

5.3 Noise Impact Analysis

Existing and future traffic noise levels for the No Build and Build Alternatives were predicted for noise sensitive receivers at 43 monitoring stations within the project study corridor. These locations provided representative data to evaluate noise levels and potential noise impacts throughout the study area. Tables presenting the comparison of the noise levels for the existing (2007), future No-Build (2032), and future Build (2032) conditions within the four general project areas are included in the following sections.

The analysis to determine the extent of noise impacts associated with the preferred alternative was accomplished by developing a contour, or isopleth, extending outward from the proposed roadway locations. The distance from the proposed edge of pavement to where noise impacts are expected was determined in two steps:

- Step 1 – Establish the distance from the road where the predicted noise level is at 66 dBA;
- Step 2 – For those receivers reporting less than 66 dBA, check the representative ambient level in that area and if the ambient level is 15 dBA less than the predicted level, establish the distance at which the predicted level is equal to the ambient level plus 15 dBA.

Using these two steps, a noise impact isopleth was determined for the preferred alternative. This isopleth is depicted in a dark blue line parallel to the alignment in the graphics. The noise sensitive sites located between the proposed roadway and the isopleths are expected to experience noise impacts as defined by FHWA and FDOT procedures. Supplemental receiver data used to determine the noise impact isopleths are included in **Appendix A**.

The following subsections provide a description of the preferred alternative evaluated for each project area (Orange County, Lake County West, Lake County East, and Seminole County) along with a graphic portrayal of the noise impact isopleth and a quantification of sensitive sites that are expected to experience noise impacts due to the proposed alternative. Back-up data on impact evaluations is included in **Appendix B**.

5.3.1 Orange County Preferred Alternative

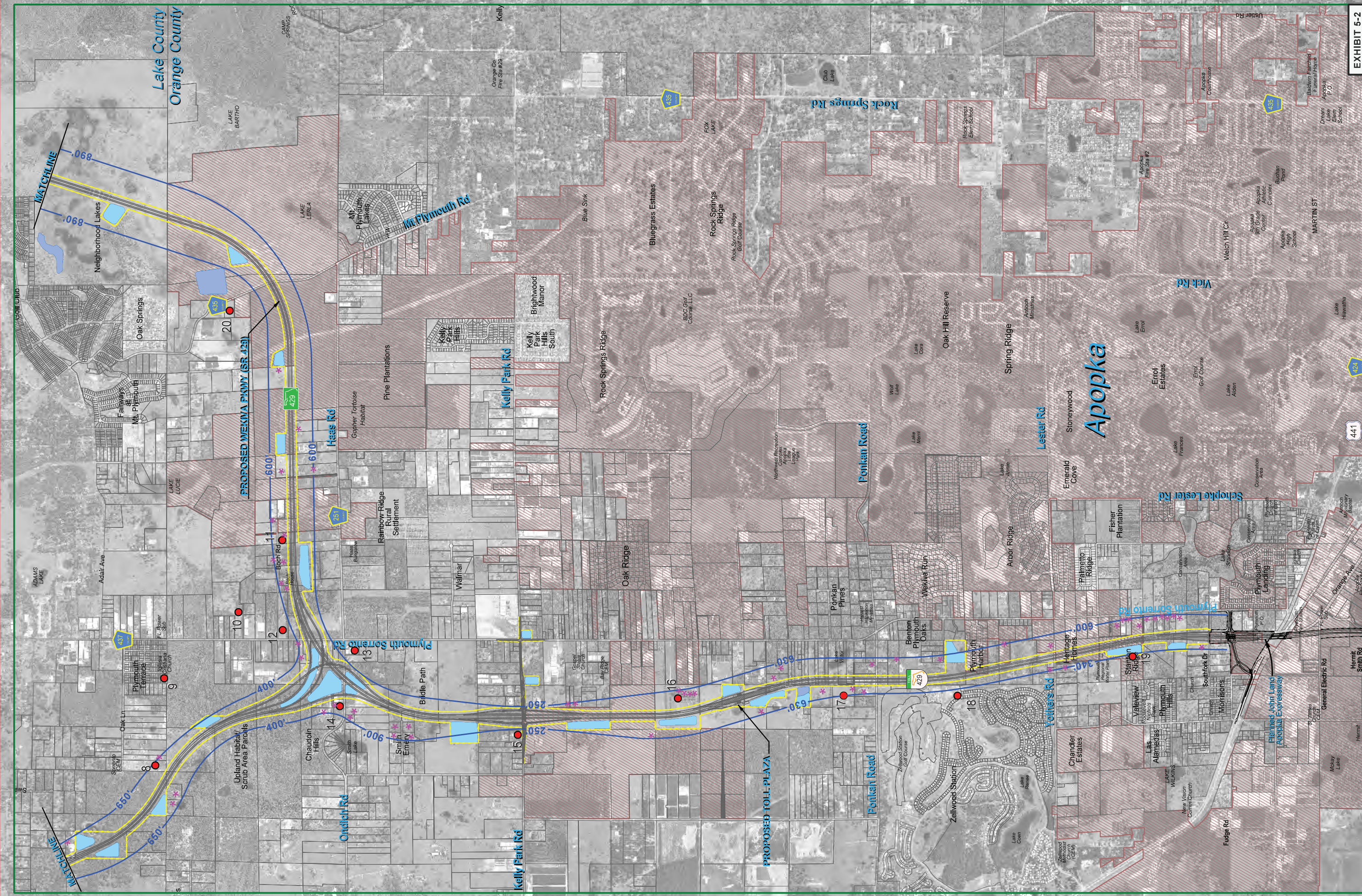
Kelly Park Road Interchange Alignment, Systems Interchange Alternative 1 (westernmost interchange location), Orange County Alignment Alternative 1 (the southern alignment from the Systems Interchange to Lake County East)

Table 5-3 provides the existing, 2032 No Build, and 2032 Build noise levels for this alternative, and **Exhibit 5-2** presents the noise impact contour for this alternative and identifies impacted receptors. A total of 53 existing residences would be impacted by this alternative. This includes 10 residences along Plymouth Sorrento Road from Southfork Drive to Schopke Road, 4 residences along Plymouth Sorrento Road west of Appy Lane, 4 residences along Smith Emery-Paulette Street, as well as scattered homes within the impact area. Back-up data on impact evaluations is included in **Appendix B**.

TABLE 5-3

Projected Future (2032) Orange County Noise Levels (Expressed in A-weighted decibels (dBA))

Monitoring Station	Existing	2032 No Build	2032 Build Preferred Alternative		
			Distance between Monitoring Station and Edge of Mainline travel way (feet)	Kelly Park Road I/C Alignment with Orange County Alternative 1 and Systems I/C Alternative 1	Increase over Existing
10	47.5	47.5	1940	51.7	4.2
11	42.7	42.7	260	61.6	18.9
12	49.5	49.5	645	61.4	11.9
13	57.6	57.6	812	62.8	5.2
14	46.0	48.2	673	65.3	19.3
15	53.8	55.3	370	64.1	10.3
16	42.3	42.3	290	62.9	20.6
17	42.9	42.9	319	61.1	18.2
18	46.4	46.4	438	58.9	12.5
19	42.8	42.8	120	68.3	25.5
20	44.0	44.0	1505	50.4	6.4



5.3.2 Lake County West Preferred Alternative

US 441/SR 46 Interchange Alternative 2, SR 46 North Widening, Lake County West Alternative 1

Table 5-4 provides the existing, 2032 No Build, and 2032 Build noise levels for this alternative, and **Exhibit 5-3** presents the noise impact contour for this alternative and identifies impacted receptors. A total of 64 existing and planned residences would be impacted by this alternative. This includes 2 planned (with building permits) and 4 existing residences in the Summerbrooke at Mount Dora subdivision, 11 existing residences in the Lake Franklin Park subdivision, 19 residences in the Southernaire Mobile Home Park, 4 residences in the Cobble Hill Village subdivision, 6 residences in the Dorset of Mount Dora subdivision, as well as scattered homes within the impact area. Back-up data on impact evaluations is included in **Appendix B**.

TABLE 5-4

Projected Future (2032) Lake County West Noise Levels (Expressed in A-weighted decibels (dBA))

Monitoring Station	Existing	2032 No Build	2032 Build Preferred Alternative		
			Distance between Receptor and Mainline Edge of travel way (feet)	US 441/SR 46 I/C Alt. 2, SR 46 Widening North, Lake County West Alternative 1	Increase over Existing
1	57.2	58.5	200	66.2	9.0
2	66.1	69.1	240	71.6	5.5
3	66.0	69.1	221	70.1	4.1
4	66.8	68.1	57	69.9	3.1
5	70.2	71.5	32	73.7	3.5
6	45.5	45.5	183	63.1	17.6
7	60.5	61.4	135	59.4	-1.1
8	39.4	39.4	430	57.3	17.9
9	48.6	48.6	2005	44.3	-4.3

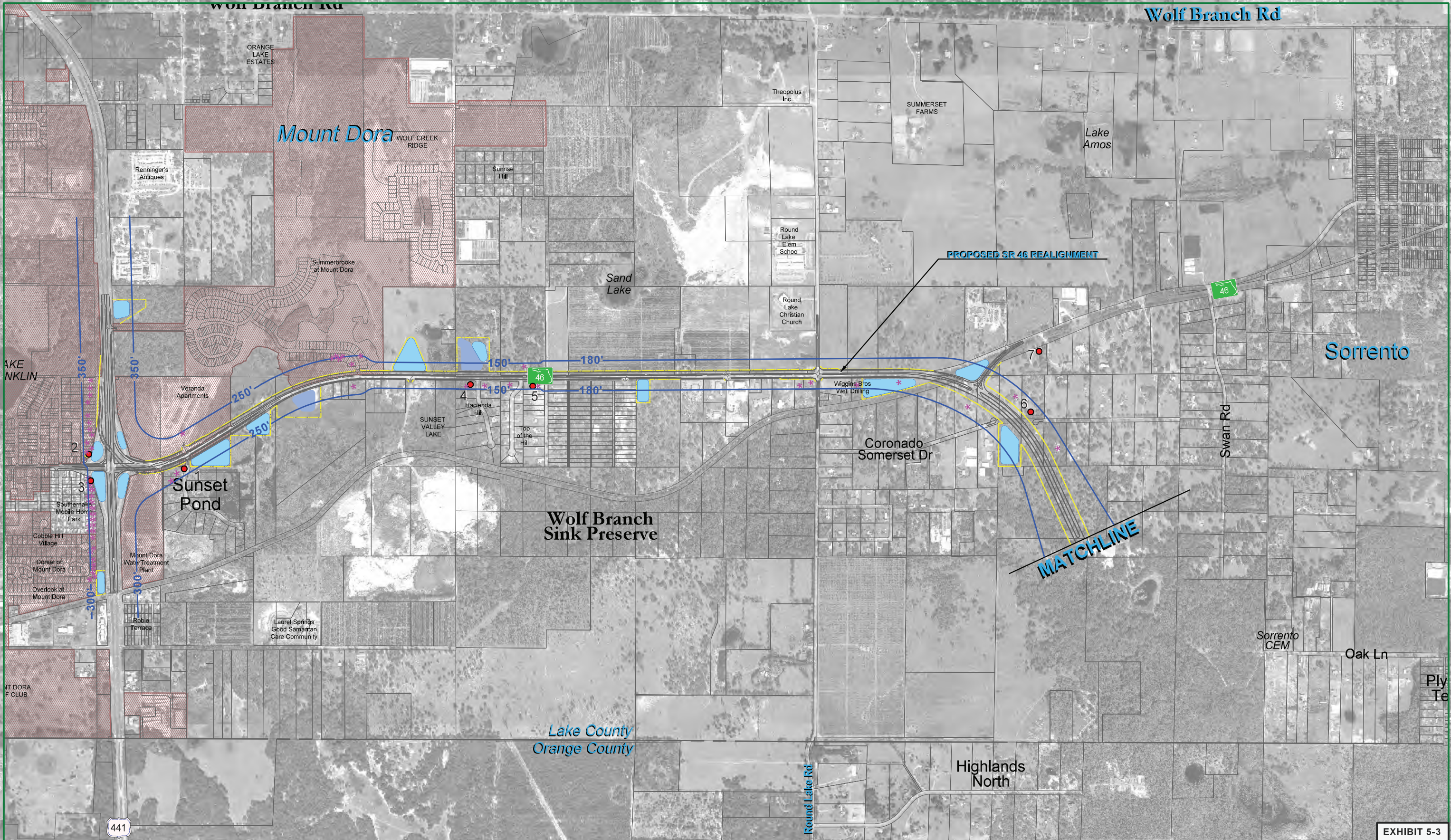


EXHIBIT 5-3

LEGEND

- NOISE MONITORING LOCATION
- NOISE CONTOUR (66 dBA/15 dBA increase)
- * NOISE IMPACT RECEPTOR

EXPRESSWAY AUTHORITY

STATE OF FLORIDA
DEPARTMENT OF TRANSPORTATION

CH2MHILL

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WEKIVA PARKWAY
Project Development and Environment Study
Orange, Lake & Seminole Counties

LAKE COUNTY WEST
Preferred Alternative
US 441/SR 46 Interchange Alternative 2
with SR 46 North Widening and
Lake County West Alternative 1
Noise Impact Plan Sheet
MARCH 2008

0 400
Feet

5.3.3 Lake County East Preferred Alternative

The Lake County East section of the project is divided into three sections for the purpose of the noise impact analysis: Neighborhood Lakes Alternative, South Alignment Alternative with Service Road, and CR 46A Realignment Alternative, as discussed in the following subsections.

5.3.3.1 Neighborhood Lakes Alternative and South Alignment Alternative with Service Road

Neighborhood Lakes Alternative 1 (the westernmost alignment through the Neighborhood Lakes parcels) and the South Alignment Alternative with Service Road (southern "Red" alignment)

Table 5-5 provides the existing, 2032 No Build, and 2032 Build noise levels for the Neighborhood Lakes alternative as well as the South Alignment Alternative with Service Road. **Exhibit 5-4** presents the noise impact contour for this alternative as well as identifies impacted receptors. Four homes located along Baird Avenue and Duxbury Avenue in the Mount Plymouth Golf Club subdivision would be impacted by this alternative. In addition, the five residences affected by the previous preferred alternative (i.e., Southern Alignment Alternative with Three Local Access Interchanges) would also be impacted by the current preferred alternative (i.e., Southern Alignment Alternative with Service Road). This includes two residences located on the south side of SR 46 west of the existing SR 46/CR 46A intersection, one residence located northwest of that intersection, and two residences located east of Wekiva River Road. Back-up data on impact evaluations is included in **Appendix B**.

5.3.3.2 Wekiva River

Since the Wekiva River is a designated Wild & Scenic River, ambient noise data was gathered at two monitoring sites on either side of the river. As shown in **Exhibit 5-4** (and later in this document in **Exhibit 5-16** on page 5-39), monitoring station 29A is on the west side of the river north of the existing SR 46 bridge and monitoring station 29B is on the east side of the river south of the existing bridge. Monitoring station 29A is located at the river shore line approximately 150 feet north of the edge of westbound travel on the existing SR 46 bridge. Monitoring station 29B is located near the river shore line approximately 180 feet south of the edge of eastbound travel on the existing bridge. As shown in **Table 5-5**, the existing ambient noise level at monitoring station 29A is 62.2 dBA and the projected 2032 Build noise level is 66.7 dBA. The existing ambient noise level at monitoring station 29B is 56.8 dBA and the projected 2032 Build noise level is 66.0 dBA. The noise analysis at the river for the Build alternative will be further developed in the Programmatic Section 4(f) Evaluation for the Wekiva Wild & Scenic River which is being prepared for the PD&E Study.

5.3.3.3 CR 46A Realignment Alternative

Table 5-5 provides the existing, 2032 No Build, and 2032 Build noise levels for the CR 46A Realignment Alternative. Several viable alternative alignments were evaluated which resulted in Monitoring Station 23 being in the right of way for the preferred alternative.

CR 46A Realignment Alternative 1A

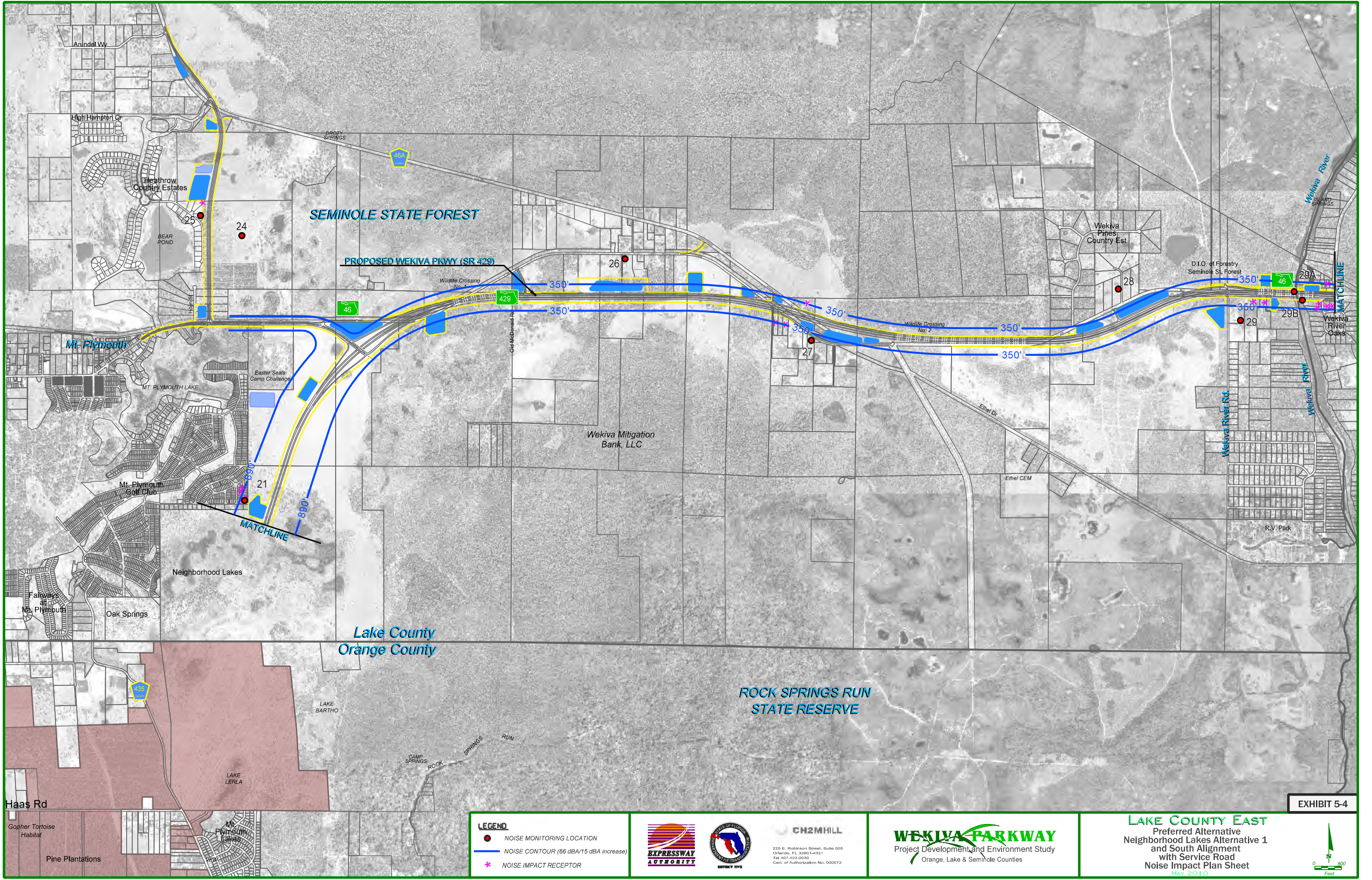
Exhibit 5-5 presents the noise impact contour for this alternative. There is one residence in the Heathrow Country Estates subdivision that would be impacted by this alternative. Back-up data on impact evaluations is included in **Appendix B**.

TABLE 5-5

Projected Future (2032) Lake County East Noise Levels (Expressed in A-weighted decibels (dBA))

Monitoring Station	Existing	2032 No Build	2032 Build Preferred Alternative		
			Distance between Receptor and Mainline Edge of travel way (feet)	Neighborhood Lakes Alternative 1, CR 46A Alt. 1A, South (Red) Alignment Alternative with Service Road	Increase over Existing
21	37.8	37.8	800	54.4	16.6
22	46.6	46.6	1185	52.4	5.8
23	69.0	70.2	Within proposed Right of Way*		
24	42.1	42.1	750	50.0	7.9
25	46.7	46.7	150	61.9	15.2
26	53.5	53.5	975	55.8	2.3
27	69.3	69.3	350	66.5	-2.8
28	50.2	50.2	955	58.3	8.1
29	51.8	52.3	770	60.0	8.2
29A	62.2	62.2	150	66.7	4.5
29B	56.8	56.8	180	66.0	9.2

* Several viable alternative alignments were evaluated which resulted in Monitoring Station 23 being in the right of way for the preferred alternative.



LEGEND

- NOISE MONITORING LOCATION
- NOISE CONTOUR (66 dBA/15 dBA increase)
- ✱ NOISE IMPACT RECEPTOR

EXPRESSWAY AUTHORITY

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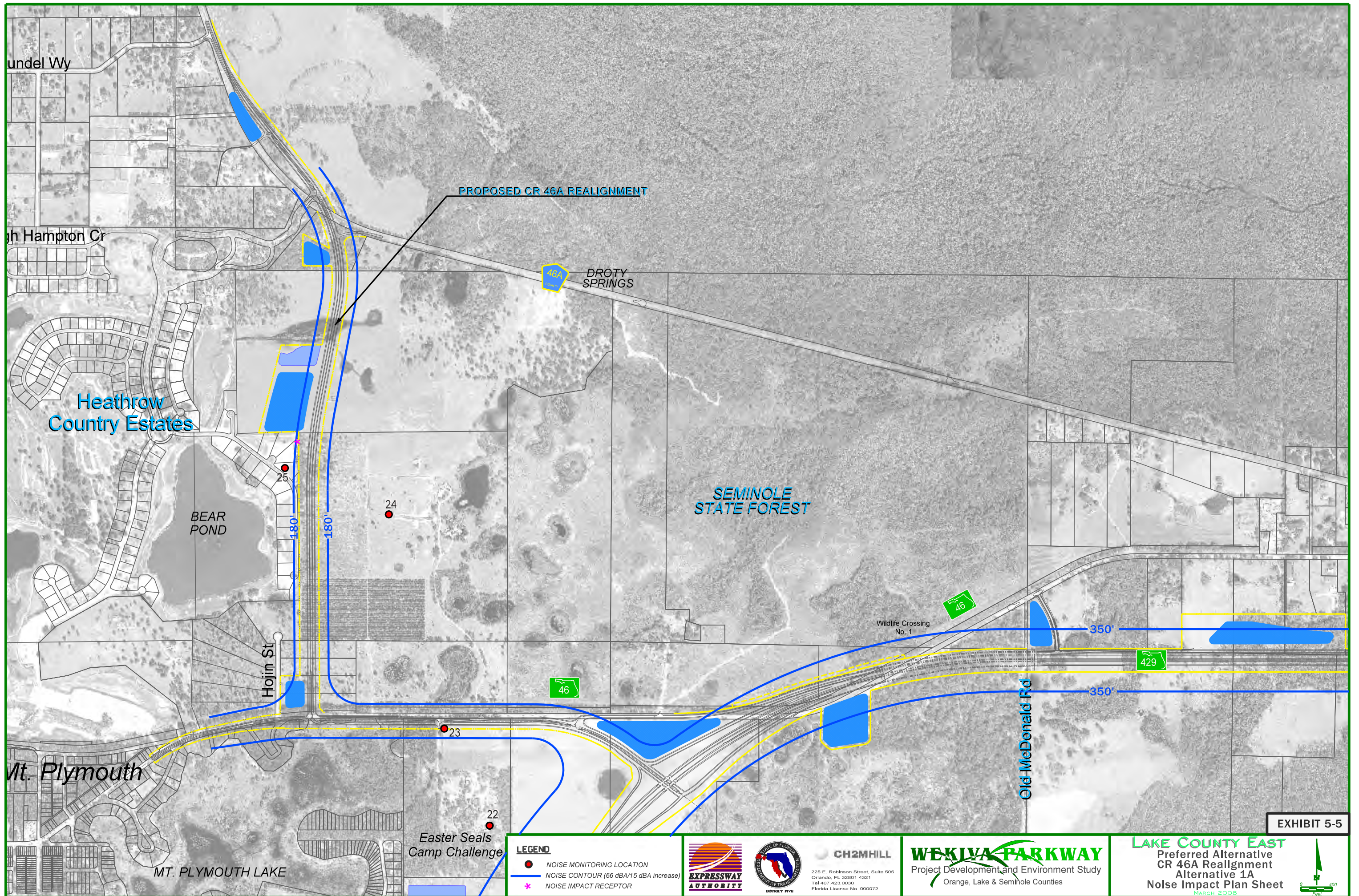
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Orange, Lake & Seminole Counties

LAKE COUNTY EAST
Preferred Alternative
Neighborhood Lakes Alternative 1
and South Alignment
with Service Road
Noise Impact Plan Sheet
MAY 2010

0 800 Feet



LEGEND

- NOISE MONITORING LOCATION
- NOISE CONTOUR (66 dBA/15 dBA increase)
- * NOISE IMPACT RECEPTOR



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Project Development and Environment Study
Orange, Lake & Seminole Counties

LAKE COUNTY EAST
Preferred Alternative
CR 46A Realignment
Alternative 1A
Noise Impact Plan Sheet
MARCH 2008



5.3.4 Seminole County Preferred Alternative

Table 5-6 provides the existing, 2032 No Build, and 2032 Build noise levels for the Seminole County Alternative. The preferred alternative is discussed below. Two viable alternatives were evaluated for SR 46 corridor widening in Seminole County which resulted in Monitoring Stations 31 and 35 being in the right of way for the future north widening alternative.

SR 46 Corridor North Widening Alternative

Exhibit 5-6 presents the noise impact contour for this alternative and identifies impacted receptors. A total of 39 single family residences, one church and approximately 59 residences in the Twelve Oaks RV Resort would be impacted by this alternative. No RVs were counted among these 59 residences. Only assumed permanent homes were counted.

Impacts to the single family residences include 7 homes in the Wekiva River Oaks subdivision, 8 homes in the Markham Forest subdivision, 4 recently constructed homes in the Bella Foresta subdivision, 6 homes in the Sylvan Glade subdivision, and several other smaller clusters or scattered homes within the impact area. Back-up data on impact evaluations is included in **Appendix B**.

SR 417/I-4 Interchange Connection Alternative B

The previously referenced **Table 5-6** provides the existing, 2032 No Build, and 2032 Build noise levels for the Seminole County SR 417/I-4 Interchange Modification Alternative with Connection Alignment Alternative B. **Exhibit 5-7** and the previously referenced **Exhibit 5-6** present the noise impact contour for this alternative and identify impacted receptors. A total of 22 residences, one church, and one private school would be impacted by this alternative. This includes five homes in the Capri Cove subdivision, five homes in the Alderene Park/South Center Road area, and other scattered homes within the impact area. One apartment building with ten units will be impacted in the Ballantrae Apartments subdivision. The Lakeside Fellowship United Methodist Church and the Academy of Learning would also be impacted by this alternative. Back-up data on impact evaluations is included in **Appendix B**.

TABLE 5-6

Projected Future (2032) Seminole County Noise Levels (Expressed in A-weighted decibels (dBA))

Monitoring Station	Existing	2032 No Build	2032 Build Preferred Alternative		
			Distance between Receptor and Mainline Edge of travel way (feet)	SR 46 Corridor North Widening, SR 417/I-4 Connection Alt. B	Increase over Existing
30	56.5	56.5	230	66.2	9.7
31	60.9	60.9	Within proposed Right of Way*		
32	60.8	60.8	245	66.7	5.9
33	66.4	66.4	145	73.1	6.7
34	62.8	62.8	142	71.2	8.4
35	63.5	63.5	Within proposed Right of Way*		
36	68.9	68.9	79	66.3	-2.6
37	47.8	47.8	215	64.8	17.0
38	54.0	54.0	375	64.1	10.1
39	49.6	49.6	245	58.7	9.1
40	53.0	53.0	140	66.7	13.7
41	54.3	54.3	220	62.7	8.4

* Two viable alternative alignments were evaluated which resulted in Monitoring Stations 31 and 35 being in the right of way for the preferred alternative.

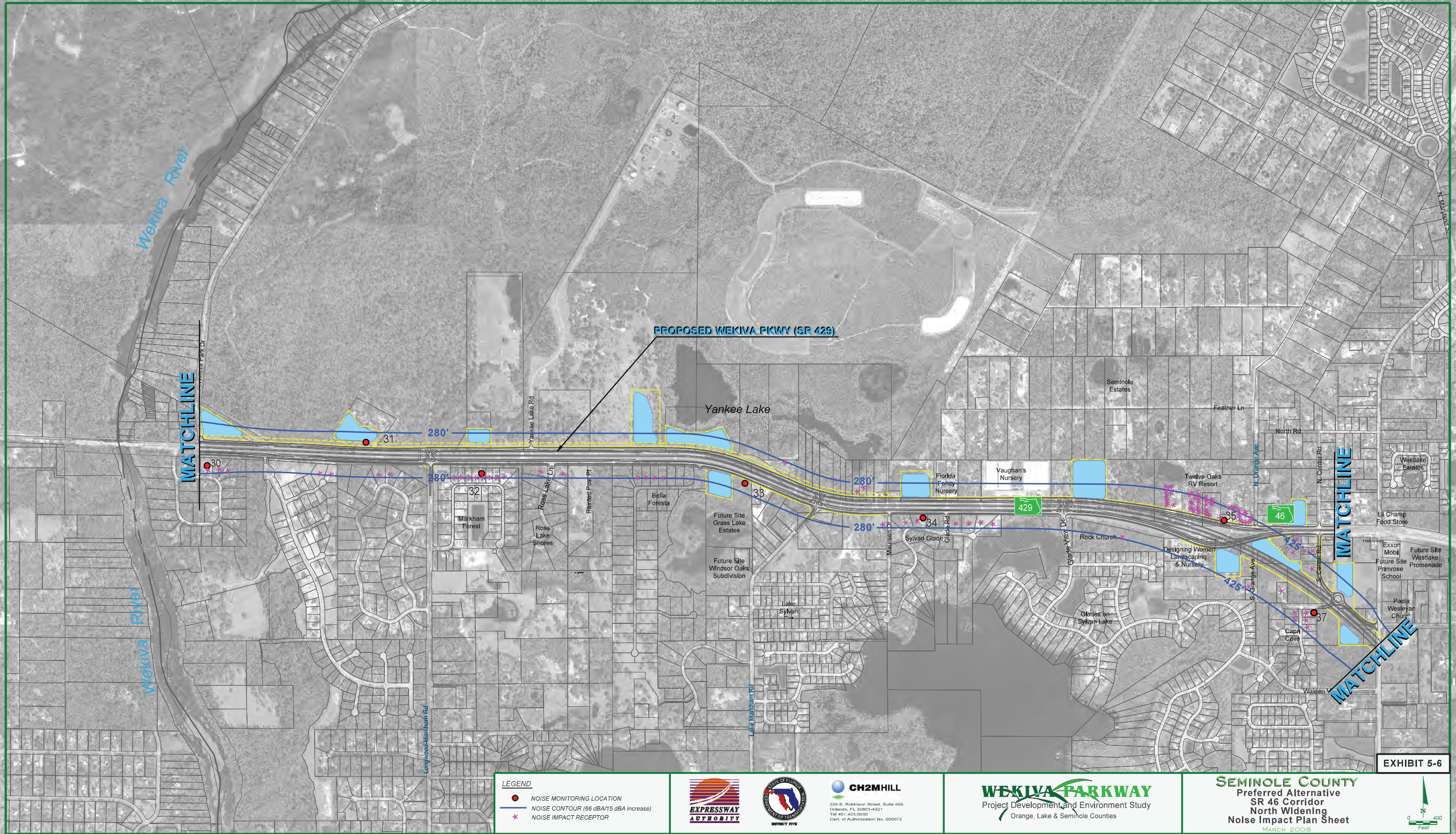


EXHIBIT 5-6

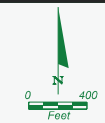
LEGEND
● NOISE MONITORING LOCATION
— NOISE CONTOUR (66 dBA/15 dBA increase)
* NOISE IMPACT RECEPTOR



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SEMINOLE COUNTY
Preferred Alternative
SR 46 Corridor
North Widening
Noise Impact Plan Sheet
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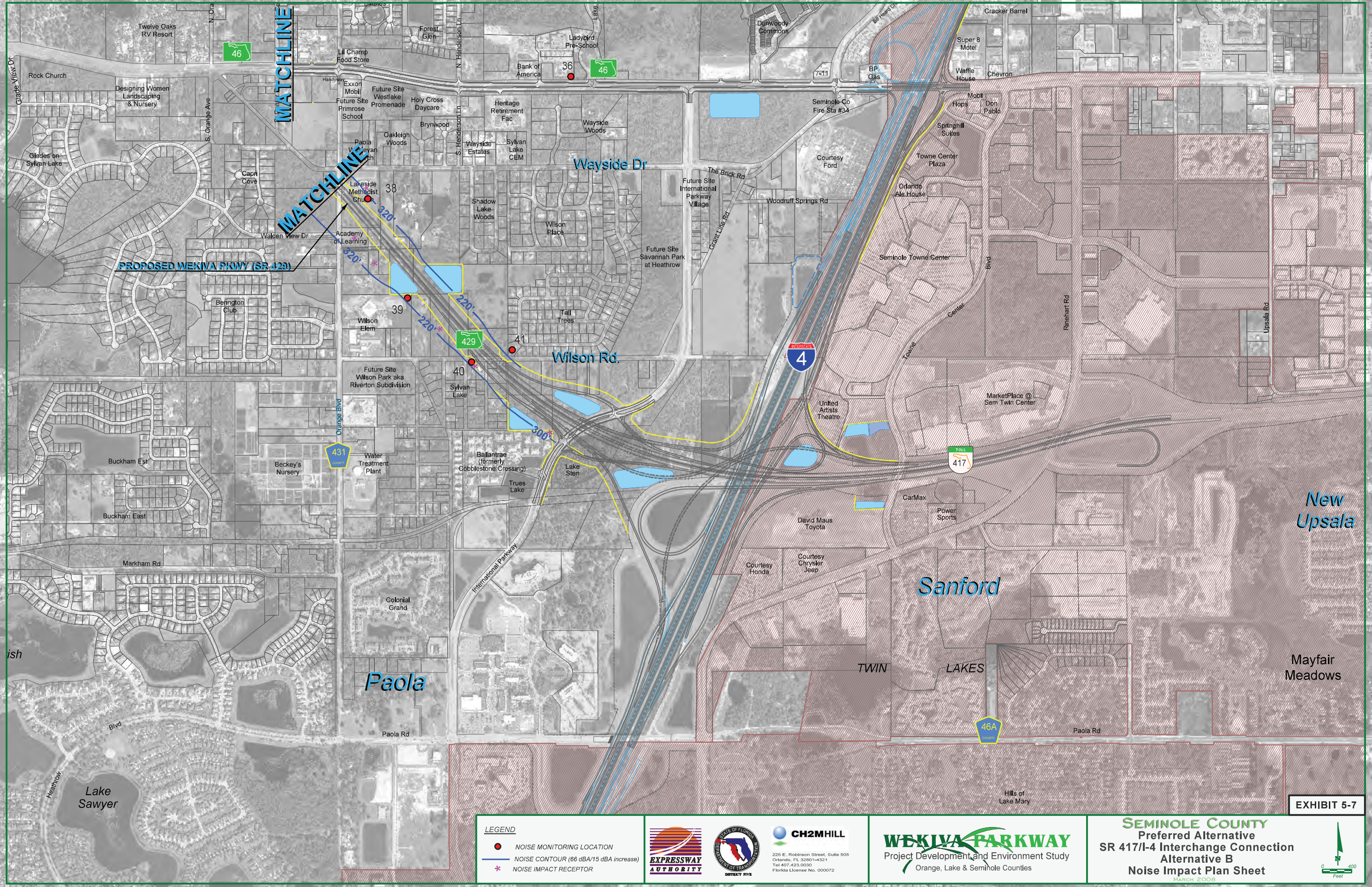


EXHIBIT 5-7

LEGEND


- NOISE MONITORING LOCATION
- NOISE CONTOUR (66 dBA/15 dBA increase)
- * NOISE IMPACT RECEPTOR



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SEMINOLE COUNTY
Preferred Alternative
SR 417/I-4 Interchange Connection
Alternative B
Noise Impact Plan Sheet
MARCH 2008



0 400 Feet

5.3.5 Summary Comparison of Noise Impacts

Table 5-7 provides a summary comparison of noise impacts for the preferred alternative evaluated in each project area.

TABLE 5-7
Summary Comparison of Project Alternatives Noise Impacts

	Existing Residences	Planned/Permitted Residences	Non- Residential (Churches, Schools)	Total
ORANGE COUNTY				
Kelly Park Road Interchange Alignment with Systems Interchange Alternative 1 and Orange County Alignment Alternative 1	53	0	0	53
LAKE COUNTY WEST				
US 441/SR 46 Interchange Alternative 2 with SR 46 North Widening and Lake County West Alternative 1	62	2	0	64
LAKE COUNTY EAST				
Neighborhood Lakes Alternative 1	4	0	0	4
CR 46A Alternative 1A	1	0	0	1
South Alignment Alternative with Service Road	5	0	0	5
SEMINOLE COUNTY				
Wekiva Parkway with Frontage Roads North Widening of SR 46 corridor	98	0	1	99
Alternative B Connection to SR 417/I-4 Interchange	22	0	2	24