Appendix B- Memorandums

MEMORANDUM

To Tom Percival, FDOT Joe Berenis, OOCEA Mark Callahan, CH2MHill Gary Skaff, PBS&J From Luis Diaz, HNTB Josiah Banet, HNTB

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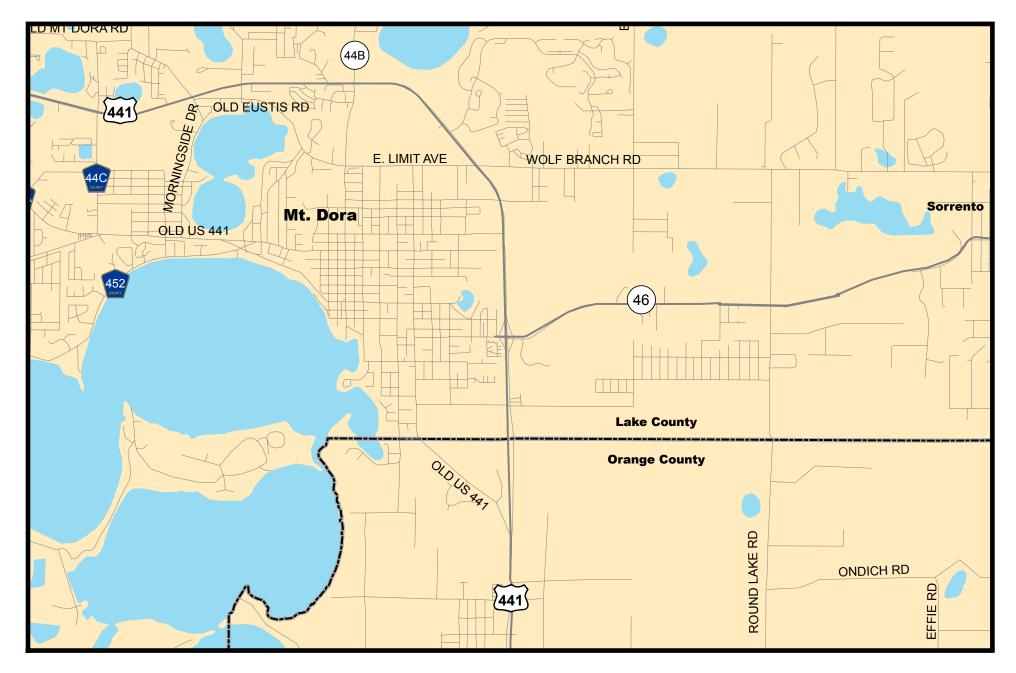
Subject Impacts to Mount Dora Traffic Due to Wekiva Parkway and SR 46 Bypass Date 5/1/06

The purpose of this memorandum is to present an evaluation of the traffic impacts to the City of Mount Dora due to the addition of both the SR 46 Bypass around Sorrento and Mount Plymouth and the Wekiva Parkway to the area's roadway network. For purposes of this memorandum the SR 46 Bypass and the Wekiva Parkway projects will collectively be referred to as the Wekiva Parkway. Figure 1 shows the existing roadway network in the Mount Dora area. The traffic impacts to Mount Dora related to the Wekiva Parkway were analyzed in four distinct evaluations as follows:

- Traffic impacts to Mount Dora area roadways
- Traffic impacts at the US 441/SR 46 interchange
- Traffic impacts to SR 46 east of US 441
- Access management along US 441 in the vicinity of SR 46

To assist in the evaluation of the Wekiva Parkway traffic impacts to the Mount Dora area, three YR 2032 scenarios were developed and analyzed comparing two No-Build Scenarios to the Wekiva Parkway Build scenario. The design year for the Wekiva Parkway PD&E Study is 2032. Future year traffic volumes were developed utilizing the Wekiva Parkway PD&E Study travel demand models which have a horizon year of 2025. The YR 2032 traffic volumes were developed by applying an annual growth rate of 3% from 2025 to 2032. In each scenario, US 441 was analyzed as a six lane facility, consistent with the Lake-Sumter MPO's 2025 Long Range Transportation Plan. The three scenarios were:

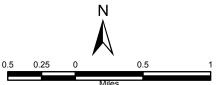
- No-Build Scenario 1: SR 46 as a two lane facility
- No-Build Scenario 2: SR 46 as a four lane facility
- Build Wekiva Parkway Scenario





5/1/2006

Figure 1 Wekiva Parkway PD&E Study Mt. Dora Area Roadway Network



For each scenario, Annual Average Daily Traffic (AADT) and Directional Design Hour Volumes (DDHV) were developed and compared to identify significant trends and impacts on the local network. A recommended K_{30} -factor value of 9% and a D_{30} -factor value of 55 % were used to develop the DDHV's for each scenario. Also, for each YR 2032 scenario, the peak hour turning movements at the US 441/SR 46 interchange were developed.

Traffic Impacts to Mount Dora Area Roadways

A comparison of the existing traffic volumes to the three YR 2032 scenario on the Mount Dora area roadway network is shown in Figure 2. The existing and projected daily traffic volumes on Mount Dora area roadway facilities are shown below in Table 1. Table 2 lists the existing and projected peak hour traffic volumes on the Mount Dora area roadways.

Table 1: Mount Dora Traffic Volumes (AADT)

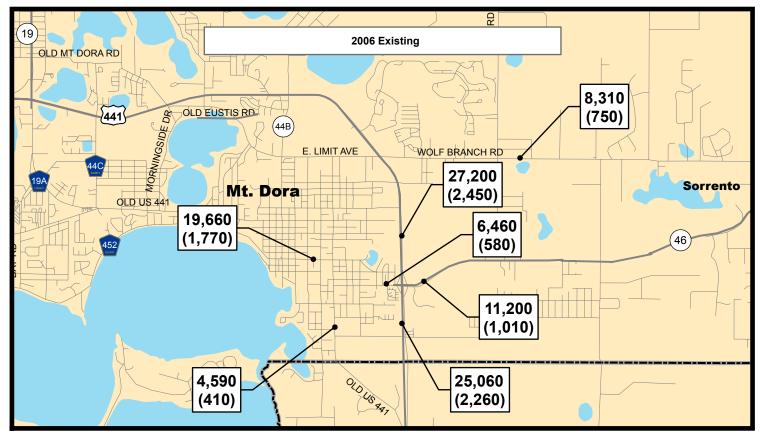
	Scenario (AADT)						
		2032 No Build Alt 1	2032 No Build Alt 2				
Roadway	2006 Existing	(SR 46- 2 Lanes)	(SR 46- 4 Lanes)	2032 Build WP			
1st Avenue, West of US 441	6,460	15,400	22,100	17,100			
5th Avenue, West of Highland Street	19,660	29,440	31,600	31,050			
Old US 441, South of Camp Avenue	4,590	14,710	15,800	10,330			
US 441, North of SR 46	27,200	62,400	70,900	73,300			
US 441, South of SR 46	25,060	60,100	68,400	40,500			

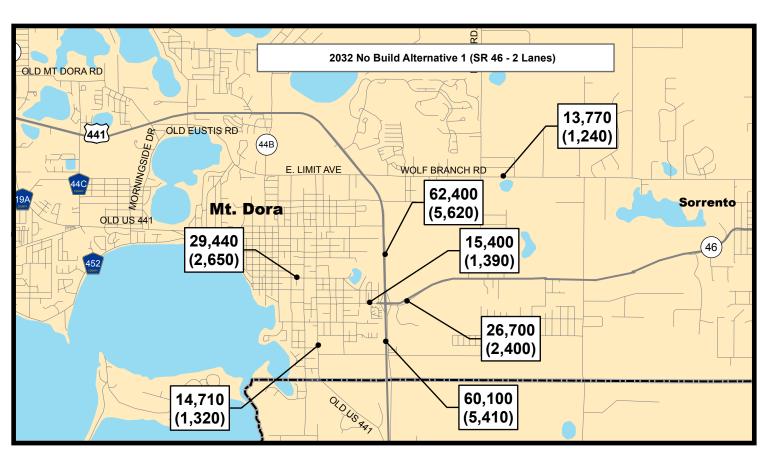
Table 2: Mount Dora Traffic Volumes (Peak Hour)

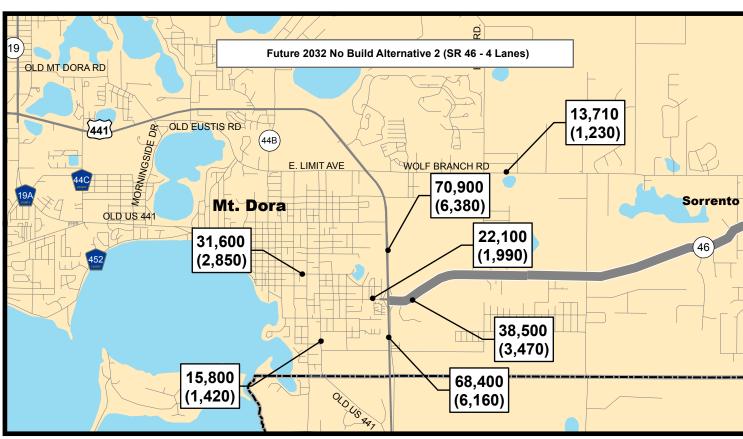
	Scenario (Peak Hour Volumes)							
		2032 No Build Alt 1	2032 No Build Alt 2					
Roadway	2006 Existing	(SR 46- 2 Lanes)	(SR 46- 4 Lanes)	2032 Build WP				
1st Avenue, West of US 441	580	1,390	1,990	1,540				
5th Avenue, West of Highland Street	1,770	2,650	2,850	2,790				
Old US 441, South of Camp Avenue	410	1,320	1,420	930				
US 441, North of SR 46	2,450	5,620	6,380	6,600				
US 441, South of SR 46	2,260	5,410	6,160	3,650				

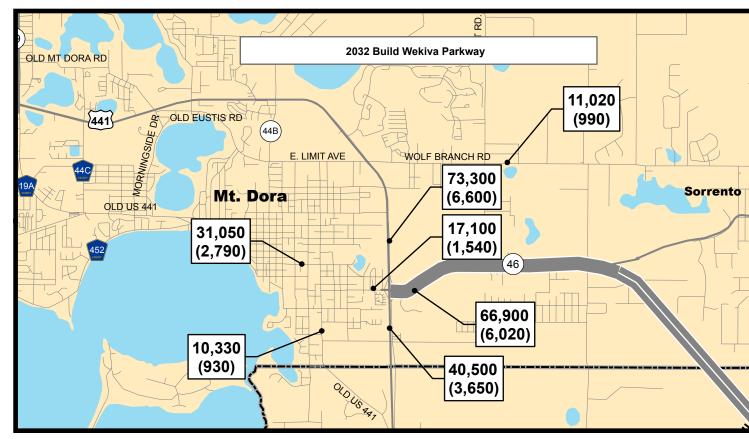
Tables 1 and 2 show how the addition of the Wekiva Parkway in northwest Orange County and east Lake County modifies traffic patterns in the Mount Dora area, particularly around the US 441/SR 46 interchange. It is expected that the Wekiva Parkway will reduce traffic on US 441 south of the SR 46 interchange, but increase traffic north of the interchange. With Wekiva Parkway, traffic on SR 46 is projected to increase east of the interchange, while traffic west of the interchange is expected to decrease slightly compared to the YR 2032 No-Build Scenario with SR 46 a four lane roadway. The addition of the Wekiva Parkway will shift travel patterns, as a result the traffic movement from US 441 north of the interchange to and from SR 46 east of the interchange becomes the major movement at the US 441/SR 46 interchange.

The traffic impacts of Wekiva Parkway west of US 441, specifically the Mount Dora Central Business District, can also be seen in Tables 1 and 2. Compared to the 2032 No Build













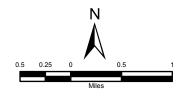


Figure 2
Wekiva Parkway Study
Mount Dora Local Traffic Analysis

Alternative 1, in which SR 46 is a two lane highway as it is today, the Wekiva Parkway Build Scenario results in an increase of traffic of 1,700 daily vehicles and 150 peak hour vehicles on 1st Avenue to the west of US 441. However, even without Wekiva Parkway, it is expected that SR 46 will need to be widened to four lanes east of US 441 by the year 2032 in order to accommodate the area's population growth over the next 26 years. Therefore, when compared to the 2032 No-Build Alternative 2 where SR 46 is a four lane highway, the daily traffic on 1st Avenue to the west of US 441 actually decreases from 22,100 to 17,100 in the Wekiva Parkway Build Scenario. This is due to the fact that with the Wekiva Parkway in place, the amount of cut-through traffic through Mount Dora will diminish as traffic accesses Wekiva Parkway by more direct routes in northwest Orange and east Lake Counties.

US 441/SR 46 Interchange Impacts

Currently, the existing configuration at US 441 and SR 46 is a diamond interchange with US 441 elevated over SR 46. This interchange consists of one-lane ramps and unsignalized intersections along SR 46. As compared to current design standards, the existing interchange ramp geometry appears to have insufficient diverge angles, exit taper lengths, recovery lengths, merge lengths and sight distances.

The analysis of the US 441/SR 46 interchange utilized the same four scenarios mentioned above. The Build Wekiva Parkway scenario includes an analysis of the projected YR 2032 traffic volumes on the existing interchange as well as one possible redesign option for the US 441/SR 46 interchange. The existing (2006) traffic volumes and level of service conditions at the US 441/SR 46 interchange are shown in Figure 3. These existing traffic conditions are based on 24-hour and peak hour turning movement counts collected in February 2006 at the US 441/SR 46 interchange. In the existing condition, the major movement at US 441 and SR 46 is the north-south thru movement on US 441.

In addition to AADT's and DDHV's, a level of service (LOS) describing the operating conditions of the highway, ramps, and intersection was developed using Highway Capacity Software (HCS). In the YR 2032 No-Build conditions, the unsignalized SR 46 intersections at the US 441 ramps do not operate acceptably and were therefore analyzed as signalized intersections. The AADT's, DDHV's, peak hour turning movements and LOS conditions for the No-Build Alternative 1, No-Build Alternative 2 and Build Wekiva Parkway Scenario on the existing interchange and the Build Wekiva Parkway Scenario on a reconfigured interchange are shown in Figures 4, 5, 6 and 7, respectively.

A summary of the LOS results are shown below in Table 3. The No-Build Alternative 1 interchange with a two lane SR 46 operates acceptably except for the SR 46 segment east of US 441, which operates at LOS E. Under the No-Build Alternative 2, a more likely condition in the YR 2032 where SR 46 is widened to four lanes to the east of the interchange, the LOS at the signalized intersections deteriorate to LOS D and the SR 46 segment to the west of US 441 operates at LOS E. In the No-Build Scenario 2, the increase in traffic on SR 46 east of US 441 is accommodated by the four lane widening.

Figure 3 - US 441 at SR 46 - Existing (2006) Conditions

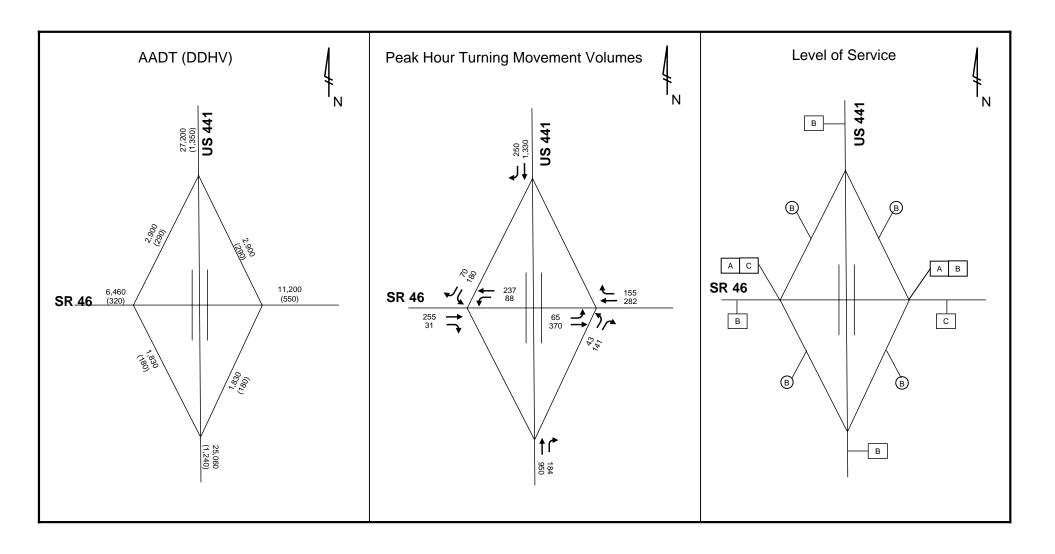
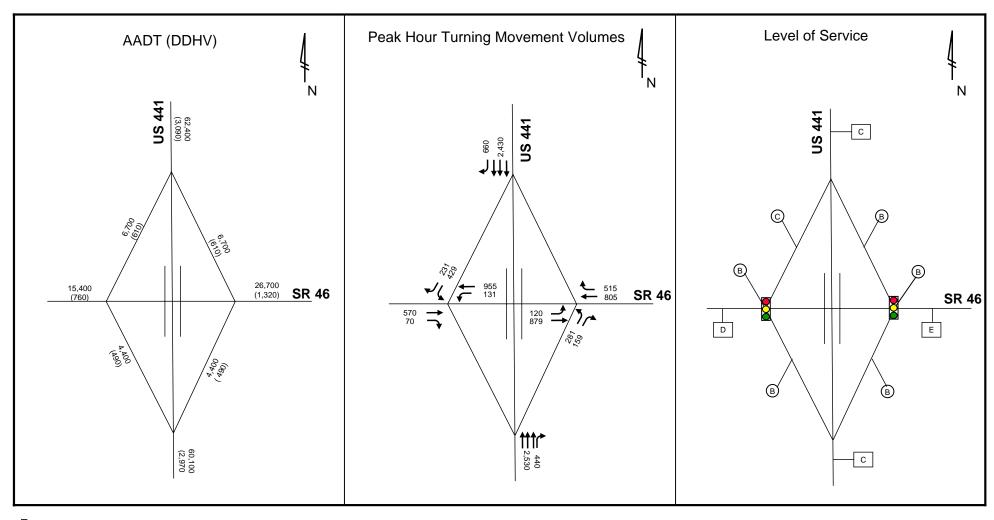
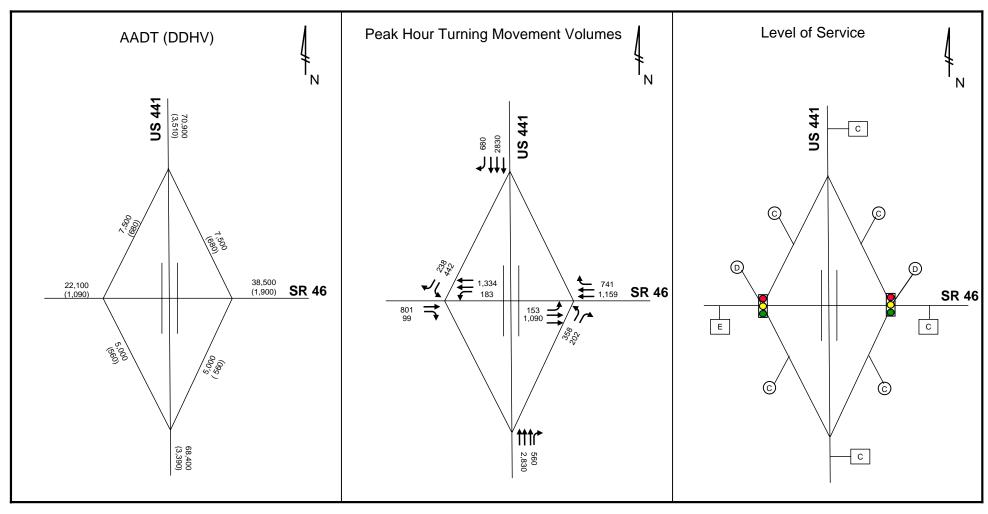


Figure 4 - US 441 at SR 46 – 2032 No Build Scenario 1 Analysis SR 46: 2 Lanes



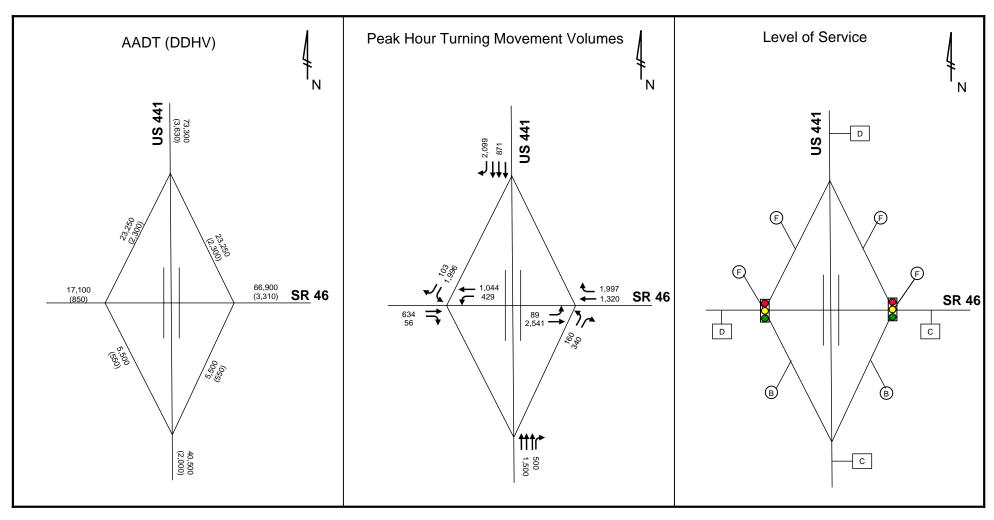
⁻Proposed signalized intersection, if warranted

Figure 5 - US 441 at SR 46 – 2032 No Build Scenario 2 Analysis SR 46: 4 Lanes



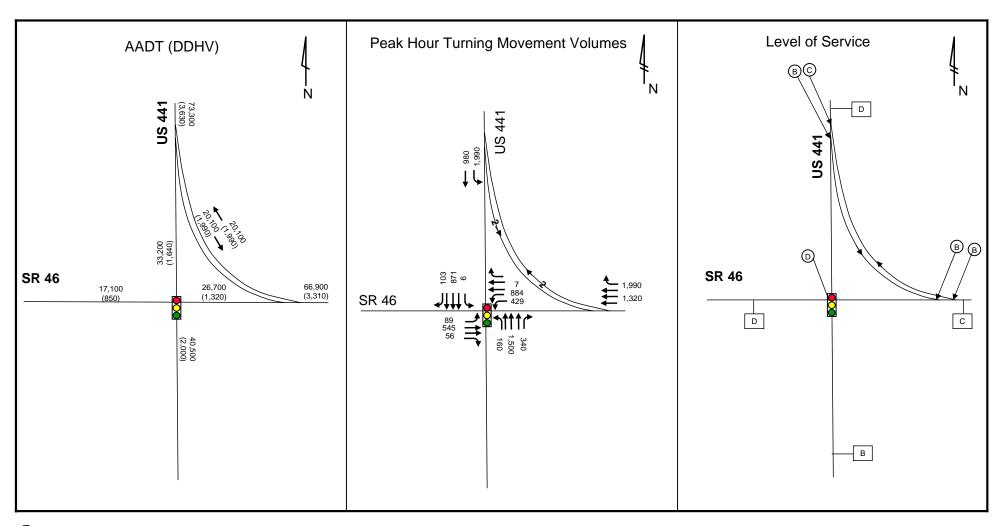
⁻Proposed signalized intersection, if warranted

Figure 6 - US 441 at SR 46 – 2032 Build Wekiva Parkway Analysis
On Existing Interchange



⁻Proposed signalized intersection, if warranted

Figure 7 - US 441 at SR 46 – 2032 Build Wekiva Parkway Analysis
On Reconfigured Interchange Option



⁻Proposed signalized intersection, if warranted

Table 3: US 441/SR 46 Level of Service Summary

	Scenario						
		2032 No Build Alt 1	2032 No Build Alt 2	2032 Build WP	2032 Build WP		
Location	2006 Existing	(SR 46- 2 Lanes)	(SR 46- 4 Lanes)	Existing Interchange	Reconfigured Interchange Option		
US 441 North of Interchange	В	С	С	D	D		
US 441 South of Interchange	В	С	С	В	В		
SR 46 East of Interchange	С	E	С	С	С		
SR 46 West of Interchange	В	D	E	D	D		
	A (Maj) / C						
US 441 SB Ramps (Unsignalized)	(Min)						
	A (Maj) / B						
US 441 NB Ramps (Unsignalized)	(Min)						
US 441 SB Ramps (Signalized)		В	D	F			
US 441 NB Ramps (Signalized)		В	D	F			
Proposed At-Grade US 441/SR 46					5		
Interchange					D		

Figure 6 shows the LOS performance of the existing SR 46/US 441 interchange under the Build Wekiva Parkway traffic conditions. Under the Build Wekiva Parkway traffic conditions, the existing one-way ramps to and from US 441 north operate at LOS F as do the signalized intersections. Therefore, for the existing interchange to operate at an acceptable LOS, several interchange improvements would be required. These required improvements include the widening of the ramps to and from US 441 north to two lanes, additional turn lanes at the ramp signalized intersections as well as the widening of SR 46 under US 441 to accommodate the increased traffic volume. However, these improvements would require a major overhaul of the existing interchange.

One option considered to accommodate the change in travel patterns and increased traffic at the US 441/SR 46 interchange due to Wekiva Parkway was a reconfiguration of the interchange. The proposed reconfigured interchange includes direct ramps from US 441 southbound to SR 46 eastbound and from SR 46 westbound to US 441 northbound. With the major movement at the interchange accommodated by the direct ramps, it is proposed that the existing interchange can be replaced with an at-grade signalized intersection. As shown in Figure 7, even with the increase in traffic due to the Wekiva Parkway at the US 441/SR 46 interchange, the proposed reconfiguration of the US 441/SR 46 interchange operates acceptably in the design year, with the proposed signalized intersection having a LOS D.

Traffic Impacts to SR 46 east of US 441

FDOT's Highplan software was used to analyze the LOS performance of SR 46 to the east of US 441 in the existing and YR 2032 Scenarios. A comparison of this LOS analysis is shown in Table 4. In the No-Build Alternative 1, SR 46 east of US 441 is two lanes and has an AADT of 26,700. This roadway performs at LOS E. In No-Build Alternative 2, SR 46 is four lanes and has an AADT of 38,500, performing at an acceptable LOS C. However, in the Wekiva Parkway Build Scenario, SR 46 east of US 441 has an AADT of 66,900 along this segment of SR 46. In the Build Wekiva Parkway Scenario, SR 46 operates at LOS F as a four lane facility and requires six lanes for it to operate at an acceptable LOS C.

Table 4: Level of Service Comparison of SR 46 East of US 441

	SR 46 East of US 441					
Scenario	No. of Lanes (two-way)	AADT	Peak Hour Volume	LOS		
Existing (2006) Conditions	2	11,200	1,010	С		
YR 2032 No-Build Alternative 1	2	26,700	2,400	Е		
YR 2032 No-Build Alternative 2	4	38,500	3,470	С		
YR 2032 Build Wekiva Parkway	4	66,900	6,020	F		
YR 2032 Build Wekiva Parkway	6	66,900	6,020	С		

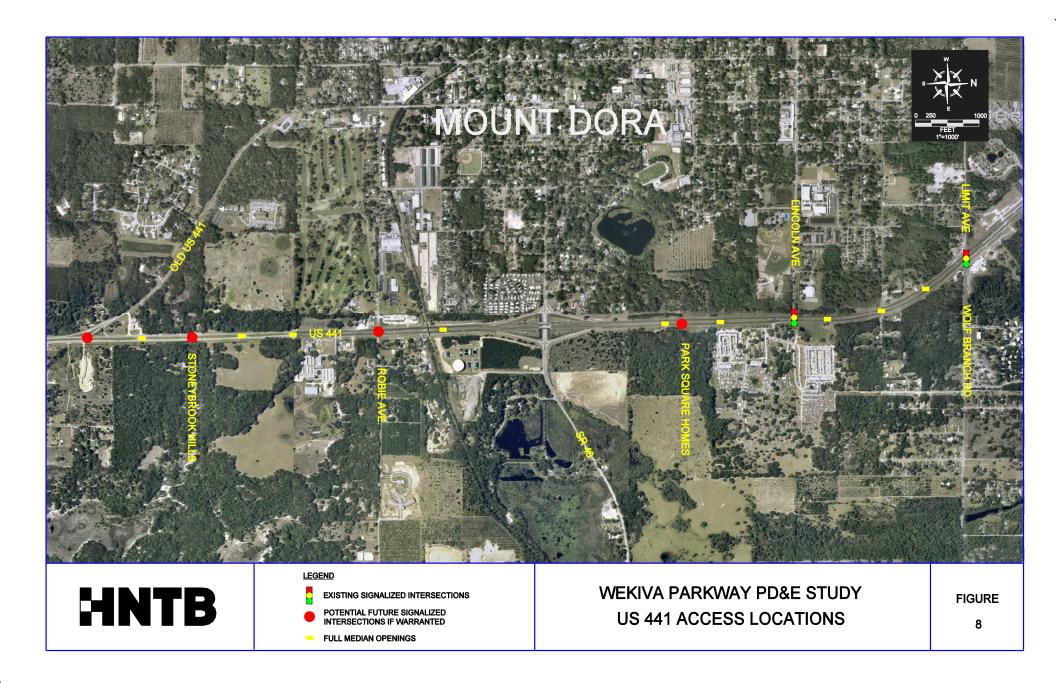
Access Management along US 441 in the Vicinity of SR 46

US 441 currently has an access management classification of 3. The minimum spacing between signalized intersections for this classification is 0.5 miles. Existing signalized intersection locations and full median openings along US 441 within the vicinity of SR 46 are shown in Figure 8. While not shown in Figure 8, the next signalized intersection along US 441 to the south is located at Sadler Road, 3.4 miles south of SR 46. Locations of potential future signalized intersections along US 441 near the US 441/SR 46 interchange are also shown in Figure 8. These potential future signalized intersections are at locations of existing minor cross streets and current development activity. It is expected that even if other potential signalized intersections are added along US 441 near SR 46, the addition of a signalized intersection at SR 46 included as part of the reconfigured intersection option would continue to meet the access management standard along US 441.

Summary

This evaluation of the traffic impacts of Wekiva Parkway on the City of Mount Dora resulted in the following conclusions:

- Wekiva Parkway will change the travel patterns in the Mount Dora area, reducing traffic on US 441 south of SR 46 and marginally increasing traffic on US 441 north of SR 46.
- Wekiva Parkway will increase traffic on SR 46 east of US 441 and reduce traffic on 1st Street to the west of US 441 due to the reduction of cut-through traffic as compared to the No-Build condition with SR 46 as a four lane facility.
- The existing US 441/SR 46 interchange is inadequate to accommodate the changes in travel patterns and traffic volumes that would result from the addition of Wekiva Parkway.
- In the Build Wekiva Parkway Scenario, SR 46 will need to be six lanes to operate at an acceptable LOS.
- The existing access management standard would be maintained if future signalized intersections, including one at SR 46, are added to US 441 in the Mount Dora area.



MEMORANDUM

To Joe Berenis, OOCEA Tom Percival, FDOT Mark Callahan, CH2MHill Gary Skaff, PBS&J From Josiah Banet, HNTB



Cc Luis Diaz, HNTB

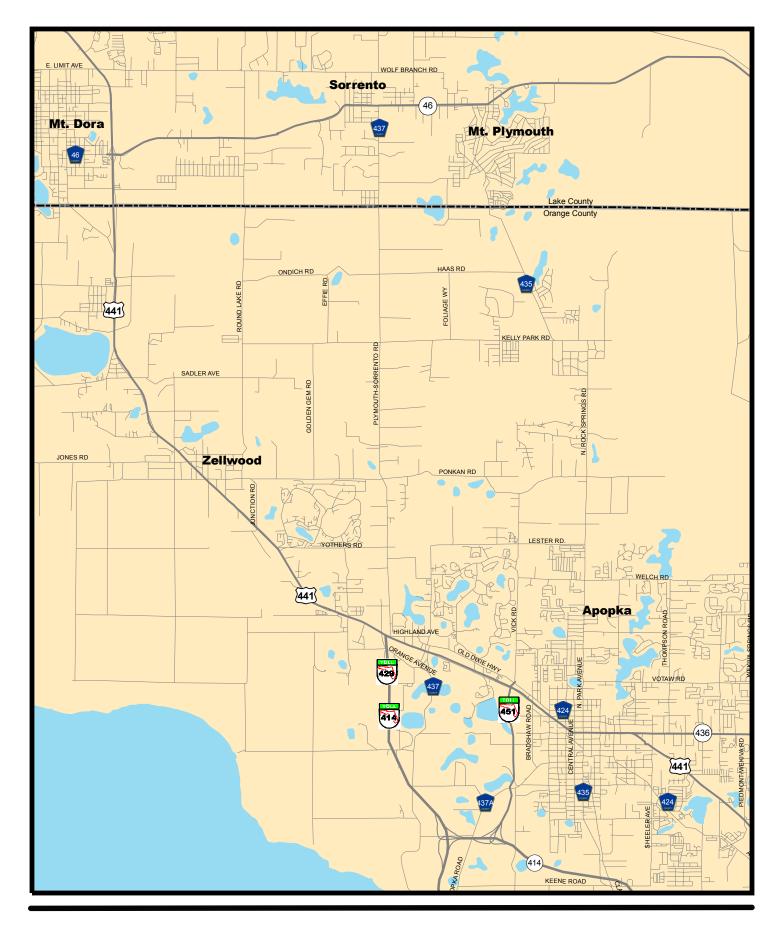
Subject
Updated Transportation Analysis for
Wekiva Parkway Local Access
Interchange in Orange County

Date 11/16/06

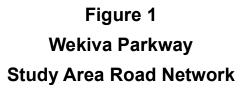
The purpose of this memorandum is to present an updated traffic analysis concerning the impact of the proposed Wekiva Parkway on the northwest Orange County and eastern Lake County local roadway network. In particular, this memorandum focuses on the transportation impacts within the study area due to a local access interchange on Wekiva Parkway at either Ponkan Road or Kelly Park Road. This traffic analysis utilizes the latest travel demand models from the Wekiva Parkway PD&E study and is intended to be an update to the February 2006 memorandum concerning the impacts of a local access interchange in Orange County.

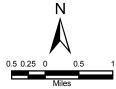
Figure 1 shows the roadway network that will be directly affected by the Wekiva Parkway in northwest Orange and east Lake Counties. Under state legislation referred to as the Wekiva Parkway and Protection Act, the Wekiva Parkway will only include one additional local access interchange in Orange County besides the interchange already planned at US 441 as part of the Maitland Boulevard Extension project. This additional local access interchange would be located at either Ponkan Road or Kelly Park Road.

In this analysis, the Wekiva Parkway alignment is assumed to be located west of Plymouth Sorrento Road in Orange County and connect via a systems interchange with the SR 46 Bypass just to the south of the Orange County/Lake County Line. The Wekiva Parkway would then turn east and north toward SR 46 east of Mount Plymouth. The Wekiva Parkway would follow the SR 46 corridor into Seminole County possibly to an interchange with I-4 at the SR 46/I-4 interchange or farther south at the SR 417/I-4 interchange. Currently, the existing SR 46 is proposed to connect with the SR 46 Bypass at an at-grade intersection west of Sorrento and to Wekiva Parkway at an interchange east of Mount Plymouth. For the purposes of this analysis, the existing section of SR 46, through Sorrento and Mount Plymouth, that is proposed to remain after construction of the Wekiva Parkway project will be referred to as Old SR 46.









Three YR 2032 design year alternatives were analyzed as part of this traffic analysis. These three alternatives were:

- No-Build
- Build Scenario 1 with Wekiva Parkway Interchange at Ponkan Road
- Build Scenario 2 with Wekiva Parkway Interchange at Kelly Park Road

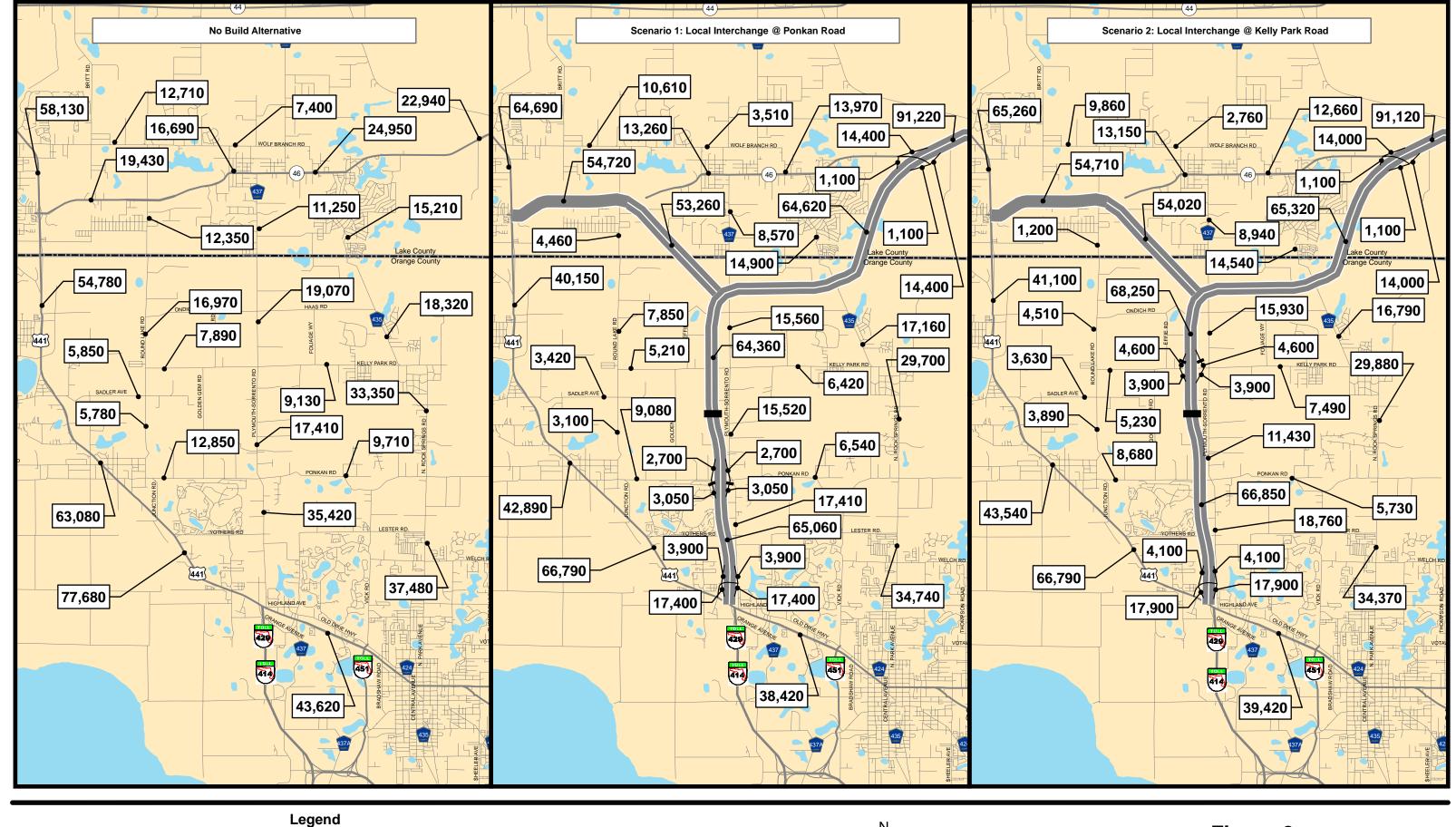
For each alternative, AADTs were developed and compared to identify significant trends and impacts on the local network. In addition to each comparative evaluation, the impact of the Wekiva Parkway project can be seen in each build alternative. A comparison of the traffic conditions in all three alternatives is shown in Figure 2.

Ponkan Road Interchange versus Kelly Park Road Interchange

As part of this evaluation, the impacts associated with an interchange at either Ponkan Road (Build Scenario 1) or Kelly Park Road (Build Scenario 2) were compared. As shown in Table 1, Wekiva Parkway is expected to reduce traffic on many of the roadways within the corridor. This reduction of traffic is shown graphically in Figure 2. It should be noted that the traffic impacts within the study area are mainly due to the presence of Wekiva Parkway, with the location of the local access interchange having a relatively minor effect on the traffic reduction in the area. Wekiva Parkway provides an attractive alternative for north-south travel through the project area, thus reducing the number of through trips occurring on the local roadways. While the reduction of traffic is significant on US 441, Plymouth Sorrento Road, and Old SR 46, it also has positive effects on other local roadways. Some of the most notable trends identified with the addition of the Wekiva Parkway were:

- 10,900-20,200 vehicle reduction on US 441 between SR 429 and SR 46
- 6,600-7,100 vehicle addition on US 441 north of SR 46
- 1,900-18,000 vehicle reduction on Plymouth Sorrento Road
- 1,900-12,500 vehicle reduction on Round Lake Road
- 1,200-3,700 vehicle reduction on Rock Springs Road
- 3,200-4,200 vehicle reduction on Ponkan Road
- 1,600-2,700 vehicle reduction on Kelly Park Road

As shown with the reduction of vehicle traffic on Ponkan Road and Kelly Park Road, Wekiva Parkway impacts east-west roadways favorably as well. In fact, the addition of Wekiva Parkway to the roadway network results in a potential reduction of vehicle traffic of greater than 40% on Old SR 46 through Sorrento.





xx,xxx AADT

Widen To 6 Lane Arterial



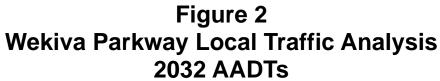


Table 1: 2032 AADT Comparison by Interchange Location

			No-Build			Build Scenario 2 Kelly Park Interchange			
Road Name	From	То	2032 AADT	2032 AADT	Change in Volume	% Change	2032 AADT	Change in Volume	% Change
Kelly Park Rd.	Round Lake Rd.	Plymouth Sorrento Rd.	7,890	5,210	-2,680	-34.0%	5,230	-2,660	-33.7%
	Plymouth Sorrento Rd.	Rock Springs Rd.	9,130	6,420	-2,710	-29.7%	7,490	-1,640	-18.0%
Plymouth-Sorrento Rd.	US 441	Ponkan Rd.	35,420	17,410	-18,010	-50.8%	18,760	-16,660	-47.0%
	Ponkan Rd.	Kelly Park Rd.	17,410	15,520	-1,890	-10.9%	11,430	-5,980	-34.3%
	Kelly Park Rd.	Lake County Line	19,070	15,560	-3,510	-18.4%	15,930	-3,140	-16.5%
	Lake County Line	SR 46	11,250	8,570	-2,680	-23.8%	8,940	-2,310	-20.5%
Ponkan Rd.	Round Lake Rd.	Plymouth Sorrento Rd.	12,850	9,080	-3,770	-29.3%	8,680	-4,170	-32.5%
	Plymouth Sorrento Rd.	Rock Springs Rd.	9,710	6,540	-3,170	-32.6%	5,730	-3,980	-41.0%
Rock Springs Rd.	US 441	Ponkan Rd.	37,480	34,740	-2,740	-7.3%	34,370	-3,110	-8.3%
	Ponkan Rd.	Kelly Park Rd.	33,350	29,700	-3,650	-10.9%	29,880	-3,470	-10.4%
	Kelly Park Rd.	Lake County Line	18,320	17,160	-1,160	-6.3%	16,790	-1,530	-8.4%
	Lake County Line	SR 46	15,210	14,900	-310	-2.0%	14,540	-670	-4.4%
Round Lake Rd.	Ponkan Rd.	Kelly Park Rd.	5,780	3,100	-2,680	-46.4%	3,890	-1,890	-32.7%
	Kelly Park Rd.	Lake County Line	16,970	7,850	-9,120	-53.7%	4,510	-12,460	-73.4%
	Lake County Line	SR 46	12,350	4,460	-7,890	-63.9%	1,200	-11,150	-90.3%
SR 46	Round Lake Rd.	Plymouth Sorrento Rd.	16,690	13,260	-3,430	-20.6%	13,150	-3,540	-21.2%
	Plymouth Sorrento Rd.	CR 435	24,950	13,970	-10,980	-44.0%	12,660	-12,290	-49.3%
US 441	SR 451	SR 429	43,620	38,420	-5,200	-11.9%	39,420	-4,200	-9.6%
	SR 429	Ponkan Rd.	77,680	66,790	-10,890	-14.0%	66,790	-10,890	-14.0%
	Ponkan Rd.	Sadler Rd.	63,080	42,890	-20,190	-32.0%	43,540	-19,540	-31.0%
	Sadler Rd.	SR 46	54,780	40,150	-14,630	-26.7%	41,100	-13,680	-25.0%
	SR 46	CR 44B	58,130	64,690	6,560	11.3%	65,260	7,130	12.3%

While the traffic impacts due to either the Ponkan Road interchange or the Kelly Park Road interchange can be considered relatively minor, their impacts are slightly different. However, with both interchanges, traffic on local roadways remains significantly below the No Build conditions. The traffic impacts related to a Ponkan Road interchange are:

- Diverts more traffic from Plymouth Sorrento Road between US 441 and Ponkan Road
- Serves area around Ponkan Road/Plymouth Sorrento Road intersection

The traffic impacts related to a Kelly Park Road interchange are:

- Higher ramp volumes compared to Ponkan Road interchange, thus greater usage
- Diverts more traffic from Plymouth Sorrento Road between Ponkan Road and Kelly Park Road
- Serves area in north Orange County and East Lake County
- Provides for better mobility in northwest Orange County and east Lake County

Another method of comparing the impact of a Ponkan Road interchange versus a Kelly Park Road interchange is to look at the user benefits generated within the study area transportation system due to each local access interchange. Table 2 shows a comparison of the user benefits of Build Scenario 1 and Build Scenario 2 within north Orange County and east Lake County as compared to the No-Build Scenario. There is a noticeable improvement in average speed, the number of accidents, and the total delay due to congestion on the transportation system in both Build Scenarios. However, Build Scenario 2 with an interchange at Kelly Park Road appears to have a larger benefit to the transportation system users than Build Scenario 1.

Table 2: User Benefits

	Change From No-Build Scenario			
	Build Scenario 1 Build Scenar			
Highway Network Parameter	Ponkan Road Interchange	Kelly Park Road Interchange		
Vehicle Miles Traveled (VMT)	27.12%	26.86%		
Vehicle Hours Traveled (VHT)	8.14%	7.57%		
Average Speed	12.00%	12.57%		
Accidents	-6.07%	-7.23%		
Total Delay Due To Congestion (Vehicle Hours)	-11.71%	-12.60%		

Both interchanges provide access to Wekiva Parkway for areas in northwest Orange County, however the Kelly Park Road interchange provides better access for areas of east Lake County. In addition, the Kelly Park Road interchange projects higher volumes and user benefits than a Ponkan Road interchange overall. This is due to several factors, such as the Ponkan Road interchange's proximity to the US 441 interchange and its location being further south.

Summary

The significant findings of this evaluation of local traffic impacts under the two Build Scenarios of Wekiva Parkway are listed below. However, these findings are based on traffic impacts only and do not account for other comparative analysis criteria such as construction costs, socioeconomic impacts and environmental impacts.

- Wekiva Parkway reduces traffic on many of the local roadways within the study area
- An interchange at Kelly Park Road provides better local access to Wekiva Parkway as indicated in the higher interchange volumes as compared to a Ponkan Road interchange
- An interchange at Kelly Park Road improves mobility in northwest Orange County and east Lake County areas
- An interchange at Kelly Park Road has more user benefits related to it than an interchange at Ponkan Road