

# Appendix E

## Air Quality Technical Memorandum



***Draft Air Quality Technical Memorandum***

**Plantation Midtown Bridge  
Project Development and Environment Study**

Broward County, Florida

Work Program ID No. 448884-1

ETDM Number: 14481

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. Code (U.S.C.) §327 and a Memorandum of Understanding (MOU) dated December 14, 2016 and executed by Federal Highway Administration and FDOT.

March 2022

**Date:** March 21, 2022

**To:** Samira Shalan, P.E., Engineering Director  
City of Plantation Engineering Department

**Prepared By:** Timothy W.A. Ogle, Marlin Engineering

**Reference:** Air Quality Technical Memorandum – Plantation Midtown Bridge Improvement  
PD&E Study (FPID No. 448884-1-22-1; ETDM No. 14481)

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## **INTRODUCTION**

The City of Plantation is conducting a Project Development and Environment (PD&E) Study to evaluate alternative alignments for a vehicular connection bridge over the New River Canal, in the City of Plantation, Broward County, Florida. A project location map is shown in **Figure 1**. The objective of this PD&E Study is to assist the City of Plantation in reaching a decision on a preferred alignment for the proposed vehicular bridge. This study documents the need for the bridge as well as the procedures utilized to develop and evaluate preliminary alignments.

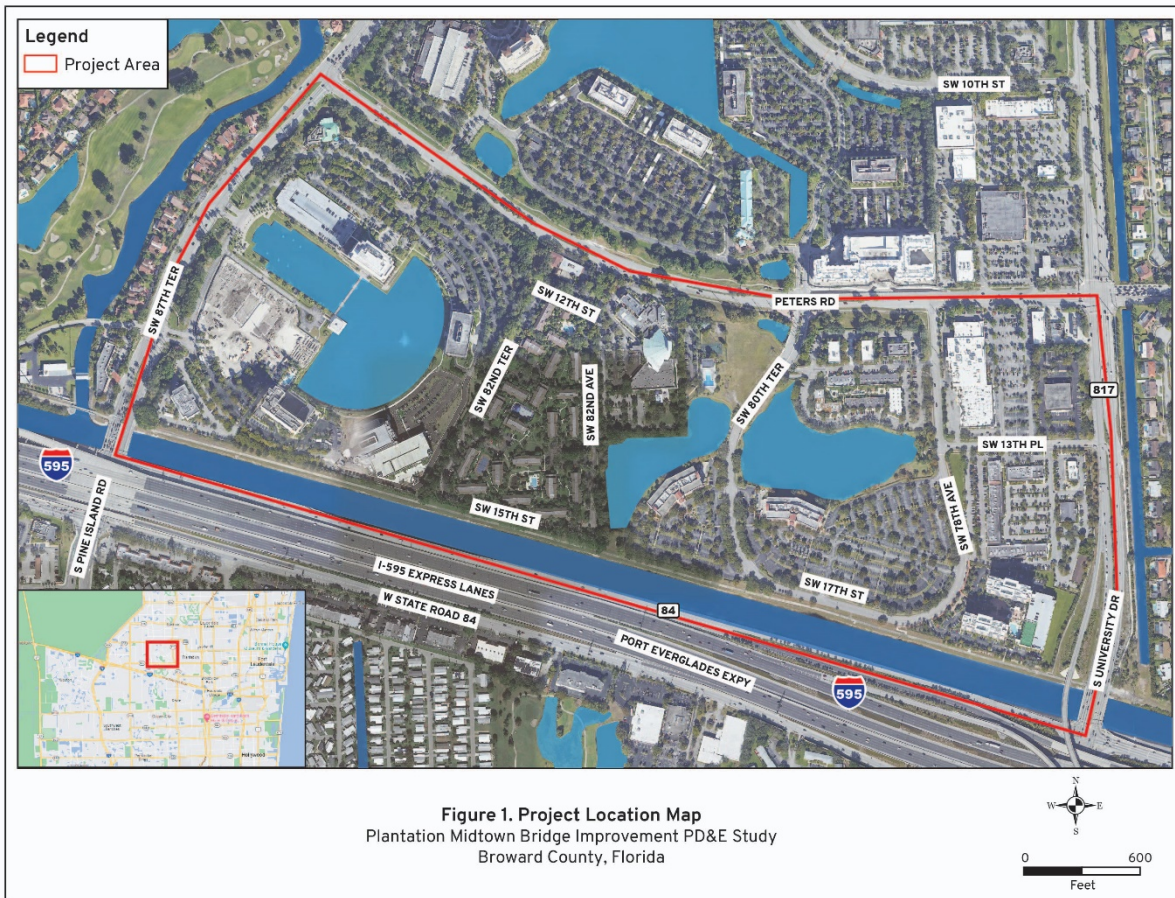
This Air Quality Technical Memorandum has been prepared in accordance with Chapter 19 *Air Quality* of Part 2 of the FDOT PD&E Manual (dated July 1, 2020). The PD&E Study satisfies all applicable requirements, including the National Environmental Policy Act (NEPA), to qualify for federal-aid funding of subsequent development phases (design, right of way acquisition, and construction). To initiate agency coordination, the project has been screened through the Programming Screen of the FDOT’s Efficient Transportation Decision Making (ETDM) process as ETDM Project No. 14481. An ETDM Programming Screen Summary Report was published on February 18, 2022, containing comments from the Environmental Technical Advisory Team (ETAT) on the project’s effects on various natural, physical, and social resources. The summary degree of effect for air quality for all build alternatives was listed as ‘Minimal’ in the ETDM Programming Screen Summary Report. Based on the ETAT comments, the Federal Highway Administration (FHWA) determined that this project qualified as a Type 2 Categorical Exclusion.

## **PROJECT STUDY AREA AND LAND USE**

The project study area is bounded by the Pine Island Road intersections at Peters Road and SR84/I-595 to the west, Peters Road on the north, SR 84 to the south, and the University Drive intersections at Peters Road and SR 84/I595 to the east. The total proposed new connection is expected to be approximately 200 feet in length between westbound SR 84 to the south and SW



17<sup>th</sup> Street to the north. The land use in the project area is dominated by residential, commercial, and light industrial land uses, with commercial and services land uses being the most prevalent.



**Figure 1 – Project Location Map**

**PLANNED IMPROVEMENTS**

This study analyzes the impacts of a new bridge crossing of the South Florida Water Management District (SFWMD) New River Canal between Westbound SR 84 and SW 17<sup>th</sup> Street in the City of Plantation, Broward County, Florida (Please see **Figure 2**). The typical section is anticipated to accommodate motorized traffic only as there are no existing or planned non-motorized facilities on Westbound SR 84. The proposed bridge was identified in the joint Broward Metropolitan Planning Organization (MPO) and Florida Department of Transportation District 4 (FDOT 4) I-595 Arterial Connectivity Study (I-595 ACS) as an alternative that has the potential to relieve congestion on Pine Island Road and University Drive and to provide a new system linkage between Westbound SR 84 and the Midtown Plantation Business District. The I-595 ACS analyzed daily traffic impacts for the bridge that shows potential to reduce traffic on both University Drive and Pine Island Road.



**Figure 2 – Planned Improvements**

**AIR QUALITY ANALYSIS**

The project is located in an area currently designated as being in attainment for the following criteria air pollutant(s): ozone/nitrogen dioxide/particulate matter (2.5 microns in size and 10 microns in size)/sulfur dioxide/carbon monoxide/lead. The No-Build and Recommended Build alternatives were subjected to the FDOT’s carbon monoxide (CO) screening model (CO Florida 2012) that makes various conservative worst-case assumptions related to site conditions, meteorology and traffic. The FDOT’s screening model for CO uses the latest United States Environmental Protection Agency (USEPA)-approved software to produce estimates of one-hour and eight-hour CO at default air quality receptor locations. The predicted CO levels can then be directly compared to the current National Ambient Air Quality Standards (NAAQS) for CO to determine if the project “passes” the screening model, or if exceedances are predicted to occur.

The existing roadway network in the area north of the New River Canal includes low-speed, two-lane roadways with a center turn-lane; including SW 80<sup>th</sup> Terrace to the west, SW 17<sup>th</sup> Street to



the south and SW 78<sup>th</sup> Avenue to the east. These roadways form a loop around the surrounding commercial and residential areas. The speed limit on all of these roadways is 25 miles per hour (MPH). SR 84 and I-595 to the south of the New River Canal are both high-volume, high-speed roadways. The new bridge over the New River Canal will include three new low-speed traffic lanes and new intersections at each end of the bridge. The intersection at SW 17<sup>th</sup> Street will be a four-way stop, while the intersection at SR 84 will remain in a free-flow condition northbound and stop-controlled for the southbound turn onto westbound SR 84.

Since, only the intersection at the north end of the bridge will be controlled on more than one leg and will not include any free-flow legs, this was the intersection that was screened for potential air quality impacts. The No Build Alternative and recommended Build Alternative were evaluated for both the opening year (2025) and the design year (2045). Afternoon (PM) Peak-Hour traffic volumes are predicted to be higher overall at this intersection and were used for this analysis. Also, the posted speed limit on SW 80<sup>th</sup> Terrace and SW 17<sup>th</sup> Street, 25 miles per hour, was assigned to all intersection legs. The traffic data input used in the evaluation is shown in **Table 1** below.

**TABLE 1 - PLANTATION MIDTOW BRIDGE PEAK HOUR TRAFFIC VOLUMES**

| Year           | Location                    | Approach Direction | Peak Hour Directional Volume |       | Speed (MPH) |
|----------------|-----------------------------|--------------------|------------------------------|-------|-------------|
|                |                             |                    | No Build                     | Build |             |
| Opening (2025) | SW 80 <sup>th</sup> Terrace | Eastbound          | 88                           | 267   | 25          |
|                | SW 17 <sup>th</sup> Street  | Westbound          | 133                          | 302   | 25          |
|                | Bridge                      | Northbound         | 0                            | 200   | 25          |
|                | Parking Area                | Southbound         | 0                            | 52    | 25          |
| Design (2045)  | SW 80 <sup>th</sup> Terrace | Eastbound          | 119                          | 394   | 25          |
|                | SW 17 <sup>th</sup> Street  | Westbound          | 155                          | 447   | 25          |
|                | Bridge                      | Northbound         | 0                            | 334   | 25          |
|                | Parking Area                | Southbound         | 0                            | 63    | 25          |

Estimates of CO were predicted for the default receptors which are located between 10 and 150 feet from the edge of the roadway. The results of the CO Screening Analysis are presented in **Table 2** below and also in the attached COFlorida 2012 output files. Based on the results from the screening model, the highest project-related CO one-hour and eight-hour levels are not predicted to meet or exceed the one-hour or eight-hour NAAQS for this pollutant with either the No-Build or Build alternatives. As such, the project passes the screening model.

**TABLE 2 - PREDICTED CARBON MONOXIDE LEVELS**

| Year           |          | Maximum CO Levels (PPM)   |                            |
|----------------|----------|---------------------------|----------------------------|
|                |          | One-Hour (NAAQS – 35 PPM) | Eight-Hour (NAAQS – 9 PPM) |
| Opening (2025) | No Build | 3.4                       | 2.0                        |
|                | Build    | 3.6                       | 2.2                        |
| Design (2045)  | No Build | 3.4                       | 2.0                        |
|                | Build    | 3.7                       | 2.2                        |

Notes: CO = Carbon Monoxide, PPM = Parts per million, NAAQS = National Ambient Air Quality Standard.

The construction of the planned improvements could cause short-term impacts to air quality through airborne dust and other ambient air pollutants. These impacts will be minimized by adherence to all applicable State and local regulations and to the FDOT’s *Standard Specifications for Road and Bridge Construction*.

Attachment: COFlorida 2012 Screening Model Output Data

# COFlorida 2012 Screening Model Output



CO Florida 2012 - Results  
 Thursday, March 3, 2022

Project Description

Project Title Plantation Midtown Bridge Improvement  
 Facility Name SW 80th Terr/SW 17th St Intersection  
 User's Name Marlin Engineering  
 Run Name Build Year/No-Build  
 FDOT District 4  
 Year 2025  
 Intersection Type E-W Freeway 4 X 4  
 Arterial Speed 25 mph  
 Max Approach Traffic 133 vph

Environmental Data

Temperature 53.9 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        | 3.3      | 2.0      |
| 2        | 3.3      | 2.0      |
| 3        | 3.4      | 2.0      |
| 4        | 3.4      | 2.0      |
| 5        | 3.3      | 2.0      |
| 6        | 3.3      | 2.0      |
| 7        | 3.3      | 2.0      |
| 8        | 3.4      | 2.0      |
| 9        | 3.4      | 2.0      |
| 10       | 3.3      | 2.0      |
| 11       | 3.3      | 2.0      |
| 12       | 3.3      | 2.0      |
| 13       | 3.4      | 2.0      |
| 14       | 3.4      | 2.0      |
| 15       | 3.3      | 2.0      |
| 16       | 3.3      | 2.0      |
| 17       | 3.3      | 2.0      |
| 18       | 3.4      | 2.0      |
| 19       | 3.3      | 2.0      |
| 20       | 3.3      | 2.0      |

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 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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**Build Year (2025) No Build Alternative**

CO Florida 2012 - Results  
 Wednesday, August 19, 2020

Project Description

Project Title Design Year All  
 Facility Name I-95/Woolbright Road  
 User's Name TO  
 Run Name 2045 All  
 FDOT District 4  
 Year 2045  
 Intersection Type E-W Freeway N-S Diamond  
 Speed Arterial 40 mph Freeway 65 mph  
 Approach Traffic Arterial 2490 vph Freeway 13501 vph

Environmental Data

Temperature 53.9 F  
 Reid Vapor Pressure 13.3 psi  
 Land Use Urban  
 Stability Class D  
 Surface Roughness 175 cm  
 1 Hr. Background Concentration 5.0 ppm  
 8 Hr. Background Concentration 3.0 ppm

Results

(ppm, including background CO)

| Receptor | Max 1-Hr | Max 8-Hr |
|----------|----------|----------|
| 1        | 10.3     | 6.2      |
| 2        | 7.7      | 4.6      |
| 3        | 7.7      | 4.6      |
| 4        | 7.5      | 4.5      |
| 5        | 7.2      | 4.3      |
| 6        | 7.3      | 4.4      |
| 7        | 7.8      | 4.7      |
| 8        | 7.7      | 4.6      |
| 9        | 6.9      | 4.1      |
| 10       | 9.8      | 5.9      |
| 11       | 10.3     | 6.2      |
| 12       | 7.7      | 4.6      |
| 13       | 7.7      | 4.6      |
| 14       | 7.4      | 4.4      |
| 15       | 7.1      | 4.3      |
| 16       | 7.3      | 4.4      |
| 17       | 7.8      | 4.7      |
| 18       | 7.7      | 4.6      |
| 19       | 6.9      | 4.1      |
| 20       | 9.8      | 5.9      |

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 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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**Build Year (2025) Build Alternative**

CO Florida 2012 - Results  
 Thursday, March 3, 2022

Project Description

Project Title Plantation Midtown Bridge Improvement  
 Facility Name SW 80th Terr/SW 17th St Intersection  
 User's Name Marlin Engineering  
 Run Name Design Year/No Build  
 FDOT District 4  
 Year 2045  
 Intersection Type E-W Freeway 4 X 4  
 Arterial Speed 25 mph  
 Max Approach Traffic 155 vph

Environmental Data

Temperature 53.9 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        | 3.3      | 2.0      |
| 2        | 3.3      | 2.0      |
| 3        | 3.4      | 2.0      |
| 4        | 3.4      | 2.0      |
| 5        | 3.3      | 2.0      |
| 6        | 3.3      | 2.0      |
| 7        | 3.3      | 2.0      |
| 8        | 3.4      | 2.0      |
| 9        | 3.4      | 2.0      |
| 10       | 3.3      | 2.0      |
| 11       | 3.3      | 2.0      |
| 12       | 3.3      | 2.0      |
| 13       | 3.4      | 2.0      |
| 14       | 3.4      | 2.0      |
| 15       | 3.3      | 2.0      |
| 16       | 3.3      | 2.0      |
| 17       | 3.3      | 2.0      |
| 18       | 3.4      | 2.0      |
| 19       | 3.3      | 2.0      |
| 20       | 3.3      | 2.0      |

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 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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**Design Year (2045) No Build Alternative**

CO Florida 2012 - Results  
 Thursday, March 3, 2022

Project Description

Project Title Plantation Midtown Bridge Improvement  
 Facility Name SW 80th Terr/SW 17th St Intersection  
 User's Name Marlin Engineering  
 Run Name Design Year/Build  
 FDOT District 4  
 Year 2045  
 Intersection Type E-W Freeway 4 X 4  
 Arterial Speed 25 mph  
 Max Approach Traffic 447 vph

Environmental Data

Temperature 53.9 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        | 3.4      | 2.0      |
| 2        | 3.5      | 2.1      |
| 3        | 3.6      | 2.2      |
| 4        | 3.5      | 2.1      |
| 5        | 3.5      | 2.1      |
| 6        | 3.4      | 2.0      |
| 7        | 3.5      | 2.1      |
| 8        | 3.6      | 2.2      |
| 9        | 3.5      | 2.1      |
| 10       | 3.5      | 2.1      |
| 11       | 3.4      | 2.0      |
| 12       | 3.5      | 2.1      |
| 13       | 3.7      | 2.2      |
| 14       | 3.5      | 2.1      |
| 15       | 3.5      | 2.1      |
| 16       | 3.4      | 2.0      |
| 17       | 3.6      | 2.2      |
| 18       | 3.6      | 2.2      |
| 19       | 3.6      | 2.2      |
| 20       | 3.5      | 2.1      |

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 \*\*\*\*\*PROJECT PASSES\*\*\*\*\*  
 \*NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED\*  
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**Design Year (2045) Build Alternative**