Air Quality Technical Memorandum

I-95 at U.S. 1 Interchange

Project Development and Environment (PD&E) Study

Volusia, Florida

Financial Project ID No. 419772-2-22-02

ETDM No.: 14442 / FAP No.: TBD

November 2022 - DRAFT

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 U.S.C. § 327 and a Memorandum of Understanding dated May 26, 2022, and executed by the Federal Highway Administration and FDOT.

Date: November 3, 2022
To: William Walsh, District 5 Environmental Administrator
Prepared By: Mariano Berrios, Senior Transportation Specialist (RS&H, Inc.)
Project: I-95 at U.S. 1 Interchange
Financial Project ID No. 419772-2-22-02
Volusia County, Florida
Subject: Air Quality Technical Memorandum

INTRODUCTION

The Florida Department of Transportation (FDOT) is evaluating alternatives to improve the interchange at Interstate 95 (I-95) and U.S. 1, located at I-95 Exit 273 in the City of Ormond Beach in northern Volusia County, Florida. The interchange is located between the I-95 at SR 40 / Granada Boulevard interchange to the south (Exit 268) and the I-95 at County Road (CR) 2002 / Old Dixie Highway interchange to the north (Exit 278). The project is also evaluating widening a one-mile section of U.S. 1 from Destination Daytona Lane to Plantation Oaks Boulevard / Broadway Avenue from four lanes to six lanes. The improvements will also add a 14-foot shared use path on the north and south side of U.S. 1. A project location map is provided on **Figure 1**. Currently, the I-95 at U.S. 1 interchange is a partial cloverleaf with loop ramps in the northern quadrants, a configuration which is in part due to the proximity of the Florida East Coast (FEC) Railroad located approximately 650 feet south of U.S. 1. U.S. 1 has a striped bicycle lane north and southbound and an intermittent sidewalk on the north side of U.S. 1, from Destination Daytona Lane to the eastern signalized ramp intersection.

The purpose for the project is to enhance the operational and safety characteristics of the interchange to accommodate the future transportation demand and address the roadway deficiencies within the interchange and on the approximately one-mile segment of U.S. 1.

As part of this PD&E Study, the project has been reviewed for air quality impacts consistent with the guidance provided by Federal Highway Administration (FHWA) as described in Part 2, Chapter 19 of the FDOT PD&E Manual entitled Air Quality (dated July 1, 2020). The purpose of this Technical Memorandum is to document the findings of the air quality analysis.

Air Quality Analysis

The proposed project is located in Volusia County, Florida which is currently designated as being in attainment for the following criteria air pollutants: ozone, nitrogen dioxide, particulate matter (2.5 microns in size and 10 microns in size), and carbon monoxide.

The Build and No Build Alternatives were subjected to a carbon monoxide (CO) screening model that makes various conservative worst-case assumptions related to site conditions, meteorology, and traffic. The FDOT's screening model, CO Florida 2012, uses the United States Environmental Protection Agency

(USEPA) software [Motor Vehicle Emission Simulator (MOVES) version 2010a and CAL3QHC] to produce estimates of one-hour and eight-hour CO concentrations at default air quality receptor locations. The one-hour and eight-hour estimates can be directly compared to the one- and eight-hour National Ambient Air Quality Standards for CO that are 35 parts per million (ppm) and 9 ppm, respectively.

Both the Build and No Build Alternatives were evaluated for the project's design year 2050. The traffic data used in this evaluation is provided in **Table 1**, which was developed from the Preliminary Project Traffic Analysis Report (PTAR) dated October 2022.

Estimates of CO were predicted for the default receptors that are located 10 feet to 150 feet from the edge of the roadway. The results of the screening test are summarized in **Table 2**. Only the maximum one-hour and eight-hour CO concentrations are presented in this table. The results of the screening model are included as an attachment to this memorandum. Based on the results from the screening model, the highest project-related CO one- and eight-hour levels are not predicted to meet or exceed the one- or eight-hour National Ambient Air Quality Standards for this pollutant with either the Build or No Build Alternatives. As such, the project "passes" the screening model.

The project is located in an area which is designated in attainment for CO Ambient Air Quality Standards under the criteria provided in the Clean Air Act. Therefore, the Clean Air Act conformity requirements as related to transportation improvements do not apply to the project.

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.

Figure 1: Project Location Map

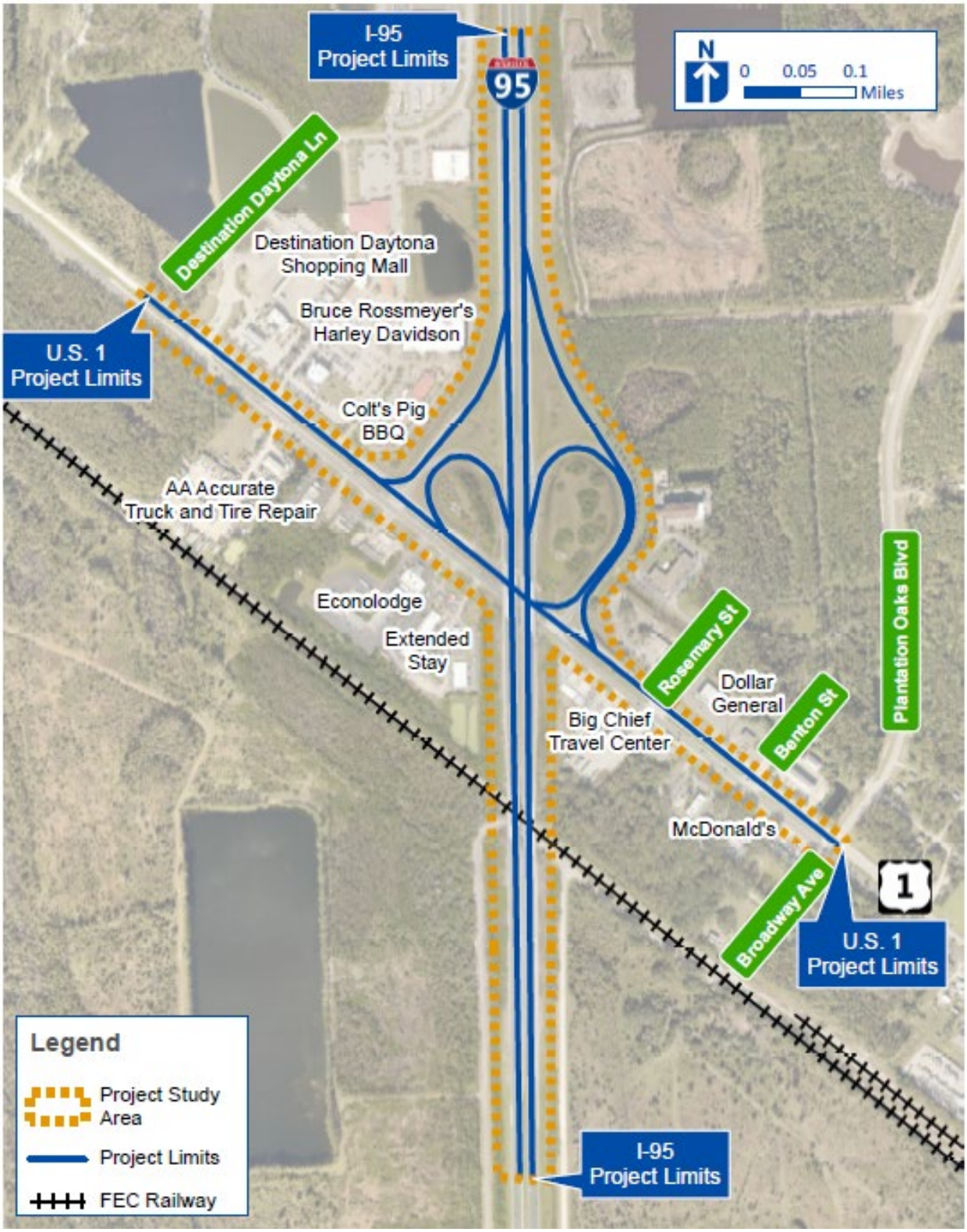

Table 1: Traffic Data for Air Quality Analysis

Roadway Type	Roadway Name	Roadway Segment	2050	
			Vehicles Per Hour	Cruise Speed (mph)
No Build Alternative				
North/South Freeway	I-95	Northbound Approach	4,094	65
		Southbound Approach	3,847	65
East/West Principal Arterial	U.S. 1	Eastbound Approach	1,172	45
		Westbound Approach	1,979	45
Build Alternative				
North/South Freeway	I-95	Northbound Approach	4,094	65
		Southbound Approach	3,847	65
East/West Principal Arterial	U.S. 1	Eastbound Approach	1,183	45
		Westbound Approach	2,810	45

Source: Preliminary Project Traffic Analysis Report (October 2022)

Table 2: Predicted CO Concentrations

Alternative	Design Year	Receptor Site Number(s)	Maximum One-Hour CO Concentration (ppm)	Maximum Eight-Hour CO Concentration (ppm)
I-95 at U.S. 1 Interchange				
No Build	2050	6, 7	4.8	2.9
Build	2050	6, 7, 16, 17	5.9	3.5

Note: * The predicted worst-case one-hour and eight-hour CO concentrations for the No Build and Build Alternatives are below the NAAQS of 35 ppm for one-hour concentrations and 9 ppm for eight-hour concentrations

ATTACHMENTS

Air Quality Screening Results

CO Florida 2012

CO Florida 2012 - Results
Thursday, November 3, 2022

Project Description

Project Title	I-95 at US-1 (SR5)			
Facility Name	I-95 and US 1			
User's Name	Mariano Berrios			
Run Name	2050 PM No Build			
FDOT District	5			
Year	2050			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	65 mph
Approach Traffic	Arterial	1979 vph	Freeway	4094 vph

Environmental Data

Temperature	47.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Rural
Stability Class	E
Surface Roughness	10 cm
1 Hr. Background Concentration	1.7 ppm
8 Hr. Background Concentration	1.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	4.6	2.8
2	3.3	2.0
3	4.5	2.7
4	4.2	2.5
5	4.0	2.4
6	4.8	2.9
7	4.8	2.9
8	4.6	2.8
9	2.9	1.7
10	4.0	2.4
11	4.6	2.8
12	3.3	2.0
13	4.4	2.6
14	4.2	2.5
15	3.9	2.3
16	4.7	2.8
17	4.7	2.8
18	4.6	2.8
19	2.9	1.7
20	4.2	2.5

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**********PROJECT PASSES**********
NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
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CO Florida 2012 - Results
Thursday, November 3, 2022

Project Description

Project Title	I-95 at US-1 (SR5)			
Facility Name	I-95 and US 1			
User's Name	Mariano Berrios			
Run Name	2050 PM Build			
FDOT District	5			
Year	2050			
Intersection Type	N-S Diamond			
Speed	Arterial	45 mph	Freeway	65 mph
Approach Traffic	Arterial	2810 vph	Freeway	4094 vph

Environmental Data

Temperature	47.8 °F
Reid Vapor Pressure	13.3 psi
Land Use	Rural
Stability Class	E
Surface Roughness	10 cm
1 Hr. Background Concentration	1.7 ppm
8 Hr. Background Concentration	1.0 ppm

Results
(ppm, including background CO)

Receptor	Max 1-Hr	Max 8-Hr
1	4.6	2.8
2	3.3	2.0
3	5.1	3.1
4	4.6	2.8
5	4.6	2.8
6	5.9	3.5
7	5.9	3.5
8	5.6	3.4
9	3.0	1.8
10	4.0	2.4
11	4.6	2.8
12	3.3	2.0
13	5.0	3.0
14	4.5	2.7
15	4.5	2.7
16	5.9	3.5
17	5.9	3.5
18	5.7	3.4
19	3.0	1.8
20	4.2	2.5

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