

2. Air Quality Impact Analysis

2.1 Screening Test Methodology

CO is a colorless and odorless gas that, for mobile sources, is generated by internal combustion engines and dispersed along traffic corridors. Vehicular traffic, speed, congestion, topography, and meteorology influence the impacts of traffic CO emissions. The NAAQS were developed by the U.S. Environmental Protection Agency (EPA) as health-based standards for ambient air to protect public health and the environment. The NAAQS consist of primary (public) and secondary (environmental) standards. In the case of CO, the two standards are identical, and they are expressed as 1-hour and 8-hour limits. **Table 2-1** summarizes the NAAQS for CO. The Wekiva Parkway (SR 429)/SR 46 Realignment PD&E Study encompasses portions of three counties in central Florida, including northwest Orange County, east Lake County, and west Seminole County. All three counties are in attainment status for CO standards. The proposed project is in the Central Florida Intrastate Air Quality Control Region which has been designated as attainment for all the air quality standards under the criteria provided in the Clean Air Act Amendments of 1990, therefore, State Implementation Plan conformity does not apply.

TABLE 2-1
National Ambient Air Quality Standards (NAAQS) for CO
Wekiva Parkway (SR 429)/SR 46 Realignment PD&E Study

Pollutant	Averaging Period	National Standards	
		Primary	Secondary
Carbon Monoxide (CO)	1-hour	35 ppm	Same
	8-hour	9 ppm	Same

Notes:
ppm=parts per million

Tools such as *CO Florida 2004*, the FDOT Intersection Air Quality CO Screening Model, are used to evaluate in a conservative manner the impacts of roadway improvement projects on ambient air quality and the NAAQS. The *CO Florida 2004* model evaluates air quality impacts from the generation and dispersion of CO and determines if those impacts produce exceedances of the NAAQS 1-hour and 8-hour standards for CO. According to the requirements of Part 2, Chapter 16 of the FDOT *PD&E Manual*, CO emissions impacts must be considered for every roadway improvement project.

Chapter 16 of the *PD&E Manual* states "to perform the review, at least the intersection with a combination of the highest intersection approach volume and lowest approach speed should be subjected to the FDOT's latest Screening Model (currently *CO Florida 2004*). The screening test should be performed for future (opening year and design year) conditions with and without the proposed roadway improvements". The analysis years for this project

are 2012 (opening year) and 2032 (design year) for evaluation of the No-Build and Build alternatives. Traffic data for the analysis were obtained from the Traffic Report (HNTB, August 2007) for the PD&E Study. Based upon the tabulation of intersection approach volumes, total vehicles per hour, and level of service for the analysis years under the No-Build and Build scenarios (see **Appendix A**), the intersections selected for the analysis are shown in **Table 2-2** below.

TABLE 2-2
Intersections Selected for Analysis Years (2012 & 2032)
Wekiva Parkway (SR 429)/SR 46 Realignment PD&E Study

2012 No-Build
CR 46A and International Parkway
CR 46A and Rinehart Road
2032 No-Build
CR 46A and International Parkway
CR 46A and Rinehart Road
2012 Build
CR 46A and Rinehart Road
2032 Build
CR 46A and International Parkway
CR 46A and Rinehart Road

For this analysis, early coordination was undertaken with the FDOT District Five Environmental Administrator and, at his direction, with the FDOT Central Office Environmental Programs Administrator. They provided guidance on and concurrence with the methodology and approach for conducting this air quality analysis. Also, the FDOT Central Office Environmental Programs Administrator reviewed the intersection-specific data and concurred with the intersections identified for analysis by the CO screening model.

The two intersections selected for further analysis, CR 46A/International Parkway and CR 46A/Rinehart Road, were evaluated based on maximum vehicular approach volume for the Build and No-Build alternatives for the 2012 and 2032 analysis years. While these existing intersections would not be part of the proposed improvements, they are within the project area and would be influenced by project traffic. The vehicular approach volumes and level of service for 2012 (opening year) and 2032 (design year) under the Build and No-Build alternatives for each intersection are shown in **Table 2-3** on the following page.

TABLE 2-3
 Approach Volume and LOS for Selected Intersections
Wekiva Parkway (SR 429)/SR 46 Realignment PD&E Study

Intersection	NB Lane (vph)	SB Lane (vph)	EB Lane (vph)	WB Lane (vph)	LOS
2012 No-Build					
CR 46A and International Parkway	2098	630	608	1289	F
CR 46A and Rinehart Road	2010	1150	3064	980	F
2032 No-Build					
CR 46A and International Parkway	3090	1280	730	1500	F
CR 46A and Rinehart Road	2580	1320	3891	1170	F
2012 Build					
CR 46A and Rinehart Road	1990	1115	2600	959	E
2032 Build					
CR 46A and International Parkway	2579	1530	882	1380	F
CR 46A and Rinehart Road	2510	1190	3357	1100	F

Notes:

NB = north bound
 SB = south bound
 EB = east bound
 WB = west bound
 LOS = level of service
 vph = vehicles per hour

The air quality analysis was performed for each of the seven (7) scenarios listed above in Table 2-3. Only CO was evaluated as directed by the PD&E manual and compared to the NAAQS.

The *CO Florida 2004* screening test makes a number of conservative assumptions regarding projects for which it is applied. In some cases, the test will indicate the need for additional, more rigorous analysis. For this analysis, ten (10) default receptors were utilized as well as the default right-of-way distance of ten (10) feet. CO concentrations associated with the proposed project were calculated at the 10 receptor locations for the intersections listed in Table 2-2, which were used along with maximum traffic volumes as listed in Table 2-3, to represent the worst-case impacts from CO dispersion. All of the intersections were assumed to have an approach speed of 40 miles per hour. Because worst-case conditions were used for the analysis, and due to the conservative characteristics of the *CO Florida 2004* model, it can be presumed that no other component of the proposed roadway improvements would have more adverse effects.

2.2 Screening Test Results

CO concentrations associated with the proposed roadway improvements were calculated at the selected receptor locations for the 2012 and 2032 analysis years. *CO Florida 2004* calculates the 1-hour and 8-hour CO concentrations, including background, in parts per million (ppm) for comparison with the NAAQS. **Table 2-4** shows the results of the CO screening tests for the identified intersections. Model output is provided in **Appendix B**.

TABLE 2-4
CO Screening Test Results
Wekiva Parkway (SR 429)/SR 46 Realignment PD&E Study

Intersection	Max 1-hour Concentration (ppm)	Max 8-hour Concentration (ppm)	1-hour CO NAAQS (ppm)	8-hour CO NAAQS (ppm)
2012 No-Build				
CR 46A and International Parkway	11.1	6.7	35	9
CR 46A and Rinehart Road	12.6	7.6	35	9
2032 No-Build				
CR 46A and International Parkway	11.1	6.7	35	9
CR 46A and Rinehart Road	11.8	7.1	35	9
2012 Build				
CR 46A and Rinehart Road	12.0	7.2	35	9
2032 Build				
CR 46A and International Parkway	10.4	6.2	35	9
CR 46A and Rinehart Road	11.2	6.7	35	9

Based on the results of the *CO Florida 2004* screening test, the proposed project in future conditions for the opening year (2012) and the design year (2032) under the Build and No-Build alternatives will not cause violations of the NAAQS for CO. Therefore, this project will not have a significant impact on air quality in the project area. In fact, as shown in Table 2-4 above, the comparative 1-hour and 8-hour CO concentrations are lower for the Build alternative than for the No-Build alternative.

Construction activities for the proposed project would cause only minor short-term air quality impacts in the form of dust from earthwork and unpaved roads. Those impacts will be minimized through implementation of State/local regulations and the FDOT *Standard Specifications for Road and Bridge Construction*.

3. Conclusions

The proposed project is located in an area which is designated attainment for all NAAQS under the criteria provided in the Clean Air Act. Therefore, the Clean Air Act conformity requirements do not apply to the project.

Based on the results of the *CO Florida 2004* screening model output for opening year (2012) and design year (2032) No-Build and Build scenarios, the proposed Wekiva Parkway (SR 429)/SR 46 Realignment project will not cause violations of the NAAQS for CO. Therefore, the project “passes” the air quality screening test which indicates that it will not have a significant impact on air quality in the project area. Because worst-case conditions were used for the analysis, and due to the conservative characteristics of the *CO Florida 2004* model, it can be presumed that no other component of the proposed improvements would have more adverse effects.

4. References

U.S. Environmental Protection Agency “Green Book”

<http://www.epa.gov/oar/oaqps/greenbk>

SR 429 - Wekiva Parkway/SR46 Realignment PD&E Study Traffic Report, August 15, 2007
and Revised Traffic Report, March 2010, HNTB Corporation

Florida Department of Transportation PD&E Manual, Part 2, Chapter 16, September 13, 2006

User’s Guide to CO Florida 2004, FDOT Intersection Air Quality (CO) Screening Model,
September 1, 2004