

AIR QUALITY MEMORANDUM

for

**SR 5/US 1 Bridge Over Loxahatchee River/Atlantic Intracoastal Waterway
(Bridge #930005)
Project Development and Environment (PD&E) Study
From CR-A1A to Beach Road
Milepost 10.567 – 11.127
Palm Beach County, Florida**

**Financial Project ID: 428400-2-22-02
Federal Aid Number: TBD
ETDM Number: 14199**

This PD&E evaluated alternatives for the replacement of the SR 5/US 1 Bridge over the Loxahatchee River and alternatives for addressing stormwater management.

The environmental review, consultation, and other actions required by applicable federal environmental laws for this project are being, or have been, carried out by FDOT pursuant to 23 U.S.C. §327 and a Memorandum of Understanding dated December 14, 2016 and executed by FHWA and FDOT.

Prepared by:



**Florida Department of Transportation
District Four
3400 West Commercial Boulevard
Fort Lauderdale, Florida 33309**

March 2017

AIR QUALITY TECHNICAL MEMORANDUM

Date: March 24, 2017

To: Rita Bulsara, P.E, FDOT – D4

Cc: Ann Broadwell, Environmental Administrator

From: Lynn Kiefer, Senior Environmental Scientist

Subject: Financial Project ID Number: 428400-2-22-02
Federal Aid Number: TBD
Air Quality Screening
SR 5/US 1 Bridge Over Loxahatchee River/Atlantic Intracoastal Waterway
(Bridge #930005)
From CR-A1A to Beach Road
Palm Beach County, Florida

The proposed project is in Palm Beach County, an area designated as being in attainment for the following criteria air pollutants: ozone, nitrogen dioxide, particulate matter, sulfur dioxide, carbon monoxide, and lead.

The project 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 Florida Department of Transportation's (FDOT's) screening model for CO uses the latest US Environmental Protection Agency (EPA)-approved software 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-hour and eight-hour National Ambient Air Quality Standards (NAAQS) for CO.

The roadway intersection forecast to have the highest total approach traffic volume was the SR 5/US Highway 1 and Beach Road/Alternate A1A intersection. The existing bridge is two lanes in each direction and the proposed bridge will also be two lanes in each direction, therefore the proposed bridge will not be increasing capacity. The bridge construction will be tying into the existing roadways. Thus, for the screening, the Build and No Build scenarios for both the opening year (2020) and design year (2040) are the same from a traffic standpoint; therefore, only the Build 2020 and Build 2040 were evaluated. The traffic data input used in the evaluation is attached to this memorandum. There is a lane-diet (reduction of the number of lanes) project on US 1 being completed by FDOT and the Town. As such, the intersection configuration was based on the reduced number of lanes on US 1 north of the intersection with Beach Road/Alternate A1A.

Estimates of CO were predicted for the default receptors which are located 10 feet to 150 feet from the edge of the roadway. 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-hour or eight-hour NAAQS for this pollutant with either the No-Build or Build Alternatives. As such the project "passes" the screening model. The results of the screening model are attached to this memorandum.

Greenhouse Gases

Greenhouse 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 USEPA established criteria or thresholds for ambient GHG emissions pursuant to its authority to establish motor vehicle emission standards for CO₂ 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 CO₂ 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 NEPA, detailed environmental analysis should be focused on issues that are significant and meaningful to decision-making (40 CFR 1500.1(b), 1500.2(b), 1500.4(g), and 1501.7). 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)).

Summary

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.

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.

TRAFFIC DATA FOR AIR QUALITY ANALYSIS

Date: March 16, 2017 Prepared by: Kimley-Horn and Associates, Inc.

Financial Project ID Number: 428400-2-22-02

Federal Aid Number: TBD

Project Description: FDOT is conducting a PD&E Study to evaluate alternatives for the replacement of the SR 5/US 1 Bridge over the Loxahatchee River/Atlantic Intracoastal Waterway. The purpose of the project is to address structural and functional deficiencies of the existing bridge. Different vertical profiles were considered, however only one horizontal alignment was considered due to right-of-way constraints. The CO models were run based on only the 2020 Build and the 2040 Build because the Build and No-Build are the same from a traffic standpoint. The existing bridge is two lanes in each direction and the proposed bridge will also be two lanes in each direction, therefore the proposed bridge will not be increasing capacity. The bridge construction will be tying into the existing roadways.

Opening Year: 2020

Design Year: 2040

Intersection: Build: SR 5/US Highway 1 No-Build: SR 5/US Highway 1

Land Use: Urban												
Year & Condition	EB			WB			NB			SB		
	No. of Lanes	VPH	Speed	No. of Lanes	VPH	Speed	No. of Lanes	VPH	Speed	No. of Lanes	VPH	Speed
2020 Build	4	1029	45	4	628	35	4	1156	45	4	1711	45
2040 Build	4	1277	45	4	717	35	4	1408	45	4	2303	45

Intersection Data - 4 X 4

SOUTHBOUND

Speed (mph)
 Approach Traffic (veh/hr)

Speed (mph)
 Approach Traffic (veh/hr)

EASTBOUND

NOT DRAWN TO SCALE

WESTBOUND

SPEED (mph)
 Approach Traffic (veh/hr)

NORTHBOUND

Speed(mph)
 Approach Traffic (veh/hr)

NOTES:

- 1) APPROACH TRAFFIC is the peak hour volume on that leg, including left and right turning traffic, if applicable.
- 2) SPEED is the cruise speed as vehicles approach the intersection before entering the queue, sometimes referred to as mid-block speed. If cruise speed is unknown, use the speed limit.

2020 Build

Intersection Data - 4 X 4

SOUTHBOUND

Speed (mph)

Approach Traffic (veh/hr)

Speed (mph)

Approach Traffic (veh/hr)

EASTBOUND

NOT DRAWN TO SCALE

Speed(mph)

Approach Traffic (veh/hr)

NORTHBOUND

WESTBOUND

SPEED (mph)

Approach Traffic (veh/hr)

NOTES:

- 1) APPROACH TRAFFIC is the peak hour volume on that leg, including left and right turning traffic, if applicable.
- 2) SPEED is the cruise speed as vehicles approach the intersection before entering the queue, sometimes referred to as mid-block speed. If cruise speed is unknown, use the speed limit.

2040 Build

CO Florida 2012 - Results
 Wednesday, March 15, 2017

Project Description

Project Title SR 5/US 1 Bridge PD&E Study
 Facility Name SR 5/ US1 Bridge
 User's Name FDOT D4
 Run Name Build 2020
 FDOT District 4
 Year 2020
 Intersection Type 4 X 4
 Speed Arterial 35 mph
 Approach Traffic Arterial 1711 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
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1	6.5	3.9
2	6.7	4.0
3	7.0	4.2
4	6.6	4.0
5	6.4	3.8
6	6.4	3.8
7	6.7	4.0
8	7.0	4.2
9	6.5	3.9
10	6.4	3.8
11	6.4	3.8
12	6.7	4.0
13	7.0	4.2
14	6.5	3.9
15	6.4	3.8
16	6.4	3.8
17	6.7	4.0
18	7.0	4.2
19	6.6	4.0
20	6.4	3.8

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

CO Florida 2012 - Results
 Wednesday, March 15, 2017

Project Description

Project Title SR 5/US 1 Bridge PD&E Study
 Facility Name SR 5/ US1 Bridge
 User's Name FDOT D4
 Run Name Build 2040
 FDOT District 4
 Year 2040
 Intersection Type 4 X 4
 Speed Arterial 35 mph
 Approach Traffic Arterial 2303 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	6.5	3.9
2	6.6	4.0
3	7.0	4.2
4	6.6	4.0
5	6.3	3.8
6	6.5	3.9
7	6.6	4.0
8	7.0	4.2
9	6.6	4.0
10	6.3	3.8
11	6.5	3.9
12	6.6	4.0
13	7.0	4.2
14	6.6	4.0
15	6.3	3.8
16	6.5	3.9
17	6.7	4.0
18	7.0	4.2
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20	6.3	3.8

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