Transportation Analysis

Georgia 400 Center DRI #1566 City of Alpharetta, Georgia

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TABLE OF CONTENTS

1.0	Project Description	1
1.1 1.2 1.3 1.4 1.5	Introduction Site Plan Review Site Access Bicycle and Pedestrian Facilities Transit Facilities	
2.0	Traffic Analyses Methodology and Assumptions	3
2.1 2.2 2.3	Growth Rate Traffic Data Collection Detailed Intersection Analysis	
3.0	Study Network	4
3.1 3.2 3.3 3.4 3.5	Gross Trip Generation Trip Distribution Level of Service Standards Study Network Determination Existing Facilities	
4.0	Trip Generation	7
5.0	Trip Distribution and Assignment	7
6.0	Traffic Analysis	8
6.1 6.2 6.3	Existing Traffic 2011 No-Build Traffic 2011 Build Traffic	
7.0	Identification of Programmed Projects	14
8.0	Ingress/Egress Analysis	14
9.0	Internal Circulation Analysis	15
10.0	Compliance with Comprehensive Plan Analysis	15
11.0	Non-Expedited Criteria	15
11.1 11.2 11.3 11.4	Quality, Character, Convenience, and Flexibility of Transportation Options Vehicle Miles Traveled Relationship Between Location of Proposed DRI and Regional Mobility Relationship Between Proposed DRI and Existing or Planned Transit Facilities	
11.5 11.6 11.7 11.8	Pransportation Management Area Designation Offsite Trip Reduction and Trip Reduction Techniques Balance of Land Uses – Jobs/Housing Balance Relationship Between Proposed DRI and Existing Development and Infrastructure	
12.0	Area of Influence	16
12.1 12.2 12.3 12.4	Criteria Study Area Determination and Characteristics DRI Employment and Salary Figures AOI Occupied Housing Figures	
13.0	ARC's Air Quality Benchmark	



LIST OF TABLES

Page

Table 1:	Proposed Land Uses	1
Table 2:	Georgia 400 Center DRI, Gross Trip Generation	5
Table 3:	Georgia 400 Center DRI, Net Trip Generation	7
Table 4:	Existing 2007 Intersection Levels of Service	8
Table 5:	2011 No-Build Intersection Levels of Service	9
Table 6:	2011 No-Build Intersection Levels of Service IMPROVED	10
Table 7:	2011 Build Intersection Levels of Service	12
Table 8:	2011 Build Intersection Levels of Service IMPROVED	13
Table 9:	Employment, Salary, and Affordable Housing Payment by Occupation	18
Table 10:	Number of Households in the DRI by Range of Income	19
Table 11:	Selected Monthly Costs for All Occupied Housing Units in the AOI	19
Table 12:	Comparison of Workers' Monthly Household Incomes in the DRI and Monthly Costs of Housing Units in the AOI	20
Table 13:	ARC VMT Reductions	21

LIST OF FIGURES

Following Page

Figure 1:	Site Location
Figure 2:	Site Aerial
Figure 3:	Site Plan
Figure 4A,4B:	Residential and Hotel Distribution
Figure 5A,5B:	Retail, Office, and Restaurant Distribution
Figure 6:	Project Trips
Figure 6: Figure 7A,7B:	Project Trips
Figure 6: Figure 7A,7B: Figure 8:	Project Trips
Figure 6: Figure 7A,7B: Figure 8: Figure 9A,9B:	Project Trips.7Existing 2007 Conditions.8Projected 2011 No-Build Conditions.9Projected 2011 Build Conditions.11



EXECUTIVE SUMMARY

This report presents the analysis of the anticipated traffic impacts of a proposed 40.4-acre mixed-use development (Georgia 400 Center) located in the City of Alpharetta, Georgia. This report is being prepared as part of a submittal requesting a Master Plan Amendment. Because the project will exceed 400,000 square feet, the proposed development is a Development of Regional Impact (DRI) and is subject to Georgia Regional Transportation Authority (GRTA) and Atlanta Regional Commission (ARC) review.

The proposed development is expected to consist of approximately 458 dwelling units, a 150-room hotel, 446,400 SF of office, 90,100 SF of retail, 10,000 SF of quality restaurant space, and 12,000 SF of sit-down restaurant space. The development is scheduled to be completed in multiple phases, with build-out by the year 2011. It should be noted that this site plan is an amendment to the previous site plan developed for this site approved in 1997. Currently, the site is approved for 239,400 square feet of retail / hotel space and 890,960 square feet of office space.

The results of the detailed intersection analysis for the 2011 No-Build (excluding the Georgia 400 Center development) and 2011 Build conditions (including the Georgia 400 Center development) identified improvements that will be necessary in order to maintain the Level of Service standard (LOS D or E) within the study network. These improvements are listed below:

2011 No-Build recommended improvements (includes background growth but does not include the Georgia 400 Center DRI project traffic):

Morrison Parkway at Hembree Road (*Intersection #1*)

- Install an additional southbound right-turn lane along Hembree Road, creating dual right-turn lanes with a right-turn overlap signal phase (green arrow). (Improvement recommended in DRI #388)
- Install an additional eastbound left-turn lane, creating dual left-turn lanes, with protected-only phasing (green arrow).
- Convert the eastbound right-turn lane to a shared through/right lane, creating three eastbound through lanes along Morrison Road. Note: the outside through lane becomes a right-turn lane at the downstream intersection of Lakeview Parkway.
- Install an additional westbound through lane, creating three westbound through lanes along Morrison Parkway.
- Change the westbound right-turn lane along Morrison Parkway to free-flow. Hembree Road will need to be widened to accommodate this improvement and should be tapered back to two lanes after a sufficient distance. (A similar improvement was recommended in DRI #388.)
- (Note: DRI #388 made different improvement recommendations at the intersection.)

Morrison Parkway at Lakeview Parkway (Intersection #2)

• Install an additional westbound through lane along Morrison Parkway, creating three westbound through lanes.

Morrison Parkway / Westside Parkway at Haynes Bridge Road Intersection #3

- Install an additional eastbound right-turn lane along Morrison Parkway, creating dual right-turn lanes with a right-turn overlap signal phase (green arrow). (Improvement recommended in DRI #698)
- Install an additional northbound left-turn lane to create triple northbound left-turn lanes along Haynes Bridge Road. (Three receiving lanes will be needed along westbound Morrison Parkway.)
- (Note: DRI #388 made different improvement recommendations at the intersection.)

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Haynes Bridge Road Lakeview Parkway / Northwinds Parkway Intersection #4

- Create a free-flow eastbound right-turn lane along Lakeview Parkway. An additional lane will be needed south of the intersection along Haynes Bridge Road. It is recommended that this additional lane be extended to the southbound right-turn lane at the Georgia 400 Southbound Ramp. (A similar improvement was recommended in DRI #698.)
- Change the eastbound left-turn phasing to protected/permissive (green arrow). (A similar improvement was recommended in DRI #698.)
- (Note: DRI #698 made different improvement recommendations at the intersection.)

Haynes Bridge Road at Georgia 400 Southbound Ramps (Intersection #5)

- Install an additional eastbound left-turn lane along the Georgia 400 ramp, creating dual left-turn lanes. (A similar improvement was recommended in DRI #698.)
- Install an additional southbound right-turn lane, creating dual right-turn lanes with a right-turn overlap signal phase (green arrow). (A similar improvement was recommended in DRI #698.)

Haynes Bridge Road at Georgia 400 Northbound Ramps (Intersection #6)

- Install an additional southbound left-turn lane, creating dual left-turn lanes along Haynes Bridge Road. (Improvement recommended in DRI #388 and DRI #698.)
- Install an additional northbound through lane, creating four through lanes along Haynes Bridge Road.
- Install an additional eastbound left-turn, creating triple left-turns along the Georgia 400 ramps.
- (Note: DRI #698 made different improvement recommendations at the intersection.)

Haynes Bridge Road at North Point Drive (Intersection #7)

• Install an additional westbound right-turn lane, creating dual right-turn lanes with a right-turn overlap signal phase (green arrow) along North Point Drive.

2011 Build recommended improvements (includes the traffic associated with the Georgia 400 Center DRI): NOTE: These improvements are in addition to the improvements listed previously in the 2011 No-Build.

Haynes Bridge Road at Lakeview Parkway / Northwinds Parkway (Intersection #4)

- Install an additional northbound left-turn lane along Haynes Bridge Road with protected-only phasing.
- The westbound left-turn lane along Lakeview Parkway should be extended to maximize vehicle storage.

Project driveway recommendations for the Georgia 400 Center DRI:

Lakeview Parkway at Driveway #2 / 2300 Lakeview Parkway Driveway (Intersection #10)

- Relocate the existing 2300 Lakeview Parkway Driveway and close the existing median opening.
- Install a modern two-lane roundabout with one 1-lane approach (2300 Office Driveway) and three 2lane approaches. The proposed roundabout should incorporate design parameters recommended in the FHWA Roundabout Guide as well as current state of the practice design standards for modern roundabouts, including pavement markings. The westbound and eastbound approaches along

Lakeview Parkway would be two lane approaches, with a shared left-turn/through lane and a shared through/right-turn lane. The northbound approach (proposed Driveway #2) would be a shared left-turn/through lane and a separate right-turn only lane. The roundabout is recommended to have a minimum outside (inscribed) diameter of 150 feet, 15 foot wide circulating travel lanes, and a mountable truck apron on the edge of the central island to provide for larger vehicle tracking. All approaches should include splitter islands to physically separate entry and exit vehicles on an approach and provide a refuge for pedestrians. All approaches should include pedestrian crossings. The roundabout is recommended to be designed to accommodate a WB-67 design vehicle.

Lakeview Parkway at Driveway #3 / 2400 Lakeview Parkway Driveway (Intersection #11)

- A signal should be installed at this location with protected-permitted westbound left-turn phasing. This new signal should be coordinated with the existing signal at Lakeview Parkway / Haynes Bridge Road (Intersection #4). (Note: It is recommended that the existing median opening be relocated to the west to provide sufficient westbound left-turn storage to reduce vehicle queue interactions with the upstream signal at Lakeview Parkway / Haynes Bridge Road (Intersection #4)).
- Provide a northbound left-turn lane and a shared through/right-turn lane exiting the site along Driveway #3. Additionally, the existing 2400 Lakeview Parkway driveway should be restriped to provide a southbound left-turn lane and a shared through/right-turn lane.

Haynes Bridge Road at Driveway #4 (Right-In / Right-Out) (Intersection #12)

• Provide an eastbound right-turn only lane exiting the site along Driveway #4.

1.0 PROJECT DESCRIPTION

1.1 Introduction

This report presents the analysis of the anticipated traffic impacts of a proposed 40.4-acre mixed-use development (Georgia 400 Center) located in the City of Alpharetta, Georgia. This report is being prepared as part of a submittal requesting a Master Plan Amendment. Because the project will exceed 400,000 square feet, the proposed development is a Development of Regional Impact (DRI) and is subject to Georgia Regional Transportation Authority (GRTA) and Atlanta Regional Commission (ARC) review.

The proposed development is expected to consist of approximately 458 dwelling units, a 150-room hotel, 446,400 SF of office, 90,100 SF of retail, 10,000 SF of quality restaurant space, and 12,000 SF of sit-down restaurant space. The development is scheduled to be completed in multiple phases, with build-out by the year 2011. It should be noted that this site plan is an amendment to the previous site plan developed for this site approved in 1997. Currently, the site is approved for 239,400 square feet of retail / hotel space and 890,960 square feet of office space.

Table 1 Proposed Land Uses				
Residential Units	458 dwelling units			
Hotel	150 rooms			
General Office Building	446,400 square feet			
Retail (Shopping Center)	90,100 square feet			
Quality Restaurant	10,000 square feet			
High-Turnover (Sit-Down) Restaurant	12,000 square feet			

A summary of the proposed land-uses and densities can be found below in Table 1.

Figure 1 and Figure 2 provide a location map and an aerial photograph of the site.

1.2 Site Plan Review

The development is located along the south side of Lakeview Parkway just west of Haynes Bridge Road in the City of Alpharetta. Office buildings are planned along Lakeview Parkway, mixed with surface parking. Driveway #2 at the proposed roundabout along Lakeview Parkway opens to a street leading to a fountain at the end of the street surrounded by a restaurant and a 12-story office building. Residential units are proposed along either side of this street. Flex space is scattered throughout the central and eastern portions of the development, intended for retail and/or office use. Two restaurants are situated along the eastern boundary along Haynes Bridge Road. The existing lake to the south of the development will remain.

The area surrounding the proposed development is also owned by MetLife and currently office space. All surrounding office buildings are to remain.

Figure 3 is a small-scale copy of the site plan. A full-size site plan consistent with GRTA's Site Plan Guidelines is also being submitted as part of the Review Package.









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1.3 Site Access

A total of four access points are proposed to serve the proposed development:

Two access points to the proposed Georgia 400 Center development are proposed along Lakeview Parkway, one is proposed along an existing access road just west of Lakeview Parkway and one is proposed along Haynes Bridge Road.

The northernmost driveway, Driveway #1, is a connection to the existing 2325 Lakeview Parkway office driveway along the west property line, which connects to Lakeview Parkway. The intersection of 2325 Lakeview Parkway and Lakeview Parkway was analyzed.

A roundabout is proposed at the western full-movement driveway (Driveway #2) along Lakeview Parkway approximately 820 feet east of Morrison Parkway along Lakeview Parkway. Two existing median openings are proposed to be closed and a new median opening will be created along Lakeview Parkway at the location of Driveway #2. This median opening will also serve the existing Georgia 400 Center office park to the north via a relocated driveway for 2300 Lakeview Parkway.

The eastern full-movement driveway, Driveway #3, is proposed along Lakeview Parkway approximately 340 feet west of Haynes Bridge Road. A signal, along with the relocation of the existing median opening to the west, is recommended at this driveway. The existing driveway at this median opening is 2400 Lakeview Parkway, currently serving the existing Georgia 400 Center office park.

Driveway #4 is a proposed right-in/right-out driveway along Haynes Bridge Road located approximately 260 feet south of Lakeview Parkway.

Approximate distances along Lakeview Parkway:

Existing Conditions:	Proposed Conditions:			
Haynes Bridge Road to existing 2400	Haynes Bridge Road to Driveway #3 / 2400			
Lakeview Parkway driveway: 340'	Lakeview Parkway driveway: 340'			
2400 Lakeview Parkway to Median Proposed Driveway #3 to Pro				
Opening: 410'	Driveway #2: 800'			
Median Opening to existing 2300 Lakeview	Proposed 2300 Parkway Driveway to 2325			
Parkway Driveway: 600'	Lakeview Parkway: 500'			
2300 Lakeview Parkway Driveway to 2325	2325 Lakeview Parkway to Morrison			
Lakeview Parkway: 290'	Parkway: 320'			
2325 Lakeview Parkway to Morrison				
Parkway: 320'				

Note: It is approximately 1,960 feet along Lakeview Parkway between Morrison Parkway (centerline) and Haynes Bridge Road (centerline). The City of Alpharetta will be the permitting agency for the site driveway along Lakeview Parkway.

1.4 Bicycle and Pedestrian Facilities

Pedestrian facilities (sidewalks) currently exist in the vicinity of the proposed site along both sides of Lakeview Parkway and Haynes Bridge Road.

1.5 Transit Facilities

The closest transit facility to the proposed development is the MARTA Mansell Center Park and Ride Lot, located off of Mansell Road, one exit south of Haynes Bridge Road on GA 400.

2.0 TRAFFIC ANALYSES METHODOLOGY AND ASSUMPTIONS

2.1 Growth Rate

Background traffic is defined as expected traffic on the roadway network in future year(s) absent the construction and opening of the proposed project. Historical traffic count data from the Georgia DOT was reviewed for the area surrounding the proposed development, and growth rates of 1.5% per year along all roadways were agreed upon during the methodology meeting with GRTA staff. Additionally, traffic associated with other projects in the area with study networks that impacted with the intersections listed in Section 3.4 were added. The amount of development built was determined to ensure only traffic associated with unbuilt portions of the project was added onto the project. Investigation of the projects in the area showed that three other projects had a study network that overlapped with the one in this report. Additionally, a portion of one of these (DRI #388) had already been built, therefore the trips associated with this project were reduced. Below is a summary of background traffic assumptions agreed to by GRTA:

- DRI # 388 Cousins Westside PODs C,E, and N have been fully built-out (311 townhomes); therefore, the project trips were reduced by this amount and the remaining project trips were added onto the network.
- DRI #698 Forum at Alpharetta 100% of project traffic was added on as background traffic, since buildout is scheduled for 2008.
- Rock Mill Road Development 100% of project traffic was added on as background traffic, since buildout is scheduled for 2009.

2.2 Traffic Data Collection

2007 peak hour turning movement counts were conducted at eight signalized intersection and three unsignalized intersections between 7:00-9:00 AM and 4:15-6:15 PM. The morning and afternoon peak hours varied between the eleven intersections:

1.	Morrison Parkway at Hembree Road	(AM Peak 7:45-8:45, PM Peak 5:00-6:00)
2.	Morrison Parkway at Lakeview Parkway	(AM Peak 7:30-8:30, PM Peak 4:45-5:45)
3.	Morrison Parkway at Haynes Bridge Road	(AM Peak 7:30-8:30, PM Peak 5:15-6:15)
4.	Haynes Bridge Road at Lakeview Parkway / No	rthwinds Parkway (AM Peak 7:45-8:45, PM Peak 5:00-6:00)
5.	Haynes Bridge Road at Georgia 400 Southbound	d Ramps (AM Peak 7:30-8:30, PM Peak 5:00-6:00)
6.	Haynes Bridge Road at Georgia 400 Northbound	d Ramps (AM Peak 7:45-8:45, PM Peak 4:30-5:30)
7.	Haynes Bridge Parkway at North Point Drive	(AM Peak 7:45-8:45, PM Peak 5:00-6:00)
8.	Haynes Bridge Road at North Point Parkway	(AM Peak 7:30-8:30, PM Peak 4:45-5:45)
9.	Lakeview Parkway at 2325 Lakeview Driveway	(AM Peak 8:00-9:00, PM Peak 4:45-5:45)
10.	Lakeview Parkway at 2300 Lakeview Driveway	(AM Peak 7:45-8:45, PM Peak 4:15-5:15)
11.	Lakeview Parkway at 2400 Lakeview Driveway	(AM Peak 7:45-8:45, PM Peak 4:45-5:45)
·	ount data is available upon request	

All raw count data is available upon request.

2.3 Detailed Intersection Analysis

Level-of-service (LOS) is used to describe the operating characteristics of a road segment or intersection in relation to its capacity. LOS is defined as a qualitative measure that describes operational conditions and motorists perceptions within a traffic stream. The Highway Capacity Manual defines six levels of service, LOS A through LOS F, with A being the best and F being the worst. Level of service analyses were conducted at all intersections within the study network using Synchro Professional, Version 6.0.

Levels of service for signalized intersections are reported for the intersection as a whole. One or more movements at an intersection may experience a low Level of service, while the intersection as a whole may operate acceptably.

Levels of service for unsignalized intersections, with stop control on the minor street only, are reported for the side street approaches. Low Levels of service for side street approaches are not uncommon, as vehicles may experience delay in turning onto a major roadway.

For the roundabout analysis, aaSIDRA software was utilized. The aaSIDRA roundabout analysis program is the software package recommended in TOPPS 4A-2, a document of guidelines for roundabouts issued by the Georgia Department of Transportation.

3.0 Study Network

3.1 Gross Trip Generation

As stated earlier, the proposed development is expected to consist of approximately 458 dwelling units, a 150room hotel, 446,400 SF of office, 90,100 SF of retail, 10,000 SF quality restaurant space, and 12,000 SF of sitdown restaurant space. The development is scheduled to be completed in multiple phases, with build-out by the year 2011.

Traffic for these land uses was calculated using equations contained in the *Institute of Transportation Engineers'* (*ITE*) *Trip Generation Manual, Seventh Edition, 2003*. Gross trips generated are displayed on the following page in **Table 2**.

Table 2 Georgia 400 Center DRI Gross Trip Generation							
Daily Traffic AM Peak Hour PM Peak Ho							k Hour
Land Use	Code	Enter	Exit	Enter	Exit	Enter	Exit
	Build-Out	t (Year 20	11)				
Apartment – 458 dwelling units	220	1,451	1,451	46	182	176	94
Hotel – 150 rooms	310	484	484	41	27	47	42
General Office Building – 446,400SF	710	2,111	2,111	546	75	98	481
Retail (Shopping Center) – 90,100 SF	820	3,173	3,173	90	57	280	304
Quality Restaurant – 10,000 SF	931	450	450	N/A	N/A	50	25
High-Turnover (Sit-Down) Restaurant – 12,000 SF	932	763	763	72	66	80	51
Total 8,432 8,432 795 407 731 997							

3.2 Trip Distribution

The directional distribution and assignment of new project trips was based on engineering judgment and discussions with GRTA staff at the methodology meeting.

3.3 Level of Service Standards

For the purposes of this traffic analysis, a level of service standard of D was assumed for all intersections and segments within the study network. If, however, an intersection or segment currently operates at LOS E or LOS F during an existing peak period, the LOS standard for that peak period becomes LOS E, consistent with GRTA's Letter of Understanding.

3.4 Study Network Determination

A general study area was determined using the 7% rule. This rule recommends that all intersections and segments be analyzed which are impacted to the extent that the traffic from the proposed site is 7% or more of the Service Volume of the facility (at a previously established LOS standard) be considered for analysis. This general study area was refined during the methodology meeting, and includes the following intersections:

- Morrison Parkway at Hembree Road
- o Morrison Parkway at Lakeview Parkway
- Morrison Parkway at Haynes Bridge Road
- o Haynes Bridge Road at Lakeview Parkway / Northwinds Parkway
- o Haynes Bridge Road at Georgia 400 Southbound Ramps
- o Haynes Bridge Road at Georgia 400 Northbound Ramps

- Haynes Bridge Road at North Point Drive
- Haynes Bridge Parkway at North Point Parkway

Each of the above listed intersections was analyzed for the Existing 2007 Condition, the 2011 No-Build Condition, and the 2011 Build Condition. The 2011 No-Build Condition represents the existing traffic volumes grown at 1.5% per year for four (4) years, plus the addition of traffic associated with other developments in the area. The 2011 Build Condition adds the projected trips associated with the Georgia 400 Center development to the 2011 No-Build Condition. (NOTE: The additional proposed site access points listed below were only analyzed for the 2011 Build Condition):

- Lakeview Parkway at 2325 Lakeview Parkway (This existing driveway will provide access to Driveway #1)
- o Lakeview Parkway at Driveway #2 / 2300 Lakeview Parkway
- o Lakeview Parkway at Driveway #2 / 2400 Lakeview Parkway
- Haynes Bridge Road at Driveway #4

These intersections were analyzed for the AM and PM peak periods.

3.5 Existing Facilities

Lakeview Parkway / Northwinds Parkway

 Lakeview Parkway is a two-way, four-lane divided roadway which extends from Haynes Bridge Road to Morrison Parkway in Alpharetta. After crossing Haynes Bridge Road, the name of the road becomes Northwinds Parkway. The speed limit along Lakeview Parkway is 25 MPH, while the speed limit along Northwinds Parkway is 35 MPH. Lakeview Parkway and Northwinds Parkway are classified as Urban Local Roads. No GDOT count information is available for this roadway.

Morrison Parkway / Westside Parkway

 Morrison Parkway is a two-way, four-lane undivided roadway which extends from Haynes Bridge Road to Hembree Road. East of Haynes Bridge Road and west of Hembree Road the name of the road becomes Westside Parkway. Westside parkway is a two-way, divided roadway. Morrison Parkway is classified as an Urban Collector Street, while Westside Parkway is classified as an Urban Local Road. The speed limit along this roadway is 40 MPH. No GDOT count information is available for this roadway.

Haynes Bridge Road

 Haynes Bridge Road is a north/south oriented, six-lane divided roadway which extends from Old Alabama Road to Academy Road in Alpharetta. Haynes Bridge Road is classified as an Urban Minor Arterial. The speed limit along this roadway is 45 MPH. According to GDOT, approximately 26,680 vehicles per day traveled along this roadway in 2006.

Hembree Road

• Hembree Road is an east/west oriented, two-lane roadway which extends east from Morrison Parkway. Hembree Road is classified as an Urban Collector Street. The speed limit along this roadway is 45 MPH. According to GDOT, approximately 13,420 vehicles per day traveled along this roadway in 2006.

North Point Drive

 North Point Drive is an east/west oriented, four-lane roadway divided by a center two-way left turn lane. North Point Drive extends North Point Mall, crossing over Haynes Bridge Road, to terminate at North Point Parkway. North Point Drive is not classified by GDOT. The speed limit along this roadway is 35 MPH. No GDOT count information is available for this roadway. North Point Parkway

 North Point Parkway is a six-lane divided roadway extending from Mansell Road to Windward Parkway. North Point Parkway runs in a southwest/northeast direction, but is considered an east-west roadway for the purposes of this report. North Point Parkway is classified as an Urban Local Road, and the speed limit along this roadway is 35MPH. No GDOT count information is available for this roadway.

4.0 **TRIP GENERATION**

As stated earlier, trips associated with the proposed development were estimated using the ITE *Trip Generation Manual*, Seventh Edition (2003), using equations where available.

Mixed-use and pass-by reductions were taken according to the *ITE Trip Generation Handbook, 2004* and GRTA guidelines. An alternate mode transportation reduction was taken at 2.0% per the agreement made during the methodology meeting with GRTA staff. The total trips generated and analyzed in the report are listed below in **Table 3**.

Table 3 Georgia 400 Center DRI Net Trip Generation							
	Daily ⁻	Traffic	AM Pea	ık Hour	PM Pea	k Hour	
Land Use Enter Exit Enter Exit Enter Ex						Exit	
Build-Out (Year 2011)							
Gross Trips 8,432 8,432 795 407 731 997							
Internal Capture Reductions	-1,226	-1,226	0	0	-106	-106	
Pass-By Reductions	-1,149	-1,149	0	0	-105	-104	
Alternate Mode Reductions	-68	-68	-13	-6	-5	-11	
New Trips	5,989	5,989	782	401	515	776	

5.0 TRIP DISTRIBUTION AND ASSIGNMENT

New trips were distributed onto the roadway network using the percentages agreed to during the methodology meeting. Figure 4A, 4B, 5A, and 5B display the expected percentages for the development throughout the roadway network. These percentages were applied to the new trips generated by the development (see Table 3, above), and the volumes were assigned to the roadway network. The expected peak hour turning movements generated by the proposed development are shown in Figure 6.











6.0 TRAFFIC ANALYSIS

6.1 Existing Traffic

The existing traffic volumes are shown in **Figure 7A and 7B**. These volumes were input in Synchro 6.0 and an Existing Conditions analysis was performed. The results are displayed below in **Table 4**.

	Table 4 Georgia 400 Center DRI Existing 2007 Intersection Levels of Service (delay in seconds)						
	Intersection Control LOS Standard AM Peak Hour PM Peak Hour						
1	Morrison Parkway at Hembree Road	Signal	D	B (15.6)	B (15.9)		
2	Morrison Parkway at Lakeview Parkway	Signal	D	A (9.1)	A (8.3)		
3	Morrison Parkway at Haynes Bridge Road	Signal	D	C (34.6)	C (33.2)		
4	Haynes Bridge Road at Lakeview Parkway / Northwinds Parkway	Signal	D – AM E – PM	B (15.1)	E (59.4)		
5	Haynes Bridge Road at Georgia 400 Southbound Ramps	Signal	D	B (17.7)	B (14.0)		
6	Haynes Bridge Road at Georgia 400 Northbound Ramps	Signal	D	C (25.2)	C (26.8)		
7	Haynes Bridge Road at North Point Drive	Signal	D	B (14.4)	D (45.9)		
8	Haynes Bridge Parkway at North Point Parkway	Signal	D	D (35.7)	D (36.5)		

One of the intersections currently operates below the acceptable Level of Service standard (LOS D) during at the PM peak hour. The LOS standard will become LOS E for the PM peak hour at this intersection.





6.2 2011 No-Build Traffic

The existing traffic volumes were grown at 1.5% per year plus the addition of traffic associated with DRI #388 and 698 and the Rock Mill Developemnt along all roadway links within the study network. These volumes were input in Synchro 6.0 and analyses of the projected 2011 No-Build conditions were performed. The results are displayed below in **Table 5.** The projected volumes for the year 2011 No-Build conditions are shown in **Figure 8.**

	Table 5 Georgia 400 Center DRI No Build 2011 Intersection Levels of Service (delay in seconds)					
	Intersection	Control	LOS Standard	AM Peak Hour	PM Peak Hour	
1	Morrison Parkway at Hembree Road	Signal	D	F (337.0)	F (224.7)	
2	Morrison Parkway at Lakeview Parkway	Signal	D	E (56.6)	B (14.7)	
3	Morrison Parkway at Haynes Bridge Road	Signal	D	E (58.4)	F (102.1)	
4	Haynes Bridge Road at Lakeview Parkway / Northwinds Parkway	Signal	D – AM E – PM	C (29.0)	F (213.7)	
5	Haynes Bridge Road at Georgia 400 Southbound Ramps	Signal	D	F (105.7)	F (111.7)	
6	Haynes Bridge Road at Georgia 400 Northbound Ramps	Signal	D	D (44.8)	F (141.5)	
7	Haynes Bridge Road at North Point Parkway	Signal	D	D (35.1)	F (84.7)	
8	Haynes Bridge Parkway at North Point Drive	Signal	D	C (32.6)	D (38.3)	

Seven (7) of the eight (8) intersections failed to meet acceptable Level of Service standards for the year 2011 No-Build condition. Per GRTA's Letter of Understanding, improvements were recommended at four intersections until the Level of Service was elevated to the GRTA standard. The 2011 No-Build with Improvement intersection Level of Service are displayed below in **Table 6**.





	Table 6 Georgia 400 Center DRI 2011 No-Build Intersection Levels of Service IMPROVED (delay in seconds)						
	Intersection Control LOS AM Peak PM Peak Standard Hour Hour						
1	Morrison Parkway at Hembree Road	Signal	D	D (48.8)	D (44.8)		
2	Morrison Parkway at Lakeview Parkway	Signal	D	B (11.0)	B (15.5)		
3	Morrison Parkway at Haynes Bridge Road	Signal	D	D (49.6)	C (32.2)		
4	Haynes Bridge Road at Lakeview Parkway / Northwinds Parkway	Signal	D – AM E – PM	C (32.7)	D (40.9)		
5	Haynes Bridge Road at Georgia 400 Southbound Ramps	Signal	D	C (24.0)	D (40.9)		
6	Haynes Bridge Road at Georgia 400 Northbound Ramps	Signal	D	C (32.9)	D (41.1)		
7	Haynes Bridge Road at North Point Parkway	Signal	D	C (23.5)	C (31.3)		

The 2011 No-Build improvements made to the intersections are shown in Figures 8A and B, and are listed below by intersection:

Morrison Parkway at Hembree Road (Intersection #1)

- Install an additional southbound right-turn lane along Hembree Road, creating dual right-turn lanes with a right-turn overlap signal phase (green arrow). (Improvement recommended in DRI #388)
- Install an additional eastbound left-turn lane, creating dual left-turn lanes, with protected-only phasing (green arrow).
- Convert the eastbound right-turn lane to a shared through/right lane, creating three eastbound through lanes along Morrison Road. Note: the outside through lane becomes a right-turn lane at the downstream intersection of Lakeview Parkway.
- Install an additional westbound through lane, creating three westbound through lanes along Morrison Parkway.
- Change the westbound right-turn lane along Morrison Parkway to free-flow. Hembree Road will need to be widened to accommodate this improvement and should be tapered back to two lanes after a sufficient distance. (A similar improvement was recommended in DRI #388.)
- (Note: DRI #388 made different improvement recommendations at the intersection.)

Morrison Parkway at Lakeview Parkway (Intersection #2)

• Install an additional westbound through lane along Morrison Parkway, creating three westbound through lanes.

Morrison Parkway / Westside Parkway at Haynes Bridge Road Intersection #3

- Install an additional eastbound right-turn lane along Morrison Parkway, creating dual right-turn lanes with a right-turn overlap signal phase (green arrow). (Improvement recommended in DRI #698)
- Install an additional northbound left-turn lane to create triple northbound left-turn lanes along Haynes Bridge Road. (Three receiving lanes will be needed along westbound Morrison Parkway.)
- (Note: DRI #388 made different improvement recommendations at the intersection.)

Haynes Bridge Road Lakeview Parkway / Northwinds Parkway Intersection #4

- Create a free-flow eastbound right-turn lane along Lakeview Parkway. An additional lane will be needed south of the intersection along Haynes Bridge Road. It is recommended that this additional lane be extended to the southbound right-turn lane at the Georgia 400 Southbound Ramp. (A similar improvement was recommended in DRI #698.)
- Change the eastbound left-turn phasing to protected/permissive (green arrow). (A similar improvement was recommended in DRI #698.)
- (Note: DRI #698 made different improvement recommendations at the intersection.)

Haynes Bridge Road at Georgia 400 Southbound Ramps (Intersection #5)

- Install an additional eastbound left-turn lane along the Georgia 400 ramp, creating dual left-turn lanes. (A similar improvement was recommended in DRI #698.)
- Install an additional southbound right-turn lane, creating dual right-turn lanes with a right-turn overlap signal phase (green arrow). (A similar improvement was recommended in DRI #698.)

Haynes Bridge Road at Georgia 400 Northbound Ramps (Intersection #6)

- Install an additional southbound left-turn lane, creating dual left-turn lanes along Haynes Bridge Road. (Improvement recommended in DRI #388 and DRI #698.)
- Install an additional northbound through lane, creating four through lanes along Haynes Bridge Road.
- Install an additional eastbound left-turn, creating triple left-turns along the Georgia 400 ramps.
- (Note: DRI #698 made different improvement recommendations at the intersection.)

Haynes Bridge Road at North Point Drive (Intersection #7)

• Install an additional westbound right-turn lane, creating dual right-turn lanes with a right-turn overlap signal phase (green arrow) along North Point Drive.

6.3 2011 Build Traffic

The traffic associated with the proposed development (Georgia 400 Center) was added to the 2011 No-Build volumes. These volumes were then input into Synchro 6.0 with the recommended No-Build geometry improvements from the previous section. Lakeview Parkway at Driveway #2 / 2300 Lakeview Parkway Driveway (Intersection #11) was analyzed using SIDRA software to determine the roundabout capacity and level of service. The results of the analyses are displayed in **Table 7**. The projected volumes, laneage, and recommended intersection control for the year 2011 Build condition are illustrated in **Figures 9A and 9B**.







	Table 7 Georgia 400 Center DRI Build 2011 Intersection Levels of Service (delay in seconds)						
	Intersection Control LOS Standard AM Peak Hour PM Peak Hour						
1	Morrison Parkway at Hembree Road	Signal	D	D (51.5)	D (47.8)		
2	Morrison Parkway at Lakeview Parkway	Signal	D	B (11.4)	B (14.3)		
3	Morrison Parkway at Haynes Bridge Road	Signal	D	D (46.5)	D (39.5)		
4	Haynes Bridge Road at Lakeview Parkway / Northwinds Parkway	Signal	D – AM E – PM	E (70.1)	E (59.4)		
5	Haynes Bridge Road at Georgia 400 Southbound Ramps	Signal	D	C (28.8)	D (52.9)		
6	Haynes Bridge Road at Georgia 400 Northbound Ramps	Signal	D	C (34.7)	D (54.3)		
7	Haynes Bridge Road at North Point Parkway	Signal	D	C (25.9)	C (34.0)		
8	Haynes Bridge Parkway at North Point Drive	Signal	D	D (37.8)	D (42.4)		
9	Lakeview Parkway at 2325 Lakeview Parkway (Provides access to Driveway #1)	Side-Street STOP Control	D	C (18.5)	D (28.5)		
				NB: A (5.2)	NB: A (16.2)		
10	Lakeview Parkway at Driveway #2 /	Roundabout	D	SB: A (6.5)	SB: A (7.1)		
10	2300 Lakeview Parkway Driveway	Roundabout	D	EB: A (4.5)	EB: A (4.7)		
				EB: A (4.9)	EB: A (6.8)		
11	Lakeview Parkway at Driveway #3 / 2400 Lakeview Parkway Driveway	Signal	D	B (16.4)	C (30.2)		
12	Haynes Bridge Road at Driveway #4	Side-Street STOP Control	D	*	*		

* HCM level of service analysis for an unsignalized intersection is limited to a maximum of three through lanes along the major street. The right-in / right-out driveway is projected to handle low entering and exiting traffic volumes. The right-out only driveway is expected to operate at an acceptable level of service due to low traffic volumes.

As shown in Table 7, the intersection of Haynes Bridge Road at Lakeview Parkway / Northwinds Parkway (Intersection #4) failed to meet the acceptable Level of Service standard for the AM peak hour. Improvements were made to the 2011 Build Conditions to obtain the appropriate LOS Standard. The 2011 Build with Improvements intersection analysis Level of Service are displayed below in **Table 8**.

	Table 8 Georgia 400 Center DRI 2011 Build Intersection Levels of Service IMPROVED (delay in seconds)						
	Intersection Control LOS AM Peak PM Pea Standard Hour Hour						
4	Haynes Bridge Road at Lakeview Parkway / Northwinds Parkway	Signal	D – AM E – PM	C (29.8)	D (41.5)		

The 2011 Build improvements made to the intersection are shown in Figures 9A and 9B, and are listed below:

2011 Build recommended improvements (includes the traffic associated with the Georgia 400 Center DRI): NOTE: These improvements are in addition to the 2011 No-Build improvements listed previously..

Haynes Bridge Road at Lakeview Parkway / Northwinds Parkway (Intersection #4)

- Install an additional northbound left-turn lane along Haynes Bridge Road with protected-only phasing.
- The westbound left-turn lane along Lakeview Parkway should be extended to maximize vehicle storage.

The proposed site driveways were analyzed for the 2011 Build conditions. **Table 7** includes the Level of Service analysis results for the proposed site driveways. The 2011 Build intersection volumes, laneage, and recommended intersection control is illustrated in **Figures 9B**.

Lakeview Parkway at Driveway #2 / 2300 Lakeview Parkway Driveway (Intersection #10)

- Relocate the existing 2300 Lakeview Parkway Driveway and close the existing median opening.
- Install a modern two-lane roundabout with one 1-lane approach (2300 Office Driveway) and three 2-lane approaches. The proposed roundabout should incorporate design parameters recommended in the FHWA Roundabout Guide as well as current state of the practice design standards for modern roundabouts, including pavement markings. The westbound and eastbound approaches along Lakeview Parkway would be two lane approaches, with a shared left-turn/through lane and a shared through/right-turn lane. The northbound approach (proposed Driveway #2) would be a shared left-turn/through lane and a separate right-turn only lane. The roundabout is recommended to have a minimum outside (inscribed) diameter of 150 feet, 15 foot wide circulating travel lanes, and a mountable truck apron on the edge of the central island to provide for larger vehicle tracking. All approaches should include splitter islands to physically separate entry and exit vehicles on an approach and provide a refuge for pedestrians. All approaches should include pedestrian crossings. The roundabout is recommended to be designed to accommodate a WB-67 design vehicle.

Lakeview Parkway at Driveway #3 / 2400 Lakeview Parkway Driveway (Intersection #11)

• A signal should be installed at this location with protected-permitted westbound left-turn phasing. This new signal should be coordinated with the existing signal at Lakeview Parkway / Haynes Bridge Road (Intersection #4). (Note: It is recommended that the existing median opening be relocated to the west to provide sufficient westbound left-turn storage to reduce vehicle queue interactions with the upstream signal at Lakeview Parkway / Haynes Bridge Road (Intersection #4)).

• Provide a northbound left-turn lane and a shared through/right-turn lane exiting the site along Driveway #3. Additionally, the existing 2400 Lakeview Parkway driveway should be restriped to provide a southbound left-turn lane and a shared through/right-turn lane.

Haynes Bridge Road at Driveway #4 (Right-In / Right-Out) (Intersection #12)

• Provide an eastbound right-turn only lane exiting the site along Driveway #4.

7.0 IDENTIFICATION OF PROGRAMMED PROJECTS

The *Mobility 2030 RTP*, *TIP*, *STIP*, *and GDOT's Construction Work Program* were researched for currently programmed transportation projects within the vicinity of the proposed development. Several projects are programmed for the area surrounding the study network. Information on the projects is included in the Appendix.

1. GDOT # 0001757	Installation of HOV lanes along Georgia 400 (I-285 to Mc Farland Road)
(RTP, TIP, STIP)	Expected Completion Date: 2015
2. GDOT # 0006819	North Point traffic signal interconnections along North Point Parkway
(RTP, TIP, STIP)	(Mansell Road to Windward Parkway) Expected Completion Date: 2008

8.0 INGRESS/EGRESS ANALYSIS

A total of four access points are proposed to serve the proposed development:

Two access points to the proposed Georgia 400 Center development are proposed along Lakeview Parkway, one is proposed along an existing access road just west of Lakeview Parkway and one is proposed along Haynes Bridge Road.

The northernmost driveway, Driveway #1, is a connection to the existing 2325 Lakeview Parkway office driveway along the west property line, which connects to Lakeview Parkway. The intersection of 2325 Lakeview Parkway and Lakeview Parkway was analyzed.

A roundabout is proposed at the western full-movement driveway (Driveway #2) along Lakeview Parkway approximately 820 feet east of Morrison Parkway along Lakeview Parkway. Two existing median openings are proposed to be closed and a new median opening will be created along Lakeview Parkway at the location of Driveway #2. This median opening will also serve the existing Georgia 400 Center office park to the north via a relocated driveway for 2300 Lakeview Parkway.

The eastern full-movement driveway, Driveway #3, is proposed along Lakeview Parkway approximately 340 feet west of Haynes Bridge Road. A signal, along with the relocation of the existing median opening to the west, is recommended at this driveway. The existing driveway at this median opening is 2400 Lakeview Parkway, currently serving the existing Georgia 400 Center office park.

Driveway #4 is a proposed right-in/right-out driveway along Haynes Bridge Road located approximately 260 feet south of Lakeview Parkway.

Approximate distances along Lakeview Parkway:

Existing Conditions:	Proposed Conditions:		
Haynes Bridge Road to existing 2400	Haynes Bridge Road to Driveway #3 / 2400		
Lakeview Parkway driveway: 340'	Lakeview Parkway driveway: 340'		
2400 Lakeview Parkway to Median	Proposed Driveway #3 to Proposed		
Opening: 410'	Driveway #2: 800'		
Median Opening to existing 2300 Lakeview	Proposed 2300 Parkway Driveway to 2325		
Parkway Driveway: 600'	Lakeview Parkway: 500'		
2300 Lakeview Parkway Driveway to 2325	2325 Lakeview Parkway to Morrison		
Lakeview Parkway: 290'	Parkway: 320'		
2325 Lakeview Parkway to Morrison			
Parkway: 320'			

Note: It is approximately 1,960 feet along Lakeview Parkway between Morrison Parkway (centerline) and Haynes Bridge Road (centerline). The City of Alpharetta will be the permitting agency for the site driveway along Lakeview Parkway.

9.0 INTERNAL CIRCULATION ANALYSIS

The proposed development will generate trips between the residential and non-residential uses. The internal roadway network connects the residential units with the office space and the retail / restaurant. Using the *ITE Trip Generation Handbook, 2004* as a reference, approximately 14.54% of the gross daily trips will be internal and approximately 12.27% of the gross PM peak hour trips will be internal.

10.0 COMPLIANCE WITH COMPREHENSIVE PLAN ANALYSIS

The City of Alpharetta Future Land Use Map designates this area as Office Center.

11.0 NON-EXPEDITED CRITERIA

11.1 Quality, Character, Convenience, and Flexibility of Transportation Options

There are no transit facilities or bus routes in the vicinity of the proposed site; however it is expected that carpooling will occur between employees due to the density of office space in and around the proposed development.

11.2 Vehicle Miles Traveled

The following table displays the reduction in traffic generation due to internal capture and pass-by trips.

	Build-out Total
Daily Gross Trip Generation:	16,865
(-)Mixed-use reductions (internal capture)	-2,452
(-)Pass-by trips	-136
(-)Alternative modes	-2,298
Net Trips:	11,979

11.3 Relationship Between Location of Proposed DRI and Regional Mobility

The proposed development is located along a major limited-access facility, SR 400, at the Haynes Bridge Road interchange.

11.4 Relationship Between Proposed DRI and Existing or Planned Transit Facilities

The proposed DRI is not within walking distance to any transit facilities or bus routes. The closest transit facility to the proposed development is the MARTA Mansell Center Park and Ride Lot, located off of Mansell Road, one exit south of Haynes Bridge Road on GA 400.

11.5 Transportation Management Area Designation

The proposed development is not located within an established TMA.

11.6 Offsite Trip Reduction and Trip Reduction Techniques

Mixed-use and pass-by trip reductions were taken according to the *ITE Trip Generation Handbook, 2004*. Approximately 14.54% of the gross daily trips will be internal and approximately 12.27% of the gross PM peak hour trips will be internal.

11.7 Balance of Land Uses – Jobs/Housing Balance

Please refer to the Area of Influence Analysis, located in Section 12.0 of the report.

11.8 Relationship Between Proposed DRI and Existing Development and Infrastructure

The No-Build improvements to the existing infrastructure listed in this report will be necessary to support traffic volumes in build-out year (2011).

12.0 AREA OF INFLUENCE

The proposed development, Georgia 400 Center, is expected to consist of 458 residential dwelling units, 446,400 SF of office space, a 150-room hotel, a 10,000 SF quality restaurant, 12,000 SF of high-turnover restaurant space, and 90,100 SF of retail space. Due to the nature of the development, it is classified as "predominantly employment" for the purposes of this AOI. The following section will describe the Area of Influence demographics, DRI average wage levels, expected AOI housing costs, and the opportunity for workers who are employed in the DRI to find housing within the AOI.

12.1 Criteria

As part of the non-expedited review process for a DRI, an Area of Influence Analysis must be performed to determine the impact of the proposed development on the balance of housing and jobs within the immediate area surrounding the development. For this proposed development classified as "predominantly employment," the non-expedited review criterion is as follows:

The proposed DRI:

(b) Is located in an Area of Influence where the proposed DRI is reasonably anticipated to contribute to the balancing of land uses within the Area of Influence such that twenty-five percent (25%) of the persons that are reasonably anticipated to be employed in the proposed DRI have the opportunity to live within the Area of Influence;

12.2 Study Area Determination and Characteristics

The Area of Influence is comprised of the area within six road-miles of the proposed development. To determine the AOI, *TransCAD* was used to measure six road miles from the nearest intersection to the project (Lakeview Parkway at Haynes Bridge Road). The population and housing statistics for the AOI were determined by taking the area outlined in *TransCAD*, creating a boundary in GIS format, and overlaying the boundary with a GIS layer containing census tract information. The Area of Influence (located within Fulton and Forsyth counties) can be seen in **Figure 10**.

The total population within the Area of Influence is 126,452, residing within 47,819 households (an average of 2.63 people per household). There are approximately 68,869 workers in the AOI for an average of 1.44 workers per household. The AOI area over the two counties totals 46,326 acres.

12.3 DRI Employment and Salary Figures

The DRI is expected to employ approximately 1,865 workers in the following land uses: General Office, Hotel, Restaurant, and Retail. The numbers of workers for the office, hotel, restaurant, and shopping center land uses are based on assumptions provided in the *Area of Influence (AOI) Guidebook for Non-Expedited Reviews, April 2003.* For the office land use, 1 employee per 300 SF yields 1,850 office employees. For the specialty retail land use, 1 employee per 560 SF results in 43 retail employees. Hotel land uses are expected to employ approximately 0.9 workers per hotel room. Sit-down restaurants are estimated to employ one employee per 300 square feet, while quality restaurants are expected to employ one employee per 450 square feet.

For the office land use, employees are assumed to work in the following occupations: management, technical, office and administrative support, computers, and business and financial operations. The specialty retail land use includes retail managers and retail salespersons. For the hotel land use, it is assumed that employment will be comprised of the following occupations: lodging managers, bellhops, housekeepers, desk clerks, and food preparers and servers.

Using the departmental and occupational guidelines provided by the client, along with the U.S. Department of Labor's *May 2005 Metropolitan Area Occupational Employment and Wage Estimates Atlanta-Sandy Springs-Marietta, GA*, salaries were approximated for each occupation. The following occupational codes were used for the above jobs:

- 11-9081 Lodging Managers
- 35-0000 Food Preparation and Serving Related Occupations
- 37-2012 Maids and Housekeeping Cleaners
- 39-6011 Baggage Porters and Bellhops
- 11-0000 Management Occupations
- 13-0000 Business and Financial Operations Occupations
- 15-0000 Computer Occupations
- 17-0000 Technical Occupations
- 41-1011 Managers of Retail Sales
- 41-2031 Retail Salespersons
- 43-0000 Office and Administrative Support Occupations

Household salary was calculated based on the computed workers per household ratio of 1.44 multiplied by the salary in each bracket. It is assumed then that each household has 1.44 workers who contribute to the monthly household salary. The affordable housing payment is calculated as 30% of the monthly household salary, as based on GRTA's *Area of Influence (AOI) Guidebook for Non-Expedited Reviews*. **Table 9** displays the department positions, the numbers of employees in each occupation, the monthly employee and household salaries, and the respective affordable housing payments.





Table 9 Employment, Salary, and Affordable Housing Payment by Occupation						
Land Use	Occupation	Employees	Monthly Employee Salary	Monthly Household Salary	Affordable Housing Payment	
	Management Occupations	298	\$7,690	\$11,074	\$3,322	
Conorol	Technical Occupations	372	\$5,020	\$7,229	\$2,169	
Office	Office and Administrative Support	149	\$2,541	\$3,659	\$1,098	
Onice	Computer Occupations	298	\$5,501	\$7,921	\$2,376	
	Business and Financial Operations	372	\$5,049	\$7,271	\$2,181	
	Lodging Managers	27	\$5,446	\$7,842	\$2,353	
	Baggage Porters and Bellhops	7	\$1,539	\$2,216	\$665	
Hotel	Maids and Housekeeping Cleaners	34	\$1,419	\$2,044	\$613	
TIOLEI	Hotel, Motel, and Resort Desk Clerks	34	\$1,445	\$2,081	\$624	
	Maintenance and Repair, General	7	\$2,781	\$4,004	\$1,201	
	Food Preparation and Serving	27	\$1,403	\$2,021	\$606	
Specialty	Managers of Retail Sales	36	\$2,937	\$4,229	\$1,269	
Retail	Retail Salespersons	144	\$1,932	\$2,782	\$834	
Postaurant	Restaurant Manager	12	\$3,750	\$5,400	\$1,620	
Restaurant	Restaurant Staff	50	\$2,100	\$3,024	\$907	
	Total Employees	1,865	-	-	-	

Given the above calculated salaries, each household is eligible for a specific housing tier within the Area of Influence. Table 10 below displays the number of households that fall into each tier based on the household salary.

Table 10 Number of Households in the DRI by Range of Monthly Income				
Range of Monthly Income for Housing	Number of Households			
\$499 or less	0			
\$500 to \$599	0			
\$600 to \$699	101			
\$700 to \$799	0			
\$800 to \$899	144			
\$900 to \$999	50			
\$1,000 to \$1,249	156			
\$1,250 to \$1,499	36			
\$1,500 to \$1,999	12			
\$2,000 or more	1,366			
Total	1,865			

12.4 AOI Occupied Housing Figures

An analysis of existing occupied housing was conducted based on 2000 Census data for owner- and renteroccupied housing. A GIS analysis identified approximately 29,000 owner-occupied units and 15,000 renteroccupied units in the AOI. **Table 11** below displays the housing units in comparable price tiers as are shown in **Table 12**. Owner-occupied housing includes housing with and without a mortgage. Renter-occupied housing includes all rental units with the exception of those with no cash rent.

Table 11 Selected Monthly Costs for All Occupied Housing Units in the AOI						
Monthly Dollar Range	Owner-Occupied Housing Units in the AOI	Renter-Occupied Housing Units in the AOI	Total Occupied Housing Units in the AOI			
\$499 or less	0	907	907			
\$500 to \$599	760	611	1,371			
\$600 to \$699	752	2,882	3,634			
\$700 to \$799	989	4,153	5,142			
\$800 to \$899	1,368	3,617	4,985			
\$900 to \$999	2,399	1,437	3,836			
\$1,000 to \$1,249	4,215	945	5,160			
\$1,250 to \$1,499	3,757	358	4,115			
\$1,500 to \$1,999	5,832	190	6,022			
\$2,000 or more	8,879	397	9,276			
Total	28,951	15,497	44,448			

Using the households in the DRI per price tier information in **Table 10** and the renter / owner distribution of occupied housing in the AOI in **Table 11** above, a comparison was done to analyze the available housing by price range within the AOI against the number of households per price tier expected within the proposed DRI. This comparison is shown below in **Table 12**.

Table 12 Comparison of Workers' Monthly Household Incomes in the DRI and Monthly Costs of Housing Units in the AOI						
Monthly Dollar Range	Total Occupied Housing Units in the AOI	Number of DRI Households with One or More Workers Working in the DRI	Difference in Number of Housing Units in AOI and Number of Households with Workers in DRI			
\$499 or less	907	0	907			
\$500 to \$599	1,371	0	1,371			
\$600 to \$699	3,634	101	3,533			
\$700 to \$799	5,142	0	5,142			
\$800 to \$899	4,985	144	4,841			
\$900 to \$999	3,836	50	3,786			
\$1,000 to \$1,249	5,160	156	5,004			
\$1,250 to \$1,499	4,115	36	4,079			
\$1,500 to \$1,999	6,022	12	6,010			
\$2,000 or more	9,276	1,366	7,910			
Total	44,448	1,865	42,583			

As can be seen from Table 12, adequate housing opportunities exist for all wage-earning levels in the DRI for both owner and renter properties. Additionally, because the salaries of the employees are concentrated at the upper limits of the price tiers, considerable extra housing is available in lower price tiers if a household desires to choose a more conservative price range. Given this information, over 25% of the employees of the DRI have an opportunity to reside within the Area of Influence.

13.0 ARC'S AIR QUALITY BENCHMARK

The proposed development is expected to consist of approximately 458 dwelling units, a 150-room hotel, 446,400 SF of office, 90,100 SF of retail, 10,000 SF of quality restaurant space, and 12,000 SF of sit-down restaurant space. Assuming each residence is the ARC-accepted average of 1,800 SF, residential is the dominant use and the dwelling units per acre ratio is approximately 10 units / acre. Based on this density, the development is projected to meet a density target for a 4% reduction.

The mixed-use proposed development contains more than 10% of floor area for office space. Thus, the proposed site may receive a 4% VMT reduction.

The proposed development will provide connections between the residential and non-residential uses within the site. Thus, the proposed site may receive a 4% VMT reduction.

The proposed development meets the ARC criteria for a total 12% VMT reduction. These reductions are displayed below in **Table 13**.

Table 13 ARC VMT Reductions	
Mixed-Use Projects where Residential is the dominant use	
Between 10 and 15 units per acre (10)	-4%
Residential dominant use with more than 10% office floor area	-4%
Bike/ped networks in developments that meet one density 'target'	-4%
Total Reductions	13%