Air Quality Screening Analysis

Technical Memorandum

for

Project Development and Environment (PD&E) Study
Midway Road (County Road (CR) 712)
From Glades Cut Off Road (CR 709)(Milepost 5.813)
To
Selvitz Road (CR 615)(Milepost 7.405)
St. Lucie County, Florida

Financial Project ID: 231440-3-22-01
ETDM Number: 14177

Prepared for:

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

September 2016

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Prepared by:
Inwood Consulting Engineers, Inc.

September 2016

DATE: **SEPTEMBER 16, 2016**

TO: **ALEX HULL, PE, INWOOD CONSULTING ENGINEERS, INC.**

FROM: **DAVID A GRAEBER, PE, INWOOD CONSULTING ENGINEERS, INC.**

SUBJECT: **MIDWAY ROAD (CR 712) PD&E STUDY FROM GLADES CUT-OFF ROAD (CR 709) (MP 5.813) TO SELVITZ ROAD (CR 615) (MP 7.405)**
FEDERAL PROJECT ID: 231440-3-22-01
ST. LUCIE COUNTY, FLORIDA

RE: **AIR QUALITY SCREENING ANALYSIS - TECHNICAL MEMORANDUM**

The Florida Department of Transportation (FDOT), District Four, is conducting a Project Development and Environment (PD&E) Study to evaluate the proposed widening of Midway Road (CR 712) from Glades Cut-Off Road (CR 709) (MP 5.813) to Selvitz Road (CR 615)(MP 7.405) in St. Lucie County. The proposed action would widen the existing two-lane rural roadway (no pedestrian or trail features) to a four-lane urban roadway, including the construction of a shared-use path on the south side of the roadway and a sidewalk on the north side of the roadway. The design speed of the roadway will be 45 miles per hour (mph). The total project length is approximately 1.6 miles. ***Figure 1*** shows the project location. The designated opening year for the project is 2020 and the designated design year for the project is 2040.

The project corridor is located in unincorporated St. Lucie County but is adjacent to the northern border to the City of Port St. Lucie. Land-uses adjacent to the project corridor include industrial, commercial and government properties on the north side of the roadway and residential properties on the south side of the roadway.

Martin and St. Lucie Counties each have an independent Metropolitan Planning Organization/Transportation Planning Organization (MPO/TPO) but share a common Regional Long Range Transportation Plan (RLRTP). The RLRTP establishes a unified strategy for transportation priorities and funding and creates a joint decision-making process regarding regional transportation issues. The Midway Road (CR 712) project is identified in the Martin and St. Lucie 2035 RLRTP. The project is identified in the St. Lucie County TPO 2035 Cost Feasible Plan (2016-2035) with a 2021-2025 implementation horizon. In addition, the project will be included in the next update to the State Transportation Improvement Program and the St. Lucie TPO Transportation Improvement Program.

St. Lucie County, Florida is an area that has been designated as attainment for ozone, nitrogen dioxide, particulate matter (2.5 microns in size and 10.0 microns in size), sulfur oxides, carbon monoxide, and lead. The project is located in an area which is designated attainment for all of the 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.

The project was reviewed for air quality impacts consistent with the *FHWA Discussion Paper: Appropriate Level of Highway Air Quality Analysis for a CE, EA/FONSI, and EIS (FHWA 1986)* per the *FDOT PD&E Manual, Part 2, Chapter 16 – Air Quality (FDOT 2016).*

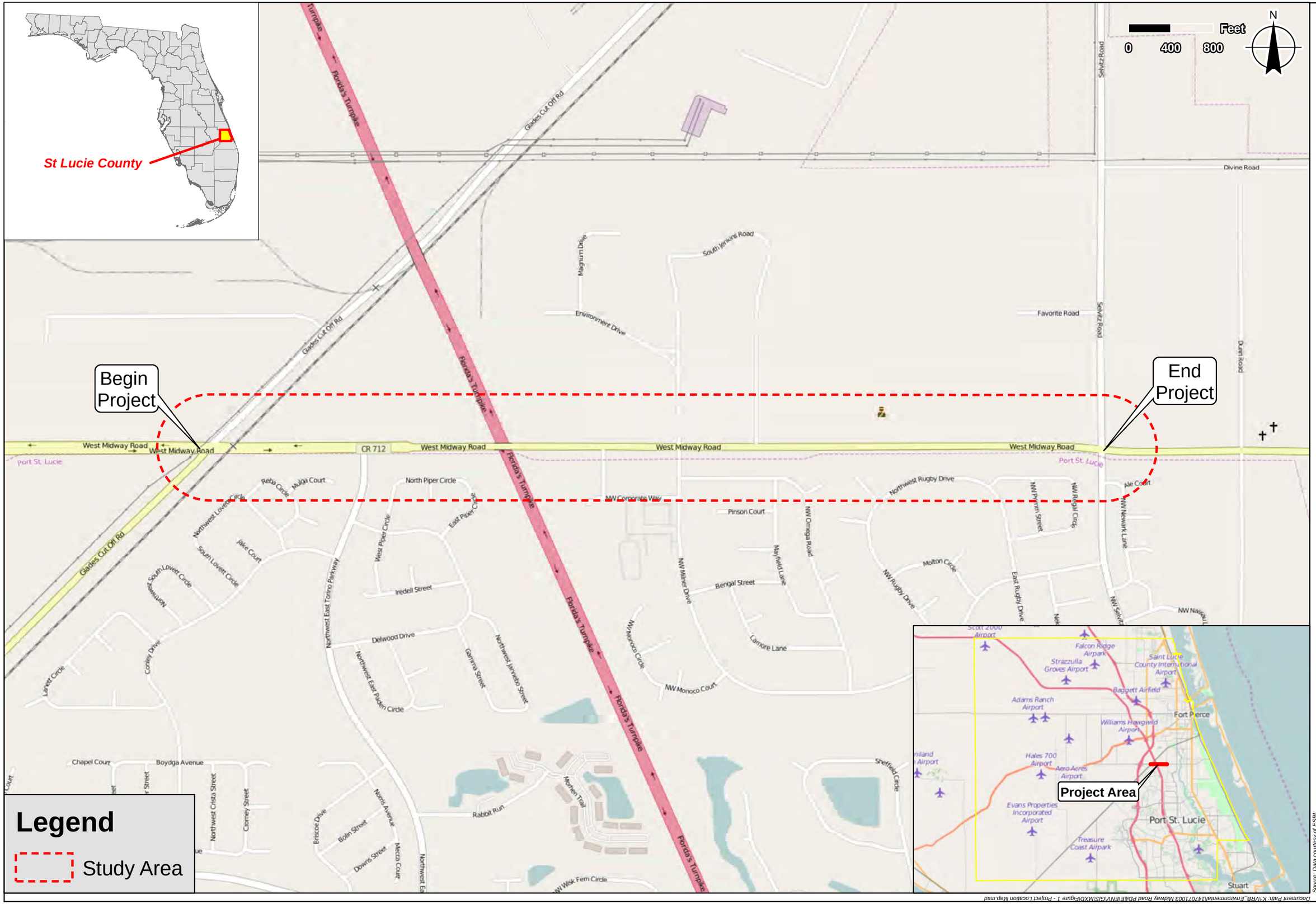
The project alternatives were subjected to a carbon monoxide (CO) screening model, *CO Florida 2012 (FDOT, Version 1.01, January 9, 2012)*, that makes various conservative, worst-case assumptions related to site conditions, meteorology and traffic utilizing the latest United States Environmental Protection Agency (EPA)-approved software to produce estimates of one-hour and eight-hour CO at default air quality receptor locations. These default air quality receptor locations are located 10 feet from the edge of a standardized roadway, which is included in the model, and spaced between 10 and 150 feet along each roadway approach on both sides of the road.

The Build and No-Build alternatives for both the opening year (2020) and the design year (2040) were evaluated. In order to establish the worst case scenario within the project corridor, estimates of CO levels were predicted for receptors located at the intersection within the corridor with the highest predicted, approach volumes in either the AM or PM peak hour condition.

For the opening year (2020), Build and No-Build conditions, the intersection within the project corridor with the highest predicted approach volume for either the AM or PM peak hour was the intersection of Midway Road and Glades Cut-off Road during the AM peak hour. The project traffic input data for this intersection is provided in ***Table 1***.

For the design year (2040) Build and No-Build conditions the intersection within the project corridor with the highest predicted approach volume for either the AM or PM peak hour was the intersection of Midway Road and Glades Cut-off Road during the AM peak hour. The project traffic input data for this intersection is provided in ***Table 2***.

Based on the traffic volume input data values shown in ***Table 1*** and ***Table 2***, receptors at the intersection of Midway Road and Glades Cut-Off Road were modeled to evaluate maximum



Source: Data courtesy of ESRI;

Document Path: K:\TRE_Environmental\147073003 Midway Road PD&E\ENV\GIS\MXD\Figure 1 - Project Location Map.mxd

FDOT

Project Location Map

Project Development and Environment (PD&E) Study - Midway Road (CR712)
From Glades Cut Off Road (CR 709) to Selvitz Road (CR 615)
St. Lucie County, Florida
Financial Project ID: 231440-3-22-01; ETDM Number: 14177

1 inch = 800 feet

FIGURE 1

MAY 2016

Table 1
CO Florida 2012 Project Traffic Input Data – Opening Year (2020)*

Year	Facility	AM Peak Hour Approach Traffic Volumes				Approach Speed (mph)
		Eastbound	Westbound	Northbound	Southbound	
2020	Midway Road	843	1013	NA	NA	45
	Glades Cut-Off Road	NA	NA	323	298	45

* Source: Design Traffic Technical Memorandum, Figure 6: 2020 Peak Hour Volumes, Prepared by Kimley-Horn and Associates, Inc., May 2016

Table 2
CO Florida 2012 Project Traffic Input Data – Design Year (2040)*

Year	Facility	AM Peak Hour Approach Traffic Volumes				Approach Speed (mph)
		Eastbound	Westbound	Northbound	Southbound	
2040	Midway Road	1625	1969	NA	NA	45
	Glades Cut-Off Road	NA	NA	1133	490	45

* Source: Design Traffic Technical Memorandum, Figure 7: 2040 Peak Hour Volumes, Prepared by Kimley-Horn and Associates, Inc., May 2016

Table 3
Predicted Maximum One-Hour and Eight-Hour CO Concentrations

Year	Scenario	Maximum CO Concentration (ppm)*	
		1-Hour	8-Hour
Opening 2020	No-Build	6.5	3.9
Opening 2020	Build	6.5	3.9
Opening 2040	No-Build	7.3	4.4
Opening 2040	Build	7.3	4.4

* Parts per Million

one-hour and eight-hour CO concentrations. The results of the CO screening are shown in parts per million (ppm) and provided in ***Table 3.***

As shown in ***Table 3***, the operations of the proposed facility are anticipated to result in maximum one-hour CO concentrations of 7.3 ppm and maximum eight-hour CO concentrations of 4.4 ppm in the design year for the Build Alternative. These values do not meet or exceed the National Ambient Air Quality Standards (NAAQS) established by the United States Environmental Protection Agency (USEPA) of 35 ppm for a one-hour concentration and 9 ppm for an eight-hour concentration, with either the Build or No-Build alternatives. Thus, the project "passes" the screening model and no adverse impacts to air quality are anticipated to result from the operation of this project. The *CO Florida 2012* data output files are attached to this memorandum as ***Attachment A***.

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

Attachment A

CO Florida 2012 Output Files

CO Florida 2012 - Results
Monday, September 12, 2016

Project Description

Project Title	Midway Road PD&E Study
Facility Name	Midway Road
User's Name	David Graeber
Run Name	Glades at Midway 2020 AM Build
FDOT District	4
Year	2020
Intersection Type	4 X 4
Speed	Arterial 45 mph
Approach Traffic	Arterial 1013 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	6.1	3.7
2	6.3	3.8
3	6.5	3.9
4	6.2	3.7
5	6.2	3.7
6	6.1	3.7
7	6.3	3.8
8	6.5	3.9
9	6.1	3.7
10	6.2	3.7
11	6.1	3.7
12	6.3	3.8
13	6.5	3.9
14	6.1	3.7
15	6.2	3.7
16	6.1	3.7
17	6.3	3.8
18	6.5	3.9
19	6.1	3.7
20	6.2	3.7

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

CO Florida 2012 - Results
Monday, September 12, 2016

Project Description

Project Title	FM 231440-3 - Midway Road PD&E Study
Facility Name	Midway Road
User's Name	David Graeber
Run Name	Midway at Glades 2040 AM - No-Build
FDOT District	4
Year	2040
Intersection Type	4 X 4
Speed	Arterial 45 mph
Approach Traffic	Arterial 1969 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	6.9	4.1
2	6.9	4.1
3	7.3	4.4
4	6.8	4.1
5	6.4	3.8
6	6.9	4.1
7	6.9	4.1
8	7.2	4.3
9	6.8	4.1
10	6.4	3.8
11	6.9	4.1
12	6.9	4.1
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CO Florida 2012 - Results
Monday, September 12, 2016

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Facility Name	Midway Road
User's Name	David Graeber
Run Name	Midway at Glades 2040 AM - Build
FDOT District	4
Year	2040
Intersection Type	4 X 4
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NO EXCEEDANCES OF NAAQ STANDARDS ARE PREDICTED
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CO Florida 2012 - Results
Monday, September 12, 2016

Project Description

Project Title	Midway Road PD&E Study
Facility Name	Midway Road
User's Name	David Graeber
Run Name	Midway at Glades 2020 AM No-Build
FDOT District	4
Year	2020
Intersection Type	4 X 4
Speed	Arterial 45 mph
Approach Traffic	Arterial 1013 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
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