

Walgreens

**NW Corner of SR A1A South and
Ocean Trace Road
St. Johns County Florida**



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Ghyabi & Associates

Ghyabi & Associates, Inc.
6015 Chester Circle
Suite 210
Jacksonville, FL 32217

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Introduction

A Walgreens pharmacy with drive-through is planned for the northwest quadrant of SR A1A South and Ocean Trace Road in St. Johns County, Florida. Access to the site will be provided by driveways to the site from both A1A and Ocean Trace Road. The driveways will be situated as far as is practicable from the intersection. There will be no median opening for the driveway on SR A1A so this driveway will allow right-in and right-out movements only. Full movements will be provided at the driveway from Ocean Trace Road. Figure 1 shows the detailed project location.



Figure 1: Detailed Project Location

The development is expected to be completed and open for business in 2005; thus 2005 was chosen as the design year for this study. In accordance with *St. Johns County Traffic Impact Study Methodology and Procedures*, a member of Ghyabi & Associates staff met with the St Johns County staff on Friday August 20, 2004 for a pre-application conference to discuss the procedure to be adopted in determining the amount of traffic and its effects on the County road system.

Study Methodology

Area of Influence

Walgreens is a store that provides for convenience as opposed to comparative shopping. There are many opportunities in the County and the nearby City of St. Augustine Beach where residents and visitors can obtain the goods and services that Walgreens has to offer. Therefore, in this analysis, it is assumed that all trips accessing this particular store will have their origins and destinations on Anastasia Island. In accordance with the *Methodology and Procedures* the project location and four-mile area of influence are shown in Figure 2. The area of influence includes some highway links on the west side of the Intracoastal Waterway. These links are included in the analysis for the sake of completeness. It is assumed that no traffic from this development will have any influence on these links.



Figure 2: Project Location and 4-mile Area of Influence

Inventory of Existing Conditions

The *Methodology and Procedures* require that all links on the County road network within a four-mile radius be evaluated for impacts. The links identified are shown in Table 1. The principal roads affected by this development are A1A Beach Boulevard and Ocean Trace Road. A1A Beach Boulevard is a divided four-lane roadway with a raised median in the vicinity of the development. All existing conditions relating to the highway network were obtained from the spreadsheet found on the St. Johns County website.¹ Table 1 shows for each link the beginning and ending point, the date of the latest traffic count, AADT, annual growth factor, link K factor,² and 2004 peak-hour traffic.

¹ <http://www.co.st-johns.fl.us/BCC/gmsvcs/Planning/Transportation/tas.xls>

² The K factor is the ratio of peak-hour traffic to 24-hour traffic

Table 1: Inventory of Existing Conditions

Link No.	Roadway	From/To	Date of Count	Traffic Count AADT	Annual Growth Factor	Link K Factor	2004 Pk. Hr. Traffic
1	11th Street	SR 3 to A1A Beach Blvd.	ADT04	833	1.029	0.096	80
2	16th Street	SR 3 to A1A Beach Blvd.	ADT04	1,241	1.029	0.096	119
3	A Street	SR 3 to A1A Beach Blvd.	ADT04	1,726	1.029	0.096	166
53	CR 5A (Old Moultrie Rd)	SR 5 (US 1) to Kings Estate Rd.	ADT04	4,445	1.038	0.096	427
54.1	CR 5A (Old Moultrie Rd)	Kings Estate Road to Lewis Point Road	ADT04	11,214	1.038	0.093	1,043
54.2	CR 5A (Old Moultrie Rd)	Lewis Point Road to SR 312	ADT03	11,960	1.038	0.098	1,217
54.3	CR 5A (Old Moultrie Rd)	Southpark Blvd. to SR 312	ADT04	16,634	1.038	0.095	1,580
56	A1A Beach Blvd.	SR A1A (S) to 11th Street	ADT04	9,090	1.029	0.096	873
57	A1A Beach Blvd.	11th Street to SR 312	ADT04	13,486	1.029	0.096	1,295
59	Kings Estate Rd./Hilltop Rd.	SR 207 to CR 5A	ADT04	5,509	1.038	0.096	529
75	Pope Rd.	SR 3 to A1A Beach Blvd.	ADT04	3,382	1.074	0.096	325
114.2	SR 312	Coke Rd. to SR A1A	ADT03	31,500	1.045	0.096	3,160
117.1	SR 5 (US 1)	SR 206 to Shores Blvd.(S)	ADT03	16,400	1.058	0.097	1,683
117.2	SR 5 (US 1)	Shores Blvd.(S) to Wildwood Dr.	ADT04	25,838	1.058	0.09	2,325
118	SR 5 (US 1)	Wildwood Dr. to CR 5A	ADT04	28,173	1.058	0.09	2,536
119	SR 5 (US 1)	CR 5A to Lewis Point Rd.	ADT04	36,535	1.058	0.09	3,288
120.1	SR 5 (US 1)	Lewis Point Rd. to Shore Dr.	ADT04	41,073	1.028	0.096	3,943
120.2	SR 5 (US 1)	Shore Dr. to SR 312	ADT04	42,509	1.028	0.096	4,081
136	SR A1A	SR 206 to Owens Ave.	ADT03	10,600	1.029	0.097	1,058
137	SR A1A	Owens Ave. to A1A Beach Blvd.(S)	ADT03	22,000	1.045	0.096	2,207
138	SR A1A	A1A Beach Blvd.(S) to Pope Rd.	ADT03	25,132	1.045	0.096	2,521
139	SR A1A	Pope Rd. to SR 312	ADT03	25,132	1.045	0.096	2,521
140	SR A1A	SR 312 to St. Aug. City Limits (S)	ADT03	24,000	1.045	0.096	2,408
141.1	SR A1A	St. Aug. Limits (N) to SR A1A (Cstl. Hwy.)	ADT03	14,700	1.044	0.096	1,473
150.1	Wildwood Dr.	SR 5 (US 1) to Deerchase Drive	ADT04	6,511	1.038	0.096	625
150.2	Wildwood Dr.	Deerchase Drive to SR 207	ADT04	7,148	1.038	0.096	686

Trip Generation

Trip generation is based on the Institute of Transportation Engineers Trip Generation Manual, 7th Edition (November 2003). The trip generation rate used is for the p.m. peak hour and is based on national averages for this type of land use. A trip rate is a measurement of traffic volume over time. More specifically, it is either the number of daily vehicle trips calculated to be generated from a specified land use, or the number of trips generated from that land use during the peak hour. Trip generation rates contained in the ITE Trip Generation Manual, include both production (going) and attraction (coming) trips. According to the methodology used by the ITE Trip Generation Manual, each two-way shopping trip is counted as four trip ends: a production and attraction trip for the single-family home, and a production and attraction trip for the retail store. For the purpose of this study, we consider only the two trip ends that occur at the development.

In the analysis these are treated separately: the number of trips entering and those leaving the establishment are determined independently. Peak hour trip rates are typically used in analyzing the vehicular capacity of urban streets and highways, as peak-hour trips contribute to the greatest congestion. The calculation of trips is shown in Table 2

Table 2: Trip Generation

Land Use	ITE Land Use Code	Size (Number of Units)	Independent Variable (Units)	Estimation Method (Rate or Equation)	Gross P.M. Peak hour Trip Ends
Pharmacy/Drugstore with Drive-Through Window	881	14,560	1,000 sf GFA	10.40	151

While Table 2 shows that the overall p.m. peak hour trip generation will be 151 trip ends, a portion of these trips will be on the roadway system and will not generate new traffic. These are known as passer-by trips. Since the proposed development is a single land use, there will be no allowance for internal trip capture. The Trip Generation manual provides national averages of passer-by trips. Passer-by trips are not new to the system, as the intermediate stop at certain land uses is not the primary trip destination. The County approves the use of the ITE Trip Generation Manual to establish the New Trip Factor for each land use. The calculation for this project is shown in Table 3.

Table 3: Total Net New P.M. Peak Hour External Trip Ends

	A	B	C (A*B)	D	E (C*D)	F	G (E*F)	H	I (E*H)	J (G+I)
ITE Land Use Code	Gross P.M. Peak Hour Trip Ends	External Trip Percentage	P.M. Peak Hour Net Trip Ends	New Trip Percentage	Total Net New P.M. Peak Hour External Trip Ends	P.M. Peak Hour External Trip End Distribution				
						Entering		Exiting		Total Trips
						%	Trips	%	Trips	
881	151	100	151	51	77	49	38	51	39	77

Traffic Distribution and Assignment Methodology

The trip distribution is based on the North East Regional Planning Model (NERMP) developed by the Florida Department of Transportation. The distribution of trips was based on the population in each Traffic Analysis Zone (TAZ) on Anastasia Island. The single-family and multi-family population was obtained from the ZDATA1 file³ and summed for each TAZ. The total population both north and south of the development was totaled and the proportion to the north and south was obtained. This analysis is shown in Table 4. This analysis shows a distribution of 69% on A1A to the north and 31% to the south. The percentage of development trips assigned to each major road was proportional to the calculated 2025 peak-hour traffic on that road

Table 4: Population of TAZs on Anastasia Island

Traffic Analysis Zones	Single Family Dwelling Units	Single Family Population	Multi-Family Dwelling Units	Multi-Family Population
North of Development				
1276	210	520	17	31
1277	687	1,452	323	447
1278	483	1,095	116	192
1279	315	803	7	12
1280	208	517	179	320
1281	1,333	3,246	618	1,093
1282	117	251	921	175
1283	87	186	225	189
1284	466	1,003	368	700
1285	190	282	1,035	615
1286	257	586	313	632
Total	4,353	9,941	4,122	4,406
Total Population	14,347	% of Population North:		68.9%
South of Development				
1287	464	735	1,563	940
1288	389	998	247	345
1289	207	474	23	27
1290	43	37	435	222
1291	156	398	499	774
1292	209	246	970	400
1293	207	398	730	493
Total	1,675	3,286	4,467	3,201
Total Population	6,487	% of Population South:		31.1%

³ This file contains the trip production variables and is a standard FSUTMS file.

The impact of new development on the County highway system depends on both the number of vehicle trips it will generate and on the travel distance or length of the trips. The Urban Land Institute⁴ estimates that neighborhood shopping centers have a service area radius of about two miles in urban areas. Convenience stores are determined to have even shorter average trip lengths. The proposed Walgreens is not in a dense urban area and while it offers convenience as opposed to comparative shopping, it offers a pharmacy. It cannot, therefore be treated as a convenience store for the purpose of determining the average trip length. Nevertheless, based on observations in previous studies, it is reasonable to assume that the total traffic generated by, and attracted to this development will attenuated over a relatively short distance. Table 5 shows the rates of attenuation used in this study. It is assumed that the number of trips exceeding five miles in length will be insignificant.

Table 5: Trip Attenuation

Distance from Site	Percentage of Trips Remaining on Network
1 mile	100
2 miles	75
3 miles	50
4 miles	25

The distribution of trips and the attenuation rates quoted above enable the assignment of peak-hour trips to the network as shown in Table 6. The percentages of the total trips from the development that remain on the network are shown in Figure 3. Table 7 shows the 2005 peak-hour traffic with the development in place, the permitted peak-hour service volume, the available capacity remaining with the development in place, the link status, and the percentage of the peak hour service volume attributable to this development.

Conclusions

The analysis shows that the development can take place without placing any significant burden on the highway system. The development will contribute more than one percent of the 2005 peak-hour traffic on two roadway links: Link 56, A1A Beach Blvd. from SR A1A (S) to 11th Street and Link 137, SR A1A from Owens Ave. to A1A Beach Blvd. (S). Neither of these links is defined as “Critical” or “Deficient”. There are three links defined as critical in the four-mile area of influence: Link 54.3, CR 5A (Old Moultrie Rd) from Southpark Blvd. to SR 312, Link 118, SR 5 (US 1) from Wildwood Dr. to CR 5A, and Link 120.1, SR 5 (US 1) from Lewis Point Rd. to Shore Dr. However, this development will not contribute any traffic to these links. It is assumed, therefore, that no intersection analyses will be required. This development falls under the threshold for any further analyses or the need to provide improvements to the County road network

⁴National Cooperative Highway Research Program Report #255. Transportation Research Board, December 1982.

Table 6: Determination of 2005 Peak Hour Traffic with and without Development

Link No.	Roadway	From/To	% Distribution	Distance From Site	Development Peak Hour Trips	2005 Peak Hour Traffic w/o Development	2005 Peak Hour Traffic w/ Development	Peak Hour Service Volume
1	11th Street	SR 3 to A1A Beach Blvd.	8.5%	1-2	7	82	89	1,110
2	16th Street	SR 3 to A1A Beach Blvd.	5.5%	1-2	4	122	126	1,110
3	A Street	SR 3 to A1A Beach Blvd.	4.0%	<1	3	171	174	1,110
53	CR 5A (Old Moultrie Rd)	SR 5 (US 1) to Kings Estate Rd.	0.0%	3-4	0	443	443	1,160
54.1	CR 5A (Old Moultrie Rd)	Kings Estate Road to Lewis Point Road	0.0%	3-4	0	1,083	1,083	2,910
54.2	CR 5A (Old Moultrie Rd)	Lewis Point Road to SR 312	0.0%	3-4	0	1,311	1,311	2,910
54.3	CR 5A (Old Moultrie Rd)	Southpark Blvd. to SR 312	0.0%	3-4	0	1,640	1,640	2,130
56	A1A Beach Blvd.	SR A1A (S) to 11th Street	23.0%	1-2	18	898	916	1,460
57	A1A Beach Blvd.	11th Street to SR 312	0.1%	2-3	0	1,333	1,333	1,850
59	Kings Estate Rd./Hilltop Rd.	SR 207 to CR 5A	0.0%	>4	0	549	549	1,110
75	Pope Rd.	SR 3 to A1A Beach Blvd.	4.5%	2-3	3	349	352	950
114.2	SR 312	Coke Rd. to SR A1A	0.0%	3-4	0	3,451	3,451	4,310
117.1	SR 5 (US 1)	SR 206 to Shores Blvd.(S)	0.0%	3-4	0	1,884	1,884	5,870
117.2	SR 5 (US 1)	Shores Blvd.(S) to Wildwood Dr.	0.0%	3-4	0	2,460	2,460	6,300
118	SR 5 (US 1)	Wildwood Dr. to CR 5A	0.0%	3-4	0	2,683	2,683	4,430
119	SR 5 (US 1)	CR 5A to Lewis Point Rd.	0.0%	3-4	0	3,479	3,479	5,710
120.1	SR 5 (US 1)	Lewis Point Rd. to Shore Dr.	0.0%	3-4	0	4,053	4,053	5,350
120.2	SR 5 (US 1)	Shore Dr. to SR 312	0.0%	3-4	0	4,195	4,195	5,350
136	SR A1A	SR 206 to Owens Ave.	31.0%	1-2	24	1,120	1,144	1,720
137	SR A1A	Owens Ave. to A1A Beach Blvd.(S)	100.0%	0-1	77	2,306	2,383	3,390
138	SR A1A	A1A Beach Blvd.(S) to Pope Rd.	46.0%	0-2	35	2,634	2,669	3,390
139	SR A1A	Pope Rd. to SR 312	23.0%	2-3	18	2,634	2,652	3,390
140	SR A1A	SR 312 to St. Aug. City Limits (S)	10.0%	3-4	8	2,516	2,524	3,390
141.1	SR A1A	St. Aug. Limits (N) to SR A1A (Cstl. Hwy.)	0.0%	>4	0	1,538	1,538	1,980
150.1	Wildwood Dr.	SR 5 (US 1) to Deerchase Drive	0.0%	>4	0	649	649	1,390
150.2	Wildwood Dr.	Deerchase Drive to SR 207	0.0%	>4	0	712	712	1,390

Table 7: Link Status and Percentage of Traffic Attributable to Development

Link No.	Roadway	From/To	2005 Peak Hour Traffic w/ Development	Peak Hour Service Volume	Available Capacity w/ Development	Link Status	% Impact
1	11th Street	SR 3 to A1A Beach Blvd.	89	1,110	1,021	OK	0.63%
2	16th Street	SR 3 to A1A Beach Blvd.	126	1,110	984	OK	0.36%
3	A Street	SR 3 to A1A Beach Blvd.	174	1,110	936	OK	0.27%
53	CR 5A (Old Moultrie Rd)	SR 5 (US 1) to Kings Estate Rd.	443	1,160	717	OK	0.00%
54.1	CR 5A (Old Moultrie Rd)	Kings Estate Road to Lewis Point Road	1,083	2,910	1,827	OK	0.00%
54.2	CR 5A (Old Moultrie Rd)	Lewis Point Road to SR 312	1,311	2,910	1,599	OK	0.00%
54.3	CR 5A (Old Moultrie Rd)	Southpark Blvd. to SR 312	1,640	2,130	490	CRITICAL	0.00%
56	A1A Beach Blvd.	SR A1A (S) to 11th Street	916	1,460	544	OK	1.23%
57	A1A Beach Blvd.	11th Street to SR 312	1,333	1,850	517	OK	0.00%
59	Kings Estate Rd./Hilltop Rd.	SR 207 to CR 5A	549	1,110	561	OK	0.00%
75	Pope Rd.	SR 3 to A1A Beach Blvd.	352	950	598	OK	0.32%
∞ 114.2	SR 312	Coke Rd. to SR A1A	3,451	4,310	859	OK	0.00%
117.1	SR 5 (US 1)	SR 206 to Shores Blvd.(S)	1,884	5,870	3,986	OK	0.00%
117.2	SR 5 (US 1)	Shores Blvd.(S) to Wildwood Dr.	2,460	6,300	3,840	OK	0.00%
118	SR 5 (US 1)	Wildwood Dr. to CR 5A	2,683	4,430	1,747	CRITICAL	0.00%
119	SR 5 (US 1)	CR 5A to Lewis Point Rd.	3,479	5,710	2,231	OK	0.00%
120.1	SR 5 (US 1)	Lewis Point Rd. to Shore Dr.	4,053	5,350	1,297	CRITICAL	0.00%
120.2	SR 5 (US 1)	Shore Dr. to SR 312	4,195	5,350	1,155	OK	0.00%
136	SR A1A	SR 206 to Owens Ave.	1,144	1,720	576	OK	1.40%
137	SR A1A	Owens Ave. to A1A Beach Blvd.(S)	2,383	3,390	1,007	OK	2.27%
138	SR A1A	A1A Beach Blvd.(S) to Pope Rd.	2,669	3,390	721	OK	1.03%
139	SR A1A	Pope Rd. to SR 312	2,652	3,390	738	OK	0.53%
140	SR A1A	SR 312 to St. Aug. City Limits (S)	2,524	3,390	866	OK	0.24%
141.1	SR A1A	St. Aug. Limits (N) to SR A1A (Cstl. Hwy.)	1,538	1,980	442	OK	0.00%
150.1	Wildwood Dr.	SR 5 (US 1) to Deerchase Drive	649	1,390	741	OK	0.00%
150.2	Wildwood Dr.	Deerchase Drive to SR 207	712	1,390	678	OK	0.00%

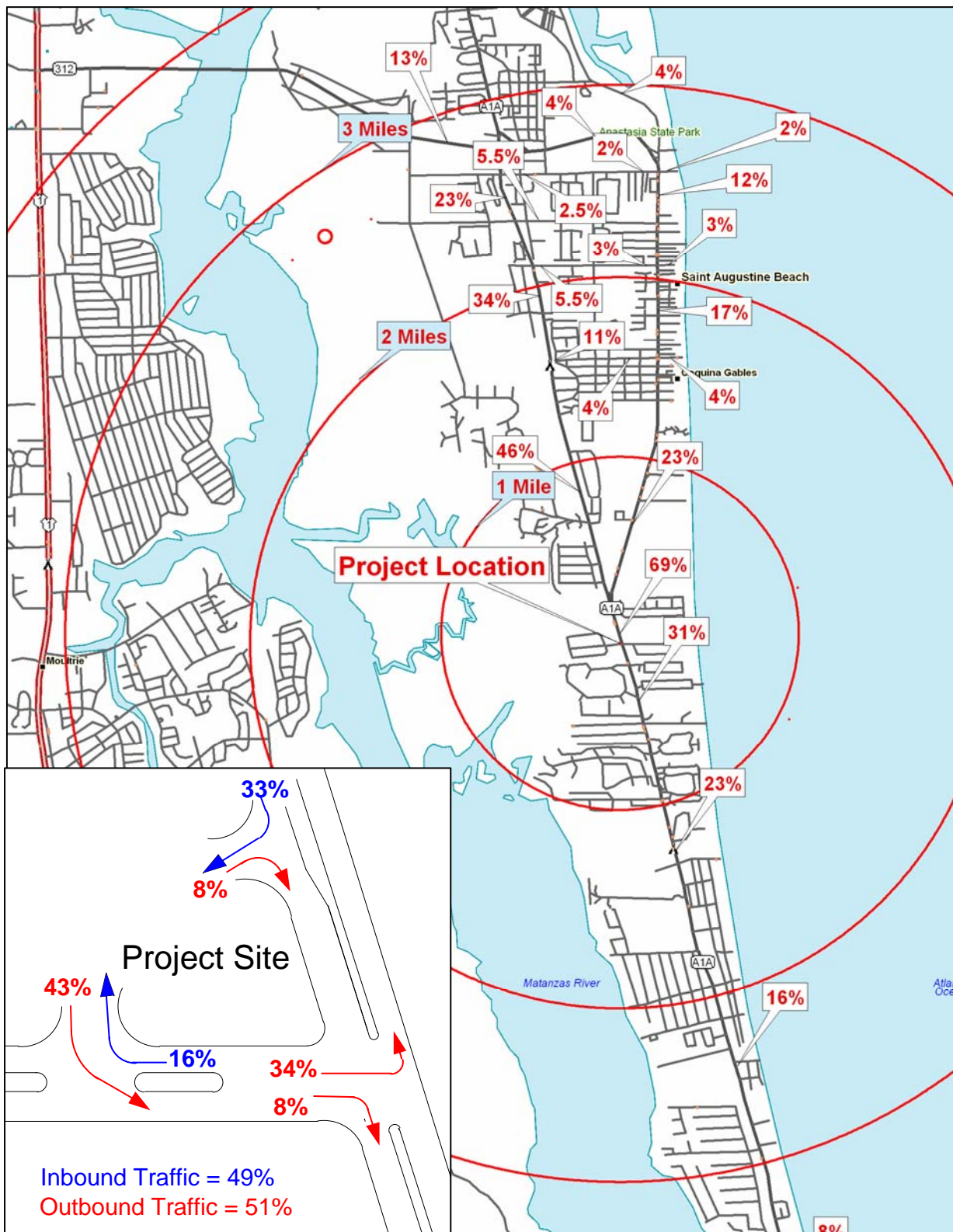


Figure 3: Percentages of Development Traffic on the Highway Network

