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	570	B=	0.07	% of Design Hour Vol.
Posted Speed:	70	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	EB SR 408 Extension Off-Ramp to SR 408/SR 50
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	1,470	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	EB SR 408 Extension On-Ramp form Woodbury Road
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	305	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	WB SR 408 Extension On-Ramp from SR50
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	1,470	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	EB SR 408 Extension On-Ramp from SR50
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	405	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	WB SR 408 Extension Off-Ramp to SR 408/SR 50
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	405	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):
FPID Number(s): 408-254
State/Federal Route No.: SR 408
Road Name: SR 408 East Extension
Project Description: Project Development and Environment Study
Segment Description: WB SR 408 Extension Off-Ramp to Woodbury Road
Section Number:
Mile Post To/From:

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	305	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	EB SR 408 Extension Off-Ramp to Avalon Park Blvd
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	1,025	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	WB SR 408 Extension On-Ramp from Avalon Park Blvd
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	1,025	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	EB SR 408 Extension On-Ramp from Avalon Park Blvd
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	245	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):
FPID Number(s): 408-254
State/Federal Route No.: SR 408
Road Name: SR 408 East Extension
Project Description: Project Development and Environment Study
Segment Description: WB SR 408 Extension Off-Ramp to Avalon Park Blvd
Section Number:
Mile Post To/From:

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	245	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	WB SR 408 Extension On-Ramp From Chuluota Road
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	1,010	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	EB SR 408 Extension Off-Ramp to Chuluota Road
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	1,010	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	WB SR 408 Extension Off-Ramp to Chuluota Road
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	15	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 408
Road Name:	SR 408 East Extension
Project Description:	Project Development and Environment Study
Segment Description:	EB SR 408 Extension On-Ramp from Chuluota Road
Section Number:	
Mile Post To/From:	

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	15	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):
FPID Number(s): 408-254
State/Federal Route No.: SR 408
Road Name: SR 408 East Extension
Project Description: Project Development and Environment Study
Segment Description: WB SR 408 Extension On-Ramp from SR 50
Section Number:
Mile Post To/From:

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	570	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):
FPID Number(s): 408-254
State/Federal Route No.: SR 408
Road Name: SR 408 East Extension
Project Description: Project Development and Environment Study
Segment Description: EB SR 408 Extension Off-Ramp to SR 50
Section Number:
Mile Post To/From:

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,230	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	570	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):
FPID Number(s): 408-254
State/Federal Route No.:
Road Name: Woodbury Road
Project Description: Project Development and Environment Study
Segment Description: West of SR 408 Extension
Section Number:
Mile Post To/From:

Existing Facility:				
		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2015	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	747	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	0.07	% of Design Hour Vol.
Posted Speed:	40	MC=	0.29	% of Design Hour Vol.

No Build Alternative (Design Year):				
		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	747	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	0.07	% of Design Hour Vol.
Posted Speed:	40	MC=	0.29	% of Design Hour Vol.

Build Alternative (Design Year):				
		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,624	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	0.07	% of Design Hour Vol.
Posted Speed:	40	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):
FPID Number(s): 408-254
State/Federal Route No.:
Road Name: Avalon Park Boulevard
Project Description: Project Development and Environment Study
Segment Description: 1000 feet North and South of 408 Extension
Section Number:
Mile Post To/From:

Existing Facility:		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2015	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1719	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	776	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

No Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1719	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	870	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,719	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	870	B=	0.07	% of Design Hour Vol.
Posted Speed:	45	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):
FPID Number(s): 408-254
State/Federal Route No.:
Road Name: Chuluota Road
Project Description: Project Development and Environment Study
Segment Description: SR 50 and SR 408 Extension
Section Number: Before SR 50 and SR 408 Ext.
Mile Post To/From:

Existing Facility:	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2015	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

No Build Alternative (Design Year):	NONE (New Corridor)	D=	-	%
		T24=	-	% of 24 Hour Vol.
Year:	2045	Tpeak=	-	% of Design Hour Vol.
		MT=	-	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	-	HT=	-	% of Design Hour Vol.
Demand Peak Hour Volume:	-	B=	-	% of Design Hour Vol.
Posted Speed:	-	MC=	-	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,719	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	1,130	B=	0.07	% of Design Hour Vol.
Posted Speed:	40	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

TRAFFIC DATA FOR NOISE STUDIES

Federal Aid Number(s):	
FPID Number(s):	408-254
State/Federal Route No.:	SR 50
Road Name:	East Colonial Drive
Project Description:	Project Development and Environment Study
Segment Description:	1000 feet East of SR 408 Extension
Section Number:	
Mile Post To/From:	

Existing Facility:		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2015	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1910	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	1143	B=	0.07	% of Design Hour Vol.
Posted Speed:	55	MC=	0.29	% of Design Hour Vol.

No Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1910	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	2025	B=	0.07	% of Design Hour Vol.
Posted Speed:	55	MC=	0.29	% of Design Hour Vol.

Build Alternative (Design Year):		D=	60.00	%
		T24=	4.00	% of 24 Hour Vol.
Year:	2045	Tpeak=	2.00	% of Design Hour Vol.
		MT=	0.94	% of Design Hour Vol.
LOS C Peak Hour Directional Volume:	1,910	HT=	0.99	% of Design Hour Vol.
Demand Peak Hour Volume:	2,025	B=	0.07	% of Design Hour Vol.
Posted Speed:	55	MC=	0.29	% of Design Hour Vol.

I certify that the above information is accurate and appropriate for use with the traffic noise analysis.

Prepared By: Stefan Escanes, P.E. Date: 11/6/2017

Print Name Signature

I have reviewed and concur that the above information is appropriate for use with the traffic noise analysis

CFX Reviewer: Date:

Print Name Signature

Site/Run #

Noise Measurement Data Sheet

Date: 7/5/2017 **Measurement Taken by:** SE

Project: SR 408

Site ID: FM1(a) Run 1/2/3

Weather Conditions	Clear ✓	Partly Cloudy	Cloudy	Other
Temperature	Start: 88.3/91.2/94.4	End: 90.8/94.7/96.7 (°F)		
Wind Direction	Start: SE	End: SE		
Wind Speed (Start):	Min: 1.8/0.2/0.2	Max: 2.9/3.1/3.2	Average: 2.1/1.1/1.6	(mph)
Wind Speed (End):	Min:	Max:	Average:	(mph)
Humidity	Start: 62.4/55.5/49.2	End: 54.3/48.7/40.7 (%)		

Equipment Data

			50'	**100'**
Sound Level Meter:	CEL-246	Serial Number	1443727	2533754

Date of Last Traceable Calibration: 6/21/2017

Calibration:	Start:	✓	End: ✓	Difference:	0.0
Battery:	Start:	Full	End: Full		
Weighting Scale:	A		Response:		
Calibrator:	CEL-120		Serial Number:	2044846	

Results: Leq: 46.1/44.9/44.9
in dB(A)

Run 1 ; Run 3

Major Noise Sources:

Bacground Noise Sources: Dog min 8-8:20 Plane 7:30-7:50

Other Notes/Observations:

Site/Run #

Noise Measurement Data Sheet

Date: 7/5/2017 **Measurement Taken by:** SE

Project: SR 408

Site ID: FM2(b) Run 1/2/3

Weather Conditions	Clear ✓	Partly Cloudy	Cloudy	Other
Temperature	Start: 90.3/95.2/93.7	End: 94.8/94.9/92.3 (°F)		
Wind Direction	Start: SE	End: SE		
Wind Speed (Start):	Min: 0.2/0.1/0.2	Max: 2.4/2.8/1.9	Average: 1.3/0.6/0.9	(mph)
Wind Speed (End):	Min:	Max:	Average:	(mph)
Humidity	Start: 56.1/49.2/20.1	End: 50.8/50.1/18.8 (%)		

Equipment Data

			50'	**100'**
Sound Level Meter:	CEL-246	Serial Number	1443727	2533754
Date of Last Traceable Calibration:	6/21/2017			
Calibration:	Start: ✓	End:	✓	Difference: 0.0
Battery:	Start: Full	End:	Full	
Weighting Scale:	A	Response:		
Calibrator:	CEL-120	Serial Number:	2044846	

Results: Leq: 44.2/44.9/45.4
in dB(A)

	Run 1	Run 3
Major Noise Sources:		
Bacground Noise Sources:	Passerby on phone min 1:30-1:45	bird chrips plane distant min 4:45 Golf cart min 6:30
Other Notes/Observations:		

Site/Run #

Noise Measurement Data Sheet

Date: 7/5/2017 **Measurement Taken by:** SE

Project: SR 408

Site ID: FM3(b) Run 1/2/3

Weather Conditions	Clear ✓	Partly Cloudy	Cloudy	Other
Temperature	Start: 96.5/96.0/99.7	End	(°F)	
Wind Direction	Start: SE	End: SE		
Wind Speed (Start):	Min: 0/0.2/0.0	Max: 1.9/3.1/2.7	Average: 0.4/0.5/1.1	(mph)
Wind Speed (End):	Min:	Max:	Average:	(mph)
Humidity	Start: 45.5/45.4/40.4	End: 45.7/49.4/41.0	(%)	

Equipment Data

			50'	**100'**
Sound Level Meter:	CEL-246	Serial Number	1443727	2533754

Date of Last Traceable Calibration: 6/21/2017

Calibration:	Start: ✓	End: ✓	Difference:	0.0	
Battery:	Start: Full	End: Full			
Weighting Scale:	A	Response:			
Calibrator:	CEL-120	Serial Number:	2044846		

Results: Leq: 50.3/49.7/43.6
in dB(A)

	Run 1	Run 2
Major Noise Sources:	Birds/Plane at 4:30	
Bacground Noise Sources:	Cicadas/car at 7:00am	Helicopter 1:30

Other Notes/Observations:

Site/Run #

Noise Measurement Data Sheet

Date: 7/5/2017 **Measurement Taken by:** SE

Project: SR 408

Site ID: FM4(a) Run 1/2/3

Weather Conditions	Clear ✓	Partly Cloudy	Cloudy	Other
Temperature	Start: 92.1/91.9/92.8	End: 91.5/92.5/92.3 (°F)		
Wind Direction	Start: SE	End: SE		
Wind Speed (Start):	Min: 0.0/0/0.3	Max: 1.8/3.6/1.6	Average: 0.4/0.7/0.9	(mph)
Wind Speed (End):	Min:	Max:	Average:	(mph)
Humidity	Start: 57.5/53.1	End: 55.1/51.3 (%)		

Equipment Data

			50'	**100'**
Sound Level Meter:	CEL-246	Serial Number	1443727	2533754

Date of Last Traceable Calibration: 6/21/2017

Calibration:	Start:	✓	End:	✓	Difference: 0.0
Battery:	Start:	Full	End:	Full	
Weighting Scale:	A		Response:		
Calibrator:	CEL-120		Serial Number:	2044846	

Results: Leq: 49.9/48.7/51.9
in dB(A)

	Run 1	Run 2	Run 3
Major Noise Sources:			
Bacground Noise Sources:	Occasional car 6 cars 1 mail car	3 cars roosters	10 cars-1 medium truck

Other Notes/Observations:

Site/Run #

Noise Measurement Data Sheet

Date: 7/5/2017 **Measurement Taken by:** SE

Project: SR 408

Site ID: FM5a Run 2/3/4

Weather Conditions	Clear	✓	Partly Cloudy	3/4	Cloudy	Other
Temperature	Start: 91.8/93.7		End: 92.5/95.1	(°F)		
Wind Direction	Start:	SE	End: SE			
Wind Speed (Start):	Min: 0.6/0.1		Max: 2.5/1.0		Average: 1.9/0.6	(mph)
Wind Speed (End):	Min:		Max:		Average: 2.8/0.4/0.9	(mph)
Humidity	Start: 57.7/49.1		End: 49.6/45.4	(%)		

Equipment Data

		50'	**100'**
Sound Level Meter:	CEL-246	Serial Number 1443727	2533754
Date of Last Traceable Calibration:	6/21/2017		
Calibration:	Start: ✓	End: ✓	Difference: 0.0
Battery:	Start: Full	End: Full	
Weighting Scale:	A	Response:	
Calibrator:	CEL-120	Serial Number:	2044846

Results: Leq: 46.9/40.8/47
in dB(A)

	Run 1
Major Noise Sources:	Few Cars
	2 cars idle
Bacground Noise Sources:	Min 2 and 6
	Discard
Other Notes/Observations:	Interrupted by concerned citizen

Site/Run #

Noise Measurement Data Sheet

Date: 7/15/2017 **Measurement Taken by:**

Project: SR 408

Site ID: FR-1b Run 1/2/3

Weather Conditions	Clear	Partly Cloudy ✓	Cloudy	Other
Temperature	Start: 83.5	End: 84.1	(°F)	
Wind Direction	Start: NW	End: NW		
Wind Speed (Start):	Min: 1.1	Max: 3.2	Average: 2.4	(mph)
Wind Speed (End):	Min:	Max:	Average:	(mph)
Humidity	Start: 73.7	End:	(%)	

Equipment Data

			50'	**100'**
Sound Level Meter:	CEL-246	Serial Number	1443727	2533754

Date of Last Traceable Calibration: 6/21/2017

Calibration:	Start: ✓	End: ✓	Difference:	0.0	
Battery:	Start: Full	End: Full			
Weighting Scale:	A	Response:			
Calibrator:	CEL-120	Serial Number:	2044846		

Results: Leq:
in dB(A)

Major Noise Sources:

Bacground Noise Sources:

Other Notes/Observations:

Observed Traffic Data

Observed Traffic Data Site #: FR1(b) Run #: 1-3

Vehicle Types	FR2-1		FR2-2		FR2-3	
	Volume	Speed	Volume	Speed	Volume	Speed
Auto	NB: 100 SB: 54	NB: 43 SB: 43	NB: 95 SB: 52	NB: 46 SB: 44	NB: 95 SB: 64	NB: 42 SB: 43
Medium Truck	NB: 1 SB: 3	NB: 34 SB: 34	NB: 0 SB: 1	NB: 0 SB: 39	NB: 0 SB: 0	NB: 0 SB: 0
Heavy Truck	NB: 1 SB: 0	NB: 36 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 1 SB: 1	NB: 39 SB: 22
Bus	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0
Motorcycle	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0	NB: 0 SB: 0

Site Sketch

APPENDIX B: MODELED NOISE RECEPTOR LOCATIONS AND NOISE ANALYSIS TABLES

Modeled Noise Receptor Locations and Noise Analysis Results

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
West of Existing SR 408 – Western Project Terminus to SR 50										
WBC-1	Woodbury Cove	SFH	Residential (B)	66	1990+40	1	165/165/150	66.7	66.7	65.3
WBC-2	Woodbury Cove	SFH	Residential (B)	66	1991+60	3	175/175/160	66.1	66.1	65.2
WBC-3	Woodbury Cove	SFH	Residential (B)	66	1993+40	3	195/195/195	65.8	65.8	64.5
WBC-4	Woodbury Cove	SFH	Residential (B)	66	1994+60	1	215/215/215	65.0	65.0	63.4
WBC-5	Woodbury Cove	SFH	Residential (B)	66	1990+40	1	300/300/285	54.6	54.6	61.0
WBC-6	Woodbury Cove	SFH	Residential (B)	66	1992+40	4	365/365/340	50.2	50.2	58.0
WBC-7	Woodbury Cove	SFH	Residential (B)	66	1995+20	2	300/300/300	61.6	61.6	61.5
South of Existing SR 408 – Western Project Terminus to East of Woodbury Road										
OCWH	Orange County Women's Health Offices	SLU	Medical Interior (D)	51	354+60	SLU	160/160/160	33.5	33.5	39.7
CWL-1 (a)	Crest at Waterford Lakes	MFH	Residential (B)	66	356+80	2	310/310/310	56.5	56.5	62.0
CWL-1 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	356+80	2	310/310/310	61.5	61.5	**67.2**
CWL-1 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	356+80	2	310/310/310	62.3	62.3	**68.2**
CWL-2 (a)	Crest at Waterford Lakes	MFH	Residential (B)	66	357+50	2	360/360/350	55.3	55.3	60.7
CWL-2 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	357+50	2	360/360/350	60.5	60.5	**66.3**
CWL-2 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	357+50	2	360/360/350	61.6	61.6	**67.3**
CWL-3 (a)	Crest at Waterford Lakes	MFH	Residential (B)	66	359+40	2	230/230/215	61.0	61.0	**66.8**
CWL-3 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	359+40	2	230/230/215	64.6	64.6	**70.4**
CWL-3 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	359+40	2	230/230/215	65.7	65.7	**71.5**
CWL-4 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	359+90	2	300/300/290	58.2	58.2	63.7
CWL-4 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	359+90	2	300/300/290	63.0	63.0	**68.7**
CWL-4 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	359+90	2	300/300/290	63.9	63.9	**69.7**
CWL-5 (a)	Crest at Waterford Lakes	MFH	Residential (B)	66	360+30	2	215/215/200	61.7	61.7	**67.5**
CWL-5 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	360+30	2	215/215/200	65.3	65.3	**71.0**
CWL-5 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	360+30	2	215/215/200	66.3	66.3	**72.1**
CWL-6 (a)	Crest at Waterford Lakes	MFH	Residential (B)	66	360+70	2	285/285/270	58.8	58.8	64.4
CWL-6 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	360+70	2	285/285/270	63.4	63.4	**69.1**
CWL-6 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	360+70	2	285/285/270	64.4	64.4	**70.1**
CWL-7 (a)	Crest at Waterford Lakes	MFH	Residential (B)	66	362+50	4	320/320/305	58.0	58.0	63.4
CWL-7 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	362+50	4	320/320/305	63.1	63.1	**68.7**
CWL-7 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	362+50	4	320/320/305	64.0	64.0	**69.7**
CWL-8 (a)	Crest at Waterford Lakes	MFH	Residential (B)	66	364+60	2	350/350/335	57.5	57.5	62.8
CWL-8 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	364+60	2	350/350/335	62.5	62.5	**68.2**
CWL-8 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	364+60	2	350/350/335	63.6	63.6	**69.3**
CWL-9 (a)	Crest at Waterford Lakes	MFH	Residential (B)	66	364+30	2	190/190/175	63.2	63.2	**68.8**
CWL-9 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	364+30	2	190/190/175	66.6	66.6	**72.3**
CWL-9 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	364+30	2	190/190/175	67.6	67.6	**73.3**
CWL-10 (a)	Crest at Waterford Lakes	MFH	Residential (B)	66	365+30	2	205/205/190	62.8	62.8	**68.6**
CWL-10 (b)	Crest at Waterford Lakes	MFH	Residential (B)	66	365+30	2	205/205/190	66.3	66.6	**72.0**
CWL-10 (c)	Crest at Waterford Lakes	MFH	Residential (B)	66	365+30	2	205/205/190	67.3	67.3	**73.0**

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.

**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
TB-1(a)	Tortuga Bay	MFH	Residential (B)	66	367+30	2	180/180/165	64.1	64.1	**69.9**
TB-1(b)	Tortuga Bay	MFH	Residential (B)	66	367+30	1	180/180/165	67.1	67.2	**72.9**
TB-2(a)	Tortuga Bay	MFH	Residential (B)	66	369+20	2	125/125/110	66.4	66.4	**72.4**
TB-2(b)	Tortuga Bay	MFH	Residential (B)	66	369+20	1	125/125/110	69.2	69.2	**75.0**
TB-3(a)	Tortuga Bay	MFH	Residential (B)	66	371+50	4	160/160/145	64.9	64.9	**70.8**
TB-3(b)	Tortuga Bay	MFH	Residential (B)	66	371+50	2	160/160/145	68.0	68.0	**73.7**
TB-4(a)	Tortuga Bay	MFH	Residential (B)	66	372+50	4	200/200/185	62.4	62.4	**68.2**
TB-4(b)	Tortuga Bay	MFH	Residential (B)	66	372+50	2	200/200/185	66.0	66.0	**71.7**
TB-5(a)	Tortuga Bay	MFH	Residential (B)	66	374+80	4	255/255/240	60.1	60.1	65.7
TB-5(b)	Tortuga Bay	MFH	Residential (B)	66	374+80	2	255/255/240	64.2	64.2	**70.0**
TB-6(a)	Tortuga Bay	MFH	Residential (B)	66	376+70	4	290/290/275	59.4	59.4	65.0
TB-6(b)	Tortuga Bay	MFH	Residential (B)	66	376+70	2	290/290/275	63.6	63.6	**69.3**
TB-7(a)	Tortuga Bay	MFH	Residential (B)	66	378+20	2	420/420/405	56.4	56.4	62.0
TB-7(b)	Tortuga Bay	MFH	Residential (B)	66	378+20	1	420/420/405	61.0	61.0	**66.8**
TB-8(c)	Tortuga Bay	MFH	Residential (B)	66	367+20	1	225/225/210	61.8	61.8	**69.3**
TB-9(a)	Tortuga Bay	MFH	Residential (B)	66	367+10	2	260/260/250	60.5	60.5	**66.1**
TB-9(b)	Tortuga Bay	MFH	Residential (B)	66	367+10	1	260/260/250	64.9	64.9	**70.5**
TB-10(a)	Tortuga Bay	MFH	Residential (B)	66	369+50	4	310/310/295	58.4	58.4	63.7
TB-10(b)	Tortuga Bay	MFH	Residential (B)	66	369+50	2	310/310/295	63.6	63.6	**69.2**
WE-PG	Waterford East Playground	Playground	Playground (C)	66	205+00	SLU	735/735/280	56.4	56.4	61.4
East of Existing SR 408 – West of Avalon Park Boulevard										
WL-1	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1023+60	4	410	45.3	50.0	**60.3**
WL-2	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1025+20	7	380	45.3	50.5	**61.5**
WL-3	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1027+20	6	490	45.3	50.9	**61.1**
WL-4	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1029+40	2	610	45.3	51.2	**62.1**
WL-5	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.412+40	1	570	45.3	51.1	**62.6**
WL-6	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1024+00	3	550	45.3	46.9	56.8
WL-7	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.2025+40	5	550	45.3	48.3	58.3
WL-8	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.2027+00	5	660	45.3	47.5	**60.3**
WL-9	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.412+00	2	810	45.3	48.4	**60.9**
WL-10	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.413+80	3	840	45.3	48.5	**61.0**

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
WL-11	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.415+00	3	1,020	45.3	42.9	59.4
WL-12	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1022+20	1	780/780/370	45.3	53.1	**61.8**
WL-13	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1020+50	1	760/760/350	45.3	53.1	**61.5**
WL-14	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1019+00	1	810/810/380	45.3	52.5	**60.7**
WL-15	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1018+50	1	860/860/450	45.3	50.8	59.3
WL-16	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1018+00	1	940/940/530	45.3	49.7	58.8
WL-17	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1016+50	1	1070/1070/670	45.3	47.2	56.6
WL-18	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1016+50	1	1070/1070/760	45.3	45.2	54.6
WL-19	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1017+40	1	1300/1300/880	45.3	43.7	53.1
WL-20	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1017+00	1	1430/1430/1020	45.3	43.0	51.9
WL-21	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1018+00	1	1200/1200/780	45.3	43.5	52.4
WL-22	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1018+10	1	1010/1010/600	45.3	42.9	52.7
WL-23	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1019+30	1	940/940/514	45.3	43.7	53.3
WL-24	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1020+50	1	900/900/480	45.3	44.2	54.0
WL-25	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1021+00	1	930/930/510	45.3	45.0	55.4
WL-26	Waterford Lakes	SFH	Residential (B)	66	East Side Sta.1022+80	1	1000/1000/580	45.3	49.1	59.0
BW-1	Bridgewater	SFH	Residential (B)	66	East Side Sta.417+80	6	940	45.3	48.7	60.3
BW-2	Bridgewater	SFH	Residential (B)	66	East Side Sta.421+00	6	730	45.3	41.6	**60.8**
BW-3	Bridgewater	SFH	Residential (B)	66	East Side Sta.423+00	5	520	45.3	50.0	**63.0**
BW-4	Bridgewater	SFH	Residential (B)	66	East Side Sta.425+00	2	373	45.3	50.1	**63.9**
BW-5	Bridgewater	SFH	Residential (B)	66	East Side Sta.425+60	1	300	45.3	50.1	**64.4**
BW-6	Bridgewater	SFH	Residential (B)	66	East Side Sta.419+80	6	1,040	45.3	44.6	56.6
BW-7	Bridgewater	SFH	Residential (B)	66	East Side	6	820	45.3	45.2	59.7

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
					Sta.423+00					
BW-8	Bridgewater	SFH	Residential (B)	66	East Side Sta.424+60	5	610	45.3	42.2	**62.0**
BW-9	Bridgewater	SFH	Residential (B)	66	East Side Sta.426+40	3	440	45.3	46.1	**63.3**
BW-10	Bridgewater	SFH	Residential (B)	66	East Side Sta.427+20	2	320	45.3	46.5	**64.2**
BW-11	Bridgewater	SFH	Residential (B)	66	East Side Sta.426+20	4	640	45.3	42.7	58.9
BW-12	Bridgewater	SFH	Residential (B)	66	East Side Sta.428+40	3	450	45.3	46.9	**63.4**
BW-13	Bridgewater	SFH	Residential (B)	66	East Side Sta.428+60	3	650	45.3	46.4	60.1
BW-14	Bridgewater	SFH	Residential (B)	66	East Side Sta.430+80	2	570	45.3	49.4	**62.3**
BW-15	Bridgewater	SFH	Residential (B)	66	East Side Sta.430+00	5	850	45.3	46.2	60.2
BW-Rec	Bridgewater	Park	Park (C)	66	East Side Sta.431+40	SLU	360	45.3	50.3	**62.9**
WC-1	Waterford Creek	SFH	Residential (B)	66	South Side Sta.444+20	1	650	45.3	48.8	59.1
WC-2	Waterford Creek	SFH	Residential (B)	66	South Side Sta.444+40	2	590	45.3	48.9	58.9
WC-3	Waterford Creek	SFH	Residential (B)	66	South Side Sta.444+60	1	470	45.3	50.0	**62.4**
WC-4	Waterford Creek	SFH	Residential (B)	66	South Side Sta.445+80	3	420	45.3	50.9	**63.1**
WC-5	Waterford Creek	SFH	Residential (B)	66	South Side Sta.447+20	2	360	45.3	51.3	**62.7**
WC-6	Waterford Creek	SFH	Residential (B)	66	South Side Sta.447+80	1	290	45.3	51.5	**63.4**
WC-7	Waterford Creek	SFH	Residential (B)	66	South Side Sta.449+80	4	300	45.3	52.0	**63.8**
WC-8	Waterford Creek	SFH	Residential (B)	66	South Side Sta.452+00	6	310	45.3	51.9	**62.6**
WC-9	Waterford Creek	SFH	Residential (B)	66	South Side Sta.454+80	3	300	45.3	45.0	54.1
WC-10	Waterford Creek	SFH	Residential (B)	66	South Side Sta.456+00	1	290	45.3	41.5	54.9
WC-11	Waterford Creek	SFH	Residential (B)	66	South Side Sta.446+20	2	680	45.3	46.9	**61.1**
WC-12	Waterford Creek	SFH	Residential (B)	66	South Side Sta.447+00	2	540	45.3	47.2	**63.5**
WC-13	Waterford Creek	SFH	Residential (B)	66	South Side Sta.448+60	3	550	45.3	48.0	**63.2**

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

Modeled Noise Receptor Locations and Noise Analysis Results

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
WC-14	Waterford Creek	SFH	Residential (B)	66	South Side Sta.450+80	4	560	45.3	45.7	59.9
WC-15	Waterford Creek	SFH	Residential (B)	66	South Side Sta.453+00	2	560	45.3	45.8	**61.0**
WC-16	Waterford Creek	SFH	Residential (B)	66	South Side Sta.449+40	2	450	45.3	47.5	**64.4**
WC-17	Waterford Creek	SFH	Residential (B)	66	South Side Sta.451+20	3	460	45.3	47.6	**63.7**
WC-18	Waterford Creek	SFH	Residential (B)	66	South Side Sta.454+00	4	450	45.3	49.4	**65.1**
WC-19	Waterford Creek	SFH	Residential (B)	66	South Side Sta.455+20	2	440	45.3	46.4	**64.8**
WC-20	Waterford Creek	SFH	Residential (B)	66	South Side Sta.456+00	1	450	45.3	46.5	**64.5**
WC-PG	Waterford Creek	Park	Park(C)	66	South Side Sta.448+20	SLU	480	45.3	47.4	**64.1**
SFH-1	1575 Hancock Lone Palm Rd	SFH	Residential (B)	66	South Side Sta.459+80	1	500	45.3	47.0	**62.9**
SFH-2	14076 E Colonial Dr	SFH	Residential (B)	66	South Side Sta.462+00	2	340	45.3	48.0	**64.6**
SFH-3	1665 Fricke Ave	SFH	Residential (B)	66	South Side Sta.463+80	1	520	45.3	46.3	**61.9**
SFH-4	1705 Fricke Ave	SFH	Residential (B)	66	North Side Sta.460+60	1	290	45.3	54.4	**64.7**
SFH-5	14162 E Colonial Dr	SFH	Residential (B)	66	North Side Sta.460+60	1	390	45.3	56.5	**63.2**
DW-1	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.471+00	1	340	44.9	44.5	**60.7**
DW-2	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.473+20	5	300	44.9	42.7	**61.5**
DW-3	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.475+40	5	250	44.9	43.2	**63.5**
DW-4	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.470+80	1	270	44.9	44.7	**62.6**
DW-5	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.472+60	3	220	44.9	42.6	59.3
DW-6	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.474+20	3	180	44.9	42.5	59.3
DW-7	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.470+60	1	200	44.9	45.0	**65.2**
DW-8	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.472+60	3	180	44.9	43.7	**66.7**
DW-9	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.475+00	3	120	44.9	46.5	**67.0**
DW-10	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side	1	140	44.9	47.6	**67.2**

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
					Sta.470+40					
DW-11	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.472+00	2	110	44.9	47.3	**67.5**
DW-12	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.473+40	2	70	44.9	47.6	**65.5**
DW-13	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.470+60	2	75	44.9	47.9	**66.5**
DW-14	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.484+00	2	270	44.9	45.7	**63.5**
DW-15	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.481+00	3	300	44.9	45.2	**63.3**
DW-16	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.482+60	2	260	44.9	45.3	**64.0**
DW-17	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.484+00	1	210	44.9	45.9	**64.2**
DW-18	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.478+40	2	300	44.9	44.9	**63.5**
DW-19	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.480+60	3	250	44.9	45.3	**63.9**
DW-20	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.482+40	2	190	44.9	46.0	**64.3**
DW-21	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.483+80	1	150	44.9	46.2	**64.5**
DW-22	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.478+40	2	250	44.9	45.5	**65.0**
DW-23	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.480+60	3	200	44.9	45.8	**63.8**
DW-24	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.482+20	2	140	44.9	46.3	**64.3**
DW-25	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.183+40	1	90	44.9	46.8	**63.8**
DW-26	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.478+40	2	160	44.9	46.2	**63.2**
DW-27	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.480+00	3	120	44.9	45.9	**62.3**
DW-28	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.482+00	1	70	44.9	46.8	**60.9**
DW-29	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.478+00	1	70	44.9	46.8	58.6
DW-30	Deerwood Mobile Home Park	SFH	Residential (B)	66	South Side Sta.479+60	2	90	44.9	46.2	59.3
DW-31	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.474+60	3	120	44.9	50.2	**65.3**
DW-32	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.471+00	2	120	44.9	51.1	**67.6**

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

Modeled Noise Receptor Locations and Noise Analysis Results

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
DW-33	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.472+40	2	150	44.9	51.4	**66.9**
DW-34	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.474+40	3	200	44.9	51.0	**65.8**
DW-35	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.469+60	1	140	44.9	51.9	**67.8**
DW-36	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.471+00	2	160	44.9	51.7	**66.8**
DW-37	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.473+00	3	210	44.9	52.0	**65.6**
DW-38	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.475+00	2	250	44.9	51.7	**61.9**
DW-39	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.469+40	1	200	44.9	52.6	**66.7**
DW-40	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.471+20	4	270	44.9	53.0	**65.1**
DW-41	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.473+80	5	330	44.9	52.8	**63.6**
DW-42	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.482+60	1	100	44.9	48.7	**64.7**
DW-43	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.478+60	2	70	44.9	49.0	**63.0**
DW-44	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.480+40	2	100	44.9	48.8	**64.6**
DW-45	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.482+40	1	150	44.9	49.0	**64.0**
DW-46	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.477+60	2	100	44.9	49.6	**64.4**
DW-47	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.479+40	2	140	44.9	49.3	**64.5**
DW-48	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.481+20	1	170	44.9	49.4	**62.6**
DW-49	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.477+40	4	180	44.9	49.9	**64.8**
DW-50	Deerwood Mobile Home Park	SFH	Residential (B)	66	North Side Sta.479+00	1	200	44.9	49.9	**64.4**
DW-Pool	Deerwood Mobile Home Park	Park	Park(C)	66	North Side Sta.477+60	SLU	270	44.9	51.0	**64.6**
GAP-1(a,b)	Grandeville at Avalon Park	MFH	Residential (B)	66	South Side Sta.494+40	2,2	220	44.1, 57.3	44.5, 57.8	**62.4, 67.2**
GAP-2(a,b)	Grandeville at Avalon Park	MFH	Residential (B)	66	South Side Sta.494+40	4,4	150	45.0, 57.0	45.3, 57.4	**63.9, 68.1**
GAP-3(a,b)	Grandeville at Avalon Park	MFH	Residential (B)	66	South Side Sta.494+20	2,2	80	45.1, 57.4	45.3, 57.9	**65.0, 69.8**
GAP-4(a,b)	Grandeville at Avalon Park	MFH	Residential (B)	66	South Side	2,2	290	65.8, 67.0	66.3, 67.5	**70.3, 71.7**

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.

**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
					Sta.496+00					
GAP-5(a,b)	Grandeville at Avalon Park	MFH	Residential (B)	66	South Side Sta.496+00	4,4	220	65.8, 67.0	66.3, 67.5	**70.4, 71.9**
GAP-6(a,b)	Grandeville at Avalon Park	MFH	Residential (B)	66	South Side Sta.469+00	2,2	160	65.8, 66.8	66.3, 67.3	**70.0, 72.2**
East of Avalon Park Boulevard to West of SR 50										
WT-1	Waterford Trails	SFH	Residential (B)	66	South Side Sta.498+20	1	380	65.6	66.1	**70.1**
WT-2	Waterford Trails	SFH	Residential (B)	66	South Side Sta.500+60	3	550	45.8	46.2	**60.9**
WT-3	Waterford Trails	SFH	Residential (B)	66	South Side Sta.500+40	2	430	43.7	44.1	**60.1**
WT-4	Waterford Trails	SFH	Residential (B)	66	South Side Sta.500+60	3	330	48.2	48.7	**64.6**
WT-5	Waterford Trails	SFH	Residential (B)	66	South Side Sta.502+20	2	340	45.5	45.9	55.3
WT-6	Waterford Trails	SFH	Residential (B)	66	South Side Sta.503+20	2	430	48.7	41.6	62.6
WT-7	Waterford Trails	SFH	Residential (B)	66	South Side Sta.503+80	2	520	48.7	41.2	61.2
WT-8	Waterford Trails	SFH	Residential (B)	66	South Side Sta.497+80	1	200	66.4	66.8	**71.0**
WT-9	Waterford Trails	SFH	Residential (B)	66	South Side Sta.498+80	3	200	56.4	56.9	**66.3**
WT-10	Waterford Trails	SFH	Residential (B)	66	South Side Sta.501+00	5	180	51.0	51.5	**66.3**
WT-11	Waterford Trails	SFH	Residential (B)	66	South Side Sta.503+40	3	230	44.1	44.4	**65.4**
WT-12	Waterford Trails	SFH	Residential (B)	66	South Side Sta.504+40	2	340	48.7	40.9	63.2
WT-13	Waterford Trails	SFH	Residential (B)	66	South Side Sta.504+80	2	450	48.7	42.2	58.5
WT-14	Waterford Trails	SFH	Residential (B)	66	South Side Sta.505+20	2	540	48.7	41.7	60.7
WT-15	Waterford Trails	SFH	Residential (B)	66	North Side Sta.498+40	1	140	60.5	60.9	**67.3**
WT-16	Waterford Trails	SFH	Residential (B)	66	North Side Sta.498+60	2	120	48.1	48.4	**66.5**
WT-17	Waterford Trails	SFH	Residential (B)	66	North Side Sta.500+60	3	80	51.1	51.6	**66.6**
WT-18	Waterford Trails	SFH	Residential (B)	66	North Side Sta.502+60	3	120	44.8	45.2	**65.5**
WT-19	Waterford Trails	SFH	Residential (B)	66	North Side Sta.503+60	3	190	42.8	43.1	**64.9**

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
WT-20	Waterford Trails	SFH	Residential (B)	66	North Side Sta.504+40	3	270	41.4	41.6	**63.7**
WT-21	Waterford Trails	SFH	Residential (B)	66	North Side Sta.506+60	5	330	48.7	48.7	**64.0**
WT-22	Waterford Trails	SFH	Residential (B)	66	North Side Sta.508+40	2	370	48.7	48.7	**63.9**
WT-23	Waterford Trails	SFH	Residential (B)	66	North Side Sta.510+40	1	380	48.7	48.7	62.4
WT-24	Waterford Trails	SFH	Residential (B)	66	North Side Sta.510+40	2	360	48.7	48.7	61.5
WT-25	Waterford Trails	SFH	Residential (B)	66	North Side Sta.510+40	2	460	48.7	48.7	60.7
WT-26	Waterford Trails	SFH	Residential (B)	66	North Side Sta.499+00	1	290	57.7	58.1	65.7
WT-27	Waterford Trails	SFH	Residential (B)	66	North Side Sta.500+00	2	260	50.3	50.8	65.1
WT-28	Waterford Trails	SFH	Residential (B)	66	North Side Sta.501+80	2	250	43.1	43.4	**65.0**
WT-29	Waterford Trails	SFH	Residential (B)	66	North Side Sta.502+80	2	330	41.5	41.8	**63.3**
WT-30	Waterford Trails	SFH	Residential (B)	66	North Side Sta.505+00	3	450	41.6	41.6	**62.6**
WT-31	Waterford Trails	SFH	Residential (B)	66	North Side Sta.507+80	2	500	48.7	48.7	61.3
WT-32	Waterford Trails	SFH	Residential (B)	66	North Side Sta.510+20	2	560	48.7	48.7	58.6
WT-33	Waterford Trails	SFH	Residential (B)	66	South Side Sta.532+20	2	530	48.7	48.7	59.5
WT-34	Waterford Trails	SFH	Residential (B)	66	South Side Sta.532+40	2	460	48.7	48.7	57.9
WT-35	Waterford Trails	SFH	Residential (B)	66	South Side Sta.531+80	1	370	48.7	48.7	62.9
WT-36	Waterford Trails	SFH	Residential (B)	66	South Side Sta.534+20	2	470	48.7	48.7	61.0
WT-37	Waterford Trails	SFH	Residential (B)	66	South Side Sta.534+00	3	330	48.7	48.7	63.2
WT-38	Waterford Trails	SFH	Residential (B)	66	South Side Sta.533+20	2	350	48.7	48.7	**66.0**
WT-39	Waterford Trails	SFH	Residential (B)	66	South Side Sta.535+80	2	470	48.7	48.7	62.6
SFH-6	1380 Caudle St	SFH	Residential (B)	66	South Side Sta.514+20	1	330	48.7	48.7	63.6
SFH-7	1290 Caudle St	SFH	Residential (B)	66	South Side Sta.514+40	1	640	48.7	48.7	59.7
SFH-8	1302 Sherman St	SFH	Residential (B)	66	South Side	4	500	48.7	48.7	61.5

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

Modeled Noise Receptor Locations and Noise Analysis Results

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
					Sta.520+00					
SFH-9	1296 Sherman St	SFH	Residential (B)	66	South Side Sta.519+20	2	350	48.7	48.7	63.3
SFH-10	1295 Caudle St	SFH	Residential (B)	66	South Side Sta.519+20	2	200	48.7	48.7	**64.5**
SFH-11	1351 Caudle St	SFH	Residential (B)	66	South Side Sta.518+40	1	120	48.7	48.7	**64.2**
SFH-12	1334 Sherman St	SFH	Residential (B)	66	South Side Sta.520+20	1	120	48.7	48.7	**64.0**
SFH-13	1325 Sherman St	SFH	Residential (B)	66	South Side Sta.522+60	1	160	48.7	48.7	**64.7**
SFH-14	1473 Caudle St	SFH	Residential (B)	66	North Side Sta.518+40	1	110	48.7	48.7	**64.3**
SFH-15	1480 Caudle St	SFH	Residential (B)	66	North Side Sta.516+40	1	300	48.7	48.7	**64.5**
SFH-16	1490 Sherman St	SFH	Residential (B)	66	North Side Sta.520+20	1	200	48.7	48.7	**65.0**
SFH-17	1488 Caudle St	SFH	Residential (B)	66	North Side Sta.516+60	1	440	48.7	48.7	63.1
SFH-18	15135 Orleans Ave	SFH	Residential (B)	66	North Side Sta.519+60	2	410	48.7	48.7	63.4
SFH-19	15232 Old Cheney Hwy	SFH	Residential (B)	66	North Side Sta.524+20	2	330	48.7	48.7	**64.1**
SFH-20	15290 Old Cheney Hwy	SFH	Residential (B)	66	North Side Sta.527+20	1	300	48.7	48.7	**64.3**
SFH-21	865 Lockwood Dr	SFH	Residential (B)	66	North Side Sta.577+40	1	410	48.7	48.7	63.5
SFH-22	16303 Hamilton Dr	SFH	Residential (B)	66	South Side Sta.593+80	1	560	50.4	50.4	48.7
BEMHP-1	Big Econ MHP	SFH	Residential (B)	66	North Side Sta.529+40	2	310	48.7	48.7	**64.0**
BEMHP-2	Big Econ MHP	SFH	Residential (B)	66	North Side Sta.531+00	2	270	48.7	48.7	**64.1**
BEMHP-3	Big Econ MHP	SFH	Residential (B)	66	North Side Sta.532+20	2	250	48.7	48.7	**63.8**
BEMHP-4	Big Econ MHP	SFH	Residential (B)	66	North Side Sta.530+80	2	340	48.7	48.7	62.9
BEMHP-5	Big Econ MHP	SFH	Residential (B)	66	North Side Sta.529+60	2	410	48.7	48.7	63.1
BEMHP-6	Big Econ MHP	SFH	Residential (B)	66	North Side Sta.530+80	2	390	48.7	48.7	61.1
BEMHP-7	Big Econ MHP	SFH	Residential (B)	66	North Side Sta.532+40	2	350	48.7	48.7	62.6
BEMHP-8	Big Econ MHP	SFH	Residential (B)	66	North Side	2	480	48.7	48.7	61.6

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
					Sta.529+80					
BEMHP-9	Big Econ MHP	SFH	Residential (B)	66	North Side Sta.531+00	4	440	48.7	48.7	61.7
BEMHP-10	Big Econ MHP	SFH	Residential (B)	66	North Side Sta.532+40	2	440	48.7	48.7	62.2
SP-1	Seaward Plantation Estates	SFH	Residential (B)	66	North Side Sta.534+00	2	360	48.7	48.7	62.4
SP-2	Seaward Plantation Estates	SFH	Residential (B)	66	North Side Sta.534+40	2	240	48.7	48.7	61.6
SP-3	Seaward Plantation Estates	SFH	Residential (B)	66	North Side Sta.537+80	1	200	48.7	48.7	60.4
SP-4	Seaward Plantation Estates	SFH	Residential (B)	66	South Side Sta.540+60	4	460	48.7	48.7	63.2
SP-5	Seaward Plantation Estates	SFH	Residential (B)	66	South Side Sta.540+80	2	140	48.7	48.7	62.7
SP-6	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.558+00	1	160	48.7	48.7	62.0
SP-7	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.559+80	3	250	48.7	48.7	**64.0**
SP-8	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.562+40	3	340	48.7	48.7	63.3
SP-9	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.565+20	3	330	48.7	48.7	63.4
SP-10	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.568+40	2	180	48.7	48.7	**64.3**
SP-11	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.569+40	1	320	48.7	48.7	**64.1**
SP-12	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.573+40	2	190	48.7	48.7	**65.5**
SP-13	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.575+80	2	330	48.7	48.7	**64.5**
SP-14	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.570+40	2	490	48.7	48.7	62.5
SP-15	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.574+20	2	450	48.7	48.7	63.2
SP-16	Seaward Plantation	SFH	Residential (B)	66	South Side Sta.568+40	1	410	48.7	48.7	55.6
SP-17	Seaward Plantation	SFH	Residential (B)	66	South Side Sta.572+00	1	250	48.7	48.7	61.8
SP-18	Seaward Plantation	SFH	Residential (B)	66	South Side Sta.572+40	1	840	48.7	48.7	54.6
SP-19	Seaward Plantation	SFH	Residential (B)	66	South Side Sta.580+40	1	310	48.7	48.7	57.1
SP-20	Seaward Plantation	SFH	Residential (B)	66	South Side Sta.582+00	2	460	48.7	48.7	57.1

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

Modeled Noise Receptor Locations and Noise Analysis Results

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
SP-21	Seaward Plantation	SFH	Residential (B)	66	South Side Sta.597+40	1	620	50.4	50.4	46.6
SP-22	Seaward Plantation	SFH	Residential (B)	66	South Side Sta.600+80	2	320	50.4	50.4	45.9
SP-23	Seaward Plantation	SFH	Residential (B)	66	South Side Sta.602+20	1	150	50.4	50.4	45.3
SP-24	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.606+00	1	190	50.4	50.4	**67.3**
SP-25	Seaward Plantation	SFH	Residential (B)	66	North Side Sta.607+80	2	370	50.4	50.4	62.8
LMBC	16224 Old Cheney Hwy	Church	Church (C)	66	North Side Sta.576+00	1	740	48.7	48.7	59.9
ERHSField	East River High School	School	School (C)	66	North Side Sta.619+60	1	560	50.4	50.4	58.4
ERHSBall	East River High School	School	School (C)	66	North Side Sta.626+00	SLU	560	50.4	50.4	60.1
PO-1	Partin Oaks	SFH	Residential (B)	66	South Side Sta.630+20	1	120	50.4	50.4	**68.5**
PIMHP-1	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.639+60	2	110	50.4	50.4	**66.9**
PIMHP-2	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.641+80	2	120	50.4	50.4	**67.2**
PIMHP-3	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.641+40	2	190	50.4	50.4	**69.0**
PIMHP-4	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.639+20	2	170	50.4	50.4	**65.4**
PIMHP-5	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.641+00	2	280	50.4	50.4	**67.4**
PIMHP-6	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.638+80	2	250	50.4	50.4	**66.2**
PIMHP-7	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.640+40	2	350	50.4	50.4	63.8
PIMHP-8	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.638+40	2	330	50.4	50.4	65.0
PIMHP-9	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.640+00	1	430	50.4	50.4	62.0
PIMHP-10	Pine Island Mobile Villas	SFH	Residential (B)	66	North Side Sta.638+00	2	410	50.4	50.4	63.0
WTP-1	Mobile Home Park	SFH	Residential (B)	66	North Side Sta.656+60	2	140	50.4	50.4	**66.1**
WTP-2	Mobile Home Park	SFH	Residential (B)	66	North Side Sta.657+40	1	240	50.4	50.4	**65.7**
WTP-3	Mobile Home Park	SFH	Residential (B)	66	North Side Sta.660+00	2	210	50.4	50.4	**65.5**
WTP-4	Mobile Home Park	SFH	Residential (B)	66	North Side	1	220	50.4	50.4	65.1

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
					Sta.657+60					
WTP-5	Mobile Home Park	SFH	Residential (B)	66	North Side Sta.657+80	2	300	50.4	50.4	64.2
WTP-6	Mobile Home Park	SFH	Residential (B)	66	North Side Sta.655+80	2	310	50.4	50.4	64.4
BTP-1	Brantley's Trailer Park	SFH	Residential (B)	66	North Side Sta.660+00	5	510	50.4	50.4	61.2
PF-1	Platt Farms	SFH	Residential (B)	66	South Side Sta.700+00	1	140	45.7	45.7	55.2
PF-2	Platt Farms	SFH	Residential (B)	66	South Side Sta.700+40	1	360	45.7	45.7	57.1
PF-3	Platt Farms	SFH	Residential (B)	66	South Side Sta.703+60	1	100	45.7	45.7	52.9
BR-1	Bithlo Ranches	SFH	Residential (B)	66	North Side Sta.649+80	1	160	50.4	50.4	**66.1**
BR-2	Bithlo Ranches	SFH	Residential (B)	66	North Side Sta.655+00	1	240	50.4	50.4	**65.5**
BR-3	Bithlo Ranches	SFH	Residential (B)	66	North Side Sta.660+00	1	300	50.4	50.4	63.7
BR-4	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.669+60	1	120	50.4	50.4	52.5
BR-5	Bithlo Ranches	SFH	Residential (B)	66	North Side Sta.671+40	1	140	50.4	50.4	64.7
BR-6	Bithlo Ranches	SFH	Residential (B)	66	North Side Sta.672+00	1	310	50.4	50.4	64.2
BR-7	Bithlo Ranches	SFH	Residential (B)	66	North Side Sta.673+60	1	470	50.4	50.4	62.2
BR-8	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.729+80	1	540	45.7	45.7	59.1
BR-9	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.734+20	2	520	45.7	45.7	57.7
BR-10	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.740+80	3	490	45.7	47.1	55.2
BR-11	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.729+20	2	390	45.7	45.7	60.6
BR-12	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.736+00	1	350	45.7	45.7	57.8
BR-13	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.741+00	3	360	45.7	45.7	56.0
BR-14	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.729+20	1	270	45.7	45.7	**61.5**
BR-15	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.732+00	3	280	45.7	45.7	**60.7**
BR-16	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.737+00	1	220	45.7	46.6	57.5

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

Modeled Noise Receptor Locations and Noise Analysis Results

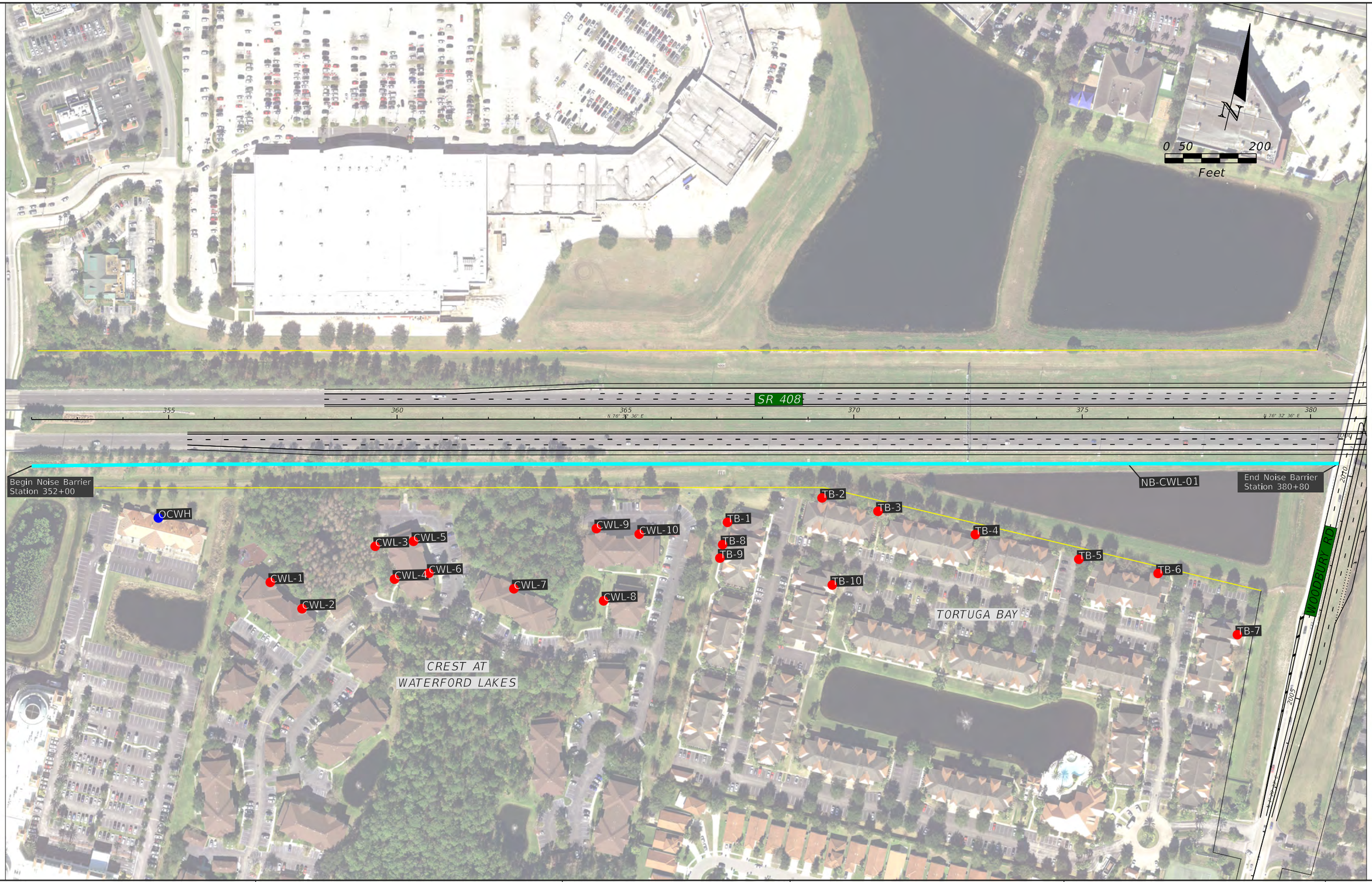
REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
BR-17	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.740+00	2	220	45.7	49.0	57.4
BR-18	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.743+80	2	190	45.7	51.8	56.0
BR-19	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.747+20	1	190	45.7	54.2	57.2
BR-20	Bithlo Ranches	SFH	Residential (B)	66	South Side Sta.749+20	1	170	45.7	56.6	58.5
B-1	Bithlo	SFH	Residential (B)	66	South Side Sta.713+00	1	180	45.7	45.7	56.2
B-2	Bithlo	SFH	Residential (B)	66	North Side Sta.702+20	1	130	45.7	45.7	**65.4**
B-3	Bithlo	SFH	Residential (B)	66	North Side Sta.706+00	3	130	45.7	45.7	**65.5**
B-4	Bithlo	SFH	Residential (B)	66	North Side Sta.711+00	2	130	45.7	45.7	**66.3**
B-5	Bithlo	SFH	Residential (B)	66	North Side Sta.702+60	1	230	45.7	45.7	**65.5**
B-6	Bithlo	SFH	Residential (B)	66	North Side Sta.706+00	3	230	45.7	45.7	**65.6**
B-7	Bithlo	SFH	Residential (B)	66	North Side Sta.710+40	3	230	45.7	45.7	**65.7**
B-8	Bithlo	SFH	Residential (B)	66	North Side Sta.715+80	3	180	45.7	45.7	**65.3**
B-9	Bithlo	SFH	Residential (B)	66	North Side Sta.719+40	4	180	45.7	45.7	**64.1**
B-10	Bithlo	SFH	Residential (B)	66	North Side Sta.722+60	3	190	45.7	45.7	**63.6**
B-11	Bithlo	SFH	Residential (B)	66	North Side Sta.725+20	2	150	45.7	45.7	**64.3**
B-12	Bithlo	SFH	Residential (B)	66	North Side Sta.728+00	1	180	45.7	45.7	**64.6**
B-13	Bithlo	SFH	Residential (B)	66	North Side Sta.702+20	2	340	45.7	45.7	**64.1**
B-14	Bithlo	SFH	Residential (B)	66	North Side Sta.704+00	1	350	45.7	45.7	**64.3**
B-15	Bithlo	SFH	Residential (B)	66	North Side Sta.706+40	3	360	45.7	45.7	**64.2**
B-16	Bithlo	SFH	Residential (B)	66	North Side Sta.710+60	3	350	45.7	45.7	**64.3**
B-17	Bithlo	SFH	Residential (B)	66	North Side Sta.715+80	3	340	45.7	45.7	**64.5**
B-18	Bithlo	SFH	Residential (B)	66	North Side Sta.719+00	2	340	45.7	45.7	**63.9**
B-19	Bithlo	SFH	Residential (B)	66	North Side	1	340	45.7	45.7	**63.3**

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

REPRESENTATIVE MODEL RECEPTOR	COMMUNTIY NAME/ REPRESENTATIVE RECEPTOR NAME	TYPE	DESCRIPTION (Noise Abatement Activity Category)	NOISE ABATEMENT APPROACH CRITERIA [dB(A)]	LOCATION (Station)	NUMBER OF NOISE-SENSITIVE SITES	DISTANCE TO NEAREST TRAFFIC LANE* (Existing/ No-Build/Build)	PREDICTED TRAFFIC NOISE LEVELS [Leq(h), dB(A)]		
								Existing (2015)	Design Year (2045)	
									No-Build	Build
					Sta.724+40					
B-20	Bithlo	SFH	Residential (B)	66	North Side Sta.726+40	1	320	45.7	45.7	**63.2**
B-21	Bithlo	SFH	Residential (B)	66	North Side Sta.727+80	1	300	45.7	45.7	**63.3**
B-22	Bithlo	SFH	Residential (B)	66	North Side Sta.700+40	1	410	45.7	45.7	**62.8**
B-23	Bithlo	SFH	Residential (B)	66	North Side Sta.704+00	3	450	45.7	45.7	**62.7**
B-24	Bithlo	SFH	Residential (B)	66	North Side Sta.709+40	4	430	45.7	45.7	**63.2**
B-25	Bithlo	SFH	Residential (B)	66	North Side Sta.714+00	1	430	45.7	45.7	**63.7**
B-26	Bithlo	SFH	Residential (B)	66	North Side Sta.717+60	5	430	45.7	45.7	**63.9**
B-27	Bithlo	SFH	Residential (B)	66	North Side Sta.724+40	2	420	45.7	45.7	**63.1**
B-28	Bithlo	SFH	Residential (B)	66	North Side Sta.726+60	1	430	45.7	45.7	**62.5**
B-29	Bithlo	SFH	Residential (B)	66	North Side Sta.727+40	1	430	45.7	45.7	**62.3**
B-31	Bithlo	SFH	Residential (B)	66	North Side Sta.700+40	1	640	45.7	45.7	59.1
B-32	Bithlo	SFH	Residential (B)	66	North Side Sta.704+80	3	590	45.7	45.7	60.6
B-33	Bithlo	SFH	Residential (B)	66	North Side Sta.709+40	3	570	45.7	45.7	**61.1**
B-34	Bithlo	SFH	Residential (B)	66	North Side Sta.713+60	2	590	45.7	45.7	**62.0**
B-35	Bithlo	SFH	Residential (B)	66	North Side Sta.718+20	6	580	45.7	45.7	**62.4**
B-36	Bithlo	SFH	Residential (B)	66	North Side Sta.722+80	2	550	45.7	45.7	**62.4**
B-37	Bithlo	SFH	Residential (B)	66	North Side Sta.726+60	2	540	45.7	45.7	**61.8**

Notes: Shaded and bolded numbers indicate noise levels approaching or exceeding the FHWA NAC or noise level increases of 15.0 dB(A) above existing conditions.
**=Distance in nearest 5 foot increment, SFH = Singlefamily home. SLU = Special Land Use. A 25 dB(A) building envelope attenuation factor was used for all interior sites.*

APPENDIX C: NOISE ANALYSIS MAPS



AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

SR 408 PD&E STUDY

CENTRAL FLORIDA
EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.
C-1

MATCH LINE FIGURE C-3

MATCH LINE FIGURE C-1

0 50 200
Feet

SR 408

NB-WL-03

Begin Noise Barrier
Station 396+00

WATERFORD EAST

WE-PG

WATERFORD LAKES

WL-1
WL-2
WL-3
WL-4
WL-5
FM1
WL-6
WL-7
WL-8
WL-9
WL-12
WL-13
WL-14
WL-15
WL-16
WL-17
WL-18
WL-19
WL-20
WL-21
WL-22
WL-23
WL-24
WL-25
WL-26

AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

SR 408 PD&E STUDY

CENTRAL FLORIDA
EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.
C-2

MATCH LINE FIGURE C-2

MATCH LINE FIGURE C-4

0 50 200
Feet

WBC7
WBC4
WBC6
WBC3
WBC5
WBC2
WBC1
WOODBURY COVE
SR 408
NB-WL-03
WL-5
WL-4
FM1
WL-9
WL-3
WL-10
WL-8
WL-2
WL-7
WL-1
WL-6
WL-12
WL-13
WL-11
WATERFORD LAKES
BW-5
BW-10
BW-4
BW-9
BW-REC
BW-3
BW-12
BW-8
BW-11
BW-14
BW-13
BW-2
BW-7
BW-15
BW-1
BW-6
BRIDGEWATER
CHERRY VALLEY WAY
BRIDGEWAY BLVD

AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

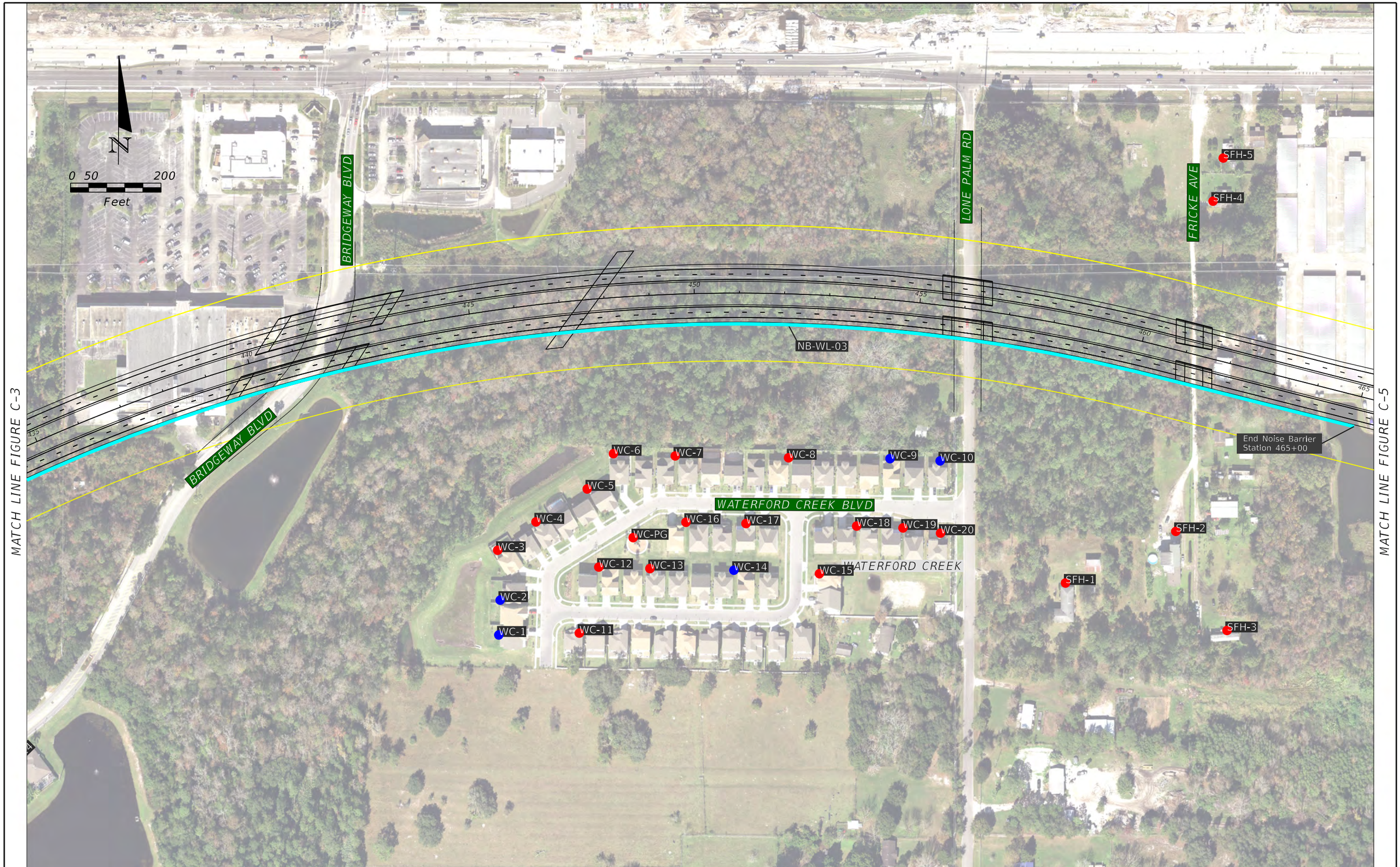
SR 408 PD&E STUDY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.
C-3



AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

SR 408 PD&E STUDY

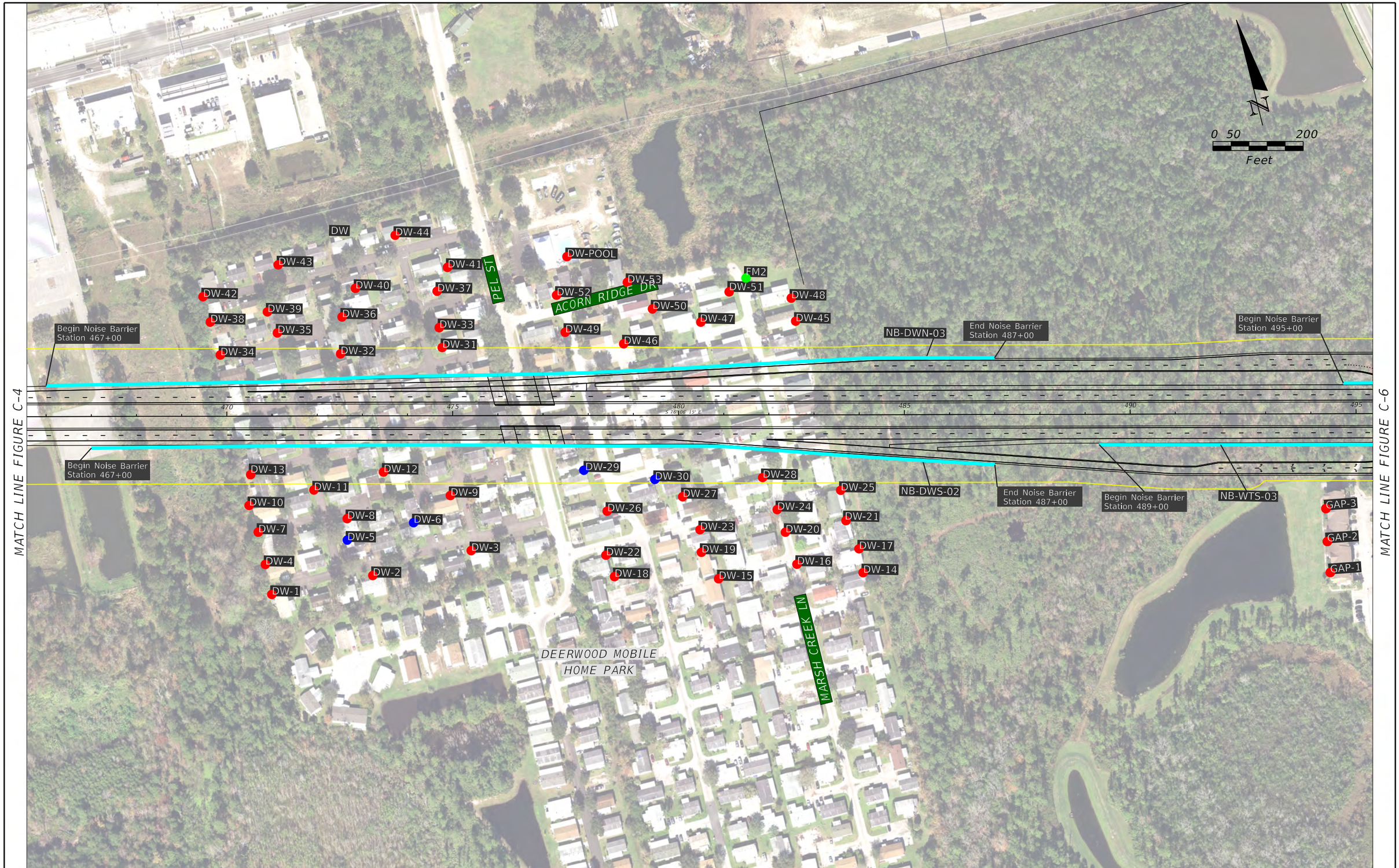
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.

C-4



AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

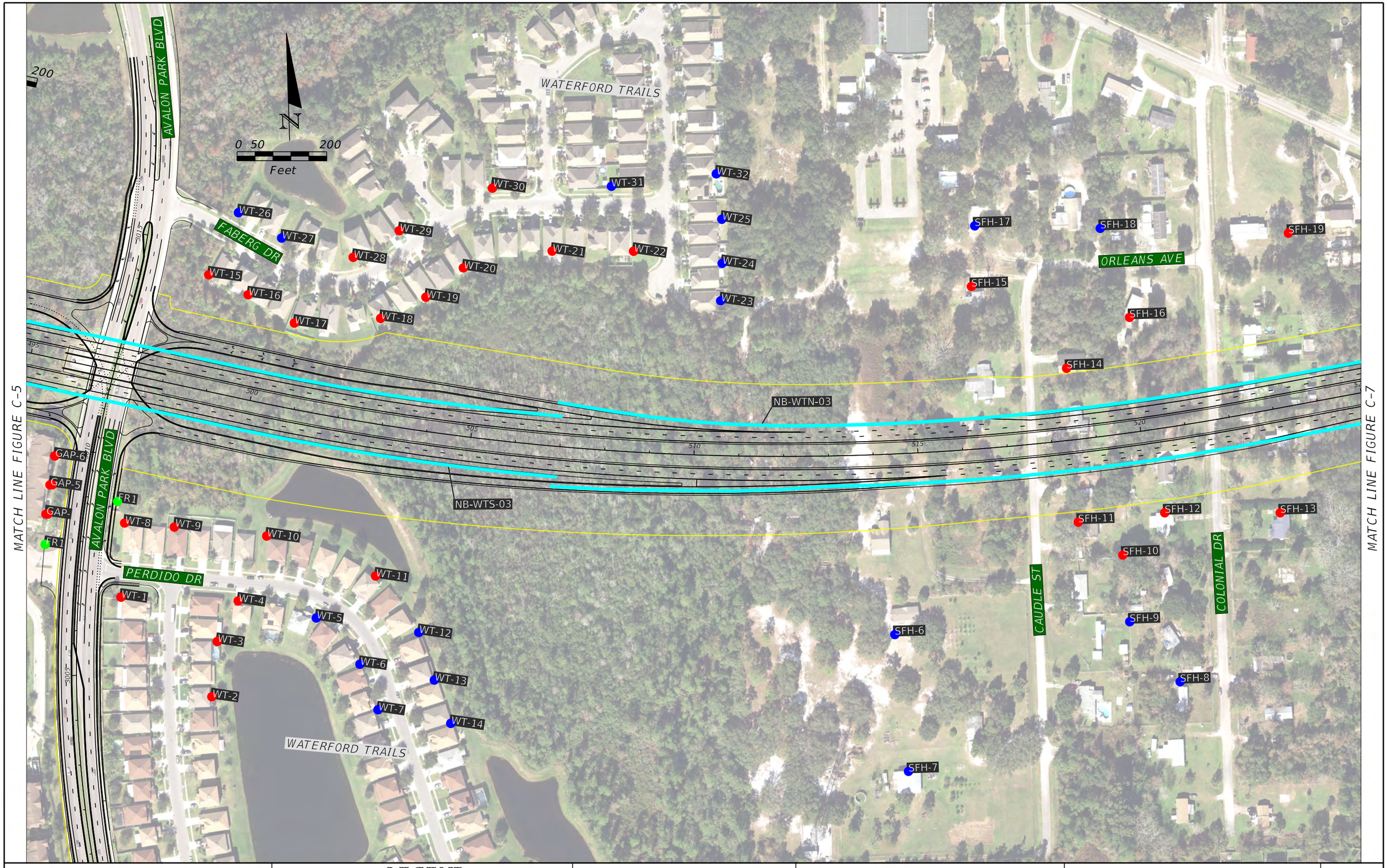
SR 408 PD&E STUDY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO. C-5



AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

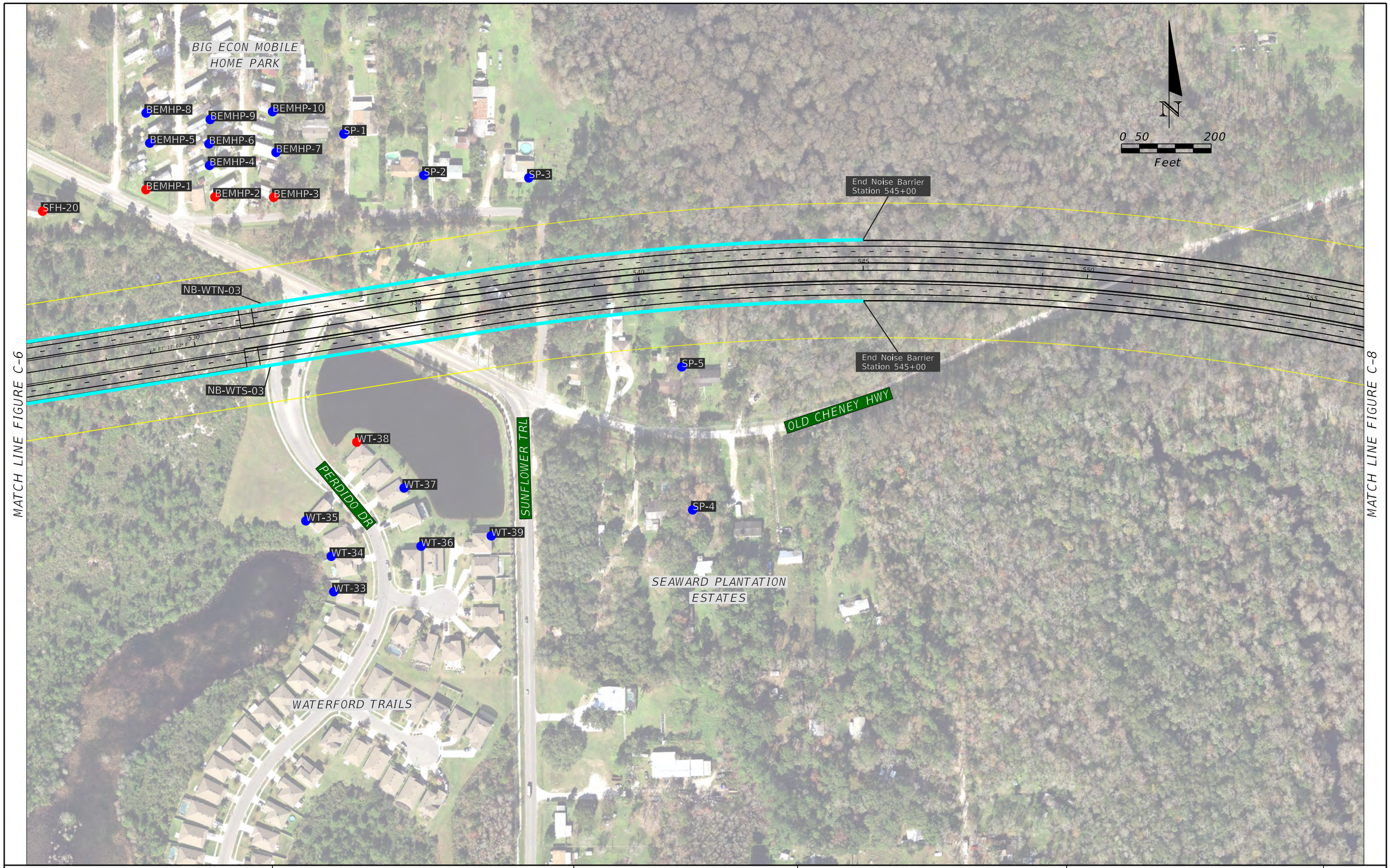
SR 408 PD&E STUDY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO. C-6



AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

SR 408 PD&E STUDY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO. C-7

MATCH LINE FIGURE C-7

MATCH LINE FIGURE C-9

SEAWARD PLANTATION ESTATES

SEAWARD PLANTATION ESTATES

OLD CHENEY HWY

MORRIS DR

HAMILTON DR

LOCKWOOD DR

SP-16 SP-17 SP-18 SP-8 SP-9 SP-6 SP-7 SP-10 SP-11 SP-12 SP-13 SP-14 SP-15 SP-16 SP-17 SP-18 SP-19 SP-20 LMBC SFH-21 FM3

Begin Noise Barrier
Station 559+50

End Noise Barrier
Station 578+00

NB-SP-03

555 560 565 570 575 580

0 50 200
Feet

N

AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

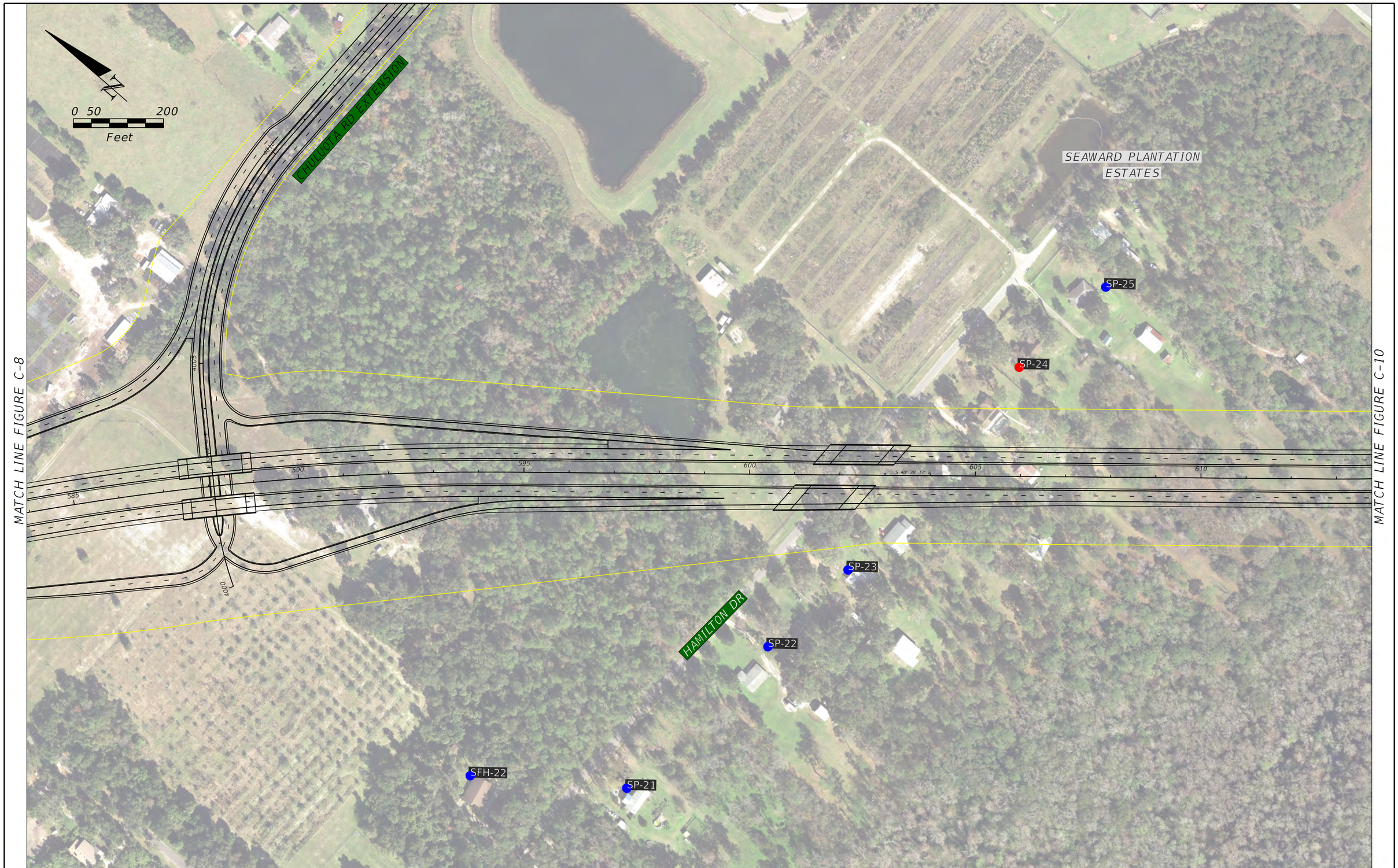
SR 408 PD&E STUDY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO. C-8



AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

SR 408 PD&E STUDY

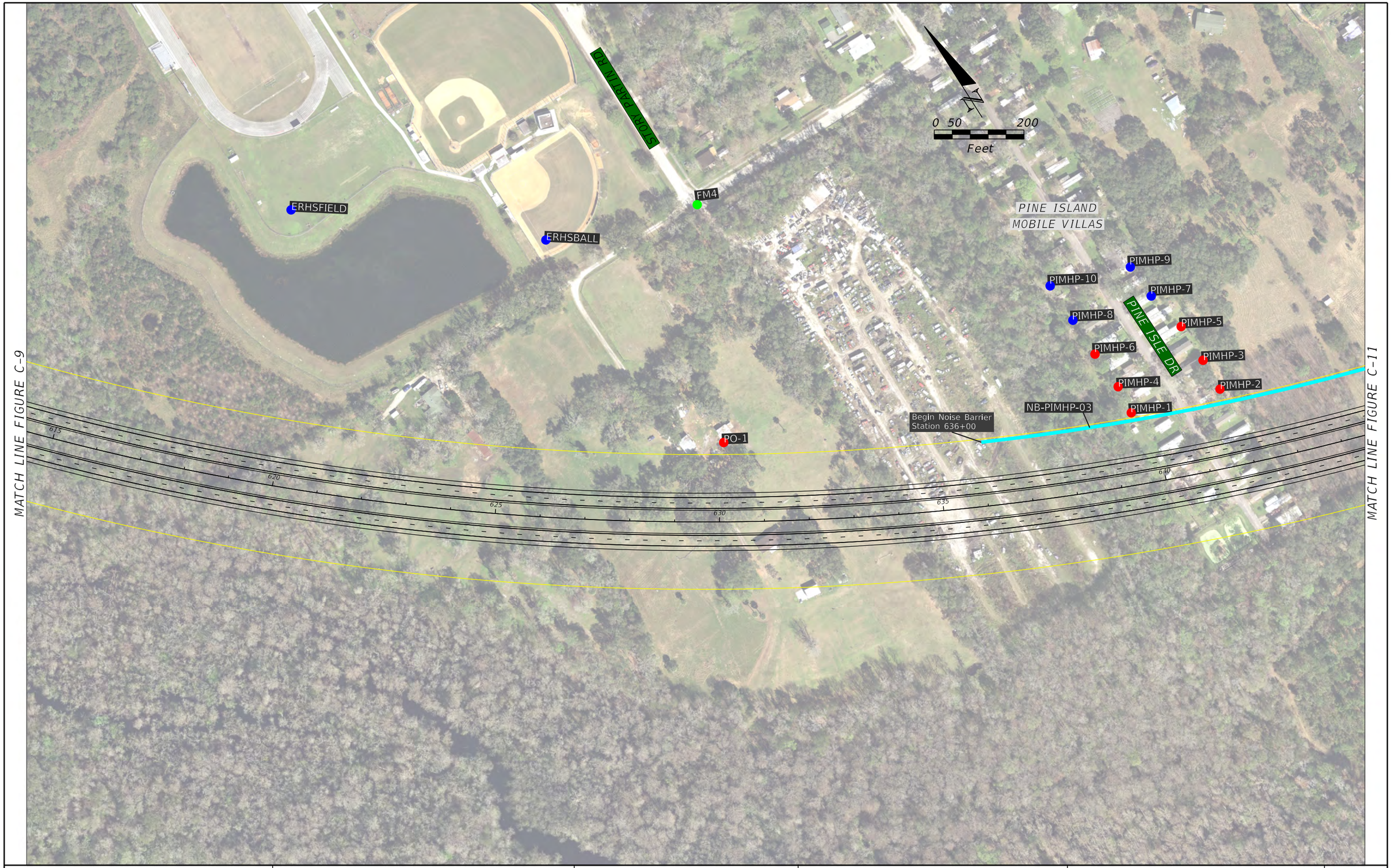
CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.

C-9



AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

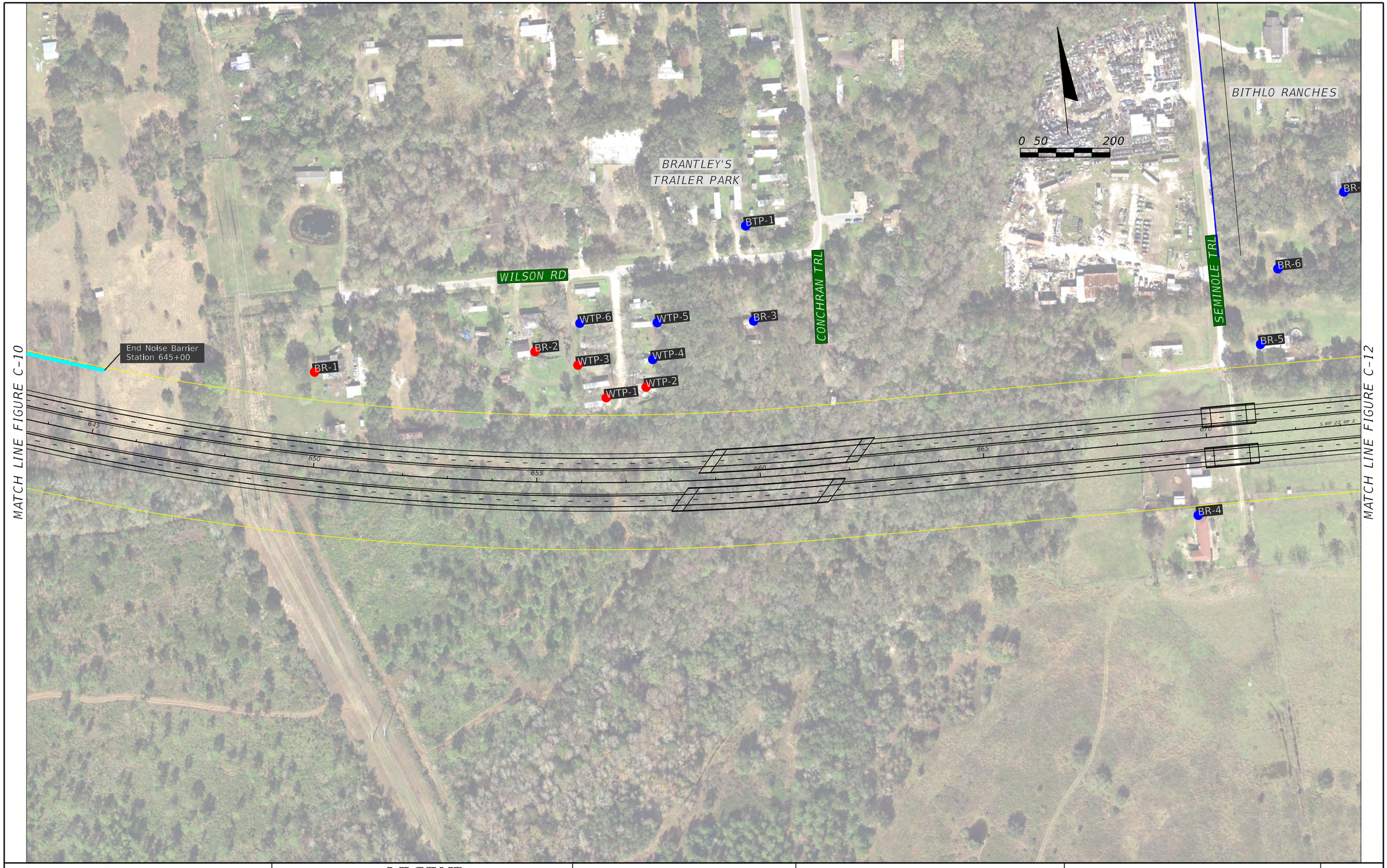
SR 408 PD&E STUDY

CENTRAL FLORIDA
EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.
C-10



AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

SR 408 PD&E STUDY

CENTRAL FLORIDA
EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.

C-11

MATCH LINE FIGURE C-11

MATCH LINE FIGURE C-13

BITHLO RANCHES

BR-7

BR-6

BR-5

B-31

B-22

PF-1

PF-2

N

0 50 200

Feet

Begin Noise Barrier
Station 697+00

675 680 685 690 695 700

S 89° 27' 49" E

N 89° 30' 03" E

AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

SR 408 PD&E STUDY

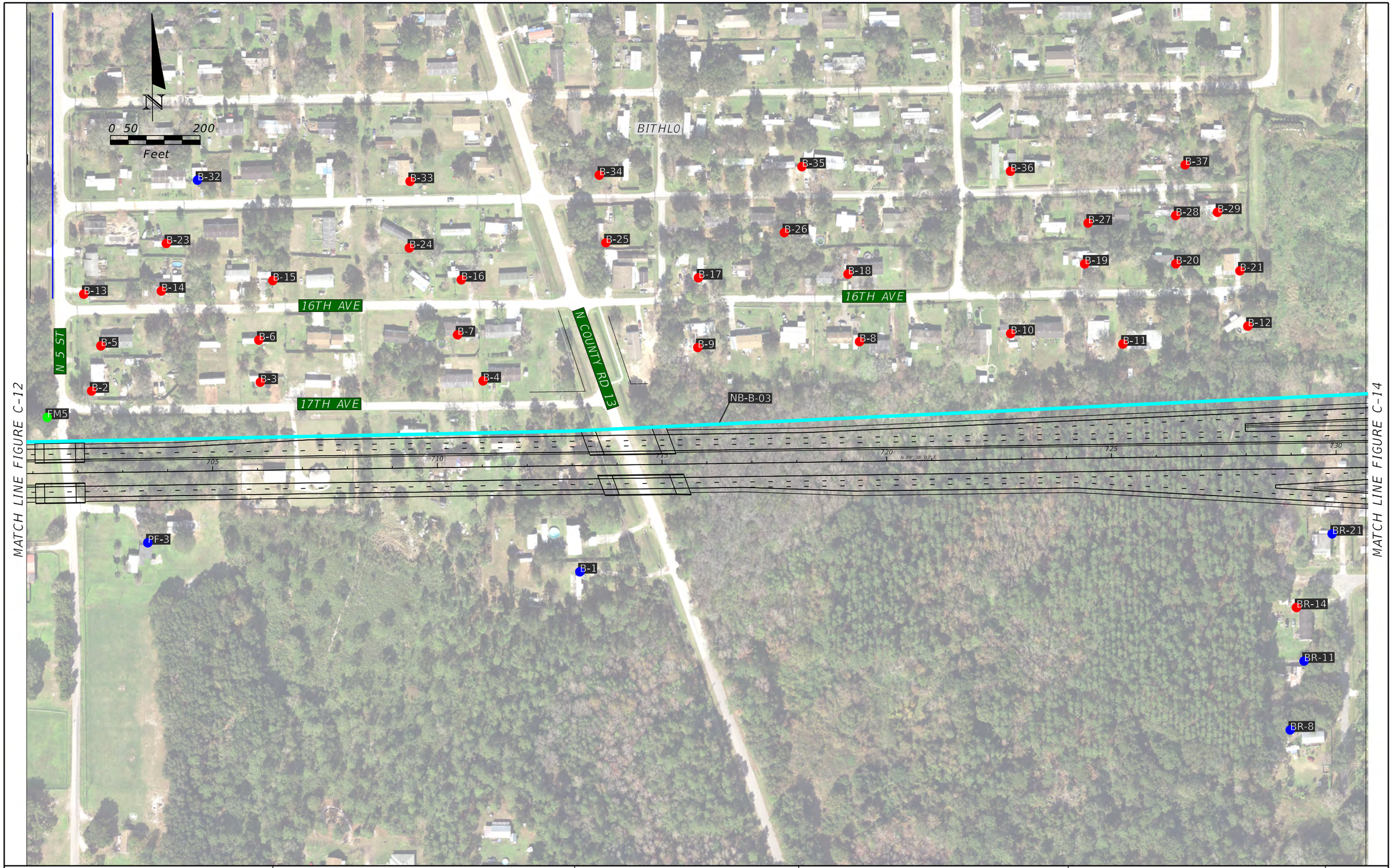
CENTRAL FLORIDA
EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.

C-12



AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

SR 408 PD&E STUDY

CENTRAL FLORIDA EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.

C-13

MATCH LINE FIGURE C-13

End Noise Barrier
Station 732+00

SR 50

E COLONIAL DR

LANSING ST

LANSING ST

TRACY ST

BITHLO RANCHES

BR-8
BR-9
BR-10
BR-11
BR-12
BR-13
BR-14
BR-15
BR-16
BR-17
BR-18
BR-19
BR-20
BR-21

5000
5010
5020
5025
730
735
740
745
750
755

N

0 50 200
Feet

AERIAL IMAGERY BY:
FDOT OFFICE OF SURVEYING AND MAPPING
AERIAL PHOTO LOOK UP SYSTEM (APLUS)
2016 ORANGE COUNTY

LEGEND

- Right Of Way Limits
- Recommeded Barrier
- Field Measurement Site
- Modeled Receptors - Impacted
- Modeled Receptors

SR 408 PD&E STUDY

CENTRAL FLORIDA
EXPRESSWAY AUTHORITY

ROAD NO.	COUNTY	CFX PROJECT NO.
SR 408	ORANGE	408254

NOISE ANALYSIS MAP

FIGURE NO.
C-14