

AIR QUALITY TECHNICAL MEMORANDUM

Date: September 18, 2012
To: Florida Department of Transportation, District Five

Prepared by: Jim Mykytka
Title: Senior Environmental Scientist, Reynolds, Smith and Hills, Inc.

Subject: AIR QUALITY SCREENING TEST
I-95 / Ellis Road Interchange and Ellis Road from I-95 to Wickham Road (CR 509)
Project Development and Environment (PD&E) Study
Financial Project ID: 426905-1-22-01
Brevard County, Florida

The referenced proposed project is located in Brevard County which is currently designated as being attainment for the following criteria air pollutants: ozone/nitrogen dioxide/particulate matter (2.5 microns in size and 10 microns in size)/sulfur dioxide/carbon monoxide/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, CO Florida 2004 (released September 7, 2004) uses the latest United States Environmental Protection Agency (USEPA)-approved software (*MOBILE6 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 (NAAQS)* for CO that are 35 parts per million (ppm) and 9 parts per million (ppm), respectively.

The roadway intersection forecast to have the highest total approach traffic volume was Ellis Road and Wickham Road. The Build and No-Build scenarios for both the opening year 2014 and the design year 2034 were evaluated. The traffic data used in the evaluation is attached to this memorandum.

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- or eight-hour *National Ambient Air Quality Standards (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.

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.

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

Project Description: I-95 / Ellis Road Interchange and Ellis Road from I-95 to Wickham Road (CR 509) Project Development and Environment (PD&E) Study
Brevard County, Florida

Financial Project ID: 426905-1-22-01

Traffic Data for Ellis Road and Wickham Road Signalized Intersection

Project Scenarios	Project Alternative	Roadway Segment (Number of Lanes)	Design Hour Intersection Approach Volume	Intersection Approach Speed (miles per hour)
Opening Year (2014)	No Build Alternative	Ellis Road Eastbound (1-Lane)	515	35
		Ellis Road Westbound (1-Lane)	1,000	45
		Wickham Road Northbound (2-Lane)	1,100	40
		Wickham Road Southbound (2-Lane)	1,850	40
	Build Alternative	Ellis Road Eastbound (2-Lane)	935	45
		Ellis Road Westbound (2-Lane)	1,320	45
		Wickham Road Northbound (2-Lane)	1,190	40
		Wickham Road Southbound (2-Lane)	1,850	40
Design Year (2034)	No Build Alternative	Ellis Road Eastbound (1-Lane)	1,050	35
		Ellis Road Westbound (1-Lane)	1,600	45
		Wickham Road Northbound (2-Lane)	1,480	40
		Wickham Road Southbound (2-Lane)	2,260	40
	Build Alternative	Ellis Road Eastbound (2-Lane)	1,175	45
		Ellis Road Westbound (2-Lane)	1,505	45
		Wickham Road Northbound (2-Lane)	1,460	40
		Wickham Road Southbound (2-Lane)	2,220	40

Source: Final Design Traffic Technical Memorandum (March 2011) Figures 7-1, 7-5, 9-1, and 9-5 PM Peak Hour Volumes

AIR QUALITY SCREENING MODEL RESULTS
CO Florida 2004 (Version 2.0.5)

CO Florida 2004

Project: Ellis Road and Wickham Road 2014 No Build
 Facility: Ellis Road PD&E Study
 Analyst: Jim Mykytka

Environmental Data:

Temperature: 48 F
 Reid Vapor Pressure: 11.5 psi
 Land Use: Suburban
 Stability Class: D
 Surface Roughness: 108
 Background Concentration: 1-hr = 3.3 ppm 8-hr = 2.0 ppm

Project Data:

Region: 3: Central Florida
 Year: 2014
 Intersection Type: 4 x 4 Intersection
 Max Approach Traffic Volume: 1850 veh/hour
 Speed: 40

Receptor Data (all distances are in feet):

Receptor Name	East-West Distance from Intersection	North-South Distance from Intersection	Receptor Height
Default Rec 1	10	150	6
Default Rec 2	10	50	6
Default Rec 3	50	10	6
Default Rec 4	150	10	6
Default Rec 5	50	50	6
Default Rec 6	10	-150	6
Default Rec 7	10	-50	6
Default Rec 8	50	-10	6
Default Rec 9	150	-10	6
Default Rec 10	50	-50	6

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	7.6	4.6
Default Rec 2	8.1	4.9
Default Rec 3	8.2	4.9
Default Rec 4	8.2	4.9
Default Rec 5	7.1	4.3
Default Rec 6	8.2	4.9
Default Rec 7	8.2	4.9
Default Rec 8	8.1	4.9
Default Rec 9	7.6	4.6
Default Rec 10	7.1	4.3

 PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED

CO Florida 2004

Project: Ellis Road and Wickham Road 2014 Build
 Facility: Ellis Road PD&E Study
 Analyst: Jim Mykytka

Environmental Data:

Temperature: 48 F
 Reid Vapor Pressure: 11.5 psi
 Land Use: Suburban
 Stability Class: D
 Surface Roughness: 108
 Background Concentration: 1-hr = 3.3 ppm 8-hr = 2.0 ppm

Project Data:

Region: 3: Central Florida
 Year: 2014
 Intersection Type: 4 x 4 Intersection
 Max Approach Traffic Volume: 1850 veh/hour
 Speed: 40

Receptor Data (all distances are in feet):

Receptor Name	East-West Distance from Intersection	North-South Distance from Intersection	Receptor Height
Default Rec 1	10	150	6
Default Rec 2	10	50	6
Default Rec 3	50	10	6
Default Rec 4	150	10	6
Default Rec 5	50	50	6
Default Rec 6	10	-150	6
Default Rec 7	10	-50	6
Default Rec 8	50	-10	6
Default Rec 9	150	-10	6
Default Rec 10	50	-50	6

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	7.6	4.6
Default Rec 2	8.1	4.9
Default Rec 3	8.2	4.9
Default Rec 4	8.2	4.9
Default Rec 5	7.1	4.3
Default Rec 6	8.2	4.9
Default Rec 7	8.2	4.9
Default Rec 8	8.1	4.9
Default Rec 9	7.6	4.6
Default Rec 10	7.1	4.3

 PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED

CO Florida 2004

Project: Ellis Road and Wickham Road 2034 No Build
 Facility: Ellis Road PD&E Study
 Analyst: Jim Mykytka

Environmental Data:

Temperature: 48 F
 Reid Vapor Pressure: 11.5 psi
 Land Use: Suburban
 Stability Class: D
 Surface Roughness: 108
 Background Concentration: 1-hr = 3.3 ppm 8-hr = 2.0 ppm

Project Data:

Region: 3: Central Florida
 Year: 2034
 Intersection Type: 4 x 4 Intersection
 Max Approach Traffic Volume: 2260 veh/hour
 Speed: 40

Receptor Data (all distances are in feet):

Receptor Name	East-West Distance from Intersection	North-South Distance from Intersection	Receptor Height
Default Rec 1	10	150	6
Default Rec 2	10	50	6
Default Rec 3	50	10	6
Default Rec 4	150	10	6
Default Rec 5	50	50	6
Default Rec 6	10	-150	6
Default Rec 7	10	-50	6
Default Rec 8	50	-10	6
Default Rec 9	150	-10	6
Default Rec 10	50	-50	6

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	7.3	4.4
Default Rec 2	7.8	4.7
Default Rec 3	7.9	4.8
Default Rec 4	7.7	4.6
Default Rec 5	6.8	4.1
Default Rec 6	7.7	4.6
Default Rec 7	7.9	4.8
Default Rec 8	7.8	4.7
Default Rec 9	7.3	4.4
Default Rec 10	6.8	4.1

 PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED

CO Florida 2004

Project: Ellis Road and Wickham Road 2034 Build
 Facility: Ellis Road PD&E Study
 Analyst: Jim Mykytka

Environmental Data:

Temperature: 48 F
 Reid Vapor Pressure: 11.5 psi
 Land Use: Suburban
 Stability Class: D
 Surface Roughness: 108
 Background Concentration: 1-hr = 3.3 ppm 8-hr = 2.0 ppm

Project Data:

Region: 3: Central Florida
 Year: 2034
 Intersection Type: 4 x 4 Intersection
 Max Approach Traffic Volume: 2220 veh/hour
 Speed: 40

Receptor Data (all distances are in feet):

Receptor Name	East-West Distance from Intersection	North-South Distance from Intersection	Receptor Height
Default Rec 1	10	150	6
Default Rec 2	10	50	6
Default Rec 3	50	10	6
Default Rec 4	150	10	6
Default Rec 5	50	50	6
Default Rec 6	10	-150	6
Default Rec 7	10	-50	6
Default Rec 8	50	-10	6
Default Rec 9	150	-10	6
Default Rec 10	50	-50	6

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	7.3	4.4
Default Rec 2	7.8	4.7
Default Rec 3	7.9	4.8
Default Rec 4	7.7	4.6
Default Rec 5	6.9	4.2
Default Rec 6	7.7	4.6
Default Rec 7	7.9	4.8
Default Rec 8	7.8	4.7
Default Rec 9	7.3	4.4
Default Rec 10	6.9	4.2

 PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED
