

Air Quality Technical Memorandum

**118th Avenue (CR 296) Connector
From US 19 to East of the Roosevelt/CR 296 Connector
Pinellas County, Florida
WPI Segment No.: 413622-1
FAP No.: 9045-054C**

This Study evaluated improvement alternatives for 118th Avenue (CR 296) from US 19 to east of the Roosevelt/CR 296 Connector in Pinellas County, Florida.

Prepared for:

Florida Department of Transportation
District Seven
11201 North McKinley Drive
Tampa, Florida 33612-6456

December 2005

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District Seven
11201 North McKinley Drive
Tampa, Florida 33612-6456**

Prepared by:

**American Consulting Engineers of Florida, LLC
4111 Land O' Lakes Boulevard
Suite 210
Land O' Lakes, FL 34639**

December 2005

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SECTION 1 – EXECUTIVE SUMMARY

An Air Quality Technical Memorandum was prepared as part of this study to evaluate potential air quality impacts resulting from the proposed project. The proposed project was subjected to a Screening Test using the computer program CO Florida 2004. Results from the Screening Test show that the one-hour and eight-hour CO levels for the Recommended Build Alternative are projected to be well below the National Ambient Air Quality Standards. Further, there were no substantial differences between the results of the Screening Test for the No-Build and Build alternatives. Therefore, no impacts to air quality are expected as a result of the proposed project.

SECTION 2 - INTRODUCTION

2.1 PROJECT DESCRIPTION

The Florida Department of Transportation (FDOT) conducted a Project Development and Environment (PD&E) Study to evaluate improvements along 118th Avenue (CR 296) from US 19 to east of the Roosevelt/CR 296 Connector in Pinellas County, Florida. The location map illustrates the study area (**Figure 1**).

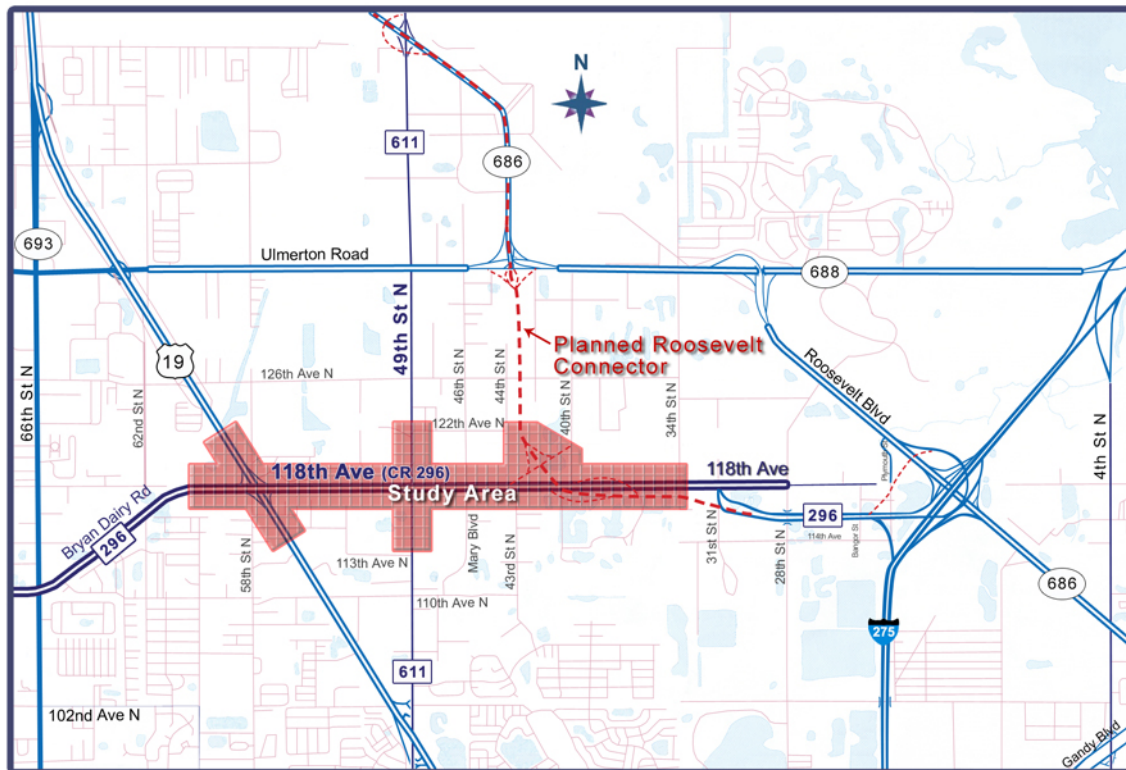


FIGURE 1 - PROJECT LOCATION MAP

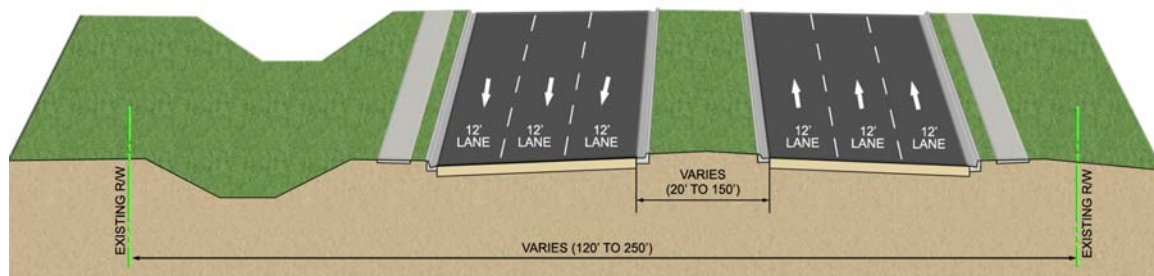
2.2 REPORT PURPOSE

This Air Quality Technical Memorandum was prepared as part of the PD&E study to evaluate potential air quality impacts resulting from the proposed improvements to 118th Avenue. The study was based on Part 2, Chapter 16 “Air Quality Analysis” of the FDOT *Project Development and Environment Manual* (revised 8/18/99). The purpose of this technical memorandum is to analyze potential air quality impacts based on current field conditions and future design year traffic data for the study corridor.

2.3 EXISTING FACILITY AND PROPOSED IMPROVEMENTS

Existing 118th Avenue is a 6-lane divided urban county roadway that is classified as a minor arterial by the Pinellas County Metropolitan Planning Organization. It has 12-foot lanes and 5-foot sidewalks on both sides, with mostly storm sewer drainage (**Figure 2**). The storm sewer systems convey runoff to existing roadside ditches and stormwater management facilities. The curbed grassed raised median is generally 20 feet wide. The typical section changes between 40th Street and 34th Street where the median widens to over 150 feet. This creates separate intersections with 40th Street and 34th Street for westbound and eastbound 118th Avenue.

FIGURE 2 - EXISTING TYPICAL SECTION

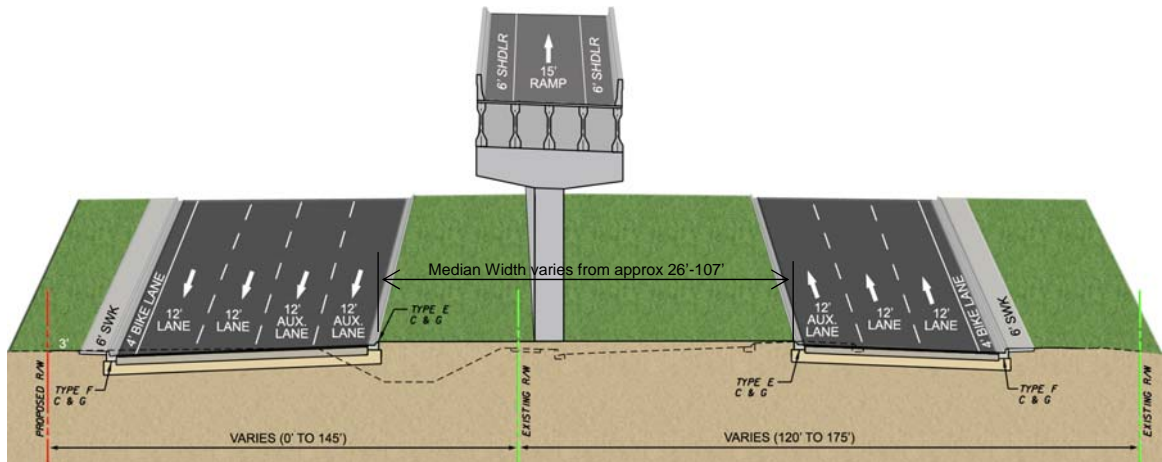


Two alternatives were considered for this project: the No-Build and a Recommended Build Alternative. The Recommended Build Alternative (Alternative “Dmod-G”) includes constructing a 4-lane controlled-access facility with 2-lane frontage roads for local access along 118th Avenue from US 19 to east of the Roosevelt/CR 296 Connector. This alternative includes a flyover ramp from southbound US 19 to eastbound 118th Avenue and ramp connections with the Roosevelt/CR 296 Connector as well as an urban interchange at 49th Street (CR 611). This alternative would allow the intersection at 43rd Street to remain connected to the 118th Avenue frontage roads. Additional right-of-way would be required for the proposed improvements, mostly along the north side of 118th Avenue. As a result of input received during the Public Hearing phase, the Recommended Build Alternative (described above) has been selected as the Preferred Alternative for future project production phases.

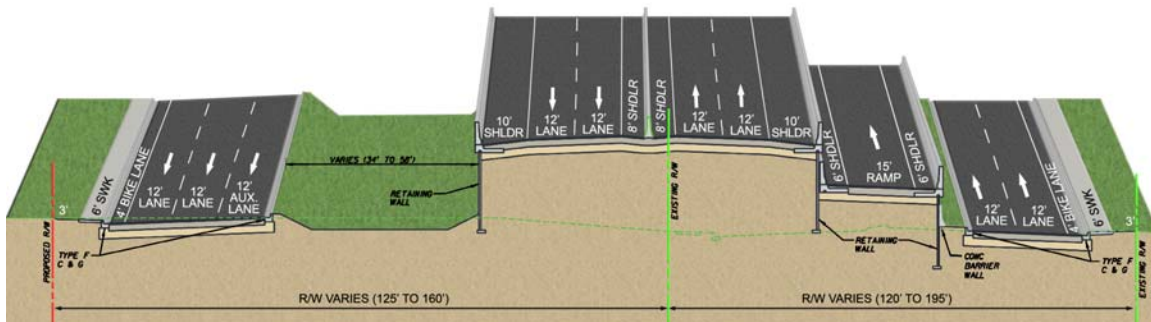
The proposed typical sections for 118th Avenue are shown in **Figure 3**. The typical section west of 49th Street includes four 12-foot lanes (two in each direction) with auxiliary lanes for the ramp connections to the elevated express lanes and a 4-foot bicycle lane and 6-foot sidewalk on each side.

The proposed typical section east of 49th street includes frontage roads with 12-foot lanes, including auxiliary lanes for the ramp connections to the elevated express lanes, and 4-foot bike lanes and 6-foot sidewalks. The elevated express lane portion includes 10-foot outside shoulders and two 12-foot lanes in each direction separated by an 18-foot median. A slip ramp from the frontage road system to the mainline is shown in this typical section.

**FIGURE 3
PROPOSED TYPICAL SECTIONS**



West of 49th Street



East of 49th Street

SECTION 3 - LAND USE

The predominant existing land uses along the 118th Avenue corridor are commercial, institutional (cemetery), and industrial. There is no residential land use immediately adjacent to the right-of-way on 118th Avenue. However, a small residential neighborhood exists south of Bryan Dairy Road (local name of CR 296 west of US 19) west of US 19. The future land use map provided by the Pinellas County Planning Department shows that development will continue towards more industrial and residential land uses.

SECTION 4 – SCREENING TEST

The proposed project was subjected to a Screening Test using the computer program CO Florida 2004. This program makes various conservative worst-case assumptions about the meteorology, traffic, and site conditions. The computer model used for this Screening Test projects an estimate of the Carbon Monoxide (CO) level at each chosen receptor under various project conditions. The computer modeled CO levels are then compared with the National Ambient Air Quality Standard (NAAQS) levels to determine whether or not the project passes or fails the Screening Test. If the computer generated CO concentrations exceed 35 parts per million (ppm) for a one-hour period or 9 ppm for an eight-hour period, the project alternative exceeds the NAAQS levels for CO and must undergo a more thorough air quality analysis.

Because air quality impacts are typically highest in the vicinity of roadway intersections where traffic is usually moving slower, the Screening Test focused on the location with the highest traffic, the intersection of 118th Avenue and US 19. Input data used in the analysis of this intersection are shown in **Table 1** below. The freeway refers to US 19 and the arterial road refers to Bryan Dairy Road. The highest Directional Design Hour Volume (DDHV) traffic volume was chosen for each scenario shown in the table. Due to the future improvements planned for US 19 not associated with this project, a diamond interchange analysis was performed. All projected traffic volume data were obtained from the “Design Traffic Technical Memorandum – 118th Avenue (CR 296) Connector [Work Program Item Segment No. 413622

1]” (January 2005). The traffic for the proposed flyover for the Build Alternative was included in the southbound freeway traffic data.

Table 1
Summary of the Project Air Quality Screening Test Input Data

Year	Alternative	Avg. Speed (MPH)		Peak Traffic Volume (Per Hour)	
		Freeway	Arterial	Freeway	Arterial
2010 (Opening Year)	No-Build	45	25	4465	2581
	Build	45	30	5180	2055
2025 (Design Year)	No-Build	40	20	5798	3350
	Build	40	25	6727	2669

The CO Florida 2004 computer program automatically places many receptors, which are considered “worst case” receptors, at all four quadrants of the interchange and thereby solves any issues of picking a reasonable receptor. Therefore, the receptors that were analyzed in the Screening Test do not necessarily represent actual sites, but are closer than any reasonable receptors at this interchange. In the event that the project passes the Screening Test using such worst-case receptors, it would be expected to pass for all reasonable receptors as well.

The results of the Screening Test are summarized in **Table 2**. Output sheets from the computer Screening Test are provided in **Appendix A**. Results from the Screening Test show that the one-hour and eight-hour CO levels for all analyzed project variable combinations are projected to be well below the one- and eight-hour NAAQS levels. Further, it should be noted that there are no substantial differences between the results of the Screening Test for the “No-Build” and “Build” Alternative.

**Table 2
Summary of Results from the Computer Air Quality Screening Test**

Year	Alternative	Carbon Monoxide (CO) Concentration (ppm)					
		One-Hour Analysis Results		One-Hour NAAQS	Eight-Hour Analysis Results		Eight-Hour NAAQS
		Min	Max		Min	Max	
2010 (Opening Year)	No-Build	10.5	12.3	35	6.3	7.4	9
	Build	10.5	13.0	35	6.3	7.8	9
2025 (Design Year)	No-Build	9.9	11.7	35	5.9	7.0	9
	Build	10.0	12.3	35	6.0	7.4	9

Construction activities will cause minor short-term air quality impacts in the form of dust from earthwork and unpaved roads and smoke from open burning. These impacts will be minimized by adherence to all State and local regulation and to the FDOT Standard Specifications for Road and Bridge Construction.

All State and local agencies were provided with an opportunity to comment on this project. There were no adverse comments regarding air quality.

SECTION 5 - SUMMARY AND CONCLUSIONS

Based on the results of the Screening Test, the one-hour and eight-hour CO levels for all analyzed project variable combinations are projected to be well below the National Ambient Air Quality Standard (NAAQS) levels. Additionally, it should be noted that there are no substantial differences between the results of the Screening Test for the “No-Build” and “Build” Alternatives. Therefore, this project will not have a significant impact on air quality with either the “No-Build” or “Build” Alternative.

The project is in an area that has been designated as attainment/maintenance for the ozone standards under the criteria provided in the Clean Air Act Amendments of 1990. This project is

included in the current approved conforming Transportation Improvement Program (TIP) for this area, which was signed by the Secretary of the Florida Department of Transportation on August 31, 2004. This project is included in the conforming long range plan for the area. This project is included in the Conformity Determination report for the area, which was approved by the Metropolitan Planning Organization (MPO) on May 12, 2004, and the Federal Highway Administration on September 30, 2004. This project's design concept and scope are the same as that which is found in the conforming plan and TIP.

APPENDIX A

PRINTOUTS FROM CO FLORIDA 2004 SCREENING TEST

03-22-2005

CO Florida 2004

Project: 118th Avenue No Build Alternative for Opening Year (2010)
Facility: American Consulting Engineers
Analyst: Anna Peterfreund

Environmental Data:

Temperature: 50 F
Reid Vapor Pressure: 11.5 psi
Land Use: Urban
Stability Class: D
Surface Roughness: 175
Background Concentration: 1-hr = 5.0 ppm 8-hr = 3.0 ppm

Project Data:

Region: 4: Hillsborough / Pinellas
Year: 2010
Intersection Type: Diamond Interchange
Max Freeway Traffic: 4465 veh/hour
Max Arterial Traffic: 2581 veh/hour
Freeway Speed: 45
Arterial Speed: 25

Receptor Data (all distances are in feet):

Receptor	East-West Distance	North-South Distance	
Receptor Name	from Intersection	from Intersection	
Height			
-----	-----	-----	
Default Rec 1	10	1020	6
Default Rec 2	10	50	6
Default Rec 3	50	10	6
Default Rec 4	150	10	6
Default Rec 5	10	-1020	6
Default Rec 6	10	-50	6
Default Rec 7	50	-10	6
Default Rec 8	150	-10	6
Default Rec 9	-10	-1020	6
Default Rec 10	-10	-50	6
Default Rec 11	-50	-10	6
Default Rec 12	-150	-10	6
Default Rec 13	-10	1020	6
Default Rec 14	-10	50	6
Default Rec 15	-50	10	6
Default Rec 16	-150	10	6

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	11.2	6.7
Default Rec 2	10.5	6.3
Default Rec 3	11.2	6.7
Default Rec 4	11.2	6.7
Default Rec 5	12.3	7.4
Default Rec 6	10.6	6.4
Default Rec 7	11.1	6.7
Default Rec 8	10.6	6.4
Default Rec 9	11.2	6.7
Default Rec 10	10.5	6.3
Default Rec 11	11.2	6.7
Default Rec 12	11.2	6.7
Default Rec 13	12.3	7.4
Default Rec 14	10.6	6.4
Default Rec 15	11.1	6.7
Default Rec 16	10.6	6.4

PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED

03-22-2005

CO Florida 2004

Project: 118th Avenue No Build Alternative for Design Year (2025)
Facility: American Consulting Engineers
Analyst: Anna Peterfreund

Environmental Data:

Temperature: 50 F
Reid Vapor Pressure: 11.5 psi
Land Use: Urban
Stability Class: D
Surface Roughness: 175
Background Concentration: 1-hr = 5.0 ppm 8-hr = 3.0 ppm

Project Data:

Region: 4: Hillsborough / Pinellas
Year: 2025
Intersection Type: Diamond Interchange
Max Freeway Traffic: 5798 veh/hour
Max Arterial Traffic: 3350 veh/hour
Freeway Speed: 45
Arterial Speed: 30

Receptor Data (all distances are in feet):

Receptor	East-West Distance	North-South Distance	
Receptor Name	from Intersection	from Intersection	
Height			
-----	-----	-----	
Default Rec 1	10	1020	6
Default Rec 2	10	50	6
Default Rec 3	50	10	6
Default Rec 4	150	10	6
Default Rec 5	10	-1020	6
Default Rec 6	10	-50	6
Default Rec 7	50	-10	6
Default Rec 8	150	-10	6
Default Rec 9	-10	-1020	6
Default Rec 10	-10	-50	6
Default Rec 11	-50	-10	6
Default Rec 12	-150	-10	6
Default Rec 13	-10	1020	6
Default Rec 14	-10	50	6
Default Rec 15	-50	10	6
Default Rec 16	-150	10	6

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	10.6	6.4
Default Rec 2	10.1	6.1
Default Rec 3	10.7	6.4
Default Rec 4	11.1	6.7
Default Rec 5	11.7	7.0
Default Rec 6	9.9	5.9
Default Rec 7	10.8	6.5
Default Rec 8	10.2	6.1
Default Rec 9	10.6	6.4
Default Rec 10	10.1	6.1
Default Rec 11	10.7	6.4
Default Rec 12	11.1	6.7
Default Rec 13	11.7	7.0
Default Rec 14	9.9	5.9
Default Rec 15	10.8	6.5
Default Rec 16	10.2	6.1

PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED

03-22-2005

CO Florida 2004

Project: 118th Avenue Build Alternative for Opening Year (2010)
Facility: American Consulting Engineers
Analyst: Anna Peterfreund

Environmental Data:

Temperature: 50 F
Reid Vapor Pressure: 11.5 psi
Land Use: Urban
Stability Class: D
Surface Roughness: 175
Background Concentration: 1-hr = 5.0 ppm 8-hr = 3.0 ppm

Project Data:

Region: 4: Hillsborough / Pinellas
Year: 2010
Intersection Type: Diamond Interchange
Max Freeway Traffic: 5180 veh/hour
Max Arterial Traffic: 2055 veh/hour
Freeway Speed: 40
Arterial Speed: 20

Receptor Data (all distances are in feet):

Receptor	East-West Distance	North-South Distance	
Receptor Name	from Intersection	from Intersection	
Height			
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Default Rec 1	10	1020	6
Default Rec 2	10	50	6
Default Rec 3	50	10	6
Default Rec 4	150	10	6
Default Rec 5	10	-1020	6
Default Rec 6	10	-50	6
Default Rec 7	50	-10	6
Default Rec 8	150	-10	6
Default Rec 9	-10	-1020	6
Default Rec 10	-10	-50	6
Default Rec 11	-50	-10	6
Default Rec 12	-150	-10	6
Default Rec 13	-10	1020	6
Default Rec 14	-10	50	6
Default Rec 15	-50	10	6
Default Rec 16	-150	10	6

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	11.4	6.8
Default Rec 2	10.5	6.3
Default Rec 3	11.0	6.6
Default Rec 4	10.9	6.5
Default Rec 5	13.0	7.8
Default Rec 6	10.8	6.5
Default Rec 7	11.3	6.8
Default Rec 8	10.9	6.5
Default Rec 9	11.4	6.8
Default Rec 10	10.5	6.3
Default Rec 11	11.0	6.6
Default Rec 12	10.9	6.5
Default Rec 13	13.0	7.8
Default Rec 14	10.8	6.5
Default Rec 15	11.3	6.8
Default Rec 16	10.9	6.5

PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED

03-22-2005

CO Florida 2004

Project: 118th Avenue Build Alternative for Design Year (2025)
Facility: American Consulting Engineers
Analyst: Anna Peterfreund

Environmental Data:

Temperature: 50 F
Reid Vapor Pressure: 11.5 psi
Land Use: Urban
Stability Class: D
Surface Roughness: 175
Background Concentration: 1-hr = 5.0 ppm 8-hr = 3.0 ppm

Project Data:

Region: 4: Hillsborough / Pinellas
Year: 2025
Intersection Type: Diamond Interchange
Max Freeway Traffic: 6727 veh/hour
Max Arterial Traffic: 2669 veh/hour
Freeway Speed: 40
Arterial Speed: 25

Receptor Data (all distances are in feet):

Receptor	East-West Distance	North-South Distance	
Receptor Name	from Intersection	from Intersection	
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Default Rec 2	10	50	6
Default Rec 3	50	10	6
Default Rec 4	150	10	6
Default Rec 5	10	-1020	6
Default Rec 6	10	-50	6
Default Rec 7	50	-10	6
Default Rec 8	150	-10	6
Default Rec 9	-10	-1020	6
Default Rec 10	-10	-50	6
Default Rec 11	-50	-10	6
Default Rec 12	-150	-10	6
Default Rec 13	-10	1020	6
Default Rec 14	-10	50	6
Default Rec 15	-50	10	6
Default Rec 16	-150	10	6

RESULTS (including background CO):

Receptor Name	Max 1-Hr Conc (ppm)	Max 8-Hr Conc (ppm)
Default Rec 1	11.0	6.6
Default Rec 2	10.0	6.0
Default Rec 3	10.5	6.3
Default Rec 4	10.7	6.4
Default Rec 5	12.3	7.4
Default Rec 6	10.1	6.1
Default Rec 7	10.8	6.5
Default Rec 8	10.2	6.1
Default Rec 9	11.0	6.6
Default Rec 10	10.0	6.0
Default Rec 11	10.5	6.3
Default Rec 12	10.7	6.4
Default Rec 13	12.3	7.4
Default Rec 14	10.1	6.1
Default Rec 15	10.8	6.5
Default Rec 16	10.2	6.1

PROJECT PASSES - NO EXCEEDANCES OF NAAQ CO STANDARDS ARE PREDICTED

APPENDIX B

SIP/TIP CONFORMITY MEMORANDUM

MEMORANDUM

Department of Transportation
District Seven Planning MS 7-500

DATE: January 18, 2005

TO: Robin Rhinesmith, EMO Department

FROM: Fawzi Bitar, Systems Planning Coordinator *FB*

COPIES: File

SUBJECT: **F.P.N.** : 413622-1
State Road : 118th Ave./CR 296 (US 19 to Roosevelt/CR 296 Connector)
County : Pinellas

Per your E-mail dated January 14, 2005, this is to certify that the above referenced project is in conformance with the State Implementation Plan (SIP) and is in the Federal Highway Administration (FHWA) approved Pinellas County Urban Area MPO's Transportation Implementation Plan (TIP), Fiscal Year 2003/04 thru 2008/09.

/FKB