



US 301 (SR 35) PD&E Study

CR 470 E to State Road 44 in Sumter County, FL

Air Quality Technical Memorandum

FDOT Office
District Five

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Date of Publication
September 2017

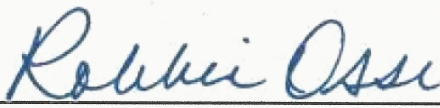
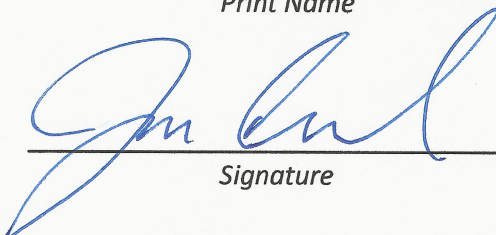
*Financial Management No. 430132-1-22-01
ETDM No. 13955*

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

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Air Quality Technical Memorandum
US 301 Project Development and Environment Study
FM No. 430132-1-22-01

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1.0 Project Description

FDOT is conducting a Project Development and Environment (PD&E) study for an approximately 8.0 mile portion of U.S. 301 between CR 470 East and SR 44 in Sumter County. Within these limits, U.S. 301 (SR 35) travels through the cities of Coleman and Wildwood. While mostly a north-south route, U.S. 301 travels in an east-west direction through the City of Coleman where it has the local road name Warm Springs Avenue. The Florida's Turnpike (SR 91) crosses US 301 with an interchange to the south of the northern project limit, and I-75 runs parallel to the study corridor on the west of U.S. 301 through Sumter County. Refer to Figure 1 on the following page for an illustration of the study corridor.

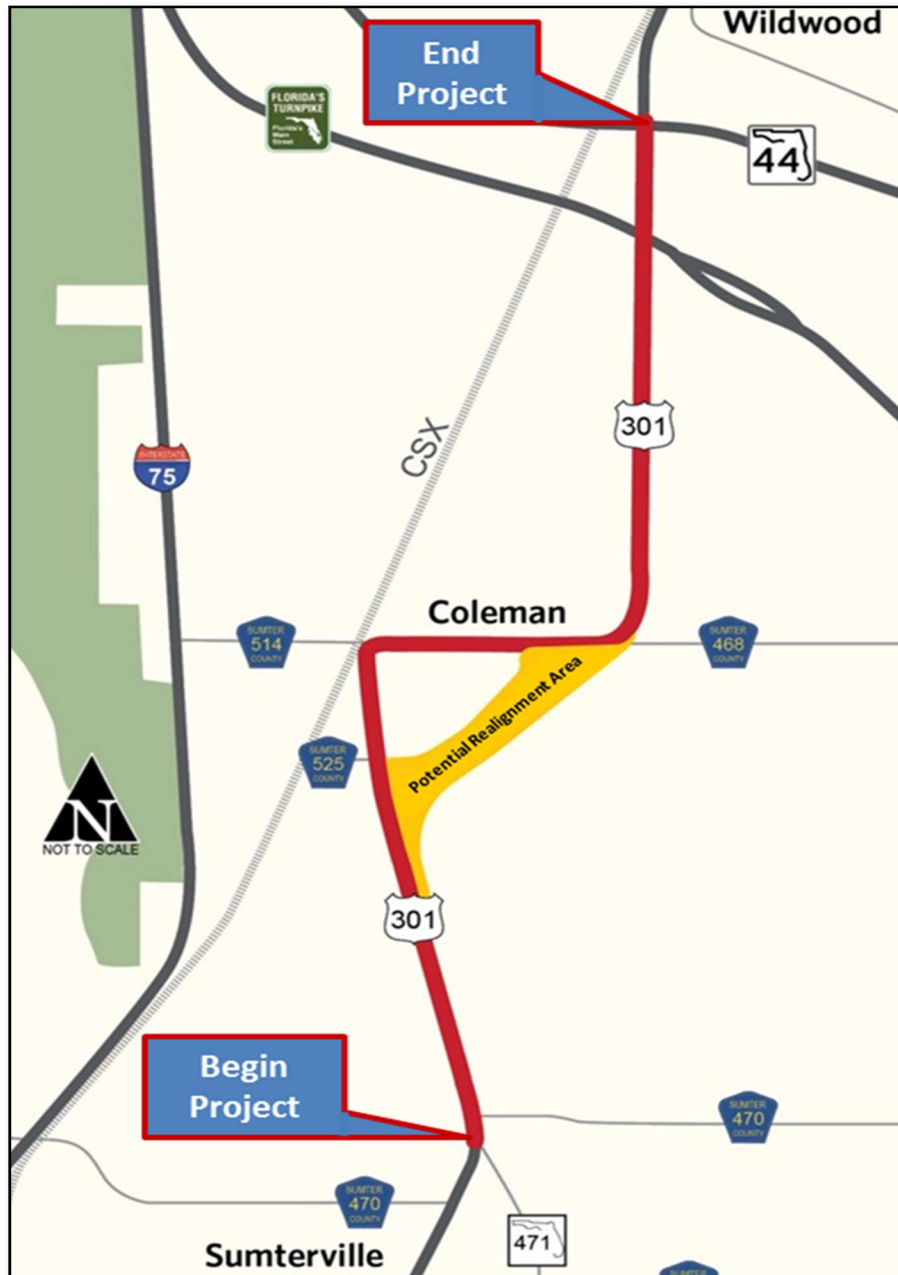
The PD&E study will analyze design alternatives that widen U.S. 301; improve the US 301 interchange at Florida's Turnpike; and consider a new corridor for US 301 south of the City of Coleman. The improvements will seek to provide additional capacity for future traffic growth. U.S. 301 is projected to carry more than 14,000 vehicles per day by 2022 and increase to more than 24,000 per day by 2042. Based on existing 2014 conditions analysis, U.S. 301 carried up to 9,600 vehicles per day on a 2-lane segment south of the Turnpike operating with a Level of Service of D.

Within the project limits, US 301 begins as a two-lane undivided roadway at CR 470 East with turn lanes at some intersections; makes a sharp 90° turn through the City of Coleman (Warm Springs Avenue/Commercial Street) and then curves to the north at CR 468. It then continues north as an undivided roadway until it reaches the Florida's Turnpike interchange where a median is added. North of the interchange, the roadway is a four-lane divided, rural typical section facility. It has a short urban curb and gutter section approaching SR 44.

The purpose of this project is to increase the capacity of SR 35 (US 301), to respond to future travel demand from the intersection of CR 470 East, north through the City of Coleman to SR 44 in the City of Wildwood. The project will also improve safety and provide multi-modal facilities for pedestrian and bicyclists, and evaluate improvements to the US 301 interchange with the Florida's Turnpike.

This study will evaluate all viable alternatives to widen US 301 on the existing project corridor as well as a potential realignment for US 301 from near CR 525 to CR 468 to minimize potential environmental impacts to the City of Coleman.

FIGURE 1 | Project Location Map



2.0 Air Quality Screening Test

Land use in the study area is predominantly scattered residential and agricultural uses from CR 470 East north to the city of Coleman. From that point, US 301, called Warm Springs Avenue as it traverses the town, is bordered by commercial, institutional, and residential land uses. North of Coleman, the land use transitions to open rural, scattered residential, with pockets of commercial and light industrial uses.

The proposed project is located in Sumter County, an area currently designated as being in attainment for the following Clean Air Act National Ambient Air Quality Standards (NAAQS): ozone, nitrogen dioxide, particulate matter (2.5 microns in size and 10 microns in size), sulfur dioxide, carbon monoxide (CO), and lead. Because the County is in attainment, the Clean Act conformity requirements do not apply to the project.

In accordance with Chapter 19 of the FDOT PD&E Manual (effective 6/14/2017), both the No-Build and the two Build Alternatives were analyzed for potential air quality impacts using FDOT's most current air quality screening model, CO Florida 2012. CO Florida 2012 incorporates the U.S. Environmental Protection Agency's latest software, MOVES, to evaluate intersections. The screening model predicts CO concentrations at varying distances using conservative, worst-case assumptions about the meteorology, traffic, and site conditions. Estimates are made of one-hour and eight-hour CO concentrations at default air quality receptor locations, and if the CO concentrations exceed 35 parts per million (ppm) for a one-hour average period or 9 ppm for an eight-hour average period, the project exceeds the NAAQS for CO. Should this occur, the project must then undergo a more thorough air quality analysis using the complete MOVES model.

2.1 No-Build Alternative

Consistent with requirements of NEPA and FHWA guidelines, this air quality impact analysis considers an alternative that assesses what would happen to the environment in the future if the proposed project were not built. This alternative, called the No-Build Alternative, includes the routine maintenance improvements of the existing roads in the study area and the currently programmed, committed, and funded roadway projects as included in the Space Coast Transportation Planning Organization's Transportation Improvement Plan and Long-Range Transportation Plan and Cost Feasible Plan. While the No-Build Alternative does not meet the project needs, it provides a baseline condition to compare and measure the effects of the two Build Alternatives.

2.2 Proposed Build Alternatives

Consistent with requirements, both Alternative 1 – widening through Coleman, and Alternative 2 – Widening with Coleman Realignment, were subjected to the carbon monoxide screening model.

2.3 Screening Test Results

Both alternatives were analyzed for the opening year (2022) and the design year (2042) at the intersection with the highest total approach traffic volume, the US 301/SR 44 intersection. Directional design hour traffic volumes were obtained from the project's traffic report and are included in this Technical Memorandum as Appendix A.

Estimates of CO were predicted for the default receptors, which are located 10 feet to 150 feet from the edge of the roadway. Results from the screening test (included as Appendix B) indicate that the highest project-related CO 1-hour and CO 8-hour levels are not predicted to meet or exceed the NAAQS for this pollutant under any of the three analyzed alternatives. As such, the project passes the screening model and no further air quality impact analysis is required.

2.4 Greenhouse Gases

No national standards have been established for Greenhouse Gases (GHGs). Similarly, the U.S. Environmental Protection Agency has not 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 federal environmental reviews because impacts are not localized or regional due to their rapid dispersion into the global atmosphere. In addition, climate change is the cumulative result of numerous and varied emissions sources, each of which makes a relatively small contribution to atmospheric GHG concentrations. It is difficult to isolate and understand the GHG emissions impacts of a particular transportation project given there is no scientific methodology for attributing specific climatological changes to that transportation project's emissions.

FDOT concluded, based on the nature of GHG emissions and the exceedingly small potential for GHG impacts from the proposed project, that the GHG emissions from the proposed action will not play a meaningful role in a determination of an environmentally preferable alternative or the selection of the preferred alternative.

No alternatives-level GHG analysis has been performed for this project since GHG emissions are very small in the context of the affected environment.

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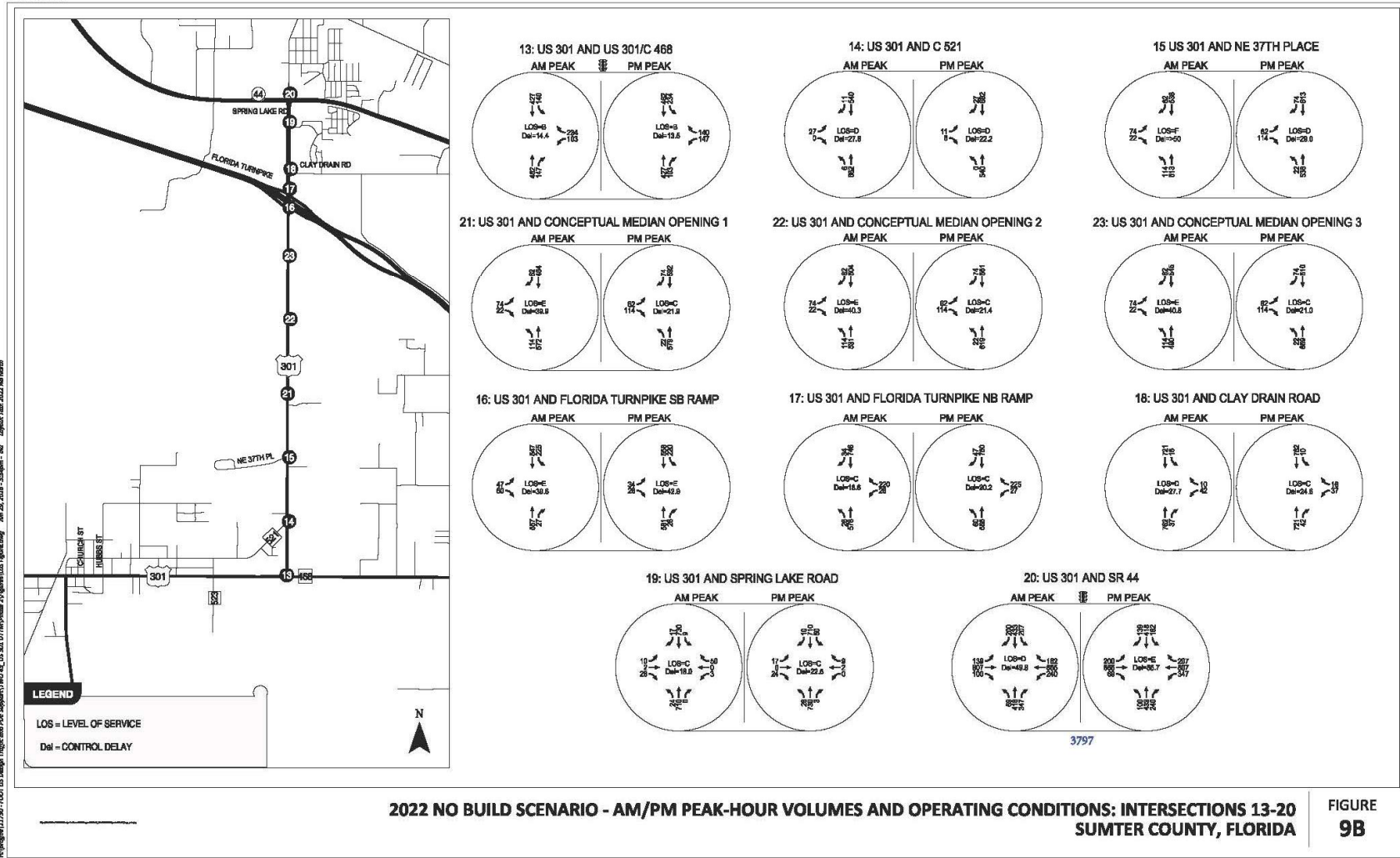
APPENDIX A:
TRAFFIC DATA

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US 301 PD&E Study CR 470 E to State Road 44 in Sumter County

FM No. 430132-1-22-01

US 301 DTTM



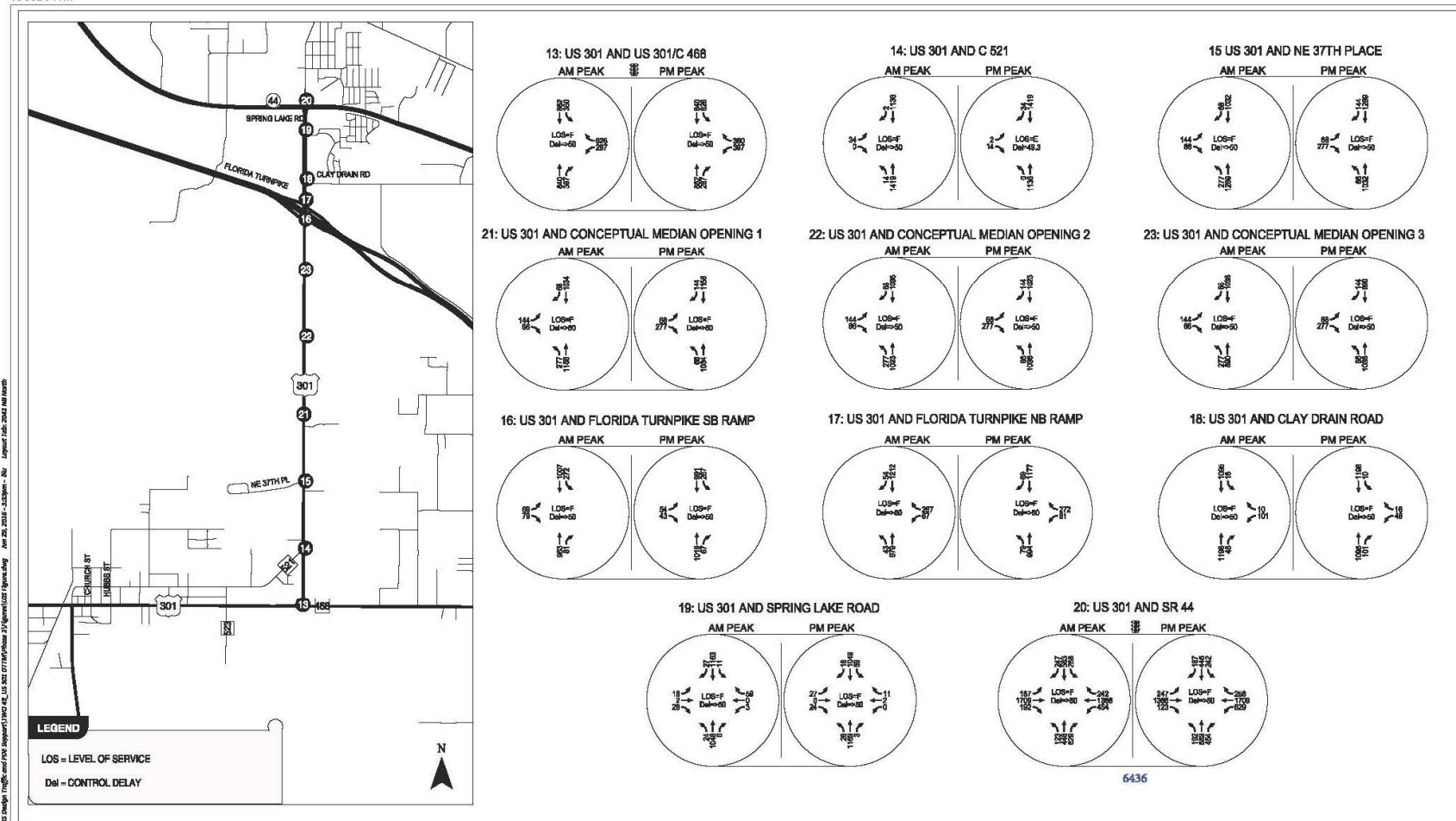
2022 NO BUILD SCENARIO - AM/PM PEAK-HOUR VOLUMES AND OPERATING CONDITIONS: INTERSECTIONS 13-20 SUMTER COUNTY, FLORIDA

FIGURE 9B

US 301 PD&E Study CR 470 E to State Road 44 in Sumter County

FM No. 430132-1-22-01

US 301 DTTM



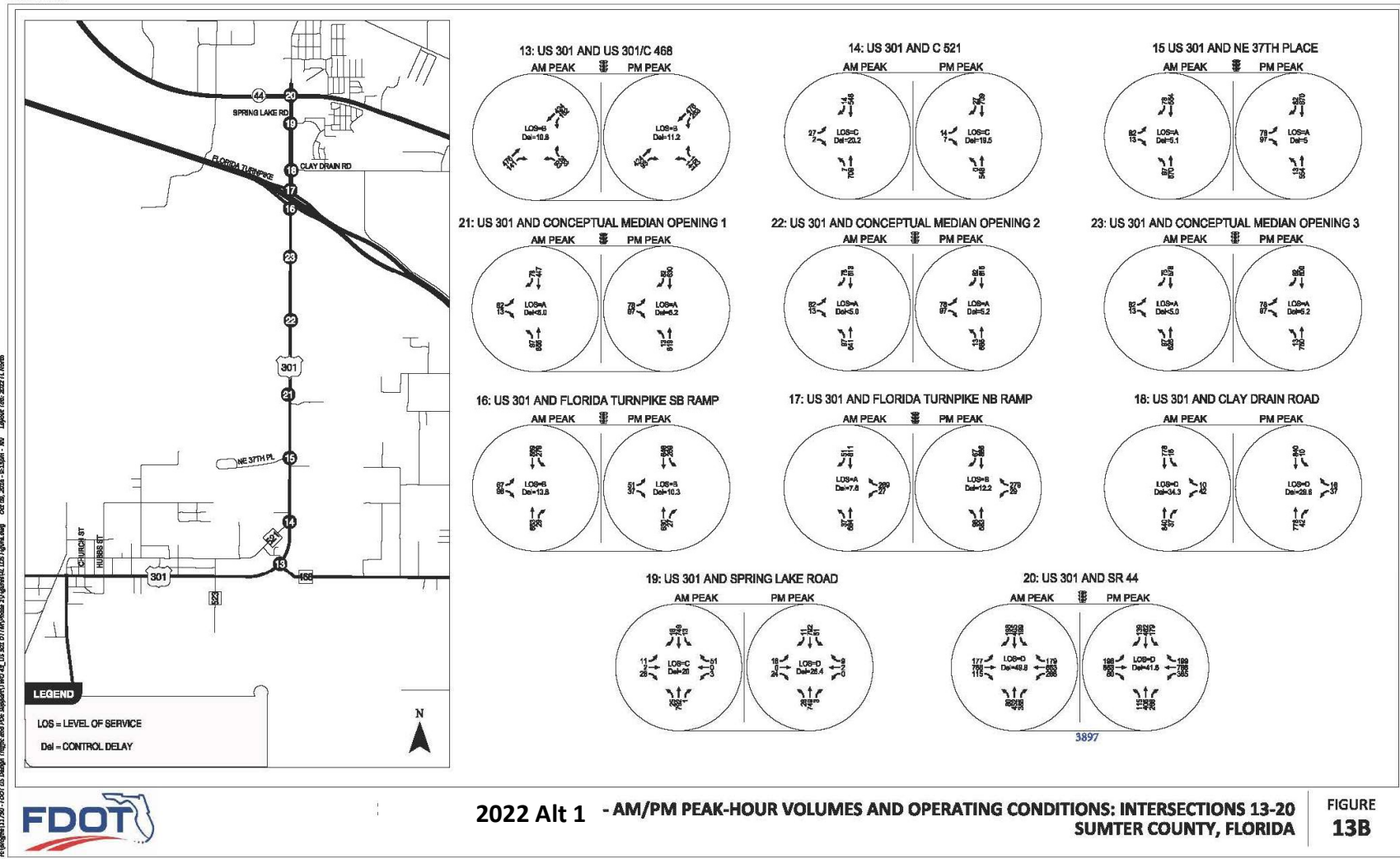
2042 NO BUILD SCENARIO - AM/PM PEAK-HOUR VOLUMES AND OPERATING CONDITIONS: INTERSECTIONS 13-20 SUMTER COUNTY, FLORIDA

FIGURE 11B

US 301 PD&E Study CR 470 E to State Road 44 in Sumter County

FM No. 430132-1-22-01

US 301 DTTM



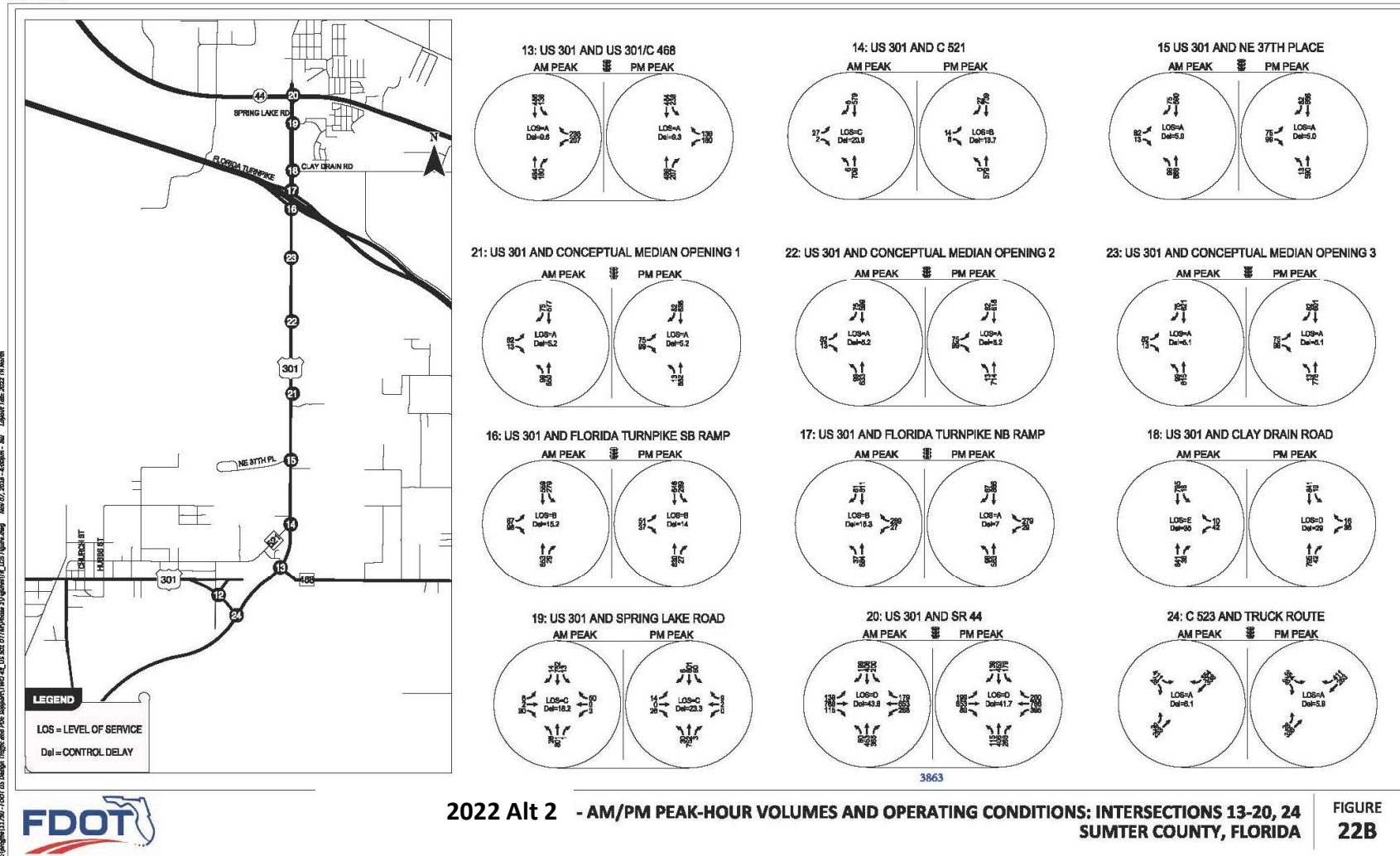
2022 Alt 1 - AM/PM PEAK-HOUR VOLUMES AND OPERATING CONDITIONS: INTERSECTIONS 13-20 SUMTER COUNTY, FLORIDA

FIGURE 13B

US 301 PD&E Study CR 470 E to State Road 44 in Sumter County

FM No. 430132-1-22-01

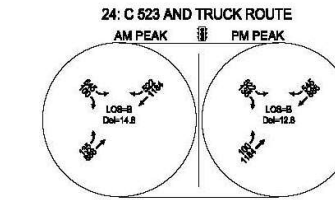
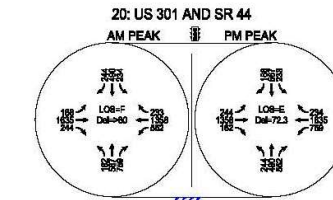
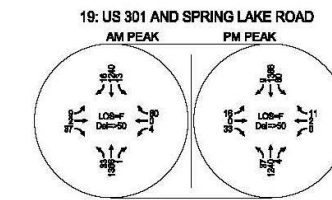
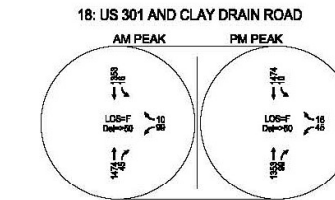
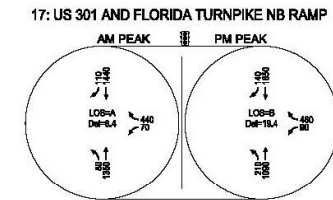
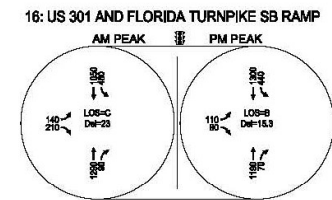
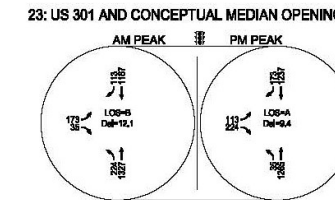
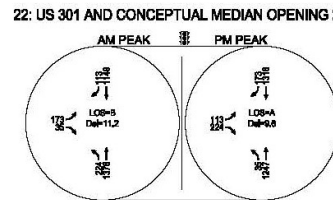
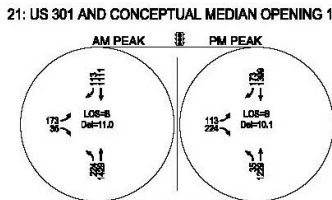
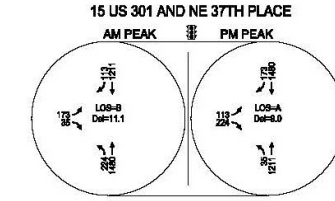
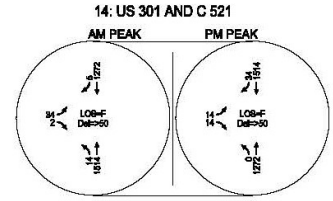
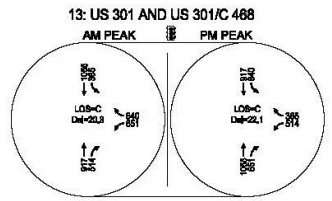
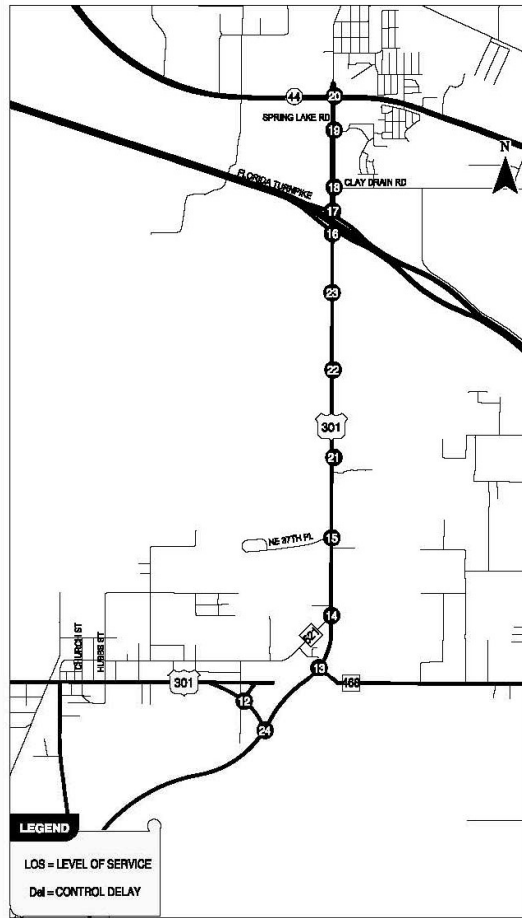
US 301 DTTM



US 301 PD&E Study CR 470 E to State Road 44 in Sumter County

FM No. 430132-1-22-01

US 301 DTTM



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2042 Alt 2 - AM/PM PEAK-HOUR VOLUMES AND OPERATING CONDITIONS: INTERSECTIONS 13-20, 24 SUMTER COUNTY, FLORIDA

FIGURE 24B



APPENDIX B:
CO FLORIDA 2012 OUTPUT

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US 301 PD&E Study CR 470 E to State Road 44 in Sumter County
 FM No. 430132-1-22-01

CO Florida 2012 - Results
 Friday, December 16, 2016

Project Description

Project Title US 301 PD&E Study
 Facility Name US 301 at SR 44
 User's Name R.Ossi, AICP - ETP
 Run Name Year Open No-Build
 FDOT District 5
 Year 2022
 Intersection Type 4 X 4
 Speed Arterial 35 mph
 Approach Traffic Arterial 1077 vph

Environmental Data

Temperature 47.8 °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

Receptor	Results (ppm, including background CO)	
	Max 1-Hr	Max 8-Hr
1	4.2	2.5
2	4.3	2.6
3	4.6	2.8
4	4.4	2.6
5	4.2	2.5
6	4.2	2.5
7	4.3	2.6
8	4.6	2.8
9	4.3	2.6
10	4.2	2.5
11	4.2	2.5
12	4.3	2.6
13	4.7	2.8
14	4.3	2.6
15	4.2	2.5
16	4.2	2.5
17	4.4	2.6
18	4.7	2.8
19	4.3	2.6
20	4.2	2.5

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

US 301 PD&E Study CR 470 E to State Road 44 in Sumter County
 FM No. 430132-1-22-01

CO Florida 2012 - Results
 Friday, December 16, 2016

Project Description

Project Title US 301 PD&E Study
 Facility Name US 301 at SR 44
 User's Name R.Ossi, AICP - ETP
 Run Name Design Year No-Build
 FDOT District 5
 Year 2042
 Intersection Type 4 X 4
 Speed Arterial 35 mph
 Approach Traffic Arterial 2088 vph

Environmental Data

Temperature 47.8 °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	4.8	2.9
2	4.9	2.9
3	5.2	3.1
4	4.8	2.9
5	4.5	2.7
6	4.8	2.9
7	4.9	2.9
8	5.1	3.1
9	4.8	2.9
10	4.5	2.7
11	4.8	2.9
12	4.9	2.9
13	5.2	3.1
14	4.8	2.9
15	4.5	2.7
16	4.8	2.9
17	5.0	3.0
18	5.1	3.1
19	4.9	2.9
20	4.5	2.7

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

US 301 PD&E Study CR 470 E to State Road 44 in Sumter County
 FM No. 430132-1-22-01

CO Florida 2012 - Results
 Monday, September 04, 2017

Project Description

Project Title US 301 PD&E Study
 Facility Name US 301 at SR 44
 User's Name R.Ossi, AICP - ETP
 Run Name Yr_Open Build Alt 1
 FDOT District 5
 Year 2022
 Intersection Type 4 X 4
 Speed Arterial 35 mph
 Approach Traffic Arterial 1100 vph

Environmental Data

Temperature 47.8 °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	4.2	2.5
2	4.4	2.6
3	4.6	2.8
4	4.4	2.6
5	4.2	2.5
6	4.2	2.5
7	4.4	2.6
8	4.6	2.8
9	4.4	2.6
10	4.2	2.5
11	4.2	2.5
12	4.4	2.6
13	4.7	2.8
14	4.4	2.6
15	4.2	2.5
16	4.2	2.5
17	4.4	2.6
18	4.7	2.8
19	4.4	2.6
20	4.2	2.5

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

US 301 PD&E Study CR 470 E to State Road 44 in Sumter County
 FM No. 430132-1-22-01

CO Florida 2012 - Results
 Monday, September 04, 2017

Project Description

Project Title US 301 PD&E Study
 Facility Name US 301 at SR 44
 User's Name R.Ossi, AICP - ETP
 Run Name Design Year Build Alt 1
 FDOT District 5
 Year 2042
 Intersection Type 4 X 4
 Speed Arterial 35 mph
 Approach Traffic Arterial 2143 vph

Environmental Data

Temperature 47.8 °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	4.8	2.9
2	4.9	2.9
3	5.2	3.1
4	4.9	2.9
5	4.5	2.7
6	4.8	2.9
7	4.9	2.9
8	5.2	3.1
9	4.9	2.9
10	4.5	2.7
11	4.8	2.9
12	4.9	2.9
13	5.3	3.2
14	4.9	2.9
15	4.5	2.7
16	4.8	2.9
17	5.0	3.0
18	5.2	3.1
19	5.0	3.0
20	4.5	2.7

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

US 301 PD&E Study CR 470 E to State Road 44 in Sumter County
 FM No. 430132-1-22-01

CO Florida 2012 - Results
 Monday, September 04, 2017

Project Description

Project Title US 301 PD&E Study
 Facility Name US 301 at SR 44
 User's Name R.Ossi, AICP - ETP
 Run Name Year Open Build Alt 2
 FDOT District 5
 Year 2022
 Intersection Type 4 X 4
 Speed Arterial 35 mph
 Approach Traffic Arterial 1100 vph

Environmental Data

Temperature 47.8 °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	4.2	2.5
2	4.4	2.6
3	4.6	2.8
4	4.4	2.6
5	4.2	2.5
6	4.2	2.5
7	4.4	2.6
8	4.6	2.8
9	4.4	2.6
10	4.2	2.5
11	4.2	2.5
12	4.4	2.6
13	4.7	2.8
14	4.4	2.6
15	4.2	2.5
16	4.2	2.5
17	4.4	2.6
18	4.7	2.8
19	4.4	2.6
20	4.2	2.5

 *****PROJECT PASSES*****
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CO Florida 2012 - Results
 Monday, September 04, 2017

Project Description

Project Title US 301 PD&E Study
 Facility Name US 301 at SR 44
 User's Name R.Ossi, AICP - ETP
 Run Name Design Year Build Alt 2
 FDOT District 5
 Year 2042
 Intersection Type 4 X 4
 Speed Arterial 35 mph
 Approach Traffic Arterial 2143 vph

Environmental Data

Temperature 47.8 °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	4.8	2.9
2	4.9	2.9
3	5.2	3.1
4	4.9	2.9
5	4.5	2.7
6	4.8	2.9
7	4.9	2.9
8	5.2	3.1
9	4.9	2.9
10	4.5	2.7
11	4.8	2.9
12	4.9	2.9
13	5.3	3.2
14	4.9	2.9
15	4.5	2.7
16	4.8	2.9
17	5.0	3.0
18	5.2	3.1
19	5.0	3.0
20	4.5	2.7

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