

Traffic Impact Analysis

Walden Lake

Plant City, Florida

Methodology Statement

October 2014

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Methodology

This report summarizes the methodology in performing the transportation impact analysis for the proposed Walden Lake Community Unit District modification (PB-2014-06). The Walden Lake Community Unit District is a mix-use planned development community built around the Walden Lake Country Club consisting of 36-hole golf course, clubhouse and restaurant, fitness center, and tennis facility. The proposed modification involves the conversion of 13 golf course holes to the development of a 100-unit assisted living facility (10 acres), 215 multi-family dwelling units (46 acres), and 170 single family dwelling units (75 acres). The vicinity map and general site plan are shown in Figures 1 and 2, respectively.

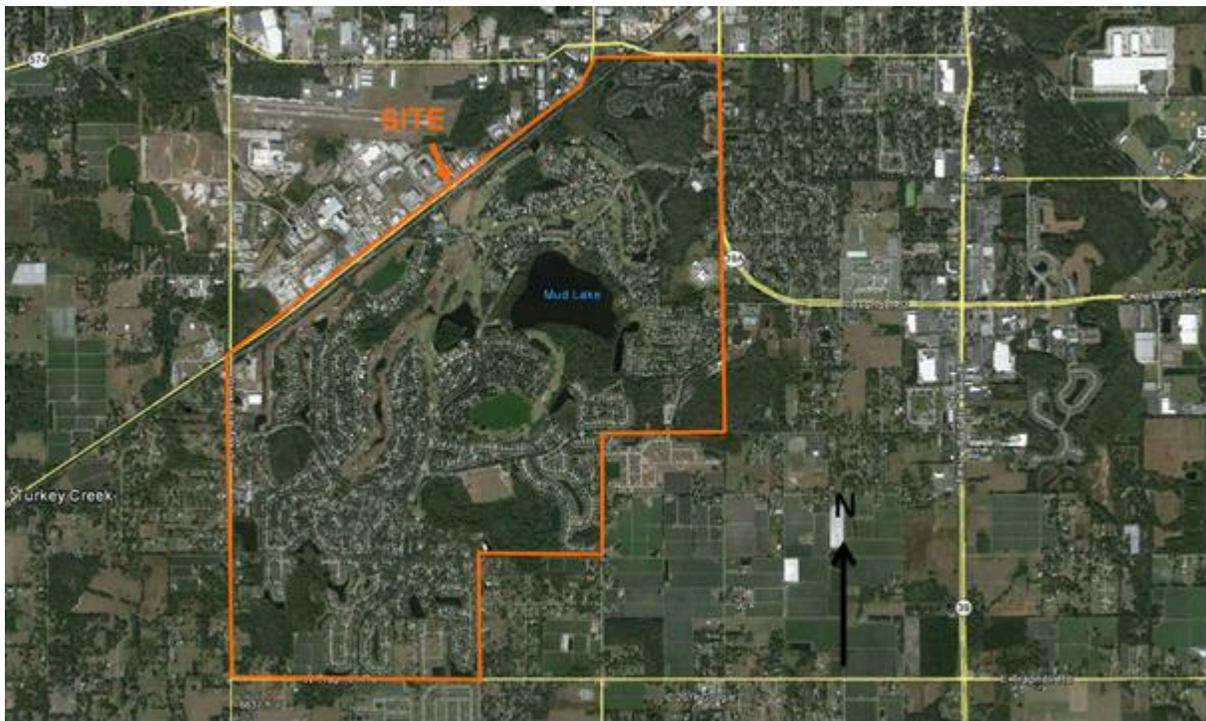


Figure 1 Vicinity Map

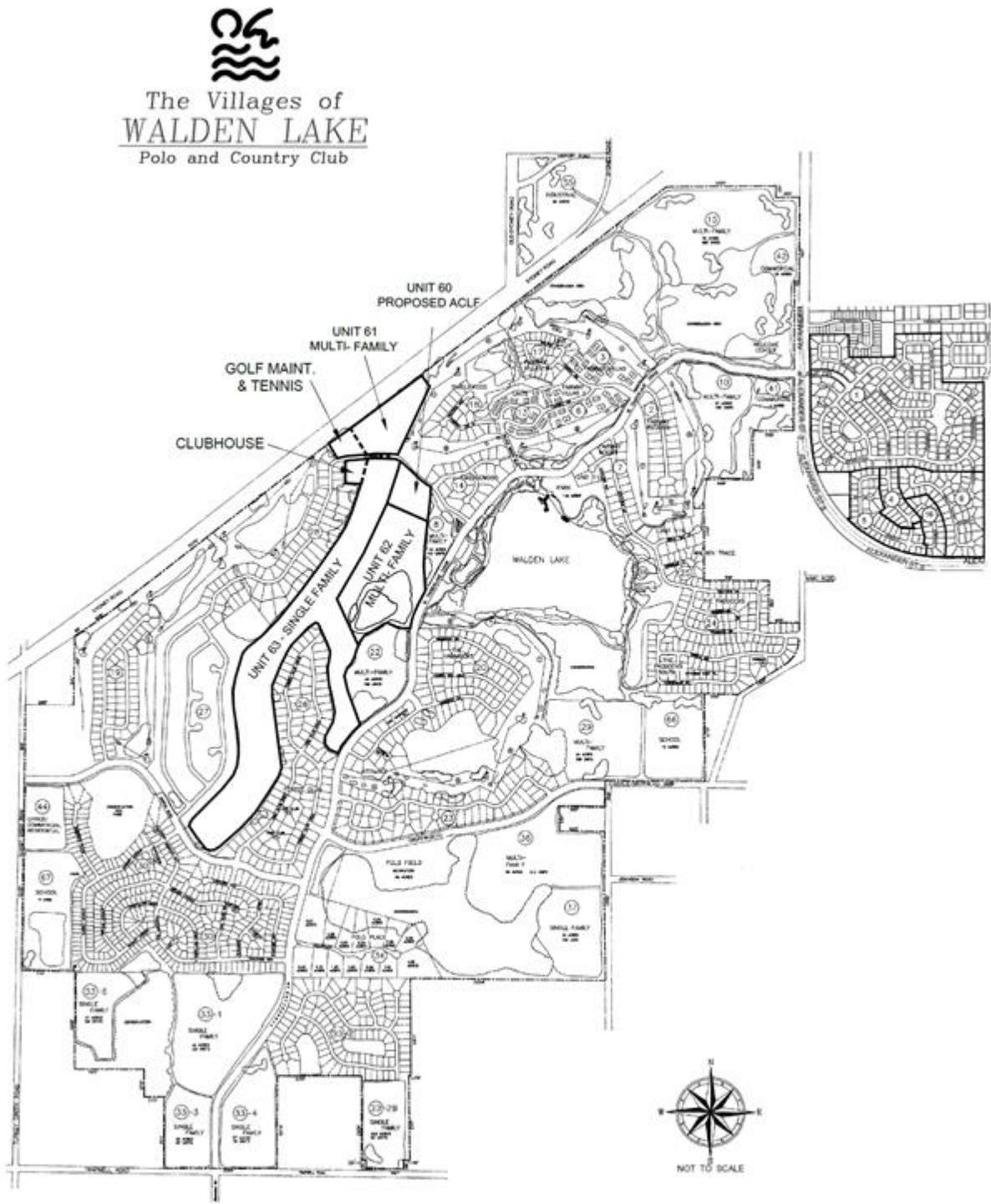


Figure 2 General Site Plan

BACKGROUND TRAFFIC GENERATION

The *existing* background traffic for the identified study intersections will be based on AM and PM peak hour turning movement counts that will be performed specifically for this study. The counts will be seasonally adjusted based on FDOT's Peak Season Factor report for Hillsborough County. Background traffic for the identified study roadway segments will be based on the most recent daily counts available from FDOT. No future growth is expected to be applied to the counts because of the generally flat data exhibited on several nearby roads over the past several years, according to historical FDOT traffic data.

TRIP GENERATION

The peak hour traffic (trip ends) generation of the proposed development is estimated using the Institute of Transportation Engineers' (ITE) *Trip Generation (manual) 9th Edition*. Table 1 below shows the total daily trips that would be generated by the development, as well as trips during the AM and PM peak hours. Average rates and fitted curve equations are used based on ITE guidance for each respective land use. Because of the planned repurposing of existing facilities, namely a reduction in the existing golf course, tennis club, and restaurant, some existing trips will be eliminated.¹ This trip reduction is detailed in Table 2. The net trip generation is shown in Table 3.

Table 1 Trip Generation

Development (Trip Type)	Size	Land Use Code	ADT	AM Peak Hour Trip Ends Enter/Exit (%) (%)	PM Peak Hour Trip Ends Enter/Exit (%) (%)
Assisted Care Living Facility	282 beds	254	750	26/14 65%/35%	27/35 44%/56%
Multi-family Housing	215 units	220	1426	22/87 20%/80%	88/48 65%/35%
Single-family Housing	170 units	210	1711	32/97 25%/75%	107/63 63%/37%
Total			3887	80/198 29%/71%	222/146 60%/40%

Table 2 Reduced Trips

Development (Trip Type)	Size	Land Use Code	ADT	AM Peak Hour Trip Ends Enter/Exit (%) (%)	PM Peak Hour Trip Ends Enter/Exit (%) (%)
Golf Course	13 holes	430	465	21/6 79%/21%	19/19 51%/49%
Racquet/Tennis Club	2 courts	491	77	2/1 N/A*	4/3 N/A*
Quality Restaurant	5,144 sq ft	931	463	2/2 N/A*	26/13 67%/33%
Total			1005	25/9 74%/26%	49/35 58%/42%

**Note: ITE Trip Generation Manual 9th Edition does not include a peak hour directional distribution for these land uses.*

¹ No fitted curve equations are used for these reduced land use trip calculations, which eliminates the need to compare existing and future trip ends to calculate a net difference.

Table 3 Net Trip Generation

	ADT	AM Peak Hour Trip Ends Enter/Exit (%) (%)	PM Peak Hour Trip Ends Enter/Exit (%) (%)
Net Total Trips	2882	55/189 23%/77%	173/111 61%/39%

TRIP DISTRIBUTION AND ASSIGNMENT

The project’s generated traffic is distributed based on knowledge of the general markets and traffic patterns. Trips generated by the project are distributed as a percentage to the corresponding roadways. Due to the size and geometry of Walden Lake, it is anticipated that there will be four primary site access points. These entrances are labeled with blue dots along with corresponding predicted traffic flow percentages in Figure 3. Figures 4, 5, 6, and 7 show anticipated trip distribution for each individual site access point. Impacted intersections are shown with red dots. The trip *assignment* will be performed based on the project’s generated trips and percent distribution along each roadway.

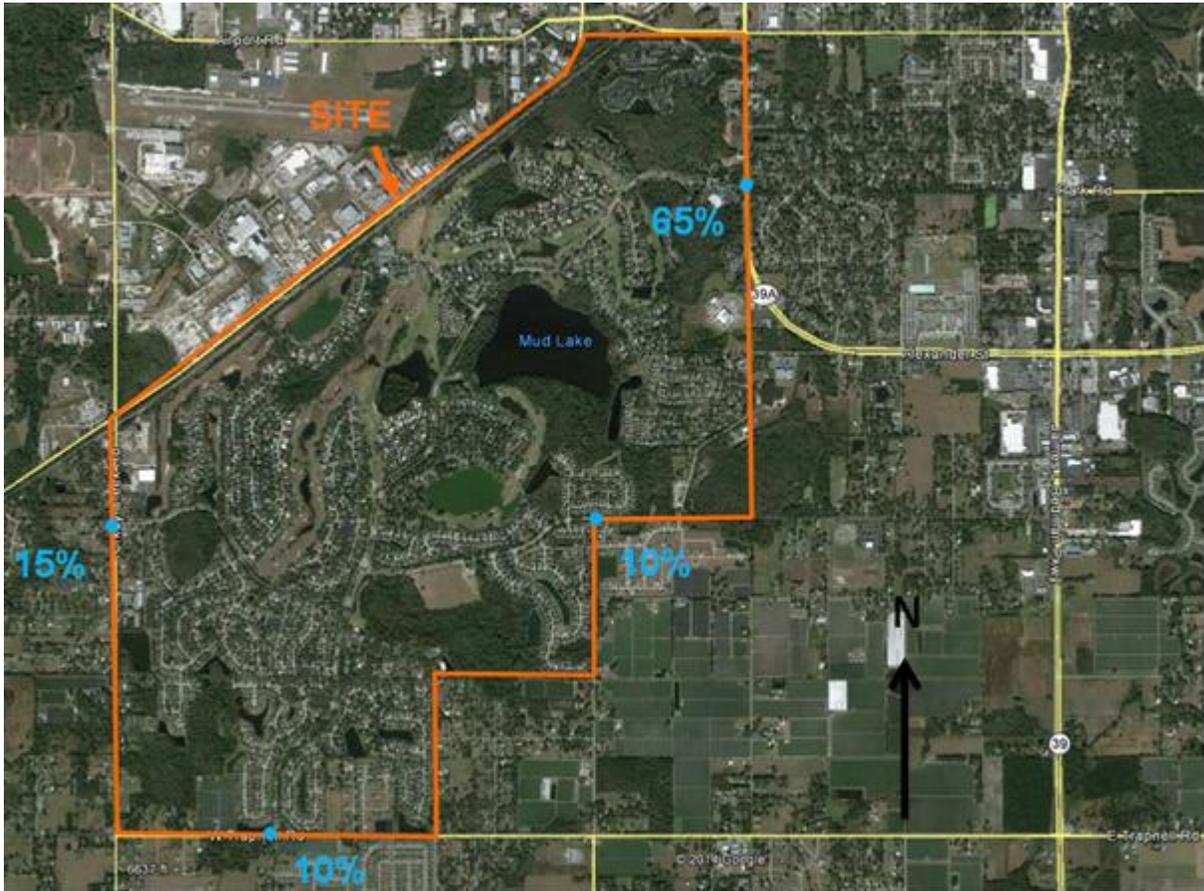


Figure 3 Anticipated Primary Trip Distribution – Percentage of Trips at Site Access Points

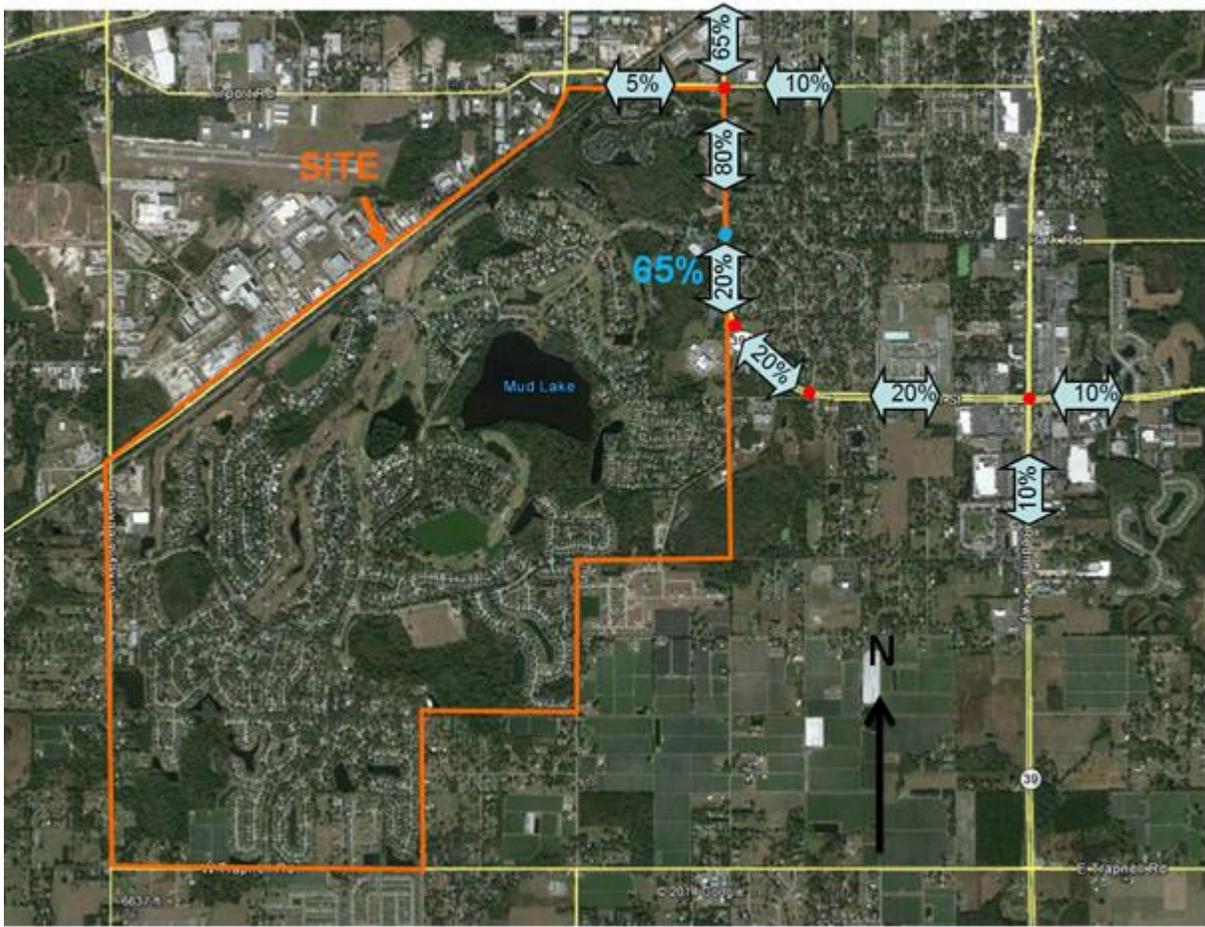


Figure 4 Anticipated Trip Distribution - Northeast Access

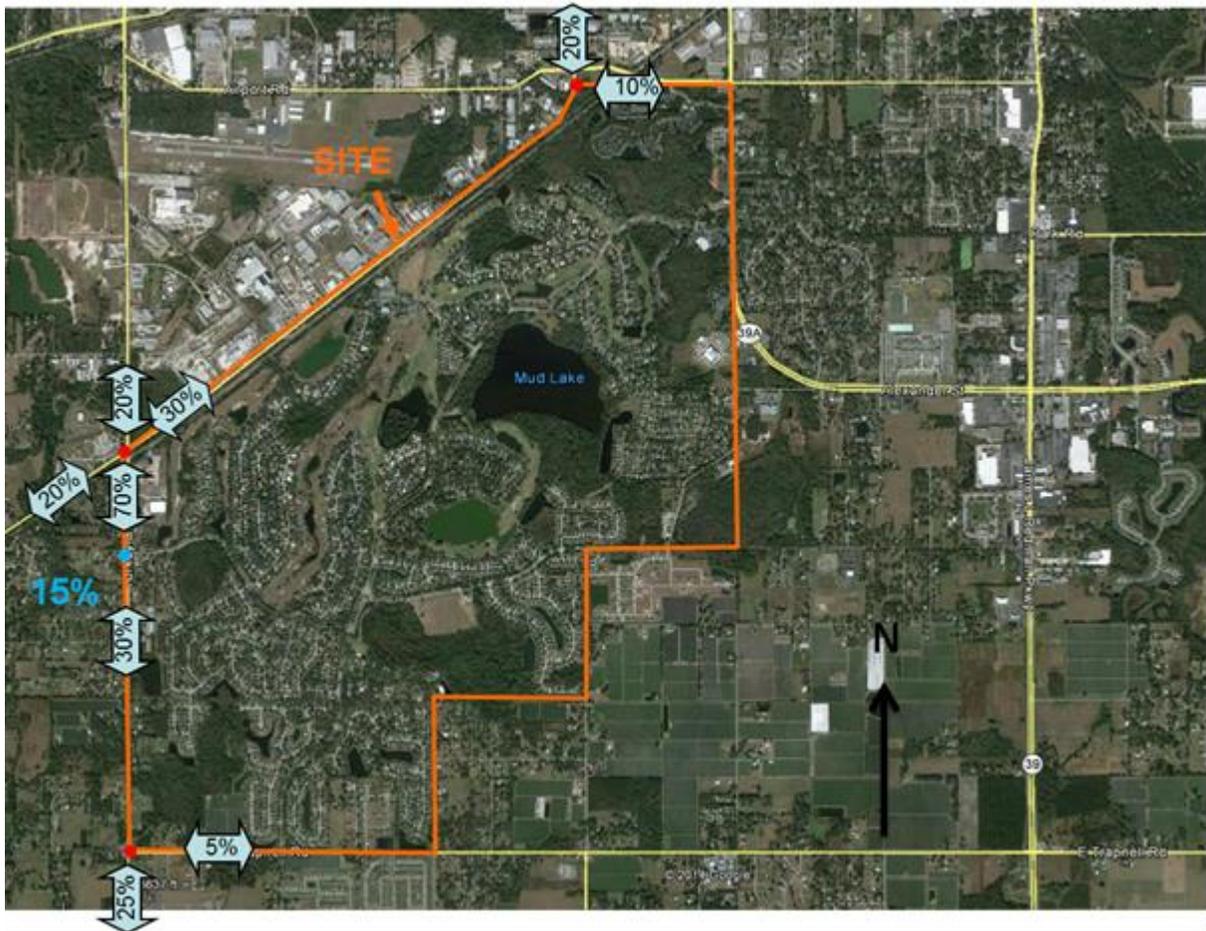


Figure 5 Anticipated Trip Distribution - West Access

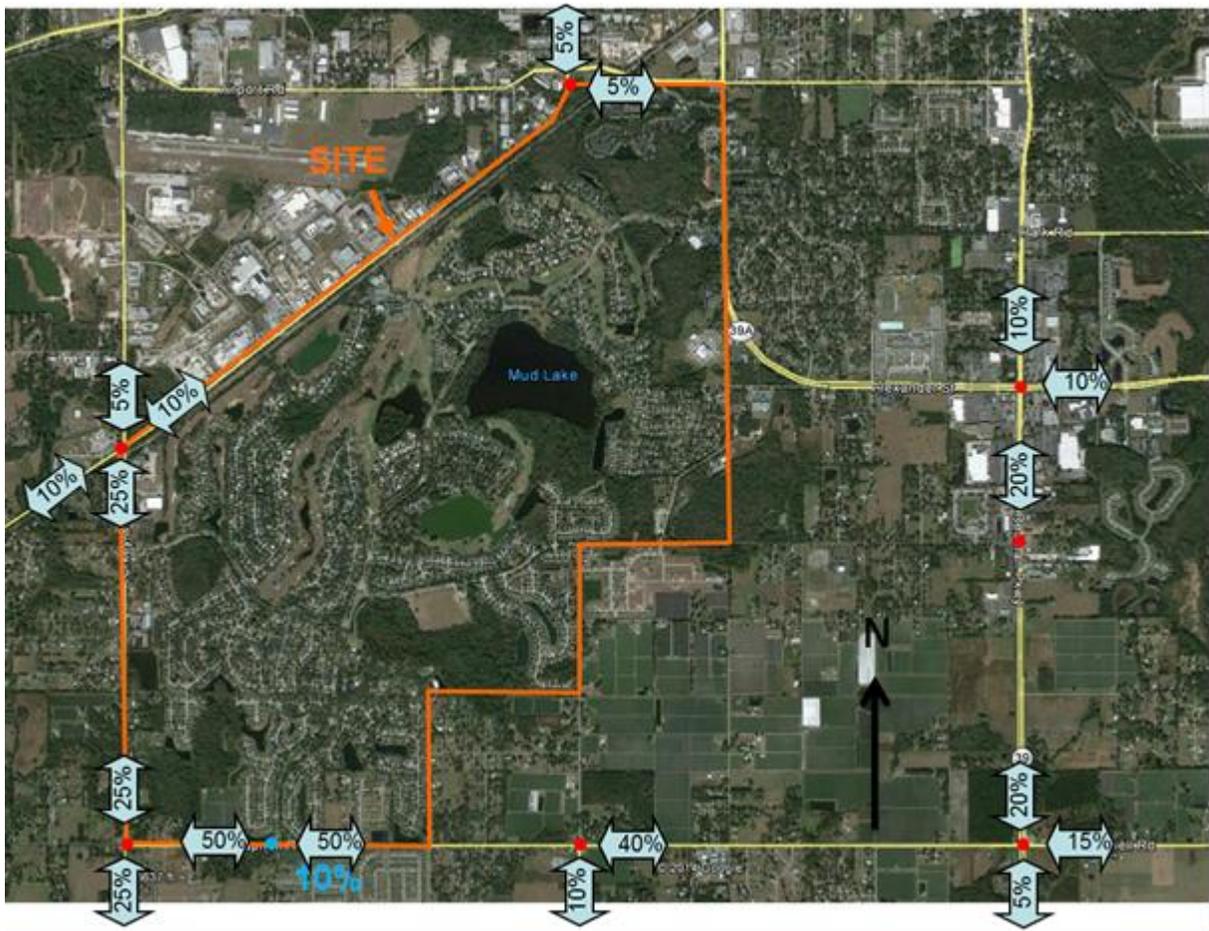


Figure 6 Anticipated Trip Distribution - South Access

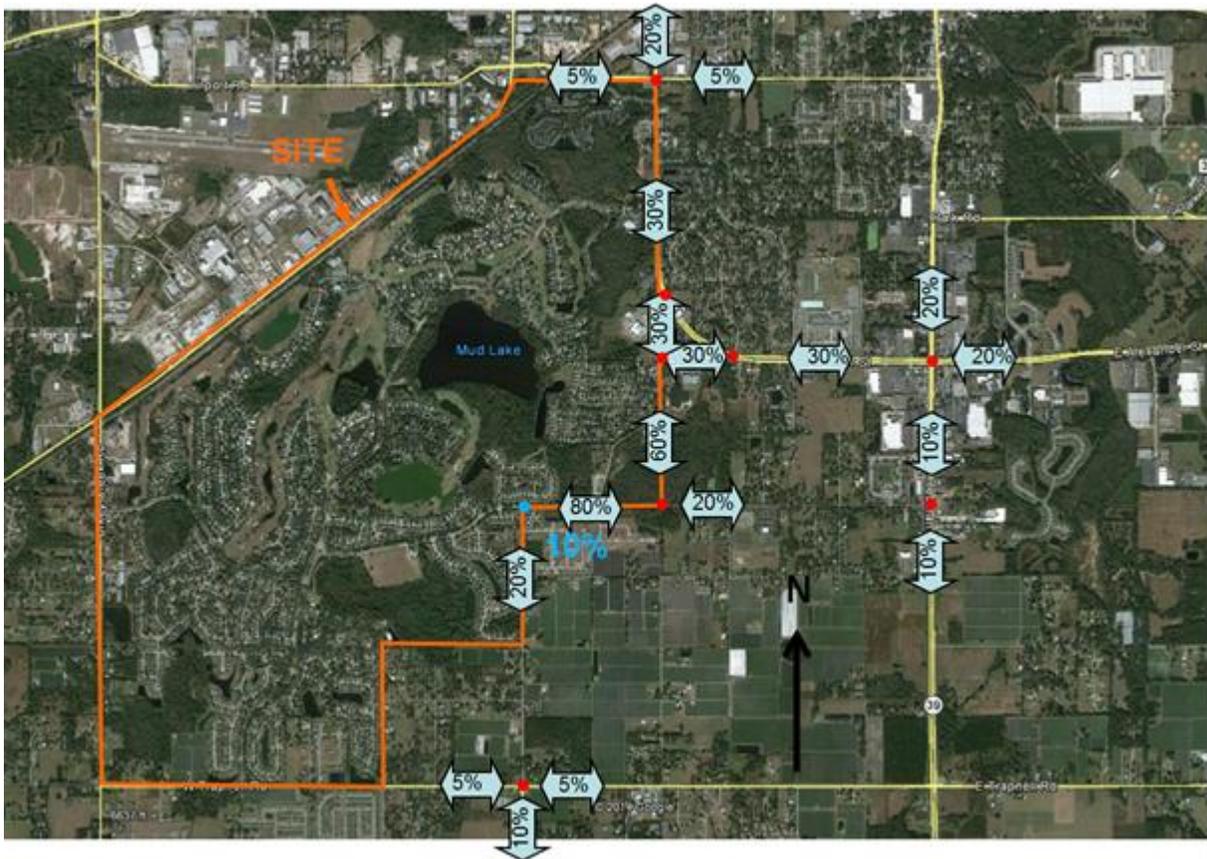


Figure 7 Anticipated Trip Distribution - Southeast Access

ANALYSES, LEVEL OF SERVICE DETERMINATIONS, & RECOMMENDATIONS

Following trip assignment, analysis of the potential impacts to the primary development access points/intersections, other nearby impacted intersections, and regulated roadway segments, as identified by City staff, will be performed. The intersections and segments that will be analyzed are outlined below and in Table 4.

Primary Development Access Points/Intersections

- *Alexander St at Timberlane Dr*
- *Timberlane Dr at Trapnell Rd*
- *Griffin Blvd at Turkey Creek Rd*
- *Clubhouse Dr at Timberlane Dr*
- *Griffin Blvd at Timberlane Dr (2 separately operating offset intersections)*

- *Griffin Blvd at Mud Lake Rd*

Other Impacted Intersections

- *Alexander St at Airport Rd/Grant St*
- *Alexander St at Mud Lake Rd*
- *Alexander St at YMCA Pl*
- *Charlie Griffin Rd at SR 39*
- *Turkey Creek Rd at Sydney Rd*
- *Mud Lake Rd at Charlie Griffin Rd*
- *Turkey Creek Rd at SR 574*
- *Turkey Creek Rd at Trapnell Rd*
- *Mud Lake Rd at Trapnell Rd*

Table 4 Regulated Roadway Segments

Roadway Segment	From	To
Sydney Rd	Forbes Rd	Airport Rd
Alexander St	I-4	Jim Johnson Rd
Turkey Creek Rd	Trapnell Rd	US 92 (W Hillsborough Ave)
Trapnell Rd	Turkey Creek Rd	US 39 (James L. Redman Pkwy)
Timberlane Dr	Trapnell Rd	Alexander St

The intersection impact analyses will be conducted for both “background traffic” and “background plus project” conditions. The *Highway Capacity Manual’s* Highway Capacity Software (HCS) will be used to determine the expected levels of service. The “background plus project” conditions will be studied for these intersections and the impact of the development will be identified.

Impacts as related to the study roadway segments’ Maximum Service Volume (MSV) will be analyzed using FDOT’s Level of Service Generalized Tables. The existing levels of service will be determined, as well as the level of service standard and the available peak hour trips, if any.

Off-site intersection and roadway segment improvements will be suggested if needed, and qualitative operational safety observations will be made, and reported, if needed. All improvements to the roadways should be pursuant to geometric standards, guidelines and policies of the agencies with jurisdiction, including the City of Plant City, Hillsborough County, and FDOT.