AIR QUALITY TECHNICAL MEMORANDUM

Florida Department of Transportation
District Five

I-75 (S.R.93)
from South of S.R. 44 to S.R. 200
Sumter and Marion County, Florida

Financial Management Number: 452074-2

ETDM Number: 14541

April 2024

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by the Florida Department of Transportation (FDOT) pursuant to 23 USC § 327 and a Memorandum of Understanding dated May 26, 2022, and executed by the Federal Highway Administration and FDOT.

Air Quality Technical Memorandum

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FDOT

Date: April 1, 2024

To: Florida Department of Transportation, District Five

Prepared By: Robbin Ossi, AICP – Chief Planner

Company: Environmental Transportation Planning, LLC

Subject: Air Quality Technical Memorandum
I-75 (S.R. 93) from South of S.R. 44 to S.R. 200
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1.0 Introduction

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study for proposed operational improvements to the Interstate 75 (I-75) corridor in Sumter and Marion County, Florida. These interim improvements were identified as part of Phase 1 of a master planning effort for the I-75 corridor between Florida's Turnpike and County Road (C.R.) 234. The operational improvements evaluated by this PD&E Study include the construction of auxiliary lanes between interchanges for a 22.5-mile segment of I-75 from south of State Road (S.R). 44 to S.R. 200. The limits of the project are shown in **Figure 1-1**.

As part of this PD&E Study, the project has been reviewed for air quality impacts consistent with the guidance provided by the Federal Highway Administration (FHWA) as described in Part 2, Chapter 19 of the FDOT PD&E Manual entitled Air Quality (dated July 1, 2023). The purpose of this Technical Memorandum is to document the findings of the air quality analysis.

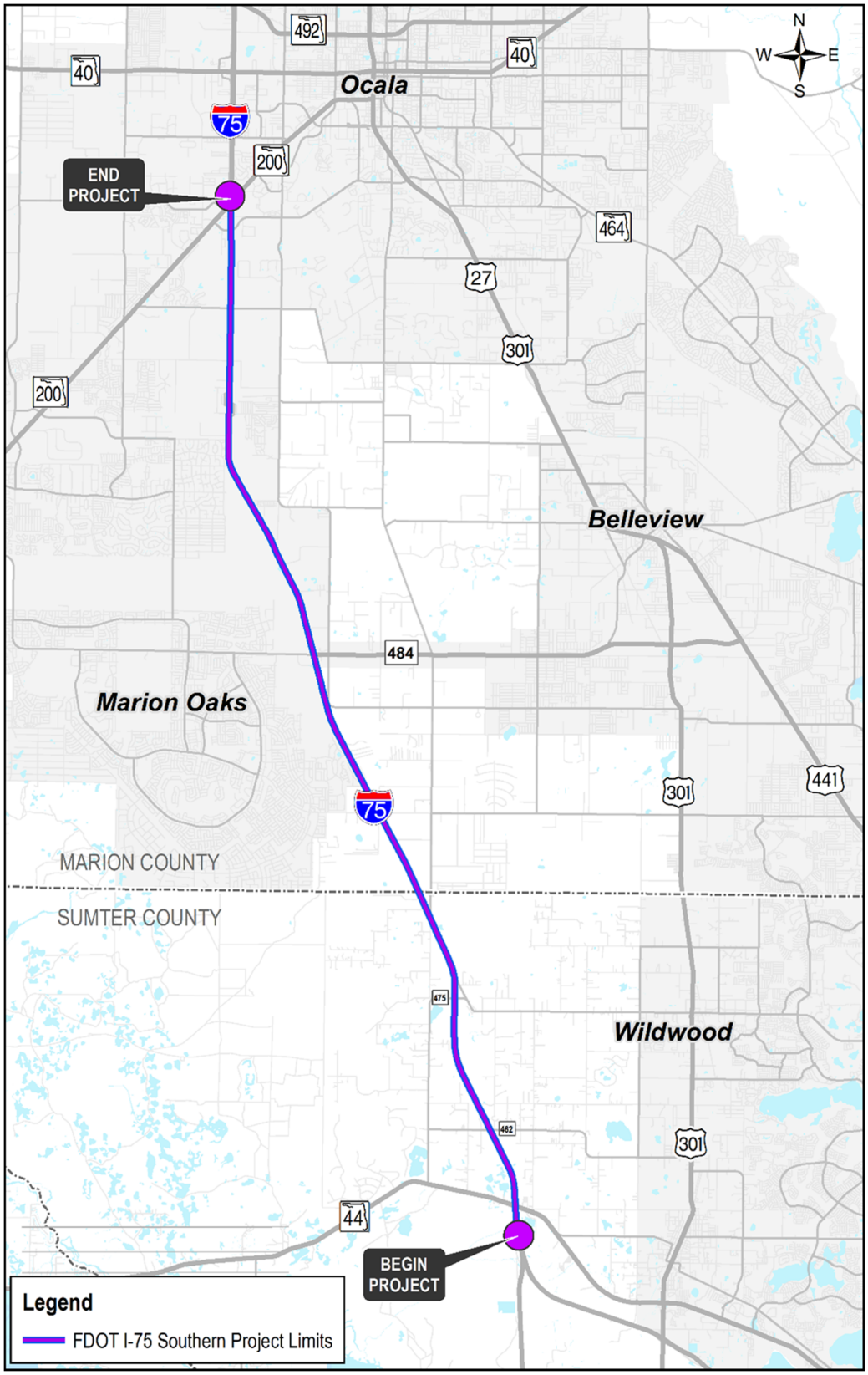


Figure 1-1 | Project Limits

2.0 Air Quality Analysis

The three pollutants analyzed in the Environmental Document for air quality are carbon monoxide (CO), particulate matter (PM), and mobile source air toxics (MSAT). The entire state of Florida is currently in attainment for PM, therefore no project level analysis is needed. Even though Florida is also in attainment for CO, a project-level analysis is required due to the forecasted intersection volumes.

2.1 Screening Test

The No-Build and Build Alternatives were subjected to a CO screening model that makes conservative worst-case assumptions about site conditions, meteorology, and traffic. The FDOT's screening model, CO Florida 2012, uses the latest United States Environmental Protection Agency (EPA) software [Motor Vehicle Emission Simulator (MOVES) version 2010a and CAL3QHC] to produce estimates of one-hour and eight-hour CO at default air quality receptor locations. The one-hour and eight-hour estimates can be directly compared to the current one- and eight-hour National Ambient Air Quality Standards (NAAQS) for CO, which are 35 parts per million (ppm) and 9 ppm, respectively.

The highest total traffic volumes for the No Build and Build Alternatives are associated with the S.R. 200 interchange with I-75. Both alternatives were evaluated for the 2030 opening year and the 2040 design year. The traffic data input used in the evaluation was developed from the Project Traffic Analysis Report (PTAR) dated March 19, 2024, and is provided in **Appendix A**.

Estimates of CO were predicted for the default receptors, which are located 10 feet to 150 feet from the edge of the roadway. The results of the screening test are provided in **Appendix B.** The maximum one-hour and eight-hour CO concentrations for each evaluated alternative are presented in **Table 2.1.** Based on the results from CO Florida 2012, the highest project-related CO one- and eight-hour levels are not predicted to meet or exceed the one- or eight-hour NAAQS for this pollutant with either the No-Build or the Build alternatives. As such, the project "passes" the screening model.

This project is located in an area which is designated in attainment for all National Ambient Air Quality Standards under the criteria provided in the Clean Air Act. Therefore, the Clean Air Act conformity requirements do not apply to the project.

Table 2-1 | Predicted CO Concentrations

I-75 Interchange at S.R. 200						
Alternative	Year	Receptor Site Number(s)	One-Hour CO Concentration (ppm)		Eight-Hour CO Concentration (ppm)	
			NAAQS	Project Maximum	NAAQS	Project Maximum
No-Build & Build	Year Open (2030)	1, 3, 6, 7, 11, 16, 17	35	5.3	9	3.2
No-Build & Build	Design Year (2040)	1, 3, 6, 7, 11, 16, 17	35	5.3	9	3.2
Note: Traffic volumes are identical for both No-Build and Build Alternatives.						

2.2 Mobile Source Air Toxics Analysis

The purpose of this project is to enhance current transportation safety and modal interrelationships by constructing one 12-foot auxiliary lane to the outside of the general-purpose lanes in each direction. This improvement will provide additional capacity between existing interchanges and improve operational and safety deficiencies.

This project has been determined to generate minimal air quality impacts for Clean Air Act criteria pollutants and has not been linked with any special mobile source air toxic (MSAT) concerns. As such, this project will not result in changes in traffic volumes, vehicle mix, basic project location, or any other factor that would cause a meaningful increase in MSAT impacts of the project from that of the No-Build alternative.

Moreover, EPA regulations for vehicle engines and fuels will cause overall MSAT emissions to decline significantly over the next several decades. Based on regulations now in effect, an analysis of national trends with EPA's MOVES2014 model forecasts a combined reduction of over 90 percent in the total annual emissions rate for the priority MSAT from 2010 to 2050, while vehicle-miles of travel are projected to increase by over 45 percent (Updated Interim Guidance on Mobile Source Air Toxic Analysis in NEPA Documents, Federal Highway Administration, October 12, 2016). This will both reduce the background level of MSAT as well as the possibility of even minor MSAT emissions from this project.

2.3 Construction Impacts

Construction activities will cause short-term air quality impacts in the form of dust from earthwork and unpaved roads. These impacts will be minimized by adherence to all applicable State and local regulations and to the FDOT Standard Specifications for Road and Bridge Construction.

Appendix A Project InterchangeTraffic Data

TRAFFIC DATA FOR AIR QUALITY ANALYSIS

Project Description: I-75 from S. of S.R. 44 to S.R. 200
FM Number: 452074-2

Prepared by: Robbin Ossi, AICP - ETP
Date: 3/29/2024

NOTE: Traffic data should be provided for the intersection that is forecast to have the highest total approach traffic volume. Notably, the intersection may not be the same for the Build and No-Build alternatives. The traffic volumes should be representative of vehicles per hour (vph) and vehicle speeds should be representative of posted speeds if intersection cruise approach speeds are unknown. This traffic data sheet was prepared to assist in obtaining appropriate traffic data for the FDOT CO Florida 2012 Intersection Screening Model. Notably, additional traffic data is required for diamond interchanges (see User's Guide).

Opening Year: 2030

Intersection: SR 200/I-75 interchange

Land Use: Urban _____ Suburban __X__ Rural _____

PM PEAK HOUR	SR 200 EB Approach		SR 200 WB Approach		NB On Ramp		NB Off Ramp		NB I-75 Thru (Approach)		SB On Ramp		SB Off Ramp		SB I-75 Thru (Approach)	
Alternative	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed
No-Build & Build	1705	45	2094	45	749	45	668	35	3048	70	852	45	844	35	4549	70

Design Year: 2040

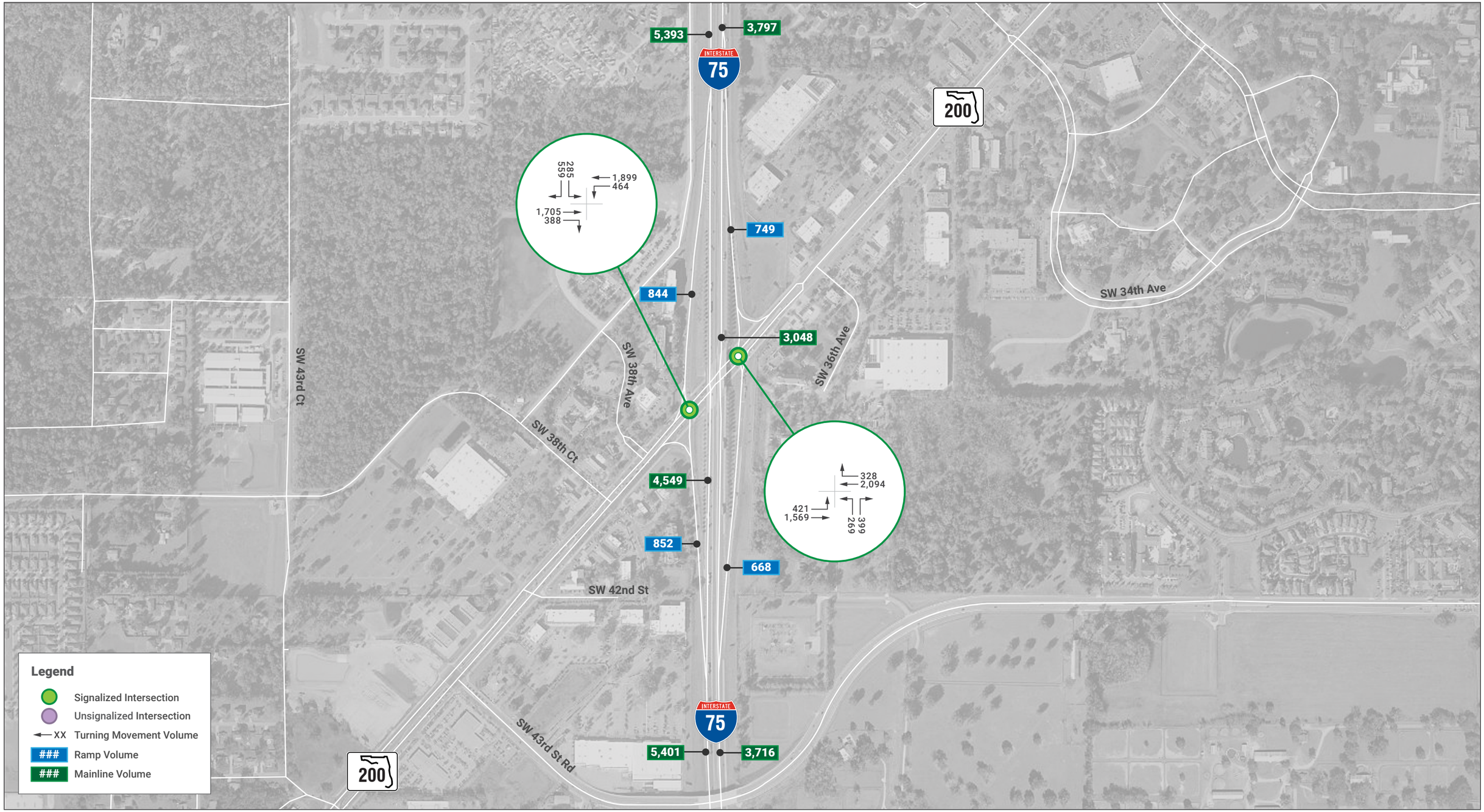
Intersectios: SR 200/I-75 interchange

Land Use: Urban _____ Suburban __X__ Rural _____

PM PEAK HOUR	SR 200 EB Approach		SR 200 WB Approach		NB On Ramp		NB Off Ramp		NB I-75 Thru (Approach)		SB On Ramp		SB Off Ramp		SB I-75 Thru (Approach)	
Alternative	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed	VPH	Speed
No-Build & Build	1794	45	2225	45	864	45	788	35	4111	70	1029	45	969	35	6011	70

Sources: Project Traffic Analysis Report, FDOT, 3/19/2024 (Volumes identical for No-Build and Build Alternatives)

Ramp and arterial speeds derived from Noise Analysis Traffic Data - I-75 Master Plan/PD&E (South Section), 2/14/2024. I-75 mainline uses COFlorida2012 max speed of 65 mph.



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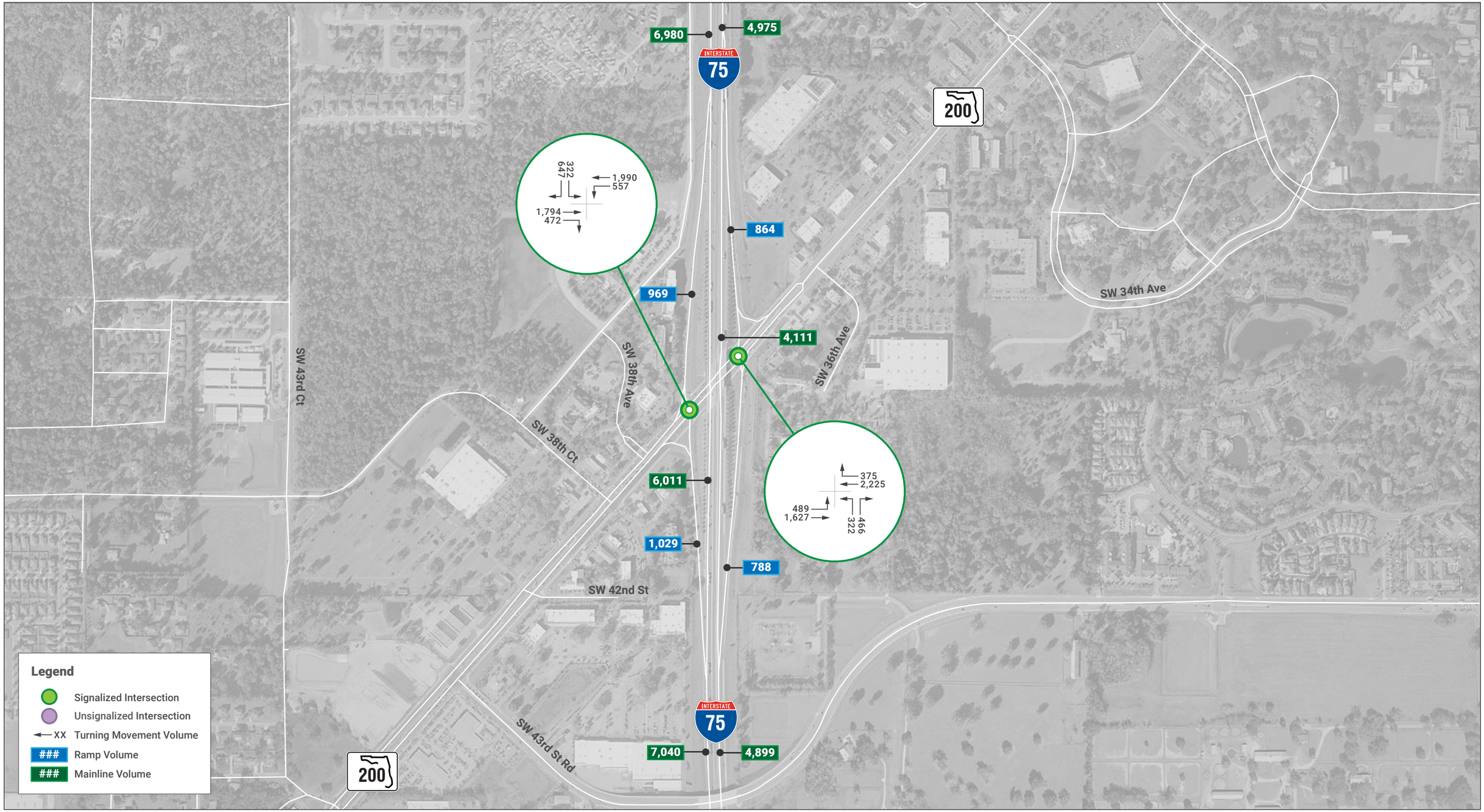
I-75 PD&E South | SR 200 Interchange

South of SR 44 to SR 200

2030 PM Peak Hour Volumes

Figure 56 (4 of 4)



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I-75 PD&E South | SR 200 Interchange

South of SR 44 to SR 200

2040 PM Peak Hour Volumes

Figure 59 (4 of 4)

Appendix B CO Florida 2012 Air Quality Screening Results

CO Florida 2012 - Results
Friday, March 29, 2024

Project Description

Project Title	I-75 fr. S. of S.R. 44 to S.R. 200			
Facility Name	SR200/I-75 interchange west intersection R.			
User's Name	Ossi, AICP - ETP (for FDOT D5)			
Run Name	Year Open - No-Build and Build - PM Peak Vols			
FDOT District	5			
Year	2030			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	65 mph
Approach Traffic	Arterial	2094 vph	Freeway	4549 vph

Environmental Data

Temperature	47.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Suburban
Stability Class	D
Surface Roughness	108 cm
1 Hr. Background Concentration	3.3 ppm
8 Hr. Background Concentration	2.0 ppm

Results

(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	5.3	3.2
2	4.4	2.6
3	5.3	3.2
4	4.9	2.9
5	4.9	2.9
6	5.3	3.2
7	5.3	3.2
8	5.1	3.1
9	4.1	2.5
10	4.9	2.9
11	5.3	3.2
12	4.4	2.6
13	5.2	3.1
14	4.8	2.9
15	4.9	2.9
16	5.3	3.2
17	5.3	3.2
18	5.1	3.1
19	4.1	2.5
20	5.0	3.0

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

CO Florida 2012 - Results
Friday, March 29, 2024

Project Description

Project Title	I-75 from S. of S.R. 44 to S.R. 200			
Facility Name	SR200/I-75 Interchange			
User's Name	R. Ossi, AICP - ETP (for FDOT 5)			
Run Name	Design Year No-Build and Build - PM Peak Vols.			
FDOT District	5			
Year	2040			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	65 mph
Approach Traffic	Arterial	2225 vph	Freeway	6011 vph

Environmental Data

Temperature	47.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Suburban
Stability Class	D
Surface Roughness	108 cm
1 Hr. Background Concentration	3.3 ppm
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Results

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8	5.1	3.1
9	4.1	2.5
10	4.9	2.9
11	5.3	3.2
12	4.4	2.6
13	5.2	3.1
14	4.8	2.9
15	4.9	2.9
16	5.3	3.2
17	5.3	3.2
18	5.1	3.1
19	4.1	2.5
20	5.0	3.0

****
**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
****

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