DRAFT
AIR QUALITY TECHNICAL MEMORANDUM

Florida Department of Transportation

District 1

SR 684 (Cortez Bridge and Approaches) PD&E Study

from SR 789 (Gulf Drive) to 123rd Street West

Manatee County, Florida

Financial Management Number: 430204-1

ETDM Number: 13568

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 (MOU) dated December 14, 2016 and executed by the Federal Highway Administration and FDOT.

August, 2017

TABLE OF CONTENTS

LIST OF APPENDICES

LIST OF TABLES

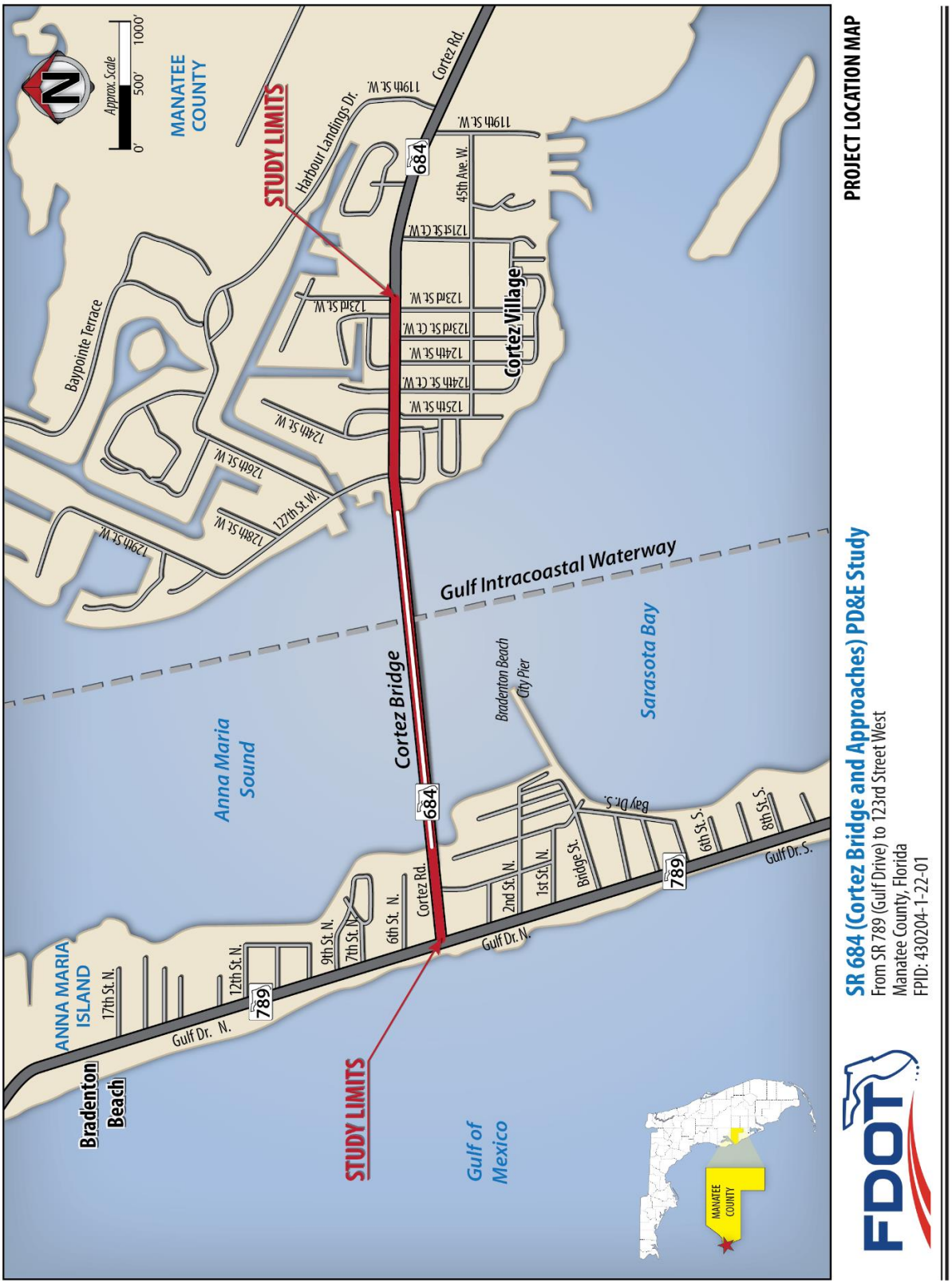
LIST OF FIGURES

SECTION 1.0
INTRODUCTION

The Florida Department of Transportation (FDOT) is conducting a Project Development and Environment (PD&E) Study for roadway and bridge improvement alternatives along State Road (SR) 684 (Cortez Road) from SR 789 (Gulf Drive) to 123rd Street West in Manatee County, Florida. The project location map (**Figure 1-1**) illustrates the location and limits of the Study.

The purpose of the PD&E Study is to provide documented environmental and engineering analyses to assist the FDOT and the Federal Highway Administration (FHWA), the lead federal agency, in reaching a decision on the type, location and conceptual design of the necessary improvements, in order to address the structural and functional deficiencies of the existing bridge while accommodating future traffic demand in a safe and efficient manner. The PD&E Study also satisfies the requirements of the National Environmental Policy Act (NEPA) and other related state and federal environmental laws and regulations, and qualifies the project for federal-aid funding of future development phases of the project.

Figure 1-1: Project Location Map



SECTION 2.0
AIR QUALITY SCREENING MODEL

An air quality analysis, specifically an analysis of carbon monoxide (CO) concentrations, was performed using methodology established in the Florida Department of Transportation (FDOT's) *Project Development and Environment* (*PD&E) Manual*[1], Part 2, Chapter 19. CO levels were predicted using FDOT's screening model *CO Florida 2012*[2].

2.1 ANALYSIS LOCATION

Motor vehicle emissions are typically highest at signalized intersections where operating speeds are slower and vehicles are delayed at traffic signals. A review of traffic data documented in the *SR 684 Final Project Traffic Report*[3] shows the SR 684 (Cortez Road)/SR 789 (Gulf Drive) intersection as the only signalized intersection within the project limits. Therefore, the SR 684 (Cortez Road)/SR 789 (Gulf Drive) intersection was evaluated as a worst-case scenario for air quality.

2.2 SITE CONDITIONS

CO Florida 2012 provides for a selection of an intersection type and default environmental/ meteorological conditions by FDOT District. The East Tee configuration was selected as the configuration most similar to the SR 684 (Cortez Road)/SR 789 (Gulf Drive) intersection. District One was selected as the geographic region.

CO Florida 2012 also provides various land use options to simulate the effects of atmospheric conditions and account for background CO levels in the project area. An urban land use was selected. The urban land use includes a background CO concentration of 5.0 parts per million (ppm) for a 1-hour averaging time and 3.0 ppm for an 8-hour averaging time. The background concentration is added to the predicted CO emissions from vehicles operating at the SR 684 (Cortez Road)/SR 789 (Gulf Drive) intersection.

2.3 TRAFFIC DATA

Traffic data used in the analysis are provided in **Table 2-1**. The traffic data represents peak-hour conditions. As indicated, the analysis was performed for opening year (2016) and design year (2036). Since there are no additional through lanes proposed, the No-Build and Build conditions are identical. Vehicle approach speeds were set at the speed limit as directed by the *User's Guide to CO Florida 2012.*

2.4 RECEPTOR LOCATIONS

CO levels are highest near travel lanes where pollutants are emitted with concentrations decreasing as the distance from the road increases. As a worst-case scenario, *CO Florida 2012* includes pre-built receptors located along each leg of the intersection. The pre-built receptors used in the screening model provide a comprehensive 360^{o} representation of potential near-road CO concentrations The East Tee configuration includes 17 pre-built receptor locations.

Table 2-1: Traffic Data

Scenario	Intersection Approach	Peak-Hour Traffic Volume	Speed Limit (mph)
2016 Opening Year	SR 789 Southbound Approach Volume	534	35
	SR 684 Westbound Approach	718	35
	SR 789 Northbound Approach Volume	551	35
2036 Design Year	SR 789 Southbound Approach Volume	842	35
	SR 684 Westbound Approach	949	35
	SR 789 Northbound Approach Volume	709	35

2.5 RESULTS

The predicted CO concentrations are provided in **Table 2-2**. The highest predicted CO concentrations are 5.9 ppm for a 1-hour averaging time and 3.5 ppm for an 8-hour averaging time. All predicted CO concentrations in the opening year (2016) and design year (2036) are below the National Ambient Air Quality Standards (NAAQS) of 35 ppm for a 1-hour averaging time and the NAAQS of 9 ppm for an 8-hour averaging time. The predicted 1-hour and 8-hour concentrations include a background CO level of 5.0 ppm and 3.0 ppm, respectively. Output sheets from *CO Florida 2012* are provided in Appendix A.

2.6 STATE IMPLEMENTATION PLAN (SIP) CONFORMITY

The project is in an area that has been designated as attainment for all of the NAAQS established by the Clean Air Act and subsequent amendments. Therefore, demonstration of conformity with a SIP is not required for this project.

Table 2-2: Predicted CO Concentrations

Receptor Identification	Scenario			
	2016 No-Build and Build		2036 No-Build and Build	
	1-Hour[1] (ppm)	8-Hour[2] (ppm)	1-Hour[1] (ppm)	8-Hour[2] (ppm)
R1	5.9	3.5	5.7	3.4
R2	5.9	3.5	5.8	3.5
R3	5.9	3.5	5.8	3.5
R4	5.7	3.4	5.6	3.4
R5	5.7	3.4	5.5	3.3
R6	5.6	3.4	5.5	3.3
R7	5.8	3.5	5.5	3.3
R8	5.9	3.5	5.7	3.4
R9	5.7	3.4	5.7	3.4
R10	5.9	3.5	5.7	3.4
R11	5.9	3.5	5.8	3.5
R12	5.9	3.5	5.7	3.4
R13	5.8	3.5	5.8	3.5
R14	5.9	3.5	5.8	3.5
R15	5.9	3.5	5.8	3.5
R16	5.9	3.5	5.8	3.5
R17	5.9	3.5	5.7	3.4

[1] Includes a background CO concentration of 5.0 ppm
2 Includes a background CO concentration of 3.0 ppm

2.7 GREEN HOUSE GAS EMISSIONS

Green House Gases (GHG) cause a global phenomenon in which heat is trapped in the earth's atmosphere. Because atmospheric concentration of GHGs continues to climb, our planet will continue to experience climate-related phenomena. For example, warmer global temperatures can cause changes in precipitation and sea levels. The burning of fossil fuels and other human activities are adding to the concentration of GHGs in the atmosphere. Many GHGs remain in the atmosphere for time periods ranging from decades to centuries.

To date, no national standards have been established regarding GHGs, nor has the United States Environmental Protection Agency (EPA) established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO_2 under the Clean Air Act. GHGs are different from other air pollutants evaluated in the Federal environmental reviews because their impacts are not localized or regional due to their rapid dispersion into the global atmosphere, which is characteristic of these gases. The affected environment for CO_2 and other GHG emissions is the entire planet. In addition, from a quantitative perspective, global climate change is the cumulative result of numerous and varied emissions sources (in terms of both absolute numbers and types), each of which makes a relatively

small addition to global atmospheric GHG concentrations. In contrast to broad scale actions such as actions involving an entire industry sector or very large geographic areas, it is difficult to isolate and understand the GHG emissions impacts for a particular transportation project. Furthermore, presently there is no scientific methodology for attributing specific climatological changes to a particular transportation project's emissions.

Under the National Environmental Policy Act (NEPA), detailed environmental analysis should be focused on issues that are significant and meaningful to decision-making (Title 40 Code of Federal Regulations [CFR] 1500.1(b), 1500.2(b), 1500.4(g), and 1501.7). The Federal Highway Administration (FHWA) has concluded, based on the nature of GHG emissions and the exceedingly small potential GHG impacts of the proposed action, that the GHG emissions from the proposed action will not result in "reasonably foreseeable significant adverse impacts on the human environment" (40 CFR 1502.22(b)). The GHG emission from the project build alternatives will be insignificant, and will not play a meaningful role in a determination of the environmentally preferable alternative or the selection of the preferred alternative. More detailed information on GHG emissions "is not essential to a reasoned choice among reasonable alternatives" (40 CFR 1502.22(a)) or to making a decision in the best overall public interest based on a balanced consideration of transportation, economic, social, and environmental needs and impacts (23 CFR 771.105(b)).

This document does not incorporate an analysis of the GHG emissions or climate change effects of each of the alternatives because the potential change in GHG emissions is very small in the context of the affected environment. Because of the insignificance of the GHG impacts, those local impacts will not be meaningful to a decision on the environmentally preferable alternative or to a choice among alternatives. For these reasons, no alternatives-level GHG analysis has been performed for this project.

SECTION 3.0
REFERENCES

1. *Project Development and Environment Manual*, Part 2, Chapter 19; Florida Department of Transportation; June 14, 2017.

2. *User's Guide to CO Florida 2012*; Florida Department of Transportation; January 31, 2012.

3. *Final Project Traffic Report*; GMB Engineers & Planners, Inc.; Orlando, Florida; May 16, 2013.

APPENDIX A

CO FLORIDA 2012 OUTPUT SHEETS

CO Florida 2012 - Results
Tuesday, August 08, 2017

Project Description

Project Title	Cortez Bridge
Facility Name	SR 684 (Cortez Road)
User's Name	DD
Run Name	2036 (Design Year)
FDOT District	1
Year	2036
Intersection Type	East Tee
Speed	Arterial 35 mph
Approach Traffic	Arterial 949 vph

Environmental Data

Temperature	48.3 °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	5.7	3.4
2	5.8	3.5
3	5.8	3.5
4	5.6	3.4
5	5.5	3.3
6	5.5	3.3
7	5.5	3.3
8	5.7	3.4
9	5.7	3.4
10	5.7	3.4
11	5.8	3.5
12	5.7	3.4
13	5.8	3.5
14	5.8	3.5
15	5.8	3.5
16	5.8	3.5
17	5.7	3.4

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

CO Florida 2012 - Results
Tuesday, August 08, 2017

Project Description

Project Title	Cortez Bridge
Facility Name	SR 684 (Cortez Road)
User's Name	DD
Run Name	2016 (Opening Year)
FDOT District	1
Year	2016
Intersection Type	East Tee
Speed	Arterial 35 mph
Approach Traffic	Arterial 718 vph

Environmental Data

Temperature	48.3 °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	5.9	3.5
2	5.9	3.5
3	5.9	3.5
4	5.7	3.4
5	5.7	3.4
6	5.6	3.4
7	5.8	3.5
8	5.9	3.5
9	5.7	3.4
10	5.9	3.5
11	5.9	3.5
12	5.9	3.5
13	5.8	3.5
14	5.9	3.5
15	5.9	3.5
16	5.9	3.5
17	5.9	3.5

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