Appendices

Appendix A: Traffic Technical Report

Buford Highway Transportation Study

Technical Traffic Memorandum

Executive Summary

In 2009, the City of Suwanee completed an update of the *Downtown Suwanee Master Plan* as part of the Atlanta Regional Commission (ARC) Livable Centers Initiative (LCI) program. As a follow up to the *Downtown Suwanee Master Plan*, the City of Suwanee is now undertaking a detailed planning and traffic engineering study for Buford Highway (US 23/SR 13) from McGinnis Ferry Road to George Pierce Park. The purpose of the study is to identify what types of multimodal improvements are needed long-term to meet community and mobility needs. As part of the traffic engineering components of this study, a Highway Capacity Manual (HCM) based analysis using Synchro 7 software of existing and future conditions was conducted to determine the potential impacts to traffic during weekday AM and PM peak hours of implementing the development recommendations of the *Downtown Suwanee Master Plan.*

Four basic scenarios were considered. The results indicated in each scenario are provided below:

2009 Existing Conditions - Analysis of traffic conditions observed in the year 2009 - The analysis indicates varied LOS conditions in the study area. The signalized intersections along the Buford Highway corridor operate adequately with the exception of Level of Service (LOS) E observed during the PM peak hour. Field observations generally agree with these analysis results, with the exception that train crossings during the PM peak hour have been observed to significantly affect the nearby intersection of Buford Highway and Lawrenceville-Suwanee Road/Suwanee Dam Road. Many of the unsignalized intersections appear to operate adequately although a few intersections stand out due to observations of LOS E and F, much of which could be due to limitations in the analysis capabilities. Field observations did not indicate that congestion predicted by Synchro at the intersections of Satellite Boulevard & Martin Farm Road, Lawrenceville-Suwanee Road & Suwanee Avenue, Buford Highway & Russell Street, and McGinnis Ferry Road & Scales Road. However, field observations do indicate the congestion predicted by Synchro at the intersection of Suwanee Dam Road & Main Street/Brogdon Road.

2010 No Build Conditions - Analysis of projected traffic conditions for the year 2010 with the assumption that no changes in development within the Downtown Suwanee study area will take place - Conditions are predicted to be similar to the 2009 Existing Conditions.

2030 No Build Conditions - Analysis of projected traffic conditions for the year 2030 with the assumption that no changes in development within the Downtown Suwanee study area will take place. In effect, this scenario assumes no additional development in Downtown Suwanee through the year 2030 - Despite the growth to the year 2030, the results indicate only minor degradation in LOS from the 2010 No Build Condition scenario. In particular, the three Buford Highway signalized intersections still operate similar to the conditions observed in 2009.

2030 Build Conditions - Analysis of projected traffic conditions for the year 2030 with the assumption that the development recommendations of the *Downtown Suwanee Master Plan* will be implemented - The results indicate notable degradation in LOS when compared to the 2030 No Build Condition scenario. In particular, LOS conditions at both Buford Highway & McGinnis Ferry Road and Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road are predicted to degrade into LOS E or F. Many of the unsignalized intersections also indicate significant degradation in LOS – some of which may be due to the limitation in unsignalized intersection analysis described earlier. However, the projected growth in development in this scenario would likely necessitate improvements to several of these unsignalized intersections to maintain acceptable LOS. A second phase of this project will use this analysis to address such potential transportation improvements.

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Buford Highway Transportation Study

Technical Traffic Memorandum

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Buford Highway Transportation Study

Technical Traffic Memorandum

Section I - Introduction

In 2009, the City of Suwanee completed an update of the *Downtown Suwanee Master Plan* as part of the Atlanta Regional Commission (ARC) Livable Centers Initiative (LCI) program. As a follow up to the *Downtown Suwanee Master Plan*, the City of Suwanee is now undertaking a detailed planning and traffic engineering study for Buford Highway (US 23/SR 13) from McGinnis Ferry Road to George Pierce Park. The purpose of the study is to identify what types of multimodal improvements are needed long-term to meet community and mobility needs. As part of the traffic engineering components of this study, a Highway Capacity Manual (HCM)-based analysis using Synchro 7 software of existing and future conditions was conducted to determine the potential impacts to traffic during weekday AM and PM peak hours of implementing the development recommendations of the *Downtown Suwanee Master Plan* at the following ten intersections:

- Buford Highway & McGinnis Ferry Road
- McGinnis Ferry Road & Scales Road
- Buford Highway & George Pierce Park
- Russell Street & Main Street
- Suwanee Dam Road & Main Street/Brogdon Road
- Lawrenceville-Suwanee Road & Suwanee Avenue
- Satellite Boulevard & Martin Farm Road
- Buford Highway & Russell Street
- Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road
- Buford Highway & Town Center Avenue

This report is organized in six sections which document four basic scenarios that were considered:

- **Introduction**
- **2009 Existing Conditions**: Analysis of traffic conditions observed in the year 2009
- **2010 No Build Conditions**: Analysis of projected traffic conditions for the year 2010 with the assumption that no changes in development within the Downtown Suwanee study area will take place
- **2030 No Build Conditions**: Analysis of projected traffic conditions for the year 2030 with the assumption that no changes in development within the Downtown Suwanee study area will take place. In effect, this scenario assumes no additional development in Downtown Suwanee through the year 2030.
- **2030 Build Conditions**: Analysis of projected traffic conditions for the year 2030 with the assumption that the development recommendations of the *Downtown Suwanee Master Plan* will be implemented.
- **Summary and Conclusions**

For this study, Synchro 7.0, which utilizes Highway Capacity Manual (HCM) methodologies, was used to evaluate intersections within the study area. The sections that follow summarize HCM methodologies for both unsignalized and signalized intersections.

For unsignalized intersections, Level of Service (LOS) is defined for the controlled movement by average control delay per vehicle which includes initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. Several factors affect the controlled delay for unsignalized intersections, such as availability and distribution of gaps in the conflicting traffic stream, critical gaps, and follow-up time for a vehicle in the queue. The following table presents LOS criteria for signalized intersections as they are defined by average control delay.

Unsignalized Level of Service	Unsignalized Average Control Delay (sec/veh)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Source: 2000 Highway Capacity Manual

For signalized intersections, LOS for a signalized intersection is defined in terms of average control delay per vehicle, which is composed of initial deceleration delay, queue move-up time, stopped delay, and final acceleration delay. The following table presents LOS criteria for signalized intersections as they are defined by average control delay.

Signalized Level of Service	Signalized Average Control Delay (sec/veh)
A	≤ 10.0
B	> 10.0 and ≤20.0
C	> 20.0 and ≤35.0
D	> 35.0 and ≤55.0
E	> 55.0 and ≤80.0
F	> 80.0

Source: 2000 Highway Capacity Manual

The first component of the study included a data collection effort that included traffic counts, field observations, and a crash analysis. Following the data collection, an evaluation with Synchro 7.0 was conducted using the existing turning movement volumes and existing lane geometry.

Traffic Counts

A traffic count program was developed across the study area at the ten study area intersections and along Buford Highway. At the study area intersections, turning movement counts were conducted of all vehicles, pedestrians, and bicyclists during the AM peak period (7AM – 9 AM) and PM peak period (4 PM – 6 PM) in October 2009 on one of the follow dates: October 20, October 26, or October 28. This information was used to determine the peak hour of traffic and the following factors which were used for analysis purposes:

- Peak Hour Traffic Volumes
- Peak Hour Pedestrian/Bicycle Movements
- Peak Hour Factor (PHF): Factor used for analysis purposes which measures the fluctuation in traffic demand during the peak hour by calculating the peak hour volume divided by the peak 15-minute rate of traffic flow
- Truck Percentage: Percentage of trucks at each turning movement location during the peak hour

In addition, a speed count was conducted on Buford Highway between Russell Street and Lawrenceville-Suwanee Road/Suwanee Dam Road. This count volume was used for the following purposes:

- Provide a 24 hour count of traffic volume on Buford Highway (12,400 vehicles)
- K factor - a factor comparing the peak hour volume to daily traffic volume (9.17 percent)
- D factor - a factor comparing the peak direction of traffic volume to the non-peak direction of traffic volume in the peak hour (58.4 percent)
- Provide the 85th percentile of travel speeds observed (49 miles per hour)

The raw traffic counts and traffic volumes are presented in **Appendix A**.

Field Observations

Field observations were conducted during AM and PM peak periods during several days throughout the months of October and November 2009. These observations were made to inventory lane configurations, posted speeds, and other characteristics of the transportation system as well as observe general conditions. These observations were also supplemented by requested signal timing data from the Gwinnett County Department of Transportation. The following observations were made:

- Trains crossing at Suwanee Dam Road during the PM peak period sporadically contribute to significant congestion at the intersection of Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road including traffic queues on Suwanee Dam Road eastbound, Lawrenceville-Suwanee Road westbound, and Buford Highway northbound. The upcoming pre-emption at this intersection with the rail crossing will likely address some of the safety issues caused by this congestion (including eastbound queues backing onto the railroad tracks) but will not likely address the congestion.
- The aforementioned congestion seems also to be exacerbated by heavy vehicle movements from Suwanee Dam eastbound making a left onto Buford Highway. The storage length for the eastbound left turn at the intersection of Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road is too short to handle the demand in traffic which then spills out into the through lanes on Suwanee Dam Road. Observations indicate that in the PM peak period many of these vehicles are destined to George Pierce Park presumably for early evening baseball and football leagues.
- This congestion also contributes to potential safety issues at the intersection of Suwanee Dam Road and Main Street/Brogdon Road. Vehicles were observed making a left turn from Suwanee Dam Road westbound onto Main Street southbound despite the lack of a dedicated left turn lane. On some occasions, this resulted in westbound vehicles backing up onto the railroad crossing and/or situations where a rear-end vehicle collision was only narrowly avoided. When eastbound queues on Suwanee Dam Road extended through this intersection, it created spillback congestion on the northbound Main Street and southbound Brogdon Road approaches. In particular, vehicles making a southbound left from Brogdon Road onto eastbound Suwanee Dam Road were observed stacking inside the median of the intersection often blocking the aforementioned Suwanee Dam westbound onto Main Street southbound vehicles from entering the median which in turn resulted in westbound vehicles backing up onto the railroad crossing.
- The intersection of the Buford Highway and George Pierce Park operated well with the exception of whenever games when beginning or ending at the park. When entering the park, many vehicles entering from southbound Buford Highway were observed to utilize the striped median to turn due to the lack of a dedicated southbound left turn lane. When games were ending, a significant queue was observed for vehicles attempting to exit the park. This heavy demand of vehicles (many turning westbound left onto Buford Highway) was also observed on Buford Highway approaching Lawrenceville-Suwanee Dam Road on such instances.
- The newly installed HAWK signal located immediately north of Town Center Avenue on Buford Highway was observed to be utilized on several occasions. However, on many of these occasions, observations suggested that drivers along Buford Highway were unsure of how to travel relative to the different phases of the HAWK signal. Likewise, westbound traffic on Town Center Avenue making a right turn onto northbound Buford Highway is channelized directly into the pedestrian crossing path for the HAWK signal with a YIELD

control. Vehicles making this movement cannot see the HAWK signal which could create an unsafe condition for a pedestrian or bicyclist utilizing the HAWK signal and pedestrian crossing path.

- The intersection of Buford Highway and McGinnis Ferry was observed to have minor queues approaching southbound on Buford Highway in the AM peak period and sporadically major queues approaching northbound on Buford Highway in the PM peak period.
- All other intersections were observed to operate safely and efficiently.

Crash Analysis

A crash analysis of the ten intersections was also conducted which is summarized in Table 1. Crash diagrams, which are provided in Appendix B, were reviewed to determine any patterns in the crashes that could be mitigated by improvements. However, no overall patterns were found that could be mitigated.

Table 1
Crash Incidents (2003-2008)

Intersection	Crash Type						Other Crash Statistics			
	Angle	Head On	Rear End	Sideswipe (same direction)	Sideswipe (opposite direction)	Not a collision with a moving vehicle	Total # of Crashes	Injuries	Fatalities	# of Pedestrians
Buford Highway & McGinnis Ferry Road	20	0	80	10	0	7	117	18	0	0
McGinnis Ferry Road & Scales Road	3	0	1	1	0	0	5	2	0	0
Buford Highway & George Pierce Park	4	0	9	0	0	1	14	5	0	0
Suwanee Dam Road & Main Street/Brogdon Road	20	0	31	3	2	0	56	8	0	0
Lawrenceville-Suwanee Road & Suwanee Avenue	0	1	6	3	0	4	14	3	0	0
Satellite Boulevard & Martin Farm Road	5	0	1	1	0	3	10	1	0	0
Buford Highway & Russell Street	2	0	2	0	0	0	4	2	0	0
Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road	7	0	3	1	0	3	14	3	0	0
Buford Highway & Town Center Avenue	0	0	3	0	1	0	4	0	0	0
Total Number of Crashes	61	1	136	19	3	18	238	42	0	0

2009 Traffic Operations

An evaluation with Synchro 7.0 was conducted using the existing turning movement volumes, pedestrian data, signal timing, Peak Hour Factor, truck percentages, and existing lane geometry. A summary of the results of the analysis are presented in **Table 2** with detailed Synchro 7.0 analysis reports provided in the **Appendix C**.

Table 2
2009 Level of Service

Intersection	2009	
	AM	PM
Buford Highway & McGinnis Ferry Road	D	E
McGinnis Ferry Road & Scales Road (unsignalized)		
Northbound Scales Road	D	F
Southbound Scales Road	C	F
Buford Highway & George Pierce Park	A	A
Russell Street & Main Street (unsignalized)		
Northbound Main Street	A	A
Southbound Main Street	B	B
Suwanee Dam Road & Main Street/Brogdon Road (unsignalized)		
Northbound Main Street	F	F
Southbound Brogdon Road	E	D
Lawrenceville-Suwanee Road & Suwanee Avenue (unsignalized)		
Eastbound Suwanee Avenue	F	F
Westbound Suwanee Avenue	F	F
Satellite Boulevard & Martin Farm Road (unsignalized)		
Northbound Martin Farm Road	F	F
Southbound Martin Farm Road	F	F
Buford Highway and Russell Street (unsignalized)		
Eastbound Russell Street	D	F
Westbound Russell Street	C	E
Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road	C	D
Buford Highway & Town Center Avenue (unsignalized)		
Eastbound Town Center Avenue	C	D
Westbound Town Center Avenue	C	D

The analysis indicates varied LOS conditions in the study area. The signalized intersections along the Buford Highway corridor operate adequately with the exception of Level of Service (LOS) E observed during the PM peak hour. Field observations generally agree with these analysis results, with the exception that train crossings during the PM peak hour have been observed to significantly affect the nearby intersection of Buford Highway and Lawrenceville-Suwanee Road/Suwanee Dam Road.

Many of the unsignalized intersections appear to operate adequately although a few intersections stand out due to observations of LOS E and F. However, a limitation of the Synchro analysis at unsignalized

intersections is that LOS results are limited only to the stop controlled approaches. LOS E and F results can be typical for intersections with this configuration as the analysis cannot effectively address likely gaps in traffic created by upstream and downstream traffic signals. As the gaps in Synchro are generated at a constant flow rate, Synchro typically interprets the stop controlled movements to not have adequate gapping and thus calculates a high delay time which corresponds to a low LOS. Field observations did not indicate that congestion predicted by Synchro at the intersections of Satellite Boulevard & Martin Farm Road, Lawrenceville-Suwanee Road & Suwanee Avenue, Buford Highway & Russell Street, and McGinnis Ferry Road & Scales Road. However, field observations do indicate the congestion predicted by Synchro at the intersection of Suwanee Dam Road & Main Street/Brogdon Road.

Projected conditions for the year 2010 No Build conditions were analyzed in two steps: (1) a traffic forecast for the year 2010 assuming no additional development in the Suwanee area and (2) a Synchro analysis of the intersection operations.

2010 No Build Traffic Forecast

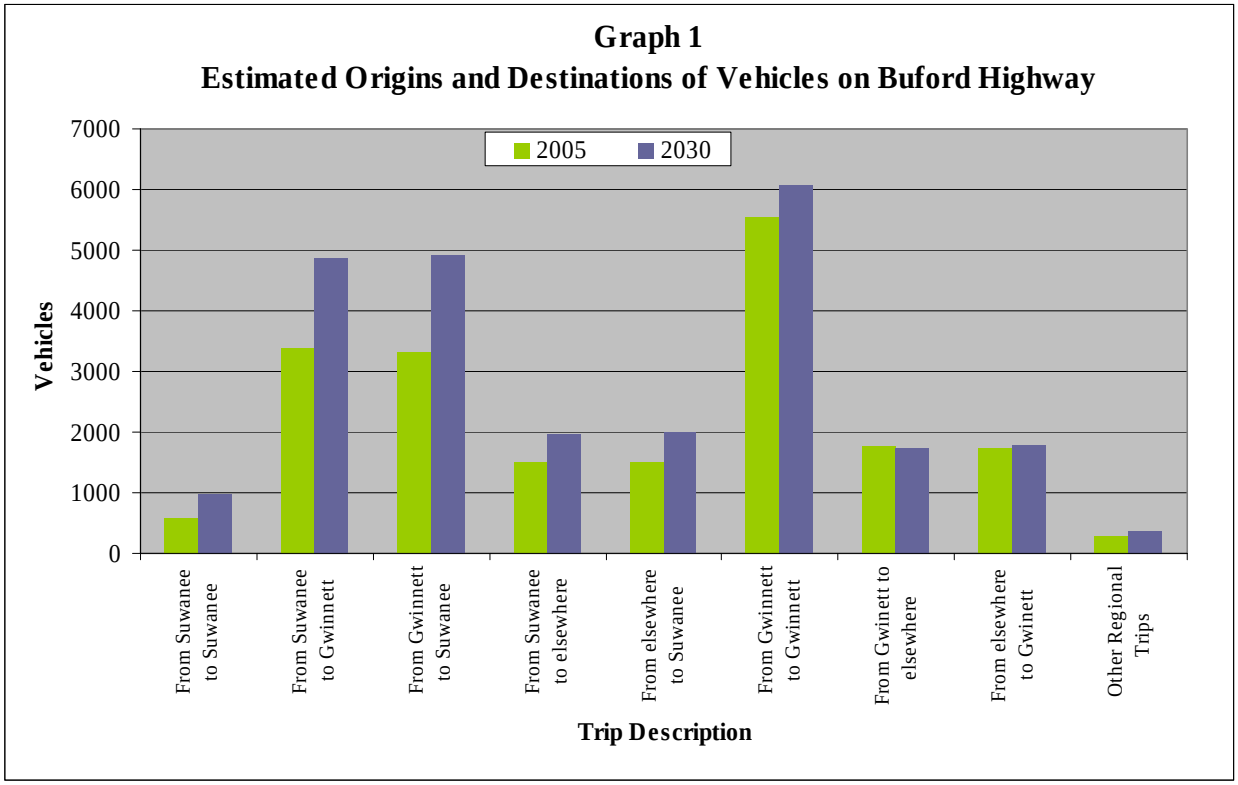
A traffic forecast was prepared for the ten study area intersections. Initial traffic forecasting efforts attempted to utilize Georgia Department of Transportation (GDOT) historical traffic counts in order to develop an appropriate annual growth rate. However, fluctuations in the historical traffic count volumes did not yield an appropriate R^2 value for any growth rate trends produced. Therefore, a traffic forecasting approach utilizing the Atlanta Regional Commission (ARC) travel demand model was developed. Among the additional advantages of utilizing the travel demand model is that it incorporates future planned transportation projects in the region such as the proposed McGinnis Ferry interchange with I-85. As a result, the model has the ability to incorporate the effect such projects have on traffic. As this scenario is intended to represent likely conditions in the year 2010 without any additional development in Suwanee, it was necessary to use the model's capabilities to determine which vehicles in the study area are local to the Suwanee area versus those vehicles that are regional in nature.

This was conducted by performing what is called a select link analysis along the Buford Highway corridor in the models for the years 2005 and 2030 to determine the origins and destinations of vehicles on the corridor. **Graph 1** and **Table 3** indicate the results of this analysis showing that more than half of the vehicles on Buford Highway are local to Suwanee. More importantly, the results indicate that the majority of predicted growth through the year 2030 along Buford Highway in Suwanee will be generated not from regional trips but rather from local Suwanee trips, with only an addition of 657 vehicles onto the corridor being regionally generated. This value was used to estimate a growth rate for regional trips in the study area of 0.28 percent. This 0.28 percent annual growth rate was applied to 2009 turning movement count volumes at locations where regional or through traffic would be located (that is, turning movements that would not be exclusively used by local Suwanee traffic) in order to project traffic volumes for the 2010 No Build scenario, which are provided in **Appendix A**.

Table 3
Estimated Origins and Destinations of Vehicles on Buford Highway (2005-2030)

Trip Patterns	2005		2030	
	Vehicles	%	Vehicles	%
From Suwanee to Suwanee	574		985	
From Suwanee to Gwinnett	3,385		4,860	
From Gwinnett to Suwanee	3,326		4,921	
From Suwanee to elsewhere	1,509		1,969	
From elsewhere to Suwanee	1,501		2,012	
Total Suwanee based Trips	**10,296**	**52.4%**	**14,747**	**59.6%**
From Gwinnett to Gwinnett	5,541		6,088	
From Gwinnett to elsewhere	1,764		1,742	
From elsewhere to Gwinnett	1,745		1,791	
Total non Suwanee Gwinnett based Trips	**9,050**	**46.1%**	**9,620**	**38.9%**
Other Regional Trips	**283**	**1.4%**	**369**	**1.5%**
TOTAL	**19,628**		**24,737**	

Source: ARC Model


Graph 1
Estimated Origins and Destinations of Vehicles on Buford Highway
2005
2030
Vehicles
7000
6000
5000
4000
3000
2000
1000
0
From Suwanee to Suwanee
From Suwanee to Gwinnett
From Gwinnett to Suwanee
From Suwanee to elsewhere
From elsewhere to Suwanee
From Gwinnett to Gwinnett
From Gwinett to elsewhere
From elsewhere to Gwinett
Other Regional Trips
Trip Description

2010 No Build Traffic Operations

An evaluation with Synchro 7.0 was conducted using the 2010 No Build projected turning movement volumes, pedestrian data, signal timing, Peak Hour Factor, truck percentages, and existing lane geometry. A summary of the results of the analysis are presented in **Table 4** with detailed Synchro 7.0 analysis reports provided in the **Appendix C**. As the analysis shows, conditions are predicted to be similar to the 2009 existing Conditions.

Table 4
2010 No Build Level of Service

Intersection	2010 No Build	
	AM	PM
Buford Highway & McGinnis Ferry Road	D	E
McGinnis Ferry Road & Scales Road (unsignalized)		
Northbound Scales Road	D	F
Southbound Scales Road	C	F
Buford Highway & George Pierce Park	A	A
Russell Street & Main Street (unsignalized)		
Northbound Main Street	A	A
Southbound Main Street	B	B
Suwanee Dam Road & Main Street/Brogdon Road (unsignalized)		
Northbound Main Street	F	F
Southbound Brogdon Road	E	D
Lawrenceville-Suwanee Road & Suwanee Avenue (unsignalized)		
Eastbound Suwanee Avenue	F	F
Westbound Suwanee Avenue	F	F
Satellite Boulevard & Martin Farm Road (unsignalized)		
Northbound Martin Farm Road	F	F
Southbound Martin Farm Road	F	F
Buford Highway and Russell Street (unsignalized)		
Eastbound Russell Street	D	F
Westbound Russell Street	C	E
Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road	C	D
Buford Highway & Town Center Avenue (unsignalized)		
Eastbound Town Center Avenue	C	D
Westbound Town Center Avenue	C	D

Projected conditions for the year 2030 No Build conditions were analyzed in two steps: (1) a traffic forecast for the year 2030 assuming no additional development in the Suwanee area and (2) a Synchro analysis of the intersection operations.

2030 No Build Traffic Forecast

Utilizing the 0.28 percent annual growth rate and process documented in the previous section, a 2030 No-Build traffic forecast was prepared. The volumes are provided in **Appendix A**.

2030 No Build Traffic Operations

An evaluation with Synchro 7.0 was conducted using the 2030 No Build projected turning movement volumes, pedestrian data, signal timing, Peak Hour Factor, truck percentages, and existing lane geometry. A summary of the results of the analysis are presented in **Table 5** with detailed Synchro 7.0 analysis reports provided in the **Appendix C**.

Table 5
2030 No Build Level of Service

Intersection	2030 No Build	
	AM	PM
Buford Highway & McGinnis Ferry Road	C	E
McGinnis Ferry Road & Scales Road (unsignalized)		
Northbound Scales Road	D	F
Southbound Scales Road	D	F
Buford Highway & George Pierce Park	A	A
Russell Street & Main Street (unsignalized)		
Northbound Main Street	A	A
Southbound Main Street	B	B
Suwanee Dam Road & Main Street/Brogdon Road (unsignalized)		
Northbound Main Street	F	F
Southbound Brogdon Road	E	F
Lawrenceville-Suwanee Road & Suwanee Avenue (unsignalized)		
Eastbound Suwanee Avenue	F	F
Westbound Suwanee Avenue	F	F
Satellite Boulevard & Martin Farm Road (unsignalized)		
Northbound Martin Farm Road	F	F
Southbound Martin Farm Road	F	F
Buford Highway and Russell Street (unsignalized)		
Eastbound Russell Street	D	F
Westbound Russell Street	C	E
Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road	C	D
Buford Highway & Town Center Avenue (unsignalized)		
Eastbound Town Center Avenue	C	D
Westbound Town Center Avenue	D	D

This scenario assumes no additional growth in the City of Suwanee through the year 2030 meaning that all traffic growth predicted is generated from regional through trips. Therefore, despite the growth to the year 2030, the results indicate only minor degradation in LOS from the 2010 No Build Condition scenario. In particular, the three Buford Highway signalized intersections still operate similar to the conditions observed in the 2010 No Build Conditions.

Projected conditions for the year 2030 Build conditions were analyzed in two steps: (1) a traffic forecast for the year 2030 incorporating additional development in the Suwanee area as recommended by the *Downtown Suwanee Master Plan* and (2) a Synchro analysis of the intersection operations.

2030 Build Traffic Forecast

As this scenario assumes significant growth in local City of Suwanee development as recommended by the *Downtown Suwanee Master Plan*, the traffic forecast was developed in a three step process:

- Determining the total number of new vehicular trips associated with additional local development
- Determining the distribution of these trips through the City of Suwanee transportation network
- Adding the new vehicular trips to the projected year 2030 regional vehicular trips documented in the previous section

New Vehicular Trips

To determine the total number of new vehicular trips associated with the additional local development, it was necessary to revise the ARC model by comparing the recommendations of the *Downtown Suwanee Master Plan* with projections already included in the ARC travel demand model for three major socioeconomic data factors: population, households, and employment. Traffic Analysis Zones (TAZ - geographic units in the travel demand model which contain socioeconomic data and are used to estimate trip generation, distribution, mode choice, and assignment) 928, 929, and 930 of the ARC model were used to represent the Downtown Suwanee study area. This process included interpolating the values for these factors for interim years to compare the specific values in the years 2005 and 2030, which is included in **Appendix A**. As shown in Table 6, the differences between the Downtown Suwanee Master Plan and the ARC model between the year 2005 and 2030 were compared, with the difference added to the ARC model. The difference for the population and employment attributes were then distributed to the three TAZs representing the Downtown Suwanee Master Plan. For the employment attribute, the ARC model already incorporates significant growth that exceeds the recommendations of the Downtown Suwanee Master Plan. Therefore, this attribute was not changed. The revised TAZ socioeconomic attributes were incorporated in the ARC travel demand model, which was then run for the year 2030.

Table 6
Revisions to ARC Model

Attribute	Population	Households	Employment
2005 *Downtown Suwanee Master Plan*	1,030	355	637
2030 *Downtown Suwanee Master Plan*	6,614	2,489	2,513
2005 ARC Model (TAZ 928,929,930)	3,685	1,512	6,061
2030 ARC Model (TAZ 928,929,930)	6,460	2,835	9,287
Downtown Suwanee Master Plan 2005 to 2030 Difference	5,584	2,134	1,876
ARC Model 2005 to 2030 Difference	2,775	1,323	3,226
Difference between *Suwanee Master Plan* and ARC Model 2005 to 2030 Differences (add to ARC Model)	2,809	810	-1,350
Distribution of socioeconomic attributes added to TAZs			
928 (30% of difference)	843	243	0
929 (30% of difference)	983	284	0
930 (35% of difference)	983	284	0

The traffic generated by each of the three TAZs in the modified 2030 ARC model were compared to the traffic generated by the three TAZs in the 2005 ARC model using the same select link process described earlier to compare local versus regional trips on Buford Highway. Therefore, the differences between the 2005 and 2030 traffic generated in each TAZ represents the additional daily traffic that will be generated through the year 2030 by the development recommendations of the Downtown Suwanee Master Plan. To estimate the additional peak hour traffic generated by this development, two factors derived from the speed count on Buford Highway were applied:

- Peak Hour Volume to Daily Volume Ratio
- Peak Direction to Non-Peak Direction Volume Ratio

This process is shown in **Table 7**, and indicates that two factors were used to estimate the total number of vehicular peak hour trips entering or exiting the Suwanee area.

Table 7
New Suwanee Peak Hour Vehicular Trips

Attribute	TAZ 928	TAZ 929	TAZ 930
2005 Daily ARC Model Vehicular Trips	20,978	8,472	34,522
2030 Daily ARC Model Vehicular Trips	36,928	11,822	54,470
Difference in 2005 to 2030 Daily ARC Model Vehicular Trips	15,950	3,350	19,948
K factor	9.17%	9.17%	9.17%
D factor	58.4%	58.4%	58.4%
New Peak Direction Peak Hour Trips	854	179	1,068
New Non Peak Direction Peak Hour Trips	609	128	761

Distribution of New Vehicular Trips

The new peak hour trips were then assigned throughout the study area using distribution patterns indicated by the ARC model. These distribution patterns were estimated for each TAZ using the same select link processes described earlier. The distribution patterns indicated by the model and the resulting turning movement assignments of new peak hour trips through the study area are provided in **Appendix A**.

Final 2030 Build Traffic Forecasts

The final 2030 Build traffic forecasts were then calculated by adding the turning movement assignments of the new peak hour trips in the Downtown Suwanee study area to the estimated increases in regional trips as indicated in the 2030 No Build traffic forecasts. The resulting traffic forecasts are provided in **Appendix A**.

2030 Build Traffic Operations

An evaluation with Synchro 7.0 was conducted using the 2030 Build projected turning movement volumes, pedestrian data, signal timing, Peak Hour Factor, truck percentages, and existing lane geometry. A summary of the results of the analysis are presented in **Table 8** with detailed Synchro 7.0 analysis reports provided in the **Appendix C**.

Table 8
2030 Build Level of Service

Intersection	2030 Build	
	AM	PM
Buford Highway & McGinnis Ferry Road	E	F
McGinnis Ferry Road & Scales Road (unsignalized)		
Northbound Scales Road	F	F
Southbound Scales Road	F	F
Buford Highway & George Pierce Park	A	A
Russell Street & Main Street (unsignalized)		
Northbound Main Street	D	C
Southbound Main Street	F	F
Suwanee Dam Road & Main Street/Brogdon Road (unsignalized)		
Northbound Main Street	F	F
Southbound Brogdon Road	F	F
Lawrenceville-Suwanee Road & Suwanee Avenue (unsignalized)		
Eastbound Suwanee Avenue	F	F
Westbound Suwanee Avenue	F	F
Satellite Boulevard & Martin Farm Road (unsignalized)		
Northbound Martin Farm Road	F	F
Southbound Martin Farm Road	F	F
Buford Highway and Russell Street (unsignalized)		
Eastbound Russell Street	F	F
Westbound Russell Street	F	F
Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road	D	E
Buford Highway & Town Center Avenue (unsignalized)		
Eastbound Town Center Avenue	F	F
Westbound Town Center Avenue	F	F

As this scenario assumes significant additional growth in the City of Suwanee as recommended in the *Downtown Suwanee Master Plan* through the year 2030 the results indicate notable degradation in LOS when compared to the 2030 No Build Condition scenario. In particular, LOS conditions at both Buford Highway & McGinnis Ferry Road and Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road are predicted to degrade into LOS E or F. Many of the unsignalized intersections also indicate significant degradation in LOS – some of which may be due to the limitation in unsignalized intersection analysis described earlier. However, the projected growth in development in this scenario would likely necessitate improvements to several of these unsignalized intersections to maintain acceptable LOS.

Buford Highway Transportation Study

Technical Traffic Memorandum

Section VI – Summary and Conclusions

In 2009, the City of Suwanee completed an update of the *Downtown Suwanee Master Plan* as part of the Atlanta Regional Commission (ARC) Livable Centers Initiative (LCI) program. As a follow up to the *Downtown Suwanee Master Plan*, the City of Suwanee is now undertaking a detailed planning and traffic engineering study for Buford Highway (SR 13) from McGinnis Ferry Road to George Pierce Park. The purpose of the study is to identify what types of multimodal improvements are needed long-term to meet community and mobility needs. As part of the traffic engineering components of this study, a Highway Capacity Manual (HCM) based analysis using Synchro 7 software of existing and future conditions was conducted to determine the potential impacts to traffic during weekday AM and PM peak hours of implementing the development recommendations of the *Downtown Suwanee Master Plan*.

This report documents four basic scenarios that were considered:

- **2009 Existing Conditions**: Analysis of traffic conditions observed in the year 2009
- **2010 No Build Conditions**: Analysis of projected traffic conditions for the year 2010 with the assumption that no changes in development within the Downtown Suwanee study area will take place
- **2030 No Build Conditions**: Analysis of projected traffic conditions for the year 2030 with the assumption that no changes in development within the Downtown Suwanee study area will take place. In effect, this scenario assumes no additional development in Downtown Suwanee through the year 2030.
- **2030 Build Conditions**: Analysis of projected traffic conditions for the year 2030 with the assumption that the development recommendations of the *Downtown Suwanee Master Plan* will be implemented.

All four of these scenarios assume no changes from existing conditions to the intersections studied in the analysis. **Tables 9** and **10** indicate the study area intersection Level of Service and average control delay (the average number of seconds in delay experienced by each vehicle at the intersection) respectively, followed by a summary of the findings from each scenario.

Table 9
Intersection Level of Service (2009 – 2030)

Intersection	2009		2010 No Build		2030 No Build		2030 Build	
	AM	PM	AM	PM	AM	PM	AM	PM
Buford Highway & McGinnis Ferry Road	D	E	D	E	D	E	E	F
McGinnis Ferry Road & Scales Road (unsignalized)								
Northbound Scales Road	D	F	D	F	D	F	F	F
Southbound Scales Road	C	F	C	F	D	F	F	F
Buford Highway & George Pierce Park	A	A	A	A	A	A	A	A
Russell Street & Main Street (unsignalized)								
Northbound Main Street	A	A	A	A	A	A	D	C
Southbound Main Street	B	B	B	B	B	B	F	F
Suwanee Dam Road & Main Street/Brogdon Road (unsignalized)								
Northbound Main Street	F	F	F	F	F	F	F	F
Southbound Brogdon Road	E	D	E	D	E	F	F	F
Lawrenceville-Suwanee Road & Suwanee Avenue (unsignalized)								
Eastbound Suwanee Avenue	F	F	F	F	F	F	F	F
Westbound Suwanee Avenue	F	F	F	F	F	F	F	F
Satellite Boulevard & Martin Farm Road (unsignalized)								
Northbound Martin Farm Road	F	F	F	F	F	F	F	F
Southbound Martin Farm Road	F	F	F	F	F	F	F	F
Buford Highway and Russell Street (unsignalized)								
Eastbound Russell Street	D	F	D	F	D	F	F	F
Westbound Russell Street	C	E	C	E	C	E	F	F
Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road	C	D	C	D	C	D	D	E
Buford Highway & Town Center Avenue (unsignalized)								
Eastbound Town Center Avenue	C	D	C	D	C	D	F	F
Westbound Town Center Avenue	C	D	C	D	D	D	F	F

Table 10
Intersection Average Seconds per Vehicle Control Delay (2009 – 2030)

Intersection	2009		2010 No Build		2030 No Build		2030 Build	
	AM	PM	AM	PM	AM	PM	AM	PM
Buford Highway & McGinnis Ferry Road	41.8	59.7	40.7	60.2	40.6	66.6	79.1	124.4
McGinnis Ferry Road & Scales Road (unsignalized)								
Northbound Scales Road	26.4	698.5	26.5	712.0	31.2	3506.1	212.9	Err
Southbound Scales Road	24.0	Err	24.2	Err	27.5	Err	55.3	Err
Buford Highway & George Pierce Park	5.1	5.6	5.0	5.6	3.0	6.5	4.7	8.9
Russell Street & Main Street (unsignalized)								
Northbound Main Street	9.1	9.4	9.1	9.4	9.1	9.4	34.1	17.9
Southbound Main Street	10.3	10.3	10.3	10.3	10.3	10.3	Err	376.6
Suwanee Dam Road & Main Street/Brogdon Road (unsignalized)								
Northbound Main Street	278.4	Err	290.1	Err	404.0	Err	Err	Err
Southbound Brogdon Road	36.4	33.3	37.2	34.0	43.7	73.0	123.9	Err
Lawrenceville-Suwanee Road & Suwanee Avenue (unsignalized)								
Eastbound Suwanee Avenue	74.8	156.9	75.8	160.1	100.9	232.8	Err	Err
Westbound Suwanee Avenue	82.7	293.2	83.6	298.1	104.1	409.8	Err	Err
Satellite Boulevard & Martin Farm Road (unsignalized)								
Northbound Martin Farm Road	Err	Err	Err	Err	Err	Err	Err	Err
Southbound Martin Farm Road	Err	Err	Err	Err	Err	Err	Err	Err
Buford Highway and Russell Street (unsignalized)								
Eastbound Russell Street	25.0	103.0	25.2	104.4	27.6	139.2	Err	Err
Westbound Russell Street	22.2	38.4	22.3	38.6	24.1	44.7	Err	Err
Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road	32.8	35.3	31.1	35.5	30.2	35.7	49.3	68.1
Buford Highway & Town Center Avenue (unsignalized)								
Eastbound Town Center Avenue	21.9	29.2	22.0	29.4	24.2	33.4	93.5	175.3
Westbound Town Center Avenue	22.2	26.4	22.4	26.6	25.4	31.0	276.1	592.0

* Err – Volume greatly exceeds capacity, methodology to calculated delay not available

2009 Existing Conditions

The analysis indicates varied LOS conditions in the study area. The signalized intersections along the Buford Highway corridor operate adequately with the exception of Level of Service (LOS) E observed during the PM peak hour. Field observations generally agree with these analysis results, with the exception that train crossings during the PM peak hour have been observed to significantly affect the nearby intersection of Buford Highway and Lawrenceville-Suwanee Road/Suwanee Dam Road.

Many of the unsignalized intersections appear to operate adequately although a few intersections stand out due to observations of LOS E and F. However, a limitation of the Synchro analysis at unsignalized intersections is that LOS results are limited only to the stop controlled approaches. LOS E and F results can be typical for intersections with this configuration as the analysis cannot effectively address likely

gaps in traffic created by upstream and downstream traffic signals. As the gaps in Synchro are generated at a constant flow rate, Synchro typically interprets the stop controlled movements to not have adequate gapping and thus calculates a high delay time which corresponds to a low LOS. Field observations did not indicate that congestion predicted by Synchro at the intersections of Satellite Boulevard & Martin Farm Road, Lawrenceville-Suwanee Road & Suwanee Avenue, Buford Highway & Russell Street, and McGinnis Ferry Road & Scales Road. However, field observations do indicate the congestion predicted by Synchro at the intersection of Suwanee Dam Road & Main Street/Brogdon Road.

2010 No Build Conditions

Conditions are predicted to be similar to the 2009 Existing Conditions.

2030 No Build Conditions

This scenario assumes no additional growth in the City of Suwanee through the year 2030 meaning that all traffic growth predicted is generated from regional through trips. Therefore, despite the growth to the year 2030, the results indicate only minor degradation in LOS from the 2010 No Build Condition scenario. In particular, the three Buford Highway signalized intersections still operate similar to the conditions observed in 2009.

2030 Build Conditions

As this scenario assumes significant additional growth in the City of Suwanee as recommended in the *Downtown Suwanee Master Plan* through the year 2030 the results indicate notable degradation in LOS when compared to the 2030 No Build Condition scenario. In particular, LOS conditions at both Buford Highway & McGinnis Ferry Road and Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road are predicted to degrade into LOS E or F. Many of the unsignalized intersections also indicate significant degradation in LOS – some of which may be due to the limitation in unsignalized intersection analysis described earlier. However, the projected growth in development in this scenario would likely necessitate improvements to several of these unsignalized intersections to maintain acceptable LOS.

Conclusions

A second phase of this project will use this analysis to address potential transportation improvements such as the ability of traffic signal control to improve intersection LOS at key intersections that will be adversely affected by additional development as recommended by the *Downtown Suwanee Master Plan* such as Buford Highway & Russell Street, Lawrenceville-Suwanee Road & Suwanee Avenue, and Satellite Boulevard & Martin Farm Road. Additionally, the 2030 Build analysis indicates LOS degradation at the two major signalized intersections along the Buford Highway corridor (at McGinnis Ferry Road and at Lawrenceville-Suwanee Road/Suwanee Dam Road). During this second phase of the study, a number of strategies will be investigated.

Appendix A

Raw Traffic Counts
2009 AM and PM Peak Hour Volumes
2010 and 2030 No Build AM and PM Peak Hour Forecasts
Revisions to ARC Model
TAZ 928,929, and 930 Distribution
2030 Build AM and PM Peak Hour Forecasts

All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
ph.404-374-1283

Site Code: 10
Station ID: 10
BUFORD HWY. SOUTH OF TOWNE CENTER AVE

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
10/20/09	0	0	0	0	0	1	1	2	0	1	0	0	0	0	5
00:15	0	0	0	0	0	0	2	3	4	0	0	0	0	0	9
00:30	0	0	0	0	0	0	3	1	1	0	0	0	0	0	5
00:45	0	0	0	0	0	1	0	1	0	0	0	0	0	0	2
	0	0	0	0	0	2	6	7	5	1	0	0	0	0	21
01:00	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
02:00	0	0	0	0	0	0	0	1	1	0	0	0	0	0	2
02:15	0	0	0	0	0	1	0	1	0	0	0	0	1	0	3
02:30	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1
02:45	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
	0	0	0	0	0	1	0	2	2	0	1	0	1	0	7
03:00	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:15	0	0	0	0	0	0	2	1	1	0	0	0	0	0	4
03:30	0	0	0	0	0	1	1	4	1	0	0	0	0	0	7
03:45	0	0	0	0	0	0	4	0	0	0	0	0	0	0	4
	0	0	0	0	1	1	7	5	2	0	0	0	0	0	16
04:00	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
04:15	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
04:30	0	0	0	0	0	0	1	0	1	1	0	0	0	0	3
04:45	0	0	0	0	0	1	1	0	2	0	1	0	0	0	5
	0	0	0	0	0	1	3	1	3	1	1	0	0	0	10
05:00	0	0	0	0	0	0	0	2	1	1	0	0	0	0	4
05:15	1	0	0	0	0	0	5	1	0	2	0	0	0	0	9
05:30	0	0	0	0	0	2	1	3	3	0	1	0	0	0	10
05:45	0	0	0	0	1	2	5	9	2	0	0	0	0	0	19
	1	0	0	0	1	4	11	15	6	3	1	0	0	0	42
06:00	0	0	0	0	0	3	3	5	1	3	0	0	0	0	15
06:15	1	0	0	0	1	2	9	9	4	0	0	0	0	0	26
06:30	1	0	0	0	1	5	13	16	5	0	0	1	0	0	42
06:45	1	0	0	0	2	7	12	19	8	1	0	0	0	0	50
	3	0	0	0	4	17	37	49	18	4	0	1	0	0	133
07:00	3	0	0	0	1	2	20	7	7	1	0	0	0	0	41
07:15	1	0	0	0	0	7	20	22	10	1	0	0	0	0	61
07:30	1	1	0	3	0	1	23	24	8	2	0	0	0	0	63
07:45	5	0	0	0	4	22	20	18	4	1	0	0	0	0	74
	10	1	0	3	5	32	83	71	29	5	0	0	0	0	239
08:00	3	0	0	0	3	23	42	18	2	4	0	1	0	0	96
08:15	3	0	0	0	3	8	23	20	9	1	0	0	0	0	67
08:30	5	1	0	1	0	8	26	19	7	1	1	0	0	0	69
08:45	2	0	0	0	1	16	27	21	6	2	0	0	0	0	75
	13	1	0	1	7	55	118	78	24	8	1	1	0	0	307
09:00	12	0	0	0	0	8	39	24	2	0	0	0	0	0	85
09:15	4	0	0	1	0	7	35	27	6	1	0	0	0	0	81
09:30	8	1	0	1	4	10	21	24	3	2	0	0	0	0	74
09:45	3	0	0	0	3	13	35	25	7	1	0	0	0	0	87
	27	1	0	2	7	38	130	100	18	4	0	0	0	0	327
10:00	5	0	0	2	2	8	30	26	13	0	0	0	0	0	86
10:15	2	0	0	0	4	19	29	16	4	0	0	0	0	0	74
10:30	3	0	0	0	1	12	27	16	15	2	2	0	0	0	78
10:45	4	2	0	0	0	13	23	24	7	0	0	0	0	0	73
	14	2	0	2	7	52	109	82	39	2	2	0	0	0	311
11:00	4	0	0	0	0	11	32	21	6	1	0	0	0	0	75
11:15	1	0	0	0	2	17	17	25	7	0	0	0	0	0	69
11:30	1	0	0	0	4	13	44	19	9	0	0	0	0	0	90
11:45	5	0	0	1	11	10	41	17	3	0	0	0	0	0	88
	11	0	0	1	17	51	134	82	25	1	0	0	0	0	322
Total	79	5	0	9	49	254	639	492	172	29	6	2	1	0	1737

All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
ph.404-374-1283

Site Code: 10
Station ID: 10
BUFORD HWY. SOUTH OF TOWNE CENTER AVE

NB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12 PM	6	2	0	0	0	18	39	27	5	1	0	0	0	0	98
12:15	3	1	0	0	1	15	36	26	6	0	0	0	0	0	88
12:30	5	3	0	0	3	10	32	25	9	1	0	0	0	0	88
12:45	6	1	0	0	1	10	22	28	7	0	0	0	0	0	75
	20	7	0	0	5	53	129	106	27	2	0	0	0	0	349
13:00	5	0	0	0	0	16	53	16	1	0	0	0	0	0	91
13:15	4	1	0	0	1	14	42	31	6	0	0	0	0	0	99
13:30	2	2	0	0	5	13	40	28	1	1	0	0	0	0	92
13:45	2	0	0	0	3	25	39	23	4	0	1	0	0	0	97
	13	3	0	0	9	68	174	98	12	1	1	0	0	0	379
14:00	1	0	0	1	1	10	37	26	4	1	1	0	0	0	82
14:15	2	1	0	1	3	13	51	27	5	0	0	0	0	0	103
14:30	2	3	2	1	9	14	44	24	6	1	0	0	0	0	106
14:45	0	1	0	0	0	4	53	40	7	1	0	0	0	0	106
	5	5	2	3	13	41	185	117	22	3	1	0	0	0	397
15:00	3	0	0	0	0	14	64	32	6	0	0	0	0	0	119
15:15	1	1	0	0	2	11	37	37	8	1	0	0	0	0	98
15:30	5	0	0	0	5	19	47	27	12	0	0	0	0	0	115
15:45	5	2	0	7	5	11	56	17	5	1	0	0	0	0	109
	14	3	0	7	12	55	204	113	31	2	0	0	0	0	441
16:00	1	0	0	3	7	42	58	25	6	2	0	0	0	0	144
16:15	7	2	1	0	6	25	62	40	7	0	0	0	0	0	150
16:30	5	1	1	0	1	35	66	48	7	0	0	0	0	0	164
16:45	7	2	1	5	3	15	51	57	14	1	0	0	0	0	156
	20	5	3	8	17	117	237	170	34	3	0	0	0	0	614
17:00	12	6	3	7	19	36	59	25	4	0	0	0	0	0	171
17:15	12	0	2	5	30	36	63	7	4	0	0	0	0	0	159
17:30	9	4	4	7	27	54	59	13	2	0	0	0	0	0	179
17:45	12	8	8	6	29	50	41	15	0	0	0	0	0	0	169
	45	18	17	25	105	176	222	60	10	0	0	0	0	0	678
18:00	1	0	0	0	16	43	76	33	3	0	0	0	0	0	172
18:15	2	0	0	0	18	51	69	35	6	0	0	0	0	0	181
18:30	1	0	0	9	14	34	61	32	8	1	0	0	0	0	160
18:45	0	0	0	1	3	56	79	15	3	0	0	0	0	0	157
	4	0	0	10	51	184	285	115	20	1	0	0	0	0	670
19:00	1	0	0	0	2	30	50	32	1	2	0	0	0	0	118
19:15	0	0	0	0	6	25	54	27	2	1	0	0	0	0	115
19:30	1	0	0	1	7	14	29	21	4	1	0	0	0	0	78
19:45	0	0	0	0	0	2	26	23	7	0	0	0	0	0	58
	2	0	0	1	15	71	159	103	14	4	0	0	0	0	369
20:00	0	0	0	1	6	15	23	14	6	0	0	0	0	0	65
20:15	0	0	0	0	4	8	33	10	3	1	0	0	0	0	59
20:30	0	0	0	0	3	11	24	16	3	0	0	0	0	0	57
20:45	0	0	0	0	0	4	21	11	7	1	0	0	0	0	44
	0	0	0	1	13	38	101	51	19	2	0	0	0	0	225
21:00	0	0	0	0	0	9	22	22	4	0	1	0	0	0	58
21:15	0	0	0	0	0	2	13	13	4	1	0	0	0	0	33
21:30	0	0	0	0	0	0	11	14	0	2	0	0	0	0	27
21:45	0	0	0	1	0	1	12	15	4	0	0	0	0	0	33
	0	0	0	1	0	12	58	64	12	3	1	0	0	0	151
22:00	0	0	0	0	0	2	5	8	3	2	0	0	0	0	20
22:15	0	0	0	0	0	1	14	8	2	0	0	0	0	0	25
22:30	1	0	0	0	1	5	6	2	1	0	0	0	0	0	16
22:45	0	0	0	0	0	1	0	5	3	0	0	0	0	0	9
	1	0	0	0	1	9	25	23	9	2	0	0	0	0	70
23:00	0	0	0	0	0	2	3	8	2	1	0	0	0	0	16
23:15	0	0	0	0	0	0	4	3	5	1	0	0	0	0	13
23:30	0	0	0	0	0	0	3	3	1	0	0	0	0	0	7
23:45	0	0	0	0	0	0	1	4	2	0	0	0	0	0	7
	0	0	0	0	0	2	11	18	10	2	0	0	0	0	43
Total	124	41	22	56	241	826	1790	1038	220	25	3	0	0	0	4386
Grand Total	203	46	22	65	290	1080	2429	1530	392	54	9	2	1	0	6123

15th Percentile :	37 MPH
50th Percentile :	43 MPH
85th Percentile :	49 MPH
95th Percentile :	52 MPH

Stats

Mean Speed(Average) :	42 MPH
10 MPH Pace Speed :	41-50 MPH
Number in Pace :	3959
Percent in Pace :	64.7%

Number of Vehicles > 55 MPH :	66
Percent of Vehicles > 55 MPH :	1.1%

All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
ph.404-374-1283

Site Code: 10.5
Station ID: 10.5
BUFORD HWY SOUTH OF
TOWN CENTER AVE.

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
10/20/09	0	0	0	0	0	2	0	0	0	0	0	0	0	0	2
00:15	0	0	0	0	0	1	0	1	0	0	1	0	0	0	3
00:30	0	0	0	0	0	0	1	2	1	0	0	0	0	0	4
00:45	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
	0	0	0	0	0	3	1	4	1	0	1	0	0	0	10
01:00	0	0	0	0	0	1	0	2	1	0	0	0	0	0	4
01:15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:30	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
01:45	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	1	0	2	1	0	0	0	0	0	4
02:00	0	0	0	0	0	0	1	2	0	0	0	0	0	0	3
02:15	0	0	0	0	0	0	1	1	1	0	0	0	0	0	3
02:30	0	0	0	0	0	0	2	0	0	0	0	0	0	0	2
02:45	0	0	0	0	0	0	1	1	0	0	0	0	0	0	2
	0	0	0	0	0	0	5	4	1	0	0	0	0	0	10
03:00	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1
03:15	0	0	0	0	1	0	0	0	0	0	0	0	0	0	1
03:30	0	0	0	0	0	1	1	0	1	0	0	0	0	0	3
03:45	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1
	0	0	0	0	1	2	2	0	1	0	0	0	0	0	6
04:00	0	0	0	0	0	1	0	0	0	0	1	0	0	0	2
04:15	0	0	0	0	0	0	1	4	1	0	0	0	0	0	6
04:30	0	0	0	0	1	4	5	1	0	0	0	0	0	0	11
04:45	0	0	0	0	0	0	2	5	2	0	0	0	0	0	9
	0	0	0	0	1	5	8	10	3	0	1	0	0	0	28
05:00	0	0	0	0	0	1	5	4	3	0	0	0	0	0	13
05:15	0	0	0	0	0	4	9	7	4	0	0	0	0	0	24
05:30	0	0	0	0	0	2	16	9	7	0	0	0	0	0	34
05:45	0	0	0	0	1	3	6	20	2	0	0	0	0	0	32
	0	0	0	0	1	10	36	40	16	0	0	0	0	0	103
06:00	2	0	0	0	0	3	16	21	13	0	0	0	0	0	55
06:15	1	0	0	0	1	12	41	25	5	2	0	1	0	0	88
06:30	0	0	0	0	5	30	35	28	5	1	0	0	0	0	104
06:45	0	0	0	0	2	24	47	37	12	1	1	0	0	0	124
	3	0	0	0	8	69	139	111	35	4	1	1	0	0	371
07:00	10	0	0	0	0	18	68	25	14	2	0	0	0	0	137
07:15	1	0	0	1	5	43	76	40	5	0	0	0	0	0	171
07:30	2	0	0	0	6	30	78	39	11	0	0	0	0	0	166
07:45	2	0	1	0	9	40	70	31	10	1	0	0	0	0	164
	15	0	1	1	20	131	292	135	40	3	0	0	0	0	638
08:00	1	0	2	4	7	34	56	44	11	1	1	0	0	0	161
08:15	5	0	0	0	11	29	61	41	14	0	0	0	0	0	161
08:30	1	0	0	0	5	35	64	20	6	0	0	0	0	0	131
08:45	1	1	0	0	1	15	54	25	10	0	0	0	0	0	107
	8	1	2	4	24	113	235	130	41	1	1	0	0	0	560
09:00	2	1	0	2	5	22	43	28	6	2	0	0	0	0	111
09:15	1	2	0	2	20	46	32	12	5	0	0	0	0	0	120
09:30	4	0	0	1	6	18	34	21	10	0	0	0	0	0	94
09:45	2	1	0	1	2	6	37	33	5	1	2	0	0	0	90
	9	4	0	6	33	92	146	94	26	3	2	0	0	0	415
10:00	3	0	0	0	1	22	37	23	5	2	0	0	0	0	93
10:15	0	0	0	0	1	10	33	21	5	0	0	0	0	0	70
10:30	0	0	0	0	3	22	35	13	3	2	0	0	0	0	78
10:45	3	0	0	1	5	10	34	15	2	3	0	0	0	0	73
	6	0	0	1	10	64	139	72	15	7	0	0	0	0	314
11:00	3	0	0	1	7	23	23	8	2	0	0	0	0	0	67
11:15	2	1	0	5	18	32	20	8	0	0	0	0	0	0	86
11:30	4	1	0	0	3	30	39	14	3	2	0	0	0	0	96
11:45	1	1	0	0	5	23	41	21	3	0	0	0	0	0	95
	10	3	0	6	33	108	123	51	8	2	0	0	0	0	344
Total	51	8	3	18	131	598	1126	653	188	20	6	1	0	0	2803

All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
ph.404-374-1283

Site Code: 10.5
Station ID: 10.5
BUFORD HWY SOUTH OF
TOWN CENTER AVE.

SB

Start Time	1 15	16 20	21 25	26 30	31 35	36 40	41 45	46 50	51 55	56 60	61 65	66 70	71 75	76 999	Total
12 PM	1	1	0	0	9	32	37	20	4	0	0	0	0	0	104
12:15	0	0	0	0	6	19	25	29	5	0	1	0	0	0	85
12:30	1	0	0	0	6	26	39	19	6	1	0	0	0	0	98
12:45	1	1	0	0	4	18	40	19	4	2	0	0	0	0	89
	3	2	0	0	25	95	141	87	19	3	1	0	0	0	376
13:00	5	2	1	0	3	25	41	27	4	0	0	0	0	0	108
13:15	4	2	0	3	8	26	32	12	7	0	0	0	0	0	94
13:30	0	0	0	1	5	9	44	18	5	1	0	0	0	0	83
13:45	3	1	0	0	3	18	31	26	8	1	0	0	0	0	91
	12	5	1	4	19	78	148	83	24	2	0	0	0	0	376
14:00	0	0	0	0	1	8	34	17	11	1	0	0	0	0	72
14:15	5	0	0	0	6	9	27	16	1	0	0	0	0	0	64
14:30	3	1	0	1	7	34	36	11	10	0	0	0	0	0	103
14:45	4	2	0	0	5	16	34	14	4	0	0	0	0	0	79
	12	3	0	1	19	67	131	58	26	1	0	0	0	0	318
15:00	4	2	0	1	11	18	39	19	3	1	0	0	0	0	98
15:15	5	3	0	0	6	20	41	27	3	0	0	0	0	0	105
15:30	4	0	1	1	9	18	31	16	7	0	0	0	0	0	87
15:45	12	3	1	0	15	27	40	17	2	0	0	0	0	0	117
	25	8	2	2	41	83	151	79	15	1	0	0	0	0	407
16:00	6	3	0	0	3	14	28	22	13	2	0	0	0	0	91
16:15	3	2	0	1	2	16	37	36	8	1	0	0	0	0	106
16:30	13	2	0	0	8	18	33	8	1	1	0	0	0	0	84
16:45	23	9	0	1	1	16	48	28	4	0	0	0	0	0	130
	45	16	0	2	14	64	146	94	26	4	0	0	0	0	411
17:00	9	7	0	3	5	16	50	28	4	0	0	0	0	0	122
17:15	4	4	0	0	7	16	39	29	9	1	0	0	0	0	109
17:30	4	3	0	0	7	37	28	24	10	0	0	0	0	0	113
17:45	3	2	0	0	0	24	37	27	6	0	0	0	0	0	99
	20	16	0	3	19	93	154	108	29	1	0	0	0	0	443
18:00	4	0	0	1	1	16	34	29	11	1	0	0	0	0	97
18:15	0	0	0	3	16	14	38	20	2	0	0	0	0	0	93
18:30	10	1	0	0	5	22	42	11	0	1	0	0	0	0	92
18:45	3	2	0	0	4	17	32	16	4	1	0	0	0	0	79
	17	3	0	4	26	69	146	76	17	3	0	0	0	0	361
19:00	6	0	3	0	1	23	22	22	2	0	0	0	0	0	79
19:15	3	4	0	0	6	20	34	15	0	0	0	0	0	0	82
19:30	1	0	0	0	1	11	19	16	5	1	0	0	0	0	54
19:45	1	1	0	0	4	14	28	21	3	0	0	0	0	0	72
	11	5	3	0	12	68	103	74	10	1	0	0	0	0	287
20:00	3	1	0	0	9	15	32	19	2	0	1	0	0	0	82
20:15	6	3	0	0	1	5	13	18	2	0	0	1	0	0	49
20:30	3	0	0	0	1	12	19	11	3	0	1	0	0	0	50
20:45	0	0	0	0	2	16	16	8	6	0	0	0	0	0	48
	12	4	0	0	13	48	80	56	13	0	2	1	0	0	229
21:00	0	0	0	0	1	9	22	13	5	0	0	0	0	0	50
21:15	0	0	0	1	5	6	15	17	7	0	0	0	0	0	51
21:30	0	0	0	1	0	2	6	12	8	0	0	0	0	0	29
21:45	0	0	0	0	0	5	5	6	4	0	0	0	0	0	20
	0	0	0	2	6	22	48	48	24	0	0	0	0	0	150
22:00	0	0	0	0	3	5	4	7	2	0	0	0	0	0	21
22:15	0	0	0	0	2	11	32	17	2	0	0	0	0	0	64
22:30	0	0	0	0	0	0	3	5	0	0	0	0	0	0	8
22:45	0	0	0	0	1	2	3	4	2	0	0	0	0	0	12
	0	0	0	0	6	18	42	33	6	0	0	0	0	0	105
23:00	0	0	0	0	1	2	4	4	1	0	0	0	0	0	12
23:15	0	0	0	0	0	4	3	2	1	0	0	0	0	0	10
23:30	0	0	0	0	0	0	4	1	0	0	0	0	0	0	5
23:45	0	0	0	0	0	1	2	4	0	0	0	0	0	0	7
	0	0	0	0	1	7	13	11	2	0	0	0	0	0	34
Total	157	62	6	18	201	712	1303	807	211	16	3	1	0	0	3497
Grand Total	208	70	9	36	332	1310	2429	1460	399	36	9	2	0	0	6300

15th Percentile :	37 MPH
50th Percentile :	43 MPH
85th Percentile :	49 MPH
95th Percentile :	52 MPH

Stats

Mean Speed(Average) :	42 MPH
10 MPH Pace Speed :	41-50 MPH
Number in Pace :	3889
Percent in Pace :	61.7%

Number of Vehicles > 55 MPH :	47
Percent of Vehicles > 55 MPH :	0.7%

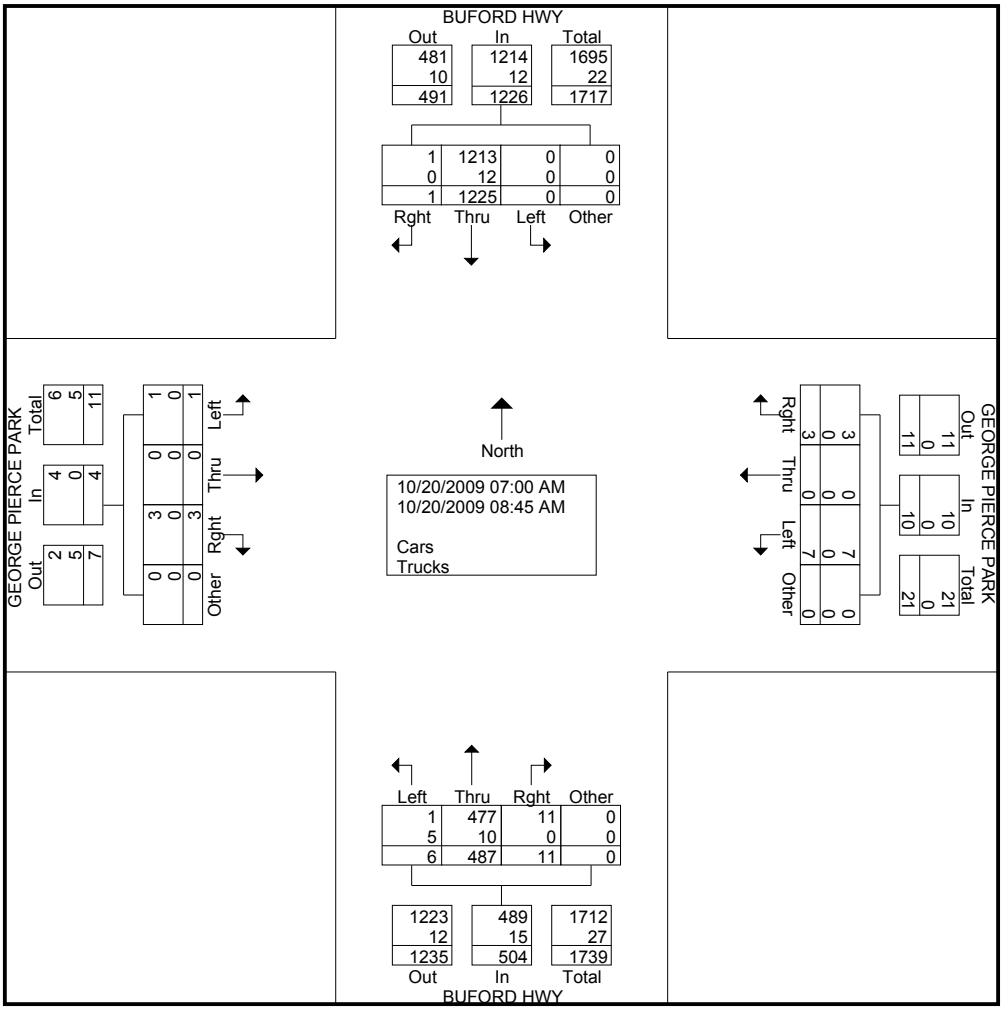
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@GeorgePierceParkAM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	BUFORD HWY Southbound					GEORGE PIERCE PARK Westbound					BUFORD HWY Northbound					GEORGE PIERCE PARK Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
07:00 AM	0	144	0	0	144	0	0	0	0	0	2	65	0	0	67	0	0	1	0	1	212
07:15 AM	0	170	0	0	170	1	0	0	0	1	0	58	2	0	60	1	0	1	0	2	233
07:30 AM	0	168	0	0	168	0	0	2	0	2	2	53	2	0	57	0	0	0	0	0	227
07:45 AM	0	172	1	0	173	0	0	0	0	0	0	49	1	0	50	0	0	0	0	0	223
Total	0	654	1	0	655	1	0	2	0	3	4	225	5	0	234	1	0	2	0	3	895
08:00 AM	0	147	0	0	147	2	0	0	0	2	0	66	0	0	66	0	0	0	0	0	215
08:15 AM	0	175	0	0	175	1	0	0	0	1	1	56	2	0	59	0	0	0	0	0	235
08:30 AM	0	139	0	0	139	1	0	1	0	2	1	67	2	0	70	0	0	1	0	1	212
08:45 AM	0	110	0	0	110	2	0	0	0	2	0	73	2	0	75	0	0	0	0	0	187
Total	0	571	0	0	571	6	0	1	0	7	2	262	6	0	270	0	0	1	0	1	849
Grand Total	0	1225	1	0	1226	7	0	3	0	10	6	487	11	0	504	1	0	3	0	4	1744
Apprch %	0	99.9	0.1	0		70	0	30	0		1.2	96.6	2.2	0		25	0	75	0		
Total %	0	70.2	0.1	0	70.3	0.4	0	0.2	0	0.6	0.3	27.9	0.6	0	28.9	0.1	0	0.2	0	0.2	
Cars	0	1213	1	0	1214	7	0	3	0	10	1	477	11	0	489	1	0	3	0	4	1717
% Cars	0	99	100	0	99	100	0	100	0	100	16.7	97.9	100	0	97	100	0	100	0	100	98.5
Trucks	0	12	0	0	12	0	0	0	0	0	5	10	0	0	15	0	0	0	0	0	27
% Trucks	0	1	0	0	1	0	0	0	0	0	83.3	2.1	0	0	3	0	0	0	0	0	1.5

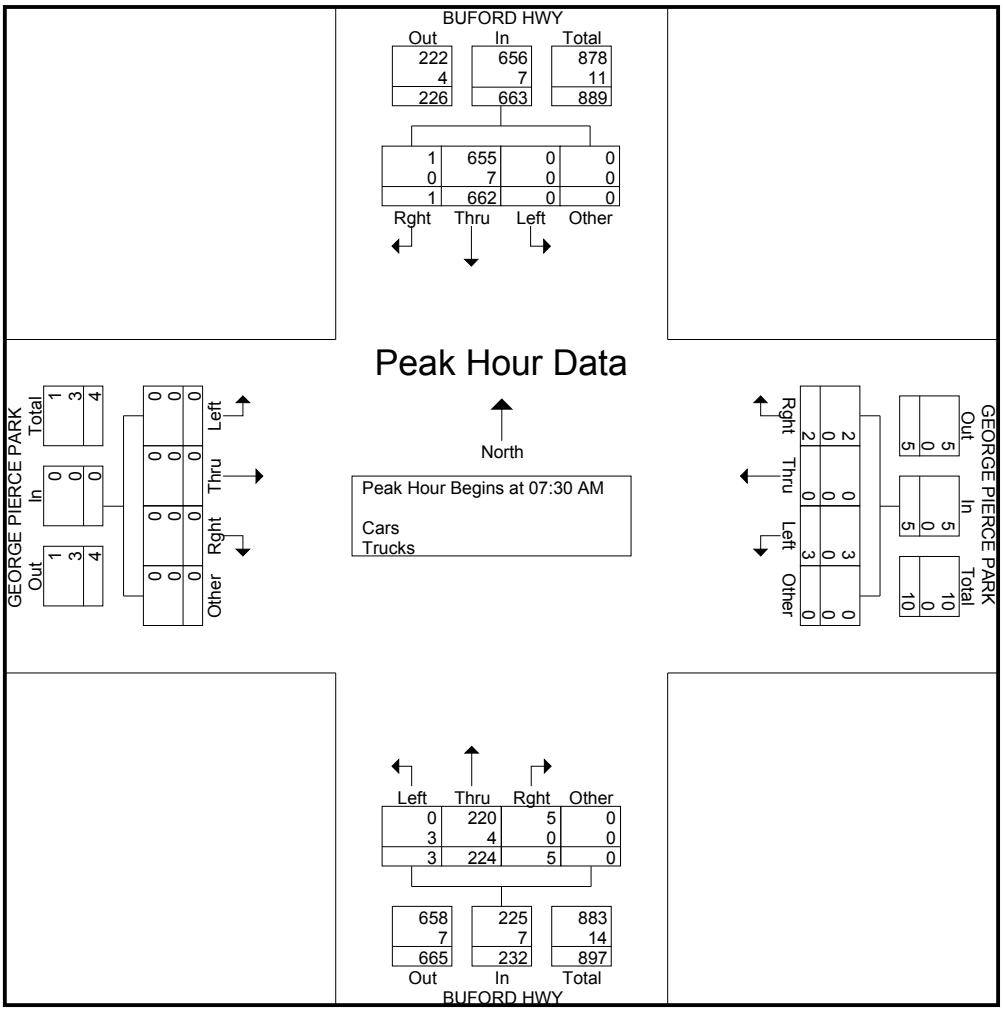


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@GeorgePierceParkAM
Site Code : 00000000
Start Date : 10/20/2009

	BUFORD HWY Southbound					GEORGE PIERCE PARK Westbound					BUFORD HWY Northbound					GEORGE PIERCE PARK Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	0	168	0	0	168	0	0	**2**	0	**2**	**2**	53	**2**	0	57	0	0	0	0	0	227
07:45 AM	0	172	**1**	0	173	0	0	0	0	0	0	49	1	0	50	0	0	0	0	0	223
08:00 AM	0	147	0	0	147	**2**	0	0	0	2	0	**66**	0	0	**66**	0	0	0	0	0	215
08:15 AM	0	**175**	0	0	**175**	1	0	0	0	1	1	56	2	0	59	0	0	0	0	0	**235**
Total Volume	0	662	1	0	663	3	0	2	0	5	3	224	5	0	232	0	0	0	0	0	900
% App. Total	0	99.8	0.2	0		60	0	40	0		1.3	96.6	2.2	0		0	0	0	0		
PHF	.000	.946	.250	.000	.947	.375	.000	.250	.000	.625	.375	.848	.625	.000	.879	.000	.000	.000	.000	.000	.957
Cars	0	655	1	0	656	3	0	2	0	5	0	220	5	0	225	0	0	0	0	0	886
% Cars	0	98.9	100	0	98.9	100	0	100	0	100	0	98.2	100	0	97.0	0	0	0	0	0	98.4
Trucks	0	7	0	0	7	0	0	0	0	0	3	4	0	0	7	0	0	0	0	0	14
% Trucks	0	1.1	0	0	1.1	0	0	0	0	0	100	1.8	0	0	3.0	0	0	0	0	0	1.6



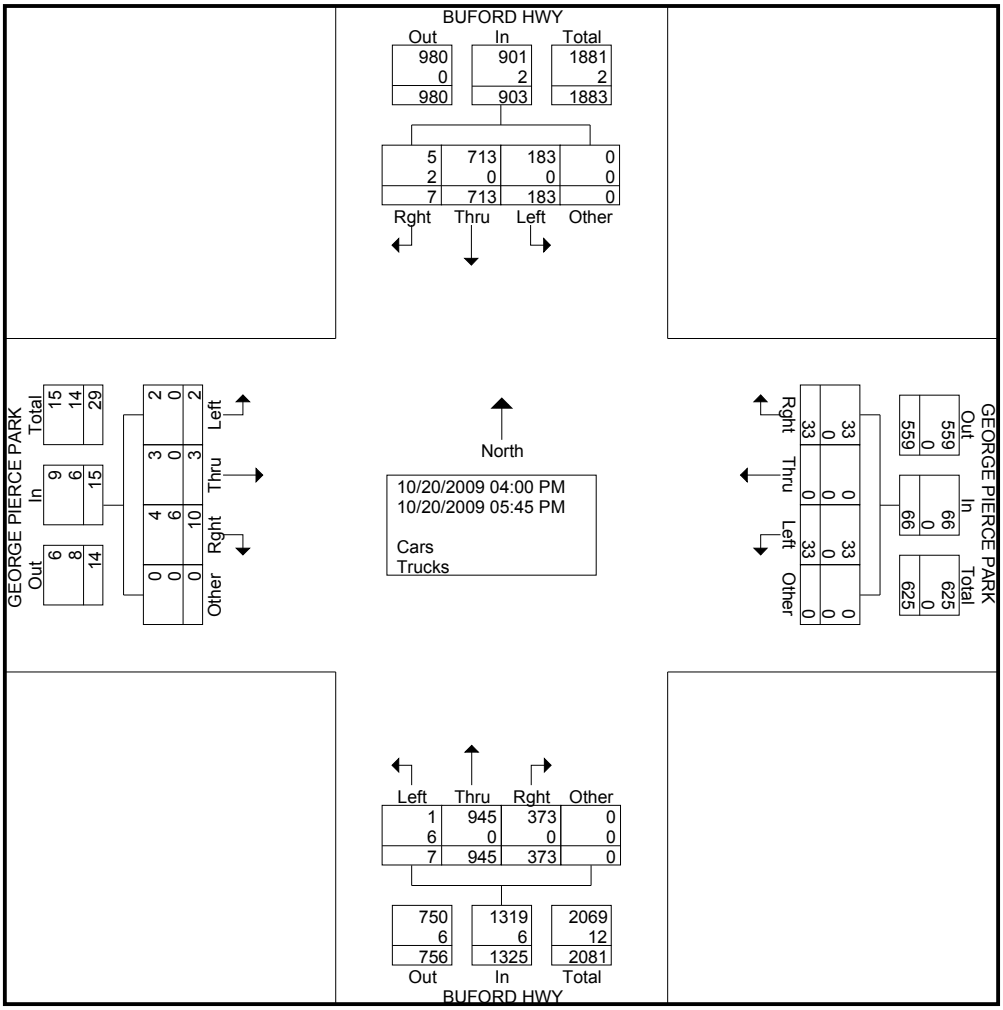
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@GeorgePierceParkPM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	BUFORD HWY Southbound					GEORGE PIERCE PARK Westbound					BUFORD HWY Northbound					GEORGE PIERCE PARK Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
04:00 PM	0	98	0	0	98	2	0	4	0	6	0	137	2	0	139	0	0	0	0	0	243
04:15 PM	3	97	0	0	100	0	0	1	0	1	1	137	4	0	142	1	0	0	0	1	244
04:30 PM	2	84	0	0	86	2	0	1	0	3	0	174	5	0	179	0	0	2	0	2	270
04:45 PM	9	97	1	0	107	2	0	3	0	5	1	121	10	0	132	0	0	0	0	0	244
Total	14	376	1	0	391	6	0	9	0	15	2	569	21	0	592	1	0	2	0	3	1001
05:00 PM	14	107	0	0	121	3	0	2	0	5	2	121	35	0	158	1	0	4	0	5	289
05:15 PM	43	74	0	0	117	5	0	5	0	10	1	100	96	0	197	0	0	2	0	2	326
05:30 PM	68	88	4	0	160	3	0	7	0	10	0	78	105	0	183	0	0	0	0	0	353
05:45 PM	44	68	2	0	114	16	0	10	0	26	2	77	116	0	195	0	3	2	0	5	340
Total	169	337	6	0	512	27	0	24	0	51	5	376	352	0	733	1	3	8	0	12	1308
Grand Total	183	713	7	0	903	33	0	33	0	66	7	945	373	0	1325	2	3	10	0	15	2309
Apprch %	20.3	79	0.8	0		50	0	50	0		0.5	71.3	28.2	0		13.3	20	66.7	0		
Total %	7.9	30.9	0.3	0	39.1	1.4	0	1.4	0	2.9	0.3	40.9	16.2	0	57.4	0.1	0.1	0.4	0	0.6	
Cars	183	713	5	0	901	33	0	33	0	66	1	945	373	0	1319	2	3	4	0	9	2295
% Cars	100	100	71.4	0	99.8	100	0	100	0	100	14.3	100	100	0	99.5	100	100	40	0	60	99.4
Trucks	0	0	2	0	2	0	0	0	0	0	6	0	0	0	6	0	0	6	0	6	14
% Trucks	0	0	28.6	0	0.2	0	0	0	0	0	85.7	0	0	0	0.5	0	0	60	0	40	0.6

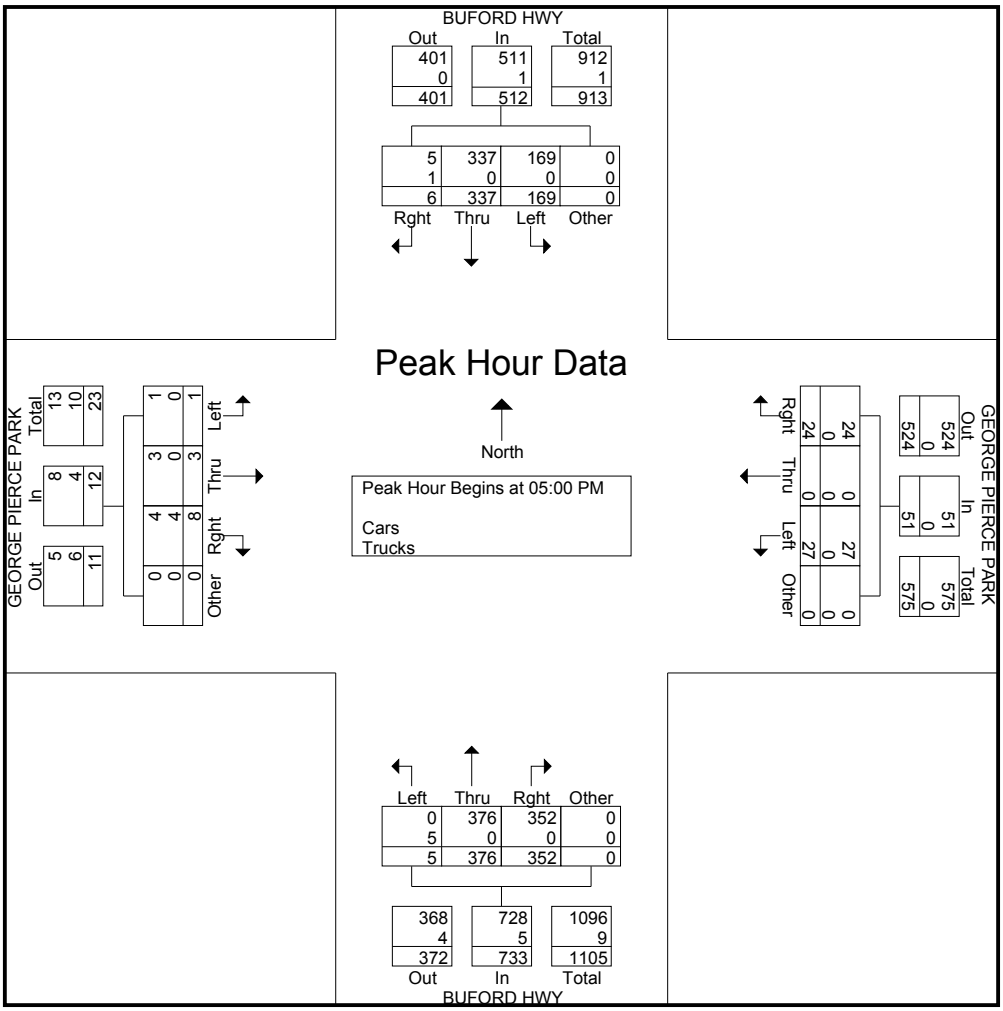


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@GeorgePierceParkPM
Site Code : 00000000
Start Date : 10/20/2009

	BUFORD HWY Southbound					GEORGE PIERCE PARK Westbound					BUFORD HWY Northbound					GEORGE PIERCE PARK Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	14	**107**	0	0	121	3	0	2	0	5	**2**	**121**	35	0	158	**1**	0	**4**	0	**5**	289
05:15 PM	43	74	0	0	117	5	0	5	0	10	1	100	96	0	**197**	0	0	2	0	2	326
05:30 PM	**68**	88	**4**	0	**160**	3	0	7	0	10	0	78	105	0	183	0	0	0	0	0	**353**
05:45 PM	44	68	2	0	114	**16**	0	**10**	0	**26**	2	77	**116**	0	195	0	**3**	2	0	5	340
Total Volume	169	337	6	0	512	27	0	24	0	51	5	376	352	0	733	1	3	8	0	12	1308
% App. Total	33	65.8	1.2	0		52.9	0	47.1	0		0.7	51.3	48	0		8.3	25	66.7	0		
PHF	.621	.787	.375	.000	.800	.422	.000	.600	.000	.490	.625	.777	.759	.000	.930	.250	.250	.500	.000	.600	.926
Cars	169	337	5	0	511	27	0	24	0	51	0	376	352	0	728	1	3	4	0	8	1298
% Cars	100	100	83.3	0	99.8	100	0	100	0	100	0	100	100	0	99.3	100	100	50.0	0	66.7	99.2
Trucks	0	0	1	0	1	0	0	0	0	0	5	0	0	0	5	0	0	4	0	4	10
% Trucks	0	0	16.7	0	0.2	0	0	0	0	0	100	0	0	0	0.7	0	0	50.0	0	33.3	0.8



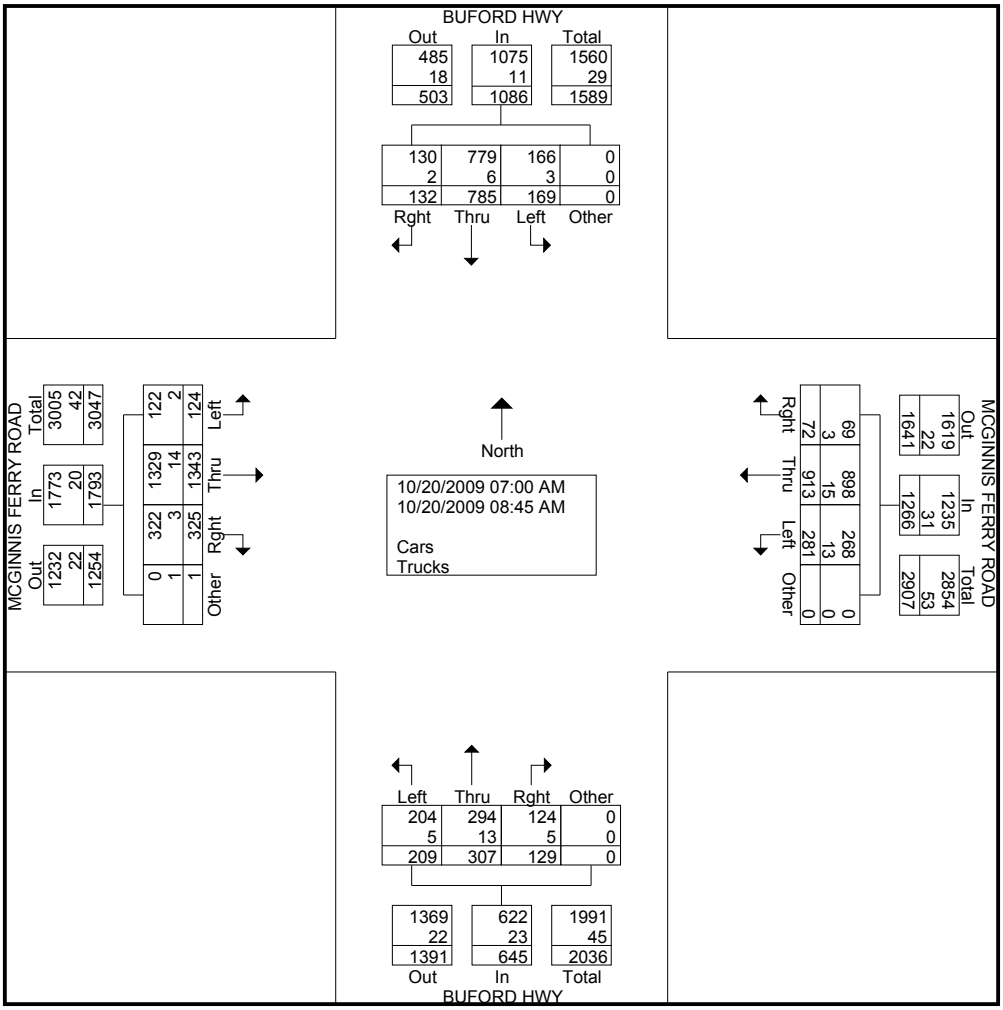
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@McGinnisFerryAM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	BUFORD HWY Southbound					MCGINNIS FERRY ROAD Westbound					BUFORD HWY Northbound					MCGINNIS FERRY ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
07:00 AM	19	96	20	0	135	31	89	7	0	127	19	29	12	0	60	11	138	30	0	179	501
07:15 AM	16	117	19	0	152	34	125	13	0	172	15	29	18	0	62	8	164	41	0	213	599
07:30 AM	24	120	20	0	164	30	99	9	0	138	26	25	14	0	65	8	185	47	0	240	607
07:45 AM	23	111	14	0	148	46	112	11	0	169	22	41	21	0	84	19	198	45	0	262	663
Total	82	444	73	0	599	141	425	40	0	606	82	124	65	0	271	46	685	163	0	894	2370
08:00 AM	29	99	9	0	137	43	132	5	0	180	24	44	16	0	84	19	173	32	0	224	625
08:15 AM	24	93	15	0	132	27	120	8	0	155	31	30	16	0	77	15	184	51	1	251	615
08:30 AM	19	74	15	0	108	26	112	6	0	144	31	44	18	0	93	12	148	43	0	203	548
08:45 AM	15	75	20	0	110	44	124	13	0	181	41	65	14	0	120	32	153	36	0	221	632
Total	87	341	59	0	487	140	488	32	0	660	127	183	64	0	374	78	658	162	1	899	2420
Grand Total	169	785	132	0	1086	281	913	72	0	1266	209	307	129	0	645	124	1343	325	1	1793	4790
Apprch %	15.6	72.3	12.2	0		22.2	72.1	5.7	0		32.4	47.6	20	0		6.9	74.9	18.1	0.1		
Total %	3.5	16.4	2.8	0	22.7	5.9	19.1	1.5	0	26.4	4.4	6.4	2.7	0	13.5	2.6	28	6.8	0	37.4	
Cars	166	779	130	0	1075	268	898	69	0	1235	204	294	124	0	622	122	1329	322	0	1773	4705
% Cars	98.2	99.2	98.5	0	99	95.4	98.4	95.8	0	97.6	97.6	95.8	96.1	0	96.4	98.4	99	99.1	0	98.9	98.2
Trucks	3	6	2	0	11	13	15	3	0	31	5	13	5	0	23	2	14	3	1	20	85
% Trucks	1.8	0.8	1.5	0	1	4.6	1.6	4.2	0	2.4	2.4	4.2	3.9	0	3.6	1.6	1	0.9	100	1.1	1.8

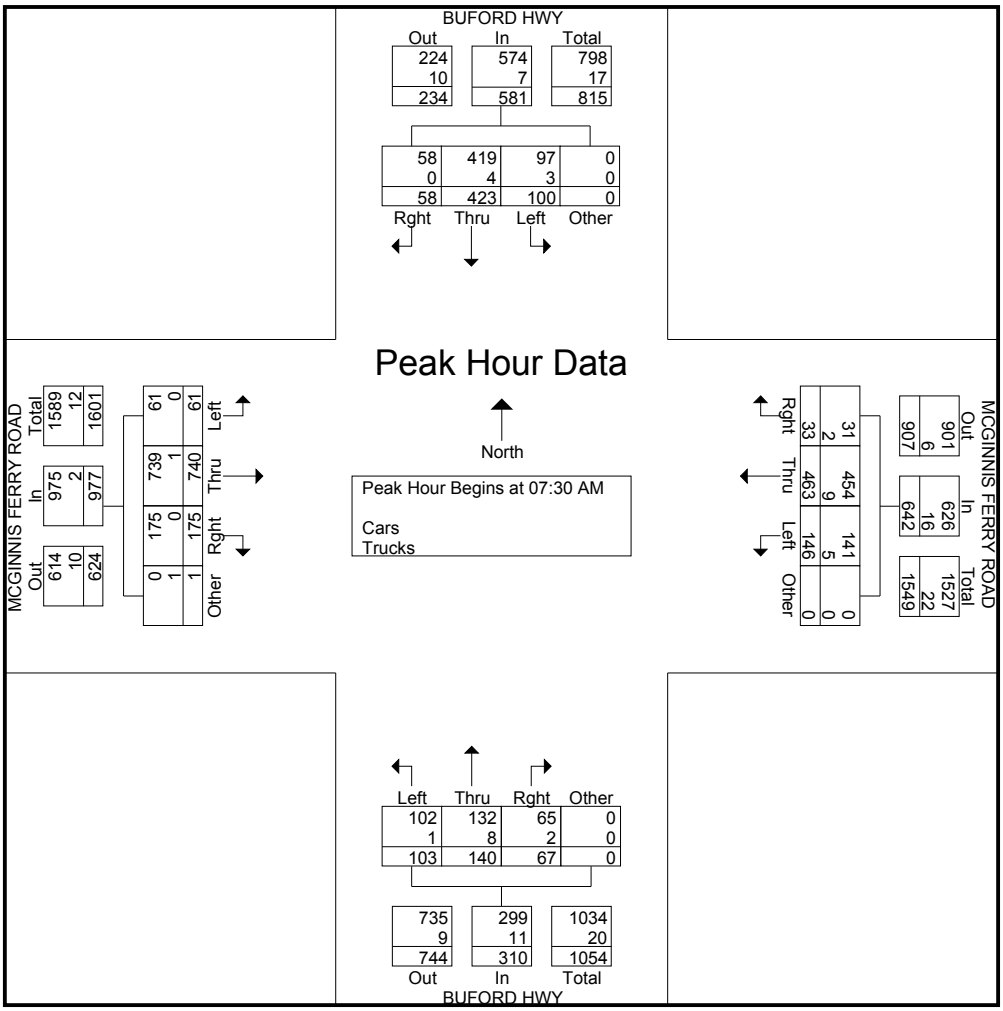


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@McGinnisFerryAM
Site Code : 00000000
Start Date : 10/20/2009

	BUFORD HWY Southbound					MCGINNIS FERRY ROAD Westbound					BUFORD HWY Northbound					MCGINNIS FERRY ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	24	**120**	**20**	0	**164**	30	99	9	0	138	26	25	14	0	65	8	185	47	0	240	607
07:45 AM	23	111	14	0	148	**46**	112	**11**	0	169	22	41	**21**	0	**84**	**19**	**198**	45	0	**262**	**663**
08:00 AM	**29**	99	9	0	137	43	**132**	5	0	**180**	24	**44**	16	0	84	19	173	32	0	224	625
08:15 AM	24	93	15	0	132	27	120	8	0	155	**31**	30	16	0	77	15	184	**51**	**1**	251	615
Total Volume	100	423	58	0	581	146	463	33	0	642	103	140	67	0	310	61	740	175	1	977	2510
% App. Total	17.2	72.8	10	0		22.7	72.1	5.1	0		33.2	45.2	21.6	0		6.2	75.7	17.9	0.1		
PHF	.862	.881	.725	.000	.886	.793	.877	.750	.000	.892	.831	.795	.798	.000	.923	.803	.934	.858	.250	.932	.946
Cars	97	419	58	0	574	141	454	31	0	626	102	132	65	0	299	61	739	175	0	975	2474
% Cars	97.0	99.1	100	0	98.8	96.6	98.1	93.9	0	97.5	99.0	94.3	97.0	0	96.5	100	99.9	100	0	99.8	98.6
Trucks	3	4	0	0	7	5	9	2	0	16	1	8	2	0	11	0	1	0	1	2	36
% Trucks	3.0	0.9	0	0	1.2	3.4	1.9	6.1	0	2.5	1.0	5.7	3.0	0	3.5	0	0.1	0	100	0.2	1.4



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@McGinnisFerryPM
Site Code : 00000000
Start Date : 10/20/2009
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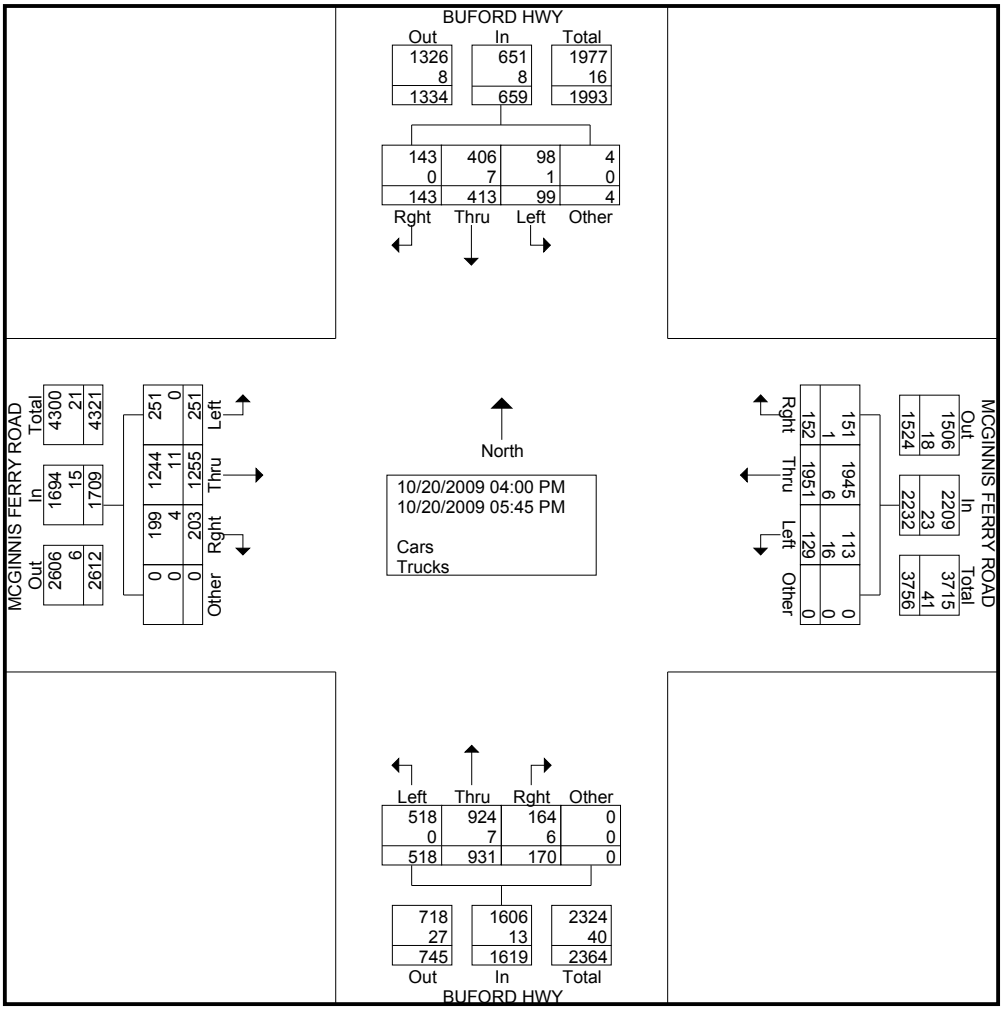
Groups Printed- Cars - Trucks

	BUFORD HWY Southbound					MCGINNIS FERRY ROAD Westbound					BUFORD HWY Northbound					MCGINNIS FERRY ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
04:00 PM	8	51	17	0	76	15	194	12	0	221	57	88	20	0	165	39	157	27	0	223	685
04:15 PM	9	53	24	3	89	15	177	13	0	205	65	106	27	0	198	33	142	24	0	199	691
04:30 PM	19	43	17	0	79	5	215	23	0	243	58	100	20	0	178	26	177	27	0	230	730
04:45 PM	5	53	6	1	65	13	237	13	0	263	55	103	26	0	184	19	152	16	0	187	699
Total	41	200	64	4	309	48	823	61	0	932	235	397	93	0	725	117	628	94	0	839	2805
05:00 PM	11	72	25	0	108	22	251	29	0	302	75	124	28	0	227	34	162	18	0	214	851
05:15 PM	13	44	18	0	75	10	305	22	0	337	64	141	17	0	222	32	186	27	0	245	879
05:30 PM	15	51	27	0	93	22	290	20	0	332	76	128	21	0	225	25	133	41	0	199	849
05:45 PM	19	46	9	0	74	27	282	20	0	329	68	141	11	0	220	43	146	23	0	212	835
Total	58	213	79	0	350	81	1128	91	0	1300	283	534	77	0	894	134	627	109	0	870	3414
Grand Total	99	413	143	4	659	129	1951	152	0	2232	518	931	170	0	1619	251	1255	203	0	1709	6219
Apprch %	15	62.7	21.7	0.6		5.8	87.4	6.8	0		32	57.5	10.5	0		14.7	73.4	11.9	0		
Total %	1.6	6.6	2.3	0.1	10.6	2.1	31.4	2.4	0	35.9	8.3	15	2.7	0	26	4	20.2	3.3	0	27.5	
Cars	98	406	143	4	651	113	1945	151	0	2209	518	924	164	0	1606	251	1244	199	0	1694	6160
% Cars	99	98.3	100	100	98.8	87.6	99.7	99.3	0	99	100	99.2	96.5	0	99.2	100	99.1	98	0	99.1	99.1
Trucks	1	7	0	0	8	16	6	1	0	23	0	7	6	0	13	0	11	4	0	15	59
% Trucks	1	1.7	0	0	1.2	12.4	0.3	0.7	0	1	0	0.8	3.5	0	0.8	0	0.9	2	0	0.9	0.9

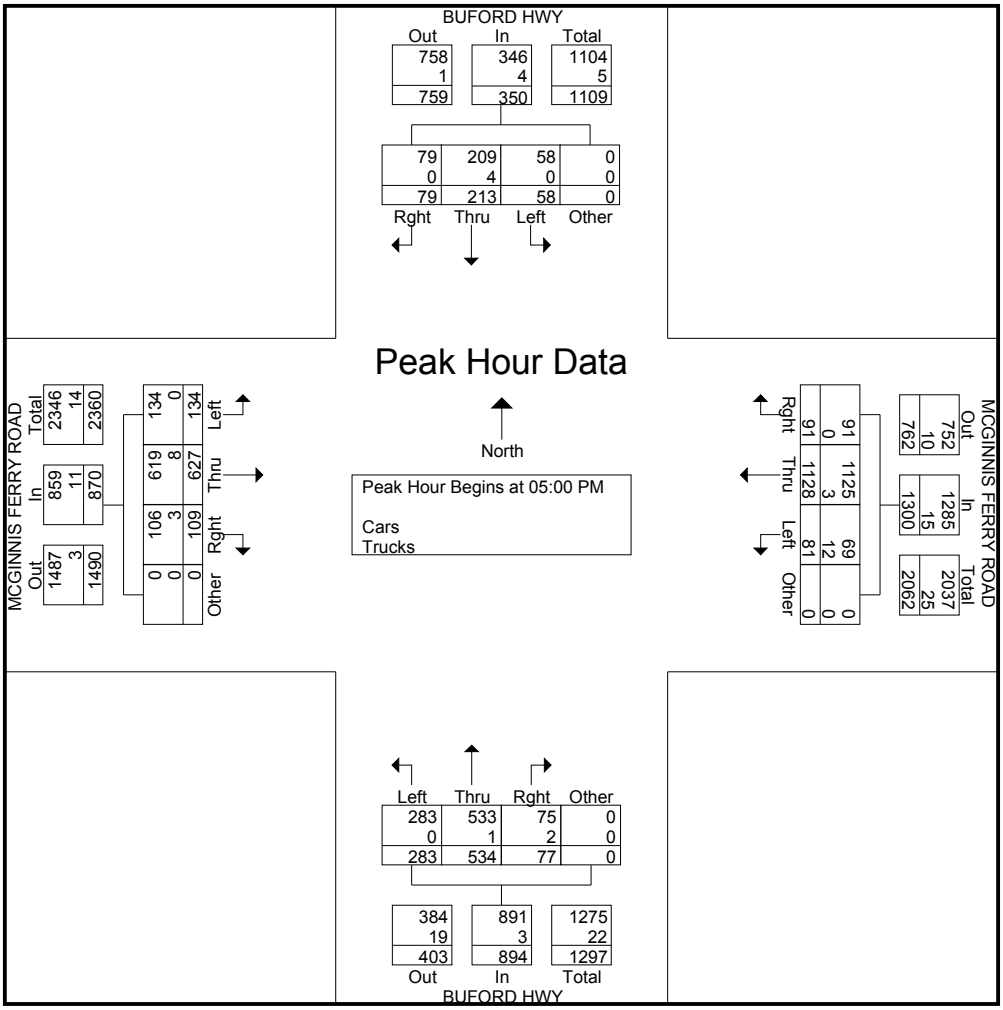


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@McGinnisFerryPM
Site Code : 00000000
Start Date : 10/20/2009

	BUFORD HWY Southbound					MCGINNIS FERRY ROAD Westbound					BUFORD HWY Northbound					MCGINNIS FERRY ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	11	**72**	25	0	**108**	22	251	**29**	0	302	75	124	**28**	0	**227**	34	162	18	0	214	851
05:15 PM	13	44	18	0	75	10	**305**	22	0	**337**	64	**141**	17	0	222	32	**186**	27	0	**245**	**879**
05:30 PM	15	51	**27**	0	93	22	290	20	0	332	**76**	128	21	0	225	25	133	**41**	0	199	849
05:45 PM	**19**	46	9	0	74	**27**	282	20	0	329	68	141	11	0	220	**43**	146	23	0	212	835
Total Volume	58	213	79	0	350	81	1128	91	0	1300	283	534	77	0	894	134	627	109	0	870	3414
% App. Total	16.6	60.9	22.6	0		6.2	86.8	7	0		31.7	59.7	8.6	0		15.4	72.1	12.5	0		
PHF	.763	.740	.731	.000	.810	.750	.925	.784	.000	.964	.931	.947	.688	.000	.985	.779	.843	.665	.000	.888	.971
Cars	58	209	79	0	346	69	1125														
% Cars	100	98.1	100	0	98.9	85.2	99.7	100	0	98.8	100	99.8	97.4	0	99.7	100	98.7	97.2	0	98.7	99.0
Trucks	0	4	0	0	4	12	3	0	0	15	0	1	2	0	3	0	8	3	0	11	33
% Trucks	0	1.9	0	0	1.1	14.8	0.3	0	0	1.2	0	0.2	2.6	0	0.3	0	1.3	2.8	0	1.3	1.0



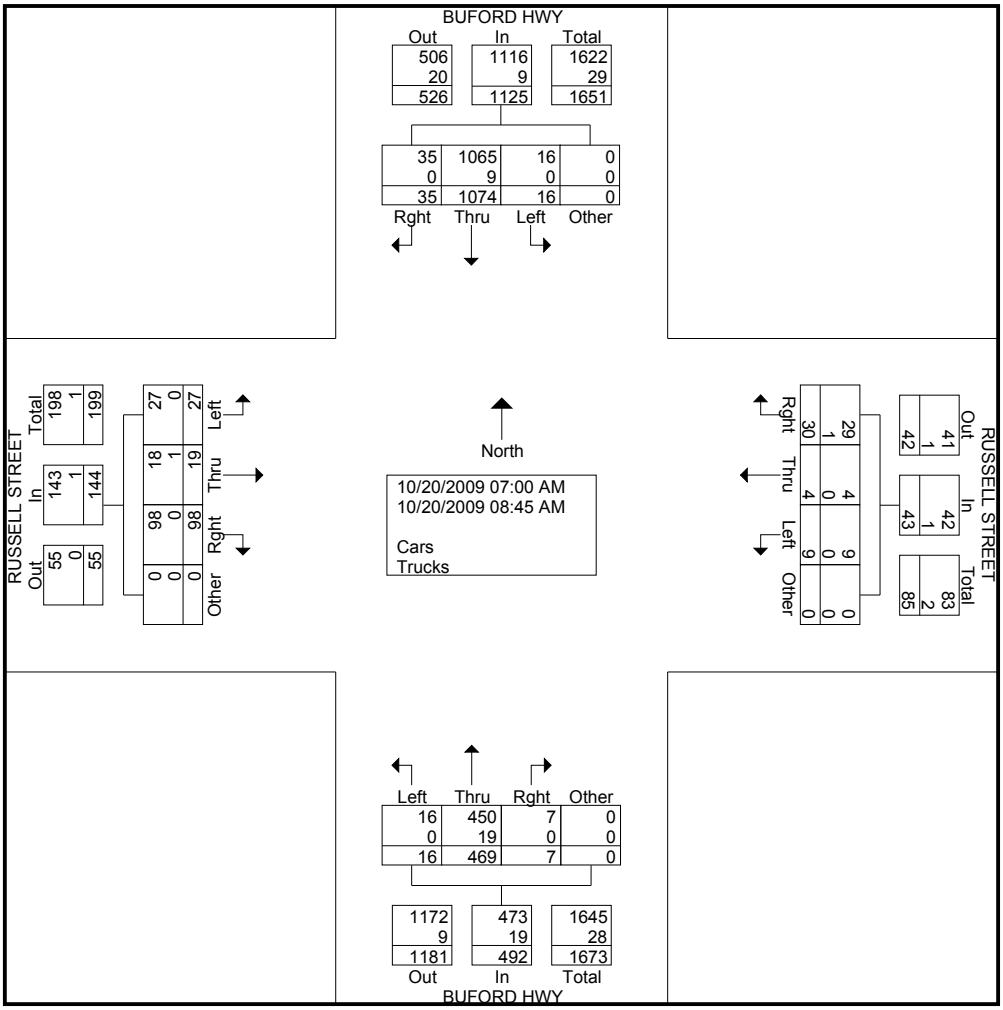
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@RussellStAM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	BUFORD HWY Southbound					RUSSELL STREET Westbound					BUFORD HWY Northbound					RUSSELL STREET Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
07:00 AM	1	130	5	0	136	1	1	1	0	3	1	37	1	0	39	3	3	10	0	16	194
07:15 AM	2	139	4	0	145	2	0	5	0	7	9	57	1	0	67	3	0	12	0	15	234
07:30 AM	3	157	2	0	162	3	1	5	0	9	0	52	0	0	52	6	5	8	0	19	242
07:45 AM	1	146	7	0	154	0	0	2	0	2	0	47	0	0	47	0	2	20	0	22	225
Total	7	572	18	0	597	6	2	13	0	21	10	193	2	0	205	12	10	50	0	72	895
08:00 AM	3	156	3	0	162	1	0	3	0	4	1	89	2	0	92	6	1	12	0	19	277
08:15 AM	1	129	5	0	135	1	1	5	0	7	1	48	1	0	50	1	2	13	0	16	208
08:30 AM	4	111	4	0	119	1	0	6	0	7	0	67	1	0	68	4	4	12	0	20	214
08:45 AM	1	106	5	0	112	0	1	3	0	4	4	72	1	0	77	4	2	11	0	17	210
Total	9	502	17	0	528	3	2	17	0	22	6	276	5	0	287	15	9	48	0	72	909
Grand Total	16	1074	35	0	1125	9	4	30	0	43	16	469	7	0	492	27	19	98	0	144	1804
Apprch %	1.4	95.5	3.1	0		20.9	9.3	69.8	0		3.3	95.3	1.4	0		18.8	13.2	68.1	0		
Total %	0.9	59.5	1.9	0	62.4	0.5	0.2	1.7	0	2.4	0.9	26	0.4	0	27.3	1.5	1.1	5.4	0	8	
Cars	16	1065	35	0	1116	9	4	29	0	42	16	450	7	0	473	27	18	98	0	143	1774
% Cars	100	99.2	100	0	99.2	100	100	96.7	0	97.7	100	95.9	100	0	96.1	100	94.7	100	0	99.3	98.3
Trucks	0	9	0	0	9	0	0	1	0	1	0	19	0	0	19	0	1	0	0	1	30
% Trucks	0	0.8	0	0	0.8	0	0	3.3	0	2.3	0	4.1	0	0	3.9	0	5.3	0	0	0.7	1.7



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@RussellStAM
Site Code : 00000000
Start Date : 10/20/2009
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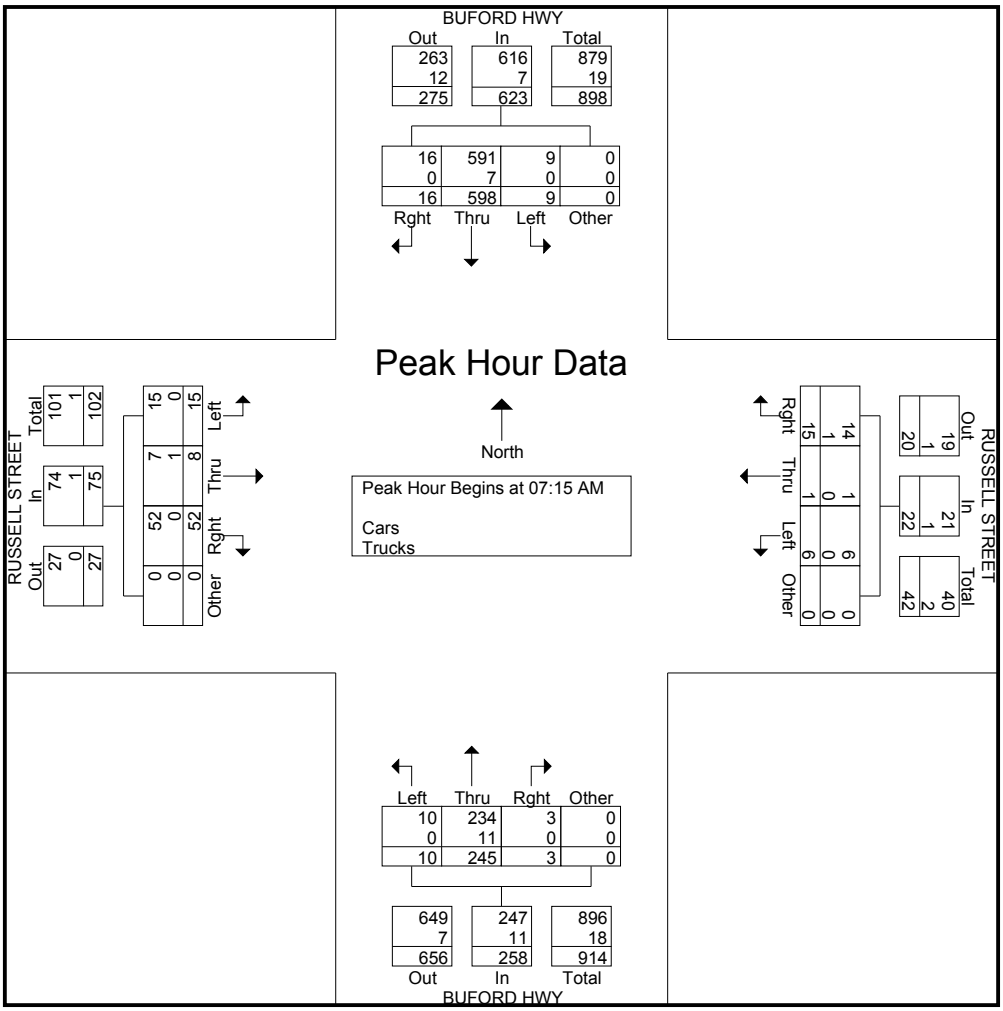
	BUFORD HWY Southbound					RUSSELL STREET Westbound					BUFORD HWY Northbound					RUSSELL STREET Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	2	139	4	0	145	2	0	**5**	0	7	**9**	57	1	0	67	3	0	12	0	15	234
07:30 AM	**3**	**157**	2	0	**162**	**3**	**1**	5	0	**9**	0	52	0	0	52	**6**	**5**	8	0	19	242
07:45 AM	1	146	**7**	0	154	0	0	2	0	2	0	47	0	0	47	0	2	**20**	0	**22**	225
08:00 AM	3	156	3	0	162	1	0	3	0	4	1	**89**	**2**	0	**92**	6	1	12	0	19	**277**
Total Volume	9	598	16	0	623	6	1	15	0	22	10	245	3	0	258	15	8	52	0	75	978
% App. Total	1.4	96	2.6	0		27.3	4.5	68.2	0		3.9	95	1.2	0		20	10.7	69.3	0		
PHF	.750	.952	.571	.000	.961	.500	.250	.750	.000	.611	.278	.688	.375	.000	.701	.625	.400	.650	.000	.852	.883
Cars	9	591	16	0	616	6	1	14	0	21	10	234	3	0	247	15	7	52	0	74	958
% Cars	100	98.8	100	0	98.9	100	100	93.3	0	95.5	100	95.5	100	0	95.7	100	87.5	100	0	98.7	98.0
Trucks	0	7	0	0	7	0	0	1	0	1	0	11	0	0	11	0	1	0	0	1	20
% Trucks	0	1.2	0	0	1.1	0	0	6.7	0	4.5	0	4.5	0	0	4.3	0	12.5	0	0	1.3	2.0



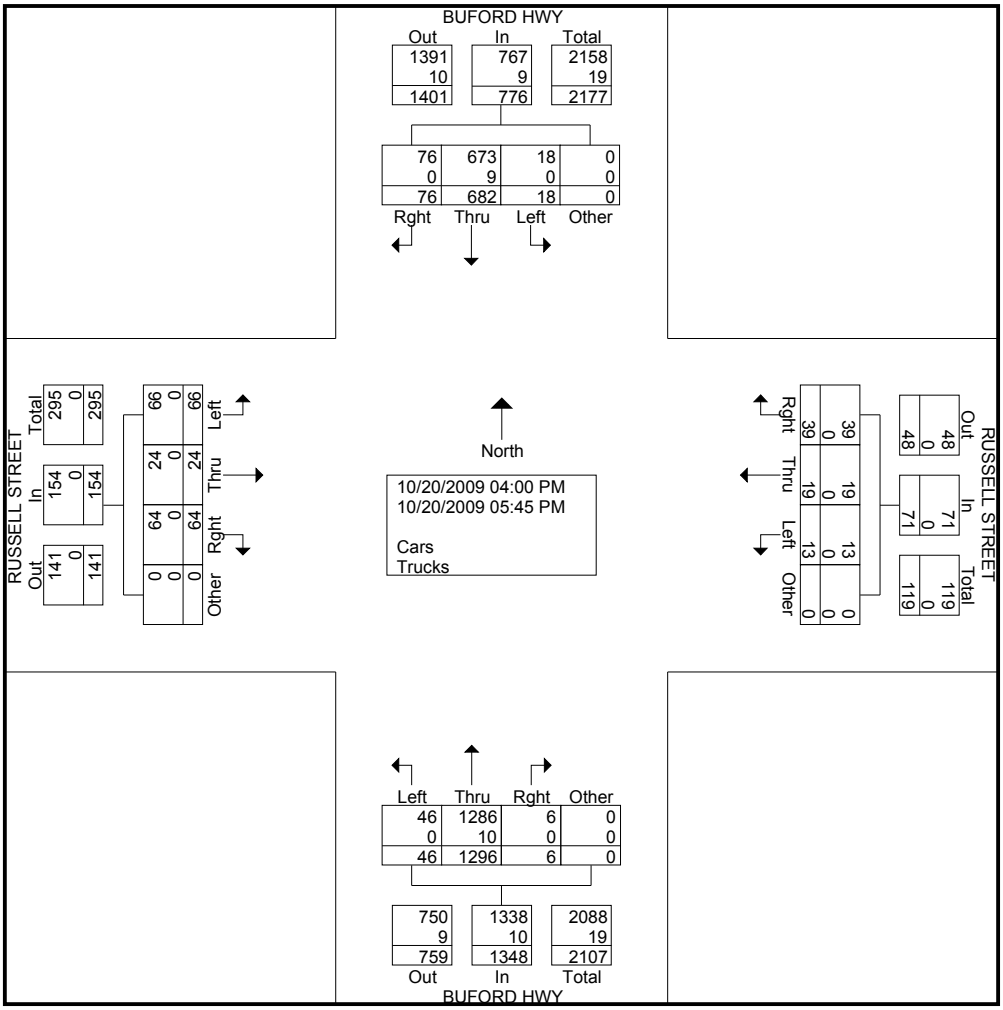
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@RussellStPM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	BUFORD HWY Southbound					RUSSELL STREET Westbound					BUFORD HWY Northbound					RUSSELL STREET Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
04:00 PM	0	75	8	0	83	0	2	8	0	10	3	149	0	0	152	8	4	4	0	16	261
04:15 PM	1	90	14	0	105	0	3	3	0	6	3	135	1	0	139	8	2	5	0	15	265
04:30 PM	3	67	12	0	82	2	1	4	0	7	6	136	1	0	143	9	2	8	0	19	251
04:45 PM	2	88	10	0	100	2	2	3	0	7	2	151	0	0	153	9	1	8	0	18	278
Total	6	320	44	0	370	4	8	18	0	30	14	571	2	0	587	34	9	25	0	68	1055
05:00 PM	7	107	13	0	127	1	3	8	0	12	6	167	1	0	174	3	8	4	0	15	328
05:15 PM	0	90	6	0	96	3	3	3	0	9	10	199	0	0	209	6	2	7	0	15	329
05:30 PM	4	92	6	0	102	3	3	2	0	8	6	169	1	0	176	13	3	9	0	25	311
05:45 PM	1	73	7	0	81	2	2	8	0	12	10	190	2	0	202	10	2	19	0	31	326
Total	12	362	32	0	406	9	11	21	0	41	32	725	4	0	761	32	15	39	0	86	1294
Grand Total	18	682	76	0	776	13	19	39	0	71	46	1296	6	0	1348	66	24	64	0	154	2349
Apprch %	2.3	87.9	9.8	0		18.3	26.8	54.9	0		3.4	96.1	0.4	0		42.9	15.6	41.6	0		
Total %	0.8	29	3.2	0	33	0.6	0.8	1.7	0	3	2	55.2	0.3	0	57.4	2.8	1	2.7	0	6.6	
Cars	18	673	76	0	767	13	19	39	0	71	46	1286	6	0	1338	66	24	64	0	154	2330
% Cars	100	98.7	100	0	98.8	100	100	100	0	100	100	99.2	100	0	99.3	100	100	100	0	100	99.2
Trucks	0	9	0	0	9	0	0	0	0	0	0	10	0	0	10	0	0	0	0	0	19
% Trucks	0	1.3	0	0	1.2	0	0	0	0	0	0	0.8	0	0	0.7	0	0	0	0	0	0.8

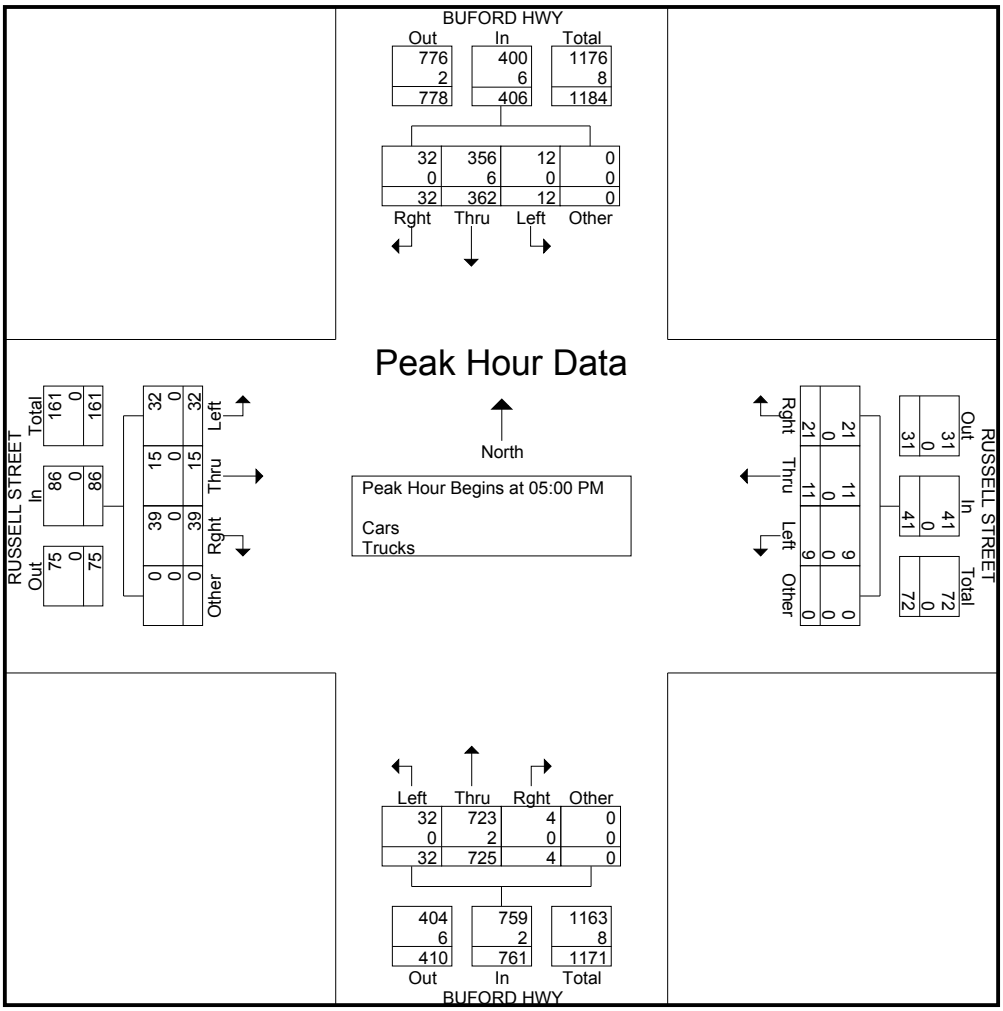


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@RussellStPM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 2

	BUFORD HWY Southbound					RUSSELL STREET Westbound					BUFORD HWY Northbound					RUSSELL STREET Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**7**	**107**	**13**	0	**127**	1	**3**	**8**	0	**12**	6	167	1	0	174	3	**8**	4	0	15	328
05:15 PM	0	90	6	0	96	**3**	3	3	0	9	**10**	**199**	0	0	**209**	6	2	7	0	15	**329**
05:30 PM	4	92	6	0	102	3	3	2	0	8	6	169	1	0	176	**13**	3	9	0	25	311
05:45 PM	1	73	7	0	81	2	2	8	0	12	10	190	**2**	0	202	10	2	**19**	0	**31**	326
Total Volume	12	362	32	0	406	9	11	21	0	41	32	725	4	0	761	32	15	39	0	86	1294
% App. Total	3	89.2	7.9	0		22	26.8	51.2	0		4.2	95.3	0.5	0		37.2	17.4	45.3	0		
PHF	.429	.846	.615	.000	.799	.750	.917	.656	.000	.854	.800	.911	.500	.000	.910	.615	.469	.513	.000	.694	.983
Cars	12	356	32	0	400	9	11	21	0	41	32	723	4	0	759	32	15	39	0	86	1286
% Cars	100	98.3	100	0	98.5	100	100	100	0	100	100	99.7	100	0	99.7	100	100	100	0	100	99.4
Trucks	0	6	0	0	6	0	0	0	0	0	0	2	0	0	2	0	0	0	0	0	8
% Trucks	0	1.7	0	0	1.5	0	0	0	0	0	0	0.3	0	0	0.3	0	0	0	0	0	0.6



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@SuwaneeDamAM
Site Code : 00000000
Start Date : 10/20/2009
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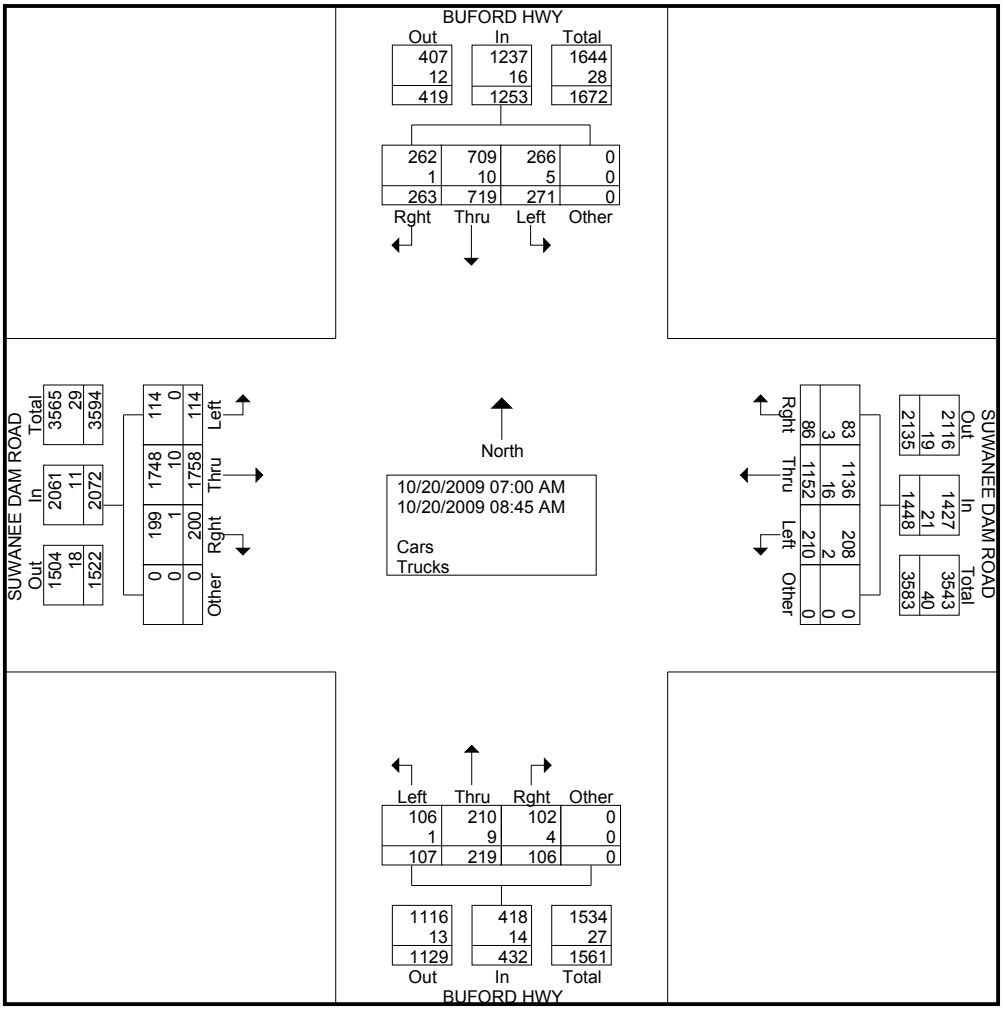
Groups Printed- Cars - Trucks

	BUFORD HWY Southbound					SUWANEE DAM ROAD Westbound					BUFORD HWY Northbound					SUWANEE DAM ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
07:00 AM	28	91	32	0	151	19	115	19	0	153	11	24	12	0	47	16	228	17	0	261	612
07:15 AM	38	96	21	0	155	25	121	10	0	156	11	35	11	0	57	15	237	17	0	269	637
07:30 AM	35	112	27	0	174	33	133	6	0	172	12	19	12	0	43	6	215	31	0	252	641
07:45 AM	38	112	33	0	183	24	130	13	0	167	15	27	15	0	57	12	227	34	0	273	680
Total	139	411	113	0	663	101	499	48	0	648	49	105	50	0	204	49	907	99	0	1055	2570
08:00 AM	36	93	40	0	169	32	156	7	0	195	10	23	11	0	44	10	187	28	0	225	633
08:15 AM	32	79	44	0	155	20	168	7	0	195	13	23	9	0	45	17	251	21	0	289	684
08:30 AM	33	77	41	0	151	30	153	9	0	192	14	32	9	0	55	21	201	28	0	250	648
08:45 AM	31	59	25	0	115	27	176	15	0	218	21	36	27	0	84	17	212	24	0	253	670
Total	132	308	150	0	590	109	653	38	0	800	58	114	56	0	228	65	851	101	0	1017	2635
Grand Total	271	719	263	0	1253	210	1152	86	0	1448	107	219	106	0	432	114	1758	200	0	2072	5205
Apprch %	21.6	57.4	21	0		14.5	79.6	5.9	0		24.8	50.7	24.5	0		5.5	84.8	9.7	0		
Total %	5.2	13.8	5.1	0	24.1	4	22.1	1.7	0	27.8	2.1	4.2	2	0	8.3	2.2	33.8	3.8	0	39.8	
Cars	266	709	262	0	1237	208	1136	83	0	1427	106	210	102	0	418	114	1748	199	0	2061	5143
% Cars	98.2	98.6	99.6	0	98.7	99	98.6	96.5	0	98.5	99.1	95.9	96.2	0	96.8	100	99.4	99.5	0	99.5	98.8
Trucks	5	10	1	0	16	2	16	3	0	21	1	9	4	0	14	0	10	1	0	11	62
% Trucks	1.8	1.4	0.4	0	1.3	1	1.4	3.5	0	1.5	0.9	4.1	3.8	0	3.2	0	0.6	0.5	0	0.5	1.2



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@SuwaneeDamAM
Site Code : 00000000
Start Date : 10/20/2009
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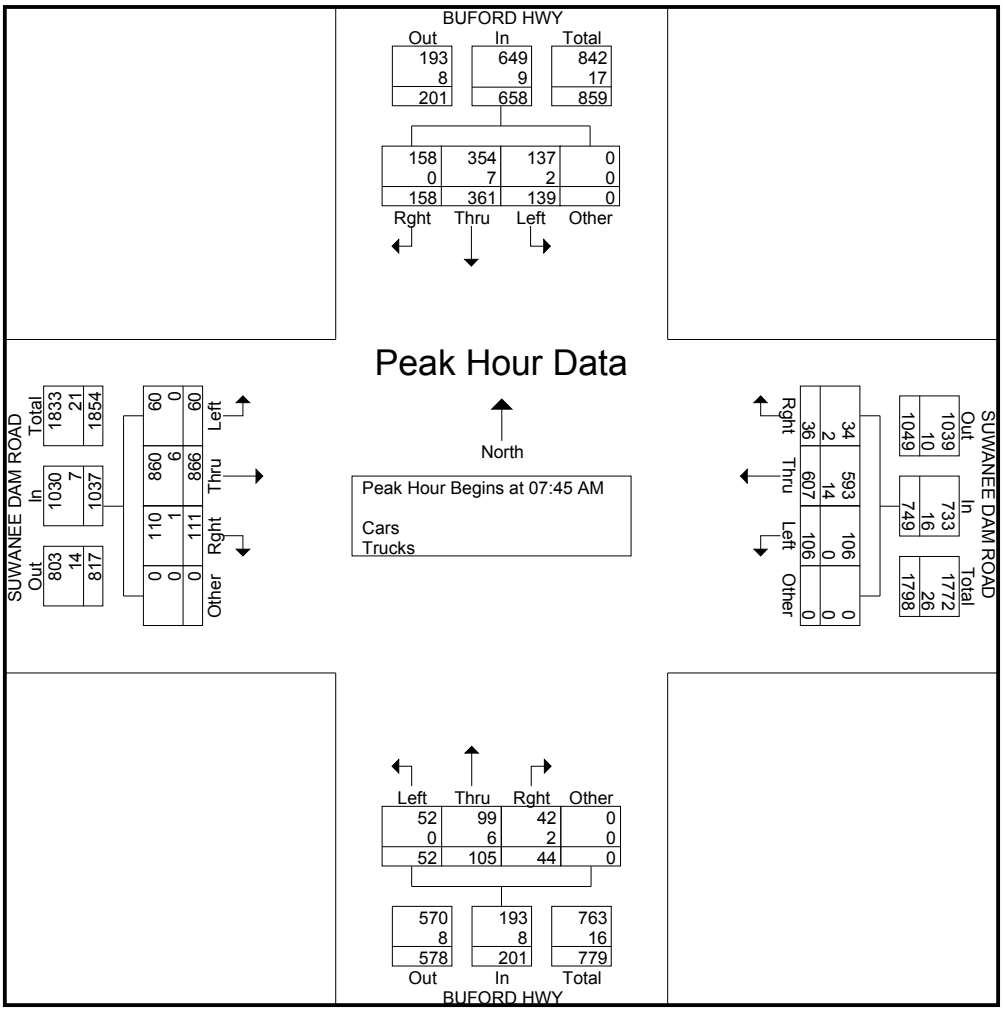
	BUFORD HWY Southbound					SUWANEE DAM ROAD Westbound					BUFORD HWY Northbound					SUWANEE DAM ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	**38**	**112**	33	0	**183**	24	130	**13**	0	167	**15**	27	**15**	0	**57**	12	227	**34**	0	273	680
08:00 AM	36	93	40	0	169	**32**	156	7	0	**195**	10	23	11	0	44	10	187	28	0	225	633
08:15 AM	32	79	**44**	0	155	20	**168**	7	0	195	13	23	9	0	45	17	**251**	21	0	**289**	**684**
08:30 AM	33	77	41	0	151	30	153	9	0	192	14	**32**	9	0	55	**21**	201	28	0	250	648
Total Volume	139	361	158	0	658	106	607	36	0	749	52	105	44	0	201	60	866	111	0	1037	2645
% App. Total	21.1	54.9	24	0		14.2	81	4.8	0		25.9	52.2	21.9	0		5.8	83.5	10.7	0		
PHF	.914	.806	.898	.000	.899	.828	.903	.692	.000	.960	.867	.820	.733	.000	.882	.714	.863	.816	.000	.897	.967
Cars	137	354	158	0	649	106	593	34	0	733	52	99	42	0	193	60	860	110	0	1030	2605
% Cars	98.6	98.1	100	0	98.6	100	97.7	94.4	0	97.9	100	94.3	95.5	0	96.0	100	99.3	99.1	0	99.3	98.5
Trucks	2	7	0	0	9	0	14	2	0	16	0	6	2	0	8	0	6	1	0	7	40
% Trucks	1.4	1.9	0	0	1.4	0	2.3	5.6	0	2.1	0	5.7	4.5	0	4.0	0	0.7	0.9	0	0.7	1.5



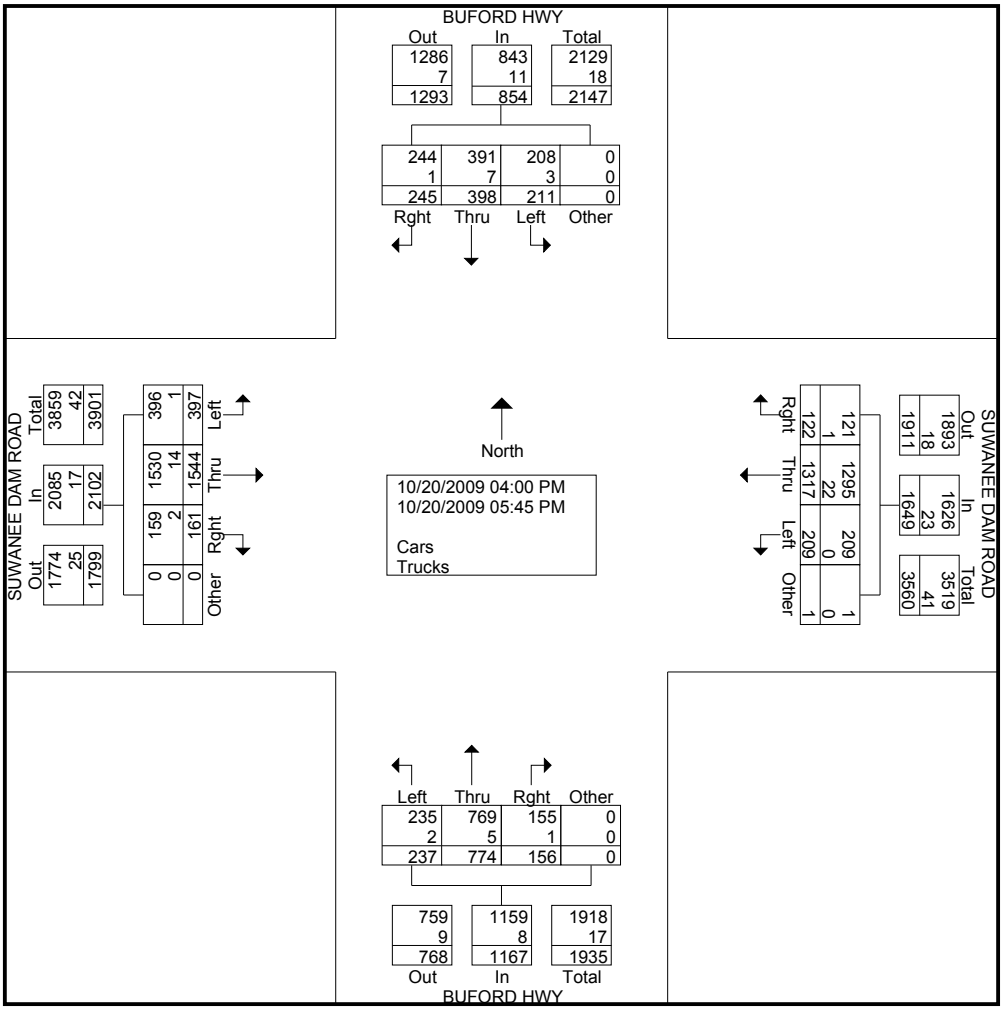
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@SuwaneeDamPM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	BUFORD HWY Southbound					SUWANEE DAM ROAD Westbound					BUFORD HWY Northbound					SUWANEE DAM ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
04:00 PM	23	42	37	0	102	30	170	17	0	217	29	82	26	0	137	37	174	15	0	226	682
04:15 PM	23	53	30	0	106	27	173	9	0	209	36	86	26	0	148	35	190	22	0	247	710
04:30 PM	27	42	21	0	90	19	179	27	0	225	22	94	21	0	137	47	194	14	0	255	707
04:45 PM	24	52	27	0	103	32	157	13	0	202	31	73	22	0	126	49	205	26	0	280	711
Total	97	189	115	0	401	108	679	66	0	853	118	335	95	0	548	168	763	77	0	1008	2810
05:00 PM	24	62	23	0	109	39	165	5	1	210	32	111	16	0	159	53	202	26	0	281	759
05:15 PM	32	50	34	0	116	13	187	33	0	233	31	113	11	0	155	55	191	22	0	268	772
05:30 PM	31	47	32	0	110	25	149	11	0	185	31	103	17	0	151	59	199	13	0	271	717
05:45 PM	27	50	41	0	118	24	137	7	0	168	25	112	17	0	154	62	189	23	0	274	714
Total	114	209	130	0	453	101	638	56	1	796	119	439	61	0	619	229	781	84	0	1094	2962
Grand Total	211	398	245	0	854	209	1317	122	1	1649	237	774	156	0	1167	397	1544	161	0	2102	5772
Apprch %	24.7	46.6	28.7	0		12.7	79.9	7.4	0.1		20.3	66.3	13.4	0		18.9	73.5	7.7	0		
Total %	3.7	6.9	4.2	0	14.8	3.6	22.8	2.1	0	28.6	4.1	13.4	2.7	0	20.2	6.9	26.7	2.8	0	36.4	
Cars	208	391	244	0	843	209	1295	121	1	1626	235	769	155	0	1159	396	1530	159	0	2085	5713
% Cars	98.6	98.2	99.6	0	98.7	100	98.3	99.2	100	98.6	99.2	99.4	99.4	0	99.3	99.7	99.1	98.8	0	99.2	99
Trucks	3	7	1	0	11	0	22	1	0	23	2	5	1	0	8	1	14	2	0	17	59
% Trucks	1.4	1.8	0.4	0	1.3	0	1.7	0.8	0	1.4	0.8	0.6	0.6	0	0.7	0.3	0.9	1.2	0	0.8	1

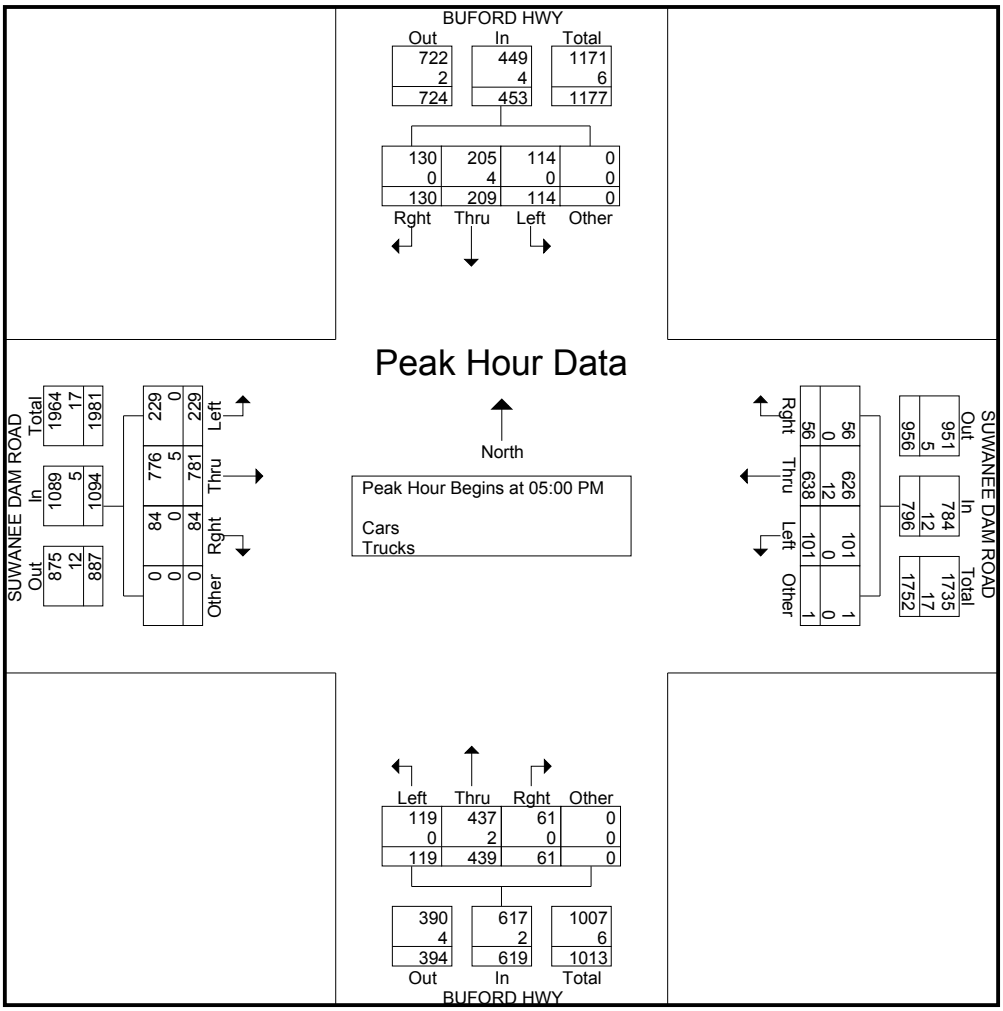


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@SuwaneeDamPM
Site Code : 00000000
Start Date : 10/20/2009

	BUFORD HWY Southbound					SUWANEE DAM ROAD Westbound					BUFORD HWY Northbound					SUWANEE DAM ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	24	**62**	23	0	109	**39**	165	5	**1**	210	**32**	111	16	0	**159**	53	**202**	**26**	0	**281**	759
05:15 PM	**32**	50	34	0	116	13	**187**	**33**	0	**233**	31	**113**	11	0	155	55	191	22	0	268	**772**
05:30 PM	31	47	32	0	110	25	149	11	0	185	31	103	**17**	0	151	59	199	13	0	271	717
05:45 PM	27	50	**41**	0	**118**	24	137	7	0	168	25	112	17	0	154	**62**	189	23	0	274	714
Total Volume	114	209	130	0	453	101	638	56	1	796	119	439	61	0	619	229	781	84	0	1094	2962
% App. Total	25.2	46.1	28.7	0		12.7	80.2	7	0.1		19.2	70.9	9.9	0		20.9	71.4	7.7	0		
PHF	.891	.843	.793	.000	.960	.647	.853	.424	.250	.854	.930	.971	.897	.000	.973	.923	.967	.808	.000	.973	.959
Cars	114	205	130	0	449	101	626	56	1	784	119	437	61	0	617	229	776	84	0	1089	2939
% Cars	100	98.1	100	0	99.1	100	98.1	100	100	98.5	100	99.5	100	0	99.7	100	99.4	100	0	99.5	99.2
Trucks	0	4	0	0	4	0	12	0	0	12	0	2	0	0	2	0	5	0	0	5	23
% Trucks	0	1.9	0	0	0.9	0	1.9	0	0	1.5	0	0.5	0	0	0.3	0	0.6	0	0	0.5	0.8



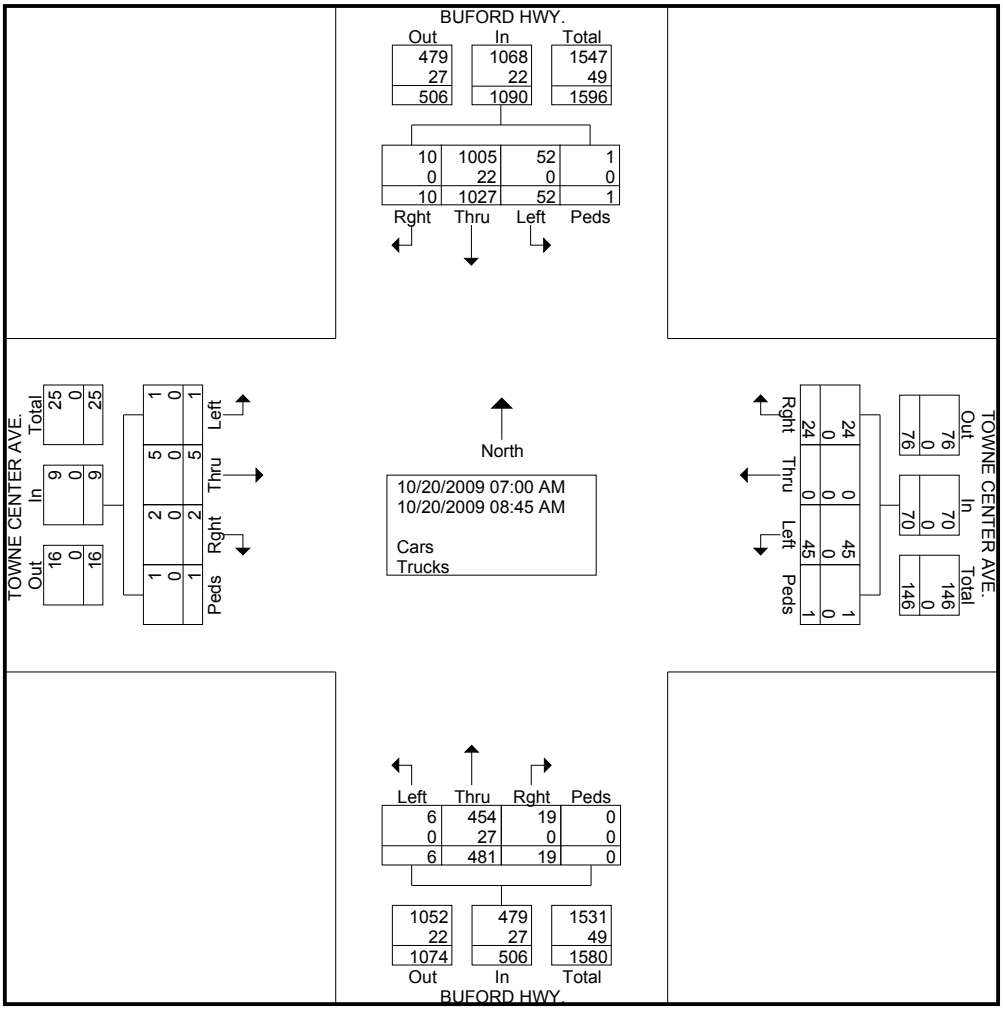
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@TowneCtrAveAM
Site Code :
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	BUFORD HWY. Southbound					TOWNE CENTER AVE. Westbound					BUFORD HWY. Northbound					TOWNE CENTER AVE. Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
07:00 AM	4	110	0	0	114	5	0	3	0	8	0	38	0	0	38	0	0	0	0	0	160
07:15 AM	0	154	0	0	154	6	0	4	0	10	1	64	3	0	68	0	0	1	0	1	233
07:30 AM	7	162	2	0	171	6	0	5	0	11	1	49	1	0	51	0	2	0	0	2	235
07:45 AM	9	133	3	0	145	6	0	3	1	10	3	43	2	0	48	1	0	0	0	1	204
Total	20	559	5	0	584	23	0	15	1	39	5	194	6	0	205	1	2	1	0	4	832
08:00 AM	5	143	1	0	149	8	0	0	0	8	1	78	5	0	84	0	1	0	0	1	242
08:15 AM	5	129	2	1	137	5	0	3	0	8	0	67	1	0	68	0	1	1	0	2	215
08:30 AM	13	109	1	0	123	7	0	2	0	9	0	59	3	0	62	0	1	0	0	1	195
08:45 AM	9	87	1	0	97	2	0	4	0	6	0	83	4	0	87	0	0	0	1	1	191
Total	32	468	5	1	506	22	0	9	0	31	1	287	13	0	301	0	3	1	1	5	843
Grand Total	52	1027	10	1	1090	45	0	24	1	70	6	481	19	0	506	1	5	2	1	9	1675
Apprch %	4.8	94.2	0.9	0.1		64.3	0	34.3	1.4		1.2	95.1	3.8	0		11.1	55.6	22.2	11.1		
Total %	3.1	61.3	0.6	0.1	65.1	2.7	0	1.4	0.1	4.2	0.4	28.7	1.1	0	30.2	0.1	0.3	0.1	0.1	0.5	
Cars	52	1005	10	1	1068	45	0	24	1	70	6	454	19	0	479	1	5	2	1	9	1626
% Cars	100	97.9	100	100	98	100	0	100	100	100	100	94.4	100	0	94.7	100	100	100	100	100	97.1
Trucks	0	22	0	0	22	0	0	0	0	0	0	27	0	0	27	0	0	0	0	0	49
% Trucks	0	2.1	0	0	2	0	0	0	0	0	0	5.6	0	0	5.3	0	0	0	0	0	2.9



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File Name : BufordHwy@TowneCtrAveAM
Site Code :
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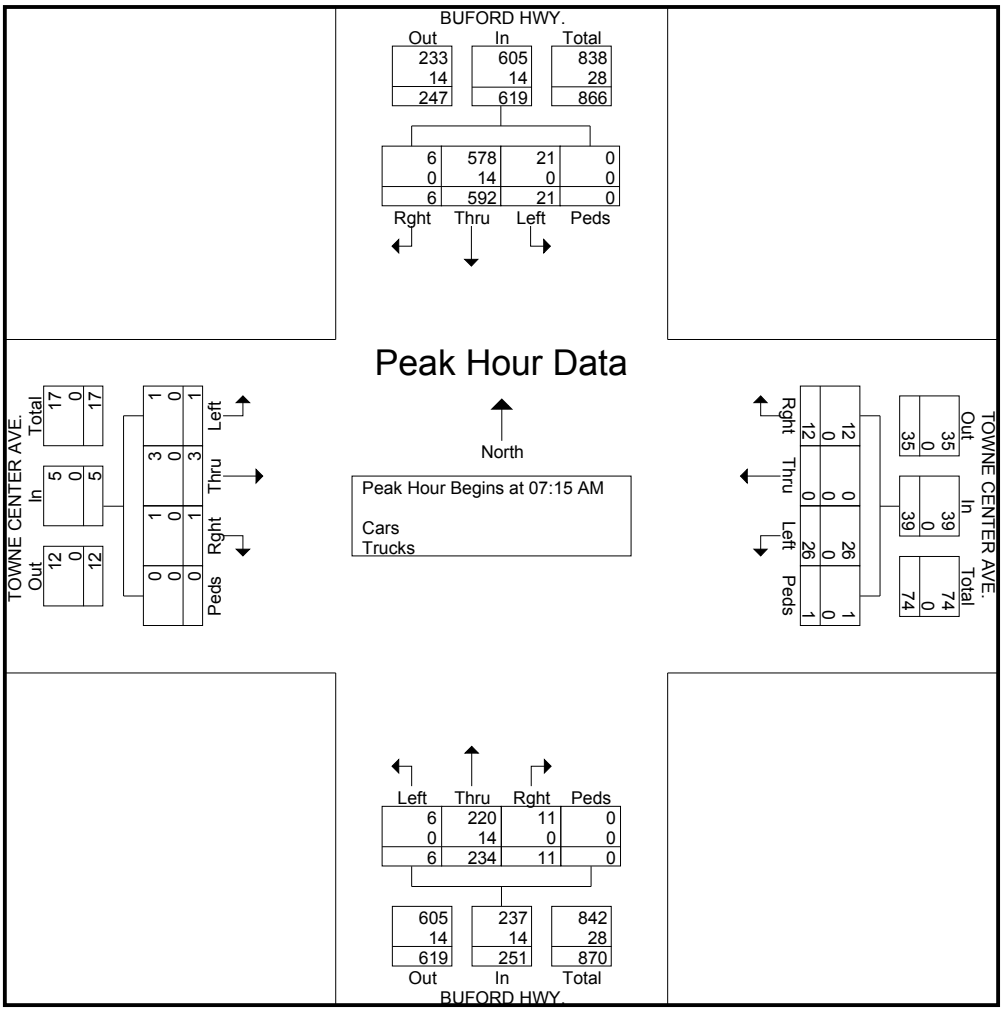
	BUFORD HWY. Southbound					TOWNE CENTER AVE. Westbound					BUFORD HWY. Northbound					TOWNE CENTER AVE. Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:15 AM																					
07:15 AM	0	154	0	0	154	6	0	4	0	10	1	64	3	0	68	0	0	**1**	0	1	233
07:30 AM	7	**162**	2	0	**171**	6	0	**5**	0	**11**	1	49	1	0	51	0	**2**	0	0	**2**	235
07:45 AM	**9**	133	**3**	0	145	6	0	3	**1**	10	**3**	43	2	0	48	**1**	0	0	0	1	204
08:00 AM	5	143	1	0	149	**8**	0	0	0	8	1	**78**	**5**	0	**84**	0	1	0	0	1	**242**
Total Volume	21	592	6	0	619	26	0	12	1	39	6	234	11	0	251	1	3	1	0	5	914
% App. Total	3.4	95.6	1	0		66.7	0	30.8	2.6		2.4	93.2	4.4	0		20	60	20	0		
PHF	.583	.914	.500	.000	.905	.813	.000	.600	.250	.886	.500	.750	.550	.000	.747	.250	.375	.250	.000	.625	.944
Cars	21	578	6	0	605	26	0	12	1	39	6	220	11	0	237	1	3	1	0	5	886
% Cars	100	97.6	100	0	97.7	100	0	100	100	100	100	94.0	100	0	94.4	100	100	100	0	100	96.9
Trucks	0	14	0	0	14	0	0	0	0	0	0	14	0	0	14	0	0	0	0	0	28
% Trucks	0	2.4	0	0	2.3	0	0	0	0	0	0	6.0	0	0	5.6	0	0	0	0	0	3.1



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@TowneCtrAvePM
Site Code :
Start Date : 10/20/2009
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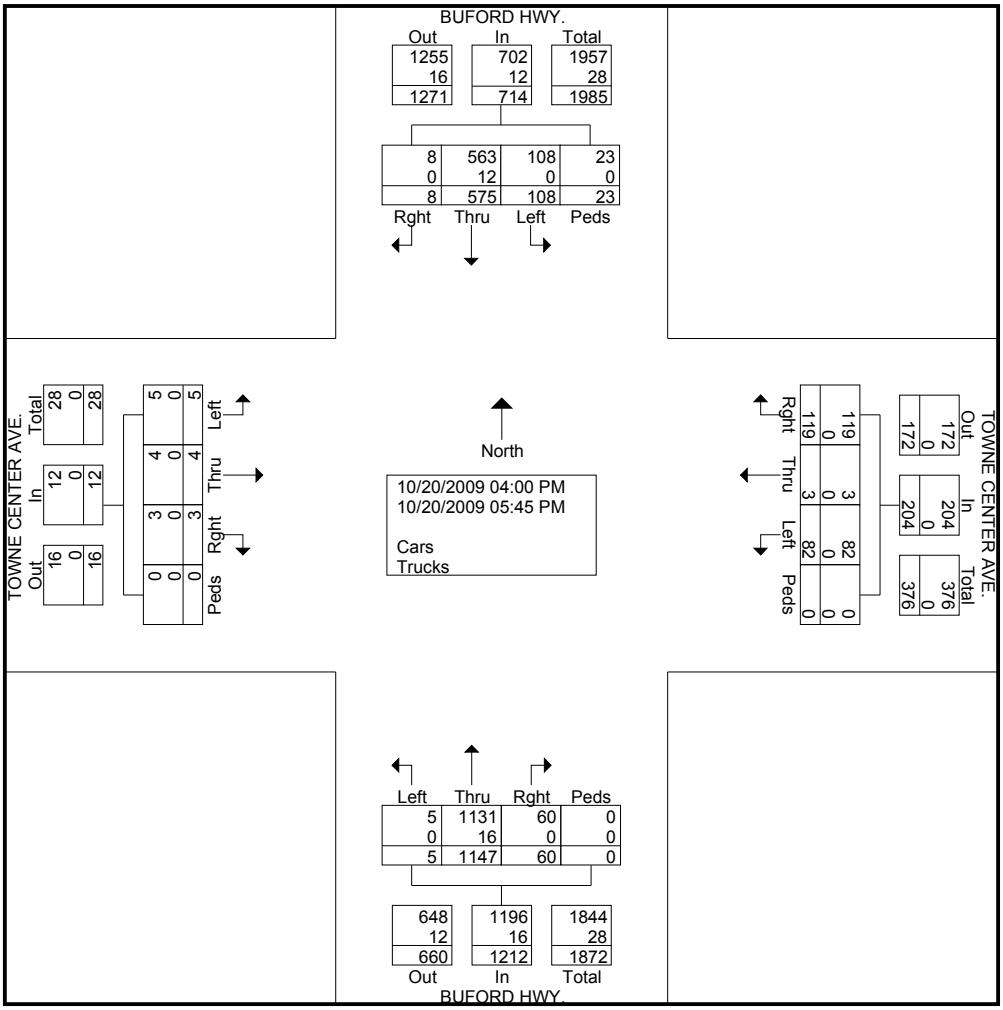
Groups Printed- Cars - Trucks

	BUFORD HWY. Southbound					TOWNE CENTER AVE. Westbound					BUFORD HWY. Northbound					TOWNE CENTER AVE. Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
04:00 PM	16	69	0	0	85	13	0	14	0	27	0	130	8	0	138	0	0	0	0	0	250
04:15 PM	16	79	0	0	95	10	1	14	0	25	1	136	2	0	139	0	0	2	0	2	261
04:30 PM	9	58	1	2	70	12	1	11	0	24	0	144	11	0	155	1	0	0	0	1	250
04:45 PM	12	81	0	7	100	8	0	15	0	23	2	134	6	0	142	0	2	0	0	2	267
Total	53	287	1	9	350	43	2	54	0	99	3	544	27	0	574	1	2	2	0	5	1028
05:00 PM	8	88	1	4	101	12	0	19	0	31	1	135	8	0	144	1	1	1	0	3	279
05:15 PM	15	64	1	2	82	6	0	19	0	25	0	150	10	0	160	1	0	0	0	1	268
05:30 PM	7	63	3	4	77	10	1	12	0	23	0	158	11	0	169	2	0	0	0	2	271
05:45 PM	25	73	2	4	104	11	0	15	0	26	1	160	4	0	165	0	1	0	0	1	296
Total	55	288	7	14	364	39	1	65	0	105	2	603	33	0	638	4	2	1	0	7	1114
Grand Total	108	575	8	23	714	82	3	119	0	204	5	1147	60	0	1212	5	4	3	0	12	2142
Apprch %	15.1	80.5	1.1	3.2		40.2	1.5	58.3	0		0.4	94.6	5	0		41.7	33.3	25	0		
Total %	5	26.8	0.4	1.1	33.3	3.8	0.1	5.6	0	9.5	0.2	53.5	2.8	0	56.6	0.2	0.2	0.1	0	0.6	
Cars	108	563	8	23	702	82	3	119	0	204	5	1131	60	0	1196	5	4	3	0	12	2114
% Cars	100	97.9	100	100	98.3	100	100	100	0	100	100	98.6	100	0	98.7	100	100	100	0	100	98.7
Trucks	0	12	0	0	12	0	0	0	0	0	0	16	0	0	16	0	0	0	0	0	28
% Trucks	0	2.1	0	0	1.7	0	0	0	0	0	0	1.4	0	0	1.3	0	0	0	0	0	1.3



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : BufordHwy@TowneCtrAvePM
Site Code :
Start Date : 10/20/2009
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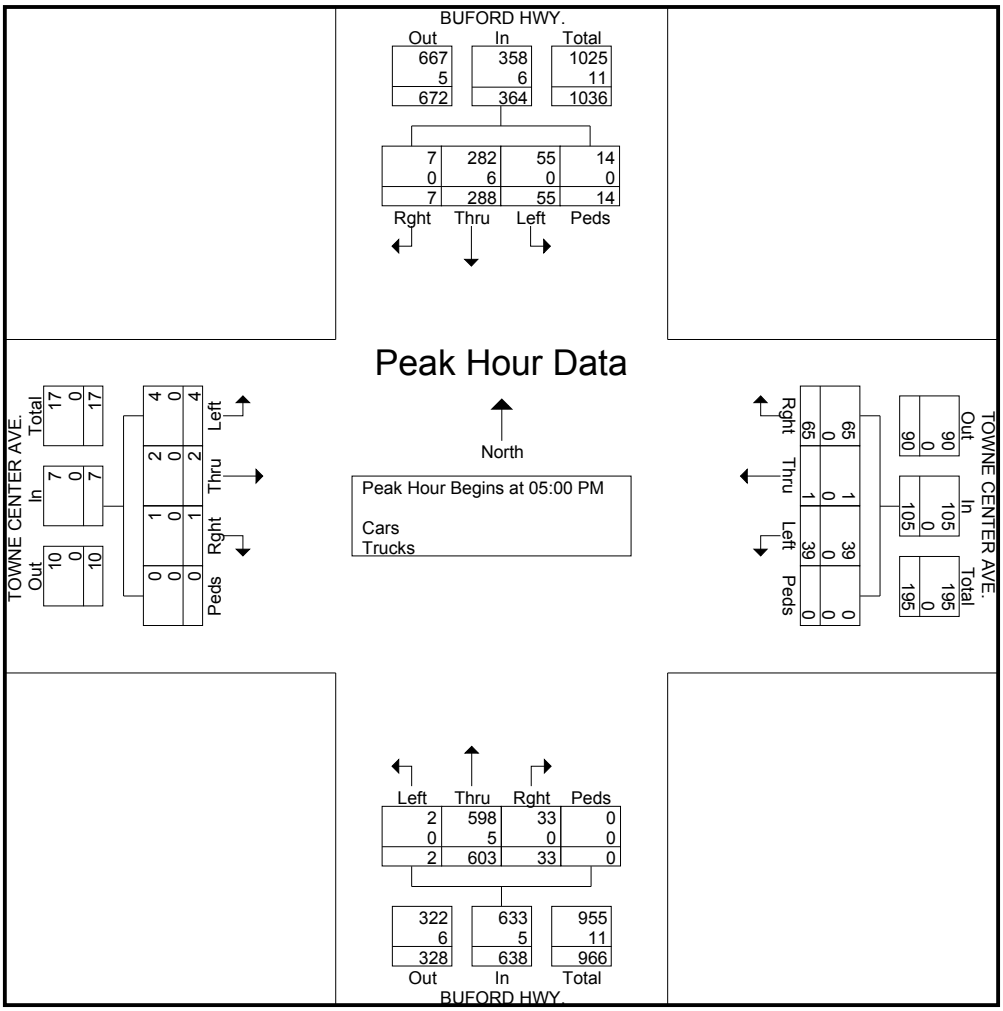
	BUFORD HWY. Southbound					TOWNE CENTER AVE. Westbound					BUFORD HWY. Northbound					TOWNE CENTER AVE. Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	8	**88**	1	**4**	101	**12**	0	**19**	0	**31**	**1**	135	8	0	144	1	**1**	**1**	0	**3**	279
05:15 PM	15	64	1	2	82	6	0	19	0	25	0	150	10	0	160	1	0	0	0	1	268
05:30 PM	7	63	**3**	4	77	10	**1**	12	0	23	0	158	**11**	0	**169**	**2**	0	0	0	2	271
05:45 PM	**25**	73	2	4	**104**	11	0	15	0	26	1	**160**	4	0	165	0	1	0	0	1	**296**
Total Volume	55	288	7	14	364	39	1	65	0	105	2	603	33	0	638	4	2	1	0	7	1114
% App. Total	15.1	79.1	1.9	3.8		37.1	1	61.9	0		0.3	94.5	5.2	0		57.1	28.6	14.3	0		
PHF	.550	.818	.583	.875	.875	.813	.250	.855	.000	.847	.500	.942	.750	.000	.944	.500	.500	.250	.000	.583	.941
Cars	55	282	7	14	358	39	1	65	0	105	2	598	33	0	633	4	2	1	0	7	1103
% Cars	100	97.9	100	100	98.4	100	100	100	0	100	100	99.2	100	0	99.2	100	100	100	0	100	99.0
Trucks	0	6	0	0	6	0	0	0	0	0	0	5	0	0	5	0	0	0	0	0	11
% Trucks	0	2.1	0	0	1.6	0	0	0	0	0	0	0.8	0	0	0.8	0	0	0	0	0	1.0



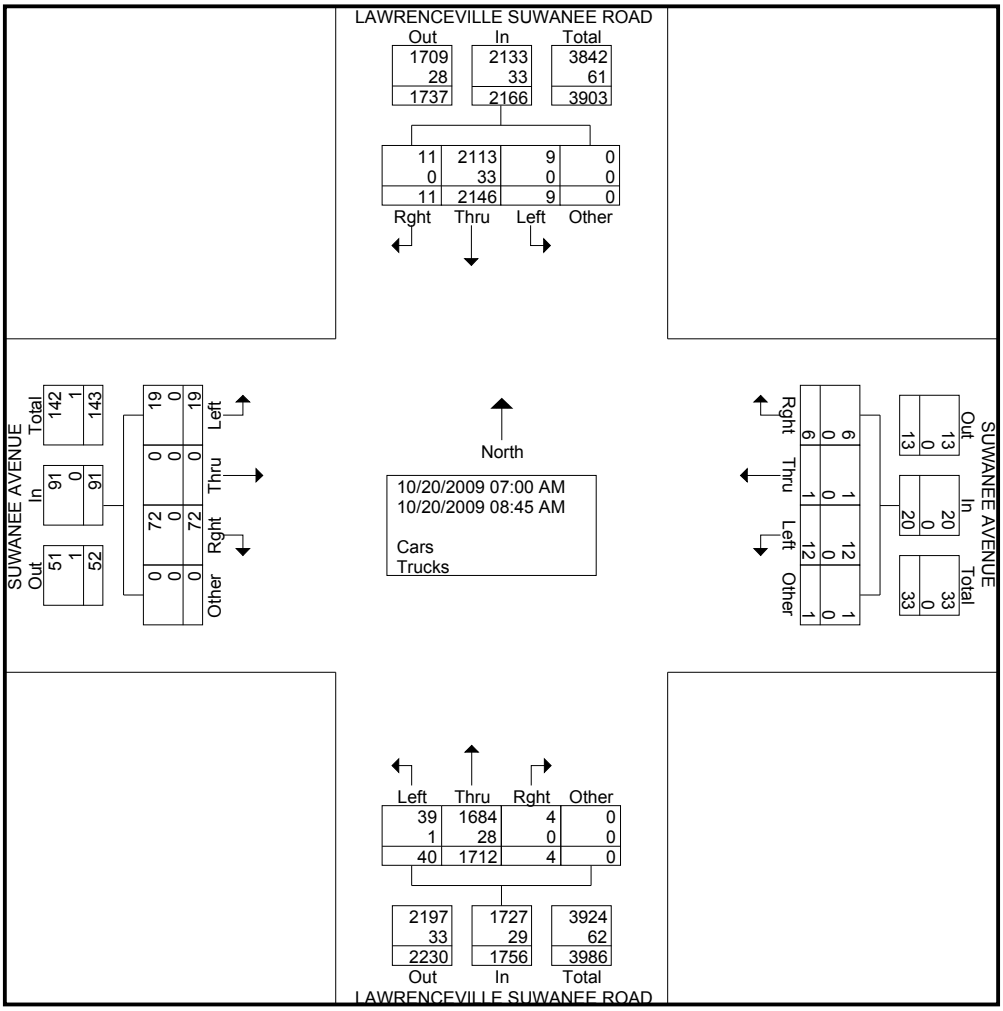
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : LawrencevilleSuwanee@SuwaneeAveAM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	LAWRENCEVILLE SUWANEE ROAD Southbound					SUWANEE AVENUE Westbound					LAWRENCEVILLE SUWANEE ROAD Northbound					SUWANEE AVENUE Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
07:00 AM	2	252	0	0	254	0	0	1	0	1	5	185	0	0	190	2	0	10	0	12	457
07:15 AM	0	258	0	0	258	3	1	0	1	5	2	196	0	0	198	1	0	8	0	9	470
07:30 AM	0	268	0	0	268	0	0	0	0	0	3	204	0	0	207	4	0	12	0	16	491
07:45 AM	1	273	2	0	276	2	0	2	0	4	11	234	0	0	245	2	0	11	0	13	538
Total	3	1051	2	0	1056	5	1	3	1	10	21	819	0	0	840	9	0	41	0	50	1956
08:00 AM	2	277	1	0	280	1	0	2	0	3	8	248	0	0	256	1	0	7	0	8	547
08:15 AM	2	297	1	0	300	4	0	1	0	5	2	217	4	0	223	6	0	7	0	13	541
08:30 AM	1	277	5	0	283	0	0	0	0	0	4	212	0	0	216	1	0	7	0	8	507
08:45 AM	1	244	2	0	247	2	0	0	0	2	5	216	0	0	221	2	0	10	0	12	482
Total	6	1095	9	0	1110	7	0	3	0	10	19	893	4	0	916	10	0	31	0	41	2077
Grand Total	9	2146	11	0	2166	12	1	6	1	20	40	1712	4	0	1756	19	0	72	0	91	4033
Apprch %	0.4	99.1	0.5	0		60	5	30	5		2.3	97.5	0.2	0		20.9	0	79.1	0		
Total %	0.2	53.2	0.3	0	53.7	0.3	0	0.1	0	0.5	1	42.4	0.1	0	43.5	0.5	0	1.8	0	2.3	
Cars	9	2113	11	0	2133	12	1	6	1	20	39	1684	4	0	1727	19	0	72	0	91	3971
% Cars	100	98.5	100	0	98.5	100	100	100	100	100	97.5	98.4	100	0	98.3	100	0	100	0	100	98.5
Trucks	0	33	0	0	33	0	0	0	0	0	1	28	0	0	29	0	0	0	0	0	62
% Trucks	0	1.5	0	0	1.5	0	0	0	0	0	2.5	1.6	0	0	1.7	0	0	0	0	0	1.5



All Traffic Data Services, Inc

1336 Farmer Road
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File Name : LawrencevilleSuwanee@SuwaneeAveAM
Site Code : 00000000
Start Date : 10/20/2009
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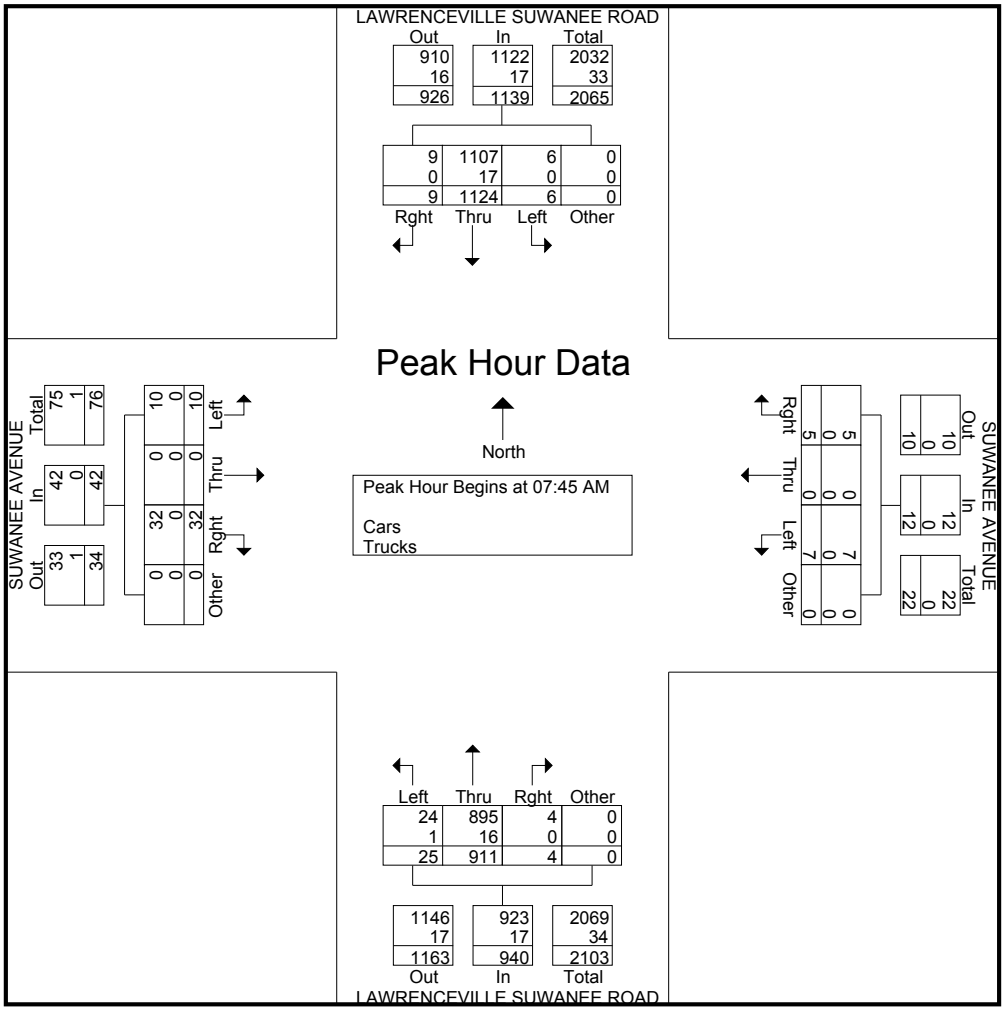
	LAWRENCEVILLE SUWANEE ROAD Southbound					SUWANEE AVENUE Westbound					LAWRENCEVILLE SUWANEE ROAD Northbound					SUWANEE AVENUE Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	1	273	2	0	276	2	0	**2**	0	4	**11**	234	0	0	245	2	0	**11**	0	**13**	538
08:00 AM	**2**	277	1	0	280	1	0	2	0	3	8	**248**	0	0	**256**	1	0	7	0	8	**547**
08:15 AM	2	**297**	1	0	**300**	**4**	0	1	0	**5**	2	217	**4**	0	223	**6**	0	7	0	13	541
08:30 AM	1	277	**5**	0	283	0	0	0	0	0	4	212	0	0	216	1	0	7	0	8	507
Total Volume	6	1124	9	0	1139	7	0	5	0	12	25	911	4	0	940	10	0	32	0	42	2133
% App. Total	0.5	98.7	0.8	0		58.3	0	41.7	0		2.7	96.9	0.4	0		23.8	0	76.2	0		
PHF	.750	.946	.450	.000	.949	.438	.000	.625	.000	.600	.568	.918	.250	.000	.918	.417	.000	.727	.000	.808	.975
Cars	6	1107																			
% Cars	100	98.5	100	0	98.5	100	0	100	0	100	96.0	98.2	100	0	98.2	100	0	100	0	100	98.4
Trucks	0	17	0	0	17	0	0	0	0	0	1	16	0	0	17	0	0	0	0	0	34
% Trucks	0	1.5	0	0	1.5	0	0	0	0	0	4.0	1.8	0	0	1.8	0	0	0	0	0	1.6



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : LawrencevilleSuwanee@SuwaneeAvePM
Site Code : 00000000
Start Date : 10/20/2009
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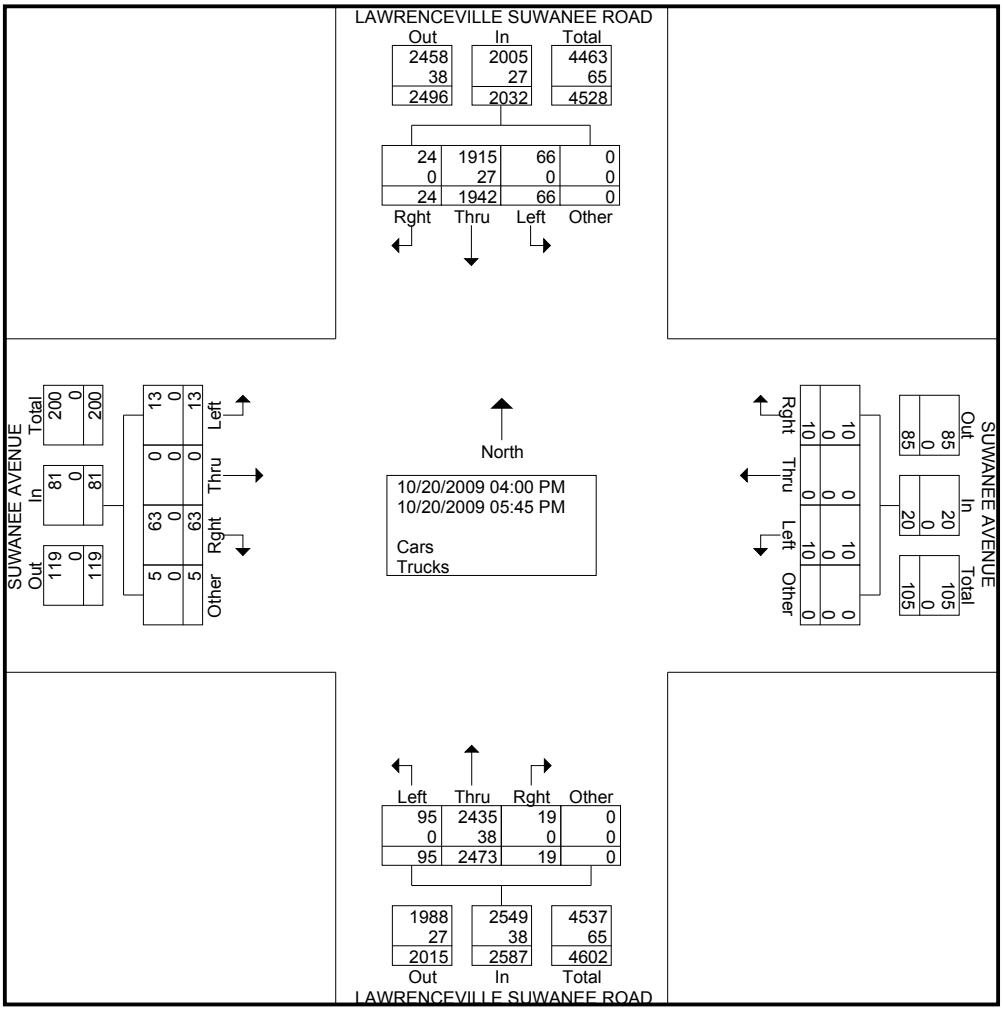
Groups Printed- Cars - Trucks

	LAWRENCEVILLE SUWANEE ROAD Southbound					SUWANEE AVENUE Westbound					LAWRENCEVILLE SUWANEE ROAD Northbound					SUWANEE AVENUE Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
04:00 PM	1	243	1	0	245	1	0	4	0	5	10	252	5	0	267	1	0	4	0	5	522
04:15 PM	3	221	2	0	226	2	0	2	0	4	8	264	1	0	273	0	0	4	0	4	507
04:30 PM	2	239	3	0	244	3	0	1	0	4	15	300	3	0	318	1	0	5	0	6	572
04:45 PM	4	234	3	0	241	1	0	0	0	1	16	278	0	0	294	2	0	6	0	8	544
Total	10	937	9	0	956	7	0	7	0	14	49	1094	9	0	1152	4	0	19	0	23	2145
05:00 PM	0	272	5	0	277	1	0	2	0	3	5	360	0	0	365	2	0	11	2	15	660
05:15 PM	13	202	4	0	219	0	0	0	0	0	9	334	4	0	347	4	0	14	0	18	584
05:30 PM	20	258	2	0	280	0	0	0	0	0	13	351	1	0	365	1	0	7	0	8	653
05:45 PM	23	273	4	0	300	2	0	1	0	3	19	334	5	0	358	2	0	12	3	17	678
Total	56	1005	15	0	1076	3	0	3	0	6	46	1379	10	0	1435	9	0	44	5	58	2575
Grand Total	66	1942	24	0	2032	10	0	10	0	20	95	2473	19	0	2587	13	0	63	5	81	4720
Apprch %	3.2	95.6	1.2	0		50	0	50	0		3.7	95.6	0.7	0		16	0	77.8	6.2		
Total %	1.4	41.1	0.5	0	43.1	0.2	0	0.2	0	0.4	2	52.4	0.4	0	54.8	0.3	0	1.3	0.1	1.7	
Cars	66	1915	24	0	2005	10	0	10	0	20	95	2435	19	0	2549	13	0	63	5	81	4655
% Cars	100	98.6	100	0	98.7	100	0	100	0	100	100	98.5	100	0	98.5	100	0	100	100	100	98.6
Trucks	0	27	0	0	27	0	0	0	0	0	0	38	0	0	38	0	0	0	0	0	65
% Trucks	0	1.4	0	0	1.3	0	0	0	0	0	0	1.5	0	0	1.5	0	0	0	0	0	1.4



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
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File Name : LawrencevilleSuwanee@SuwaneeAvePM
Site Code : 00000000
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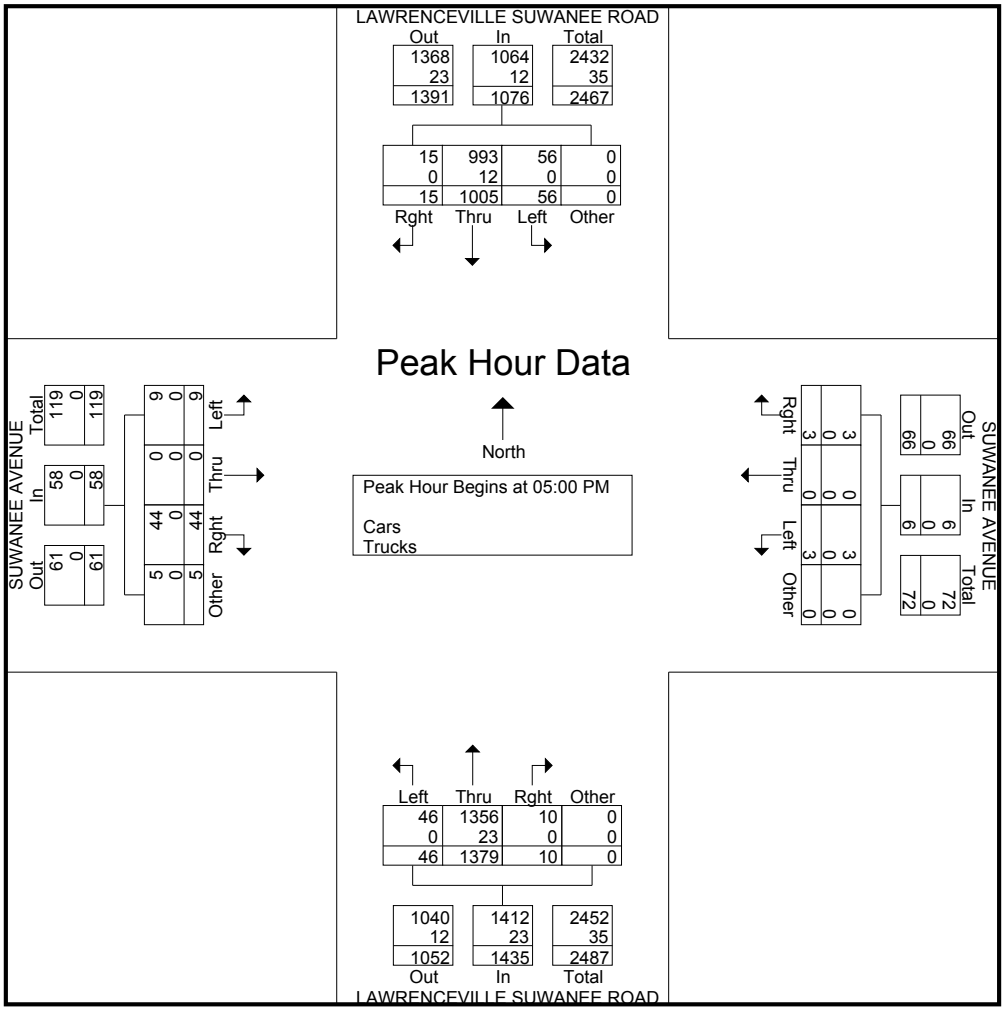
	LAWRENCEVILLE SUWANEE ROAD Southbound					SUWANEE AVENUE Westbound					LAWRENCEVILLE SUWANEE ROAD Northbound					SUWANEE AVENUE Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	0	272	**5**	0	277	1	0	**2**	0	**3**	5	**360**	0	0	**365**	2	0	11	2	15	660
05:15 PM	13	202	4	0	219	0	0	0	0	0	9	334	4	0	347	**4**	0	**14**	0	**18**	584
05:30 PM	20	258	2	0	280	0	0	0	0	0	13	351	1	0	365	1	0	7	0	8	653
05:45 PM	**23**	**273**	4	0	**300**	**2**	0	1	0	3	**19**	334	**5**	0	358	2	0	12	**3**	17	**678**
Total Volume	56	1005	15	0	1076	3	0	3	0	6	46	1379	10	0	1435	9	0	44	5	58	2575
% App. Total	5.2	93.4	1.4	0		50	0	50	0		3.2	96.1	0.7	0		15.5	0	75.9	8.6		
PHF	.609	.920	.750	.000	.897	.375	.000	.375	.000	.500	.605	.958	.500	.000	.983	.563	.000	.786	.417	.806	.949
Cars	56	993	15	0	1064	3	0	3	0	6	46	1356									
% Cars	100	98.8	100	0	98.9	100	0	100	0	100	100	98.3	100	0	98.4	100	0	100	100	100	98.6
Trucks	0	12	0	0	12	0	0	0	0	0	0	23	0	0	23	0	0	0	0	0	35
% Trucks	0	1.2	0	0	1.1	0	0	0	0	0	0	1.7	0	0	1.6	0	0	0	0	0	1.4



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MainSt@RussellStAM
Site Code :
Start Date : 10/20/2009
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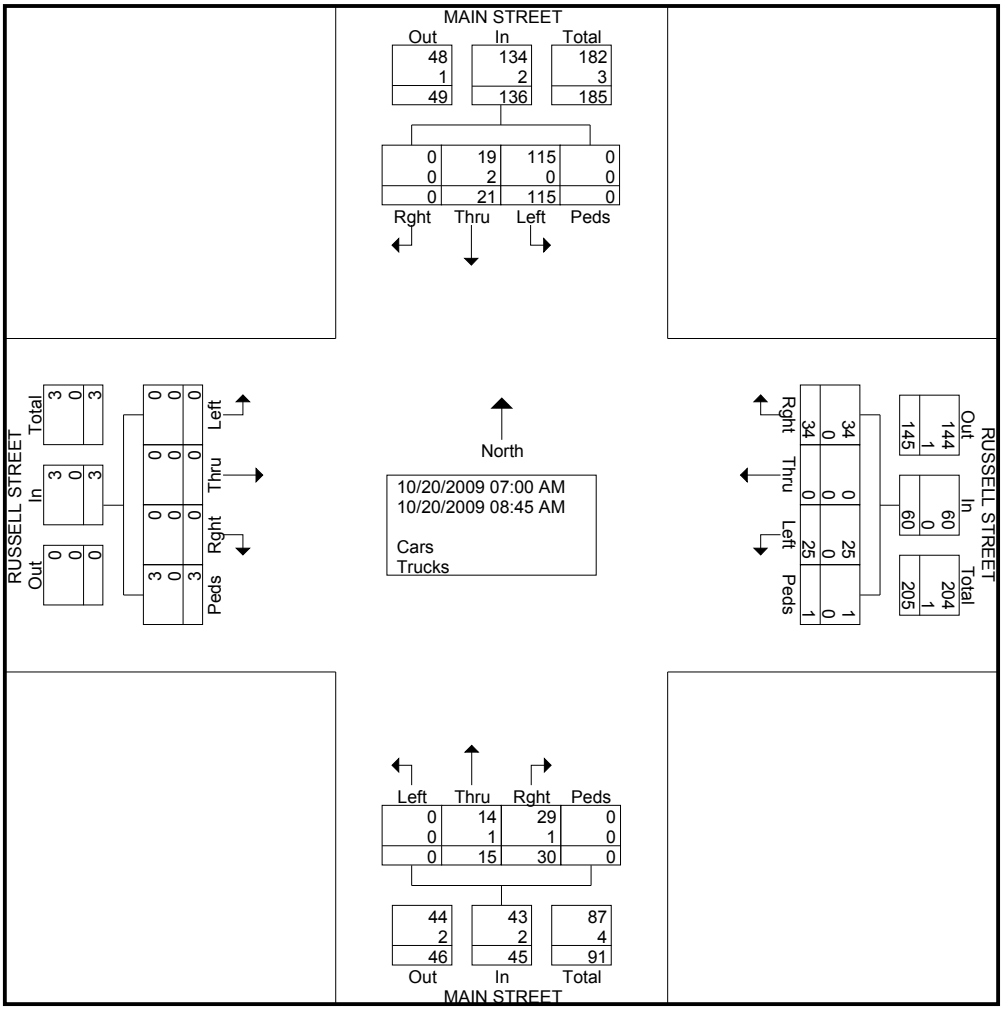
Groups Printed- Cars - Trucks

	MAIN STREET Southbound					RUSSELL STREET Westbound					MAIN STREET Northbound					RUSSELL STREET Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
07:00 AM	11	3	0	0	14	4	0	2	0	6	0	1	5	0	6	0	0	0	0	0	26
07:15 AM	13	4	0	0	17	12	0	2	0	14	0	4	6	0	10	0	0	0	1	1	42
07:30 AM	23	2	0	0	25	1	0	3	0	4	0	0	5	0	5	0	0	0	0	0	34
07:45 AM	16	3	0	0	19	2	0	3	0	5	0	1	3	0	4	0	0	0	0	0	28
Total	63	12	0	0	75	19	0	10	0	29	0	6	19	0	25	0	0	0	1	1	130
08:00 AM	11	2	0	0	13	2	0	4	0	6	0	2	2	0	4	0	0	0	1	1	24
08:15 AM	16	1	0	0	17	1	0	5	1	7	0	3	1	0	4	0	0	0	1	1	29
08:30 AM	15	2	0	0	17	1	0	4	0	5	0	1	5	0	6	0	0	0	0	0	28
08:45 AM	10	4	0	0	14	2	0	11	0	13	0	3	3	0	6	0	0	0	0	0	33
Total	52	9	0	0	61	6	0	24	1	31	0	9	11	0	20	0	0	0	2	2	114
Grand Total	115	21	0	0	136	25	0	34	1	60	0	15	30	0	45	0	0	0	3	3	244
Apprch %	84.6	15.4	0	0		41.7	0	56.7	1.7		0	33.3	66.7	0		0	0	0	100		
Total %	47.1	8.6	0	0	55.7	10.2	0	13.9	0.4	24.6	0	6.1	12.3	0	18.4	0	0	0	1.2	1.2	
Cars	115	19	0	0	134	25	0	34	1	60	0	14	29	0	43	0	0	0	3	3	240
% Cars	100	90.5	0	0	98.5	100	0	100	100	100	0	93.3	96.7	0	95.6	0	0	0	100	100	98.4
Trucks	0	2	0	0	2	0	0	0	0	0	0	1	1	0	2	0	0	0	0	0	4
% Trucks	0	9.5	0	0	1.5	0	0	0	0	0	0	6.7	3.3	0	4.4	0	0	0	0	0	1.6



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
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File Name : MainSt@RussellStAM
Site Code :
Start Date : 10/20/2009
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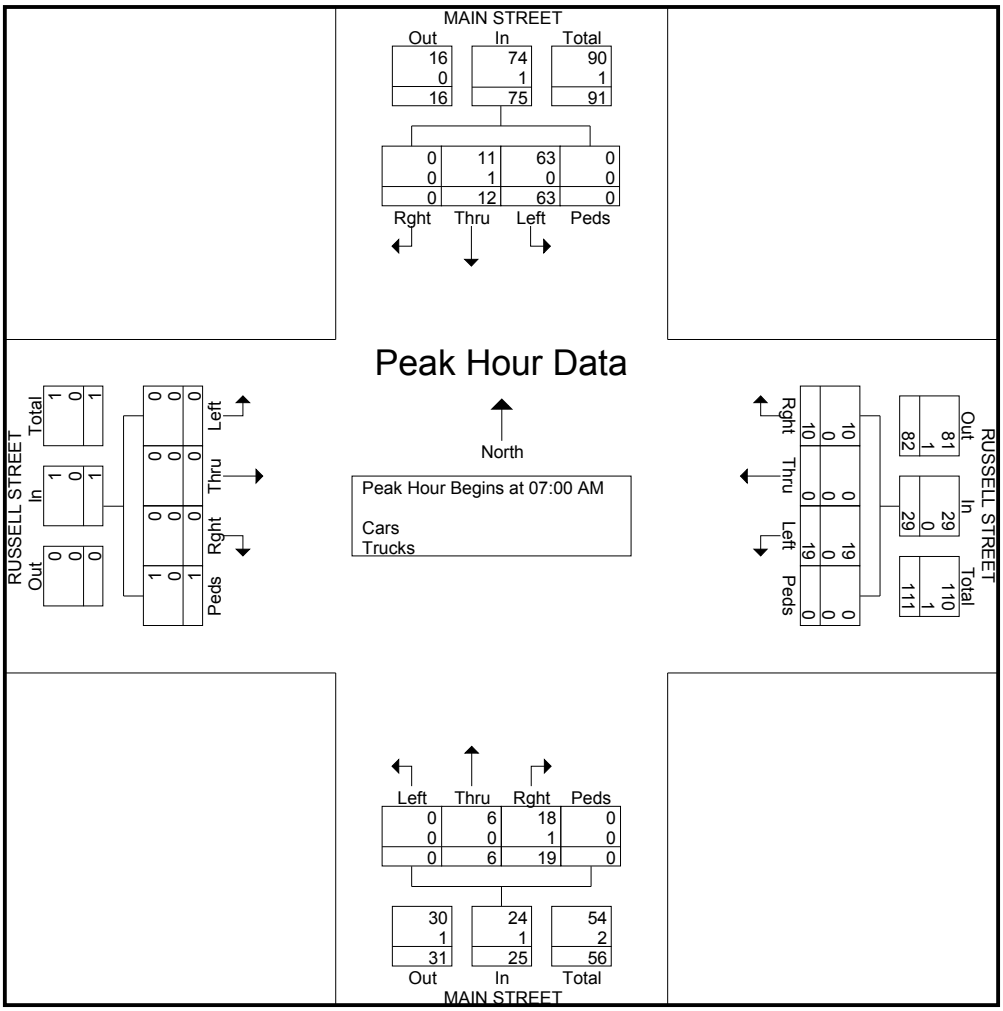
	MAIN STREET Southbound					RUSSELL STREET Westbound					MAIN STREET Northbound					RUSSELL STREET Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:00 AM																					
07:00 AM	11	3	0	0	14	4	0	2	0	6	0	1	5	0	6	0	0	0	0	0	26
07:15 AM	13	**4**	0	0	17	**12**	0	2	0	**14**	0	**4**	**6**	0	**10**	0	0	0	**1**	**1**	**42**
07:30 AM	**23**	2	0	0	**25**	1	0	**3**	0	4	0	0	5	0	5	0	0	0	0	0	34
07:45 AM	16	3	0	0	19	2	0	3	0	5	0	1	3	0	4	0	0	0	0	0	28
Total Volume	63	12	0	0	75	19	0	10	0	29	0	6	19	0	25	0	0	0	1	1	130
% App. Total	84	16	0	0		65.5	0	34.5	0		0	24	76	0		0	0	0	100		
PHF	.685	.750	.000	.000	.750	.396	.000	.833	.000	.518	.000	.375	.792	.000	.625	.000	.000	.000	.250	.250	.774
Cars	63	11	0	0	74	19	0	10	0	29	0	6	18	0	24	0	0	0	1	1	128
% Cars	100	91.7	0	0	98.7	100	0	100	0	100	0	100	94.7	0	96.0	0	0	0	100	100	98.5
Trucks	0	1	0	0	1	0	0	0	0	0	0	0	1	0	1	0	0	0	0	0	2
% Trucks	0	8.3	0	0	1.3	0	0	0	0	0	0	0	5.3	0	4.0	0	0	0	0	0	1.5



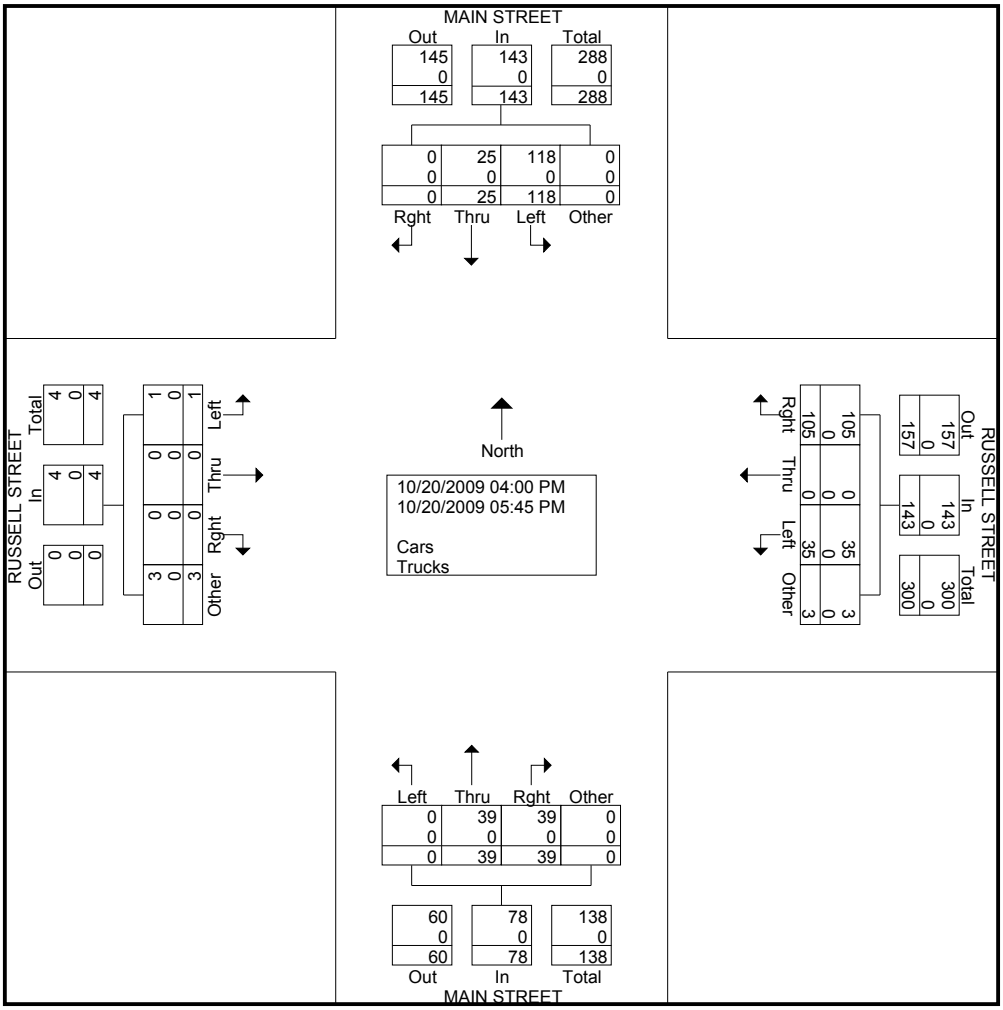
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MainSt@RussellStPM
Site Code :
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	MAIN STREET Southbound					RUSSELL STREET Westbound					MAIN STREET Northbound					RUSSELL STREET Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
04:00 PM	10	2	0	0	12	4	0	11	0	15	0	1	7	0	8	0	0	0	0	0	35
04:15 PM	13	8	0	0	21	5	0	16	0	21	0	1	7	0	8	0	0	0	0	0	50
04:30 PM	7	0	0	0	7	5	0	10	0	15	0	5	8	0	13	1	0	0	1	2	37
04:45 PM	15	5	0	0	20	3	0	17	0	20	0	6	4	0	10	0	0	0	0	0	50
Total	45	15	0	0	60	17	0	54	0	71	0	13	26	0	39	1	0	0	1	2	172
05:00 PM	14	2	0	0	16	5	0	15	1	21	0	8	1	0	9	0	0	0	0	0	46
05:15 PM	12	2	0	0	14	1	0	15	0	16	0	5	2	0	7	0	0	0	1	1	38
05:30 PM	23	3	0	0	26	4	0	11	0	15	0	5	6	0	11	0	0	0	0	0	52
05:45 PM	24	3	0	0	27	8	0	10	2	20	0	8	4	0	12	0	0	0	1	1	60
Total	73	10	0	0	83	18	0	51	3	72	0	26	13	0	39	0	0	0	2	2	196
Grand Total	118	25	0	0	143	35	0	105	3	143	0	39	39	0	78	1	0	0	3	4	368
Apprch %	82.5	17.5	0	0		24.5	0	73.4	2.1		0	50	50	0		25	0	0	75		
Total %	32.1	6.8	0	0	38.9	9.5	0	28.5	0.8	38.9	0	10.6	10.6	0	21.2	0.3	0	0	0.8	1.1	
Cars	118	25	0	0	143	35	0	105	3	143	0	39	39	0	78	1	0	0	3	4	368
% Cars	100	100	0	0	100	100	0	100	100	100	0	100	100	0	100	100	0	0	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

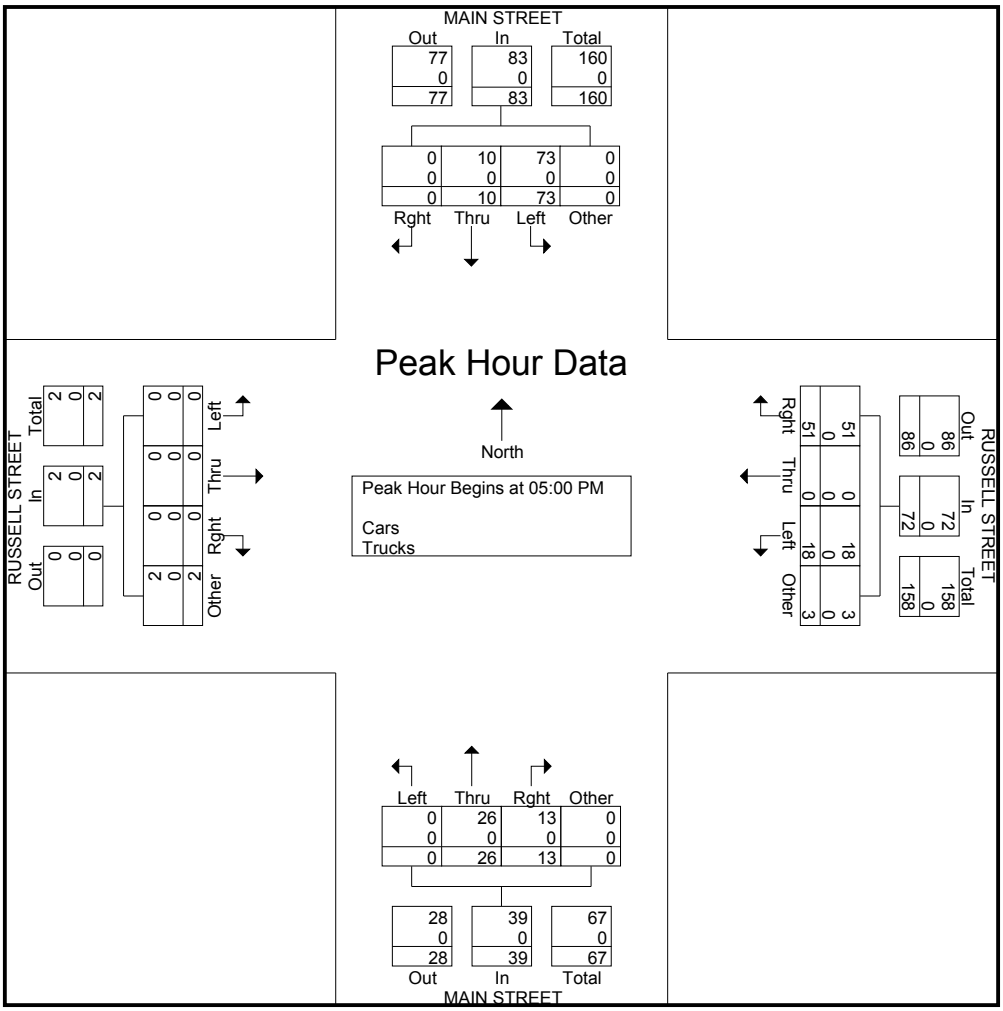


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MainSt@RussellStPM
Site Code :
Start Date : 10/20/2009
Page No : 2

	MAIN STREET Southbound					RUSSELL STREET Westbound					MAIN STREET Northbound					RUSSELL STREET Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	14	2	0	0	16	5	0	**15**	1	**21**	0	**8**	1	0	9	0	0	0	0	0	46
05:15 PM	12	2	0	0	14	1	0	15	0	16	0	5	2	0	7	0	0	0	**1**	**1**	38
05:30 PM	23	**3**	0	0	26	4	0	11	0	15	0	5	**6**	0	11	0	0	0	0	0	52
05:45 PM	**24**	3	0	0	**27**	**8**	0	10	**2**	20	0	8	4	0	**12**	0	0	0	1	1	**60**
Total Volume	73	10	0	0	83	18	0	51	3	72	0	26	13	0	39	0	0	0	2	2	196
% App. Total	88	12	0	0		25	0	70.8	4.2		0	66.7	33.3	0		0	0	0	100		
PHF	.760	.833	.000	.000	.769	.563	.000	.850	.375	.857	.000	.813	.542	.000	.813	.000	.000	.000	.500	.500	.817
Cars	73	10	0	0	83	18	0	51	3	72	0	26	13	0	39	0	0	0	2	2	196
% Cars	100	100	0	0	100	100	0	100	100	100	0	100	100	0	100	0	0	0	100	100	100
Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Trucks	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0



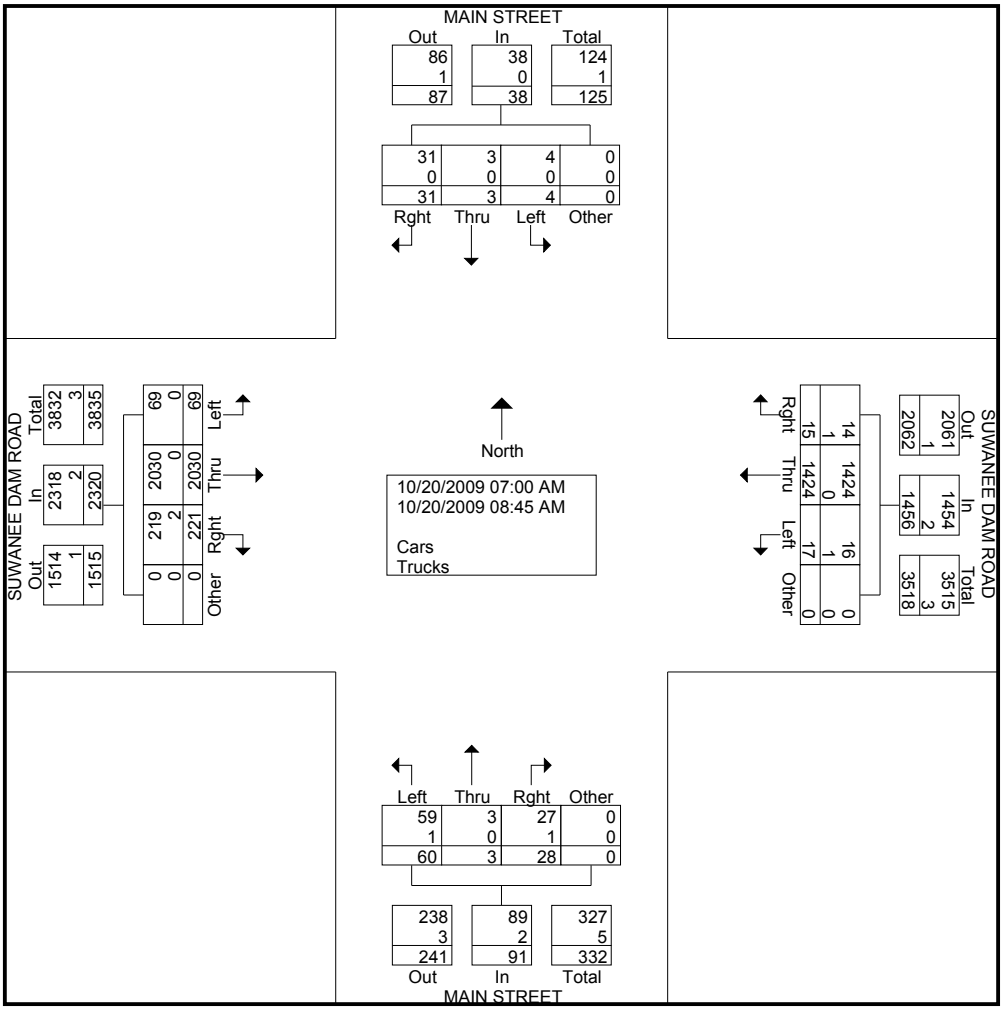
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MainSt@SuwaneeDamAM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	MAIN STREET Southbound					SUWANEE DAM ROAD Westbound					MAIN STREET Northbound					SUWANEE DAM ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
07:00 AM	1	1	1	0	3	0	150	1	0	151	3	1	3	0	7	3	260	22	0	285	446
07:15 AM	0	0	2	0	2	0	143	4	0	147	8	0	2	0	10	8	266	27	0	301	460
07:30 AM	0	1	8	0	9	1	164	2	0	167	4	0	1	0	5	11	250	20	0	281	462
07:45 AM	0	0	3	0	3	1	160	4	0	165	7	1	9	0	17	11	264	38	0	313	498
Total	1	2	14	0	17	2	617	11	0	630	22	2	15	0	39	33	1040	107	0	1180	1866
08:00 AM	0	0	2	0	2	3	200	0	0	203	4	0	3	0	7	9	220	38	0	267	479
08:15 AM	0	1	7	0	8	4	212	1	0	217	7	0	4	0	11	10	282	27	0	319	555
08:30 AM	0	0	2	0	2	3	195	1	0	199	10	0	3	0	13	5	241	23	0	269	483
08:45 AM	3	0	6	0	9	5	200	2	0	207	17	1	3	0	21	12	247	26	0	285	522
Total	3	1	17	0	21	15	807	4	0	826	38	1	13	0	52	36	990	114	0	1140	2039
Grand Total	4	3	31	0	38	17	1424	15	0	1456	60	3	28	0	91	69	2030	221	0	2320	3905
Apprch %	10.5	7.9	81.6	0		1.2	97.8	1	0		65.9	3.3	30.8	0		3	87.5	9.5	0		
Total %	0.1	0.1	0.8	0	1	0.4	36.5	0.4	0	37.3	1.5	0.1	0.7	0	2.3	1.8	52	5.7	0	59.4	
Cars	4	3	31	0	38	16	1424	14	0	1454	59	3	27	0	89	69	2030	219	0	2318	3899
% Cars	100	100	100	0	100	94.1	100	93.3	0	99.9	98.3	100	96.4	0	97.8	100	100	99.1	0	99.9	99.8
Trucks	0	0	0	0	0	1	0	1	0	2	1	0	1	0	2	0	0	2	0	2	6
% Trucks	0	0	0	0	0	5.9	0	6.7	0	0.1	1.7	0	3.6	0	2.2	0	0	0.9	0	0.1	0.2

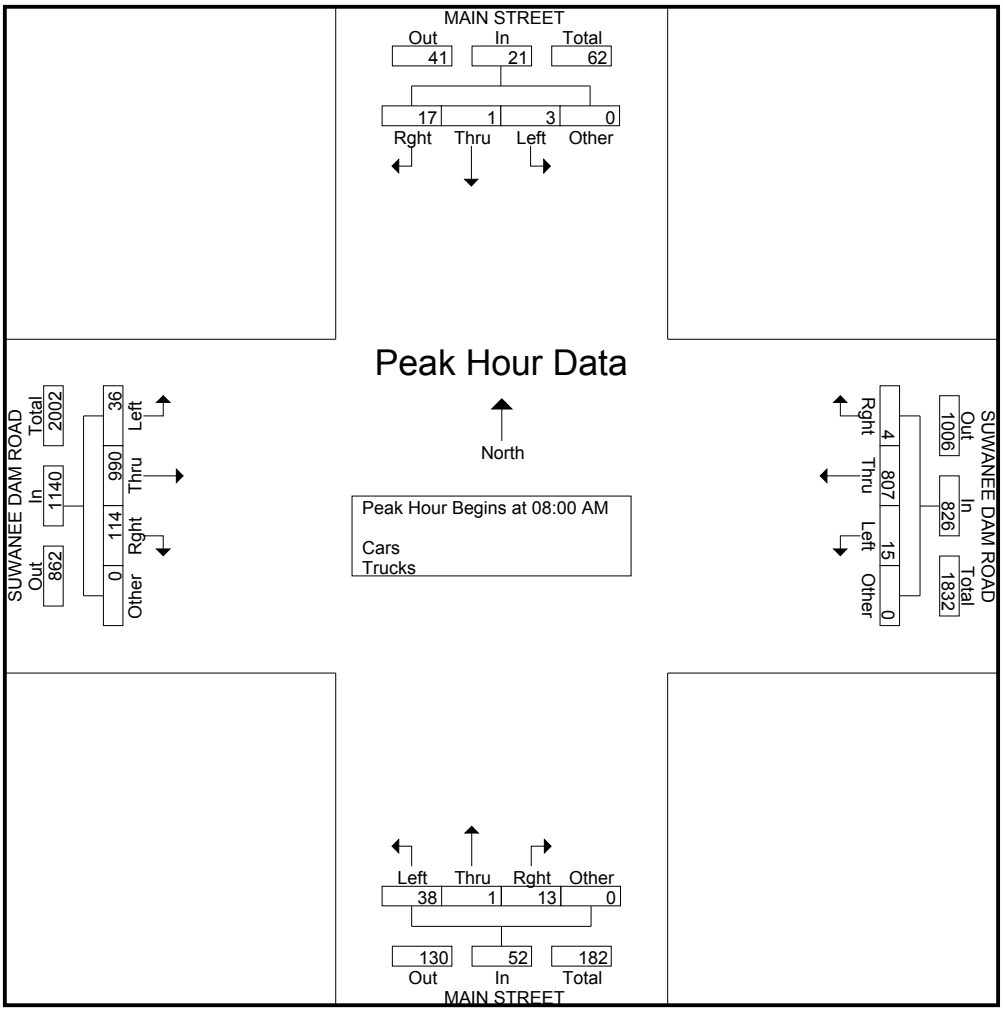


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MainSt@SuwaneeDamAM
Site Code : 00000000
Start Date : 10/20/2009
Page No : 2

	MAIN STREET Southbound					SUWANEE DAM ROAD Westbound					MAIN STREET Northbound					SUWANEE DAM ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	0	0	2	0	2	3	200	0	0	203	4	0	3	0	7	9	220	**38**	0	267	479
08:15 AM	0	**1**	**7**	0	8	4	**212**	1	0	**217**	7	0	**4**	0	11	10	**282**	27	0	**319**	**555**
08:30 AM	0	0	2	0	2	3	195	1	0	199	10	0	3	0	13	5	241	23	0	269	483
08:45 AM	**3**	0	6	0	**9**	**5**	200	**2**	0	207	**17**	**1**	3	0	**21**	**12**	247	26	0	285	522
Total Volume	3	1	17	0	21	15	807	4	0	826	38	1	13	0	52	36	990	114	0	1140	2039
% App. Total	14.3	4.8	81	0		1.8	97.7	0.5	0		73.1	1.9	25	0		3.2	86.8	10	0		
PHF	.250	.250	.607	.000	.583	.750	.952	.500	.000	.952	.559	.250	.813	.000	.619	.750	.878	.750	.000	.893	.918



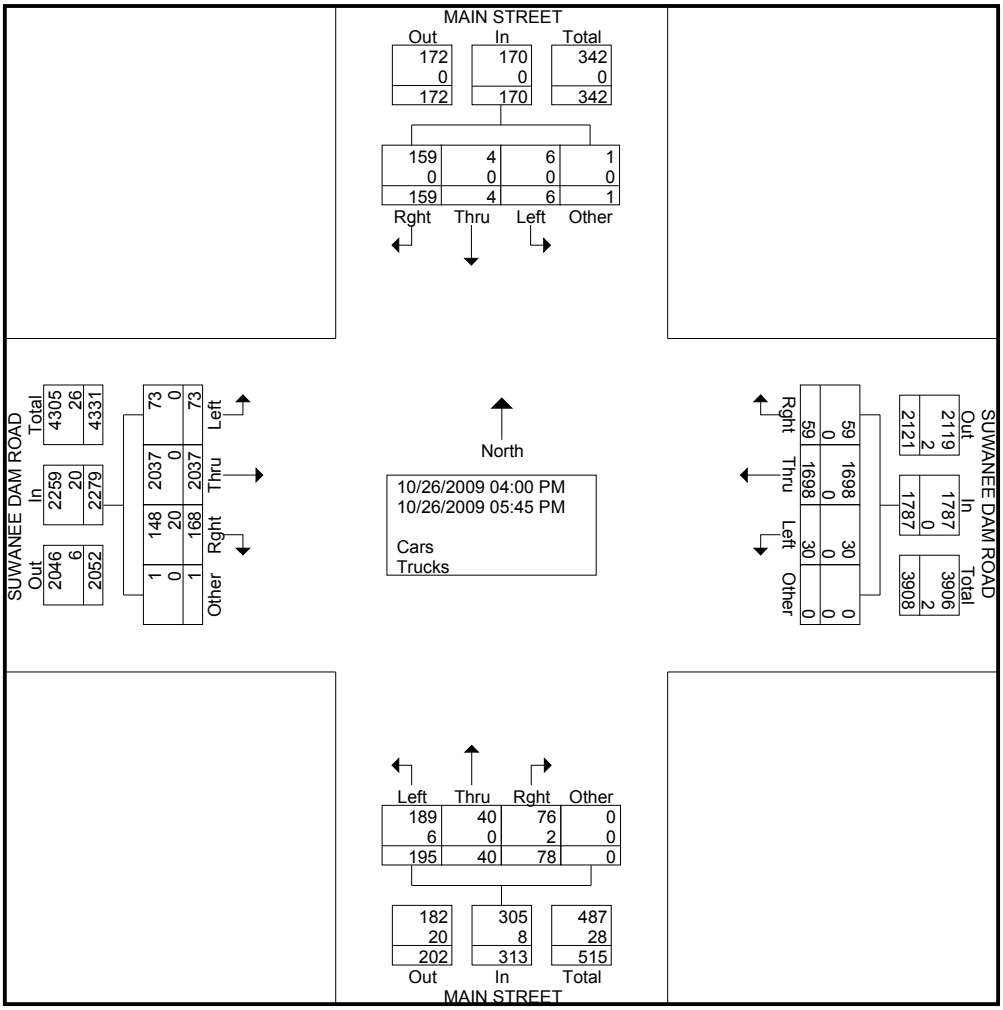
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MainSt@SuwaneeDamPM
Site Code : 00000000
Start Date : 10/26/2009
Page No : 1

Groups Printed- Cars - Trucks

	MAIN STREET Southbound					SUWANEE DAM ROAD Westbound					MAIN STREET Northbound					SUWANEE DAM ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
04:00 PM	0	0	22	1	23	1	230	3	0	234	29	3	8	0	40	15	218	19	1	253	550
04:15 PM	1	1	20	0	22	3	227	14	0	244	20	3	11	0	34	8	237	21	0	266	566
04:30 PM	3	1	22	0	26	4	210	7	0	221	30	1	5	0	36	6	250	15	0	271	554
04:45 PM	0	0	17	0	17	2	210	6	0	218	24	3	12	0	39	15	274	16	0	305	579
Total	4	2	81	1	88	10	877	30	0	917	103	10	36	0	149	44	979	71	1	1095	2249
05:00 PM	0	1	18	0	19	4	204	8	0	216	43	6	5	0	54	9	275	25	0	309	598
05:15 PM	2	1	17	0	20	4	233	7	0	244	13	7	13	0	33	9	254	28	0	291	588
05:30 PM	0	0	28	0	28	4	200	10	0	214	20	6	13	0	39	8	266	23	0	297	578
05:45 PM	0	0	15	0	15	8	184	4	0	196	16	11	11	0	38	3	263	21	0	287	536
Total	2	2	78	0	82	20	821	29	0	870	92	30	42	0	164	29	1058	97	0	1184	2300
Grand Total	6	4	159	1	170	30	1698	59	0	1787	195	40	78	0	313	73	2037	168	1	2279	4549
Apprch %	3.5	2.4	93.5	0.6		1.7	95	3.3	0		62.3	12.8	24.9	0		3.2	89.4	7.4	0		
Total %	0.1	0.1	3.5	0	3.7	0.7	37.3	1.3	0	39.3	4.3	0.9	1.7	0	6.9	1.6	44.8	3.7	0	50.1	
Cars	6	4	159	1	170	30	1698	59	0	1787	189	40	76	0	305	73	2037	148	1	2259	4521
% Cars	100	100	100	100	100	100	100	100	0	100	96.9	100	97.4	0	97.4	100	100	88.1	100	99.1	99.4
Trucks	0	0	0	0	0	0	0	0	0	0	6	0	2	0	8	0	0	20	0	20	28
% Trucks	0	0	0	0	0	0	0	0	0	0	3.1	0	2.6	0	2.6	0	0	11.9	0	0.9	0.6

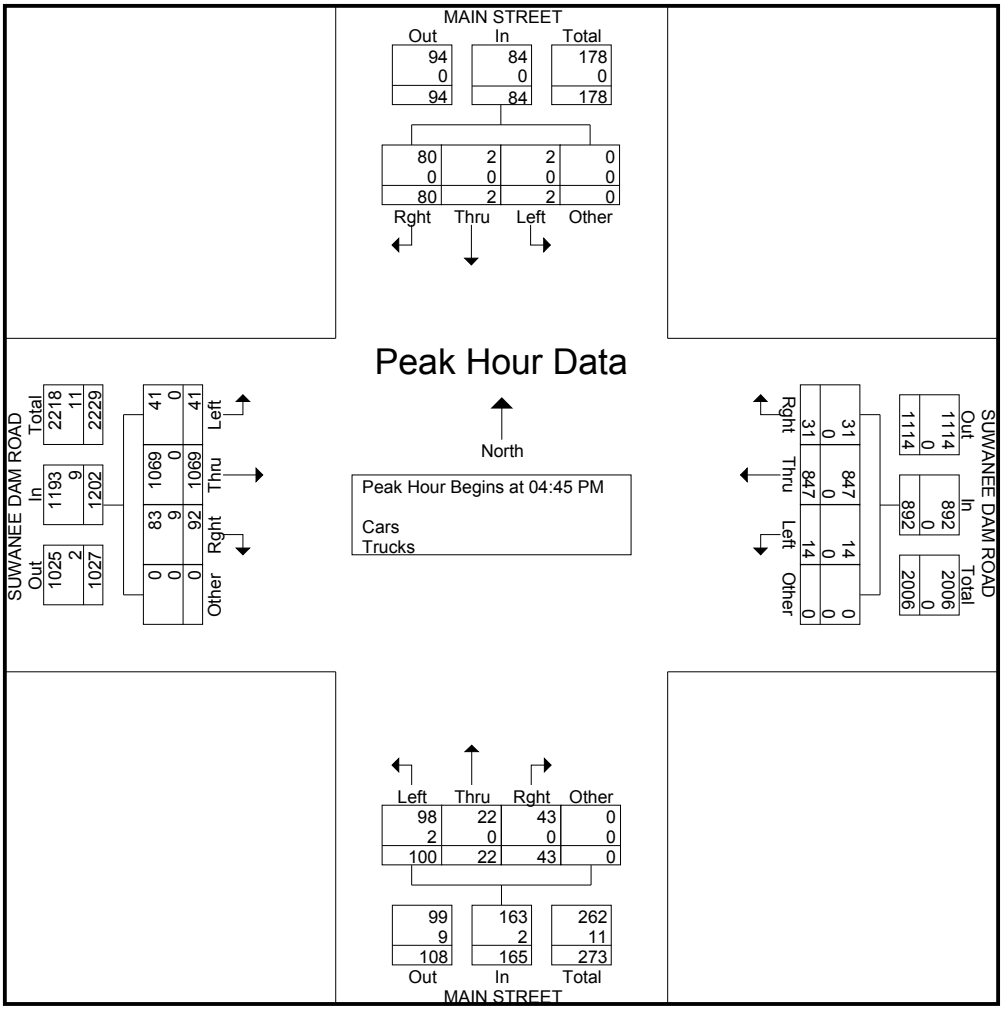


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MainSt@SuwaneeDamPM
Site Code : 00000000
Start Date : 10/26/2009
Page No : 2

	MAIN STREET Southbound					SUWANEE DAM ROAD Westbound					MAIN STREET Northbound					SUWANEE DAM ROAD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	0	0	17	0	17	2	210	6	0	218	24	3	12	0	39	**15**	274	16	0	305	579
05:00 PM	0	**1**	18	0	19	**4**	204	8	0	216	**43**	6	5	0	**54**	9	**275**	25	0	**309**	**598**
05:15 PM	**2**	1	17	0	20	4	**233**	7	0	**244**	13	**7**	**13**	0	33	9	254	**28**	0	291	588
05:30 PM	0	0	**28**	0	**28**	4	200	**10**	0	214	20	6	13	0	39	8	266	23	0	297	578
Total Volume	2	2	80	0	84	14	847	31	0	892	100	22	43	0	165	41	1069	92	0	1202	2343
% App. Total	2.4	2.4	95.2	0		1.6	95	3.5	0		60.6	13.3	26.1	0		3.4	88.9	7.7	0		
PHF	.250	.500	.714	.000	.750	.875	.909	.775	.000	.914	.581	.786	.827	.000	.764	.683	.972	.821	.000	.972	.980
Cars	2	2	80	0	84	14	847	31	0	892	98	22	43	0	163	41	1069				
% Cars	100	100	100	0	100	100	100	100	0	100	98.0	100	100	0	98.8	100	100	90.2	0	99.3	99.5
Trucks	0	0	0	0	0	0	0	0	0	0	2	0	0	0	2	0	0	9	0	9	11
% Trucks	0	0	0	0	0	0	0	0	0	0	2.0	0	0	0	1.2	0	0	9.8	0	0.7	0.5



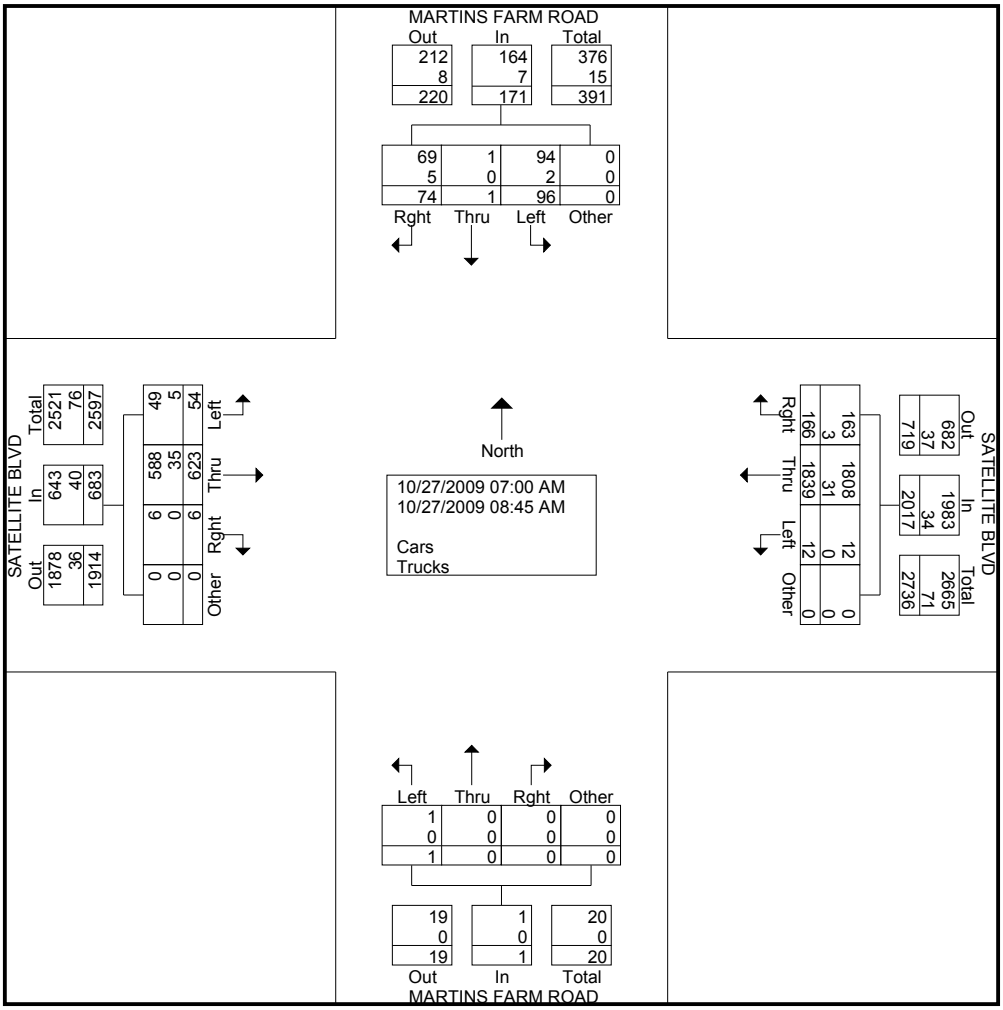
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MartinFarm@SatelliteBlvdAM
Site Code : 00000000
Start Date : 10/27/2009
Page No : 1

Groups Printed- Cars - Trucks

	MARTINS FARM ROAD Southbound					SATELLITE BLVD Westbound					MARTINS FARM ROAD Northbound					SATELLITE BLVD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
07:00 AM	8	0	4	0	12	1	211	36	0	248	0	0	0	0	0	3	50	0	0	53	313
07:15 AM	14	0	5	0	19	2	199	21	0	222	0	0	0	0	0	11	70	0	0	81	322
07:30 AM	17	0	10	0	27	0	258	14	0	272	0	0	0	0	0	3	83	0	0	86	385
07:45 AM	11	0	6	0	17	3	258	37	0	298	0	0	0	0	0	9	70	3	0	82	397
Total	50	0	25	0	75	6	926	108	0	1040	0	0	0	0	0	26	273	3	0	302	1417
08:00 AM	9	1	9	0	19	0	245	22	0	267	0	0	0	0	0	8	88	1	0	97	383
08:15 AM	12	0	14	0	26	1	249	11	0	261	1	0	0	0	1	3	94	1	0	98	386
08:30 AM	14	0	14	0	28	3	216	13	0	232	0	0	0	0	0	11	87	0	0	98	358
08:45 AM	11	0	12	0	23	2	203	12	0	217	0	0	0	0	0	6	81	1	0	88	328
Total	46	1	49	0	96	6	913	58	0	977	1	0	0	0	1	28	350	3	0	381	1455
Grand Total	96	1	74	0	171	12	1839	166	0	2017	1	0	0	0	1	54	623	6	0	683	2872
Apprch %	56.1	0.6	43.3	0		0.6	91.2	8.2	0		100	0	0	0		7.9	91.2	0.9	0		
Total %	3.3	0	2.6	0	6	0.4	64	5.8	0	70.2	0	0	0	0	0	1.9	21.7	0.2	0	23.8	
Cars	94	1	69	0	164	12	1808	163	0	1983	1	0	0	0	1	49	588	6	0	643	2791
% Cars	97.9	100	93.2	0	95.9	100	98.3	98.2	0	98.3	100	0	0	0	100	90.7	94.4	100	0	94.1	97.2
Trucks	2	0	5	0	7	0	31	3	0	34	0	0	0	0	0	5	35	0	0	40	81
% Trucks	2.1	0	6.8	0	4.1	0	1.7	1.8	0	1.7	0	0	0	0	0	9.3	5.6	0	0	5.9	2.8

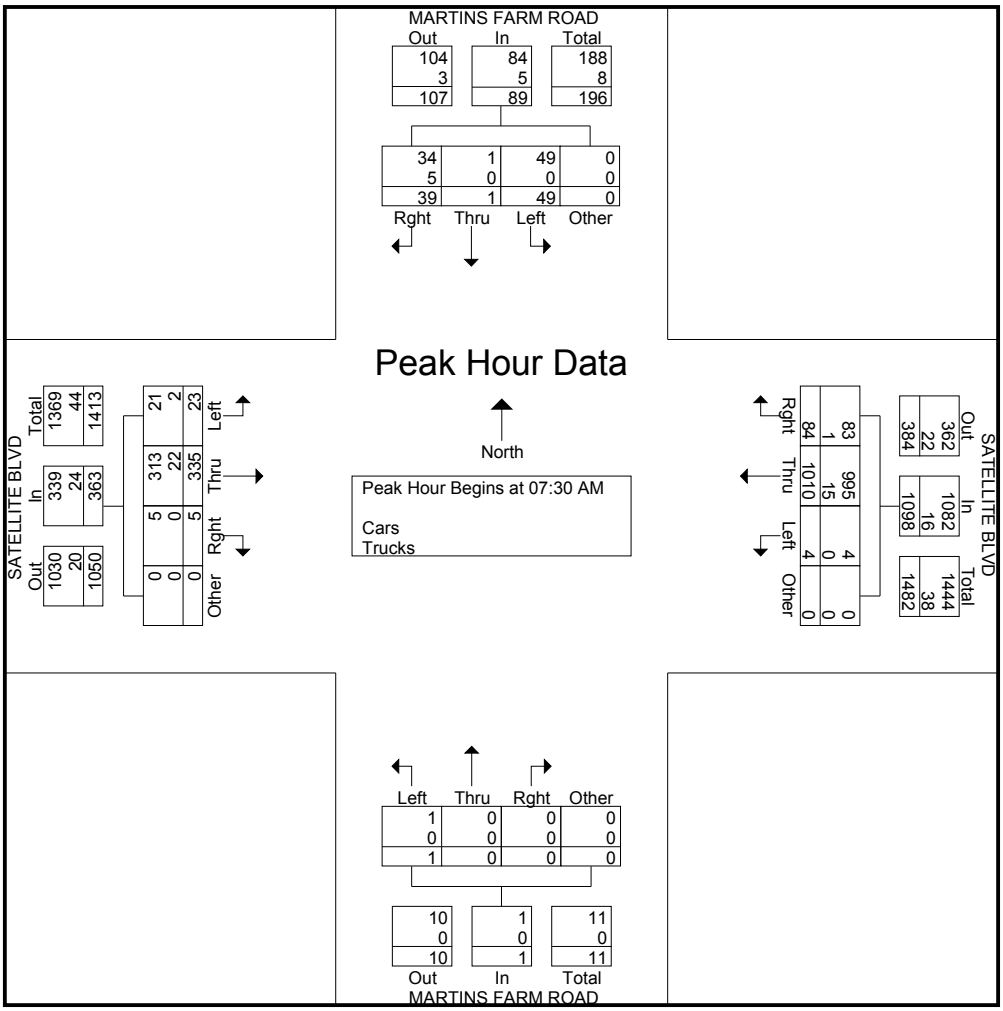


All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MartinFarm@SatelliteBlvdAM
Site Code : 00000000
Start Date : 10/27/2009
Page No : 2

	MARTINS FARM ROAD Southbound					SATELLITE BLVD Westbound					MARTINS FARM ROAD Northbound					SATELLITE BLVD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	**17**	0	10	0	**27**	0	**258**	14	0	272	0	0	0	0	0	3	83	0	0	86	385
07:45 AM	11	0	6	0	17	**3**	258	**37**	0	**298**	0	0	0	0	0	**9**	70	**3**	0	82	**397**
08:00 AM	9	**1**	9	0	19	0	245	22	0	267	0	0	0	0	0	8	88	1	0	97	383
08:15 AM	12	0	**14**	0	26	1	249	11	0	261	**1**	0	0	0	**1**	3	**94**	1	0	**98**	386
Total Volume	49	1	39	0	89	4	1010	84	0	1098	1	0	0	0	1	23	335	5	0	363	1551
% App. Total	55.1	1.1	43.8	0		0.4	92	7.7	0		100	0	0	0		6.3	92.3	1.4	0		
PHF	.721	.250	.696	.000	.824	.333	.979	.568	.000	.921	.250	.000	.000	.000	.250	.639	.891	.417	.000	.926	.977
Cars	49	1	34	0	84	4	995	83	0	1082	1	0	0	0	1	21	313	5	0	339	1506
% Cars	100	100	87.2	0	94.4	100	98.5	98.8	0	98.5	100	0	0	0	100	91.3	93.4	100	0	93.4	97.1
Trucks	0	0	5	0	5	0	15	1	0	16	0	0	0	0	0	2	22	0	0	24	45
% Trucks	0	0	12.8	0	5.6	0	1.5	1.2	0	1.5	0	0	0	0	0	8.7	6.6	0	0	6.6	2.9



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MartinFarm@SatelliteBlvdPM
Site Code : 00000000
Start Date : 10/28/2009
Page No : 1

Groups Printed- Cars - Trucks

	MARTIN FARM ROAD Southbound					SATELLITE BLVD Westbound					MARTIN FARM ROAD Northbound					SATELLITE BLVD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
03:00 PM	12	0	5	0	17	0	112	10	0	122	0	0	4	0	4	7	163	1	0	171	314
03:15 PM	10	0	6	0	16	1	139	12	0	152	1	0	1	0	2	6	134	3	0	143	313
03:30 PM	14	1	6	0	21	0	136	9	0	145	0	0	1	0	1	4	157	1	0	162	329
03:45 PM	16	0	14	0	30	0	128	15	0	143	0	0	1	0	1	1	150	1	0	152	326
Total	52	1	31	0	84	1	515	46	0	562	1	0	7	0	8	18	604	6	0	628	1282
04:00 PM	24	0	21	0	45	1	113	13	0	127	0	0	1	0	1	5	164	1	0	170	343
04:15 PM	13	0	11	0	24	0	154	11	0	165	1	0	2	0	3	4	124	1	0	129	321
04:30 PM	19	0	21	0	40	0	129	15	0	144	1	0	2	0	3	8	165	2	0	175	362
04:45 PM	12	0	8	0	20	2	122	9	0	133	1	0	1	0	2	7	176	0	0	183	338
Total	68	0	61	0	129	3	518	48	0	569	3	0	6	0	9	24	629	4	0	657	1364
05:00 PM	19	0	16	0	35	0	145	9	0	154	2	1	2	0	5	4	239	0	0	243	437
05:15 PM	14	0	10	0	24	0	153	10	0	163	5	0	1	1	7	6	213	0	0	219	413
05:30 PM	19	0	7	0	26	0	143	14	0	157	2	0	1	0	3	3	208	1	0	212	398
05:45 PM	14	0	7	0	21	0	121	4	0	125	0	0	3	0	3	8	212	1	0	221	370
Total	66	0	40	0	106	0	562	37	0	599	9	1	7	1	18	21	872	2	0	895	1618
Grand Total	186	1	132	0	319	4	1595	131	0	1730	13	1	20	1	35	63	2105	12	0	2180	4264
Apprch %	58.3	0.3	41.4	0		0.2	92.2	7.6	0		37.1	2.9	57.1	2.9		2.9	96.6	0.6	0		
Total %	4.4	0	3.1	0	7.5	0.1	37.4	3.1	0	40.6	0.3	0	0.5	0	0.8	1.5	49.4	0.3	0	51.1	
Cars	181	1	129	0	311	4	1556	123	0	1683	13	1	20	1	35	63	2071	12	0	2146	4175
% Cars	97.3	100	97.7	0	97.5	100	97.6	93.9	0	97.3	100	100	100	100	100	100	98.4	100	0	98.4	97.9
Trucks	5	0	3	0	8	0	39	8	0	47	0	0	0	0	0	0	34	0	0	34	89
% Trucks	2.7	0	2.3	0	2.5	0	2.4	6.1	0	2.7	0	0	0	0	0	0	1.6	0	0	1.6	2.1

All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MartinFarm@SatelliteBlvdPM
Site Code : 00000000
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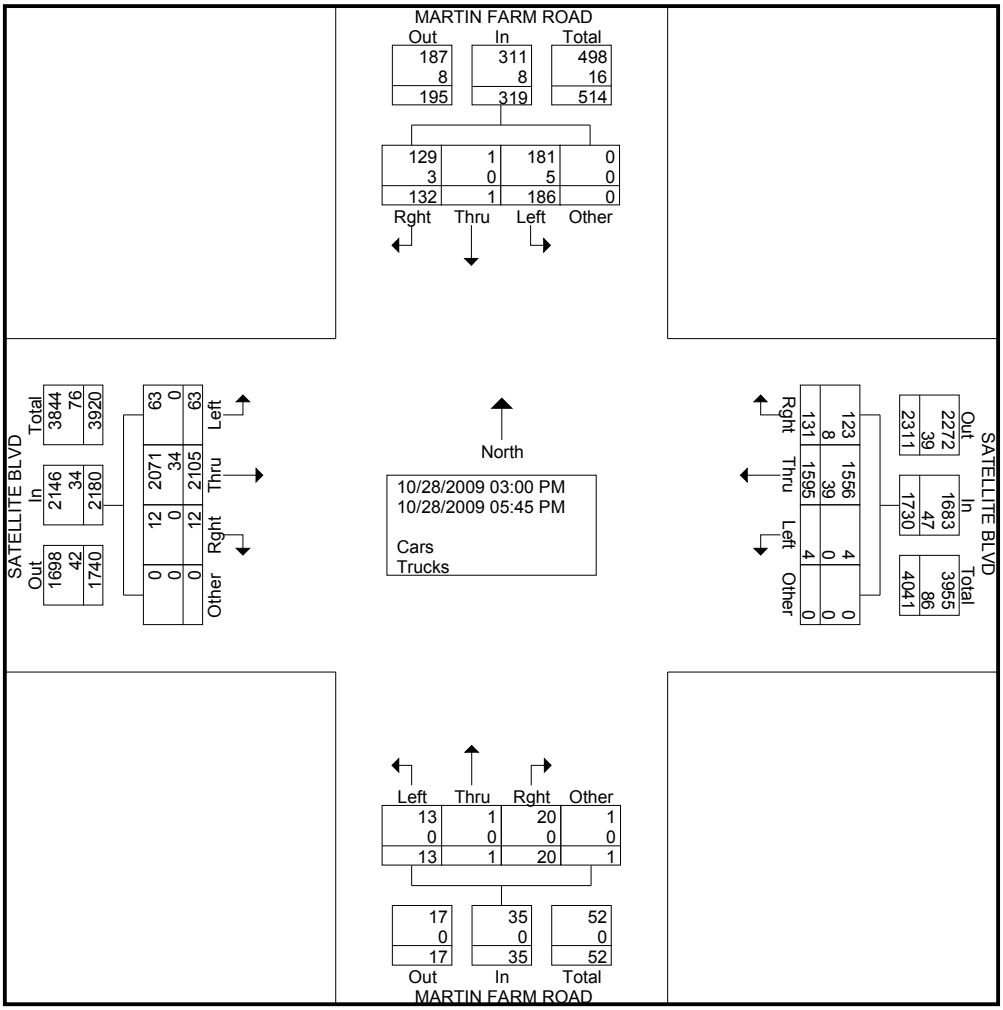

All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : MartinFarm@SatelliteBlvdPM
Site Code : 00000000
Start Date : 10/28/2009
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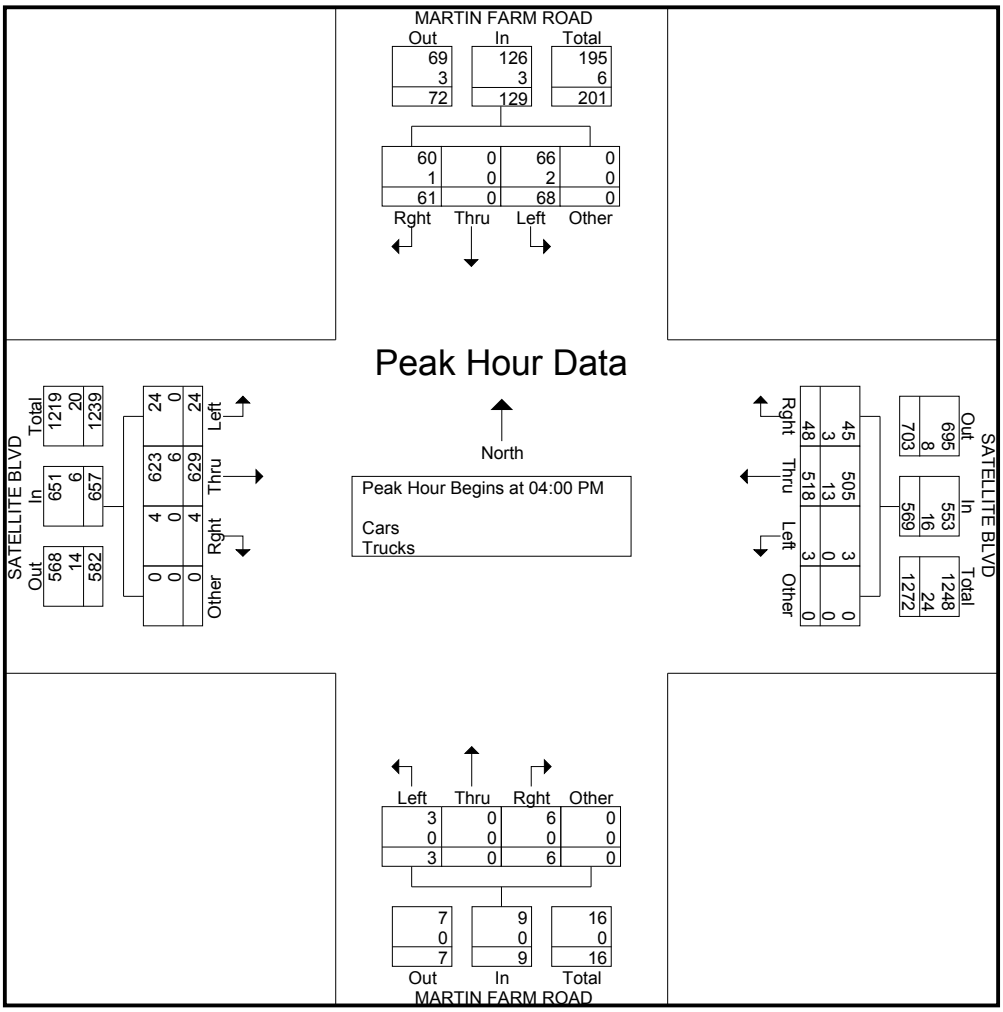
	MARTIN FARM ROAD Southbound					SATELLITE BLVD Westbound					MARTIN FARM ROAD Northbound					SATELLITE BLVD Eastbound					
Start Time	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Left	Thru	Rght	Other	App. Total	Int. Total
Peak Hour Analysis From 03:00 PM to 04:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:00 PM																					
04:00 PM	**24**	0	**21**	0	**45**	1	113	13	0	127	0	0	1	0	1	5	164	1	0	170	343
04:15 PM	13	0	11	0	24	0	**154**	11	0	**165**	**1**	0	**2**	0	**3**	4	124	1	0	129	321
04:30 PM	19	0	21	0	40	0	129	**15**	0	144	1	0	2	0	3	**8**	165	**2**	0	175	**362**
04:45 PM	12	0	8	0	20	**2**	122	9	0	133	1	0	1	0	2	7	**176**	0	0	**183**	338
Total Volume	68	0	61	0	129	3	518	48	0	569	3	0	6	0	9	24	629	4	0	657	1364
% App. Total	52.7	0	47.3	0		0.5	91	8.4	0		33.3	0	66.7	0		3.7	95.7	0.6	0		
PHF	.708	.000	.726	.000	.717	.375	.841	.800	.000	.862	.750	.000	.750	.000	.750	.750	.893	.500	.000	.898	.942
Cars	66	0	60	0	126	3	505	45	0	553	3	0	6	0	9	24	623	4	0	651	1339
% Cars	97.1	0	98.4	0	97.7	100	97.5	93.8	0	97.2	100	0	100	0	100	100	99.0	100	0	99.1	98.2
Trucks	2	0	1	0	3	0	13	3	0	16	0	0	0	0	0	0	6	0	0	6	25
% Trucks	2.9	0	1.6	0	2.3	0	2.5	6.3	0	2.8	0	0	0	0	0	0	1.0	0	0	0.9	1.8



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : ScalesRd@McGinnisFerryRdAM
Site Code :
Start Date : 10/20/2009
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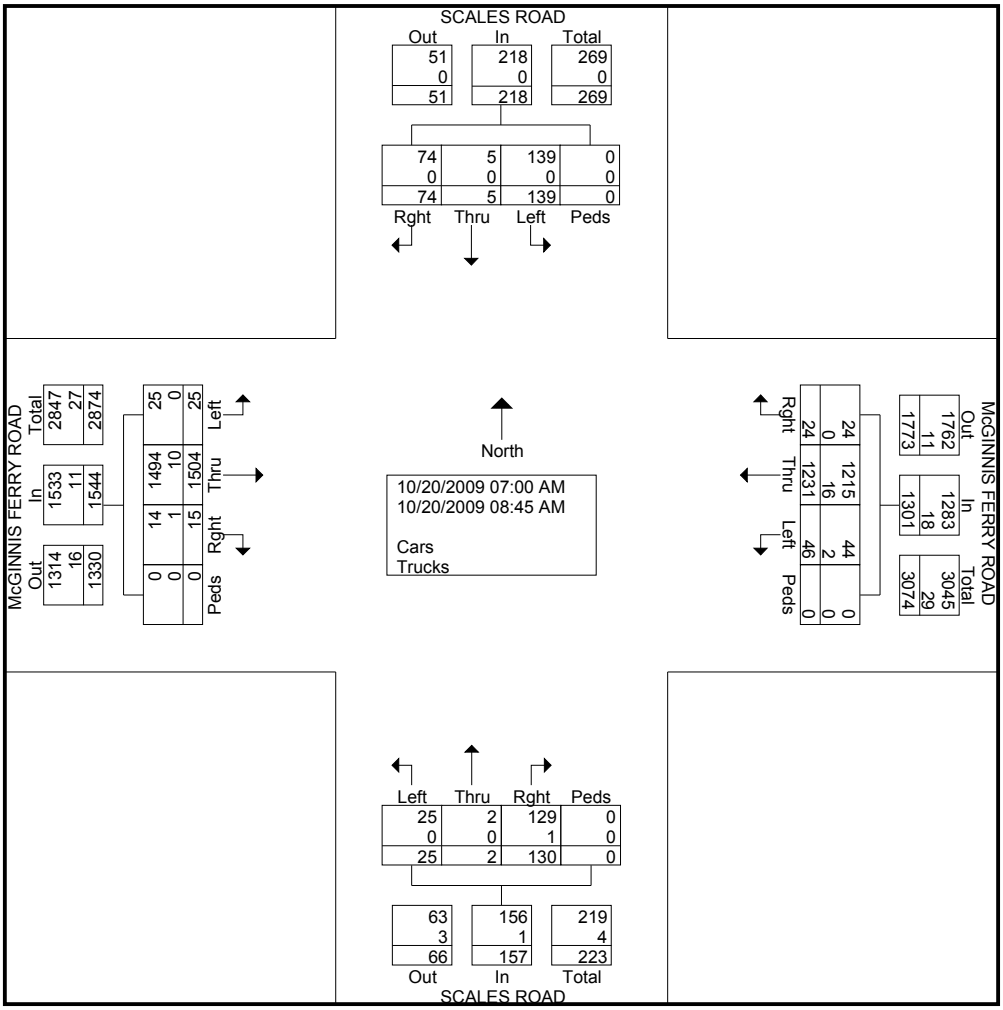
Groups Printed- Cars - Trucks

	SCALES ROAD Southbound					McGINNIS FERRY ROAD Westbound					SCALES ROAD Northbound					McGINNIS FERRY ROAD Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
07:00 AM	11	0	12	0	23	2	144	1	0	147	3	0	13	0	16	0	166	1	0	167	353
07:15 AM	21	2	8	0	31	3	153	4	0	160	4	0	18	0	22	0	181	0	0	181	394
07:30 AM	16	1	6	0	23	6	158	1	0	165	1	0	15	0	16	2	208	1	0	211	415
07:45 AM	18	2	15	0	35	6	125	1	0	132	5	0	16	0	21	2	217	1	0	220	408
Total	66	5	41	0	112	17	580	7	0	604	13	0	62	0	75	4	772	3	0	779	1570
08:00 AM	21	0	6	0	27	8	160	3	0	171	1	0	15	0	16	5	184	4	0	193	407
08:15 AM	22	0	9	0	31	6	157	4	0	167	5	0	17	0	22	4	199	2	0	205	425
08:30 AM	13	0	8	0	21	7	153	5	0	165	1	1	21	0	23	6	166	3	0	175	384
08:45 AM	17	0	10	0	27	8	181	5	0	194	5	1	15	0	21	6	183	3	0	192	434
Total	73	0	33	0	106	29	651	17	0	697	12	2	68	0	82	21	732	12	0	765	1650
Grand Total	139	5	74	0	218	46	1231	24	0	1301	25	2	130	0	157	25	1504	15	0	1544	3220
Apprch %	63.8	2.3	33.9	0		3.5	94.6	1.8	0		15.9	1.3	82.8	0		1.6	97.4	1	0		
Total %	4.3	0.2	2.3	0	6.8	1.4	38.2	0.7	0	40.4	0.8	0.1	4	0	4.9	0.8	46.7	0.5	0	48	
Cars	139	5	74	0	218	44	1215	24	0	1283	25	2	129	0	156	25	1494	14	0	1533	3190
% Cars	100	100	100	0	100	95.7	98.7	100	0	98.6	100	100	99.2	0	99.4	100	99.3	93.3	0	99.3	99.1
Trucks	0	0	0	0	0	2	16	0	0	18	0	0	1	0	1	0	10	1	0	11	30
% Trucks	0	0	0	0	0	4.3	1.3	0	0	1.4	0	0	0.8	0	0.6	0	0.7	6.7	0	0.7	0.9



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : ScalesRd@McGinnisFerryRdAM
Site Code :
Start Date : 10/20/2009
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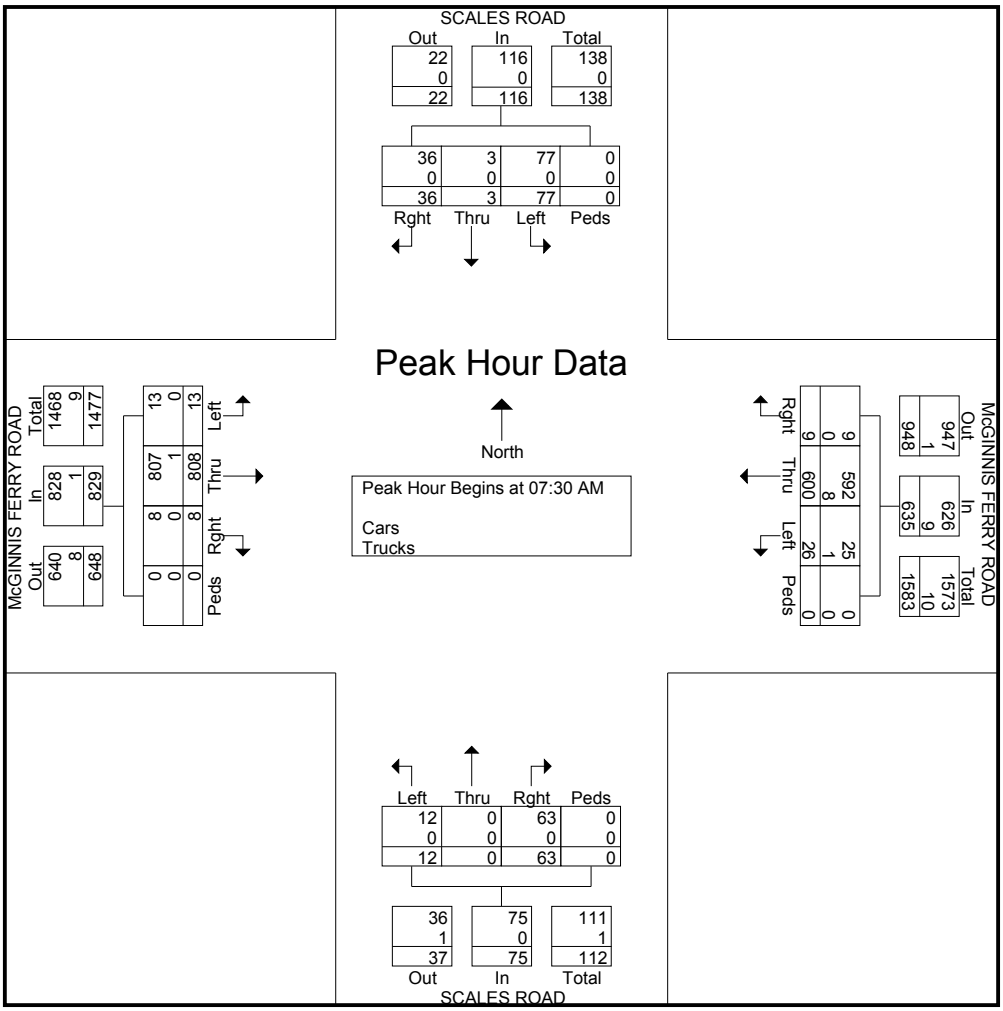
	SCALES ROAD Southbound					McGINNIS FERRY ROAD Westbound					SCALES ROAD Northbound					McGINNIS FERRY ROAD Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:30 AM																					
07:30 AM	16	1	6	0	23	6	158	1	0	165	1	0	15	0	16	2	208	1	0	211	415
07:45 AM	18	**2**	**15**	0	**35**	6	125	1	0	132	**5**	0	16	0	21	2	**217**	1	0	**220**	408
08:00 AM	21	0	6	0	27	**8**	**160**	3	0	**171**	1	0	15	0	16	**5**	184	**4**	0	193	407
08:15 AM	**22**	0	9	0	31	6	157	**4**	0	167	5	0	**17**	0	**22**	4	199	2	0	205	**425**
Total Volume	77	3	36	0	116	26	600	9	0	635	12	0	63	0	75	13	808	8	0	829	1655
% App. Total	66.4	2.6	31	0		4.1	94.5	1.4	0		16	0	84	0		1.6	97.5	1	0		
PHF	.875	.375	.600	.000	.829	.813	.938	.563	.000	.928	.600	.000	.926	.000	.852	.650	.931	.500	.000	.942	.974
Cars	77	3	36	0	116	25	592	9	0	626	12	0	63	0	75	13	807	8	0	828	1645
% Cars	100	100	100	0	100	96.2	98.7	100	0	98.6	100	0	100	0	100	100	99.9	100	0	99.9	99.4
Trucks	0	0	0	0	0	1	8	0	0	9	0	0	0	0	0	0	1	0	0	1	10
% Trucks	0	0	0	0	0	3.8	1.3	0	0	1.4	0	0	0	0	0	0	0.1	0	0	0.1	0.6



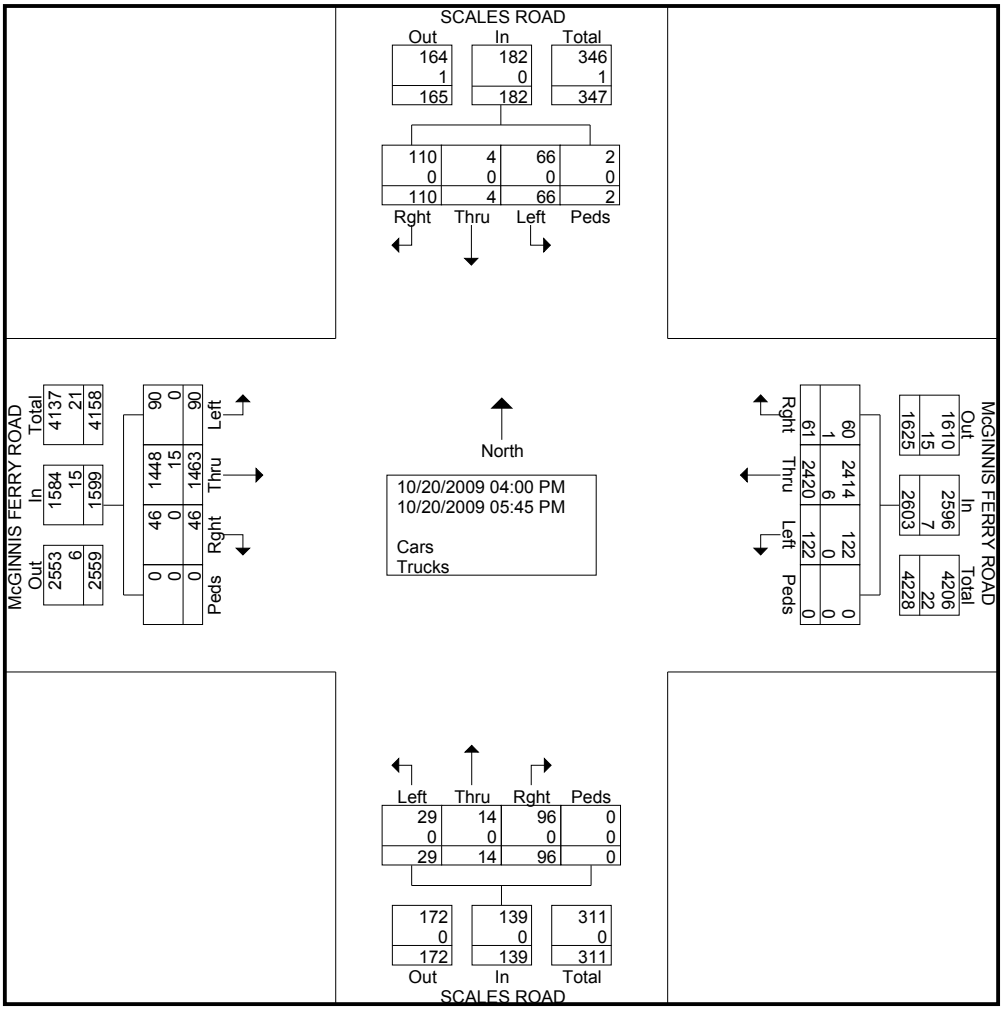
All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : ScalesRd@McGinnisFerryRdPM
Site Code :
Start Date : 10/20/2009
Page No : 1

Groups Printed- Cars - Trucks

	SCALES ROAD Southbound					McGINNIS FERRY ROAD Westbound					SCALES ROAD Northbound					McGINNIS FERRY ROAD Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
04:00 PM	4	0	7	1	12	14	236	8	0	258	3	0	10	0	13	7	195	3	0	205	488
04:15 PM	6	0	13	0	19	13	259	12	0	284	2	1	11	0	14	5	171	6	0	182	499
04:30 PM	8	1	14	0	23	11	269	10	0	290	2	1	8	0	11	13	199	5	0	217	541
04:45 PM	12	0	12	0	24	21	270	4	0	295	3	0	7	0	10	14	155	7	0	176	505
Total	30	1	46	1	78	59	1034	34	0	1127	10	2	36	0	48	39	720	21	0	780	2033
05:00 PM	12	0	16	0	28	13	342	2	0	357	1	1	15	0	17	13	173	4	0	190	592
05:15 PM	11	2	20	0	33	17	383	7	0	407	3	2	8	0	13	14	215	7	0	236	689
05:30 PM	8	0	19	0	27	11	335	9	0	355	13	6	14	0	33	11	171	8	0	190	605
05:45 PM	5	1	9	1	16	22	326	9	0	357	2	3	23	0	28	13	184	6	0	203	604
Total	36	3	64	1	104	63	1386	27	0	1476	19	12	60	0	91	51	743	25	0	819	2490
Grand Total	66	4	110	2	182	122	2420	61	0	2603	29	14	96	0	139	90	1463	46	0	1599	4523
Apprch %	36.3	2.2	60.4	1.1		4.7	93	2.3	0		20.9	10.1	69.1	0		5.6	91.5	2.9	0		
Total %	1.5	0.1	2.4	0	4	2.7	53.5	1.3	0	57.6	0.6	0.3	2.1	0	3.1	2	32.3	1	0	35.4	
Cars	66	4	110	2	182	122	2414	60	0	2596	29	14	96	0	139	90	1448	46	0	1584	4501
% Cars	100	100	100	100	100	100	99.8	98.4	0	99.7	100	100	100	0	100	100	99	100	0	99.1	99.5
Trucks	0	0	0	0	0	0	6	1	0	7	0	0	0	0	0	0	15	0	0	15	22
% Trucks	0	0	0	0	0	0	0.2	1.6	0	0.3	0	0	0	0	0	0	1	0	0	0.9	0.5



All Traffic Data Services, Inc

1336 Farmer Road
Conyers, Ga 30012
404-374-1283

File Name : ScalesRd@McGinnisFerryRdPM
Site Code :
Start Date : 10/20/2009
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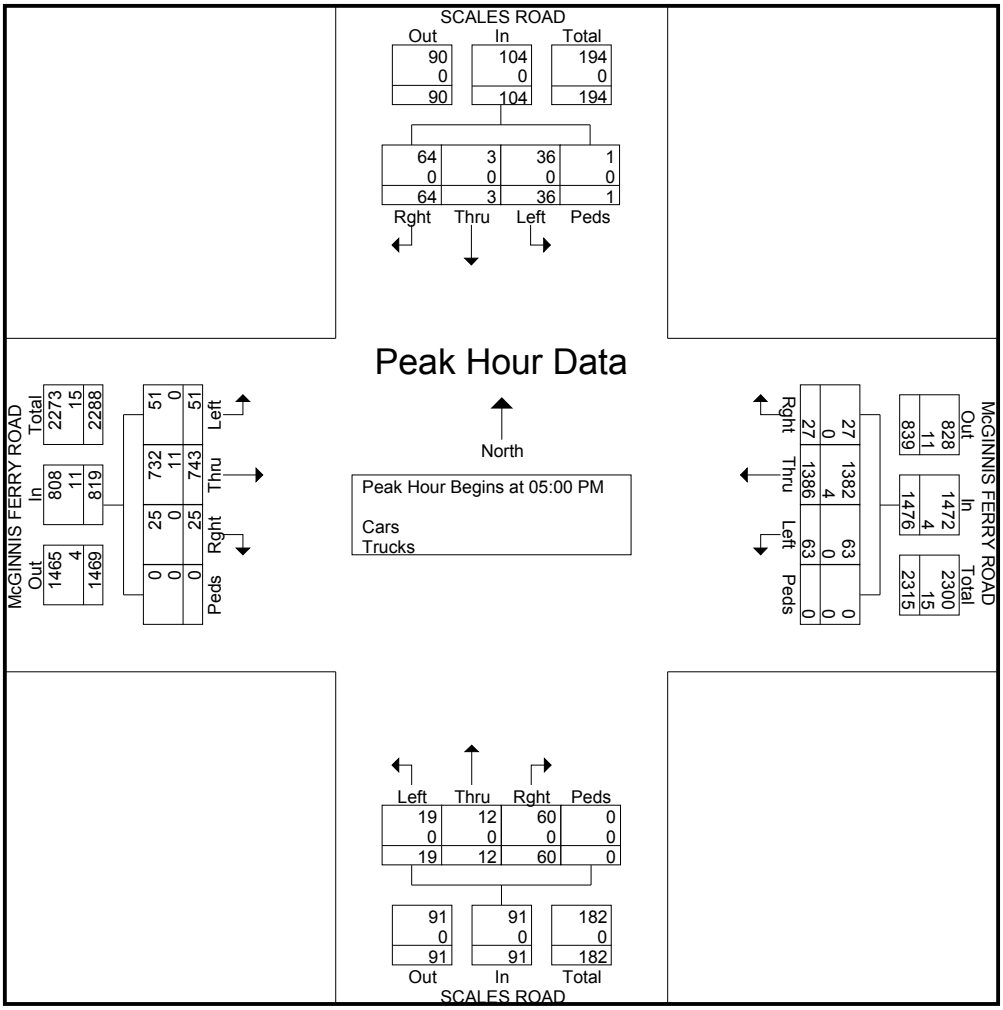
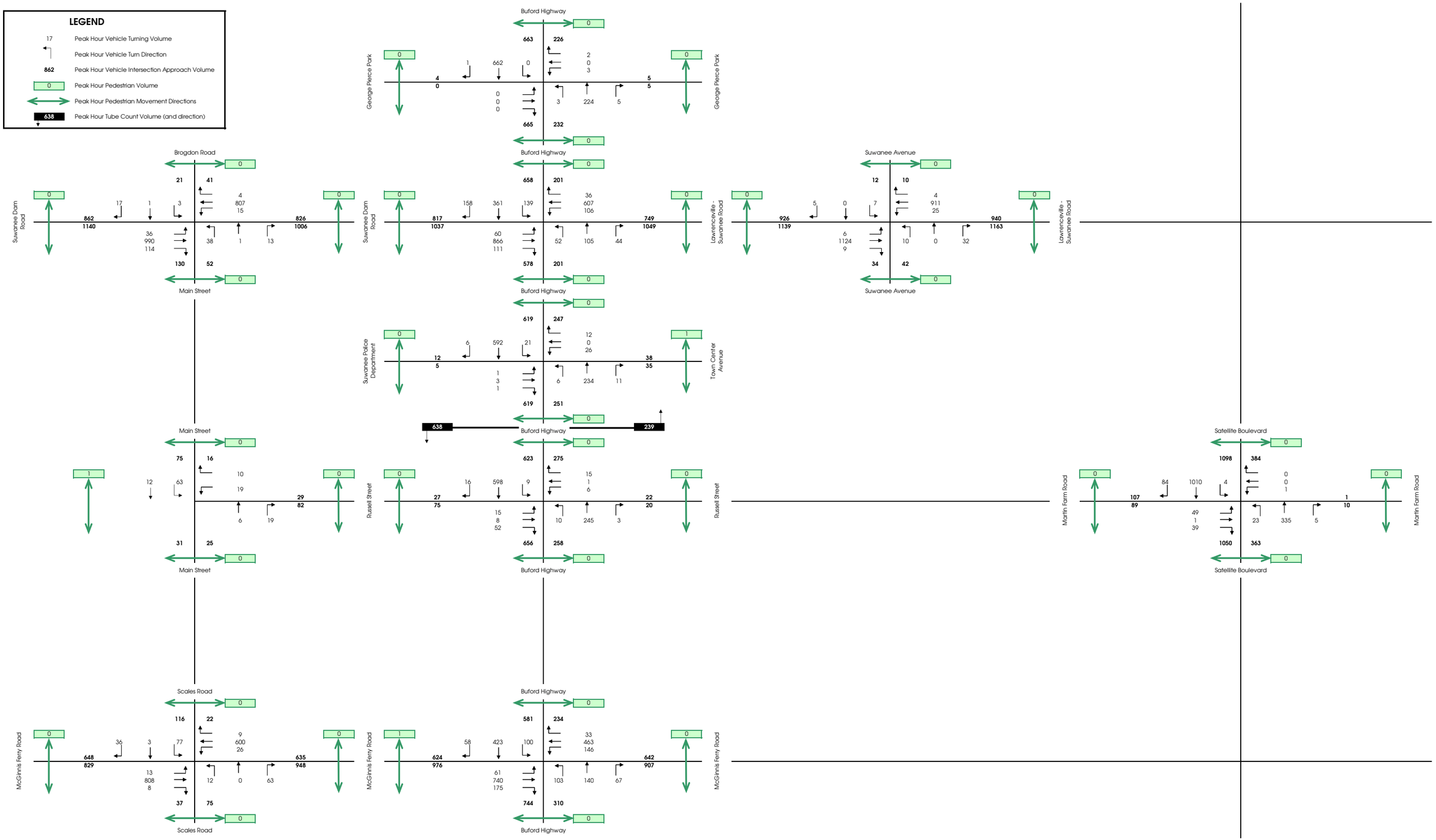
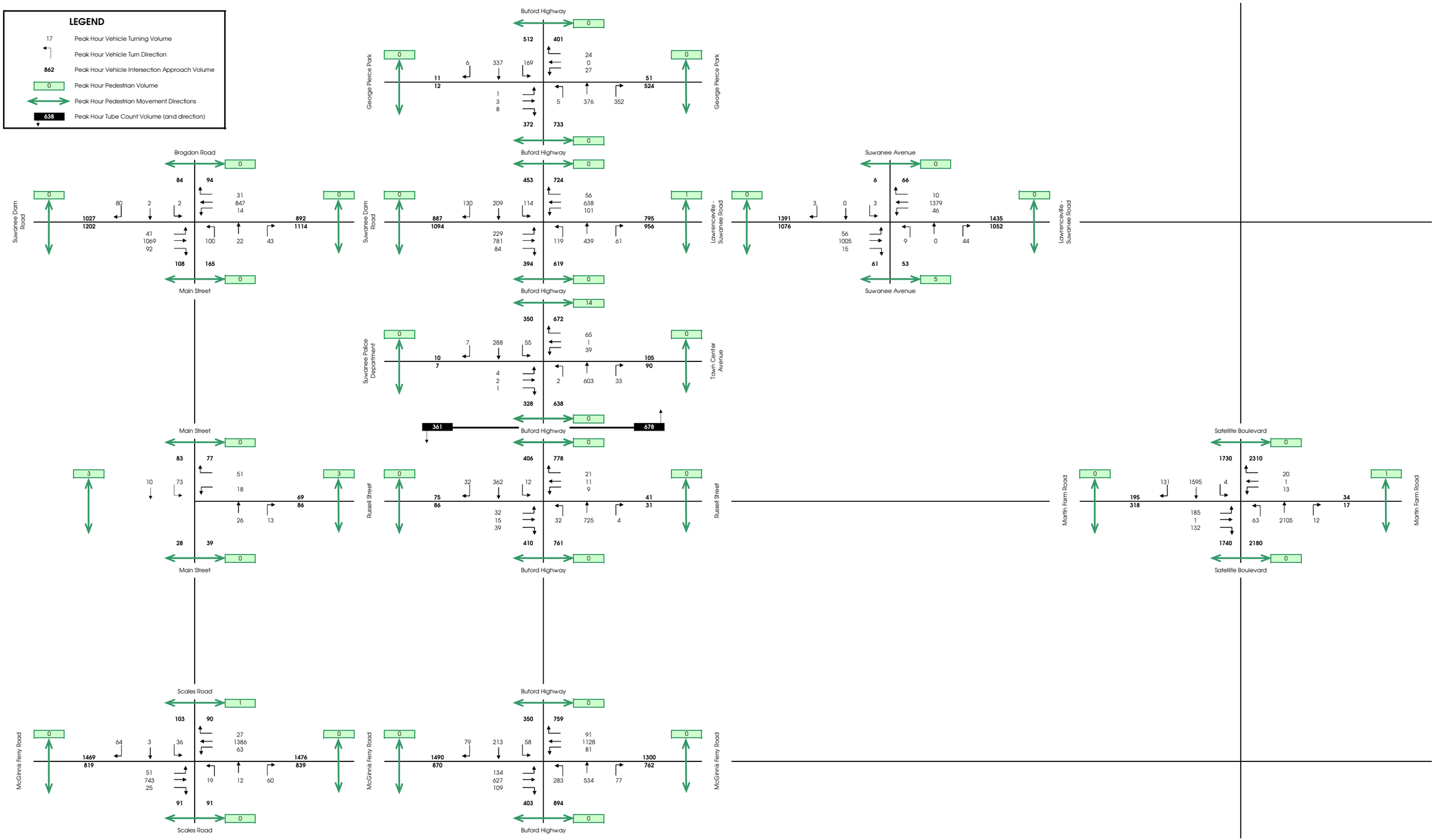
	SCALES ROAD Southbound					McGINNIS FERRY ROAD Westbound					SCALES ROAD Northbound					McGINNIS FERRY ROAD Eastbound					
Start Time	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Left	Thru	Rght	Peds	App. Total	Int. Total
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 05:00 PM																					
05:00 PM	**12**	0	16	0	28	13	342	2	0	357	1	1	15	0	17	13	173	4	0	190	592
05:15 PM	11	**2**	**20**	0	**33**	17	**383**	7	0	**407**	3	2	8	0	13	**14**	**215**	7	0	**236**	**689**
05:30 PM	8	0	19	0	27	11	335	**9**	0	355	**13**	**6**	14	0	**33**	11	171	**8**	0	190	605
05:45 PM	5	1	9	**1**	16	**22**	326	9	0	357	2	3	**23**	0	28	13	184	6	0	203	604
Total Volume	36	3	64	1	104	63	1386	27	0	1476	19	12	60	0	91	51	743	25	0	819	2490
% App. Total	34.6	2.9	61.5	1		4.3	93.9	1.8	0		20.9	13.2	65.9	0		6.2	90.7	3.1	0		
PHF	.750	.375	.800	.250	.788	.716	.905	.750	.000	.907	.365	.500	.652	.000	.689	.911	.864	.781	.000	.868	.903
Cars	36	3	64	1	104	63	1382														
% Cars	100	100	100	100	100	100	99.7	100	0	99.7	100	100	100	0	100	100	98.5	100	0	98.7	99.4
Trucks	0	0	0	0	0	0	4	0	0	4	0	0	0	0	0	0	11	0	0	11	15
% Trucks	0	0	0	0	0	0	0.3	0	0	0.3	0	0	0	0	0	0	1.5	0	0	1.3	0.6



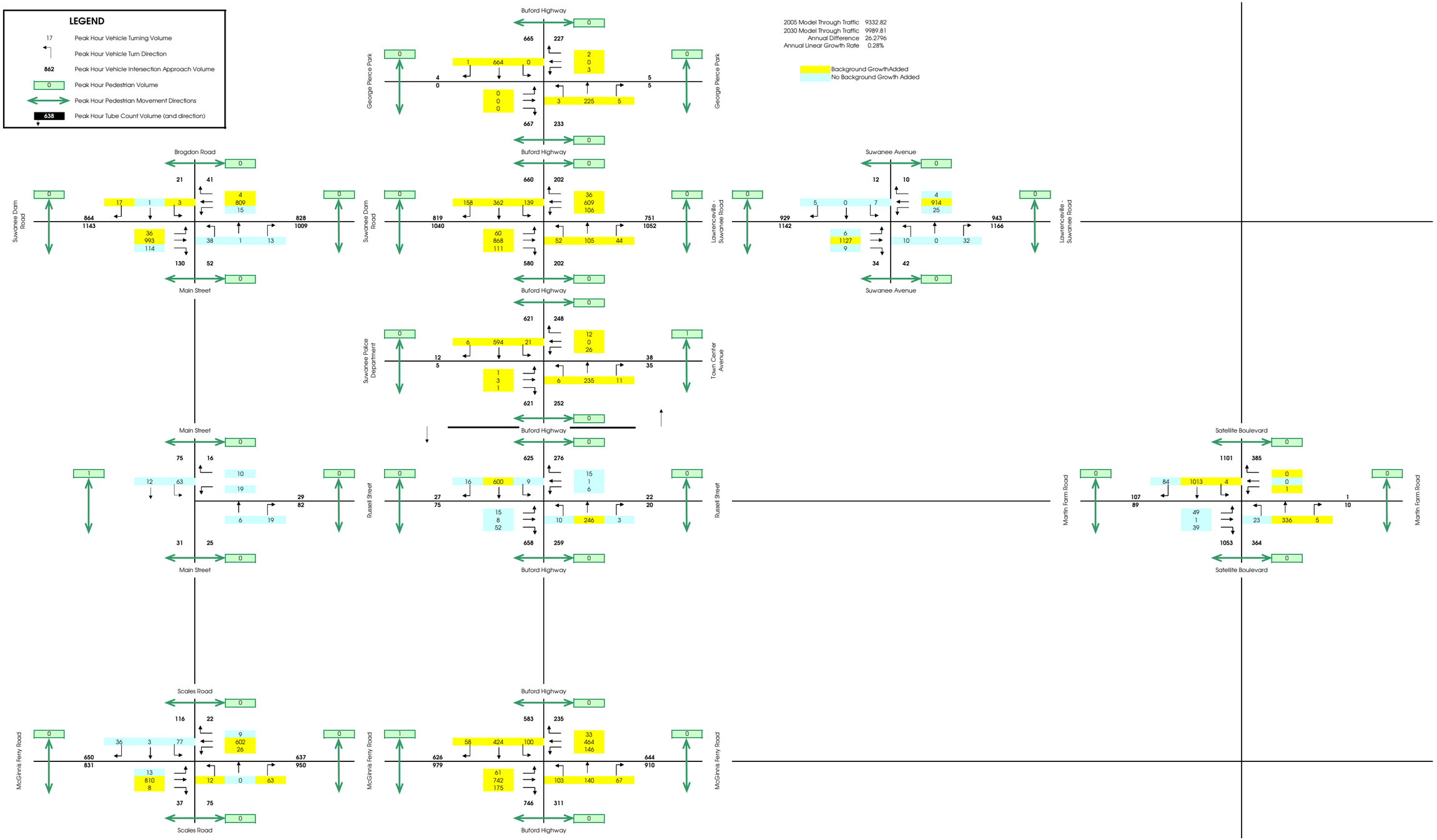
Suwanee Traffic.xls
2009 AM Peak Hour



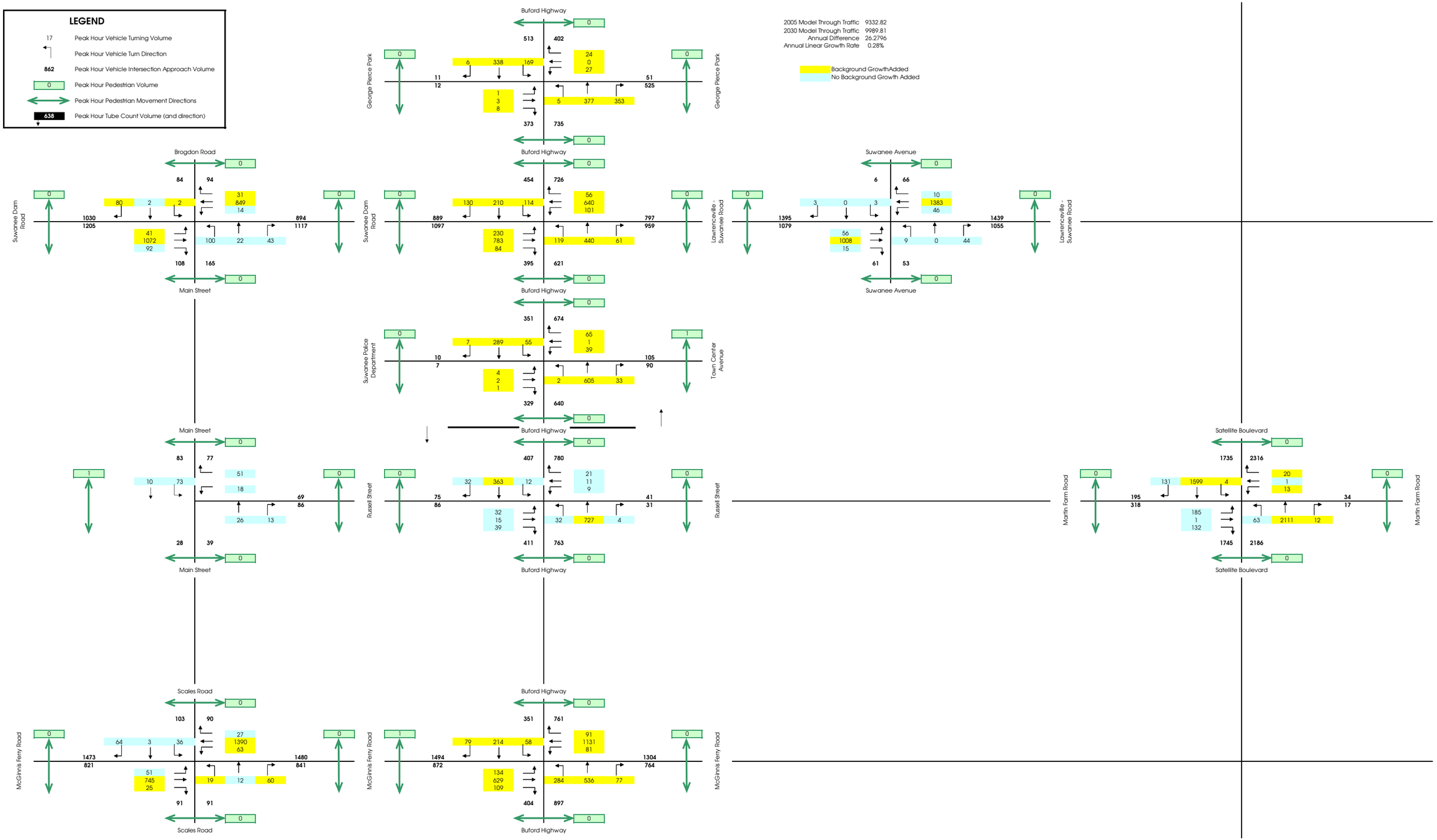
Suwanee Traffic.xls
2009 PM Peak Hour



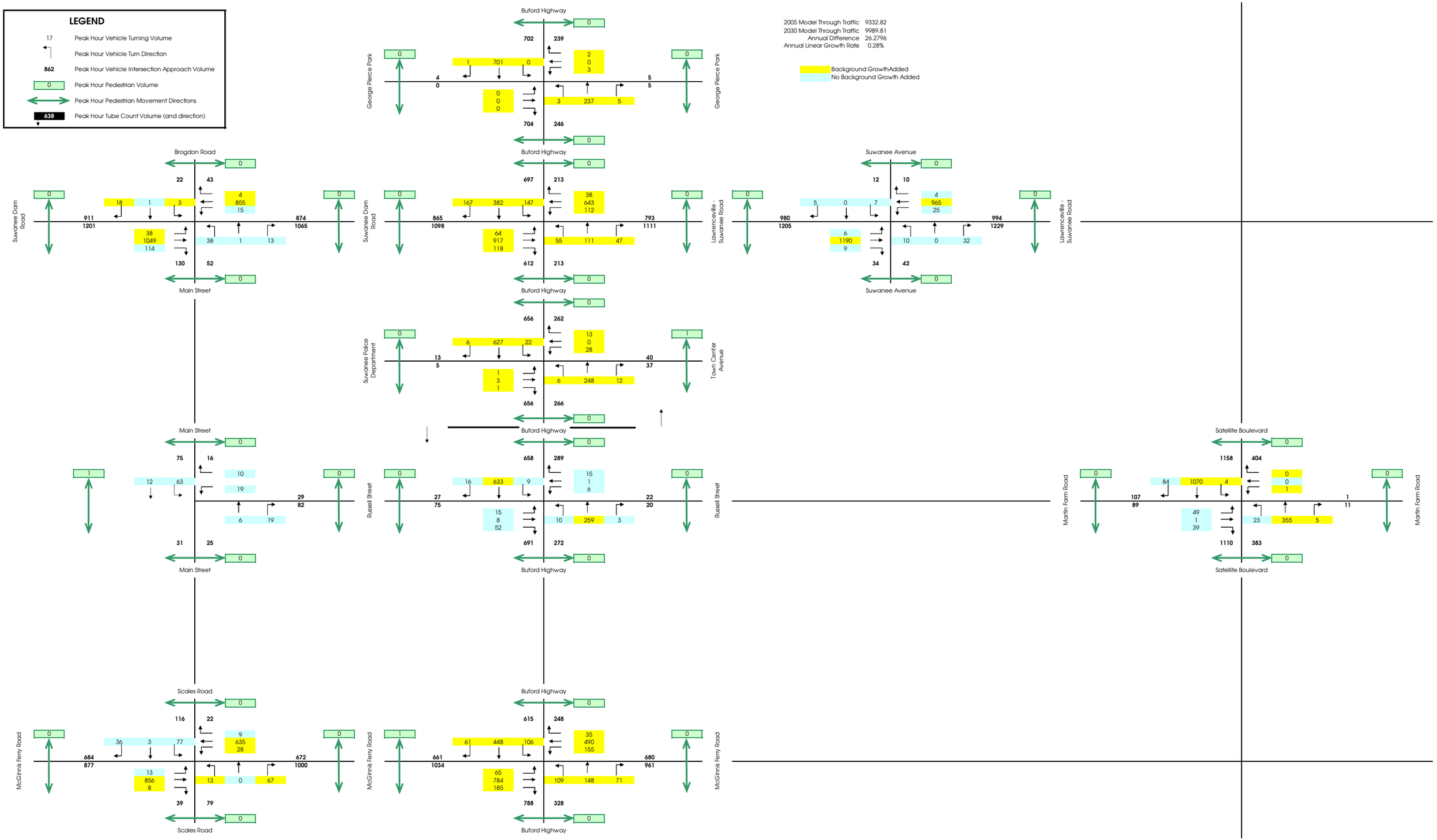
Suwanee Traffic.xls
2010 NoBuild AM Peak Hour



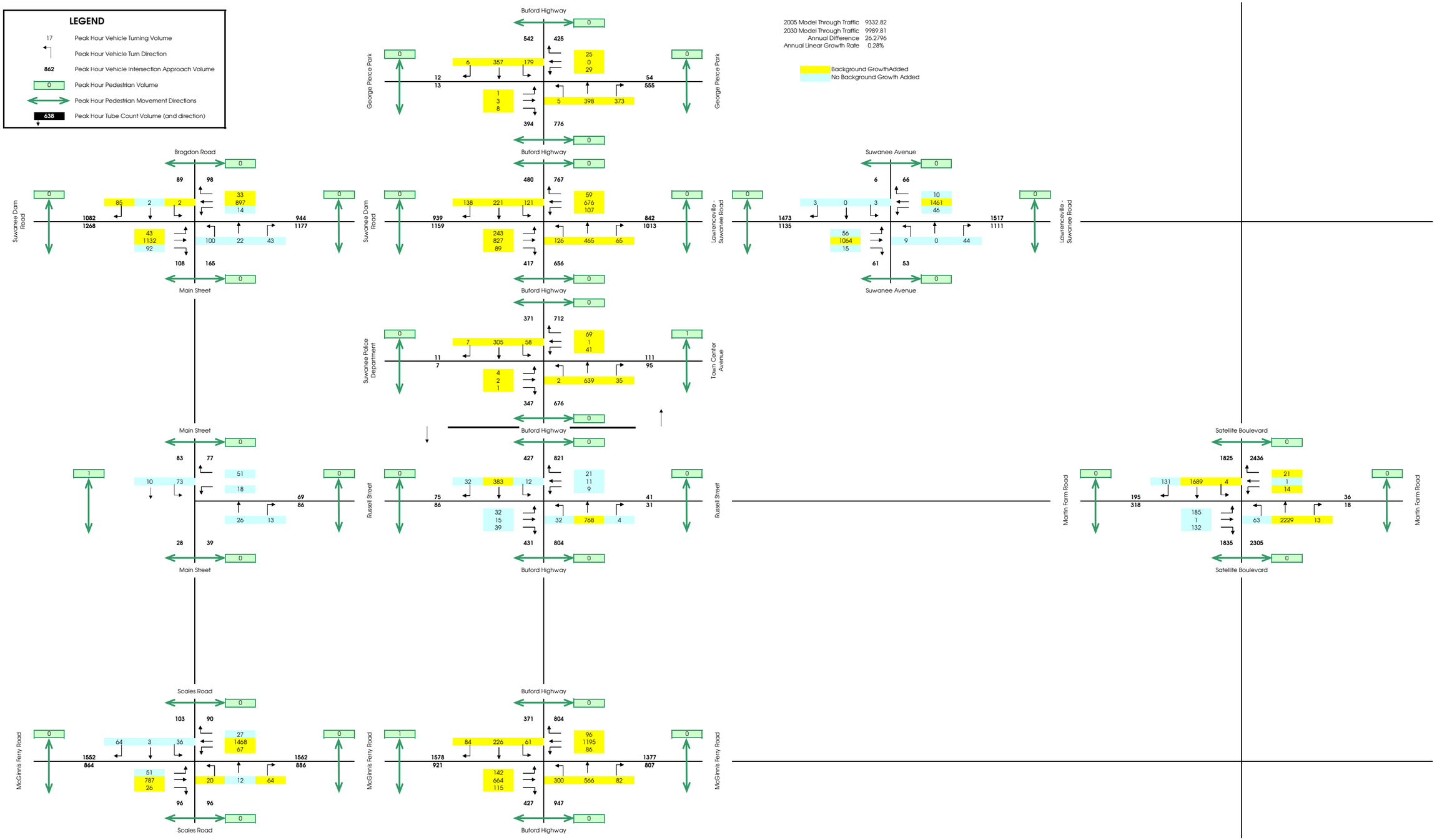
Suwanee Traffic.xls
2010 NoBuild PM Peak Hour



Suwanee Traffic.xls
2030 NoBuild AM Peak Hour



Suwanee Traffic.xls
2030 NoBuild PM Peak Hour



Revisions to ARC Model

Population

SOURCE	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Downtown Suwanee LCI	1030	1105	1181	1256	1331	1407	1482	1558	1633	1764	1894	2025	2155	2286	2537	2789	3040	3292	3543	4039	4535	5031	5527	6023	6318	6614	6909.2	7204.6	7500
Original Suwanne Projections	1050	1118	1187	1256	1325	1394	1462	1531	1600	1664	1728	1792	1856	1920	1978	2035	2093	2150	2208	2274	2340	2407	2473	2539	2590	2641	2691.4	2742.2	2793
ARC Model (TAZ 928,929,930)	3685	3796	3907	4018	4129	4240	4351	4462	4573	4684	4795	4906	5017	5128	5239	5350	5461	5572	5683	5794	5905	6016	6127	6238	6349	6460	6571	6682	6793

Preferred Plan 2005 to 2030 Diff	5584	Distribution of additional households into LCI study area	TAZ	% Distr	Additional POP
ARC Model 2005 to 2030 Diff	2775	based on fact that most development will occur in 930 and	928	30%	843
Difference to add to ARC Model	2809	929 TAZs.	929	35%	983
			930	35%	983

Households / Housing Units

SOURCE	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Downtown Suwanee LCI	355	381	407	433	459	485	511	537	563	613.6	664.2	714.8	765.4	816	897.6	979.2	1061	1142	1224	1395	1567	1738	1910	2081	2285	2489	2692.4	2896.2	3100
Original Suwanne Projections	368.8	390.2	411.6	433	454.4	475.8	497.2	518.6	540	563.8	587.6	611.4	635.2	659	681.4	703.8	726.2	748.6	771	794.2	817.4	840.6	863.8	887	904.8	922.6	940.4	958.2	976
ARC Model (TAZ 928,929,930)	1512	1565	1618	1671	1724	1777	1830	1882	1935	1988	2041	2094	2147	2200	2253	2306	2359	2412	2465	2517	2570	2623	2676	2729	2782	2835	2887.9	2940.8	2993.8

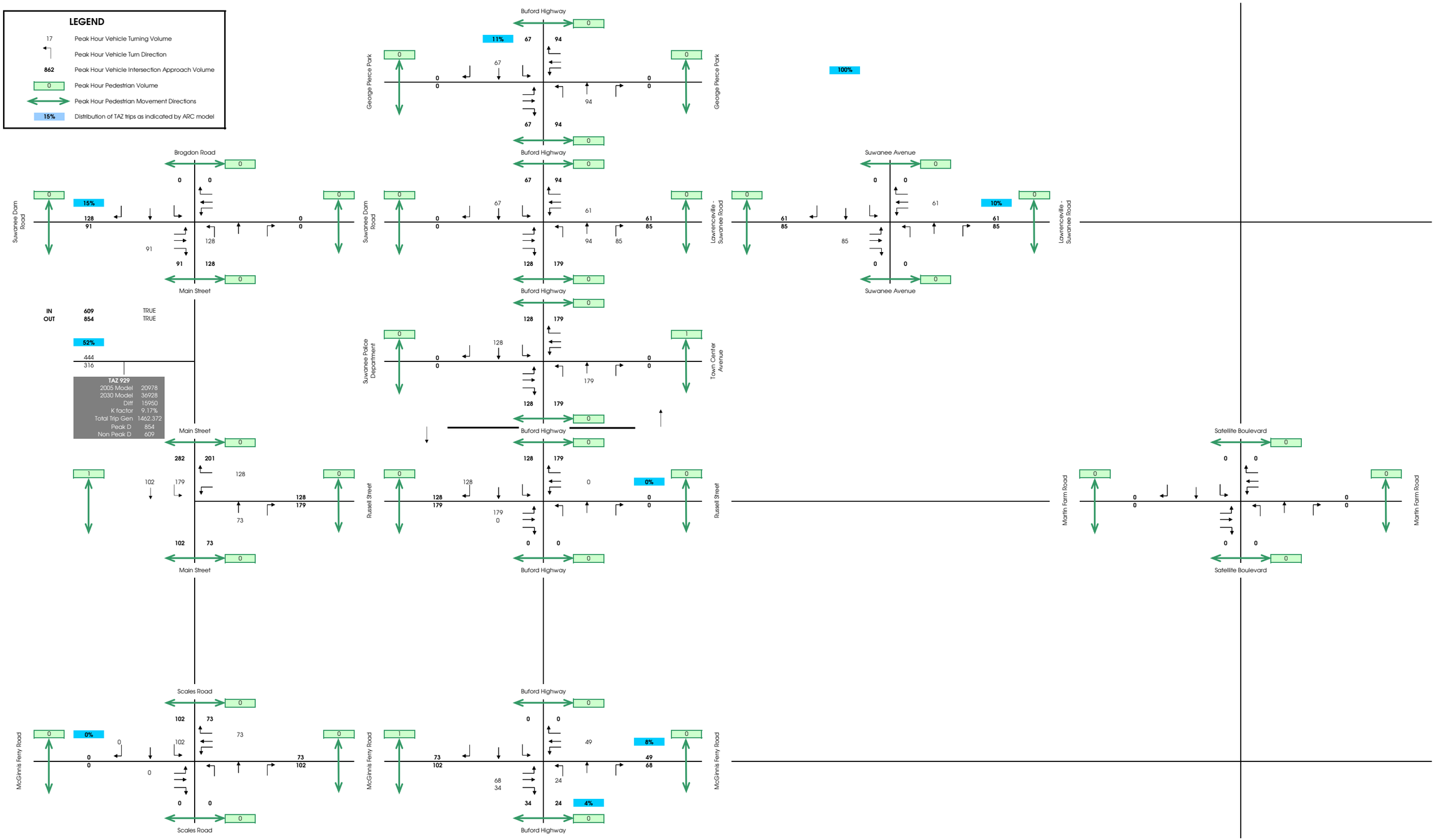
Preferred Plan 2005 to 2030 Diff	2134	Distribution of additional households into LCI study area	TAZ	% Distr	Additional HH
ARC Model 2005 to 2030 Diff	1323	based on fact that most development will occur in 930 and	928	30%	243
Difference to add to ARC Model	810.6	929 TAZs.	929	35%	284
			930	35%	284

Employment

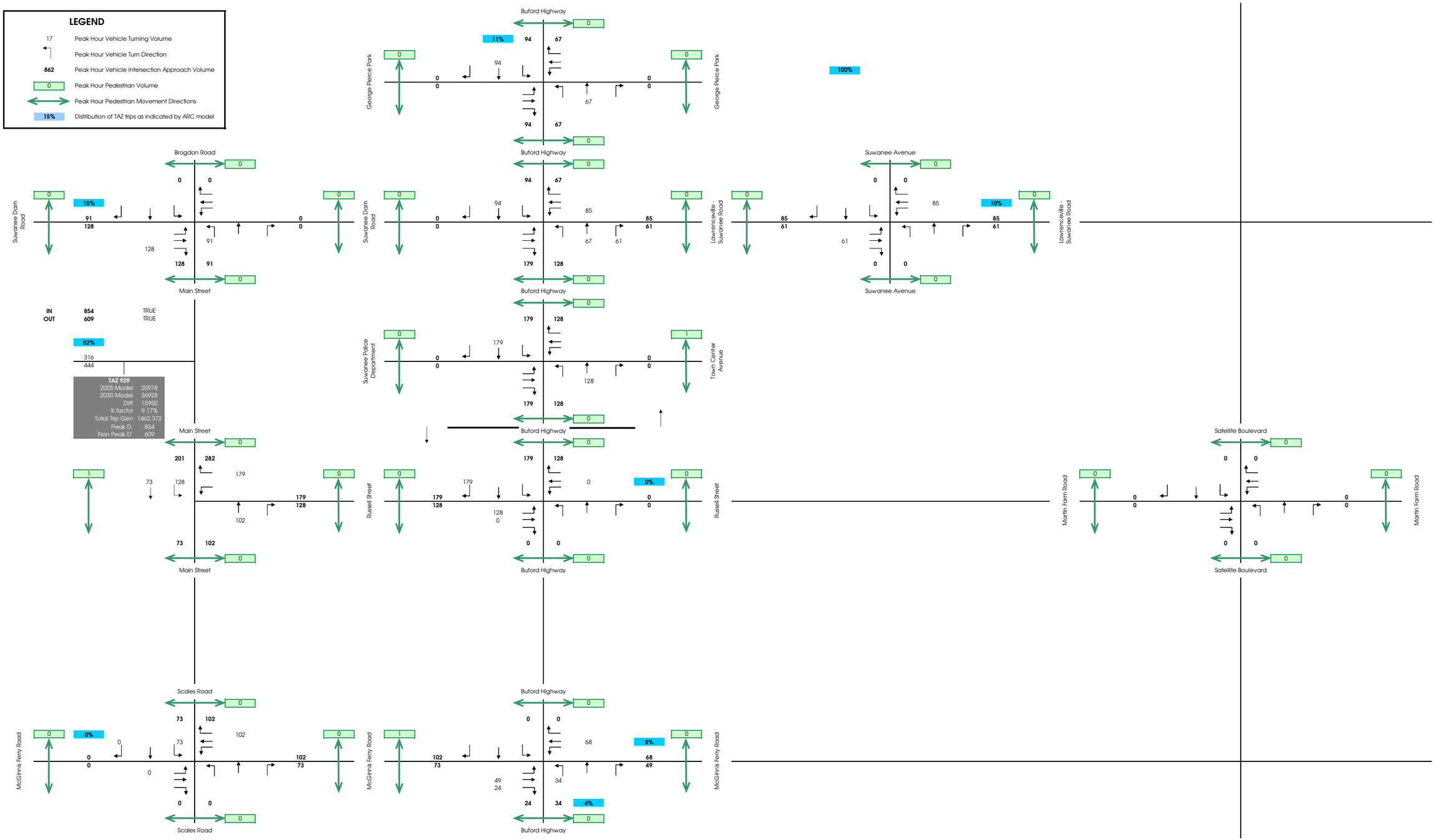
SOURCE	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Downtown Suwanee LCI	637	658	679	700	721	742	763	784	805	845.2	885.4	925.6	965.8	1006	1017	1028	1038	1049	1060	1286	1512	1737	1963	2189	2351	2513	2675.6	2837.8	3000
Original Suwanne Projections	647.2	664.8	682.4	700	717.6	735.2	752.8	770.4	788	814.6	841.2	867.8	894.4	921	1029	1136	1244	1351	1459	1411	1363	1315	1267	1219	1243	1267	1291.6	1315.8	1340
ARC Model (TAZ 928,929,930)	6061	6190	6319	6448	6577	6706	6835	6964	7093	7222	7351	7480	7609	7739	7868	7997	8126	8255	8384	8513	8642	8771	8900	9029	9158	9287	9416	9545.1	9674.1

Preferred Plan 2005 to 2030 Diff	1876	although employment seems to be concentrated in parts of TAZ 930 that are not part of the LCI study area, the emp numbers in TAZs 928 and 929 which resemble the denser parts of the LCI area also
ARC Model 2005 to 2030 Diff	3226	have emp numbers that are similar to the LCI projections. Therefore, no changes will be made to the employment categories
Difference to add to ARC Model	-1350	

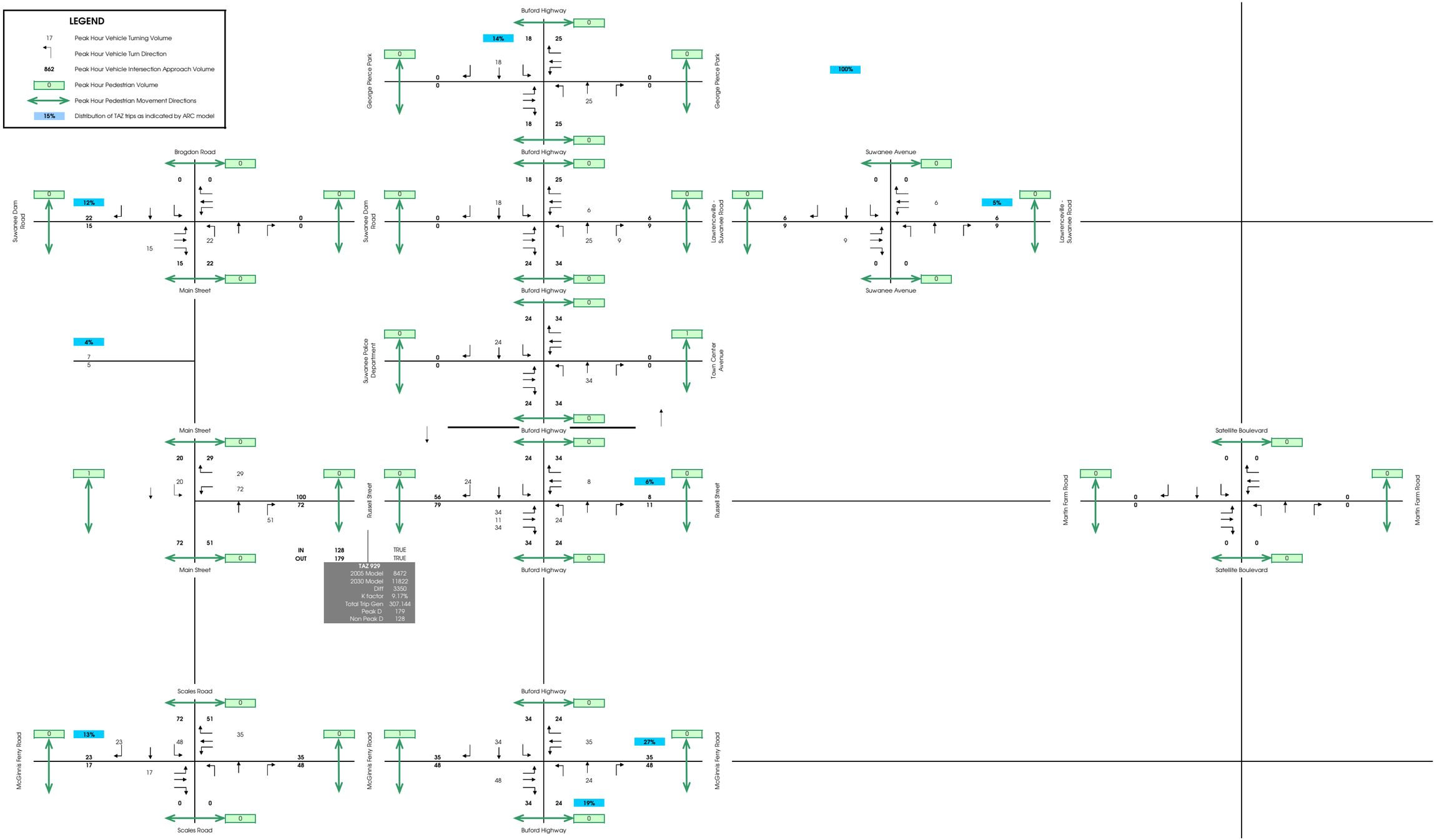
Suwanee Traffic.xls
TAZ 928 Distrib AM



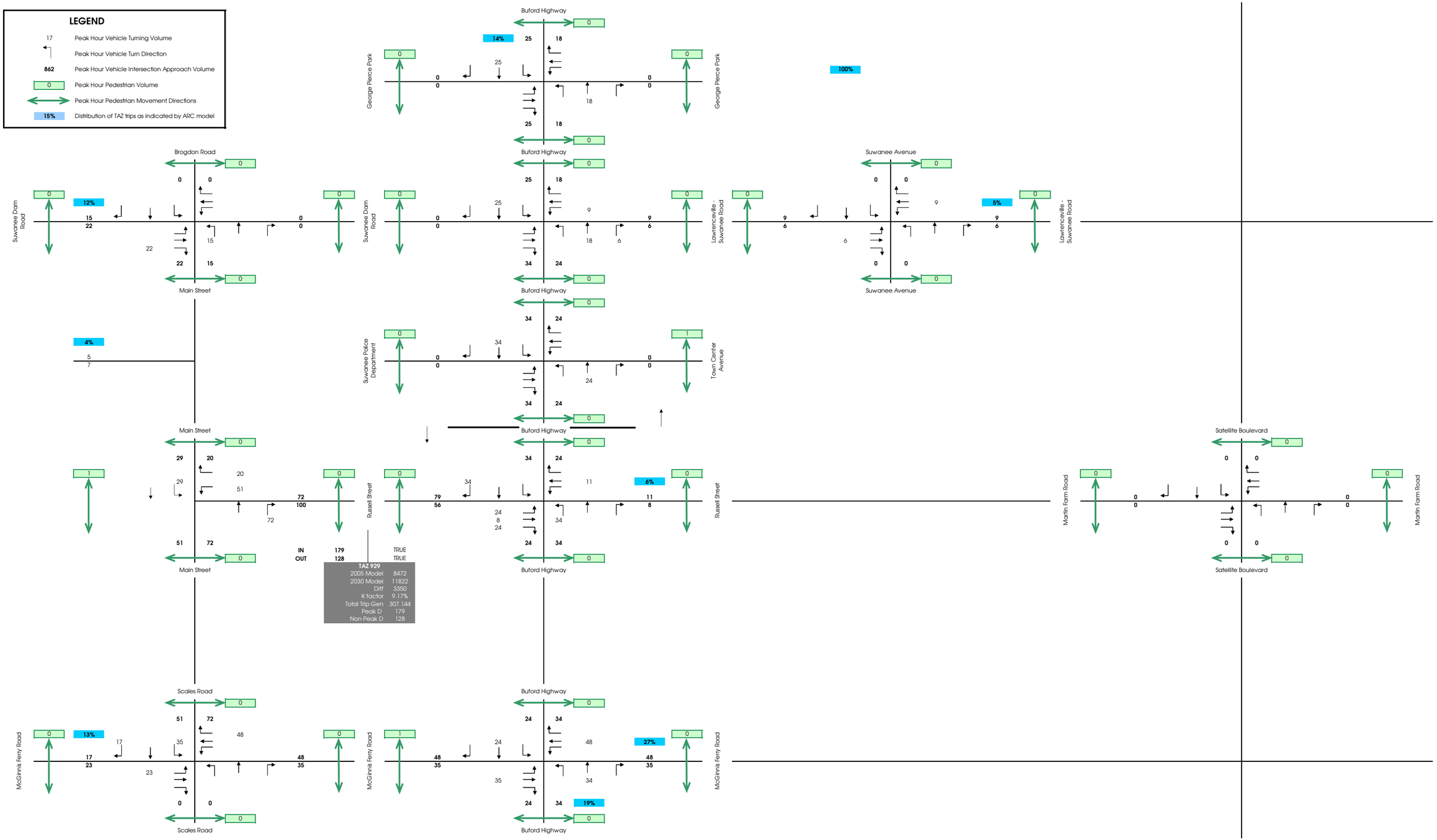
Suwanee Traffic.xls
TAZ 928 Distrib PM



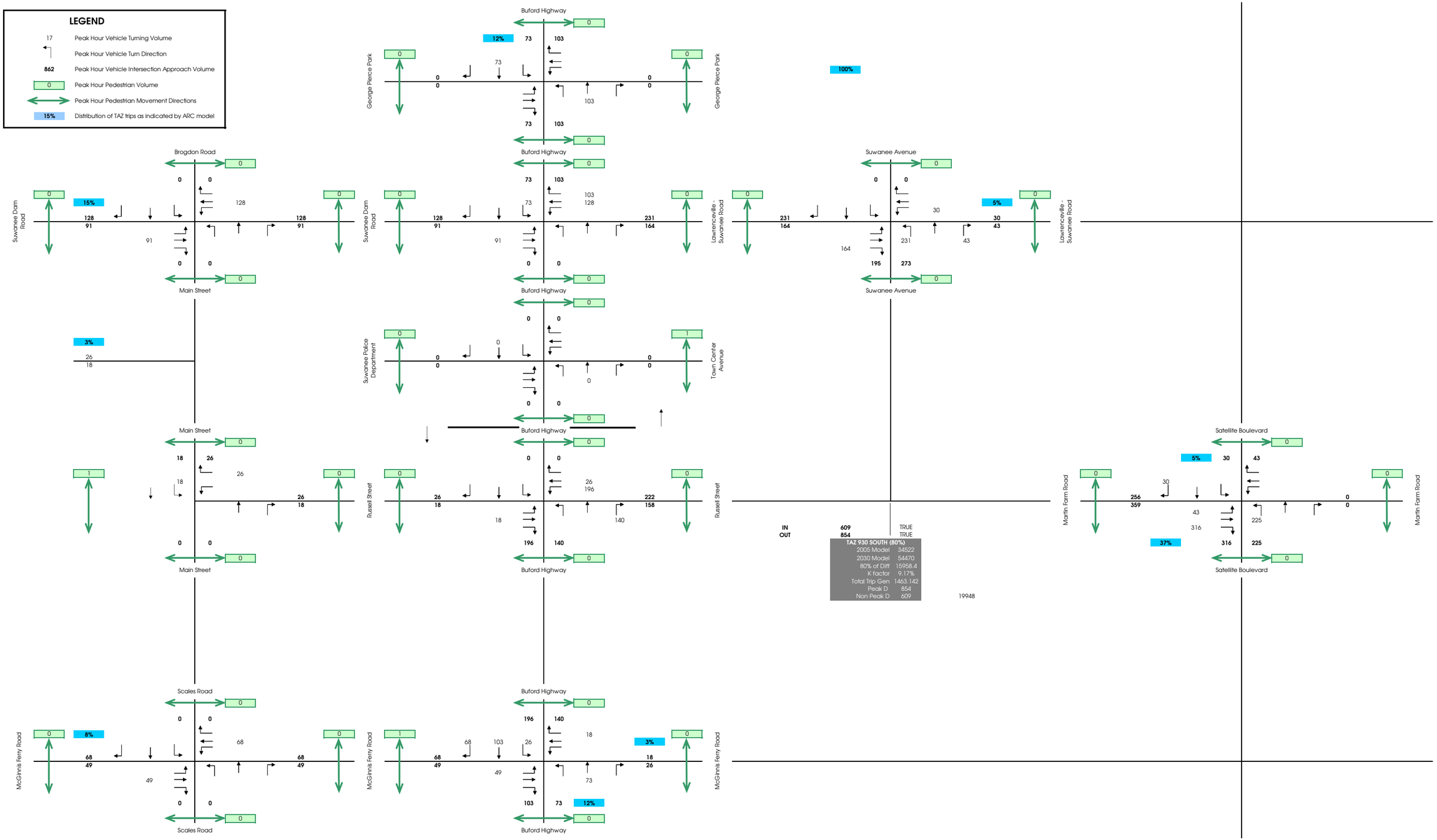
Suwanee Traffic.xls
TAZ 929 Distrib AM



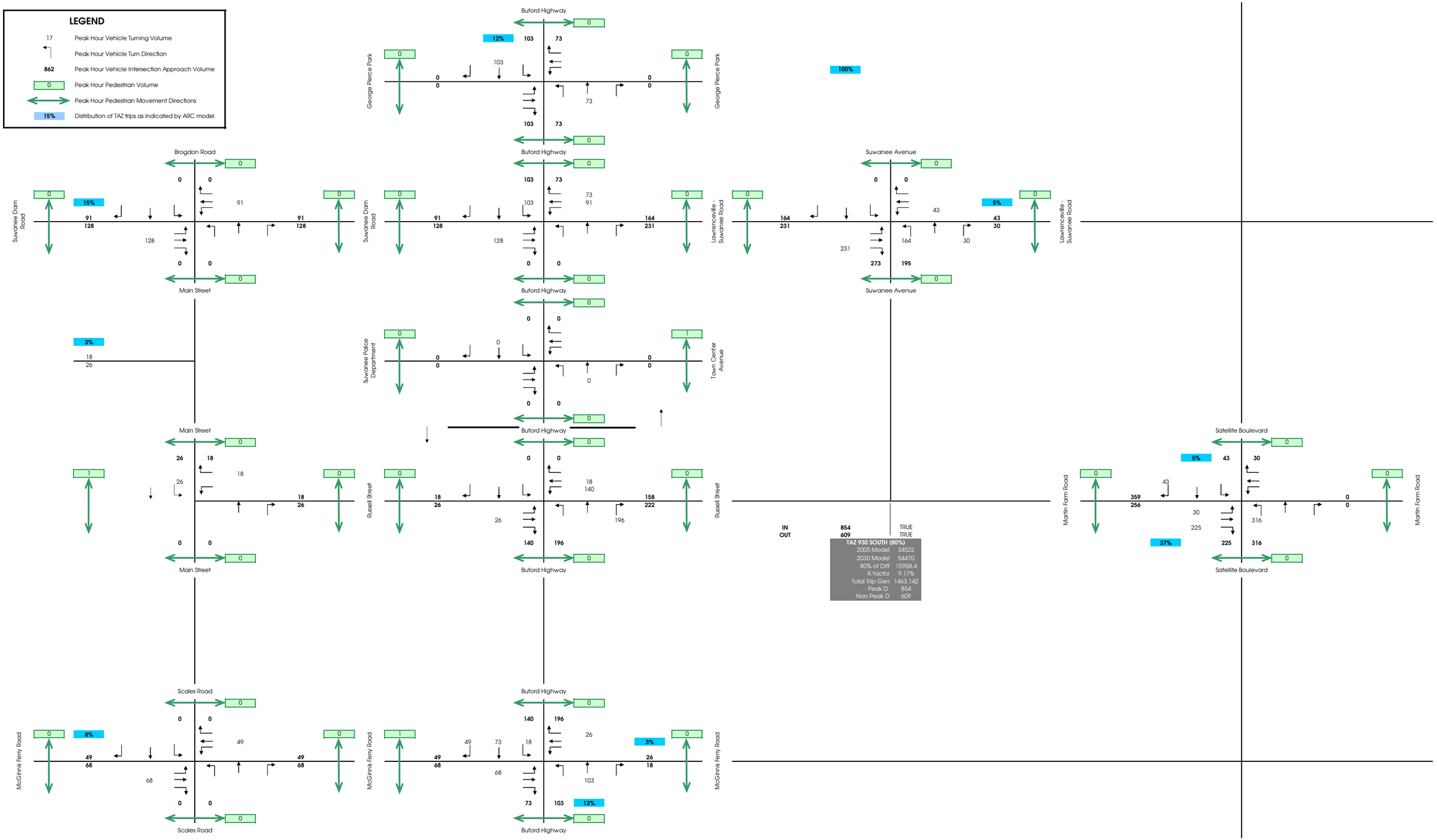
Suwanee Traffic.xls
TAZ 929 Distrib PM



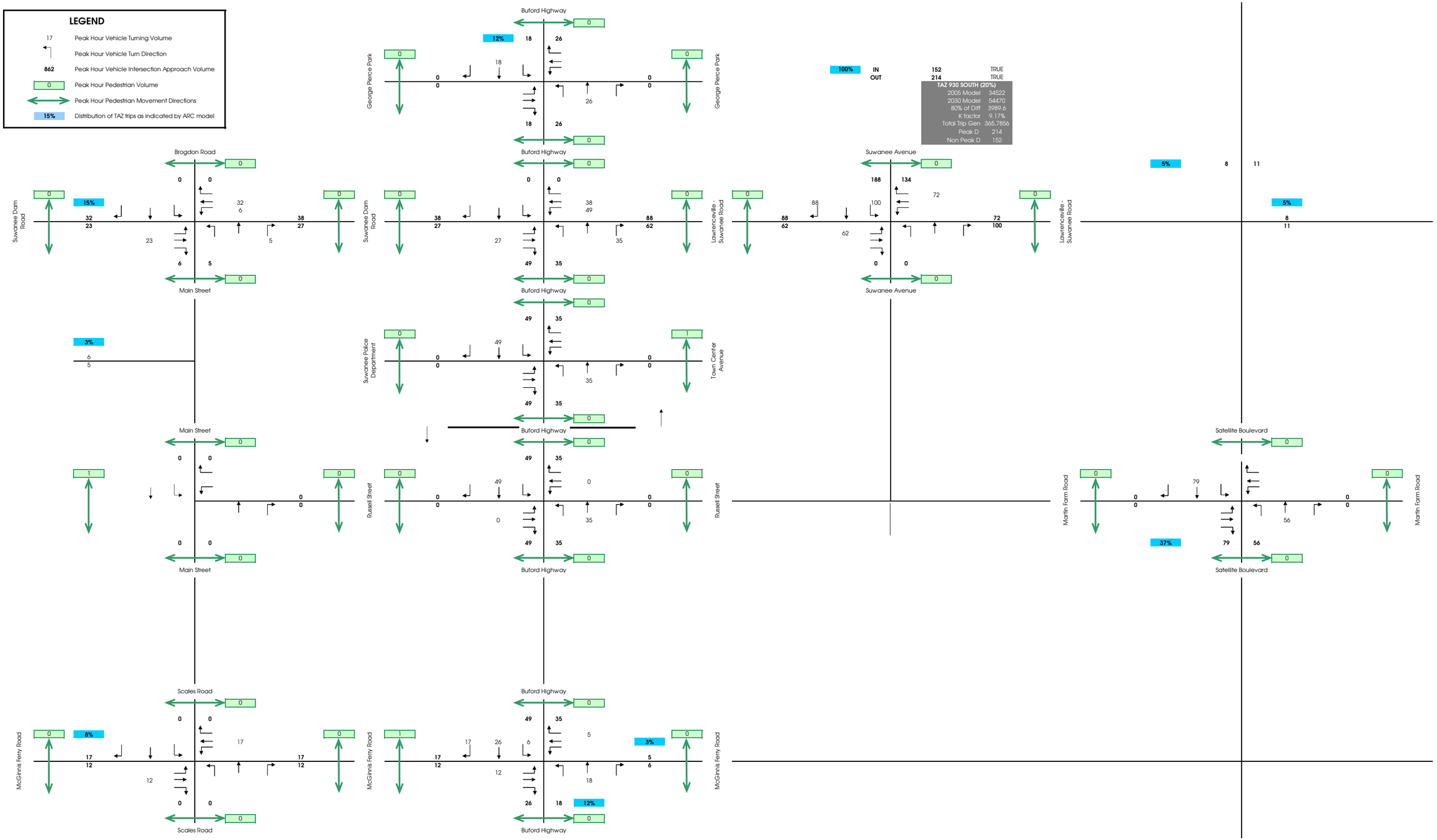
Suwanee Traffic.xls
TAZ 930S Distrib AM



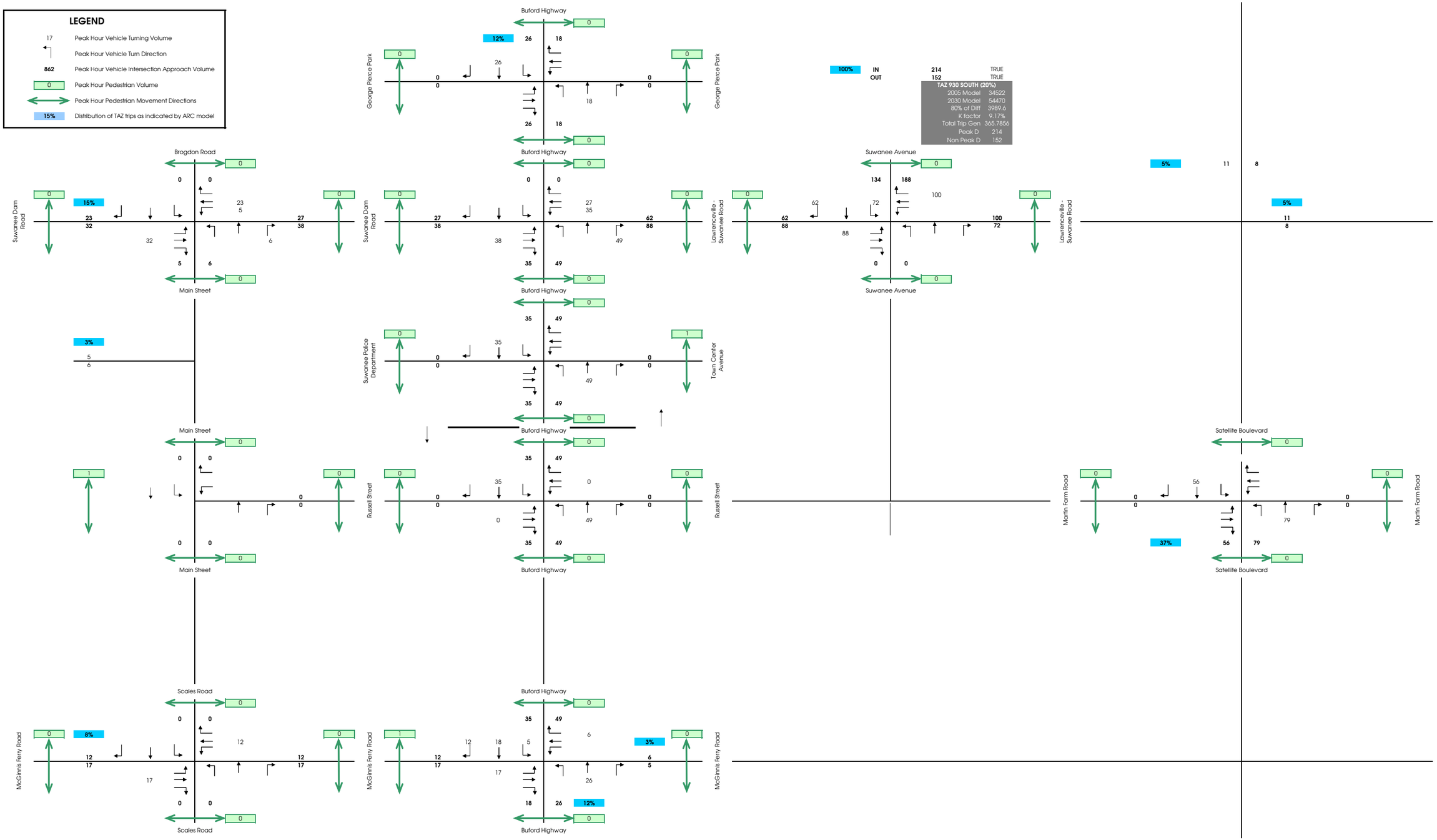
Suwanee Traffic.xls
TAZ 930S Distrib PM



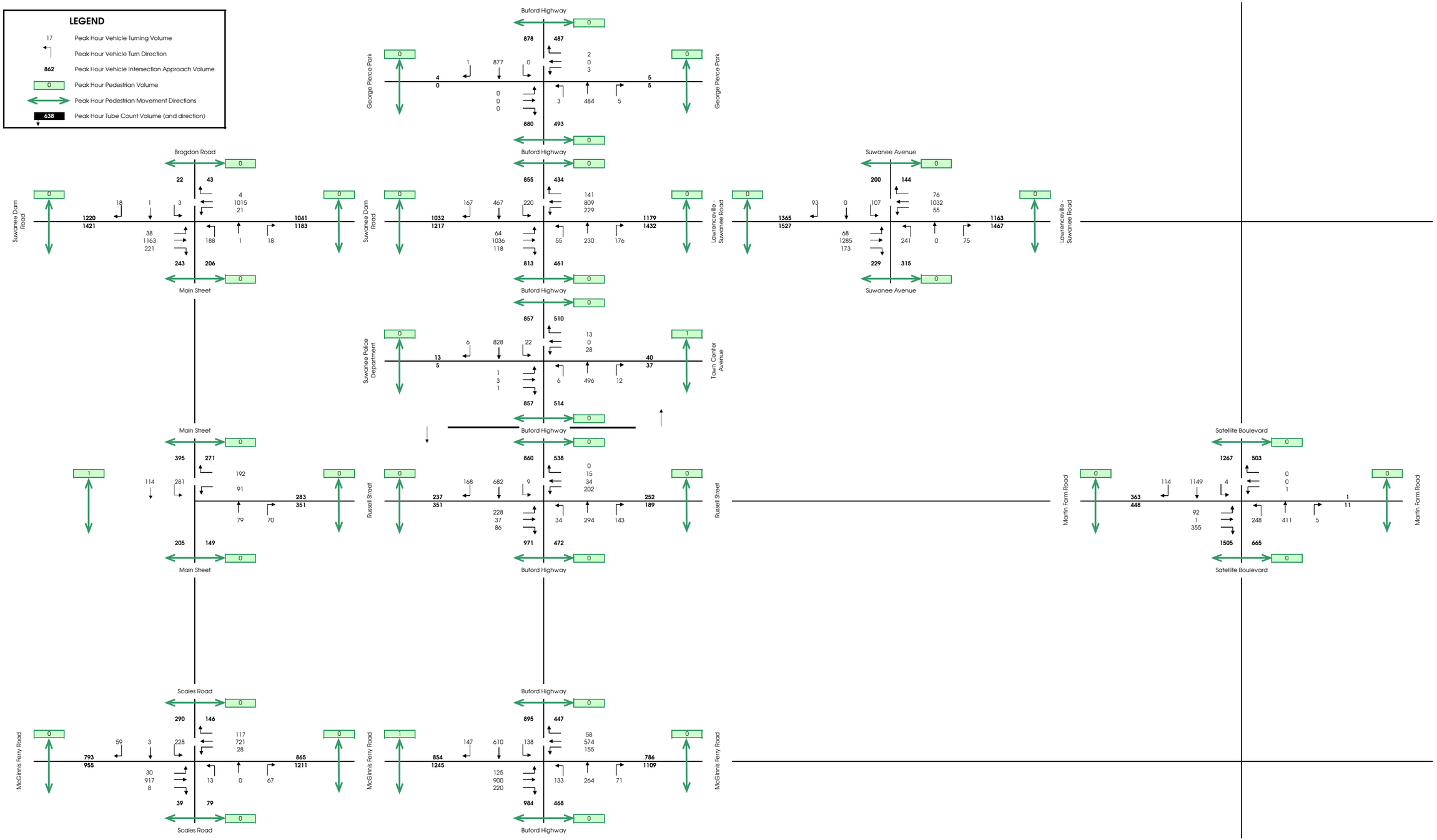
Suwanee Traffic.xls
TAZ 930N Distrib AM



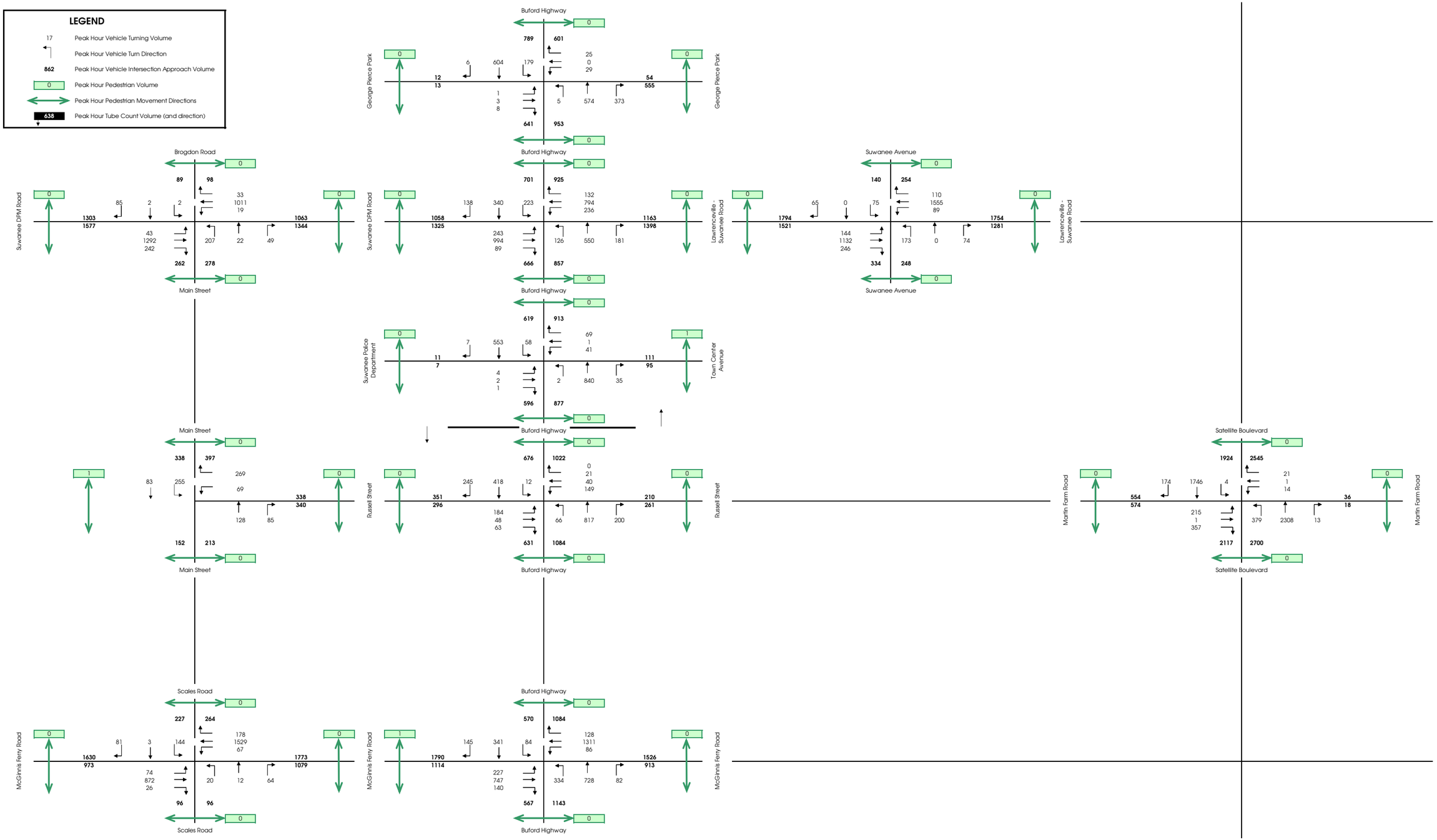
Suwanee Traffic.xls
TAZ 930N Distrib PM



Suwanee Traffic.xls
2030 Build AM Peak Hour



Suwanee Traffic.xls
2030 Build PM Peak Hour

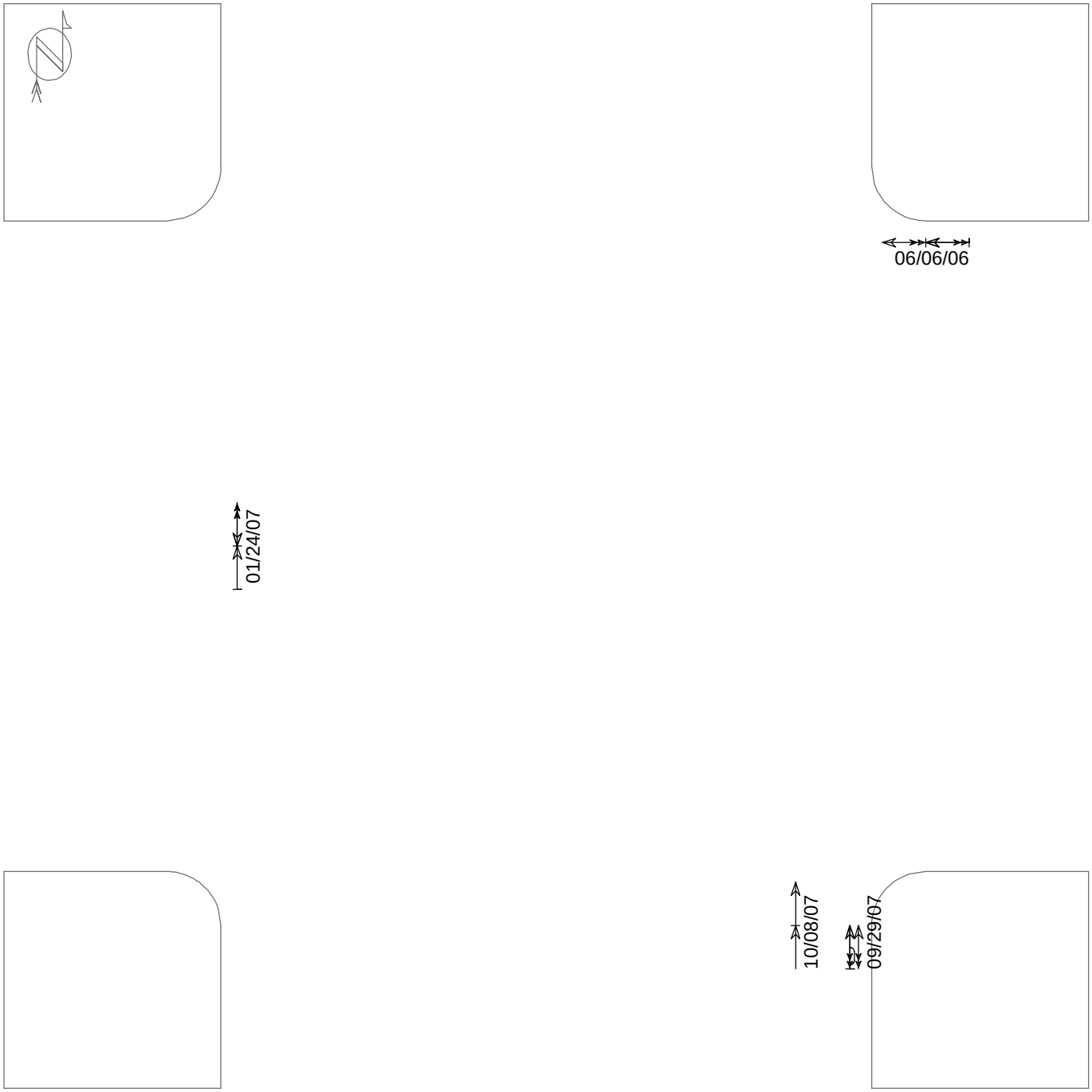


Appendix B

Crash Diagrams (2003-2008)

4 Accidents

BUFORD HWY at TOWNE CENTER AVE
2003-2007

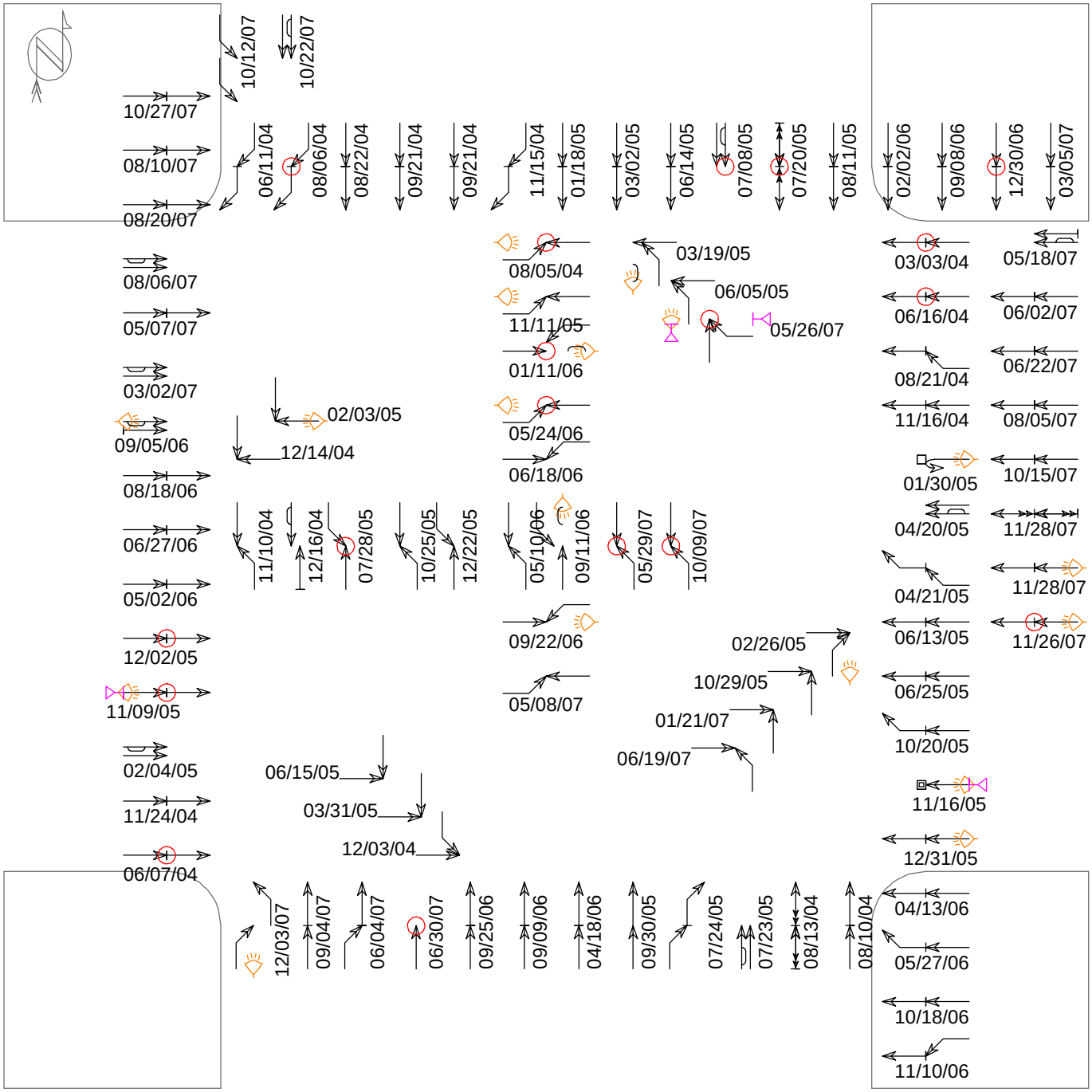


(clear filter), (0) accidents with insufficient data for display

Straight	Parked	Pedestrian	Fixed objects:
Stopped	Erratic	Bicycle	General, Pole, Signal, Curb, Tree, Animal
Unknown	Out of control	Injury	
Backing	Right turn	Fatality	
Overtaking	Left turn	Nighttime	3rd vehicle
Sideswipe	U-turn	DUI	Extra data

105 Accidents

BUFORD HWY at L'VILLE SUWANEE RD
2004-2007

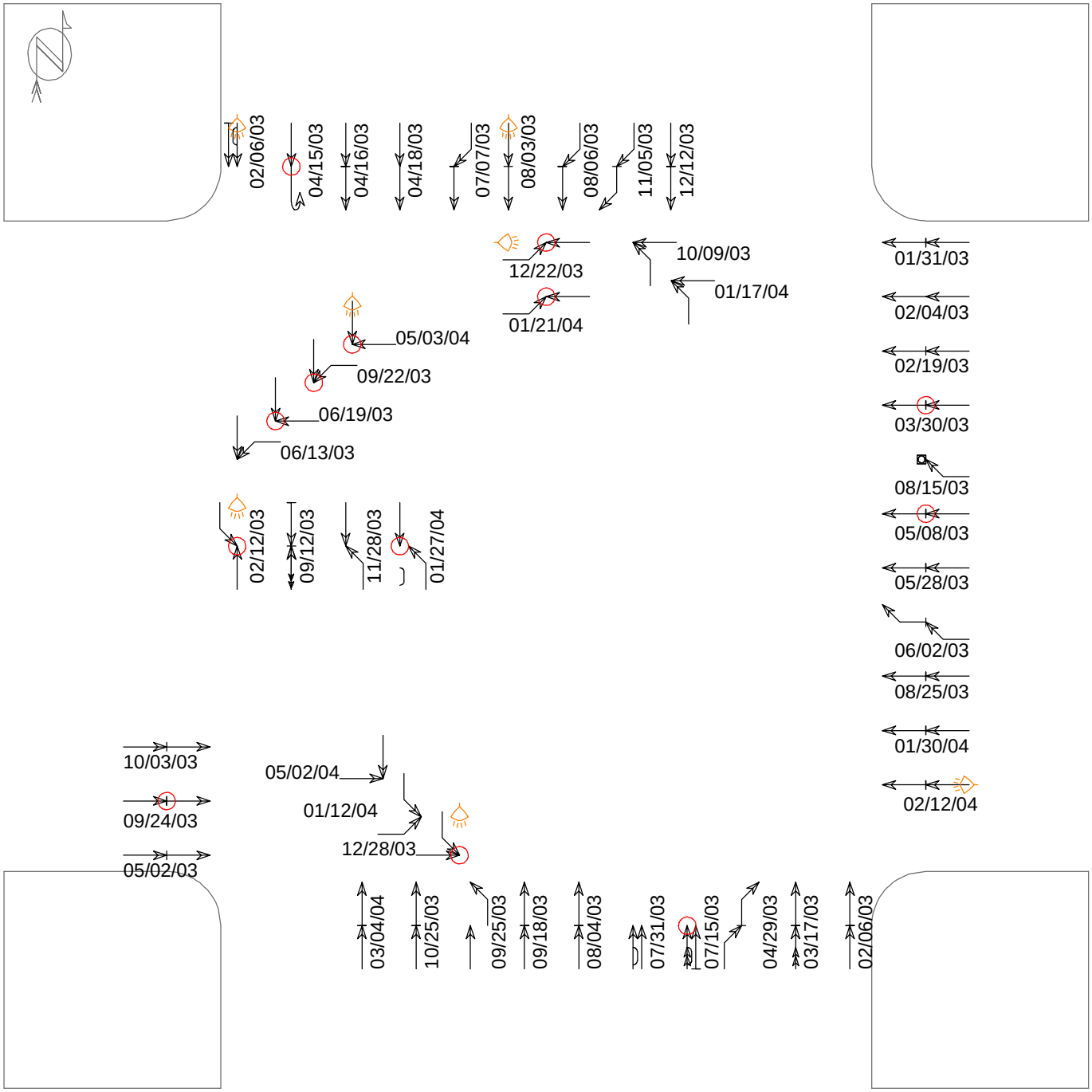


(clear filter), (0) accidents with insufficient data for display

Straight	Parked	Pedestrian	Fixed objects:
Stopped	Erratic	Bicycle	General / Pole
Unknown	Out of control	Injury	Signal / Curb
Backing	Right turn	Fatality	Tree / Animal
Overtaking	Left turn	Nighttime	3rd vehicle
Sideswipe	U-turn	DUI	Extra data

48 Accidents

BUFORD HWY at L"VILLE SUWANEE RD
2003-2004

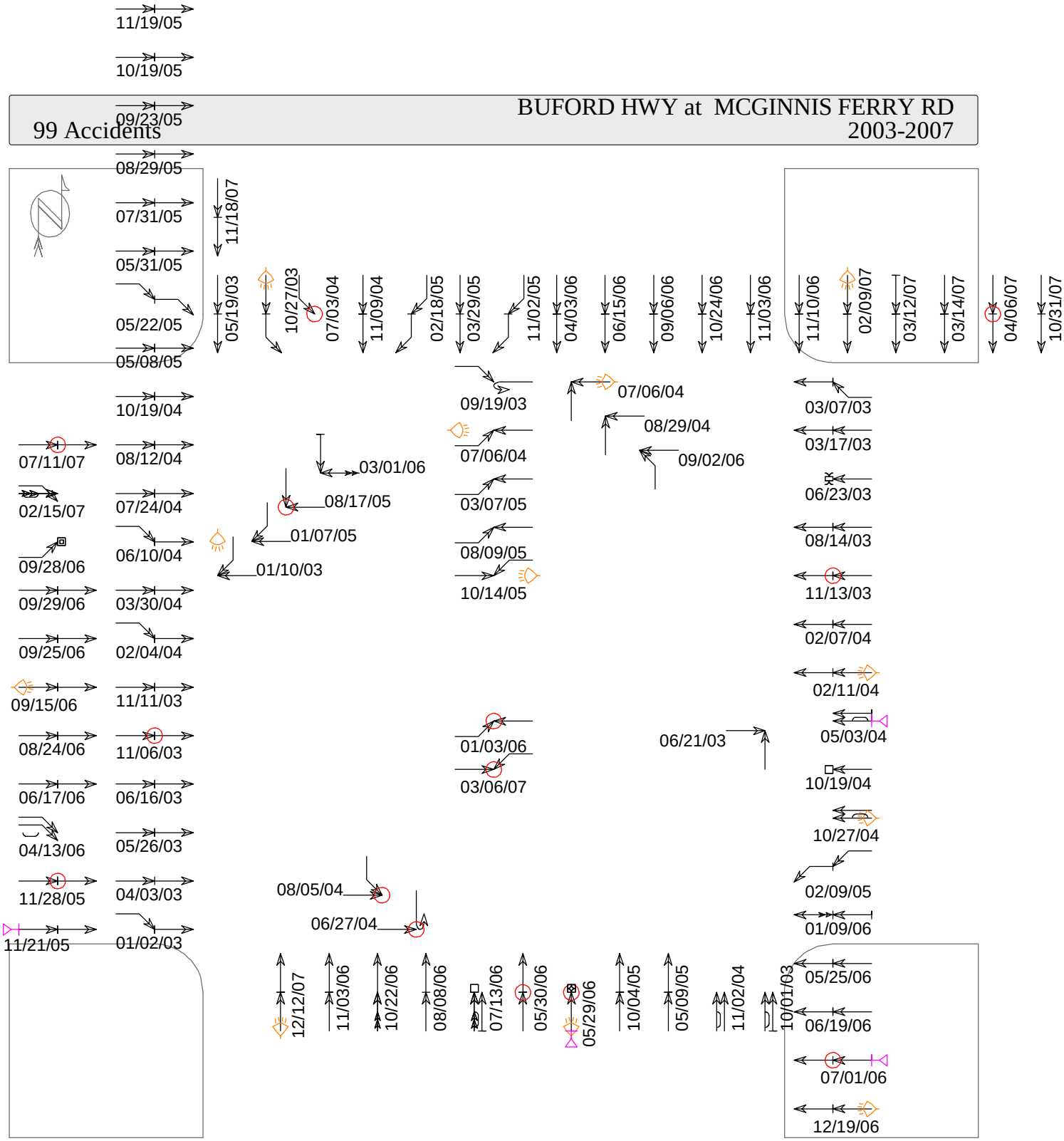


(clear filter), (0) accidents with insufficient data for display

Straight	Parked	Pedestrian	Fixed objects:
Stopped	Erratic	Bicycle	General, Pole
Unknown	Out of control	Injury	Signal, Curb
Backing	Right turn	Fatality	Tree, Animal
Overtaking	Left turn	Nighttime	3rd vehicle
Sideswipe	U-turn	DUI	Extra data

99 Accidents

BUFORD HWY at MCGINNIS FERRY RD
2003-2007

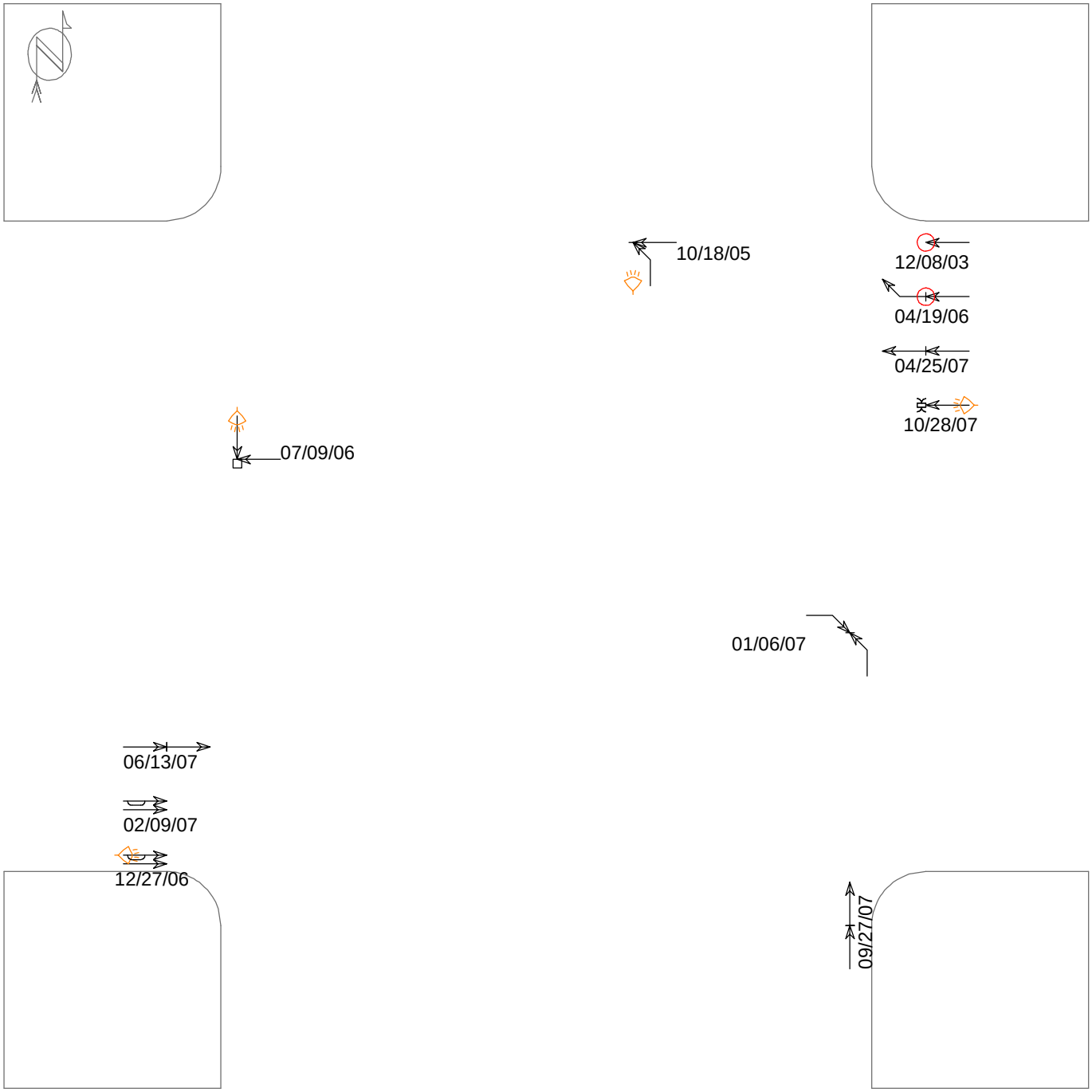


(clear filter), (0) accidents with insufficient data for display

Straight	Parked	Pedestrian	Fixed objects:
Stopped	Erratic	Bicycle	General / Signal / Tree
Unknown	Out of control	Injury	Pole / Curb / Animal
Backing	Right turn	Fatality	
Overtaking	Left turn	Nighttime	3rd vehicle
Sideswipe	U-turn	DUI	Extra data

11 Accidents

L"VILLE SUWANEE RD at SUWANEE AVE
2003-2007

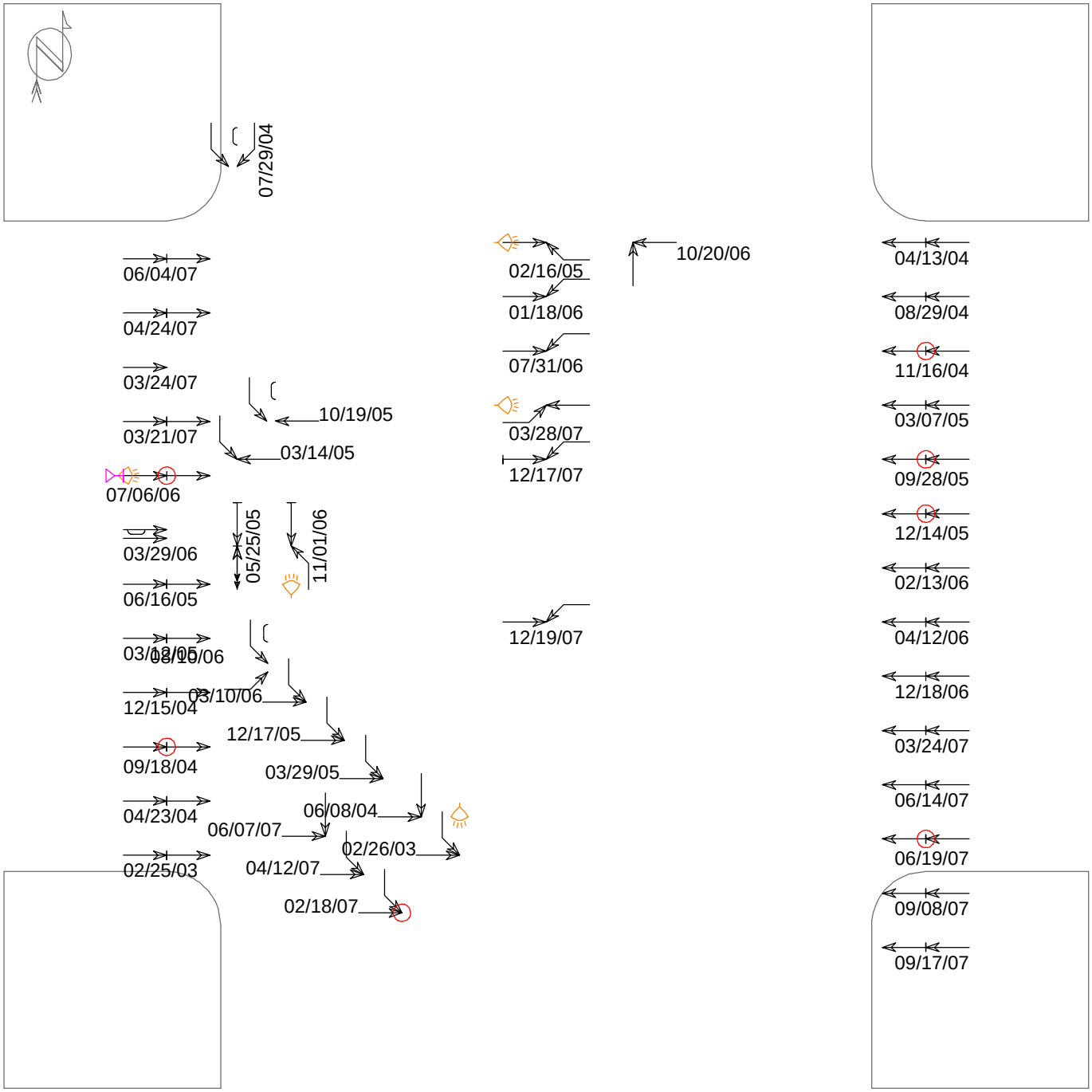


(clear filter), (0) accidents with insufficient data for display

Straight	Parked	Pedestrian	Fixed objects:
Stopped	Erratic	Bicycle	General / Pole
Unknown	Out of control	Injury	Signal / Curb
Backing	Right turn	Fatality	Tree / Animal
Overtaking	Left turn	Nighttime	3rd vehicle
Sideswipe	U-turn	DUI	Extra data

47 Accidents

SUWANEE DAM RD at MAIN ST
2003-2007

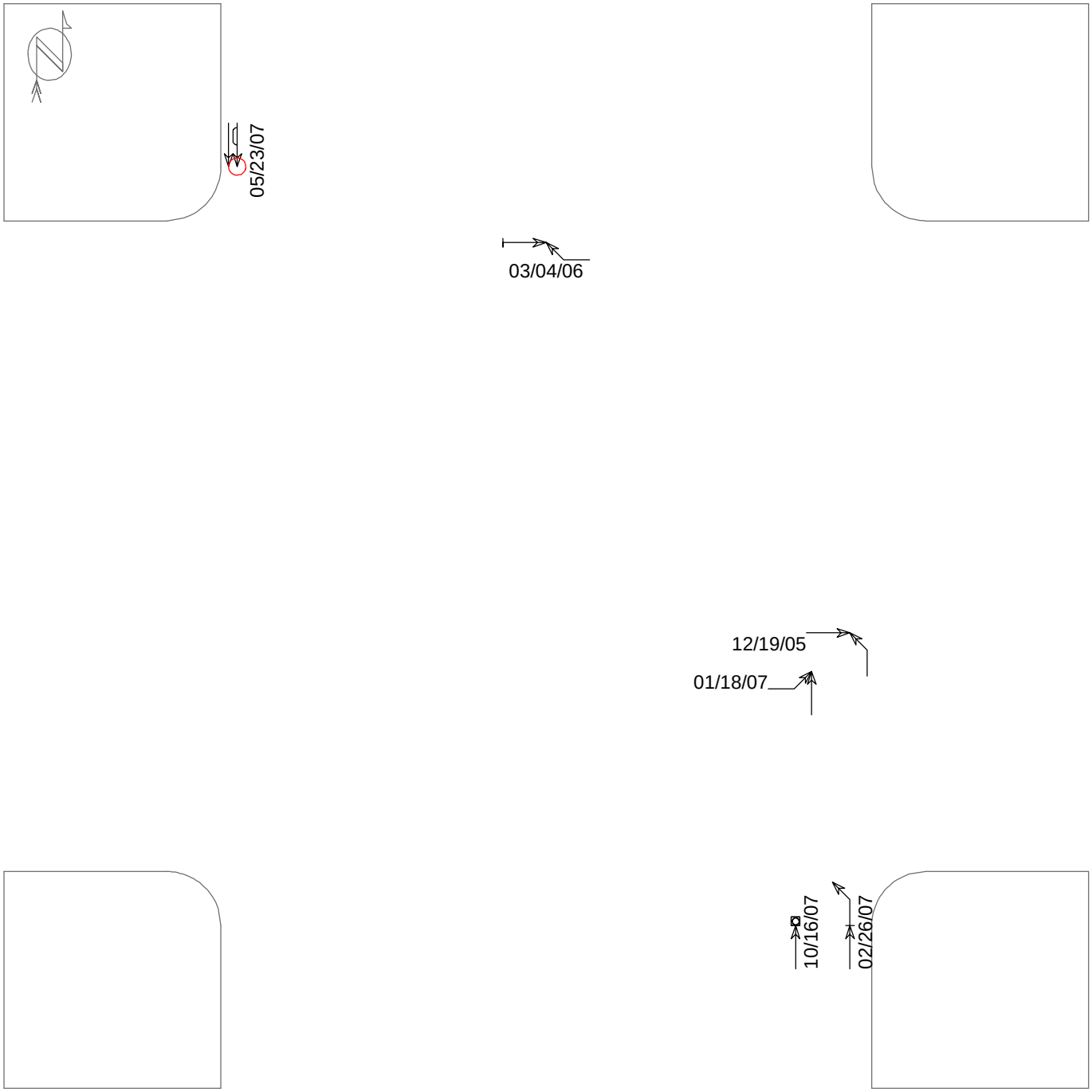


(clear filter), (0) accidents with insufficient data for display

Straight	Parked	Pedestrian	Fixed objects:
Stopped	Erratic	Bicycle	General, Pole
Unknown	Out of control	Injury	Signal, Curb
Backing	Right turn	Fatality	Tree, Animal
Overtaking	Left turn	Nighttime	3rd vehicle
Sideswipe	U-turn	DUI	Extra data

6 Accidents

SATELLITE BLVD at MARTIN FARM RD
2003-2007

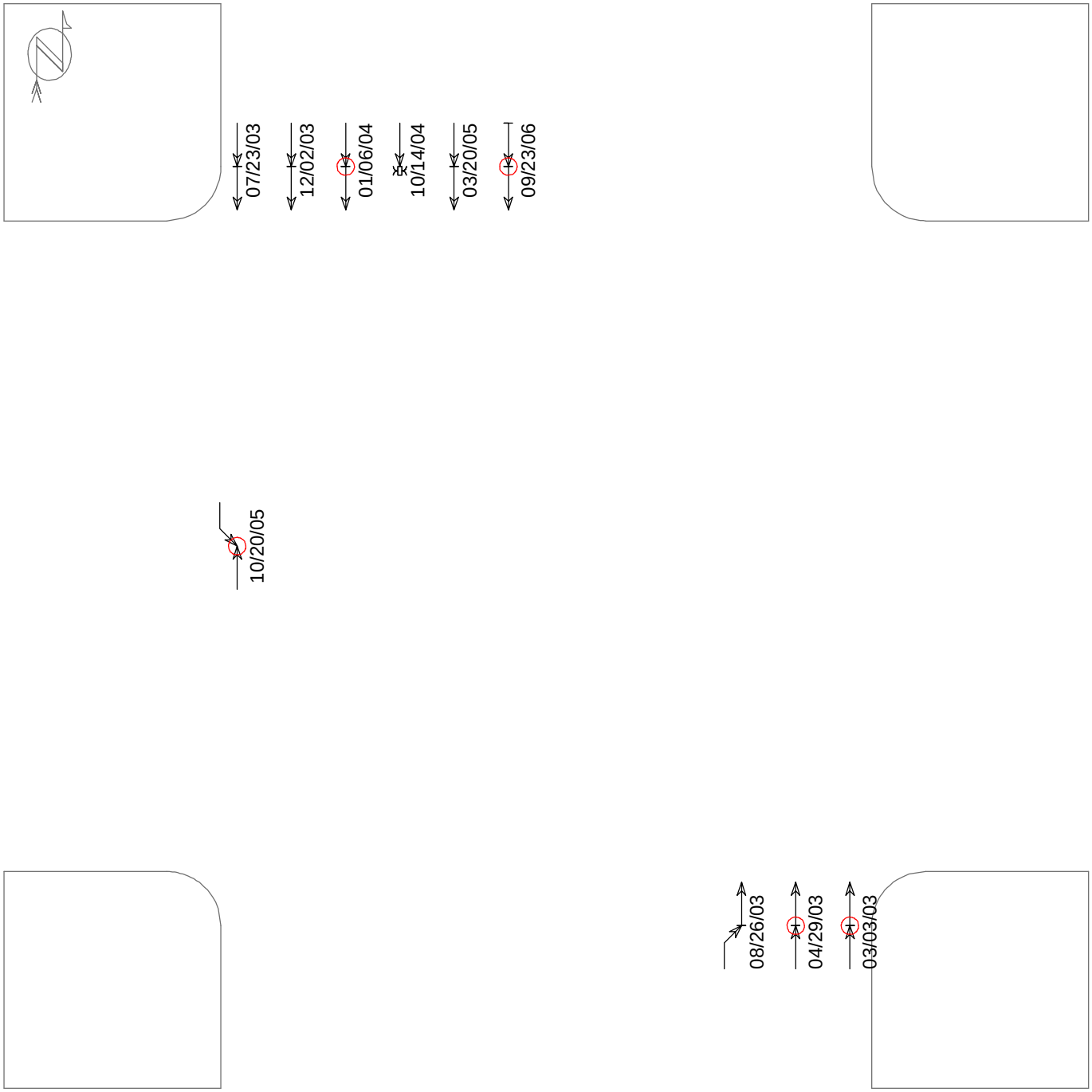


(clear filter), (0) accidents with insufficient data for display

Straight	Parked	Pedestrian	Fixed objects:
Stopped	Erratic	Bicycle	General, Pole, Signal, Curb, Tree, Animal
Unknown	Out of control	Injury	
Backing	Right turn	Fatality	
Overtaking	Left turn	Nighttime	3rd vehicle
Sideswipe	U-turn	DUI	Extra data

10 Accidents

BUFORD HWY at GEORGE PIERCE PARK
2003-2007



(clear filter), (0) accidents with insufficient data for display

Straight	Parked	Pedestrian	Fixed objects:
Stopped	Erratic	Bicycle	General, Pole
Unknown	Out of control	Injury	Signal, Curb
Backing	Right turn	Fatality	Tree, Animal
Overtaking	Left turn	Nighttime	3rd vehicle
Sideswipe	U-turn	DUI	Extra data

Appendix C

2009 AM Synchro
2009 PM Synchro
2010 No Build AM Synchro
2010 No Build PM Synchro
2030 No Build AM Synchro
2030 No Build PM Synchro
2030 Build AM Synchro
2030 Build PM Synchro

HCM Signalized Intersection Capacity Analysis
3: mcginnis ferry road & buford highway

1/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	740	175	146	463	33	103	140	67	100	423	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1752	3539	1524	1787	1792	1568	1752	1844	
Flt Permitted	0.36	1.00	1.00	0.19	1.00	1.00	0.10	1.00	1.00	0.61	1.00	
Satd. Flow (perm)	689	3610	1615	343	3539	1524	196	1792	1568	1128	1844	
Peak-hour factor, PHF	0.80	0.93	0.86	0.79	0.88	0.75	0.83	0.80	0.80	0.86	0.88	0.73
Adj. Flow (vph)	76	796	203	185	526	44	124	175	84	116	481	79
RTOR Reduction (vph)	0	0	139	0	0	30	0	0	57	0	5	0
Lane Group Flow (vph)	76	796	64	185	526	14	124	175	27	116	555	0
Heavy Vehicles (%)	0%	0%	0%	3%	2%	6%	1%	6%	3%	3%	1%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		
Actuated Green, G (s)	46.8	37.9	37.9	46.5	37.9	37.9	47.2	38.3	38.3	47.0	38.3	
Effective Green, g (s)	46.8	37.9	37.9	46.5	37.9	37.9	47.2	38.3	38.3	47.0	38.3	
Actuated g/C Ratio	0.39	0.32	0.32	0.39	0.32	0.32	0.39	0.32	0.32	0.39	0.32	
Clearance Time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Grp Cap (vph)	351	1140	510	234	1118	481	195	572	500	487	589	
v/s Ratio Prot	0.02	0.22		c0.06	0.15		c0.05	0.10		0.02	c0.30	
v/s Ratio Perm	0.07		0.04	c0.25		0.01	0.20		0.02	0.08		
v/c Ratio	0.22	0.70	0.13	0.79	0.47	0.03	0.64	0.31	0.05	0.24	0.94	
Uniform Delay, d1	23.6	36.0	29.2	27.1	33.0	28.3	28.1	30.8	28.3	23.8	39.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.4	3.6	0.5	23.3	1.4	0.1	14.8	1.4	0.2	1.2	25.3	
Delay (s)	25.0	39.6	29.8	50.4	34.4	28.5	42.9	32.2	28.5	25.0	65.1	
Level of Service	C	D	C	D	C	C	D	C	C	C	E	
Approach Delay (s)		36.7			38.0			34.9			58.2	
Approach LOS		D			D			C			E	

Intersection Summary			
HCM Average Control Delay	41.8	HCM Level of Service	D
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.6
Intersection Capacity Utilization	81.9%	ICU Level of Service	D
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	808	8	26	600	9	12	0	63	36	3	77
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.65	0.93	0.50	0.81	0.94	0.56	0.60	0.25	0.93	0.88	0.38	0.60
Hourly flow rate (vph)	20	869	16	32	638	16	20	0	68	41	8	128
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	654			885			1424	1627	434	1245	1627	319
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	654			885			1424	1627	434	1245	1627	319
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			72	100	88	63	92	81
cM capacity (veh/h)	942			748			71	97	575	111	97	683

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	20	434	434	16	32	319	319	16	20	68	41	136
Volume Left	20	0	0	0	32	0	0	0	20	0	41	0
Volume Right	0	0	0	16	0	0	0	16	0	68	0	128
cSH	942	1700	1700	1700	748	1700	1700	1700	71	575	111	505
Volume to Capacity	0.02	0.26	0.26	0.01	0.04	0.19	0.19	0.01	0.28	0.12	0.37	0.27
Queue Length 95th (ft)	2	0	0	0	3	0	0	0	25	10	37	27
Control Delay (s)	8.9	0.0	0.0	0.0	10.0	0.0	0.0	0.0	74.7	12.1	55.0	14.7
Lane LOS	A				B				F	B	F	B
Approach Delay (s)	0.2				0.5				26.4		24.0	
Approach LOS									D		C	

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	3	0	2	3	224	5	0	662	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.9	5.9		5.9	5.9		5.9	
Lane Util. Factor					1.00	1.00		1.00	1.00		1.00	
Frt					1.00	0.85		1.00	0.85		1.00	
Flt Protected					0.95	1.00		1.00	1.00		1.00	
Satd. Flow (prot)					1805	1615		1809	1615		1880	
Flt Permitted					1.00	1.00		0.98	1.00		1.00	
Satd. Flow (perm)					1900	1615		1767	1615		1880	
Peak-hour factor, PHF	0.25	0.25	0.25	0.38	0.25	0.25	0.38	0.85	0.62	0.25	0.95	0.25
Adj. Flow (vph)	0	0	0	8	0	8	8	264	8	0	697	4
RTOR Reduction (vph)	0	0	0	0	0	8	0	0	3	0	0	0
Lane Group Flow (vph)	0	0	0	0	8	0	0	272	5	0	701	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	100%	2%	0%	0%	1%	0%
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)					0.8	0.8		17.3	17.3		17.3	
Effective Green, g (s)					0.8	0.8		17.3	17.3		17.3	
Actuated g/C Ratio					0.03	0.03		0.58	0.58		0.58	
Clearance Time (s)					5.9	5.9		5.9	5.9		5.9	
Vehicle Extension (s)					3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)					51	43		1022	934		1088	
v/s Ratio Prot											c0.37	
v/s Ratio Perm					c0.00	0.00		0.15	0.00			
v/c Ratio					0.16	0.00		0.27	0.00		0.64	
Uniform Delay, d1					14.2	14.2		3.1	2.7		4.2	
Progression Factor					1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2					1.4	0.0		0.1	0.0		1.3	
Delay (s)					15.7	14.2		3.3	2.7		5.5	
Level of Service					B	B		A	A		A	
Approach Delay (s)		0.0			14.9			3.3			5.5	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	5.1	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	29.9	Sum of lost time (s)	11.8
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	19	10	6	19	63	12
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.40	0.84	0.38	0.79	0.69	0.75
Hourly flow rate (vph)	48	12	16	24	91	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		107	0	133	101
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		107	0	133	101
tC, single (s)	4.1		6.5	6.2	7.1	6.6
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.1
p0 queue free %	97		98	98	88	98
cM capacity (veh/h)	1636		764	1076	794	755

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	59	40	107
Volume Left	48	0	91
Volume Right	12	24	0
cSH	1636	926	788
Volume to Capacity	0.03	0.04	0.14
Queue Length 95th (ft)	2	3	12
Control Delay (s)	5.9	9.1	10.3
Lane LOS	A	A	B
Approach Delay (s)	5.9	9.1	10.3
Approach LOS		A	B

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	990	114	15	807	4	38	1	13	3	1	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.88	0.75	0.75	0.95	0.50	0.56	0.25	0.81	0.25	0.25	0.61
Hourly flow rate (vph)	48	1125	152	20	849	8	68	4	16	12	4	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					468							
pX, platoon unblocked	0.86						0.86	0.86		0.86	0.86	0.86
vC, conflicting volume	857			1277			1716	2118	562	1570	2266	429
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	496			1277			1499	1970	562	1329	2143	0
tC, single (s)	4.1			4.2			7.5	6.5	7.1	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	95			96			0	92	96	86	90	97
cM capacity (veh/h)	923			513			61	49	455	83	38	933

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	NB 1	SB 1
Volume Total	48	562	562	152	445	433	88	44
Volume Left	48	0	0	0	20	0	68	12
Volume Right	0	0	0	152	0	8	16	28
cSH	923	1700	1700	1700	513	1700	72	158
Volume to Capacity	0.05	0.33	0.33	0.09	0.04	0.25	1.22	0.28
Queue Length 95th (ft)	4	0	0	0	3	0	171	27
Control Delay (s)	9.1	0.0	0.0	0.0	1.2	0.0	278.4	36.4
Lane LOS	A				A		F	E
Approach Delay (s)	0.3				0.6		278.4	36.4
Approach LOS							F	E

Intersection Summary			
Average Delay	11.6		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	32	7	0	5	25	911	4	6	1124	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.42	0.25	0.73	0.44	0.25	0.63	0.57	0.92	0.25	0.75	0.95	0.45
Hourly flow rate (vph)	24	0	44	16	0	8	44	990	16	8	1183	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1790	2293	592	1737	2305	503	1203			1006		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1790	2293	592	1737	2305	503	1203			1006		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	50	100	90	67	100	98	92			99		
cM capacity (veh/h)	48	36	455	48	35	519	565			696		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	68	24	44	660	346	8	592	592	20
Volume Left	24	16	44	0	0	8	0	0	0
Volume Right	44	8	0	0	16	0	0	0	20
cSH	114	69	565	1700	1700	696	1700	1700	1700
Volume to Capacity	0.59	0.35	0.08	0.39	0.20	0.01	0.35	0.35	0.01
Queue Length 95th (ft)	73	32	6	0	0	1	0	0	0
Control Delay (s)	74.8	82.7	11.9	0.0	0.0	10.2	0.0	0.0	0.0
Lane LOS	F	F	B			B			
Approach Delay (s)	74.8	82.7	0.5			0.1			
Approach LOS	F	F							

Intersection Summary				
Average Delay	3.2			
Intersection Capacity Utilization	41.1%	ICU Level of Service	A	
Analysis Period (min)	15			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	49	1	39	1	0	0	23	335	5	4	1010	84
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.89	0.42	0.33	0.98	0.57	0.25	0.25	0.25	0.72	0.25	0.70
Hourly flow rate (vph)	77	1	93	3	0	0	92	1340	20	6	4040	120
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												7
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			94			2180	160	1	850	253	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			94			2180	160	1	850	253	0
tC, single (s)	4.3			4.1			7.5	6.5	6.9	7.5	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	95			100			0	0	98	0	0	89
cM capacity (veh/h)	1572			1513			0	698	1090	0	621	1050

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	77	1	1	93	3	0	0	1452	4166
Volume Left	77	0	0	0	3	0	0	92	6
Volume Right	0	0	0	93	0	0	0	20	120
cSH	1572	1700	1700	1700	1513	1700	1700	0	2
Volume to Capacity	0.05	0.00	0.00	0.05	0.00	0.00	0.00	Err	2625.96
Queue Length 95th (ft)	4	0	0	0	0	0	0	Err	Err
Control Delay (s)	7.4	0.0	0.0	0.0	7.4	0.0	0.0	Err	Err
Lane LOS	A				A			F	F
Approach Delay (s)	3.3				7.4			Err	Err
Approach LOS								F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	70.3%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	8	52	6	1	15	10	245	3	9	598	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.40	0.65	0.50	0.25	0.75	0.28	0.69	0.38	0.75	0.95	0.57
Hourly flow rate (vph)	24	20	80	12	4	20	36	355	8	12	629	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1120	1102	644	1188	1112	359	658			363		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1120	1102	644	1188	1112	359	658			363		
tC, single (s)	7.1	6.6	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	86	90	83	90	98	97	96			99		
cM capacity (veh/h)	171	193	477	123	201	674	940			1207		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	124	36	399	670
Volume Left	24	12	36	12
Volume Right	80	20	8	28
cSH	301	245	940	1207
Volume to Capacity	0.41	0.15	0.04	0.01
Queue Length 95th (ft)	48	13	3	1
Control Delay (s)	25.0	22.2	1.2	0.3
Lane LOS	D	C	A	A
Approach Delay (s)	25.0	22.2	1.2	0.3
Approach LOS	D	C		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	866	111	106	607	36	52	105	44	139	361	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3574	1599	1805	3539	1524	1805	1792	1538	1787	1863	1615
Flt Permitted	0.31	1.00	1.00	0.10	1.00	1.00	0.23	1.00	1.00	0.61	1.00	1.00
Satd. Flow (perm)	582	3574	1599	189	3539	1524	437	1792	1538	1154	1863	1615
Peak-hour factor, PHF	0.71	0.86	0.82	0.83	0.90	0.69	0.87	0.82	0.73	0.91	0.81	0.90
Adj. Flow (vph)	85	1007	135	128	674	52	60	128	60	153	446	176
RTOR Reduction (vph)	0	0	43	0	0	33	0	0	43	0	0	123
Lane Group Flow (vph)	85	1007	92	128	674	19	60	128	17	153	446	53
Heavy Vehicles (%)	0%	1%	1%	0%	2%	6%	0%	6%	5%	1%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	44.6	38.4	38.4	49.4	40.8	40.8	36.9	30.6	30.6	42.7	33.5	33.5
Effective Green, g (s)	44.6	38.4	38.4	49.4	40.8	40.8	36.9	30.6	30.6	42.7	33.5	33.5
Actuated g/C Ratio	0.40	0.35	0.35	0.44	0.37	0.37	0.33	0.28	0.28	0.38	0.30	0.30
Clearance Time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	302	1235	553	209	1300	560	223	494	424	496	562	487
v/s Ratio Prot	0.02	c0.28		c0.05	0.19		0.02	0.07		c0.03	c0.24	
v/s Ratio Perm	0.10		0.06	0.22		0.01	0.07		0.01	0.09		0.03
v/c Ratio	0.28	0.82	0.17	0.61	0.52	0.03	0.27	0.26	0.04	0.31	0.79	0.11
Uniform Delay, d1	21.3	33.1	25.2	22.6	27.5	22.5	27.0	31.4	29.5	23.1	35.6	28.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	4.3	0.1	5.2	0.4	0.0	0.7	0.3	0.0	0.4	7.6	0.1
Delay (s)	21.8	37.4	25.4	27.8	27.8	22.5	27.6	31.7	29.5	23.4	43.2	28.1
Level of Service	C	D	C	C	C	C	C	C	C	C	D	C
Approach Delay (s)		35.0			27.5			30.2			35.9	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	32.8	HCM Level of Service	C
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	111.1	Sum of lost time (s)	24.3
Intersection Capacity Utilization	72.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	3	1	26	0	12	6	234	11	21	592	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.38	0.25	0.81	0.25	0.60	0.50	0.75	0.55	0.58	0.91	0.50
Hourly flow rate (vph)	4	8	4	32	0	20	12	312	20	36	651	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						3						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											696	
pX, platoon unblocked	0.76	0.76	0.76	0.76	0.76		0.76					
vC, conflicting volume	1059	1059	651	1067	1071	312	663			312		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	922	922	386	932	938	312	402			312		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	96	99	82	100	97	99			97		
cM capacity (veh/h)	182	199	508	177	195	733	891			1260		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	16	52	324	20	36	651	12
Volume Left	4	32	12	0	36	0	0
Volume Right	4	20	0	20	0	0	12
cSH	228	287	891	1700	1260	1700	1700
Volume to Capacity	0.07	0.18	0.01	0.01	0.03	0.38	0.01
Queue Length 95th (ft)	6	16	1	0	2	0	0
Control Delay (s)	21.9	22.2	0.5	0.0	7.9	0.0	0.0
Lane LOS	C	C	A		A		
Approach Delay (s)	21.9	22.2	0.5		0.4		
Approach LOS	C	C					

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	47.8%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: mcginnis ferry road & buford highway

1/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	627	109	81	1128	91	283	534	77	58	213	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3574	1568	1570	3610	1615	1805	1900	1568	1805	1796	
Flt Permitted	0.11	1.00	1.00	0.21	1.00	1.00	0.30	1.00	1.00	0.10	1.00	
Satd. Flow (perm)	201	3574	1568	355	3610	1615	576	1900	1568	198	1796	
Peak-hour factor, PHF	0.78	0.84	0.67	0.75	0.93	0.78	0.93	0.95	0.69	0.76	0.74	0.73
Adj. Flow (vph)	172	746	163	108	1213	117	304	562	112	76	288	108
RTOR Reduction (vph)	0	0	112	0	0	60	0	0	66	0	12	0
Lane Group Flow (vph)	172	746	51	108	1213	57	304	562	46	76	384	0
Heavy Vehicles (%)	0%	1%	3%	15%	0%	0%	0%	0%	3%	0%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		
Actuated Green, G (s)	46.8	37.9	37.9	46.5	37.9	37.9	47.2	38.3	38.3	47.0	38.3	
Effective Green, g (s)	46.8	37.9	37.9	46.5	37.9	37.9	47.2	38.3	38.3	47.0	38.3	
Actuated g/C Ratio	0.39	0.32	0.32	0.39	0.32	0.32	0.39	0.32	0.32	0.39	0.32	
Clearance Time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Grp Cap (vph)	197	1129	495	225	1140	510	318	606	500	194	573	
v/s Ratio Prot	c0.06	0.21		0.03	c0.34		c0.07	0.30		0.03	0.21	
v/s Ratio Perm	0.28		0.03	0.15		0.04	c0.31		0.03	0.12		
v/c Ratio	0.87	0.66	0.10	0.48	1.06	0.11	0.96	0.93	0.09	0.39	0.67	
Uniform Delay, d1	29.9	35.5	29.0	25.4	41.1	29.1	34.6	39.5	28.7	27.4	35.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	37.8	3.0	0.4	7.2	45.5	0.4	40.4	22.5	0.4	5.9	6.1	
Delay (s)	67.8	38.5	29.5	32.6	86.5	29.6	75.0	62.0	29.0	33.2	41.5	
Level of Service	E	D	C	C	F	C	E	E	C	C	D	
Approach Delay (s)		41.8			77.8			62.3			40.2	
Approach LOS		D			E			E			D	

Intersection Summary			
HCM Average Control Delay	59.7	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.4
Intersection Capacity Utilization	92.0%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	743	25	63	1386	27	19	12	60	64	3	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.86	0.78	0.72	0.91	0.75	0.37	0.50	0.65	0.75	0.38	0.80
Hourly flow rate (vph)	56	864	32	88	1523	36	51	24	92	85	8	45
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1559			896			1962	2710	432	2346	2706	762
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1559			896			1962	2710	432	2346	2706	762
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	87			89			0	0	84	0	52	87
cM capacity (veh/h)	430			766			18	16	577	0	17	352

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	56	432	432	32	88	762	762	36	51	116	85	53
Volume Left	56	0	0	0	88	0	0	0	51	0	85	0
Volume Right	0	0	0	32	0	0	0	36	0	92	0	45
cSH	430	1700	1700	1700	766	1700	1700	1700	18	72	0	87
Volume to Capacity	0.13	0.25	0.25	0.02	0.11	0.45	0.45	0.02	2.90	1.62	Err	0.60
Queue Length 95th (ft)	11	0	0	0	10	0	0	0	174	249	Err	70
Control Delay (s)	14.6	0.0	0.0	0.0	10.3	0.0	0.0	0.0	1305.9	430.3	Err	95.4
Lane LOS	B				B				F	F	F	F
Approach Delay (s)	0.9				0.5				698.5		Err	
Approach LOS									F		F	

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	3	8	27	0	24	5	376	352	169	337	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9			5.9	5.9		5.9	5.9	5.9	5.9	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt		0.93			1.00	0.85		1.00	0.85	1.00	0.99	
Flt Protected		0.99			0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1409			1805	1615		1868	1615	1805	1878	
Flt Permitted		0.94			0.91	1.00		0.99	1.00	0.48	1.00	
Satd. Flow (perm)		1338			1727	1615		1854	1615	914	1878	
Peak-hour factor, PHF	0.25	0.25	0.50	0.42	0.25	0.60	0.63	0.78	0.76	0.62	0.79	0.38
Adj. Flow (vph)	4	12	16	64	0	40	8	482	463	273	427	16
RTOR Reduction (vph)	0	14	0	0	0	35	0	0	194	0	1	0
Lane Group Flow (vph)	0	18	0	0	64	5	0	490	269	273	442	0
Heavy Vehicles (%)	0%	0%	50%	0%	0%	0%	100%	0%	0%	0%	0%	17%
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)		4.4			4.4	4.4		22.5	22.5	22.5	22.5	
Effective Green, g (s)		4.4			4.4	4.4		22.5	22.5	22.5	22.5	
Actuated g/C Ratio		0.11			0.11	0.11		0.58	0.58	0.58	0.58	
Clearance Time (s)		5.9			5.9	5.9		5.9	5.9	5.9	5.9	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		152			196	184		1078	939	531	1092	
v/s Ratio Prot											0.24	
v/s Ratio Perm		0.01			c0.04	0.00		0.26	0.17	c0.30		
v/c Ratio		0.12			0.33	0.02		0.45	0.29	0.51	0.40	
Uniform Delay, d1		15.4			15.8	15.2		4.6	4.1	4.8	4.4	
Progression Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.3			1.0	0.1		0.3	0.2	0.8	0.2	
Delay (s)		15.8			16.8	15.3		4.9	4.2	5.7	4.7	
Level of Service		B			B	B		A	A	A	A	
Approach Delay (s)		15.8			16.2			4.6			5.1	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	5.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	38.7	Sum of lost time (s)	11.8
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	18	51	26	13	73	10
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.85	0.81	0.54	0.76	0.83
Hourly flow rate (vph)	32	60	32	24	96	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		124	0	134	94
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		124	0	134	94
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	98		96	98	88	98
cM capacity (veh/h)	1636		755	1091	785	784

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	92	56	108
Volume Left	32	0	96
Volume Right	60	24	0
cSH	1636	870	784
Volume to Capacity	0.02	0.06	0.14
Queue Length 95th (ft)	2	5	12
Control Delay (s)	2.6	9.4	10.3
Lane LOS	A	A	B
Approach Delay (s)	2.6	9.4	10.3
Approach LOS		A	B

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	41	1069	92	14	847	31	100	22	43	2	2	80
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.97	0.82	0.88	0.91	0.78	0.58	0.79	0.83	0.25	0.50	0.71
Hourly flow rate (vph)	60	1102	112	16	931	40	172	28	52	8	4	113
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					468							
pX, platoon unblocked	0.82						0.82	0.82		0.82	0.82	0.82
vC, conflicting volume	971			1214			1835	2225	551	1720	2317	485
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	512			1214			1571	2050	551	1431	2163	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	93			97			0	33	89	74	89	87
cM capacity (veh/h)	867			581			45	42	483	30	35	890

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	NB 1	SB 1
Volume Total	60	551	551	112	481	505	252	125
Volume Left	60	0	0	0	16	0	172	8
Volume Right	0	0	0	112	0	40	52	113
cSH	867	1700	1700	1700	581	1700	55	248
Volume to Capacity	0.07	0.32	0.32	0.07	0.03	0.30	4.61	0.50
Queue Length 95th (ft)	6	0	0	0	2	0	Err	65
Control Delay (s)	9.5	0.0	0.0	0.0	0.8	0.0	Err	33.3
Lane LOS	A				A		F	D
Approach Delay (s)	0.4				0.4		Err	33.3
Approach LOS							F	D

Intersection Summary			
Average Delay	957.5		
Intersection Capacity Utilization	57.0%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	0	44	3	0	3	46	1379	10	56	1005	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.25	0.79	0.38	0.25	0.38	0.61	0.96	0.50	0.61	0.92	0.75
Hourly flow rate (vph)	16	0	56	8	0	8	75	1436	20	92	1092	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2153	2883	546	2383	2893	728	1112			1456		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2153	2883	546	2383	2893	728	1112			1456		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	23	100	89	38	100	98	88			80		
cM capacity (veh/h)	21	12	487	13	12	370	635			470		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	72	16	75	958	499	92	546	546	20
Volume Left	16	8	75	0	0	92	0	0	0
Volume Right	56	8	0	0	20	0	0	0	20
cSH	82	25	635	1700	1700	470	1700	1700	1700
Volume to Capacity	0.88	0.64	0.12	0.56	0.29	0.20	0.32	0.32	0.01
Queue Length 95th (ft)	115	49	10	0	0	18	0	0	0
Control Delay (s)	156.9	293.2	11.4	0.0	0.0	14.5	0.0	0.0	0.0
Lane LOS	F	F	B			B			
Approach Delay (s)	156.9	293.2	0.6			1.1			
Approach LOS	F	F							

Intersection Summary			
Average Delay	6.4		
Intersection Capacity Utilization	55.1%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	185	1	132	13	1	20	63	2105	12	4	1595	131
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.89	0.50	0.38	0.84	0.80	0.75	0.25	0.75	0.71	0.25	0.73
Hourly flow rate (vph)	247	1	264	34	1	25	84	8420	16	6	6380	179
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												7
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	26			265			3753	589	1	4802	841	13
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	26			265			3753	589	1	4802	841	13
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.6	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	85			97			0	0	99	0	0	83
cM capacity (veh/h)	1601			1311			0	349	1090	0	250	1064

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	247	1	1	264	34	1	25	8520	6565
Volume Left	247	0	0	0	34	0	0	84	6
Volume Right	0	0	0	264	0	0	25	16	179
cSH	1601	1700	1700	1700	1311	1700	1700	0	0
Volume to Capacity	0.15	0.00	0.00	0.16	0.03	0.00	0.01	Err	Err
Queue Length 95th (ft)	14	0	0	0	2	0	0	Err	Err
Control Delay (s)	7.7	0.0	0.0	0.0	7.8	0.0	0.0	Err	Err
Lane LOS	A				A			F	F
Approach Delay (s)	3.7				4.4			Err	Err
Approach LOS								F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	185.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	15	39	9	11	21	32	725	4	12	362	32
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.47	0.51	0.75	0.92	0.66	0.80	0.91	0.50	0.43	0.85	0.62
Hourly flow rate (vph)	52	32	76	12	12	32	40	797	8	28	426	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1426	1392	452	1481	1414	801	477			805		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1426	1392	452	1481	1414	801	477			805		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	44	76	88	83	91	92	96			97		
cM capacity (veh/h)	92	133	612	71	129	388	1095			828		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	160	56	845	505
Volume Left	52	12	40	28
Volume Right	76	32	8	52
cSH	173	162	1095	828
Volume to Capacity	0.92	0.34	0.04	0.03
Queue Length 95th (ft)	174	35	3	3
Control Delay (s)	103.0	38.4	1.0	0.9
Lane LOS	F	E	A	A
Approach Delay (s)	103.0	38.4	1.0	0.9
Approach LOS	F	E		

Intersection Summary			
Average Delay	12.7		
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	229	781	84	101	638	56	119	439	61	114	209	130
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3574	1615	1805	3539	1615	1805	1881	1615	1805	1863	1615
Flt Permitted	0.19	1.00	1.00	0.17	1.00	1.00	0.49	1.00	1.00	0.20	1.00	1.00
Satd. Flow (perm)	367	3574	1615	323	3539	1615	931	1881	1615	377	1863	1615
Peak-hour factor, PHF	0.92	0.97	0.81	0.65	0.85	0.42	0.93	0.97	0.90	0.89	0.84	0.79
Adj. Flow (vph)	249	805	104	155	751	133	128	453	68	128	249	165
RTOR Reduction (vph)	0	0	45	0	0	94	0	0	44	0	0	116
Lane Group Flow (vph)	249	805	59	155	751	39	128	453	24	128	249	49
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	1%	0%	0%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	39.9	30.9	30.9	39.1	30.5	30.5	39.3	30.4	30.4	39.1	30.3	30.3
Effective Green, g (s)	39.9	30.9	30.9	39.1	30.5	30.5	39.3	30.4	30.4	39.1	30.3	30.3
Actuated g/C Ratio	0.39	0.30	0.30	0.38	0.30	0.30	0.38	0.30	0.30	0.38	0.29	0.29
Clearance Time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	268	1072	485	246	1048	478	431	555	477	265	548	475
v/s Ratio Prot	c0.08	0.23		0.05	0.21		0.03	c0.24		c0.04	0.13	
v/s Ratio Perm	c0.28		0.04	0.19		0.02	0.09		0.02	0.14		0.03
v/c Ratio	0.93	0.75	0.12	0.63	0.72	0.08	0.30	0.82	0.05	0.48	0.45	0.10
Uniform Delay, d1	25.6	32.6	26.2	23.2	32.4	26.2	21.4	33.7	26.0	23.2	29.6	26.5
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	36.0	3.0	0.1	5.2	2.4	0.1	0.4	9.0	0.0	1.4	0.6	0.1
Delay (s)	61.7	35.6	26.3	28.4	34.8	26.2	21.8	42.7	26.0	24.6	30.2	26.5
Level of Service	E	D	C	C	C	C	C	D	C	C	C	C
Approach Delay (s)		40.4			32.7			36.9			27.8	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	35.3	HCM Level of Service	D
HCM Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	103.0	Sum of lost time (s)	12.1
Intersection Capacity Utilization	80.0%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	2	1	39	1	65	2	603	33	55	288	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.25	0.81	0.25	0.86	0.50	0.94	0.75	0.55	0.82	0.58
Hourly flow rate (vph)	8	4	4	48	4	76	4	641	44	100	351	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						3						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											696	
pX, platoon unblocked	0.94	0.94	0.94	0.94	0.94		0.94					
vC, conflicting volume	1203	1201	351	1207	1213	641	363			641		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1185	1183	283	1189	1196	641	295			641		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	93	98	99	66	97	84	100			90		
cM capacity (veh/h)	120	161	718	140	158	478	1206			953		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	16	128	645	44	100	351	12
Volume Left	8	48	4	0	100	0	0
Volume Right	4	76	0	44	0	0	12
cSH	164	347	1206	1700	953	1700	1700
Volume to Capacity	0.10	0.37	0.00	0.03	0.10	0.21	0.01
Queue Length 95th (ft)	8	41	0	0	9	0	0
Control Delay (s)	29.2	26.4	0.1	0.0	9.2	0.0	0.0
Lane LOS	D	D	A		A		
Approach Delay (s)	29.2	26.4	0.1		2.0		
Approach LOS	D	D					

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	56.2%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: mcginnis ferry road & buford highway

1/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	61	742	175	146	464	33	103	140	67	100	424	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1752	3539	1524	1787	1792	1568	1752	1844	
Flt Permitted	0.45	1.00	1.00	0.14	1.00	1.00	0.11	1.00	1.00	0.62	1.00	
Satd. Flow (perm)	852	3610	1615	266	3539	1524	203	1792	1568	1149	1844	
Peak-hour factor, PHF	0.80	0.93	0.86	0.79	0.88	0.75	0.83	0.80	0.80	0.86	0.88	0.73
Adj. Flow (vph)	76	798	203	185	527	44	124	175	84	116	482	79
RTOR Reduction (vph)	0	0	142	0	0	28	0	0	56	0	5	0
Lane Group Flow (vph)	76	798	61	185	527	16	124	175	28	116	556	0
Heavy Vehicles (%)	0%	0%	0%	3%	2%	6%	1%	6%	3%	3%	1%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		
Actuated Green, G (s)	41.4	35.9	35.9	53.9	42.3	42.3	46.7	39.8	39.8	45.5	39.3	
Effective Green, g (s)	41.4	35.9	35.9	53.9	42.3	42.3	46.7	39.8	39.8	45.5	39.3	
Actuated g/C Ratio	0.34	0.30	0.30	0.45	0.35	0.35	0.39	0.33	0.33	0.38	0.33	
Clearance Time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Grp Cap (vph)	338	1080	483	263	1247	537	170	594	520	467	604	
v/s Ratio Prot	0.01	0.22		c0.07	0.15		c0.04	0.10		0.01	c0.30	
v/s Ratio Perm	0.07		0.04	c0.25		0.01	0.24		0.02	0.08		
v/c Ratio	0.22	0.74	0.13	0.70	0.42	0.03	0.73	0.29	0.05	0.25	0.92	
Uniform Delay, d1	26.9	37.8	30.6	24.0	29.6	25.4	28.5	29.7	27.3	24.8	38.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	1.5	4.5	0.5	14.6	1.1	0.1	23.9	1.3	0.2	1.3	21.6	
Delay (s)	28.4	42.4	31.2	38.6	30.6	25.5	52.4	31.0	27.5	26.0	60.5	
Level of Service	C	D	C	D	C	C	D	C	C	C	E	
Approach Delay (s)		39.3			32.3			37.1			54.6	
Approach LOS		D			C			D			D	

Intersection Summary			
HCM Average Control Delay	40.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.76		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	19.2
Intersection Capacity Utilization	82.1%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	810	8	26	602	9	12	0	63	36	3	77
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.65	0.93	0.50	0.81	0.94	0.56	0.60	0.25	0.93	0.88	0.38	0.60
Hourly flow rate (vph)	20	871	16	32	640	16	20	0	68	41	8	128
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	656			887			1428	1632	435	1248	1632	320
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	656			887			1428	1632	435	1248	1632	320
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			96			72	100	88	63	92	81
cM capacity (veh/h)	941			747			70	96	574	111	96	681

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	20	435	435	16	32	320	320	16	20	68	41	136
Volume Left	20	0	0	0	32	0	0	0	20	0	41	0
Volume Right	0	0	0	16	0	0	0	16	0	68	0	128
cSH	941	1700	1700	1700	747	1700	1700	1700	70	574	111	503
Volume to Capacity	0.02	0.26	0.26	0.01	0.04	0.19	0.19	0.01	0.28	0.12	0.37	0.27
Queue Length 95th (ft)	2	0	0	0	3	0	0	0	26	10	37	27
Control Delay (s)	8.9	0.0	0.0	0.0	10.0	0.0	0.0	0.0	75.3	12.1	55.4	14.8
Lane LOS	A				B				F	B	F	B
Approach Delay (s)	0.2				0.5				26.5		24.2	
Approach LOS									D		C	

Intersection Summary			
Average Delay	3.8		
Intersection Capacity Utilization	37.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	3	0	2	3	225	5	0	664	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.9	5.9		5.9	5.9		5.9	
Lane Util. Factor					1.00	1.00		1.00	1.00		1.00	
Frt					1.00	0.85		1.00	0.85		1.00	
Flt Protected					0.95	1.00		1.00	1.00		1.00	
Satd. Flow (prot)					1805	1615		1809	1615		1880	
Flt Permitted					1.00	1.00		0.98	1.00		1.00	
Satd. Flow (perm)					1900	1615		1768	1615		1880	
Peak-hour factor, PHF	0.25	0.25	0.25	0.38	0.25	0.25	0.38	0.85	0.62	0.25	0.95	0.25
Adj. Flow (vph)	0	0	0	8	0	8	8	265	8	0	699	4
RTOR Reduction (vph)	0	0	0	0	0	8	0	0	3	0	0	0
Lane Group Flow (vph)	0	0	0	0	8	0	0	273	5	0	703	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	100%	2%	0%	0%	1%	0%
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)					0.7	0.7		17.5	17.5		17.5	
Effective Green, g (s)					0.7	0.7		17.5	17.5		17.5	
Actuated g/C Ratio					0.02	0.02		0.58	0.58		0.58	
Clearance Time (s)					5.9	5.9		5.9	5.9		5.9	
Vehicle Extension (s)					3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)					44	38		1031	942		1097	
v/s Ratio Prot											c0.37	
v/s Ratio Perm					c0.00	0.00		0.15	0.00			
v/c Ratio					0.18	0.00		0.26	0.00		0.64	
Uniform Delay, d1					14.4	14.3		3.1	2.6		4.2	
Progression Factor					1.00	1.00		1.00	1.00		1.00	
Incremental Delay, d2					2.0	0.1		0.1	0.0		1.3	
Delay (s)					16.4	14.4		3.2	2.6		5.4	
Level of Service					B	B		A	A		A	
Approach Delay (s)		0.0			15.4			3.2			5.4	
Approach LOS		A			B			A			A	

Intersection Summary			
HCM Average Control Delay	5.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	30.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	19	10	6	19	63	12
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.40	0.84	0.38	0.79	0.69	0.75
Hourly flow rate (vph)	48	12	16	24	91	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		107	0	133	101
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		107	0	133	101
tC, single (s)	4.1		6.5	6.2	7.1	6.6
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.1
p0 queue free %	97		98	98	88	98
cM capacity (veh/h)	1636		764	1076	794	755

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	59	40	107
Volume Left	48	0	91
Volume Right	12	24	0
cSH	1636	926	788
Volume to Capacity	0.03	0.04	0.14
Queue Length 95th (ft)	2	3	12
Control Delay (s)	5.9	9.1	10.3
Lane LOS	A	A	B
Approach Delay (s)	5.9	9.1	10.3
Approach LOS		A	B

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	36	993	114	15	809	4	38	1	13	3	1	17
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.88	0.75	0.75	0.95	0.50	0.56	0.25	0.81	0.25	0.25	0.61
Hourly flow rate (vph)	48	1128	152	20	852	8	68	4	16	12	4	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					468							
pX, platoon unblocked	0.86						0.86	0.86		0.86	0.86	0.86
vC, conflicting volume	860			1280			1720	2124	564	1574	2272	430
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	515			1280			1514	1983	564	1344	2155	16
tC, single (s)	4.1			4.2			7.5	6.5	7.1	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	95			96			0	92	96	85	89	97
cM capacity (veh/h)	914			512			60	49	454	81	38	918

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	NB 1	SB 1
Volume Total	48	564	564	152	446	434	88	44
Volume Left	48	0	0	0	20	0	68	12
Volume Right	0	0	0	152	0	8	16	28
cSH	914	1700	1700	1700	512	1700	70	155
Volume to Capacity	0.05	0.33	0.33	0.09	0.04	0.26	1.25	0.28
Queue Length 95th (ft)	4	0	0	0	3	0	173	27
Control Delay (s)	9.2	0.0	0.0	0.0	1.2	0.0	290.1	37.2
Lane LOS	A				A		F	E
Approach Delay (s)	0.3				0.6		290.1	37.2
Approach LOS							F	E

Intersection Summary			
Average Delay	12.0		
Intersection Capacity Utilization	49.4%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	32	7	0	5	25	914	4	6	1127	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.42	0.25	0.73	0.44	0.25	0.63	0.57	0.92	0.25	0.75	0.95	0.45
Hourly flow rate (vph)	24	0	44	16	0	8	44	993	16	8	1186	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1795	2300	593	1742	2312	505	1206			1009		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1795	2300	593	1742	2312	505	1206			1009		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	50	100	90	67	100	98	92			99		
cM capacity (veh/h)	47	36	454	48	35	518	563			695		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	68	24	44	662	347	8	593	593	20
Volume Left	24	16	44	0	0	8	0	0	0
Volume Right	44	8	0	0	16	0	0	0	20
cSH	113	68	563	1700	1700	695	1700	1700	1700
Volume to Capacity	0.60	0.35	0.08	0.39	0.20	0.01	0.35	0.35	0.01
Queue Length 95th (ft)	74	33	6	0	0	1	0	0	0
Control Delay (s)	75.8	83.6	11.9	0.0	0.0	10.2	0.0	0.0	0.0
Lane LOS	F	F	B			B			
Approach Delay (s)	75.8	83.6	0.5			0.1			
Approach LOS	F	F							

Intersection Summary			
Average Delay	3.3		
Intersection Capacity Utilization	41.2%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	49	1	39	1	0	0	23	336	5	4	1013	84
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.89	0.42	0.33	0.98	0.57	0.25	0.25	0.25	0.72	0.25	0.70
Hourly flow rate (vph)	77	1	93	3	0	0	92	1344	20	6	4052	120
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												7
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			94			2186	160	1	852	253	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			94			2186	160	1	852	253	0
tC, single (s)	4.3			4.1			7.5	6.5	6.9	7.5	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	95			100			0	0	98	0	0	89
cM capacity (veh/h)	1572			1513			0	698	1090	0	621	1050

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	77	1	1	93	3	0	0	1456	4178
Volume Left	77	0	0	0	3	0	0	92	6
Volume Right	0	0	0	93	0	0	0	20	120
cSH	1572	1700	1700	1700	1513	1700	1700	0	2
Volume to Capacity	0.05	0.00	0.00	0.05	0.00	0.00	0.00	Err	2650.57
Queue Length 95th (ft)	4	0	0	0	0	0	0	Err	Err
Control Delay (s)	7.4	0.0	0.0	0.0	7.4	0.0	0.0	Err	Err
Lane LOS	A				A			F	F
Approach Delay (s)	3.3				7.4			Err	Err
Approach LOS								F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	8	52	6	1	15	10	246	3	9	600	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.40	0.65	0.50	0.25	0.75	0.28	0.69	0.38	0.75	0.95	0.57
Hourly flow rate (vph)	24	20	80	12	4	20	36	357	8	12	632	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1124	1105	646	1192	1116	360	660			364		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1124	1105	646	1192	1116	360	660			364		
tC, single (s)	7.1	6.6	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	86	90	83	90	98	97	96			99		
cM capacity (veh/h)	170	192	475	122	200	673	938			1205		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	124	36	400	672
Volume Left	24	12	36	12
Volume Right	80	20	8	28
cSH	300	243	938	1205
Volume to Capacity	0.41	0.15	0.04	0.01
Queue Length 95th (ft)	48	13	3	1
Control Delay (s)	25.2	22.3	1.2	0.3
Lane LOS	D	C	A	A
Approach Delay (s)	25.2	22.3	1.2	0.3
Approach LOS	D	C		

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	48.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	60	868	111	106	609	36	52	105	44	139	362	158
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3574	1599	1805	3539	1524	1805	1792	1538	1787	1863	1615
Flt Permitted	0.34	1.00	1.00	0.10	1.00	1.00	0.24	1.00	1.00	0.59	1.00	1.00
Satd. Flow (perm)	642	3574	1599	190	3539	1524	460	1792	1538	1116	1863	1615
Peak-hour factor, PHF	0.71	0.86	0.82	0.83	0.90	0.69	0.87	0.82	0.73	0.91	0.81	0.90
Adj. Flow (vph)	85	1009	135	128	677	52	60	128	60	153	447	176
RTOR Reduction (vph)	0	0	43	0	0	31	0	0	44	0	0	123
Lane Group Flow (vph)	85	1009	92	128	677	21	60	128	16	153	447	53
Heavy Vehicles (%)	0%	1%	1%	0%	2%	6%	0%	6%	5%	1%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	43.3	38.6	38.6	52.5	43.2	43.2	33.2	29.3	29.3	41.0	33.2	33.2
Effective Green, g (s)	43.3	38.6	38.6	52.5	43.2	43.2	33.2	29.3	29.3	41.0	33.2	33.2
Actuated g/C Ratio	0.40	0.35	0.35	0.48	0.40	0.40	0.30	0.27	0.27	0.38	0.30	0.30
Clearance Time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	304	1262	565	229	1399	602	188	480	412	467	566	491
v/s Ratio Prot	0.01	c0.28		c0.05	c0.19		0.01	0.07		c0.02	c0.24	
v/s Ratio Perm	0.10		0.06	0.22		0.01	0.09		0.01	0.10		0.03
v/c Ratio	0.28	0.80	0.16	0.56	0.48	0.03	0.32	0.27	0.04	0.33	0.79	0.11
Uniform Delay, d1	21.1	31.9	24.3	20.6	24.7	20.3	28.5	31.5	29.6	23.4	34.9	27.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.5	3.6	0.1	2.9	0.3	0.0	1.0	0.3	0.0	0.4	7.2	0.1
Delay (s)	21.6	35.5	24.4	23.5	25.0	20.3	29.5	31.8	29.6	23.8	42.1	27.5
Level of Service	C	D	C	C	C	C	C	C	C	C	D	C
Approach Delay (s)		33.3			24.5			30.7			35.2	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM Average Control Delay	31.1	HCM Level of Service	C
HCM Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	109.3	Sum of lost time (s)	30.5
Intersection Capacity Utilization	72.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	3	1	26	0	12	6	235	11	21	594	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.38	0.25	0.81	0.25	0.60	0.50	0.75	0.55	0.58	0.91	0.50
Hourly flow rate (vph)	4	8	4	32	0	20	12	313	20	36	653	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						3						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											696	
pX, platoon unblocked	0.77	0.77	0.77	0.77	0.77		0.77					
vC, conflicting volume	1062	1062	653	1070	1074	313	665			313		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	929	929	395	940	945	313	410			313		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	98	96	99	82	100	97	99			97		
cM capacity (veh/h)	180	198	505	176	194	732	889			1258		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	16	52	325	20	36	653	12
Volume Left	4	32	12	0	36	0	0
Volume Right	4	20	0	20	0	0	12
cSH	227	285	889	1700	1258	1700	1700
Volume to Capacity	0.07	0.18	0.01	0.01	0.03	0.38	0.01
Queue Length 95th (ft)	6	16	1	0	2	0	0
Control Delay (s)	22.0	22.4	0.5	0.0	7.9	0.0	0.0
Lane LOS	C	C	A		A		
Approach Delay (s)	22.0	22.4	0.5		0.4		
Approach LOS	C	C					

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	47.9%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: mcginnis ferry road & buford highway

1/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	134	629	109	81	1131	91	284	536	77	58	214	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3574	1568	1570	3610	1615	1805	1900	1568	1805	1796	
Flt Permitted	0.11	1.00	1.00	0.21	1.00	1.00	0.30	1.00	1.00	0.10	1.00	
Satd. Flow (perm)	201	3574	1568	352	3610	1615	573	1900	1568	198	1796	
Peak-hour factor, PHF	0.78	0.84	0.67	0.75	0.93	0.78	0.93	0.95	0.69	0.76	0.74	0.73
Adj. Flow (vph)	172	749	163	108	1216	117	305	564	112	76	289	108
RTOR Reduction (vph)	0	0	112	0	0	60	0	0	65	0	11	0
Lane Group Flow (vph)	172	749	51	108	1216	57	305	564	47	76	386	0
Heavy Vehicles (%)	0%	1%	3%	15%	0%	0%	0%	0%	3%	0%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		
Actuated Green, G (s)	46.8	37.9	37.9	46.5	37.9	37.9	47.2	38.3	38.3	47.0	38.3	
Effective Green, g (s)	46.8	37.9	37.9	46.5	37.9	37.9	47.2	38.3	38.3	47.0	38.3	
Actuated g/C Ratio	0.39	0.32	0.32	0.39	0.32	0.32	0.39	0.32	0.32	0.39	0.32	
Clearance Time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Grp Cap (vph)	197	1129	495	224	1140	510	317	606	500	194	573	
v/s Ratio Prot	c0.06	0.21		0.03	c0.34		c0.07	0.30		0.03	0.21	
v/s Ratio Perm	0.28		0.03	0.15		0.04	c0.31		0.03	0.12		
v/c Ratio	0.87	0.66	0.10	0.48	1.07	0.11	0.96	0.93	0.09	0.39	0.67	
Uniform Delay, d1	29.9	35.5	29.0	25.5	41.1	29.1	34.7	39.6	28.7	27.4	35.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	37.8	3.1	0.4	7.3	46.4	0.4	41.8	23.0	0.4	5.9	6.2	
Delay (s)	67.8	38.6	29.5	32.7	87.4	29.6	76.5	62.5	29.0	33.3	41.7	
Level of Service	E	D	C	C	F	C	E	E	C	C	D	
Approach Delay (s)		41.9			78.6			63.1			40.3	
Approach LOS		D			E			E			D	

Intersection Summary			
HCM Average Control Delay	60.2	HCM Level of Service	E
HCM Volume to Capacity ratio	0.99		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	25.4
Intersection Capacity Utilization	92.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

HCM Signalized Intersection Capacity Analysis
3: mcginnis ferry road & buford highway

1/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	65	784	185	155	490	35	109	148	71	106	448	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.98	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1752	3539	1524	1787	1792	1568	1752	1844	
Flt Permitted	0.37	1.00	1.00	0.16	1.00	1.00	0.15	1.00	1.00	0.59	1.00	
Satd. Flow (perm)	709	3610	1615	299	3539	1524	278	1792	1568	1088	1844	
Peak-hour factor, PHF	0.80	0.93	0.86	0.79	0.88	0.75	0.83	0.80	0.80	0.86	0.88	0.73
Adj. Flow (vph)	81	843	215	196	557	47	131	185	89	123	509	84
RTOR Reduction (vph)	0	0	161	0	0	34	0	0	62	0	7	0
Lane Group Flow (vph)	81	843	54	196	557	13	131	185	27	123	586	0
Heavy Vehicles (%)	0%	0%	0%	3%	2%	6%	1%	6%	3%	3%	1%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		
Actuated Green, G (s)	28.4	22.7	22.7	32.1	24.7	24.7	31.8	27.1	27.1	35.2	28.9	
Effective Green, g (s)	28.4	22.7	22.7	32.1	24.7	24.7	31.8	27.1	27.1	35.2	28.9	
Actuated g/C Ratio	0.32	0.25	0.25	0.36	0.27	0.27	0.35	0.30	0.30	0.39	0.32	
Clearance Time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Grp Cap (vph)	293	911	407	226	971	418	177	540	472	472	592	
v/s Ratio Prot	0.02	0.23		c0.07	0.16		c0.04	0.10		0.02	c0.32	
v/s Ratio Perm	0.07		0.03	c0.24		0.01	0.22		0.02	0.08		
v/c Ratio	0.28	0.93	0.13	0.87	0.57	0.03	0.74	0.34	0.06	0.26	0.99	
Uniform Delay, d1	22.2	32.8	26.0	23.0	28.1	23.9	23.2	24.5	22.4	18.0	30.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.58	0.69	
Incremental Delay, d2	2.3	16.4	0.7	33.4	2.5	0.1	24.0	1.7	0.2	1.1	31.6	
Delay (s)	24.5	49.3	26.7	56.4	30.6	24.0	47.2	26.2	22.6	11.5	52.6	
Level of Service	C	D	C	E	C	C	D	C	C	B	D	
Approach Delay (s)		43.2			36.5			32.2			45.5	
Approach LOS		D			D			C			D	

Intersection Summary			
HCM Average Control Delay	40.6	HCM Level of Service	D
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	85.5%	ICU Level of Service	E
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	13	856	8	28	635	9	13	0	67	36	3	77
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.65	0.93	0.50	0.81	0.94	0.56	0.60	0.25	0.93	0.88	0.38	0.60
Hourly flow rate (vph)	20	920	16	35	676	16	22	0	72	41	8	128
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	692			936			1500	1721	460	1317	1721	338
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	692			936			1500	1721	460	1317	1721	338
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	98			95			64	100	87	58	91	81
cM capacity (veh/h)	913			715			61	84	553	97	84	664

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	20	460	460	16	35	338	338	16	22	72	41	136
Volume Left	20	0	0	0	35	0	0	0	22	0	41	0
Volume Right	0	0	0	16	0	0	0	16	0	72	0	128
cSH	913	1700	1700	1700	715	1700	1700	1700	61	553	97	474
Volume to Capacity	0.02	0.27	0.27	0.01	0.05	0.20	0.20	0.01	0.36	0.13	0.42	0.29
Queue Length 95th (ft)	2	0	0	0	4	0	0	0	33	11	44	29
Control Delay (s)	9.0	0.0	0.0	0.0	10.3	0.0	0.0	0.0	93.5	12.5	67.2	15.6
Lane LOS	A				B				F	B	F	C
Approach Delay (s)	0.2				0.5				31.2		27.5	
Approach LOS									D		D	

Intersection Summary			
Average Delay	4.3		
Intersection Capacity Utilization	39.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	3	0	2	3	237	5	0	701	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.9	5.9		5.9	5.9		5.9	
Lane Util. Factor					1.00	1.00		1.00	1.00		1.00	
Frt					1.00	0.85		1.00	0.85		1.00	
Flt Protected					0.95	1.00		1.00	1.00		1.00	
Satd. Flow (prot)					1805	1615		1812	1615		1880	
Flt Permitted					1.00	1.00		0.98	1.00		1.00	
Satd. Flow (perm)					1900	1615		1782	1615		1880	
Peak-hour factor, PHF	0.25	0.25	0.25	0.38	0.25	0.25	0.38	0.85	0.62	0.25	0.95	0.25
Adj. Flow (vph)	0	0	0	8	0	8	8	279	8	0	738	4
RTOR Reduction (vph)	0	0	0	0	0	8	0	0	1	0	0	0
Lane Group Flow (vph)	0	0	0	0	8	0	0	287	7	0	742	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	100%	2%	0%	0%	1%	0%
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)					2.8	2.8		75.4	75.4		75.4	
Effective Green, g (s)					2.8	2.8		75.4	75.4		75.4	
Actuated g/C Ratio					0.03	0.03		0.84	0.84		0.84	
Clearance Time (s)					5.9	5.9		5.9	5.9		5.9	
Vehicle Extension (s)					3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)					59	50		1493	1353		1575	
v/s Ratio Prot											c0.39	
v/s Ratio Perm					c0.00	0.00		0.16	0.00			
v/c Ratio					0.14	0.00		0.19	0.00		0.47	
Uniform Delay, d1					42.4	42.3		1.4	1.2		2.0	
Progression Factor					1.00	1.00		0.53	0.16		1.00	
Incremental Delay, d2					1.1	0.0		0.3	0.0		1.0	
Delay (s)					43.5	42.3		1.0	0.2		3.0	
Level of Service					D	D		A	A		A	
Approach Delay (s)		0.0			42.9			1.0			3.0	
Approach LOS		A			D			A			A	

Intersection Summary			
HCM Average Control Delay	3.0	HCM Level of Service	A
HCM Volume to Capacity ratio	0.46		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	51.8%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	19	10	6	19	63	12
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.40	0.84	0.38	0.79	0.69	0.75
Hourly flow rate (vph)	48	12	16	24	91	16
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		107	0	133	101
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		107	0	133	101
tC, single (s)	4.1		6.5	6.2	7.1	6.6
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.1
p0 queue free %	97		98	98	88	98
cM capacity (veh/h)	1636		764	1076	794	755

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	59	40	107
Volume Left	48	0	91
Volume Right	12	24	0
cSH	1636	926	788
Volume to Capacity	0.03	0.04	0.14
Queue Length 95th (ft)	2	3	12
Control Delay (s)	5.9	9.1	10.3
Lane LOS	A	A	B
Approach Delay (s)	5.9	9.1	10.3
Approach LOS		A	B

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	20.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	1049	114	15	855	4	38	1	13	3	1	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.88	0.75	0.75	0.95	0.50	0.56	0.25	0.81	0.25	0.25	0.61
Hourly flow rate (vph)	51	1192	152	20	900	8	68	4	16	12	4	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					468							
pX, platoon unblocked	0.84						0.84	0.84		0.84	0.84	0.84
vC, conflicting volume	908			1344			1815	2241	596	1659	2389	454
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	502			1344			1585	2094	596	1399	2271	0
tC, single (s)	4.1			4.2			7.5	6.5	7.1	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	94			96			0	90	96	83	87	97
cM capacity (veh/h)	899			483			50	40	432	71	31	913

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	NB 1	SB 1
Volume Total	51	596	596	152	470	458	88	46
Volume Left	51	0	0	0	20	0	68	12
Volume Right	0	0	0	152	0	8	16	30
cSH	899	1700	1700	1700	483	1700	59	137
Volume to Capacity	0.06	0.35	0.35	0.09	0.04	0.27	1.48	0.33
Queue Length 95th (ft)	4	0	0	0	3	0	195	33
Control Delay (s)	9.2	0.0	0.0	0.0	1.2	0.0	404.0	43.7
Lane LOS	A				A		F	E
Approach Delay (s)	0.3				0.6		404.0	43.7
Approach LOS							F	E

Intersection Summary			
Average Delay	15.7		
Intersection Capacity Utilization	50.7%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	10	0	32	7	0	5	25	965	4	6	1190	9
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.42	0.25	0.73	0.44	0.25	0.63	0.57	0.92	0.25	0.75	0.95	0.45
Hourly flow rate (vph)	24	0	44	16	0	8	44	1049	16	8	1253	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1889	2421	626	1831	2433	532	1273			1065		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1889	2421	626	1831	2433	532	1273			1065		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	41	100	90	61	100	98	92			99		
cM capacity (veh/h)	40	30	432	41	29	497	531			662		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	68	24	44	699	366	8	626	626	20
Volume Left	24	16	44	0	0	8	0	0	0
Volume Right	44	8	0	0	16	0	0	0	20
cSH	97	58	531	1700	1700	662	1700	1700	1700
Volume to Capacity	0.69	0.41	0.08	0.41	0.22	0.01	0.37	0.37	0.01
Queue Length 95th (ft)	88	38	7	0	0	1	0	0	0
Control Delay (s)	100.9	104.1	12.4	0.0	0.0	10.5	0.0	0.0	0.0
Lane LOS	F	F	B			B			
Approach Delay (s)	100.9	104.1	0.5			0.1			
Approach LOS	F	F							

Intersection Summary			
Average Delay	4.0		
Intersection Capacity Utilization	42.9%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	49	1	39	1	0	0	23	355	5	4	1070	84
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.89	0.42	0.33	0.98	0.57	0.25	0.25	0.25	0.72	0.25	0.70
Hourly flow rate (vph)	77	1	93	3	0	0	92	1420	20	6	4280	120
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												7
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			94			2300	160	1	890	253	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			94			2300	160	1	890	253	0
tC, single (s)	4.3			4.1			7.5	6.5	6.9	7.5	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	95			100			0	0	98	0	0	89
cM capacity (veh/h)	1572			1513			0	698	1090	0	621	1050

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	77	1	1	93	3	0	0	1532	4406
Volume Left	77	0	0	0	3	0	0	92	6
Volume Right	0	0	0	93	0	0	0	20	120
cSH	1572	1700	1700	1700	1513	1700	1700	0	1
Volume to Capacity	0.05	0.00	0.00	0.05	0.00	0.00	0.00	Err	3150.95
Queue Length 95th (ft)	4	0	0	0	0	0	0	Err	Err
Control Delay (s)	7.4	0.0	0.0	0.0	7.4	0.0	0.0	Err	Err
Lane LOS	A				A			F	F
Approach Delay (s)	3.3				7.4			Err	Err
Approach LOS								F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	15	8	52	6	1	15	10	259	3	9	633	16
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.40	0.65	0.50	0.25	0.75	0.28	0.69	0.38	0.75	0.95	0.57
Hourly flow rate (vph)	24	20	80	12	4	20	36	375	8	12	666	28
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1177	1159	680	1245	1169	379	694			383		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1177	1159	680	1245	1169	379	694			383		
tC, single (s)	7.1	6.6	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	85	89	82	89	98	97	96			99		
cM capacity (veh/h)	156	178	454	110	185	657	911			1186		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	124	36	419	706
Volume Left	24	12	36	12
Volume Right	80	20	8	28
cSH	281	224	911	1186
Volume to Capacity	0.44	0.16	0.04	0.01
Queue Length 95th (ft)	53	14	3	1
Control Delay (s)	27.6	24.1	1.2	0.3
Lane LOS	D	C	A	A
Approach Delay (s)	27.6	24.1	1.2	0.3
Approach LOS	D	C		

Intersection Summary			
Average Delay	3.9		
Intersection Capacity Utilization	49.8%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	917	118	112	643	38	55	111	47	147	382	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3574	1599	1805	3539	1524	1805	1792	1538	1787	1863	1615
Flt Permitted	0.26	1.00	1.00	0.13	1.00	1.00	0.23	1.00	1.00	0.57	1.00	1.00
Satd. Flow (perm)	490	3574	1599	251	3539	1524	443	1792	1538	1067	1863	1615
Peak-hour factor, PHF	0.71	0.86	0.82	0.83	0.90	0.69	0.87	0.82	0.73	0.91	0.81	0.90
Adj. Flow (vph)	90	1066	144	135	714	55	63	135	64	162	472	186
RTOR Reduction (vph)	0	0	63	0	0	36	0	0	48	0	0	130
Lane Group Flow (vph)	90	1066	81	135	714	19	63	135	16	162	472	56
Heavy Vehicles (%)	0%	1%	1%	0%	2%	6%	0%	6%	5%	1%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	35.6	30.6	30.6	35.0	30.3	30.3	26.2	23.0	23.0	34.6	27.2	27.2
Effective Green, g (s)	35.6	30.6	30.6	35.0	30.3	30.3	26.2	23.0	23.0	34.6	27.2	27.2
Actuated g/C Ratio	0.40	0.34	0.34	0.39	0.34	0.34	0.29	0.26	0.26	0.38	0.30	0.30
Clearance Time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	267	1215	544	179	1191	513	177	458	393	469	563	488
v/s Ratio Prot	0.02	c0.30		c0.04	0.20		0.01	0.08		c0.03	c0.25	
v/s Ratio Perm	0.11		0.05	0.25		0.01	0.09		0.01	0.10		0.03
v/c Ratio	0.34	0.88	0.15	0.75	0.60	0.04	0.36	0.29	0.04	0.35	0.84	0.12
Uniform Delay, d1	17.9	27.9	20.7	21.0	24.8	20.0	24.3	27.0	25.2	18.9	29.3	22.7
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.01	1.03	1.41	0.89	0.94	0.61
Incremental Delay, d2	0.8	7.4	0.1	16.4	0.8	0.0	1.2	1.6	0.2	0.4	13.2	0.5
Delay (s)	18.7	35.3	20.8	37.4	25.6	20.1	25.8	29.5	35.8	17.3	40.8	14.2
Level of Service	B	D	C	D	C	C	C	C	D	B	D	B
Approach Delay (s)		32.6			27.0			30.2			30.1	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM Average Control Delay	30.2	HCM Level of Service	C
HCM Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	90.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	3	1	28	0	13	6	248	12	22	627	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.38	0.25	0.81	0.25	0.60	0.50	0.75	0.55	0.58	0.91	0.50
Hourly flow rate (vph)	4	8	4	35	0	22	12	331	22	38	689	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						3						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											696	
pX, platoon unblocked	0.75	0.75	0.75	0.75	0.75		0.75					
vC, conflicting volume	1120	1120	689	1127	1132	331	701			331		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	993	993	419	1003	1009	331	435			331		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	97	96	99	78	100	97	99			97		
cM capacity (veh/h)	159	177	479	155	174	716	852			1240		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	16	56	343	22	38	689	12
Volume Left	4	35	12	0	38	0	0
Volume Right	4	22	0	22	0	0	12
cSH	204	251	852	1700	1240	1700	1700
Volume to Capacity	0.08	0.22	0.01	0.01	0.03	0.41	0.01
Queue Length 95th (ft)	6	21	1	0	2	0	0
Control Delay (s)	24.2	25.4	0.5	0.0	8.0	0.0	0.0
Lane LOS	C	D	A		A		
Approach Delay (s)	24.2	25.4	0.5		0.4		
Approach LOS	C	D					

Intersection Summary			
Average Delay	1.9		
Intersection Capacity Utilization	49.7%	ICU Level of Service	A
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: mcginnis ferry road & buford highway

1/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	142	664	115	86	1195	96	300	566	82	61	226	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.96	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3574	1568	1570	3610	1615	1805	1900	1568	1805	1796	
Flt Permitted	0.12	1.00	1.00	0.20	1.00	1.00	0.15	1.00	1.00	0.19	1.00	
Satd. Flow (perm)	238	3574	1568	325	3610	1615	277	1900	1568	357	1796	
Peak-hour factor, PHF	0.78	0.84	0.67	0.75	0.93	0.78	0.93	0.95	0.69	0.76	0.74	0.73
Adj. Flow (vph)	182	790	172	115	1285	123	323	596	119	80	305	115
RTOR Reduction (vph)	0	0	117	0	0	72	0	0	79	0	13	0
Lane Group Flow (vph)	182	790	55	115	1285	51	323	596	40	80	407	0
Heavy Vehicles (%)	0%	1%	3%	15%	0%	0%	0%	0%	3%	0%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		
Actuated Green, G (s)	38.2	32.0	32.0	40.9	33.5	33.5	40.4	30.1	30.1	25.3	21.3	
Effective Green, g (s)	38.2	32.0	32.0	40.9	33.5	33.5	40.4	30.1	30.1	25.3	21.3	
Actuated g/C Ratio	0.38	0.32	0.32	0.41	0.34	0.34	0.40	0.30	0.30	0.25	0.21	
Clearance Time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Grp Cap (vph)	188	1144	502	225	1209	541	311	572	472	148	383	
v/s Ratio Prot	c0.06	0.22		0.04	c0.36		c0.14	c0.31		0.02	0.23	
v/s Ratio Perm	0.31		0.04	0.17		0.03	0.28		0.03	0.12		
v/c Ratio	0.97	0.69	0.11	0.51	1.06	0.09	1.04	1.04	0.08	0.54	1.06	
Uniform Delay, d1	27.6	29.7	24.0	20.2	33.2	22.8	26.9	35.0	25.1	30.8	39.4	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	57.8	3.4	0.4	8.1	44.3	0.3	61.4	49.0	0.4	13.4	63.3	
Delay (s)	85.4	33.1	24.4	28.3	77.6	23.2	88.3	83.9	25.4	44.2	102.6	
Level of Service	F	C	C	C	E	C	F	F	C	D	F	
Approach Delay (s)		40.1			69.5			78.6			93.3	
Approach LOS		D			E			E			F	

Intersection Summary			
HCM Average Control Delay	66.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.00		
Actuated Cycle Length (s)	100.0	Sum of lost time (s)	18.9
Intersection Capacity Utilization	96.2%	ICU Level of Service	F
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	51	787	26	67	1468	27	20	12	64	64	3	36
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.86	0.78	0.72	0.91	0.75	0.37	0.50	0.65	0.75	0.38	0.80
Hourly flow rate (vph)	56	915	33	93	1613	36	54	24	98	85	8	45
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1649			948			2069	2863	458	2479	2860	807
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1649			948			2069	2863	458	2479	2860	807
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	86			87			0	0	82	0	38	86
cM capacity (veh/h)	397			732			12	13	556	0	13	329

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	56	458	458	33	93	807	807	36	54	122	85	53
Volume Left	56	0	0	0	93	0	0	0	54	0	85	0
Volume Right	0	0	0	33	0	0	0	36	0	98	0	45
cSH	397	1700	1700	1700	732	1700	1700	1700	12	59	0	70
Volume to Capacity	0.14	0.27	0.27	0.02	0.13	0.47	0.47	0.02	4.64	2.06	Err	0.75
Queue Length 95th (ft)	12	0	0	0	11	0	0	0	Err	294	Err	88
Control Delay (s)	15.6	0.0	0.0	0.0	10.6	0.0	0.0	0.0	Err	640.2	Err	143.9
Lane LOS	C				B				F	F	F	F
Approach Delay (s)	0.9				0.6				3506.1		Err	
Approach LOS									F		F	

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	64.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	3	8	29	0	25	5	398	373	179	357	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9			5.9	5.9		5.9	5.9	5.9	5.9	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt		0.93			1.00	0.85		1.00	0.85	1.00	0.99	
Flt Protected		0.99			0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1409			1805	1615		1870	1615	1805	1879	
Flt Permitted		0.94			0.74	1.00		0.99	1.00	0.44	1.00	
Satd. Flow (perm)		1337			1399	1615		1857	1615	843	1879	
Peak-hour factor, PHF	0.25	0.25	0.50	0.42	0.25	0.60	0.63	0.78	0.76	0.62	0.79	0.38
Adj. Flow (vph)	4	12	16	69	0	42	8	510	491	289	452	16
RTOR Reduction (vph)	0	14	0	0	0	36	0	0	207	0	1	0
Lane Group Flow (vph)	0	18	0	0	69	6	0	518	284	289	467	0
Heavy Vehicles (%)	0%	0%	50%	0%	0%	0%	100%	0%	0%	0%	0%	17%
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)		6.6			6.6	6.6		25.2	25.2	25.2	25.2	
Effective Green, g (s)		6.6			6.6	6.6		25.2	25.2	25.2	25.2	
Actuated g/C Ratio		0.15			0.15	0.15		0.58	0.58	0.58	0.58	
Clearance Time (s)		5.9			5.9	5.9		5.9	5.9	5.9	5.9	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		202			212	244		1073	933	487	1086	
v/s Ratio Prot											0.25	
v/s Ratio Perm		0.01			c0.05	0.00		0.28	0.18	c0.34		
v/c Ratio		0.09			0.33	0.03		0.48	0.30	0.59	0.43	
Uniform Delay, d1		15.9			16.5	15.8		5.4	4.7	5.9	5.2	
Progression Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2		0.2			0.9	0.0		0.3	0.2	1.9	0.3	
Delay (s)		16.1			17.4	15.8		5.7	4.9	7.9	5.4	
Level of Service		B			B	B		A	A	A	A	
Approach Delay (s)		16.1			16.8			5.3			6.4	
Approach LOS		B			B			A			A	

Intersection Summary			
HCM Average Control Delay	6.6	HCM Level of Service	A
HCM Volume to Capacity ratio	0.54		
Actuated Cycle Length (s)	43.6	Sum of lost time (s)	11.8
Intersection Capacity Utilization	63.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	18	51	26	13	73	10
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.85	0.81	0.54	0.76	0.83
Hourly flow rate (vph)	32	60	32	24	96	12
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		124	0	134	94
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		124	0	134	94
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	98		96	98	88	98
cM capacity (veh/h)	1636		755	1091	785	784

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	92	56	108
Volume Left	32	0	96
Volume Right	60	24	0
cSH	1636	870	784
Volume to Capacity	0.02	0.06	0.14
Queue Length 95th (ft)	2	5	12
Control Delay (s)	2.6	9.4	10.3
Lane LOS	A	A	B
Approach Delay (s)	2.6	9.4	10.3
Approach LOS		A	B

Intersection Summary			
Average Delay	7.4		
Intersection Capacity Utilization	22.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	1132	92	14	897	33	100	22	43	2	2	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.97	0.82	0.88	0.91	0.78	0.58	0.79	0.83	0.25	0.50	0.71
Hourly flow rate (vph)	63	1167	112	16	986	42	172	28	52	8	4	120
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					468							
pX, platoon unblocked	0.80						0.80	0.80		0.80	0.80	0.80
vC, conflicting volume	1028			1279			1940	2353	584	1814	2444	514
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	545			1279			1680	2195	584	1524	2308	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			97			0	15	89	49	86	86
cM capacity (veh/h)	831			549			35	33	460	16	28	876

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	NB 1	SB 1
Volume Total	63	584	584	112	509	535	252	132
Volume Left	63	0	0	0	16	0	172	8
Volume Right	0	0	0	112	0	42	52	120
cSH	831	1700	1700	1700	549	1700	43	168
Volume to Capacity	0.08	0.34	0.34	0.07	0.03	0.31	5.86	0.79
Queue Length 95th (ft)	6	0	0	0	2	0	Err	128
Control Delay (s)	9.7	0.0	0.0	0.0	0.8	0.0	Err	77.9
Lane LOS	A				A		F	F
Approach Delay (s)	0.5				0.4		Err	77.9
Approach LOS							F	F

Intersection Summary			
Average Delay	913.9		
Intersection Capacity Utilization	58.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	9	0	44	3	0	3	46	1461	10	56	1064	15
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.25	0.79	0.38	0.25	0.38	0.61	0.96	0.50	0.61	0.92	0.75
Hourly flow rate (vph)	16	0	56	8	0	8	75	1522	20	92	1157	20
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2260	3033	578	2500	3043	771	1177			1542		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2260	3033	578	2500	3043	771	1177			1542		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	6	100	88	21	100	98	87			79		
cM capacity (veh/h)	17	9	464	10	9	347	601			436		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	72	16	75	1015	527	92	578	578	20
Volume Left	16	8	75	0	0	92	0	0	0
Volume Right	56	8	0	0	20	0	0	0	20
cSH	68	19	601	1700	1700	436	1700	1700	1700
Volume to Capacity	1.06	0.81	0.13	0.60	0.31	0.21	0.34	0.34	0.01
Queue Length 95th (ft)	136	55	11	0	0	20	0	0	0
Control Delay (s)	232.8	409.8	11.8	0.0	0.0	15.4	0.0	0.0	0.0
Lane LOS	F	F	B			C			
Approach Delay (s)	232.8	409.8	0.6			1.1			
Approach LOS	F	F							

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	56.5%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	185	1	132	14	1	21	63	2229	13	4	1689	131
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.89	0.50	0.38	0.84	0.80	0.75	0.25	0.75	0.71	0.25	0.73
Hourly flow rate (vph)	247	1	264	37	1	26	84	8916	17	6	6756	179
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												7
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	27			265			3947	596	1	5057	846	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	27			265			3947	596	1	5057	846	14
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.6	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	85			97			0	0	98	0	0	83
cM capacity (veh/h)	1599			1311			0	345	1090	0	248	1063

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	247	1	1	264	37	1	27	9017	6941
Volume Left	247	0	0	0	37	0	0	84	6
Volume Right	0	0	0	264	0	0	26	17	179
cSH	1599	1700	1700	1700	1311	1700	1700	0	0
Volume to Capacity	0.15	0.00	0.00	0.16	0.03	0.00	0.02	Err	Err
Queue Length 95th (ft)	14	0	0	0	2	0	0	Err	Err
Control Delay (s)	7.7	0.0	0.0	0.0	7.8	0.0	0.0	Err	Err
Lane LOS	A				A			F	F
Approach Delay (s)	3.7				4.5			Err	Err
Approach LOS								F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	192.5%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	32	15	39	9	11	21	32	768	4	12	383	32
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.47	0.51	0.75	0.92	0.66	0.80	0.91	0.50	0.43	0.85	0.62
Hourly flow rate (vph)	52	32	76	12	12	32	40	844	8	28	451	52
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1498	1464	476	1553	1486	848	502			852		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1498	1464	476	1553	1486	848	502			852		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	36	73	87	80	90	91	96			96		
cM capacity (veh/h)	81	120	593	61	117	364	1073			796		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	160	56	892	530
Volume Left	52	12	40	28
Volume Right	76	32	8	52
cSH	155	145	1073	796
Volume to Capacity	1.03	0.39	0.04	0.04
Queue Length 95th (ft)	201	41	3	3
Control Delay (s)	139.2	44.7	1.0	1.0
Lane LOS	F	E	A	A
Approach Delay (s)	139.2	44.7	1.0	1.0
Approach LOS	F	E		

Intersection Summary			
Average Delay	16.0		
Intersection Capacity Utilization	70.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	827	89	107	676	59	126	465	65	121	221	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3574	1615	1805	3539	1615	1805	1881	1615	1805	1863	1615
Flt Permitted	0.17	1.00	1.00	0.15	1.00	1.00	0.47	1.00	1.00	0.17	1.00	1.00
Satd. Flow (perm)	330	3574	1615	277	3539	1615	892	1881	1615	326	1863	1615
Peak-hour factor, PHF	0.92	0.97	0.81	0.65	0.85	0.42	0.93	0.97	0.90	0.89	0.84	0.79
Adj. Flow (vph)	264	853	110	165	795	140	135	479	72	136	263	175
RTOR Reduction (vph)	0	0	44	0	0	97	0	0	43	0	0	122
Lane Group Flow (vph)	264	853	66	165	795	43	135	479	29	136	263	53
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	1%	0%	0%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	42.0	33.0	33.0	41.6	32.8	32.8	41.6	32.6	32.6	41.4	32.5	32.5
Effective Green, g (s)	42.0	33.0	33.0	41.6	32.8	32.8	41.6	32.6	32.6	41.4	32.5	32.5
Actuated g/C Ratio	0.39	0.31	0.31	0.39	0.30	0.30	0.39	0.30	0.30	0.38	0.30	0.30
Clearance Time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	252	1096	495	232	1079	492	421	570	489	248	563	488
v/s Ratio Prot	c0.09	0.24		0.06	0.22		0.03	c0.25		c0.05	0.14	
v/s Ratio Perm	c0.32		0.04	0.22		0.03	0.10		0.02	0.17		0.03
v/c Ratio	1.05	0.78	0.13	0.71	0.74	0.09	0.32	0.84	0.06	0.55	0.47	0.11
Uniform Delay, d1	28.0	34.0	27.0	24.4	33.5	26.7	22.1	35.1	26.6	24.4	30.5	27.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	69.7	3.6	0.1	9.8	2.7	0.1	0.4	10.8	0.1	2.5	0.6	0.1
Delay (s)	97.8	37.5	27.1	34.2	36.2	26.8	22.6	45.8	26.7	26.9	31.1	27.2
Level of Service	F	D	C	C	D	C	C	D	C	C	C	C
Approach Delay (s)		49.5			34.7			39.2			28.9	
Approach LOS		D			C			D			C	

Intersection Summary			
HCM Average Control Delay	39.7	HCM Level of Service	D
HCM Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	107.6	Sum of lost time (s)	12.1
Intersection Capacity Utilization	83.6%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	2	1	41	1	69	2	639	35	58	305	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.25	0.81	0.25	0.86	0.50	0.94	0.75	0.55	0.82	0.58
Hourly flow rate (vph)	8	4	4	51	4	80	4	680	47	105	372	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						3						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											696	
pX, platoon unblocked	0.93	0.93	0.93	0.93	0.93		0.93					
vC, conflicting volume	1273	1271	372	1277	1283	680	384			680		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1254	1252	282	1259	1265	680	295			680		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	92	97	99	59	97	82	100			89		
cM capacity (veh/h)	102	142	706	122	139	455	1184			922		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	16	135	684	47	105	372	12
Volume Left	8	51	4	0	105	0	0
Volume Right	4	80	0	47	0	0	12
cSH	142	305	1184	1700	922	1700	1700
Volume to Capacity	0.11	0.44	0.00	0.03	0.11	0.22	0.01
Queue Length 95th (ft)	9	54	0	0	10	0	0
Control Delay (s)	33.5	31.2	0.1	0.0	9.4	0.0	0.0
Lane LOS	D	D	A		A		
Approach Delay (s)	33.5	31.2	0.1		2.0		
Approach LOS	D	D					

Intersection Summary			
Average Delay	4.2		
Intersection Capacity Utilization	58.7%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: mcginnis ferry road & buford highway

1/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	125	900	220	155	574	58	133	264	71	138	610	147
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.97	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3610	1615	1752	3539	1524	1787	1792	1568	1752	1822	
Flt Permitted	0.24	1.00	1.00	0.10	1.00	1.00	0.07	1.00	1.00	0.42	1.00	
Satd. Flow (perm)	459	3610	1615	190	3539	1524	135	1792	1568	777	1822	
Peak-hour factor, PHF	0.80	0.93	0.86	0.79	0.88	0.75	0.83	0.80	0.80	0.86	0.88	0.73
Adj. Flow (vph)	156	968	256	196	652	77	160	330	89	160	693	201
RTOR Reduction (vph)	0	0	164	0	0	56	0	0	53	0	8	0
Lane Group Flow (vph)	156	968	92	196	652	21	160	330	36	160	886	0
Heavy Vehicles (%)	0%	0%	0%	3%	2%	6%	1%	6%	3%	3%	1%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		
Actuated Green, G (s)	45.9	36.9	36.9	49.4	38.8	38.8	63.8	55.9	55.9	68.4	58.3	
Effective Green, g (s)	45.9	36.9	36.9	49.4	38.8	38.8	63.8	55.9	55.9	68.4	58.3	
Actuated g/C Ratio	0.33	0.26	0.26	0.35	0.28	0.28	0.46	0.40	0.40	0.49	0.42	
Clearance Time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Grp Cap (vph)	237	951	426	185	981	422	155	716	626	450	759	
v/s Ratio Prot	0.04	0.27		c0.08	0.18		c0.06	0.18		0.03	c0.49	
v/s Ratio Perm	0.17		0.06	c0.29		0.01	0.41		0.02	0.15		
v/c Ratio	0.66	1.02	0.22	1.06	0.66	0.05	1.03	0.46	0.06	0.36	1.17	
Uniform Delay, d1	35.6	51.6	40.2	37.8	44.8	37.1	37.6	31.0	25.8	21.0	40.8	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	13.5	33.7	1.2	82.8	3.6	0.2	81.1	2.1	0.2	2.2	89.5	
Delay (s)	49.1	85.3	41.4	120.6	48.4	37.3	118.6	33.1	26.0	23.2	130.3	
Level of Service	D	F	D	F	D	D	F	C	C	C	F	
Approach Delay (s)		73.1			62.8			55.6			114.1	
Approach LOS		E			E			E			F	

Intersection Summary			
HCM Average Control Delay	79.1	HCM Level of Service	E
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	103.8%	ICU Level of Service	G
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	30	917	8	28	721	117	13	0	67	59	3	228
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.65	0.93	0.50	0.81	0.94	0.56	0.60	0.25	0.93	0.88	0.38	0.60
Hourly flow rate (vph)	46	986	16	35	767	209	22	0	72	67	8	380
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	976			1002			1915	2123	493	1494	1930	384
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	976			1002			1915	2123	493	1494	1930	384
tC, single (s)	4.1			4.2			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	94			95			0	100	86	2	87	39
cM capacity (veh/h)	715			675			13	45	527	69	59	620

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	46	493	493	16	35	384	384	209	22	72	67	388
Volume Left	46	0	0	0	35	0	0	0	22	0	67	0
Volume Right	0	0	0	16	0	0	0	209	0	72	0	380
cSH	715	1700	1700	1700	675	1700	1700	1700	13	527	69	520
Volume to Capacity	0.06	0.29	0.29	0.01	0.05	0.23	0.23	0.12	1.62	0.14	0.98	0.75
Queue Length 95th (ft)	5	0	0	0	4	0	0	0	85	12	123	159
Control Delay (s)	10.4	0.0	0.0	0.0	10.6	0.0	0.0	0.0	878.1	12.9	204.9	29.5
Lane LOS	B				B				F	B	F	D
Approach Delay (s)	0.5				0.4				212.9		55.3	
Approach LOS									F		F	

Intersection Summary			
Average Delay	17.6		
Intersection Capacity Utilization	46.3%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	0	0	0	3	0	2	3	484	5	0	877	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)					5.9	5.9		5.9	5.9		5.9	
Lane Util. Factor					1.00	1.00		1.00	1.00		1.00	
Frt					1.00	0.85		1.00	0.85		1.00	
Flt Protected					0.95	1.00		1.00	1.00		1.00	
Satd. Flow (prot)					1805	1615		1837	1615		1880	
Flt Permitted					1.00	1.00		0.99	1.00		1.00	
Satd. Flow (perm)					1900	1615		1817	1615		1880	
Peak-hour factor, PHF	0.25	0.25	0.25	0.38	0.25	0.25	0.38	0.85	0.62	0.25	0.95	0.25
Adj. Flow (vph)	0	0	0	8	0	8	8	569	8	0	923	4
RTOR Reduction (vph)	0	0	0	0	0	8	0	0	2	0	0	0
Lane Group Flow (vph)	0	0	0	0	8	0	0	577	6	0	927	0
Heavy Vehicles (%)	0%	0%	0%	0%	0%	0%	100%	2%	0%	0%	1%	0%
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)					1.4	1.4		41.8	41.8		41.8	
Effective Green, g (s)					1.4	1.4		41.8	41.8		41.8	
Actuated g/C Ratio					0.03	0.03		0.76	0.76		0.76	
Clearance Time (s)					5.9	5.9		5.9	5.9		5.9	
Vehicle Extension (s)					3.0	3.0		3.0	3.0		3.0	
Lane Grp Cap (vph)					48	41		1381	1227		1429	
v/s Ratio Prot											c0.49	
v/s Ratio Perm					c0.00	0.00		0.32	0.00			
v/c Ratio					0.17	0.00		0.42	0.00		0.65	
Uniform Delay, d1					26.2	26.1		2.3	1.6		3.1	
Progression Factor					1.00	1.00		0.97	0.41		1.00	
Incremental Delay, d2					1.6	0.0		0.8	0.0		2.3	
Delay (s)					27.9	26.2		3.1	0.7		5.4	
Level of Service					C	C		A	A		A	
Approach Delay (s)		0.0			27.0			3.1			5.4	
Approach LOS		A			C			A			A	

Intersection Summary			
HCM Average Control Delay	4.7	HCM Level of Service	A
HCM Volume to Capacity ratio	0.63		
Actuated Cycle Length (s)	55.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	61.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	91	192	79	70	281	114
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.40	0.84	0.38	0.79	0.69	0.75
Hourly flow rate (vph)	228	229	208	89	407	152
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		684	0	762	569
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		684	0	762	569
tC, single (s)	4.1		6.5	6.2	7.1	6.6
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.1
p0 queue free %	86		35	92	0	58
cM capacity (veh/h)	1636		322	1076	130	365

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	456	297	559
Volume Left	228	0	407
Volume Right	229	89	0
cSH	1636	407	158
Volume to Capacity	0.14	0.73	3.55
Queue Length 95th (ft)	12	142	Err
Control Delay (s)	4.4	34.1	Err
Lane LOS	A	D	F
Approach Delay (s)	4.4	34.1	Err
Approach LOS		D	F

Intersection Summary			
Average Delay	4271.9		
Intersection Capacity Utilization	56.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	38	1163	221	21	1015	4	188	1	18	3	1	18
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.88	0.75	0.75	0.95	0.50	0.56	0.25	0.81	0.25	0.25	0.61
Hourly flow rate (vph)	51	1322	295	28	1068	8	336	4	22	12	4	30
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					468							
pX, platoon unblocked	0.80						0.80	0.80		0.80	0.80	0.80
vC, conflicting volume	1076			1616			2045	2555	661	1915	2846	538
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	588			1616			1802	2442	661	1639	2807	0
tC, single (s)	4.1			4.2			7.5	6.5	7.1	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.3			3.5	4.0	3.4	3.5	4.0	3.3
p0 queue free %	94			93			0	82	94	70	69	97
cM capacity (veh/h)	795			377			27	22	391	39	13	870

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	NB 1	SB 1
Volume Total	51	661	661	295	562	542	362	46
Volume Left	51	0	0	0	28	0	336	12
Volume Right	0	0	0	295	0	8	22	30
cSH	795	1700	1700	1700	377	1700	28	70
Volume to Capacity	0.06	0.39	0.39	0.17	0.07	0.32	12.71	0.65
Queue Length 95th (ft)	5	0	0	0	6	0	Err	72
Control Delay (s)	9.8	0.0	0.0	0.0	2.3	0.0	Err	123.9
Lane LOS	A				A		F	F
Approach Delay (s)	0.3				1.2		Err	123.9
Approach LOS							F	F

Intersection Summary			
Average Delay	1140.8		
Intersection Capacity Utilization	68.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	241	0	75	107	0	93	55	1032	76	68	1285	173
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.42	0.25	0.73	0.44	0.25	0.63	0.57	0.92	0.25	0.75	0.95	0.45
Hourly flow rate (vph)	574	0	103	243	0	148	96	1122	304	91	1353	384
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2435	3153	676	2427	3385	713	1737			1426		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2435	3153	676	2427	3385	713	1737			1426		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.2			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	74	0	100	61	72			81		
cM capacity (veh/h)	7	6	400	9	5	379	350			483		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	677	391	96	748	678	91	676	676	384
Volume Left	574	243	96	0	0	91	0	0	0
Volume Right	103	148	0	0	304	0	0	0	384
cSH	8	14	350	1700	1700	483	1700	1700	1700
Volume to Capacity	82.61	28.63	0.28	0.44	0.40	0.19	0.40	0.40	0.23
Queue Length 95th (ft)	Err	Err	28	0	0	17	0	0	0
Control Delay (s)	Err	Err	19.2	0.0	0.0	14.2	0.0	0.0	0.0
Lane LOS	F	F	C			B			
Approach Delay (s)	Err	Err	1.2			0.7			
Approach LOS	F	F							

Intersection Summary			
Average Delay	2416.8		
Intersection Capacity Utilization	73.5%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	92	1	355	1	0	0	248	411	5	4	1149	114
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.64	0.89	0.42	0.33	0.98	0.57	0.25	0.25	0.25	0.72	0.25	0.70
Hourly flow rate (vph)	144	1	845	3	0	0	992	1644	20	6	4596	163
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												7
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	0			846			2593	295	1	1136	1140	0
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	0			846			2593	295	1	1136	1140	0
tC, single (s)	4.3			4.1			7.5	6.5	6.9	7.5	6.5	7.2
tC, 2 stage (s)												
tF (s)	2.3			2.2			3.5	4.0	3.3	3.5	4.0	3.4
p0 queue free %	91			100			0	0	98	0	0	84
cM capacity (veh/h)	1572			799			0	561	1090	0	183	1050

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	144	1	1	845	3	0	0	2656	4764
Volume Left	144	0	0	0	3	0	0	992	6
Volume Right	0	0	0	845	0	0	0	20	163
cSH	1572	1700	1700	1700	799	1700	1700	0	0
Volume to Capacity	0.09	0.00	0.00	0.50	0.00	0.00	0.00	Err	Err
Queue Length 95th (ft)	8	0	0	0	0	0	0	Err	Err
Control Delay (s)	7.5	0.0	0.0	0.0	9.5	0.0	0.0	Err	Err
Lane LOS	A				A			F	F
Approach Delay (s)	1.1				9.5			Err	Err
Approach LOS								F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	118.1%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	228	37	86	202	34	15	34	294	143	9	682	168
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.63	0.40	0.65	0.50	0.25	0.75	0.28	0.69	0.38	0.75	0.95	0.57
Hourly flow rate (vph)	362	92	132	404	136	20	121	426	376	12	718	295
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1834	1935	865	1925	1894	614	1013			802		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1834	1935	865	1925	1894	614	1013			802		
tC, single (s)	7.1	6.6	6.2	7.1	6.5	6.3	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.1	3.3	3.5	4.0	3.4	2.2			2.2		
p0 queue free %	0	0	63	0	0	96	82			99		
cM capacity (veh/h)	0	50	356	0	57	483	693			830		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	587	560	924	1025
Volume Left	362	404	121	12
Volume Right	132	20	376	295
cSH	0	0	693	830
Volume to Capacity	Err	Err	0.18	0.01
Queue Length 95th (ft)	Err	Err	16	1
Control Delay (s)	Err	Err	4.7	0.4
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	4.7	0.4
Approach LOS	F	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	64	1036	118	229	809	141	55	230	176	220	467	167
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3574	1599	1805	3539	1524	1805	1792	1538	1787	1863	1615
Flt Permitted	0.23	1.00	1.00	0.09	1.00	1.00	0.15	1.00	1.00	0.31	1.00	1.00
Satd. Flow (perm)	429	3574	1599	175	3539	1524	288	1792	1538	584	1863	1615
Peak-hour factor, PHF	0.71	0.86	0.82	0.83	0.90	0.69	0.87	0.82	0.73	0.91	0.81	0.90
Adj. Flow (vph)	90	1205	144	276	899	204	63	280	241	242	577	186
RTOR Reduction (vph)	0	0	46	0	0	123	0	0	139	0	0	125
Lane Group Flow (vph)	90	1205	98	276	899	81	63	280	102	242	577	61
Heavy Vehicles (%)	0%	1%	1%	0%	2%	6%	0%	6%	5%	1%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	42.7	37.2	37.2	55.7	43.9	43.9	29.6	26.4	26.4	42.1	33.1	33.1
Effective Green, g (s)	42.7	37.2	37.2	55.7	43.9	43.9	29.6	26.4	26.4	42.1	33.1	33.1
Actuated g/C Ratio	0.39	0.34	0.34	0.51	0.40	0.40	0.27	0.24	0.24	0.38	0.30	0.30
Clearance Time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	235	1209	541	269	1412	608	122	430	369	332	561	486
v/s Ratio Prot	0.02	0.34		c0.11	0.25		0.02	0.16		c0.07	c0.31	
v/s Ratio Perm	0.13		0.06	c0.41		0.05	0.12		0.07	0.21		0.04
v/c Ratio	0.38	1.00	0.18	1.03	0.64	0.13	0.52	0.65	0.28	0.73	1.03	0.13
Uniform Delay, d1	22.3	36.3	25.7	32.9	26.6	21.0	32.8	37.7	34.0	26.4	38.4	27.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.91	0.95	0.99
Incremental Delay, d2	1.0	24.9	0.2	61.7	1.0	0.1	3.7	7.5	1.9	7.0	43.3	0.5
Delay (s)	23.3	61.2	25.8	94.6	27.6	21.1	36.5	45.1	35.9	30.9	79.8	28.2
Level of Service	C	E	C	F	C	C	D	D	D	C	E	C
Approach Delay (s)		55.3			40.0			40.4			58.5	
Approach LOS		E			D			D			E	

Intersection Summary			
HCM Average Control Delay	49.3	HCM Level of Service	D
HCM Volume to Capacity ratio	1.01		
Actuated Cycle Length (s)	110.0	Sum of lost time (s)	18.1
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	1	3	1	28	0	13	6	496	12	22	828	6
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.25	0.38	0.25	0.81	0.25	0.60	0.50	0.75	0.55	0.58	0.91	0.50
Hourly flow rate (vph)	4	8	4	35	0	22	12	661	22	38	910	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						3						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											696	
pX, platoon unblocked	0.62	0.62	0.62	0.62	0.62		0.62					
vC, conflicting volume	1671	1671	910	1679	1683	661	922			661		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1778	1778	542	1791	1797	661	562			661		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	89	84	99	0	100	95	98			96		
cM capacity (veh/h)	36	48	335	32	47	466	628			937		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	16	56	673	22	38	910	12
Volume Left	4	35	12	0	38	0	0
Volume Right	4	22	0	22	0	0	12
cSH	56	52	628	1700	937	1700	1700
Volume to Capacity	0.29	1.08	0.02	0.01	0.04	0.54	0.01
Queue Length 95th (ft)	25	121	1	0	3	0	0
Control Delay (s)	93.5	276.1	0.5	0.0	9.0	0.0	0.0
Lane LOS	F	F	A		A		
Approach Delay (s)	93.5	276.1	0.5		0.4		
Approach LOS	F	F					

Intersection Summary			
Average Delay	10.3		
Intersection Capacity Utilization	60.2%	ICU Level of Service	B
Analysis Period (min)	15		

HCM Signalized Intersection Capacity Analysis
3: mcginnis ferry road & buford highway

1/5/2010

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	227	747	140	86	1311	128	334	728	82	84	341	145
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	0.95	
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	
Satd. Flow (prot)	1805	3574	1568	1570	3610	1615	1805	1900	1568	1805	1789	
Flt Permitted	0.08	1.00	1.00	0.17	1.00	1.00	0.09	1.00	1.00	0.10	1.00	
Satd. Flow (perm)	152	3574	1568	286	3610	1615	171	1900	1568	198	1789	
Peak-hour factor, PHF	0.78	0.84	0.67	0.75	0.93	0.78	0.93	0.95	0.69	0.76	0.74	0.73
Adj. Flow (vph)	291	889	209	115	1410	164	359	766	119	111	461	199
RTOR Reduction (vph)	0	0	135	0	0	63	0	0	44	0	11	0
Lane Group Flow (vph)	291	889	74	115	1410	101	359	766	75	111	649	0
Heavy Vehicles (%)	0%	1%	3%	15%	0%	0%	0%	0%	3%	0%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases	2		2	6		6	4		4	8		
Actuated Green, G (s)	61.8	49.9	49.9	55.5	46.9	46.9	61.3	50.3	50.3	43.0	38.3	
Effective Green, g (s)	61.8	49.9	49.9	55.5	46.9	46.9	61.3	50.3	50.3	43.0	38.3	
Actuated g/C Ratio	0.44	0.36	0.36	0.40	0.34	0.34	0.44	0.36	0.36	0.31	0.27	
Clearance Time (s)	6.1	7.1	7.1	6.4	7.1	7.1	6.1	6.7	6.7	6.3	6.7	
Lane Grp Cap (vph)	208	1274	559	192	1209	541	272	683	563	115	489	
v/s Ratio Prot	c0.12	0.25		0.04	0.39		c0.16	0.40		0.03	0.36	
v/s Ratio Perm	c0.50		0.05	0.20		0.06	c0.42		0.05	0.26		
v/c Ratio	1.40	0.70	0.13	0.60	1.17	0.19	1.32	1.12	0.13	0.97	1.33	
Uniform Delay, d1	41.6	38.6	30.4	29.6	46.6	33.0	43.8	44.9	30.2	46.8	50.9	
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	
Incremental Delay, d2	206.0	3.2	0.5	13.1	84.1	0.8	167.4	72.9	0.5	75.0	161.0	
Delay (s)	247.6	41.8	30.9	42.7	130.7	33.8	211.2	117.8	30.7	121.8	211.8	
Level of Service	F	D	C	D	F	C	F	F	C	F	F	
Approach Delay (s)		83.3			115.3			136.4			198.9	
Approach LOS		F			F			F			F	

Intersection Summary			
HCM Average Control Delay	124.4	HCM Level of Service	F
HCM Volume to Capacity ratio	1.34		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	18.3
Intersection Capacity Utilization	115.8%	ICU Level of Service	H
Analysis Period (min)	15		
c Critical Lane Group			

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	74	872	26	67	1529	178	20	12	64	81	3	144
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.91	0.86	0.78	0.72	0.91	0.75	0.37	0.50	0.65	0.75	0.38	0.80
Hourly flow rate (vph)	81	1014	33	93	1680	237	54	24	98	108	8	180
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	1918			1047			2387	3280	507	2646	3076	840
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1918			1047			2387	3280	507	2646	3076	840
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	74			86			0	0	81	0	0	42
cM capacity (veh/h)	313			672			0	6	516	0	8	313

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	WB 4	NB 1	NB 2	SB 1	SB 2
Volume Total	81	507	507	33	93	840	840	237	54	122	108	188
Volume Left	81	0	0	0	93	0	0	0	54	0	108	0
Volume Right	0	0	0	33	0	0	0	237	0	98	0	180
cSH	313	1700	1700	1700	672	1700	1700	1700	0	28	0	119
Volume to Capacity	0.26	0.30	0.30	0.02	0.14	0.49	0.49	0.14	Err	4.36	Err	1.58
Queue Length 95th (ft)	25	0	0	0	12	0	0	0	Err	Err	Err	344
Control Delay (s)	20.5	0.0	0.0	0.0	11.2	0.0	0.0	0.0	Err	Err	Err	362.8
Lane LOS	C				B				F	F	F	F
Approach Delay (s)	1.5				0.5				Err		Err	
Approach LOS									F		F	

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	72.1%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	1	3	8	29	0	25	5	574	373	179	604	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		5.9			5.9	5.9		5.9	5.9	5.9	5.9	
Lane Util. Factor		1.00			1.00	1.00		1.00	1.00	1.00	1.00	
Frt		0.93			1.00	0.85		1.00	0.85	1.00	1.00	
Flt Protected		0.99			0.95	1.00		1.00	1.00	0.95	1.00	
Satd. Flow (prot)		1409			1805	1615		1879	1615	1805	1888	
Flt Permitted		0.94			0.74	1.00		0.99	1.00	0.32	1.00	
Satd. Flow (perm)		1337			1399	1615		1865	1615	602	1888	
Peak-hour factor, PHF	0.25	0.25	0.50	0.42	0.25	0.60	0.63	0.78	0.76	0.62	0.79	0.38
Adj. Flow (vph)	4	12	16	69	0	42	8	736	491	289	765	16
RTOR Reduction (vph)	0	14	0	0	0	37	0	0	151	0	1	0
Lane Group Flow (vph)	0	18	0	0	69	5	0	744	340	289	780	0
Heavy Vehicles (%)	0%	0%	50%	0%	0%	0%	100%	0%	0%	0%	0%	17%
Turn Type	Perm			Perm		Perm	Perm		Perm	Perm		
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2		2	6		
Actuated Green, G (s)		6.7			6.7	6.7		41.5	41.5	41.5	41.5	
Effective Green, g (s)		6.7			6.7	6.7		41.5	41.5	41.5	41.5	
Actuated g/C Ratio		0.11			0.11	0.11		0.69	0.69	0.69	0.69	
Clearance Time (s)		5.9			5.9	5.9		5.9	5.9	5.9	5.9	
Vehicle Extension (s)		3.0			3.0	3.0		3.0	3.0	3.0	3.0	
Lane Grp Cap (vph)		149			156	180		1290	1117	416	1306	
v/s Ratio Prot											0.41	
v/s Ratio Perm		0.01			c0.05	0.00		0.40	0.21	c0.48		
v/c Ratio		0.12			0.44	0.03		0.58	0.30	0.69	0.60	
Uniform Delay, d1		24.0			24.9	23.7		4.7	3.6	5.5	4.9	
Progression Factor		1.00			1.00	1.00		0.78	2.62	1.00	1.00	
Incremental Delay, d2		0.4			2.0	0.1		1.1	0.4	9.2	2.0	
Delay (s)		24.4			26.9	23.8		4.8	9.9	14.7	6.9	
Level of Service		C			C	C		A	A	B	A	
Approach Delay (s)		24.4			25.7			6.8			9.0	
Approach LOS		C			C			A			A	

Intersection Summary			
HCM Average Control Delay	8.9	HCM Level of Service	A
HCM Volume to Capacity ratio	0.66		
Actuated Cycle Length (s)	60.0	Sum of lost time (s)	11.8
Intersection Capacity Utilization	85.7%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Volume (veh/h)	69	269	128	85	255	83
Sign Control	Free		Stop			Stop
Grade	0%		0%			0%
Peak Hour Factor	0.56	0.85	0.81	0.54	0.76	0.83
Hourly flow rate (vph)	123	316	158	157	336	100
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None					
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	0		563	0	641	405
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	0		563	0	641	405
tC, single (s)	4.1		6.5	6.2	7.1	6.5
tC, 2 stage (s)						
tF (s)	2.2		4.0	3.3	3.5	4.0
p0 queue free %	92		61	86	0	80
cM capacity (veh/h)	1636		405	1091	220	498

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	440	315	436
Volume Left	123	0	336
Volume Right	316	157	0
cSH	1636	590	252
Volume to Capacity	0.08	0.53	1.73
Queue Length 95th (ft)	6	79	715
Control Delay (s)	2.6	17.9	376.6
Lane LOS	A	C	F
Approach Delay (s)	2.6	17.9	376.6
Approach LOS		C	F

Intersection Summary			
Average Delay	143.4		
Intersection Capacity Utilization	60.8%	ICU Level of Service	B
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	43	1292	242	19	1011	33	207	22	49	2	2	85
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.68	0.97	0.82	0.88	0.91	0.78	0.58	0.79	0.83	0.25	0.50	0.71
Hourly flow rate (vph)	63	1332	295	22	1111	42	357	28	59	8	4	120
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type		None			None							
Median storage veh)												
Upstream signal (ft)					468							
pX, platoon unblocked	0.75						0.75	0.75		0.75	0.75	0.75
vC, conflicting volume	1153			1627			2179	2655	666	2041	2929	577
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	536			1627			1904	2540	666	1720	2905	0
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.5	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	92			95			0	0	85	0	62	85
cM capacity (veh/h)	781			405			17	18	407	0	10	818

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	NB 1	SB 1
Volume Total	63	666	666	295	577	598	444	132
Volume Left	63	0	0	0	22	0	357	8
Volume Right	0	0	0	295	0	42	59	120
cSH	781	1700	1700	1700	405	1700	20	0
Volume to Capacity	0.08	0.39	0.39	0.17	0.05	0.35	22.71	Err
Queue Length 95th (ft)	7	0	0	0	4	0	Err	Err
Control Delay (s)	10.0	0.0	0.0	0.0	1.6	0.0	Err	Err
Lane LOS	B				A		F	F
Approach Delay (s)	0.4				0.8		Err	Err
Approach LOS							F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	173	0	74	75	0	65	89	1555	110	144	1132	246
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.56	0.25	0.79	0.38	0.25	0.38	0.61	0.96	0.50	0.61	0.92	0.75
Hourly flow rate (vph)	309	0	94	197	0	171	146	1620	220	236	1230	328
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2975	3834	615	3203	4052	920	1558			1840		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2975	3834	615	3203	4052	920	1558			1840		
tC, single (s)	7.5	6.5	6.9	7.5	6.5	6.9	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	100	79	0	100	38	66			30		
cM capacity (veh/h)	1	1	439	1	1	277	430			335		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2	SB 3	SB 4
Volume Total	403	368	146	1080	760	236	615	615	328
Volume Left	309	197	146	0	0	236	0	0	0
Volume Right	94	171	0	0	220	0	0	0	328
cSH	1	2	430	1700	1700	335	1700	1700	1700
Volume to Capacity	381.28	179.20	0.34	0.64	0.45	0.70	0.36	0.36	0.19
Queue Length 95th (ft)	Err	Err	37	0	0	127	0	0	0
Control Delay (s)	Err	Err	17.6	0.0	0.0	37.7	0.0	0.0	0.0
Lane LOS	F	F	C			E			
Approach Delay (s)	Err	Err	1.3			5.0			
Approach LOS	F	F							

Intersection Summary			
Average Delay	1696.4		
Intersection Capacity Utilization	83.9%	ICU Level of Service	E
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	215	1	357	14	1	21	379	2308	13	4	1746	174
Sign Control		Free			Free			Stop			Stop	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.75	0.89	0.50	0.38	0.84	0.80	0.75	0.25	0.75	0.71	0.25	0.73
Hourly flow rate (vph)	287	1	714	37	1	26	505	9232	17	6	6984	238
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												7
Median type		None			None							
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	27			715			4141	676	1	5295	1376	14
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	27			715			4141	676	1	5295	1376	14
tC, single (s)	4.1			4.1			7.5	6.5	6.9	7.6	6.5	6.9
tC, 2 stage (s)												
tF (s)	2.2			2.2			3.5	4.0	3.3	3.5	4.0	3.3
p0 queue free %	82			96			0	0	98	0	0	78
cM capacity (veh/h)	1599			895			0	297	1090	0	115	1063

Direction, Lane #	EB 1	EB 2	EB 3	EB 4	WB 1	WB 2	WB 3	NB 1	SB 1
Volume Total	287	1	1	714	37	1	27	9755	7228
Volume Left	287	0	0	0	37	0	0	505	6
Volume Right	0	0	0	714	0	0	26	17	238
cSH	1599	1700	1700	1700	895	1700	1700	0	0
Volume to Capacity	0.18	0.00	0.00	0.42	0.04	0.00	0.02	Err	Err
Queue Length 95th (ft)	16	0	0	0	3	0	0	Err	Err
Control Delay (s)	7.7	0.0	0.0	0.0	9.2	0.0	0.0	Err	Err
Lane LOS	A				A			F	F
Approach Delay (s)	2.2				5.3			Err	Err
Approach LOS								F	F

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	263.9%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	184	48	63	149	40	21	66	817	200	12	418	245
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.62	0.47	0.51	0.75	0.92	0.66	0.80	0.91	0.50	0.43	0.85	0.62
Hourly flow rate (vph)	297	102	124	199	43	32	82	898	400	28	492	395
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)												
Median type								None			None	
Median storage veh)												
Upstream signal (ft)												
pX, platoon unblocked												
vC, conflicting volume	2062	2208	689	2183	2206	1098	887			1298		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	2062	2208	689	2183	2206	1098	887			1298		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	0	0	72	0	0	88	89			95		
cM capacity (veh/h)	0	38	449	0	38	261	772			541		

Direction, Lane #	EB 1	WB 1	NB 1	SB 1
Volume Total	522	274	1380	915
Volume Left	297	199	82	28
Volume Right	124	32	400	395
cSH	0	0	772	541
Volume to Capacity	Err	Err	0.11	0.05
Queue Length 95th (ft)	Err	Err	9	4
Control Delay (s)	Err	Err	5.0	1.6
Lane LOS	F	F	A	A
Approach Delay (s)	Err	Err	5.0	1.6
Approach LOS	F	F		

Intersection Summary			
Average Delay	Err		
Intersection Capacity Utilization	117.0%	ICU Level of Service	H
Analysis Period (min)	15		

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	243	994	89	236	794	132	126	550	181	223	340	138
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Lane Util. Factor	1.00	0.95	1.00	1.00	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1805	3574	1615	1805	3539	1615	1805	1881	1615	1805	1863	1615
Flt Permitted	0.13	1.00	1.00	0.11	1.00	1.00	0.52	1.00	1.00	0.13	1.00	1.00
Satd. Flow (perm)	239	3574	1615	216	3539	1615	996	1881	1615	253	1863	1615
Peak-hour factor, PHF	0.92	0.97	0.81	0.65	0.85	0.42	0.93	0.97	0.90	0.89	0.84	0.79
Adj. Flow (vph)	264	1025	110	363	934	314	135	567	201	251	405	175
RTOR Reduction (vph)	0	0	38	0	0	211	0	0	104	0	0	115
Lane Group Flow (vph)	264	1025	72	363	934	103	135	567	97	251	405	60
Heavy Vehicles (%)	0%	1%	0%	0%	2%	0%	0%	1%	0%	0%	2%	0%
Turn Type	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm	pm+pt		Perm
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases	4		4	8		8	2		2	6		6
Actuated Green, G (s)	46.1	31.8	31.8	52.9	35.2	35.2	35.2	35.0	35.0	41.2	41.2	41.2
Effective Green, g (s)	46.1	31.8	31.8	52.9	35.2	35.2	35.2	35.0	35.0	41.2	41.2	41.2
Actuated g/C Ratio	0.38	0.26	0.26	0.44	0.29	0.29	0.29	0.29	0.29	0.34	0.34	0.34
Clearance Time (s)	6.3	6.2	6.2	6.3	6.2	6.2	5.8	6.0	6.0	5.8	6.0	6.0
Vehicle Extension (s)	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Lane Grp Cap (vph)	278	947	428	330	1038	474	326	549	471	232	640	554
v/s Ratio Prot	0.11	0.29		c0.16	0.26		0.02	c0.30		c0.10	0.22	
v/s Ratio Perm	0.25		0.04	c0.32		0.06	0.10		0.06	c0.27		0.04
v/c Ratio	0.95	1.08	0.17	1.10	0.90	0.22	0.41	1.03	0.21	1.08	0.63	0.11
Uniform Delay, d1	31.9	44.1	33.9	36.2	40.7	32.0	34.7	42.5	32.0	33.6	33.1	26.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	0.92	1.62
Incremental Delay, d2	39.9	54.2	0.2	79.1	10.4	0.2	0.9	47.1	1.0	78.1	4.0	0.3
Delay (s)	71.9	98.3	34.1	115.3	51.1	32.2	35.5	89.6	33.0	110.8	34.3	44.0
Level of Service	E	F	C	F	D	C	D	F	C	F	C	D
Approach Delay (s)		88.2			61.9			68.9			59.5	
Approach LOS		F			E			E			E	

Intersection Summary			
HCM Average Control Delay	70.6	HCM Level of Service	E
HCM Volume to Capacity ratio	1.06		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	18.4
Intersection Capacity Utilization	102.1%	ICU Level of Service	G
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (veh/h)	4	2	1	41	1	69	2	840	35	58	553	7
Sign Control		Stop			Stop			Free			Free	
Grade		0%			0%			0%			0%	
Peak Hour Factor	0.50	0.50	0.25	0.81	0.25	0.86	0.50	0.94	0.75	0.55	0.82	0.58
Hourly flow rate (vph)	8	4	4	51	4	80	4	894	47	105	674	12
Pedestrians												
Lane Width (ft)												
Walking Speed (ft/s)												
Percent Blockage												
Right turn flare (veh)						3						
Median type								None			None	
Median storage veh)												
Upstream signal (ft)											696	
pX, platoon unblocked	0.70	0.70	0.70	0.70	0.70		0.70					
vC, conflicting volume	1789	1787	674	1793	1799	894	686			894		
vC1, stage 1 conf vol												
vC2, stage 2 conf vol												
vCu, unblocked vol	1916	1913	312	1921	1930	894	330			894		
tC, single (s)	7.1	6.5	6.2	7.1	6.5	6.2	4.1			4.1		
tC, 2 stage (s)												
tF (s)	3.5	4.0	3.3	3.5	4.0	3.3	2.2			2.2		
p0 queue free %	65	90	99	0	90	77	100			86		
cM capacity (veh/h)	23	41	509	29	40	343	863			768		

Direction, Lane #	EB 1	WB 1	NB 1	NB 2	SB 1	SB 2	SB 3
Volume Total	16	135	898	47	105	674	12
Volume Left	8	51	4	0	105	0	0
Volume Right	4	80	0	47	0	0	12
cSH	35	68	863	1700	768	1700	1700
Volume to Capacity	0.46	1.99	0.00	0.03	0.14	0.40	0.01
Queue Length 95th (ft)	38	311	0	0	12	0	0
Control Delay (s)	175.3	592.0	0.1	0.0	10.4	0.0	0.0
Lane LOS	F	F	A		B		
Approach Delay (s)	175.3	592.0	0.1		1.4		
Approach LOS	F	F					

Intersection Summary			
Average Delay	44.4		
Intersection Capacity Utilization	61.9%	ICU Level of Service	B
Analysis Period (min)	15		

Appendix B: Community and Stakeholder Outreach Summary

Buford Highway Transportation Study
Stakeholder Interview Form

Stakeholder:	
Agency/Title:	
Telephone:	
Date of Interview:	
Interview Type:	
Interviewer:	

Background

The City of Suwanee is undertaking a planning and traffic engineering study for Buford Highway (US 23/SR 13) from McGinnis Ferry Road to George Pierce Park. The purpose of the study is to identify what types of improvements are needed long-term to meet community and mobility needs. Previous studies, including the recently completed *Downtown Suwanee Master Plan* and *Comprehensive Plan,* have identified the need to connect the historic Old Town Suwanee with Town Center Suwanee with a facility which complements existing and planned future development.

Questions

1) What are the community issues and concerns regarding Buford Highway in its existing role within the community, if any?

2) What are specific transportation issues that should be addressed (congestion, safety, etc)?

3) What are the assets along Buford Highway (such as Town Center)?

Buford Highway Transportation Study
Stakeholder Interview Form

4) Within the Downtown Master Plan, it was recommended that Buford Highway be redesigned as a “complete street” with facilities for pedestrians, bicyclists, and vehicles and including landscaping. As Buford Highway is redesigned, which elements should receive priority?

5) How does this project rank within other community priorities?

6) To reach as broad an audience as possible, who should be involved in the study that could otherwise be overlooked?

7) Who may be opposed to the project and why?

8) What would you like to see as an outcome of the Buford Highway Transportation Study?

9) How long have you lived in Suwanee?

10) What changes have you observed along Buford Highway in this time?

Buford Highway Transportation Study

Stakeholder Interview Summary

Stakeholders representing the city, business leaders, and property owners were interviewed in October and November, 2009 for the Buford Highway Transportation Study. The purpose of stakeholder interviews is to facilitate one-on-one discussion related to issues and concerns and elicit input that might not be shared in a group setting. Specific to the study, the stakeholder interviews focused on identifying community issues and needs regarding Buford Highway as well as identifying what was desired long-term for Buford Highway. The study is examining Buford Highway from McGinnis Ferry Road to George Pierce Park.

Stakeholders identified for interviews are listed in Table 1. Eleven of 13 stakeholders participated in the interview process.

Table 1: Stakeholder Interviewees

Stakeholder	Affiliation
Dave Williams	Mayor
Jimmy Burnette	City Council
Kevin McOmber	City Council
Dan Foster	City Council
Jace Brooks	City Council
Dick Goodman	City Council
Marty Allen	City Manager
Toby Blackwell	Old Town Business Owner
Pamela Reeves	Old Town Business Owner
James Davenport	Downtown Development Authority
Kevin O'Brien	Downtown Development Authority
Jim Wells	Representative of Property Owners
Wayne Hill	Property Owner

The interview was comprised of ten questions. The following presents a summary of input received.

What are the community issues and concerns regarding Buford Highway in its existing role within the community, if any?

Many of the concerns expressed about Buford Highway are related to its current ownership and design. As an existing state and federal highway (US 23/SR 13), the City of Suwanee does not control or maintain the roadway. It is owned and maintained by the Georgia Department of Transportation (GDOT). Suwanee will have to cooperate with GDOT and consider state plans for Buford Highway, such as whether it will need to be widened to four lanes. However, there are limited funds to reconstruct Buford Highway. It was expressed that Buford Highway should function more as a local road, and it connects the Old Town to Town Center. Since it is in the center of town, Buford Highway needs to create a different feel for the City than it currently does. It could be signature roadway. Although some stakeholders indicated Buford Highway

bisects the City, another stakeholder said that Buford Highway does not divide or create as much of a barrier in Suwanee as does Peachtree Industrial Boulevard.

Buford Highway's current roadway design is as a rural, two-lane highway, and the context is nostalgic, recalling a previous era. The highway differs within Suwanee from adjacent jurisdictions in that beyond Suwanee, Buford Highway is four lanes. It does not have any facilities, such as sidewalks or bicycle lanes, for pedestrians or bicyclists. Those on foot or bicycle cannot use Buford Highway safely. Although Buford Highway is two lanes, it acts as a river and is difficult to cross for pedestrians. There have been improvements for pedestrians, including the crosswalk at Lawrenceville-Suwanee Road and Hawk Signal. In particular, one should be able to walk along Buford Highway from Lawrenceville-Suwanee Road to Russell Street. Along Buford Highway, there are no curbs, and the topography is difficult as there are ditches and steep drop offs. If Buford Highway was widened, Suwanee citizens may not find that an improvement.

From a land use and development perspective, Buford Highway is a startling contrast to the adjacent communities of Buford and Duluth, where there is abundant strip-commercial development. There is little development along Buford Highway, and it needs economic development to spur a new look. The City needs to encourage good development along Buford Highway between Old Town and Town Center, not commercial strip development.

Buford Highway currently has a mature tree canopy with specimen trees. The mature trees are something that should be preserved. It is currently pastoral and shady. However, other stakeholders noted Buford Highway is unattractive and industrial in nature. It needs aesthetic improvements to create a more community-feel. The Suwanee Day parade route is a concern.

What are specific transportation issues that should be addressed (congestion, safety, etc)?

Safety was the most frequently cited transportation concern along Buford Highway. Buford Highway was identified as extremely dangerous for alternative transportation, particularly from White Street to McGinnis Ferry Road. There are no sidewalks or shoulders. It's difficult to walk along, and there is no buffer to protect pedestrians. Those living east of Buford Highway cannot access Town Center as a pedestrian as it is only for motor vehicles. There are some bicyclists, which is a safety concern. The volume of traffic and the speed of traffic also are a concern for pedestrians. In addition, the road has no marked pedestrian crossings at Russell Street, Davis Street, or King Street. A concern is getting people safely across Buford Highway and Lawrenceville-Suwanee. With future development, there will be more pedestrians walking along Buford Highway. Buford Highway may need a median, but it should remain two lanes (one lane in each direction). Stakeholders identified the need for sidewalks and bicycle trails from Russell Street to entrance of George Pierce Park. Drivers and pedestrians are unfamiliar with the pedestrian Hawk signal. Education about the signal only reaches Suwanee residents. Buford Highway may need additional controls.

Buford Highway was also identified as dangerous for vehicles. Buford Highway has no turning lanes, so turns stop and slow traffic. It is difficult to take left turns onto Buford Highway. The existing speed limit is 45 mph, and it is difficult to enter or cross Buford Highway at Russell Street intersection. Traffic speeds should be slower between McGinnis Ferry Road and Lawrenceville-Suwanee Road. Speeds should be reduced and traffic calmed or diverted. Harvest Park at White Street could help drive the need for change. Buford Highway needs traffic calming and should be attractive with street trees, street lights, and landscaping. Safety is a concern especially at Suwanee Dam Road and railroad. One specific concern is that motorists making left turns between Suwanee Dam to Buford Highway could be stranded on railroad tracks.

From a mobility perspective, Buford Highway currently functions adequately, but it has a lot of traffic in the afternoon. The facility needs to meet long term traffic and mobility needs, but not sure how a four-lane section would fit into the planned development scheme. The peak period congestion is bad, particularly at Lawrenceville-Suwanee Road, but that is not necessarily a bad thing. The state designation limits what Suwanee can do. One stakeholder questioned whether Buford Highway needed to be maintained as a state highway. It is a four-lane highway both north and south of Suwanee.

What are the assets along Buford Highway (such as Town Center)?

Town Center, City Hall, and Town Center Park were the most frequently cited assets to preserve along Buford Highway. It was noted provisions were made in design of Town Center Park so that it would not be impacted by changes to Buford Highway, such as widening. Other assets identified include the cemetery at Lawrenceville-Suwanee Road and Buford Highway, the "Purple House" and ambiance near Russell Street, and the "Pink House," which acts as a local landmark. It was mentioned that the City needed to preserve parkland along corridor. Currently, Buford Highway looks like a country road with the tree canopy, and this is pleasant. The streetscape begun at Town Center is an asset and should be extended. White Street Park and the Community Garden are emerging assets. There may be some historic structures worth preserving, and there is a large developable track near White Street which could be an asset. Finally, sewer could make a difference, and the City will have address as sewer capacity as development occurs.

Within the Downtown Master Plan, it was recommended that Buford Highway be redesigned as a "complete street" with facilities for pedestrians, bicyclists, and vehicles and including landscaping. As Buford Highway is redesigned, which elements should receive priority?

Most stakeholders indicated that pedestrian facilities on Buford Highway should receive priority, but improvements for vehicular traffic, bicyclists, and streetscaping should also be included. People on the ground should have more priority than those in vehicles. Pedestrians and bicyclists need a buffer from vehicular traffic. However, a balance should be struck between

the various modes. The ability to walk safely along Buford Highway is important as is a safe roadway for driving. Because of the existing topography and limited guardrails, Buford Highway does not seem safe for motorists either. Turning lanes are needed at some locations.

In addressing larger mobility needs, stakeholders questioned the need for Buford Highway to be widened to four lanes as there are alternative corridors for travel, including Satellite Boulevard and Peachtree Industrial Boulevard. In addition, some do not think Buford Highway will work well as a four-lane facility in accommodating pedestrian and bicycle travel. As an example, Lawrenceville-Suwanee Road is not easy to cross now with the multiple lane cross-section. The design should avoid concrete median barriers.

Stakeholders cited the need to slow vehicular traffic through the downtown as well as the need to preserve tree canopy and provide a landscape buffer with street trees and street lights. The design should be aesthetically pleasing with park benches and landscaping. Buford Highway could use lighting in the commercially-developed area.

Alongside Buford Highway, there is an opportunity to tie the history of the Old Town to Town Center and create a place where people can walk and shop. The character should be as a local destination shopping area. The segment of Buford Highway between Russell Street and Town Center is a priority for improvements.

How does this project rank within other community priorities?

Six stakeholders indicated addressing Buford Highway is high or very high priority, four indicated it was a mid-tier priority, and one indicated it was low priority. Reasons city for making Buford Highway a high priority include:

- Responding to anticipated growth as directed in the Master Plan.
- The role Buford Highway could play in connecting the community. Newer residents living in newer neighborhoods moved to Suwanee because they like the idea that Suwanee is a walking-friendly community. However, the reality is they cannot walk around. Sidewalks are not connected, but if they were, the residents could walk.
- Buford Highway could create a gateway for Old Town
- The critical need for facilities to bicycle or walk to Town Center along Buford Highway.
- Transforming Buford Highway into a city street. Buford Highway has the potential to influence development along it.
- The future design of Buford Highway has a bearing on supporting Town Center and Old Town.

It was noted that anything the City might do to Buford Highway would be expensive, and the City doesn't have direct control over the future of Buford Highway. This impacts prioritization. Some cited Buford Highway as a five-year priority. The study is nice, but it is unknown if the

City needs to make these improvements now or as development occurs. Other City priorities include paving Jackson Street and addressing storm water facilities. There are more severe pedestrian problems on Peachtree Industrial Boulevard.

To reach as broad an audience as possible, who should be involved in the study that could otherwise be overlooked?

On the whole, stakeholders indicated they thought the City had done a good job reaching out to interested groups. It was suggested that they City reach out to those how have been involved in the process and reconvene the steering committee from the Downtown Master Plan Update. Advertisement for the open house needs to be more than just notification on the city's website. It was recommended that the study team use the charette format to engage participants at community meetings. There may be some seniors or retirees who feel that everything is done for others and not for them. There are many older persons living in Suwanee in "Master on Main" homes. The City could reach out to this population via mail or telephone. Senior populations would rather not attend night meetings. The City should reach out to Gwinnett County parks and recreation to discuss access to George Pierce Park. Traffic to the park is a significant issue, and the only access point is at Buford Highway. The City should also contact the Gwinnett community improvement districts (CIDs) to examine transportation coordination from a peer perspective.

Specific audiences identified for participation in the study include:

- Corridor residents and property owners
- Corridor business owners
- Buford Highway neighborhoods
- Buford Highway commuters
- Buford Highway pedestrians
- Downtown Master Plan Steering Committee
- Main Street Merchants
- Downtown Development Authority
- Suwanee Lumber

Who may be opposed to the project and why?

Most stakeholders indicated there was no known opposition to improving Buford Highway, but that could change as the project becomes fully defined. Some constituencies are opposed to widening Buford Highway, while commuters may welcome road widening. The project will need to balance community needs and capacity. One stakeholder noted that a large segment of the population does not value the more recent development in Suwanee, particularly those who have lived in Suwanee longer. Town Center is of no use to them, and they think it is a waste of money. There is more traffic and they do not like it. Perhaps some Main Street merchants,

business, large property owners or neighborhood groups could be opposed to changes on Buford Highway, depending on the outcome.

What would you like to see as an outcome of the Buford Highway Transportation Study?

On the whole, stakeholders want the study to integrate the development concept along Buford Highway with multimodal transportation improvements to Buford Highway. The role of Buford Highway in the center of Suwanee needs to change from a pass-through highway to a central core "Main Street," one that better serves the community. The development patterns should result in a destination place to shop and include residential housing. Buford Highway needs to connect Town Center to Old Town in a way to encourage future development. The City needs to encourage development that brings people into Old Town, such as restaurants and cultural attractions (a community theater).

Some stakeholders would like the study to result in innovative, out-of-the-box solutions, while others indicated a more pragmatic approach. One concept mentioned was to pair White Street with Buford Highway and use White Street as two southbound lanes and Buford Highway as two northbound lanes. Some stakeholders identified a need for a parkway design with landscaped median. Long-term, another stakeholder pictures Buford Highway as a two-lane facility with a median. It was suggested to consider connecting King Street to Suwanee Avenue to provide residential street connection. General through and truck traffic should be diverted off of Buford Highway to Satellite Boulevard or Peachtree Industrial Boulevard. One stakeholder would like to see on-street parking that could support retail rather than developments with a lot of parking lots.

The City cannot do everything at once, so the study should include a prioritization of projects. The study should provide a realistic plan, sensitive to financial constrains. The City needs value in relation to spending, and it does not want to just spend money on just landscaping. Overall, the study should promote system-wide improvements.

One of the study goals should be to engage the citizenry in a dialogue to articulate a vision for Buford Highway. Stakeholders do not want to see the type of development along Buford Highway that has occurred in neighboring jurisdictions (Buford and Duluth). The City needs to go on record indicating what it wants for Buford Highway. It is also important to work successfully with GDOT. The City has an opportunity to lead regarding Buford Highway's future. It is happy with the status quo (keeping Buford Highway two lanes). The state route designation should be evaluated.

How long have you lived in Suwanee?

Most of the stakeholders interviewed have lived or worked in Suwanee for over 12 years. One stakeholder has lived in Suwanee four years. Two stakeholders have lived in Suwanee in excess of 45 years each.

What changes have you observed along Buford Highway in this time?

One of the most commonly cited observations along Buford Highway is that there have been nearly no changes to Buford Highway itself or the area along Buford Highway except for Town Center and Town Center Park. The greatest changes observed on Buford Highway include increased traffic volumes during commute times, the Pedestrian Hawk signal installation at Town Center, and upgrade of the signal at Lawrenceville-Suwanee Road. The Suwanee Day parade has been rerouted down Buford Highway, but no one can see it along the parade route. People now park along Buford Highway to Russell Street during large park events such as concerts and are walking to Town Center Park. George Pierce Park has been expanded and a new park is under development at White Street.

It was noted that it was unusual that development along Buford Highway has not occurred, as growth has occurred elsewhere in Suwanee. Population in Suwanee has doubled. In contrast to Buford Highway, Lawrenceville-Suwanee Road had previously been a two-lane road with a stop sign. It is now a divided four-lane, signal-controlled arterial. The City Hall has moved three times. The post office and police station have moved. The City needs to make progress on Buford Highway.

Buford Highway Transportation Study

Public Meeting Workshop
Thursday, February 25, 2010
City of Suwanee Crossroads Center

Meeting Notes

A public meeting workshop for the Buford Highway Transportation Study was conducted Thursday, February 25 at the Crossroads Center. Thirty persons signed in as attending the meeting, but a head count showed that the total attendance was closer to 40 persons. The meeting presented the study's purpose, process, and draft recommendations for community review and input. The meeting format included a presentation followed by an interactive workshop. Participants were divided into two groups to review more closely the project recommendations, ask questions, and complete a detailed comment form. Twenty-three completed comment forms were received.

The comment form provided an opportunity for attendees to offer feedback on the preferred design alternative for Buford Highway (between George Pierce Park and McGinnis Ferry Road) and short and long-term safety and operations project recommendations. The responses indicated that the preferred design alternative for Buford Highway—retaining the two-lane cross section and basing the design of the corridor on a transect from rural to historic to town center—provides vehicular (60 percent), pedestrian (91 percent) and bicyclist (86 percent) safety while retaining the unique character of the City of Suwanee (95 percent). Of note, 100 percent of the respondents stated that the preferred design alternative is visually and aesthetically pleasing.

The element of the preferred design alternative that was least liked by respondents was the reduction or limitation of traffic flow (due to retaining the current two-lane cross section). However, tree cover, pedestrian access (sidewalks) and bicycle lanes were all listed as elements liked the most by respondents. When asked what features of the proposed Rural, Historic, and Town Center transect cross sections were liked the most, tree cover, the roundabout treatment (at Russell and Buford Highway intersection) and pedestrian safety were listed by a majority of the respondents. Limited traffic capacity was listed as the element liked least in the three proposed transect cross sections. A majority of respondents (77 percent) indicated that the locations/ lengths of the proposed Rural, Historic and Town Center transect cross sections are appropriate along Buford Highway.

Attached for reference include:

- Meeting Agenda
- Project Fact Sheet
- Presentation
- Sign-in Sheets
- Comment Form
- Detailed Summary of Comments Received

Buford Highway Transportation Study

Community Meeting
Buford Highway: Improving Community Mobility
February 25, 2010

Agenda

- Welcome and Introductions
- Study Overview and Process
- Review Data Findings and Planning Efforts
- Community Feedback on Recommendations & Design for Buford Highway
- Next Steps
    - Please join us at the City Open House on March 18, 2010 at 6:30 pm at Suwanee City Hall
    - Please visit the City of Suwanee website at www.suwanee.com
- Question and Answer

For more information contact:
Matthew Dickison, AICP
City of Suwanee, Planning Department,
City Hall, 330 Town Center Avenue, Suwanee, Georgia 30024
Phone: 770-945-6583
Email: mdickison@suwanee.com

www.suwanee.com

Buford Highway Transportation Study Fact Sheet

Study Purpose

The City of Suwanee is undertaking a detailed planning and traffic engineering study for Buford Highway (US 23/SR 13) from McGinnis Ferry Road to the entrance of George Pierce Park. The purpose of the study is to identify what types of multimodal (vehicle, bicycle & pedestrian) improvements are needed long-term to meet community needs. The study will draw upon the recently updated *Downtown Suwanee Master Plan*, which anticipated future development along Buford Highway and identified the need to connect historic Old Town Suwanee with Town Center. The City's desire to strengthen linkages between these two centers of the community to other destinations such as George Pierce Park and the Suwanee Greenway is an ongoing effort. The study will closely examine existing and future travel patterns, traffic demands and anticipated development to determine how to best balance competing interests. Community meetings to receive input from the public will be held in February and March, 2010.

Study Tasks and Schedule

The Study is anticipated to be completed by April 2010. Major tasks include the following:

- Collect traffic counts in and around the study area
- Conduct public and stakeholder outreach
- Conduct a traffic impact and circulation analysis
- Identify transportation strategies, projects, and programs
- Develop an implementation plan

STUDY AREA MAP

Mark your calendar

Community Meeting
Thursday, February 25, 2010
Suwanee Crossroads Center

Community Open House
Thursday, March 18, 2010
Suwanee City Hall

The heart of Old Town Suwanee

For More Project Information:

Matthew Dickison, AICP
Planning Division Director
City of Suwanee
770-904-3371
mdickison@suwanee.com

www.Suwanee.com

Pedestrians Crossing Buford Highway to Town Center Suwanee

Buford Highway Transportation Study

Community Meeting

Buford Highway: Improving Community Mobility

February 25, 2010

Agenda

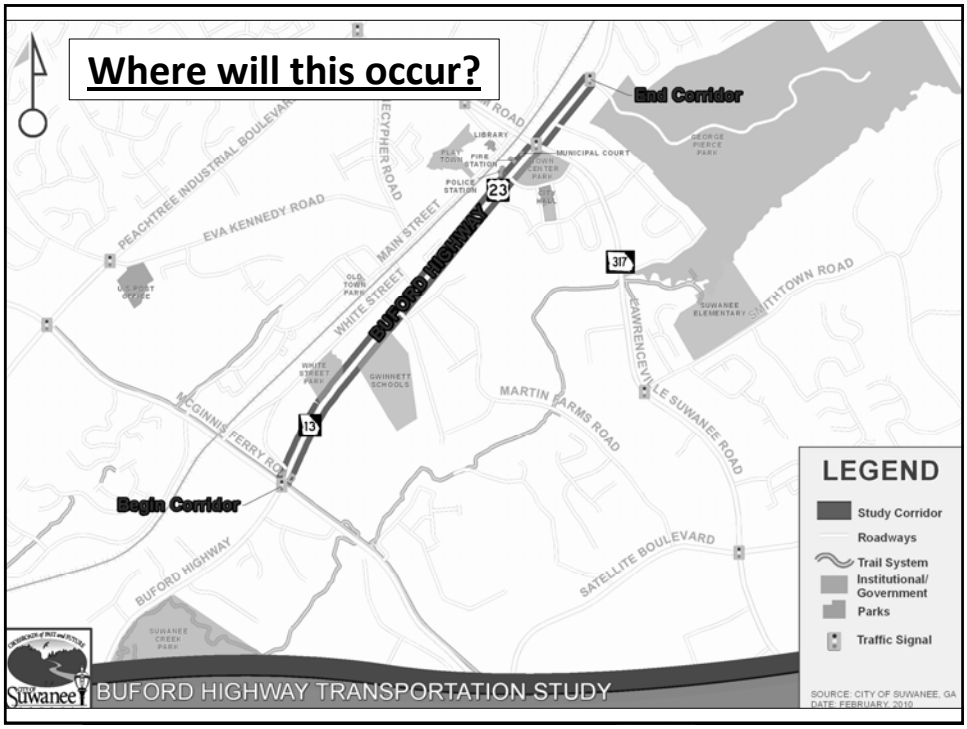
- Welcome and Introductions
- Study Overview
  - Process
  - Findings
  - Proposed Recommendations
- Community Feedback
- Next Steps

Tonight's Objectives

- Introduce the Buford Highway Transportation Study purpose and process
- Review findings and planning efforts
- Receive **YOUR** feedback on Buford Highway proposed projects

Why is this important?

- Achieve improved multimodal access, connectivity and safety along Buford Highway
- Complement *Downtown Suwanee Master Plan* recommendations
- Provide context-sensitive design to accommodate multimodal travel
- Integrate community values and goals



Who is involved?

- The Suwanee Community
- City of Suwanee
- Suwanee Downtown Development Authority
- Georgia Department of Transportation (GDOT)
- Atlanta Regional Commission (ARC)
- Gwinnett County
- Consultant Team

What is the process?

- Data Collection and Traffic Impact & Circulation Analysis
- Identification of Strategies
- Community Feedback & Guidance
- Implementation Plan

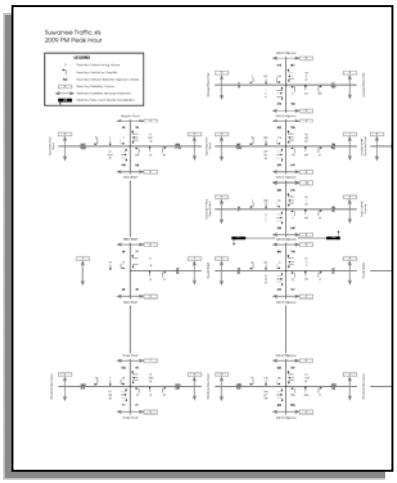
} **Improved Mobility and Design for all modes of travel on Buford Highway**

How long is the process?

September 2009	October 2009	November 2009	December 2009
Project Initiation & Data Collection	Traffic Impact & Circulation Analysis; Stakeholder Interviews	Identification of Transportation Strategies, Projects & Programs →	
January 2010	**February 2010**	**March 2010**	**April 2010**
→	Community Meeting Buford Highway: Improving Community Mobility	City Open House Recommendations for Buford Highway	City Council Work Session & Adoption

What Has Been Accomplished?

- Stakeholder Interviews
- Traffic Impact & Circulation Analysis
- Alternatives Identification
- Development of proposed recommendations and future design of Buford Highway



Study Context

Study builds upon the *Downtown Suwanee Master Plan* which defines future desired development patterns along Buford Highway

Development District	Desired Characteristics
Town Center	• Civic center • Low- to mid-rise commercial and office development • Buildings front street • Pedestrian-oriented streetscape
Historic Old Town Village	• Suwanee gateway • Low- to mid-rise Commercial and office development • Buildings front street • Pedestrian-oriented streetscape with outdoor patios
Suwanee Farm Village	• White Street Park and Community Garden • Mid-rise residential • Tree canopy preservation • Pedestrian-oriented streetscape with landscape buffers

Community Input

- *Change role of Buford Highway from a regional through-street to a local main street*
- *Support development patterns that create a place to live, shop, and work*
- *Improve connection between Old Town and Town Center*
- *Improve safety, particularly for alternative modes*
- *Preserve corridor assets*

Traffic Analysis

Purpose & Tasks

- Collect traffic data to identify existing and future mobility needs
- Develop future traffic growth estimates
- Understand travel patterns
- Estimate projected traffic impacts of *Downtown Suwanee Master Plan*

Major Findings

- Currently, Buford Highway operates fairly well except for a few pinch points
- Future traffic growth will result in poor conditions at most intersections
- Majority of trips are local, directed within Suwanee or Gwinnett County (less than 2 percent regional)

Proposed Alternatives

Strategies

- Petition for reduced speed limit
- Work with GDOT to implement a context sensitive road design
- Move state and federal route designations (SR 13/US 23) to another route

Short-term Operations and Safety Projects

- Discuss possible relocation of cross-walk at HAWK signal to island with GDOT
- Address safety concerns at Suwanee-Dam Road and Main Street/ Brogdon Road

Proposed Alternatives

Long-term Operations and Safety Projects

- Add turning lanes to Buford Highway at McGinnis Ferry Road
- Provide traffic signal control at:
  - Lawrenceville-Suwanee Road and Suwanee Avenue
  - Satellite Boulevard and Martin Farm Road
  - Buford Highway and Russell Street (could consider roundabout treatment)
- Provide access to George Pierce Park from Lawrenceville-Suwanee Road at Suwanee Avenue or Mohawk Trail

Proposed Alternatives

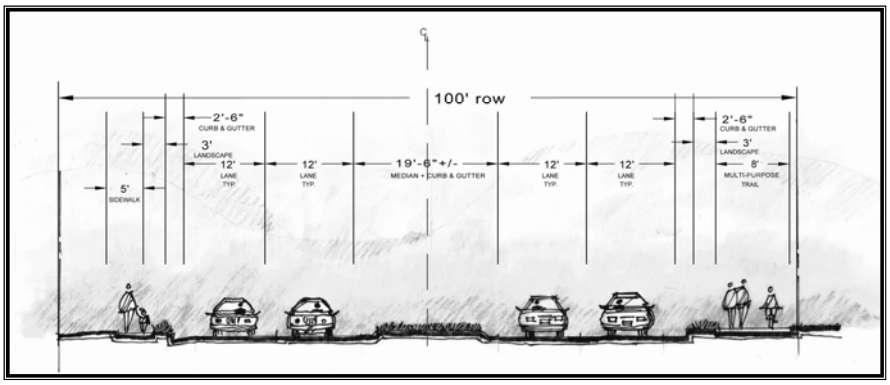
<u>Future Design Alternatives</u>

- ⇨ Redesign Buford Highway primarily for regional vehicular mobility

OR

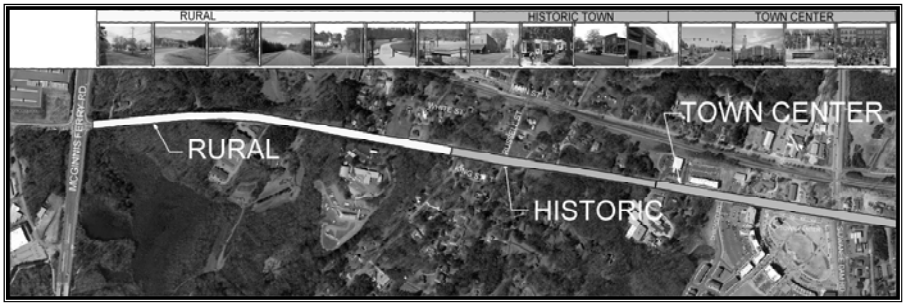
- ⇨ Redesign Buford Highway to complement existing and future land use, respect community character, and improve multimodal mobility

Option A: Conventional 4-Lane



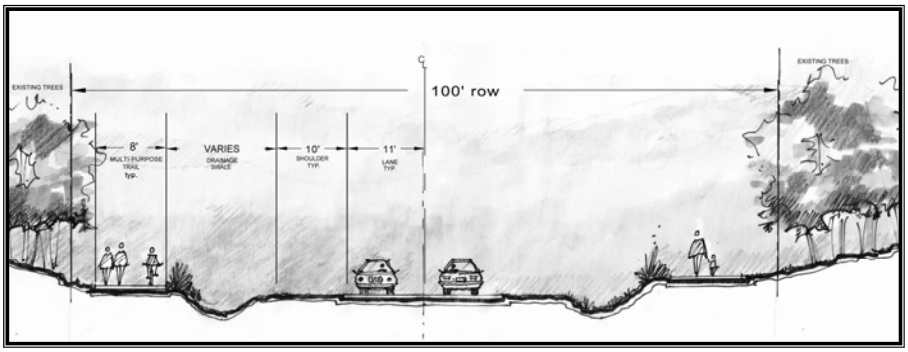
- Focuses on providing vehicular mobility
- Meets design criteria for state-owned arterial

Option B (Preferred): The Transect



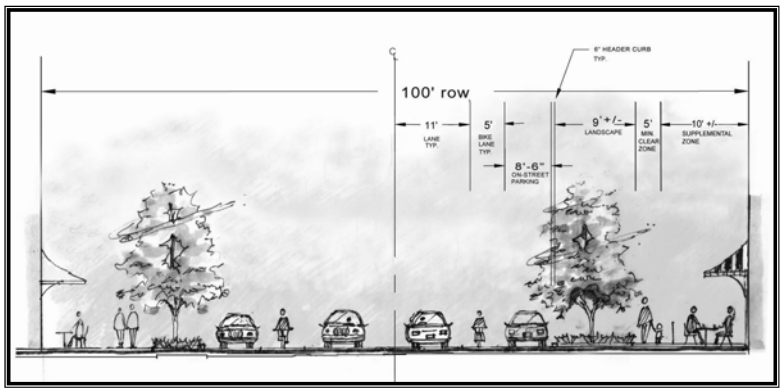
- Transitions from Suwanee Farm Village to Historic Old Town to Town Center
- Streetscape respects characteristics of each area

Rural Transect



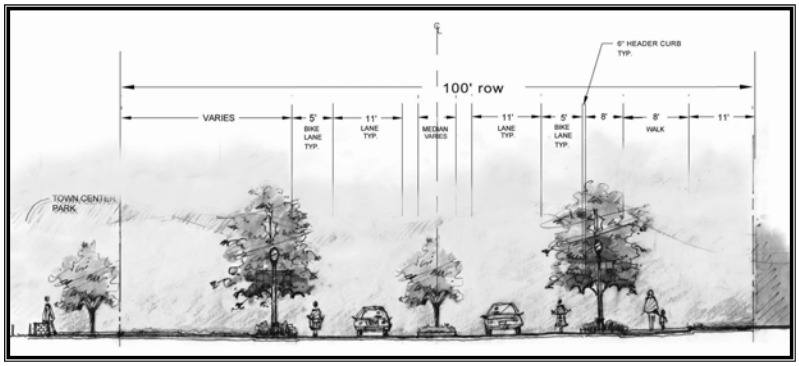
- Transitions from existing tree canopy with natural, landscaped buffer
- Includes broad multi-purpose path

Historic Transect



- Supports development node at Old Town
- Includes broad sidewalks, bicycle lanes, and street trees

Town Center Transect



- Complements Town Center Park and civic center
- Provides landscaped median which serves as gateway feature

Where do we go from here?

- Provide **YOUR** feedback on recommendations and design for Buford Highway regarding:
  - Future design alternative that relates to adjacent land use transects
  - Strategies
  - Short and Long-Term Projects
  - What did we miss?

Next Steps

- Analyze community feedback and refine recommendations and design
- Develop the Final Draft Report
- Open House:

Recommendations for Buford Highway

Date: Thursday, March 18, 2010

Time: 6:30 pm

Location: Suwanee City Hall

Buford Highway Transportation Study

For More Information:
Matthew Dickison, AICP
City of Suwanee, Planning Department,
City Hall, 330 Town Center Avenue, Suwanee, Georgia 30024
Phone: 770-945-6583
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www.suwanee.com

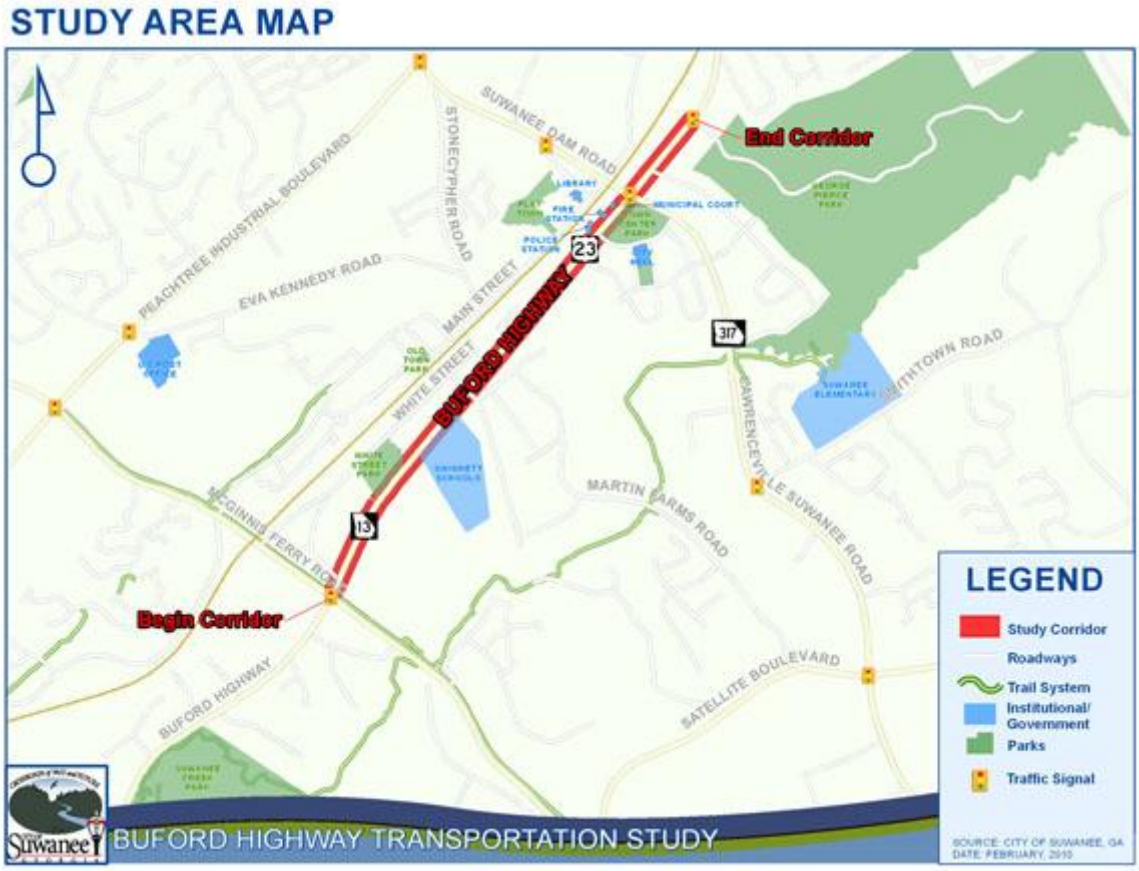
Buford Highway Transportation Study

1. Introduction and Purpose

The City of Suwanee is conducting a detailed planning and traffic engineering study for Buford Highway (US 23/SR 13) from McGinnis Ferry Road north to George Pierce Park (as illustrated on the Study Area map). The purpose of the study is to identify what types of multi-modal improvements are needed long-term to meet community and mobility needs. The study builds upon the recently updated Downtown Suwanee Master Plan, which identified development nodes and context-sensitive design solutions along Buford Highway.

We need your feedback with regards to the proposed recommendations and design for Buford Highway. Please complete this survey. Your feedback is critical for determining the best mobility and design recommendations for the future of Buford Highway and the City of Suwanee

Buford Highway Study Area Map



Buford Highway Transportation Study

2. Provide Feedback on the Buford Highway Preferred Design Alternative

As a local road, Buford Highway can be more flexible with regards to building setbacks, driveway access, turn lanes, medians, and overall design considerations. The preferred design alternative for Buford Highway is based on a transect, whereby the design of the corridor transitions from rural to historic to town center (as shown in the Buford Highway Road Transect diagram).

The following questions are based on the unique design characteristics proposed for Buford Highway as it passes through each of these three distinct transects (rural to historic to town center).

1. What do you like most and least about the Preferred Design Alternative for Buford Highway?

Most

Least

2. Do you feel the Preferred Design Alternative adequately meets the following study goals?

	Yes	No	Don't Know
Provides Vehicular Safety	◯	◯	◯
Provides Pedestrian Safety	◯	◯	◯
Provides Bicyclist/ Non-Motorized Safety	◯	◯	◯
Is Aesthetically/ Visually Pleasing	◯	◯	◯
Retains Unique Character of the City of Suwanee	◯	◯	◯
Meets the Needs of the Community	◯	◯	◯

3. Are the locations/ lengths proposed for each of the transects (i.e. rural, historic and town center) correct? Are the locations where the corridor transects change appropriate?

	Yes	No	Don't Know
The Rural Location/ Length is Appropriate	◯	◯	◯
The Historic Location/ Length is Appropriate	◯	◯	◯
The Town Center Location/ Length is Appropriate	◯	◯	◯

If any location above is NOT appropriate or should be revised, please specify how:

4. What do you like most and least about the Proposed Rural Transect Cross-Section for Buford Highway?

Most

Least

5. What do you like most and least about the Proposed Historic Transect Cross-Section for Buford Highway?

Most

Least

6. What do you like most and least about the Proposed Town Center Transect Cross-Section for Buford Highway?

Most

Least

7. Is anything missing in the proposed cross-sections? What else should be considered? Please be specific

8. Please provide feedback on the short- and long-term operations and safety projects that were presented tonight:

3. Provide Feedback about Yourself

9. In what instances do you use Buford Highway (check all that apply) for transportation purposes?

- ☐ Primarily For Commuting from my residence to my Work/ School by a motorized vehicle
- ☐ Primarily For Commuting from my residence to my Work/ School on Foot or by Bicycle
- ☐ Primarily For Access to my Residence by a motorized vehicle (i.e. my home is near Buford Highway)
- ☐ Primarily For Access to my Residence on Foot or by Bicycle (i.e. my home is near Buford Highway)
- ☐ Occasional Motorized Trips
- ☐ Occasional Trips on foot or by bicycle
- ☐ I rarely use Buford Highway for motorized trips
- ☐ I rarely use Buford Highway for trips on foot or by bicycle

10. How would you describe yourself (check all that apply)?

- ☐ Homeowner in the City of Suwanee
- ☐ Property owner in the City of Suwanee
- ☐ Renter in the City of Suwanee
- ☐ Business owner in the City of Suwanee
- ☐ Work in the City of Suwanee
- ☐ None of the above

11. How long have you lived in Suwanee?

- ○ Less than 1 year
- ○ 1 to 2 years
- ○ 3 to 5 years
- ○ 6 to 10 years
- ○ 11+ years
- ○ I do not live in Suwanee

12. In what neighborhood (subdivision/ street) do you live? (Please list City in which you reside if not in Suwanee)

13. Please indicate your age, as based on range below.

- ◯ Under 18
- ◯ 18-24
- ◯ 25-34
- ◯ 35-44
- ◯ 45-54
- ◯ 55-64
- ◯ 65 and over
- ◯ No response

14. Which of the following best describes your household?

- ◯ Couple, no children
- ◯ Couple with one or more children living at home
- ◯ Single, no children
- ◯ Single with one or more children living at home
- ◯ Empty nester (couple or single- children no longer at home)
- ◯ Other (please specify)

15. Please indicate your race below. (optional)

- ◯ African-American
- ◯ Caucasian/White
- ◯ Asian/Pacific Islander
- ◯ Native American
- ◯ Hispanic or Latino
- ◯ Other

16. Do you have any comments or questions about the Buford Highway Transportation Study?

17. How did you find out about tonight's meeting?

- City of Suwanee Website
- Flyer
- Email Announcement
- Newspaper
- Social Media (Facebook, Twitter)

Other (please specify)

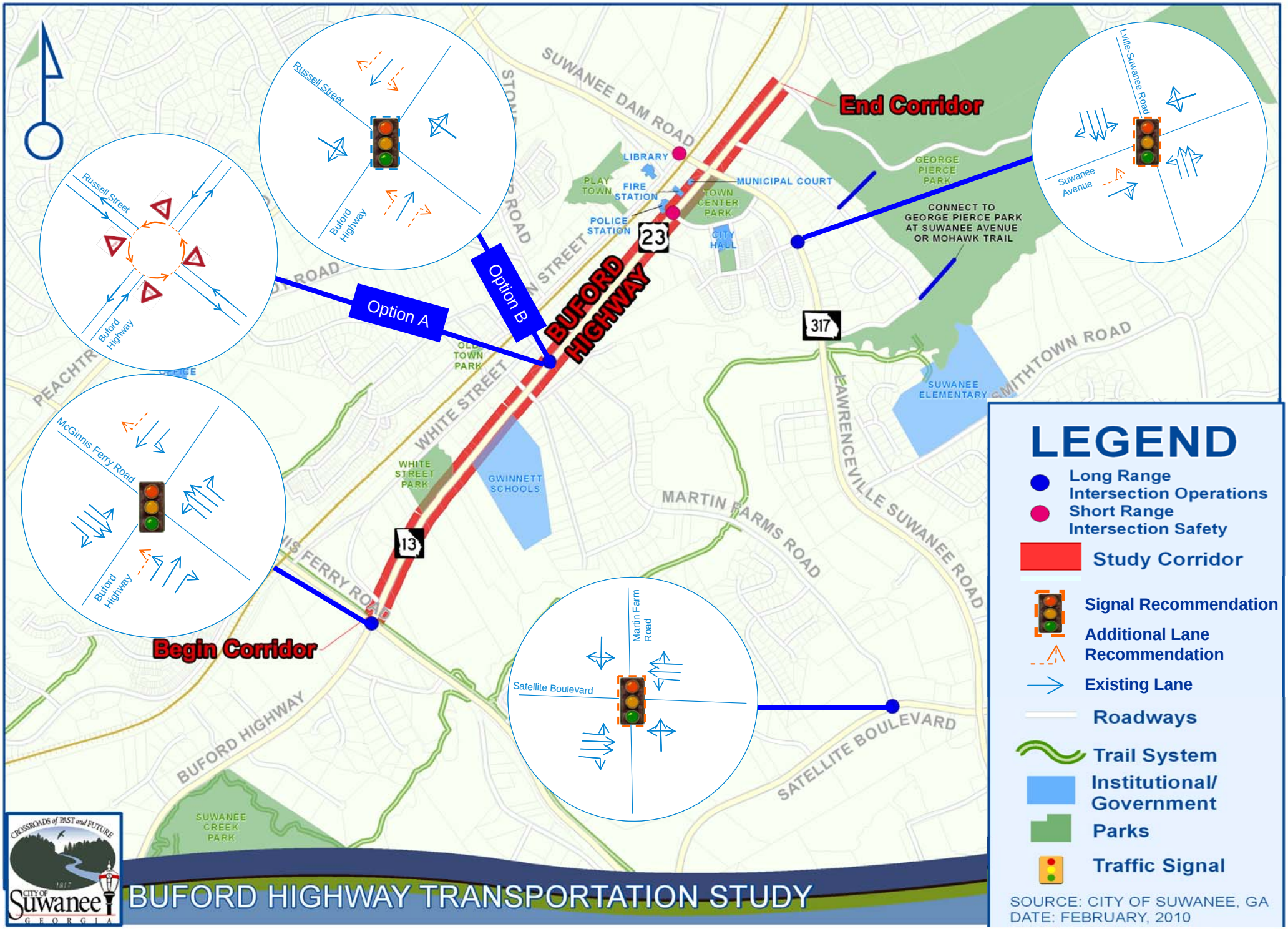
18. Is this meeting time and location convenient for you?

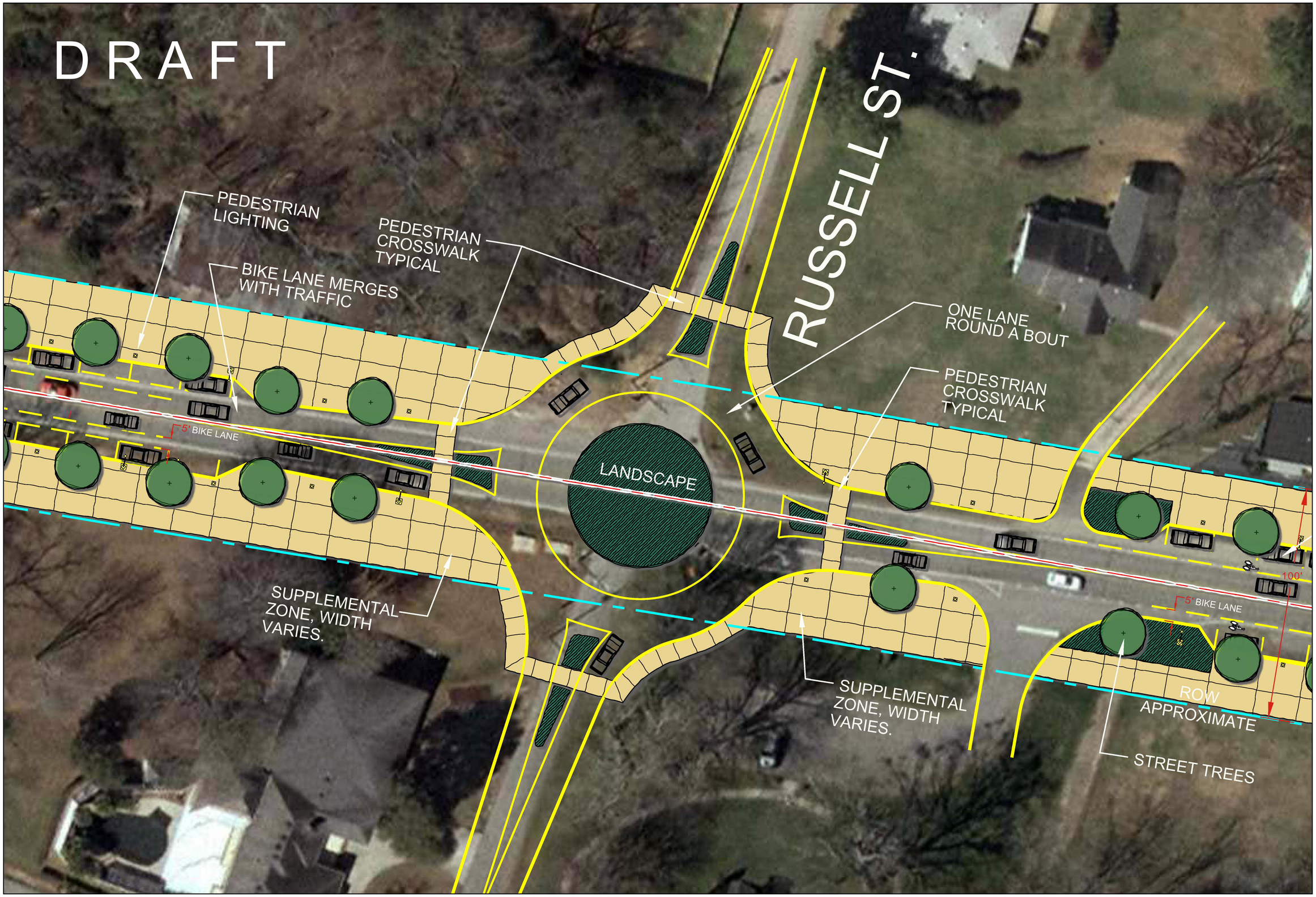
- Yes
- No

If No (please specify)

DRAFT

BUFORD HIGHWAY PROJECT RECOMMENDATIONS





CROSSROADS of PAST and FUTURE
1817
CITY OF Suwanee
GEORGIA

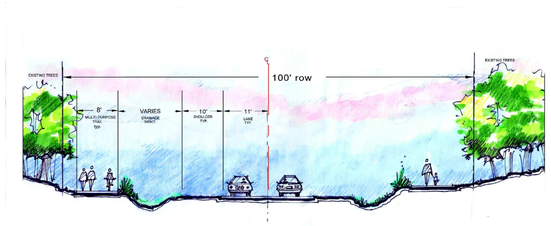
ROUND A BOUT - CONCEPT

BUFORD HWY. STUDY

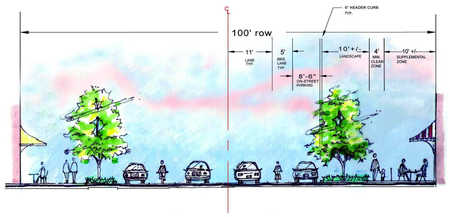
0' 10' 20' 40'

URS

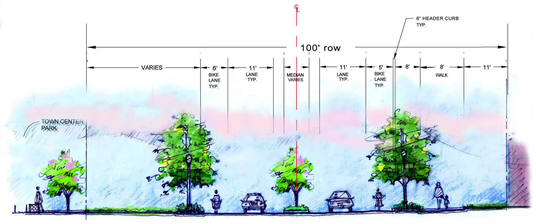
DRAFT



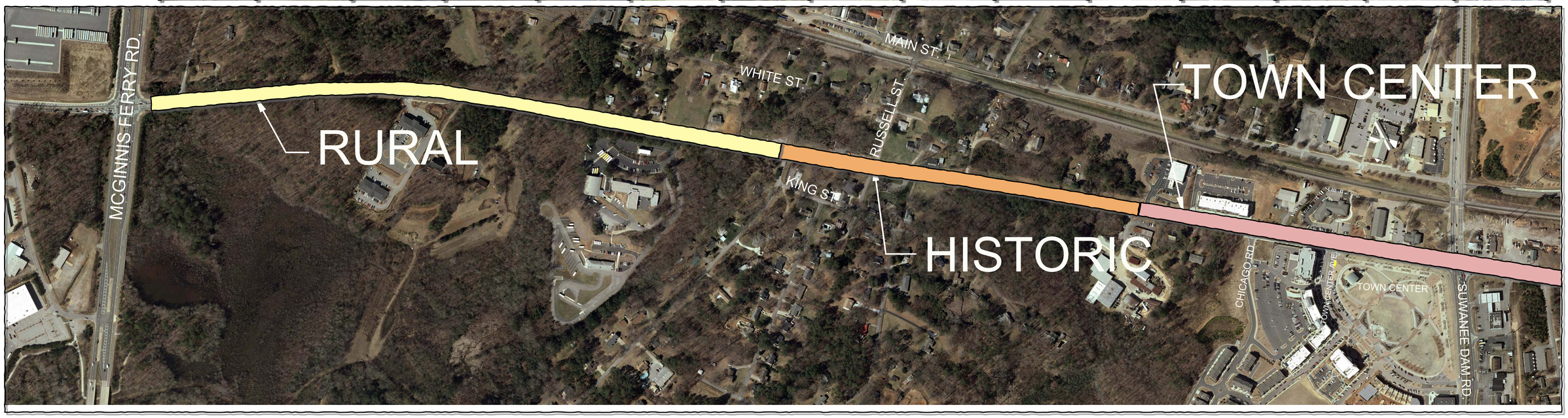
CROSS SECTION - RURAL



CROSS SECTION - HISTORIC TOWN



CROSS SECTION - TOWN CENTER



CROSSROADS of PAST and FUTURE
1817
CITY OF Suwanee GEORGIA

TRANSECT - ROAD CHARACTER

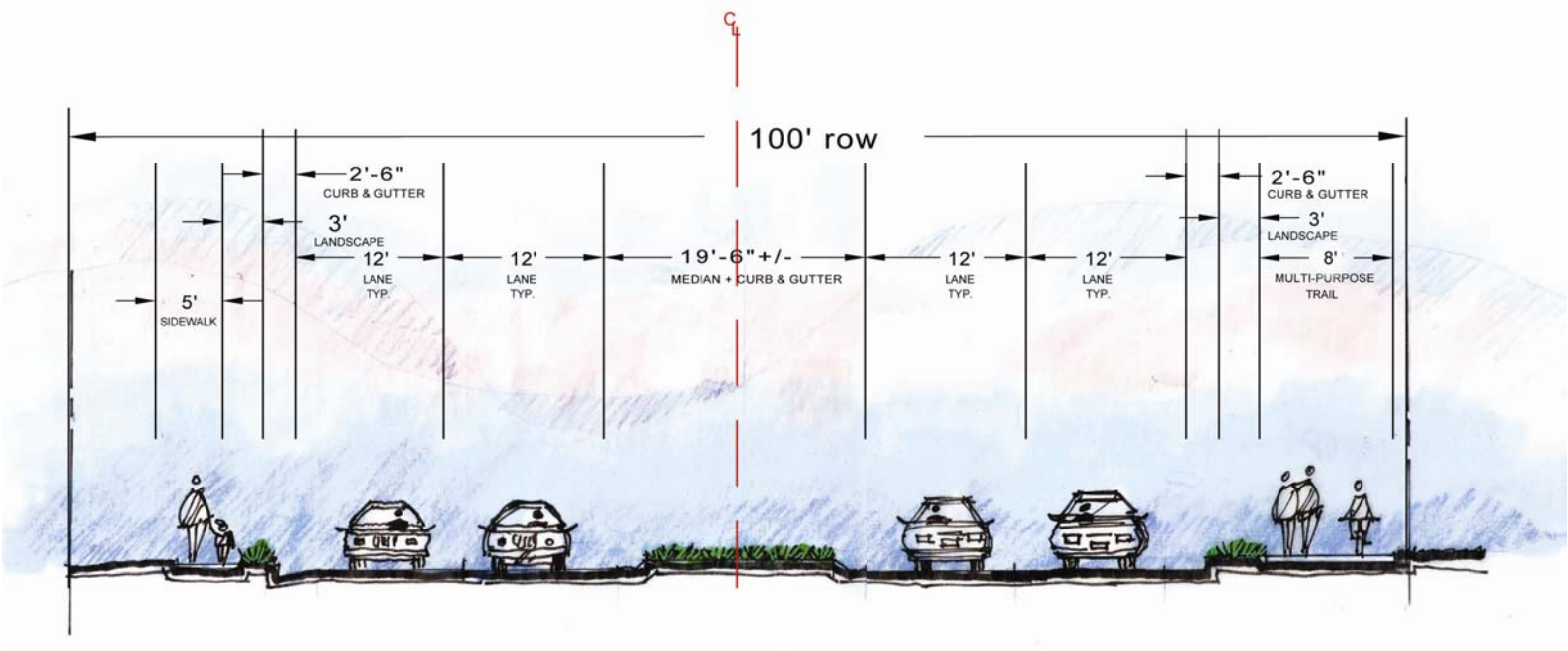
BUFORD HWY. STUDY

0' 100' 200' 400'

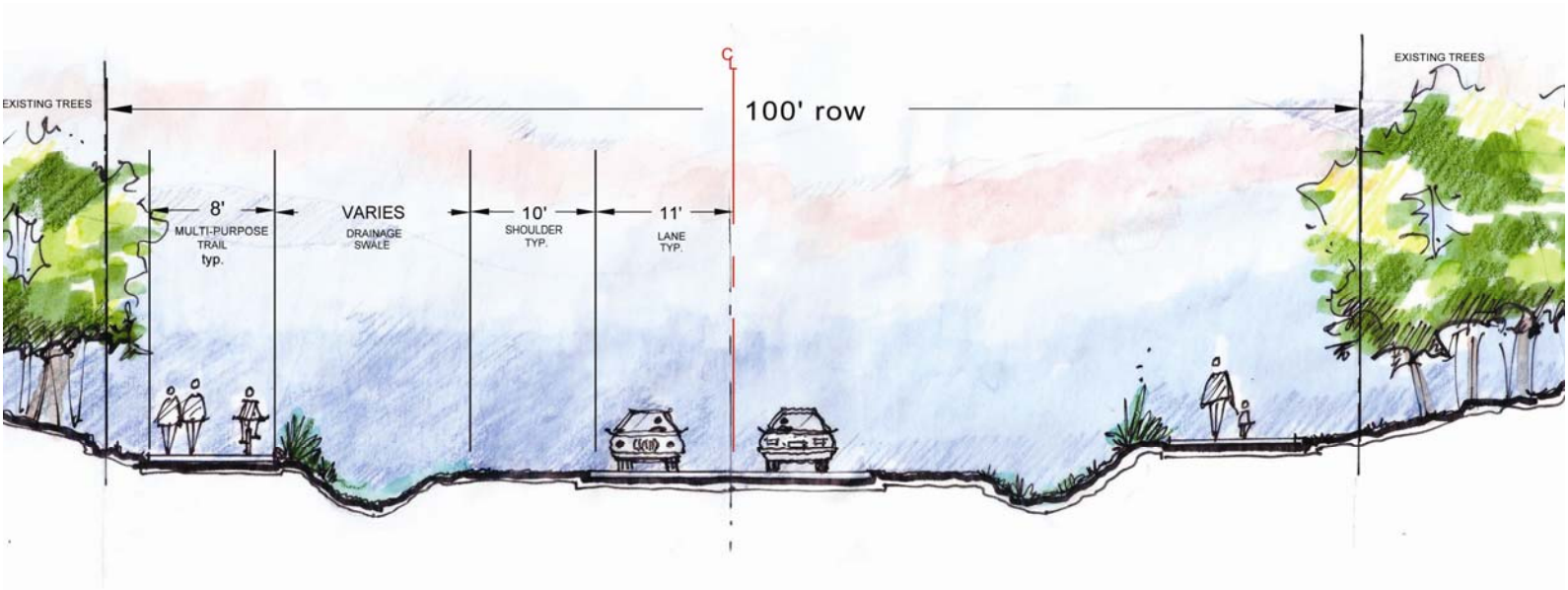
URS

Future Design Alternatives (Draft)

Option A:
Conventional Four-Lane Cross Section

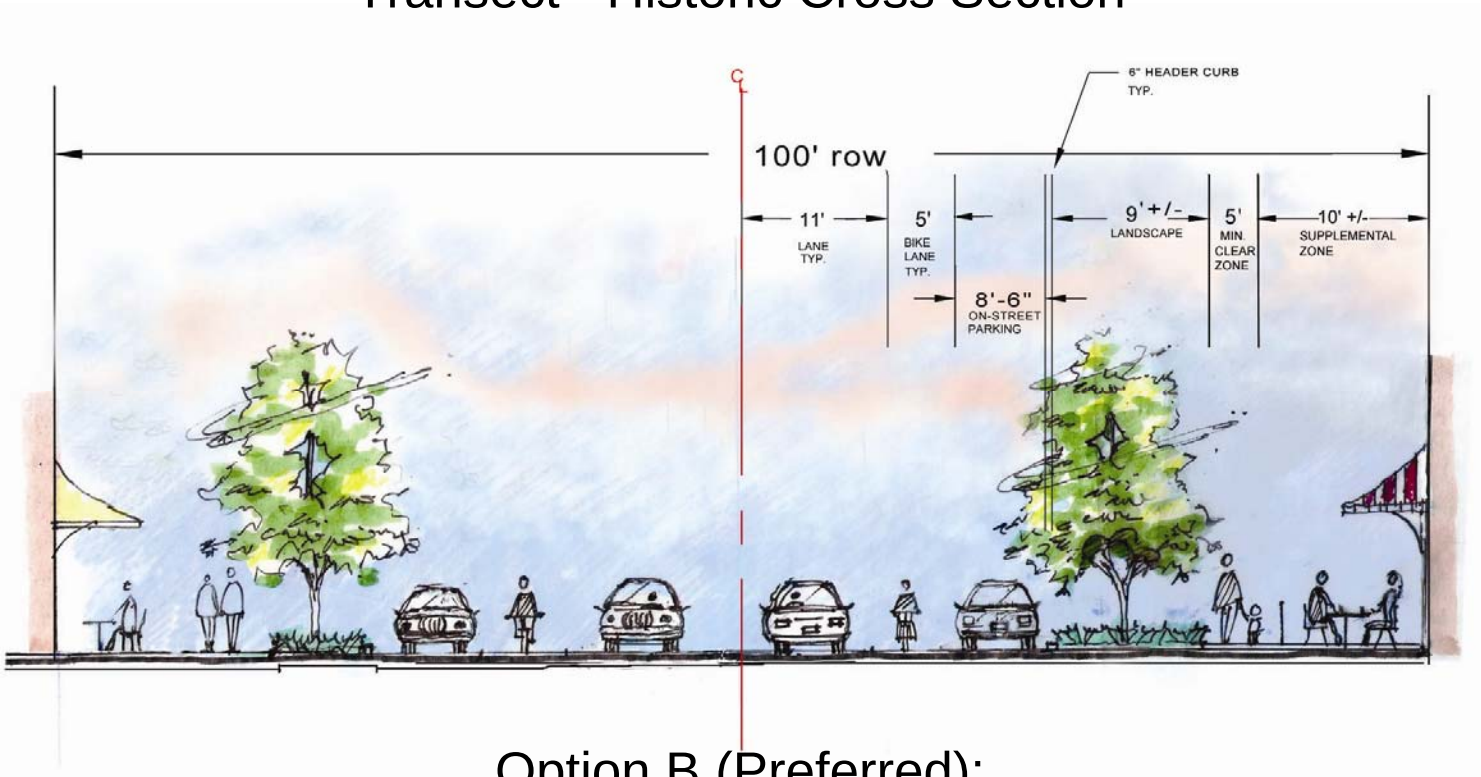


Option B (Preferred):
Transect - Rural Cross Section

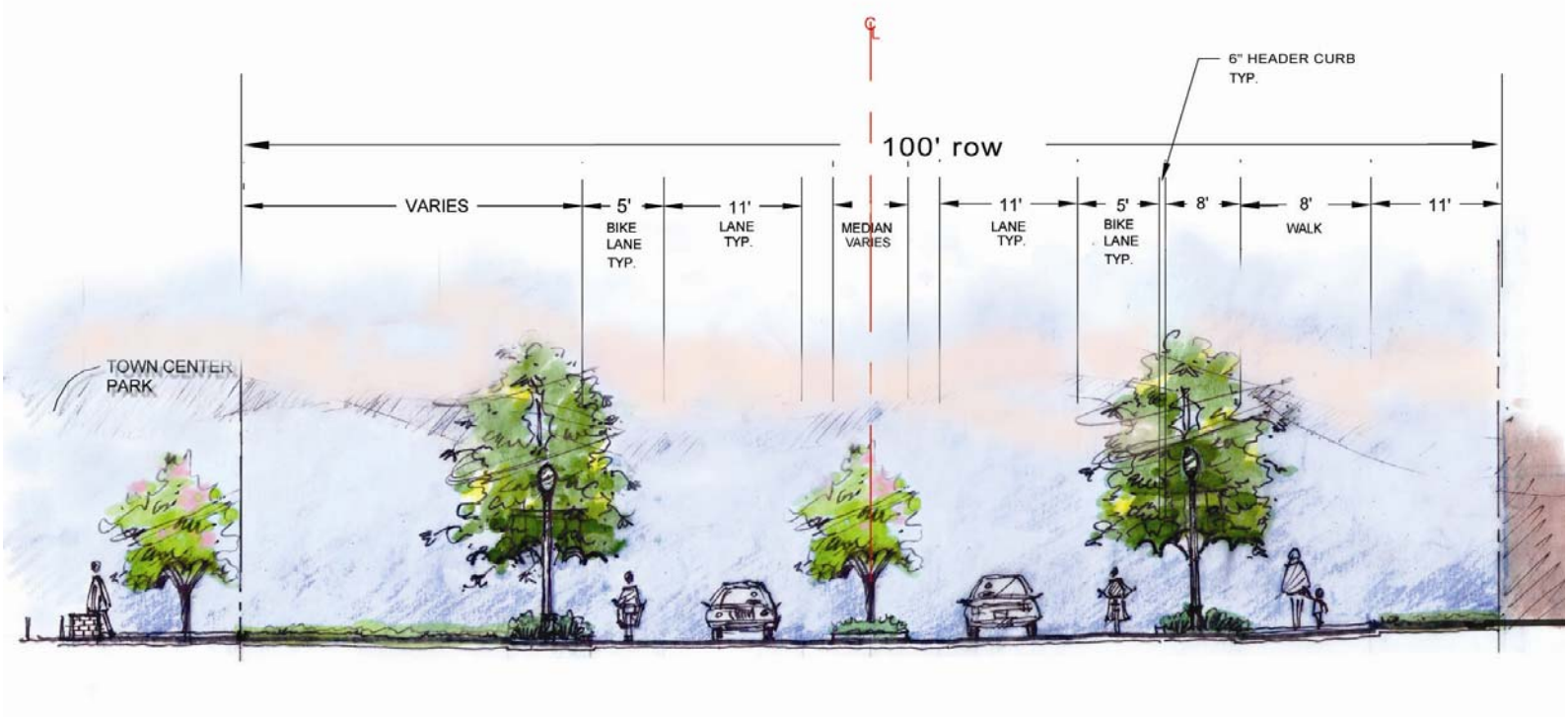


Future Design Alternatives (Draft)

Option B (Preferred):
Transect - Historic Cross Section

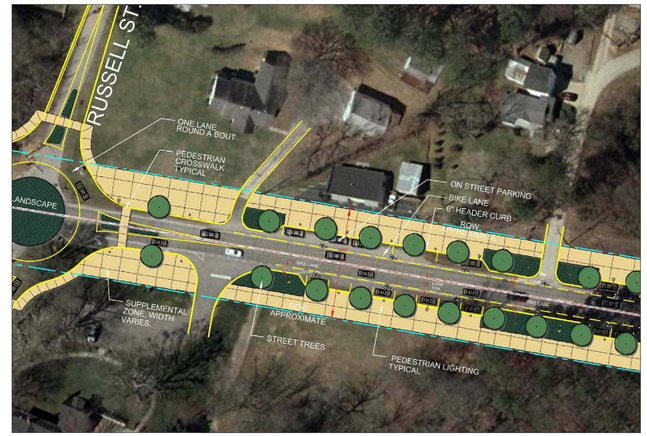


Option B (Preferred):
Transect - Town Center Cross Section

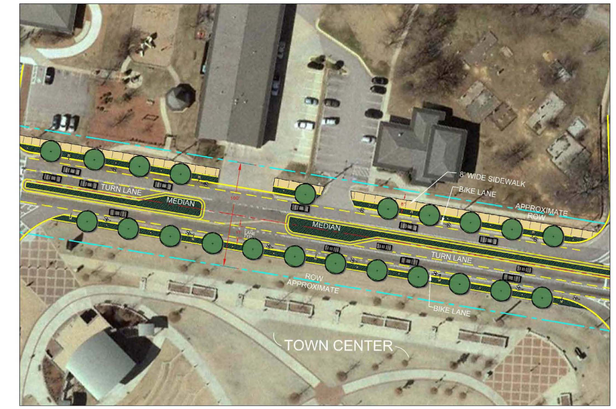


DRAFT

RURAL TRANSECT - CONCEPT



HISTORIC TRANSECT - CONCEPT



TOWN CENTER TRANSECT - CONCEPT

TRANSECT - ROAD CHARACTER

BUFORD HWY. STUDY

0' 100' 200' 400'

URS

Buford Highway Transportation Study

Community Meeting Sign-In Sheet - February 25, 2010

NAME	ADDRESS	PHONE NUMBER	E-MAIL
CHRIS RAGON	LAWRENCEVILLE		
DON RAGON	DON RAGON	770-271-7350	
Linda Cochran	893 Buford Hwy.		
CRAIG COMPTON	Ruby FOREST HOA	770-313-7464	CRAIGRF2008@GMAIL.COM
Hilda Roberts	Old Town Suwanee	770-367-1036	hgroberts@yahoo.com
Artis Britt	3884 Davis St	7-945-9620	artisbritt@Bellsouth.net
Fred Williams	67 Lake Drive Winder	770-868-1197	
Robert Edwards	691 Buford Hwy	770-945-7297	
Rohlli Isaac			
Beth Hilscher	535 Ruby Forest Pkwy	6/4825211	hilscherlaw@bellsouth.net
Rob Rohloff	3783 Memphis Drive	6/296-1437	robert.rohloff@gmail.com

Buford Highway Transportation Study

Community Meeting Sign-In Sheet - February 25, 2010

NAME	ADDRESS	PHONE NUMBER	E-MAIL
DAN FOSTER	914 BISCAYNE Way 30024	770-614-5750	dfoster@suwanee.com
Margaret Fitzgerald	3175 Suwanee Creek Rd	770 3638274	suwaneeat@aol.com
Lynne DeWilde	330 Town Center Ave	770-945-8996	ldewilde@suwanee.com
Kevin McomBER	"	"	Kmcomber@suwanee.com
Dick Goodman	415 Pringle Drive	678-714-6514	dick@suwanee.com
Brian McDonald	3949 Russell St	678-541-0171	bouncefish@gmail.com
Larry Pettiford	4374 Grave Field Ct	678-464-3657	LarryhP@bellsouth.net
Jim Wales	1605 Buford Hwy / Corner Buford Hwy / McGinnis	678-525-2750	jim@homeofGeorgia.com

Buford Highway Transportation Study

Community Meeting Sign-In Sheet - February 25, 2010

NAME	ADDRESS	PHONE NUMBER	E-MAIL
Brian Fitzgerald Suwanee Animal Hosp	85 Buford Hwy	cell 770-361-0110	HWY211@hotmail.com
Robert Robinson	14 Buford Hwy	770-945-9081	—
Pam Reeves	574 King St.	7)654-1553	pamela@ambiance world wide.com
Tech Karen Kirotz	3743 Davis St	7-271-4097	KKIROTZ@bellsouth.net
Paul Kinney	878 Mill Creek Run	7-945-8315	yKINNEY@bellsouth.net
Miles Williams	721 740 Buford Hwy (Hwy 23)	770-561-3082	willimilo@aol.com
Jon Tuley	~~3304~~ ARC	4)463-3309	jtuley@atlantaregional.com
Richard Gomerich	3738 Hickory Manor Dr	678-546-1930	
Jane Keegan	3215 Northcliff Dr.	770-831-0506	keeganevans@hotmail.com
Semra Staut	3601 Portland Trl Dr	770 9043619	SStaut@hotmail.com

Buford Highway Transportation Study

Community Meeting Sign-In Sheet - February 25, 2010

NAME	ADDRESS	PHONE NUMBER	E-MAIL
Jimmy Burnette	571 Main St Suwanee	770-945-3492	jmbjr13@bellsouth.net

What do you like most and least about the Preferred Design Alternative for Buford Highway?		
	Response Percent	Response Count
Most	**90.5%**	**19**
Least	66.7%	14
	answered question	**21**
	skipped question	**2**

Most		
1		Mar 3, 2010 1:08 AM
2	how it will benefit property owners at the corner of buford hwy and mcginnis ferry	Mar 3, 2010 1:32 AM
3	moderate like plan but will not adequately move traffic	Mar 3, 2010 1:38 AM
4	4 lane aesthetically nice	Mar 3, 2010 1:43 AM
5	slower traffic flow	Mar 3, 2010 1:46 AM
6	very inclusive to alternative travel	Mar 3, 2010 1:50 AM
7	tree cover	Mar 3, 2010 1:54 AM
8	aesthetic	Mar 3, 2010 1:57 AM
9	very aesthetically pleasing	Mar 3, 2010 2:00 AM
10	greenspace, parking in site, ped/ bike access	Mar 3, 2010 2:06 AM
11	the round about, landscaping	Mar 3, 2010 2:10 AM
12	looks	Mar 3, 2010 2:13 AM
13	side walks and bike paths	Mar 3, 2010 2:16 AM
14	the trees	Mar 3, 2010 2:23 AM
15	side walk with trees on side of road	Mar 3, 2010 2:27 AM
16	round about	Mar 3, 2010 2:30 AM
17	pedestrian access/ bike lanes	Mar 3, 2010 2:33 AM
18		Mar 3, 2010 2:38 AM
19	bike and pedestrian paths	Mar 3, 2010 2:42 AM
20	walkable	Mar 3, 2010 2:44 AM
21	much better looking than traditional 4 lane	Mar 3, 2010 2:50 AM

Least		
1	Feet used in my property	Mar 3, 2010 1:08 AM
2		Mar 3, 2010 1:32 AM
3	slow or no traffic flow efficiently	Mar 3, 2010 1:38 AM
4	round about	Mar 3, 2010 1:43 AM
5	congestion	Mar 3, 2010 1:46 AM
6		Mar 3, 2010 1:50 AM
7	not 4 lanes	Mar 3, 2010 1:54 AM

Least		
8	doesn't eliminate and possibly increases traffic	Mar 3, 2010 1:57 AM
9	cuts down on commercial exposure	Mar 3, 2010 2:00 AM
10		Mar 3, 2010 2:06 AM
11		Mar 3, 2010 2:10 AM
12	limited traffic capacity	Mar 3, 2010 2:13 AM
13		Mar 3, 2010 2:16 AM
14	the new design will slow traffic and discourage people from coming down Buford Highway	Mar 3, 2010 2:23 AM
15		Mar 3, 2010 2:27 AM
16	traffic signal	Mar 3, 2010 2:30 AM
17		Mar 3, 2010 2:33 AM
18	traffic flow slowed down considerably	Mar 3, 2010 2:38 AM
19	need more buffer between 2 lanes of traffic; separation	Mar 3, 2010 2:42 AM
20	costly	Mar 3, 2010 2:44 AM
21	reduces traffic flow	Mar 3, 2010 2:50 AM

Buford Highway Transportation Study

Do you feel the Preferred Design Alternative adequately meets the following study goals?				
	Yes	**No**	**Don't Know**	**Response Count**
Provides Vehicular Safety	**60.9% (14)**	21.7% (5)	17.4% (4)	23
Provides Pedestrian Safety	**91.3% (21)**	4.3% (1)	4.3% (1)	23
Provides Bicyclist/ Non-Motorized Safety	**86.4% (19)**	13.6% (3)	0.0% (0)	22
Is Aesthetically/ Visually Pleasing	**100.0% (22)**	0.0% (0)	0.0% (0)	22
Retains Unique Character of the City of Suwanee	**95.2% (20)**	4.8% (1)	0.0% (0)	21
Meets the Needs of the Community	**54.5% (12)**	22.7% (5)	22.7% (5)	22
			answered question	**23**
			skipped question	**0**

Are the locations/ lengths proposed for each of the transects (i.e. rural, historic and town center) correct? Are the locations where the corridor transects change appropriate?				
	Yes	**No**	**Don't Know**	**Response Count**
The Rural Location/ Length is Appropriate	**77.3% (17)**	9.1% (2)	13.6% (3)	22
The Historic Location/ Length is Appropriate	**81.8% (18)**	4.5% (1)	13.6% (3)	22
The Town Center Location/ Length is Appropriate	**77.3% (17)**	4.5% (1)	18.2% (4)	22
If any location above is NOT appropriate or should be revised, please specify how:				2
	answered question			**22**
	skipped question			**1**

If any location above is NOT appropriate or should be revised, please specify how:		
1	Comment at Rural Location: commercial at corner	Mar 3, 2010 1:32 AM
2	too short of distance to subdivide 3 times	Mar 3, 2010 1:38 AM

What do you like most and least about the Proposed Rural Transect Cross-Section for Buford Highway?			
		Response Percent	Response Count
Most		**94.4%**	**17**
Least		61.1%	11
		answered question	**18**
		skipped question	**5**

Most		
1	increased value as commercial?	Mar 3, 2010 1:08 AM
2	needs to provide commercial high density to enhance mixed use for corner	Mar 3, 2010 1:32 AM
3	does keep tree integrity	Mar 3, 2010 1:38 AM
4	turn lanes	Mar 3, 2010 1:43 AM
5	designated areas defined	Mar 3, 2010 1:46 AM
6		Mar 3, 2010 1:54 AM
7	nice transitions	Mar 3, 2010 1:57 AM
8	seems perfect as is	Mar 3, 2010 2:06 AM
9	trees, walkway	Mar 3, 2010 2:10 AM
10	looks	Mar 3, 2010 2:13 AM
11	sidewalks	Mar 3, 2010 2:16 AM
12	the trees	Mar 3, 2010 2:23 AM
13	still 2 lane	Mar 3, 2010 2:27 AM
14	keeping natural feel	Mar 3, 2010 2:30 AM
15	limited to 2 lanes	Mar 3, 2010 2:33 AM
16	nice for pedestrian use	Mar 3, 2010 2:38 AM
17	need light at russell	Mar 3, 2010 2:40 AM
18	elevated walkways	Mar 3, 2010 2:50 AM

Least		
1	how much land use of my property	Mar 3, 2010 1:08 AM
2		Mar 3, 2010 1:32 AM
3	no street parking, no 4 lane to manage traffic	Mar 3, 2010 1:38 AM
4		Mar 3, 2010 1:43 AM
5	restricts development	Mar 3, 2010 1:46 AM
6	not 4 lanes	Mar 3, 2010 1:54 AM
7	none	Mar 3, 2010 1:57 AM
8		Mar 3, 2010 2:06 AM
9		Mar 3, 2010 2:10 AM
10	limited traffic capacity	Mar 3, 2010 2:13 AM

Least		
11	ditches, lack of screening buffer between sidewalk and road	Mar 3, 2010 2:16 AM
12	the 2 lane buford highway and gully on each side	Mar 3, 2010 2:23 AM
13		Mar 3, 2010 2:27 AM
14		Mar 3, 2010 2:30 AM
15	like the trees to be closer (narrower row)	Mar 3, 2010 2:33 AM
16	traffic flow not improved	Mar 3, 2010 2:38 AM
17		Mar 3, 2010 2:40 AM
18	ditches	Mar 3, 2010 2:50 AM

What do you like most and least about the Proposed Historic Transect Cross-Section for Buford Highway?			
		Response Percent	Response Count
Most		**88.2%**	**15**
Least		47.1%	8
	answered question		**17**
	skipped question		**6**

Most		
1	circle roundabout at russell	Mar 3, 2010 1:32 AM
2	street parking	Mar 3, 2010 1:38 AM
3	present state	Mar 3, 2010 1:43 AM
4	improves and defines area	Mar 3, 2010 1:46 AM
5	having buildings close to highway	Mar 3, 2010 1:50 AM
6	tree cover	Mar 3, 2010 1:54 AM
7	access	Mar 3, 2010 1:57 AM
8	good as is	Mar 3, 2010 2:06 AM
9	trees, walking areas, wide areas	Mar 3, 2010 2:10 AM
10	looks	Mar 3, 2010 2:13 AM
11	tree/ landscape buffer	Mar 3, 2010 2:16 AM
12		Mar 3, 2010 2:23 AM
13		Mar 3, 2010 2:27 AM
14	round about design/ providing safety traffic calming	Mar 3, 2010 2:30 AM
15	on street parking	Mar 3, 2010 2:33 AM
16	looks good to pedestrians	Mar 3, 2010 2:38 AM
17	front loaded shops; on street parking with 2 lane round about	Mar 3, 2010 2:50 AM

Least		
1		Mar 3, 2010 1:32 AM
2	still not 4 lanes	Mar 3, 2010 1:38 AM
3		Mar 3, 2010 1:43 AM
4	may impede traffic flow	Mar 3, 2010 1:46 AM
5		Mar 3, 2010 1:50 AM
6	no round about; not 4 lane	Mar 3, 2010 1:54 AM
7	traffic	Mar 3, 2010 1:57 AM
8		Mar 3, 2010 2:06 AM
9		Mar 3, 2010 2:10 AM
10	limited traffic capacity	Mar 3, 2010 2:13 AM
11		Mar 3, 2010 2:16 AM

Least		
12	the parking on the street and 2 lane highway	Mar 3, 2010 2:23 AM
13	no traffic light	Mar 3, 2010 2:27 AM
14		Mar 3, 2010 2:30 AM
15		Mar 3, 2010 2:33 AM
16	traffic flow slowed down	Mar 3, 2010 2:38 AM
17		Mar 3, 2010 2:50 AM

Buford Highway Transportation Study

What do you like most and least about the Proposed Town Center Transect Cross-Section for Buford Highway?			
		Response Percent	Response Count
Most		**92.3%**	**12**
Least		46.2%	6
		answered question	**13**
		skipped question	**10**

Most		
1	tree lined and adequate parking	Mar 3, 2010 1:32 AM
2	street parking	Mar 3, 2010 1:38 AM
3	lighting	Mar 3, 2010 1:43 AM
4	provides traffic safety	Mar 3, 2010 1:46 AM
5	trees and landscaping medians	Mar 3, 2010 1:50 AM
6	access	Mar 3, 2010 1:57 AM
7	good as is	Mar 3, 2010 2:06 AM
8	trees, walking areas, wide areas	Mar 3, 2010 2:10 AM
9	looks	Mar 3, 2010 2:13 AM
10		Mar 3, 2010 2:23 AM
11	connecting and providing alternative travel to McGinnis Ferry	Mar 3, 2010 2:30 AM
12	landscaped median	Mar 3, 2010 2:33 AM
13	street scape	Mar 3, 2010 2:50 AM

Least		
1		Mar 3, 2010 1:32 AM
2	not 4 lane	Mar 3, 2010 1:38 AM
3	trees	Mar 3, 2010 1:43 AM
4	does impede traffic	Mar 3, 2010 1:46 AM
5		Mar 3, 2010 1:50 AM
6	traffic	Mar 3, 2010 1:57 AM
7		Mar 3, 2010 2:06 AM
8		Mar 3, 2010 2:10 AM
9	limited traffic capacity	Mar 3, 2010 2:13 AM
10	the 2 lane highway	Mar 3, 2010 2:23 AM
11		Mar 3, 2010 2:30 AM
12		Mar 3, 2010 2:33 AM
13		Mar 3, 2010 2:50 AM

Is anything missing in the proposed cross-sections? What else should be considered? Please be specific		
		Response Count
		10
	answered question	**10**
	skipped question	**13**

	Response Text	
1	cobblestone streets	Mar 3, 2010 1:32 AM
2	2 lanes cannot handle existing traffic not to mention increased traffic in future	Mar 3, 2010 1:38 AM
3	no opinion yet- too much to think about	Mar 3, 2010 1:46 AM
4	rural cross section possible tunnel at white street park to connect to greenway	Mar 3, 2010 1:50 AM
5	connection to existing sidewalks at McGinnis?	Mar 3, 2010 2:06 AM
6	the fact that traffic already backs up between McGinnis and L. S. If you slow the traffic more- people will find an alternative route and businesses will suffer. Also, if you drop the State hwy designation you lose state funding	Mar 3, 2010 2:23 AM
7	taking Davis street across Buford hwy and across RR to go into Main Street	Mar 3, 2010 2:27 AM
8	looks great	Mar 3, 2010 2:30 AM
9	parking for Suwanee farm garden; deceleration lane for farm	Mar 3, 2010 2:38 AM
10	turn lanes at key locations	Mar 3, 2010 2:50 AM

Buford Highway Transportation Study

Please provide feedback on the short- and long-term operations and safety projects that were presented tonight:		
		Response Count
		8
	answered question	**8**
	skipped question	**15**

	Response Text	
1	traffic lights and round abouts and slower speed limit will further hinder traffic. not in favor of down grading Buford Highway from a state highway, especially funding	Mar 3, 2010 1:38 AM
2	no opinion	Mar 3, 2010 1:46 AM
3	short term operations at Main street and Suwanee Dam road needs to happen sooner than later. HAWK improvements make sense.	Mar 3, 2010 1:50 AM
4	still major concern with traffic	Mar 3, 2010 1:57 AM
5	like the round about for Buford hwy slows traffic down in order to go around and it is aesthetically pleasing to the eye	Mar 3, 2010 2:10 AM
6	need to address traffic volume issue	Mar 3, 2010 2:13 AM
7	i do not believe they are in the best interest of businesses or tax payers. businesses flourish when there is traffic going by- that is why where are more businesses on Peachtree Industrial. Suwanee Center could become a ghost town.	Mar 3, 2010 2:23 AM
8	perhaps include another HAWK system where we consider additional ped traffic	Mar 3, 2010 2:50 AM

In what instances do you use Buford Highway (check all that apply) for transportation purposes?

	Response Percent	Response Count
Primarily For Commuting from my residence to my Work/ School by a motorized vehicle	**69.6%**	**16**
Primarily For Commuting from my residence to my Work/ School on Foot or by Bicycle	4.3%	1
Primarily For Access to my Residence by a motorized vehicle (i.e. my home is near Buford Highway)	65.2%	15
Primarily For Access to my Residence on Foot or by Bicycle (i.e. my home is near Buford Highway)	8.7%	2
Occasional Motorized Trips	39.1%	9
Occasional Trips on foot or by bicycle	13.0%	3
I rarely use Buford Highway for motorized trips	0.0%	0
I rarely use Buford Highway for trips on foot or by bicycle	13.0%	3
	answered question	**23**
	skipped question	**0**

How would you describe yourself (check all that apply)?		Response Percent	Response Count
Homeowner in the City of Suwanee		**82.6%**	**19**
Property owner in the City of Suwanee		65.2%	15
Renter in the City of Suwanee		0.0%	0
Business owner in the City of Suwanee		39.1%	9
Work in the City of Suwanee		43.5%	10
None of the above		4.3%	1
	answered question		**23**
	skipped question		**0**

How long have you lived in Suwanee?

	Response Percent	Response Count
Less than 1 year	0.0%	0
1 to 2 years	0.0%	0
3 to 5 years	14.3%	3
6 to 10 years	14.3%	3
11+ years	**57.1%**	**12**
I do not live in Suwanee	14.3%	3
	answered question	**21**
	skipped question	**2**

In what neighborhood (subdivision/ street) do you live? (Please list City in which you reside if not in Suwanee)		
		Response Count
		21
	answered question	**21**
	skipped question	**2**

	Response Text	
1	buford hwy	Mar 3, 2010 1:09 AM
2	white lane property area	Mar 3, 2010 1:34 AM
3	on buford hwy	Mar 3, 2010 1:41 AM
4	village grove	Mar 3, 2010 1:44 AM
5	main street	Mar 3, 2010 1:51 AM
6	suwanee dam- own property at russell	Mar 3, 2010 1:55 AM
7	ruby forest	Mar 3, 2010 1:58 AM
8	3175 Suwanee Creek Road	Mar 3, 2010 2:04 AM
9	downtown/ historic suwanee	Mar 3, 2010 2:07 AM
10	Sugar Hill	Mar 3, 2010 2:11 AM
11	morningview	Mar 3, 2010 2:14 AM
12	stonecypher/ pringle	Mar 3, 2010 2:17 AM
13	suwanee creek road	Mar 3, 2010 2:24 AM
14	davis street	Mar 3, 2010 2:28 AM
15	historic old town; king street business russell and buford highway	Mar 3, 2010 2:31 AM
16	Shadowbrook	Mar 3, 2010 2:34 AM
17	davis street	Mar 3, 2010 2:41 AM
18	Shadowbrook at Town Center/ Portland Trail Dr	Mar 3, 2010 2:43 AM
19	ruby forest	Mar 3, 2010 2:45 AM
20	buford highway	Mar 3, 2010 2:47 AM
21	forest plantation	Mar 3, 2010 2:51 AM

Please indicate your age, as based on range below.

	Response Percent	Response Count
Under 18	0.0%	0
18-24	0.0%	0
25-34	0.0%	0
35-44	17.4%	4
45-54	**34.8%**	**8**
55-64	26.1%	6
65 and over	21.7%	5
No response	0.0%	0
	answered question	**23**
	skipped question	**0**

Which of the following best describes your household?

	Response Percent	Response Count
Couple, no children	**40.9%**	**9**
Couple with one or more children living at home	22.7%	5
Single, no children	9.1%	2
Single with one or more children living at home	0.0%	0
Empty nester (couple or single-children no longer at home)	27.3%	6
Other (please specify)	0.0%	0
	answered question	**22**
	skipped question	**1**

Please indicate your race below. (optional)			
		Response Percent	Response Count
African-American		5.0%	1
Caucasian/White		**95.0%**	**19**
Asian/Pacific Islander		0.0%	0
Native American		0.0%	0
Hispanic or Latino		0.0%	0
Other		0.0%	0
	answered question		**20**
	skipped question		**3**

Buford Highway Transportation Study

Do you have any comments or questions about the Buford Highway Transportation Study?		
		Response Count
		14
	answered question	**14**
	skipped question	**9**

	Response Text	
1	how does this effect property value in the future?	Mar 3, 2010 1:09 AM
2	bridge McGinnis ferry to historic; representing a property owner	Mar 3, 2010 1:34 AM
3	On question #2- retains the 'new' character of the City, not the 'old'	Mar 3, 2010 1:41 AM
4	great job	Mar 3, 2010 1:51 AM
5	should be 4 lanes	Mar 3, 2010 1:55 AM
6	traffic is primary concern	Mar 3, 2010 1:58 AM
7	possible safety issue if recommending a new entrance to G Pierce Park on Buford highway; speed needs to drop here to approx 35 MPH or cut down Buford Hwy at 150' north of G Pierce park; actual engineering shows a safety problem; Brian Fitzgerald 770-361-0110; I have letters to prove it.	Mar 3, 2010 2:04 AM
8	I do not live in suwanee presently however raised from baby; lived here approx 30 years and worked for the City	Mar 3, 2010 2:11 AM
9	address traffic volume issue	Mar 3, 2010 2:14 AM
10	love it	Mar 3, 2010 2:17 AM
11	i believe the traditional road would be safer and less expensive and the residents will benefit more from this	Mar 3, 2010 2:24 AM
12	nice work; needs better titles on posters	Mar 3, 2010 2:28 AM
13	just do it!	Mar 3, 2010 2:31 AM
14	provide parking for suwanee farm center garden	Mar 3, 2010 2:39 AM

Buford Highway Transportation Study

How did you find out about tonight's meeting?		Response Percent	Response Count
City of Suwanee Website		23.5%	4
Flyer		23.5%	4
Email Announcement		**41.2%**	**7**
Newspaper		5.9%	1
Social Media (Facebook, Twitter)		5.9%	1
	Other (please specify)		9
	answered question		**17**
	skipped question		**6**

Other (please specify)		
1	mailed letter	Mar 3, 2010 1:41 AM
2	letter	Mar 3, 2010 1:47 AM
3	direct mailing	Mar 3, 2010 2:04 AM
4	mailing	Mar 3, 2010 2:07 AM
5	sign	Mar 3, 2010 2:14 AM
6	and City of Suwanee Website	Mar 3, 2010 2:31 AM
7	and City of Suwanee Website	Mar 3, 2010 2:34 AM
8	family	Mar 3, 2010 2:39 AM
9	and City of Suwanee Website	Mar 3, 2010 2:51 AM

Is this meeting time and location convenient for you?		Response Percent	Response Count
Yes		**95.5%**	**21**
No		4.5%	1
		If No (please specify)	1
		answered question	**22**
		skipped question	**1**

If No (please specify)		
1	larger parking	Mar 3, 2010 1:34 AM

Buford Highway Transportation Study

Public Meeting Open House
Thursday, March 18, 2010
City of Suwanee Crossroads Center

Meeting Notes

A public meeting open house was conducted Thursday evening, March 18, 2010 at Suwanee City Hall for the Buford Highway Transportation Study. Fourteen persons signed in as attending the meeting. The meeting format was an open house and included two stations where attendees could review plan recommendations on display boards. Participants were asked to complete a short comment form. Three completed comment forms were received.

Many of the meeting attendees either work at a business on Buford Highway or own property along the corridor. A number of informal comments were provided about the recommended Buford Highway design cross sections. Concerns were expressed about the addition of medians in the Town Center section and whether it would affect property access and close existing driveways. Some attendees commented that they did not think the recommended design would adequately handle the growth in traffic demands over time and traffic will have to take alternate routes. Others cited a reduced speed limit as a concern in that it would reduce traffic volumes on Buford Highway. Some attendees indicated that they were concerned about being able to safely enter and exit their property located on Buford Highway. Some attendees favored the concept in that it would not likely need additional right of way beyond what is existing. Several attendees indicated general support for the Transect concept for Buford Highway. One attendee wanted to explore the possibility of making Suwanee Dam Road pass under the Norfolk Southern rail line.

Regarding other project recommendations, a number of attendees supported the roundabout concept at Buford Highway and Russell Street. This project could serve as a good gateway and keep traffic moving, albeit at a slower speed.

Attached for reference include:

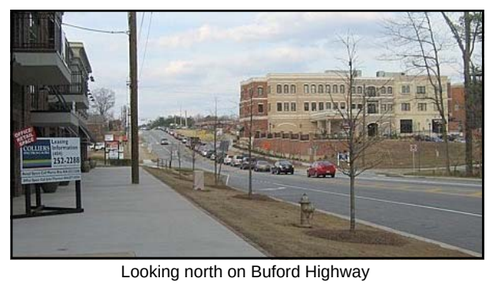
- Executive Summary Handout
- Sign-in Sheets
- Comment Form
- Comment Form Summary

BUFORD HIGHWAY PROJECT RECOMMENDATIONS

Round-about Concept for Russell Street and Buford Highway

For More Project Information:

Matthew Dickison, AICP
Planning Division Director
City of Suwanee
770-904-3371
mdickison@suwanee.com



Looking north on Buford Highway

Introduction

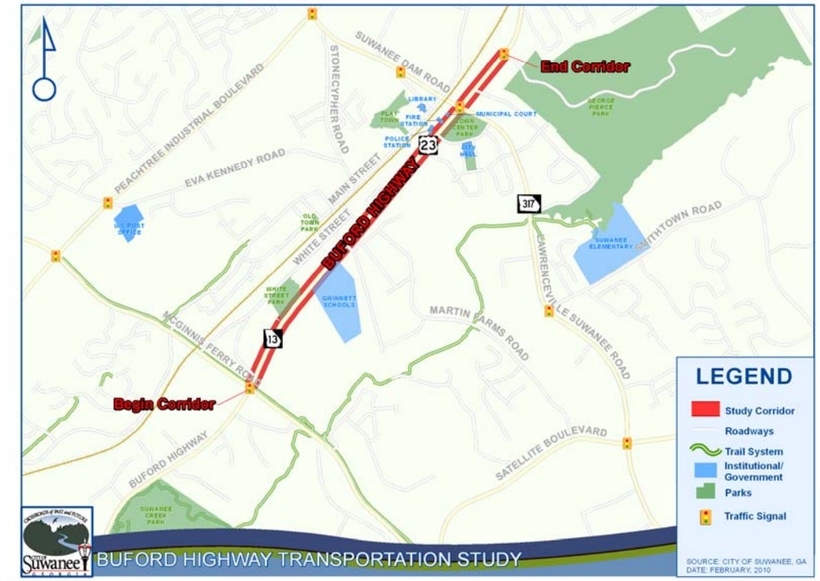
The City of Suwanee is a dynamic community of 16,300 people located in northwest metropolitan Atlanta. In 2009, the City completed construction of a new City Hall at the apex of Town Center, Suwanee's signature civic center, which integrates both public and private space and includes Town Center Park and mixed-use commercial, office, residential, and institutional development. Town Center resulted from a history of thoughtful planning first identified in detail in the *Old Town Master Plan*, conducted in 2002.

In 2008, the City updated its master plan, now called the *Downtown Suwanee Master Plan*. The *Downtown Suwanee Master Plan* identified future development nodes along Buford Highway and recognized the need to connect Town Center Suwanee with historic Old Town. One of the needs identified within the *Downtown Suwanee Master Plan* was to closely examine the role of Buford Highway within the context of the plan and develop a long-range vision for the highway.

In Fall 2009, the City undertook the **Buford Highway Transportation Study**, a detailed planning and traffic engineering study for Buford Highway (US 23/SR 13) from McGinnis Ferry Road to George Pierce Park. The purpose of the study was to identify what types of multimodal improvements are needed long-term to meet community and mobility needs as they relate to Buford Highway.

Historic Pierce's Corner at Main Street

STUDY AREA MAP



Study Tasks and Schedule

The Buford Highway Transportation Study was comprised of four major components: data collection, traffic impact and circulation analysis, alternatives and recommendations development, and public involvement. The study was initiated in October 2009 and completed in April 2010. At the outset of the study, new traffic data was collected at intersections along and around Buford Highway.

The traffic impact and circulation analysis considered and compared how traffic demands will change from the existing to future condition based on alternative assumptions. The Atlanta Regional Commission (ARC) Regional Travel Demand Model, combined with anticipated development identified in the *Downtown Suwanee Master Plan*, was used to examine future growth rates and develop future build and no-build conditions for Buford Highway. The 2030 future build scenario assumed that the development identified within the *Downtown Suwanee Master Plan* would be implemented, while the 2030 no-build scenario assumed no additional development. Both future scenarios were compared against an existing condition.

Community outreach and participation for the study used multiple means to engage citizens, stakeholders, and policy makers within the study process. Major elements of the public involvement process included stakeholder interviews, development of a interjurisdictional transportation stakeholder committee, a public workshop meeting, a public open house meeting, and a presentation to the City Council.

Alternatives were developed as a result of the traffic impact and circulation analysis and in consideration of input received through the public outreach process. The alternatives considered included traffic operational and safety improvements as well as design options for Buford Highway.

Recommendations

Recommended projects are divided into three categories: roadway projects, short-term operations and safety projects, and long-term operations and safety projects.

Roadway Projects

❖ **Apply a Context-Sensitive Design to Buford Highway**

It is recommended that Buford Highway be designed in a context-sensitive manner to fit its land use *transect*. A transect is a cut or path through part of the environment showing a range of different characteristics and habitats. From Town Center through the historic Old Town and into the more rural area south of Russell Street, Buford Highway passes through three distinct Transects, as shown in the figure below.

The preferred design for Buford Highway includes three typical cross sections which have been developed to relate to the land use transect (illustrated on Page 3).

From McGinnis Ferry Road to Davis Street, the **Rural** cross section includes two 11-foot vehicle lanes and an eight-foot multi-purpose path that is set back from the edge of the street by a natural swale and landscaping.

The **Historic** cross section extends from Davis Street to just south of Town Center and includes two 11-foot vehicle lanes, two five-foot bicycle lanes, and a 24-foot supplemental and landscape zone that includes a broad sidewalk. The Historic cross section also includes provisions for on-street parking.

The **Town Center** cross section includes two 11-foot vehicle lanes, two five-foot bicycle lanes, a landscaped median, and a broad eight-foot sidewalk. All of the cross sections were developed within the estimated 100-foot right-of-way area that already exists on Buford Highway.

In addition to a new design for Buford Highway, a number of projects were identified to address access and mobility needs. These projects are illustrated on the Project Recommendations map on Page 4.

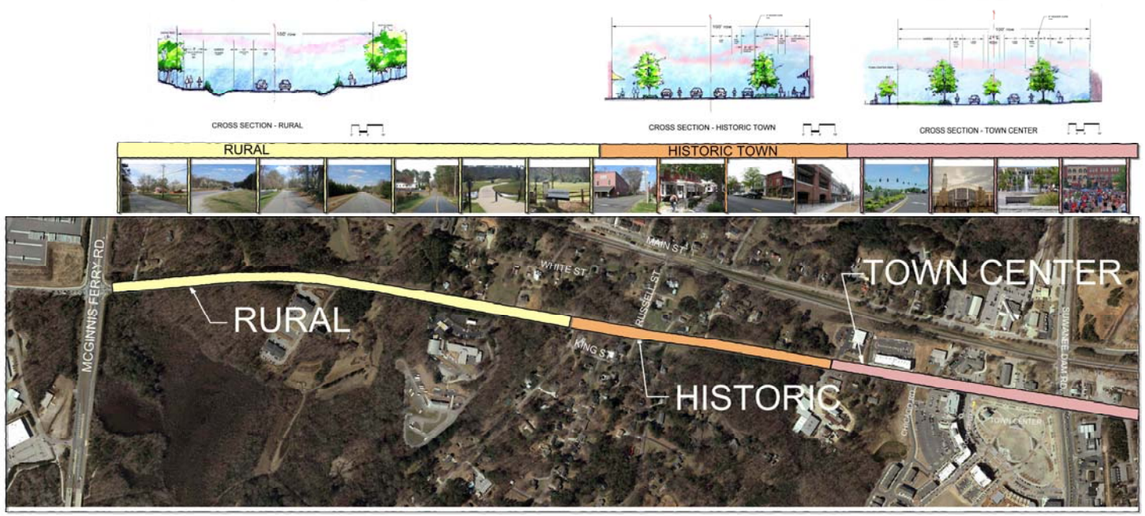
❖ **Develop Access to George Pierce Park from Lawrenceville-Suwanee Road**

Provide access to George Pierce Park from Lawrenceville-Suwanee Road at either Suwanee Avenue or Mohawk Trail. The timing of the project should coincide with the redevelopment proposed in the *Downtown Suwanee Master Plan.* This project would provide a secondary access point for this busy regional park.

Short-Term Traffic Operations and Safety Projects

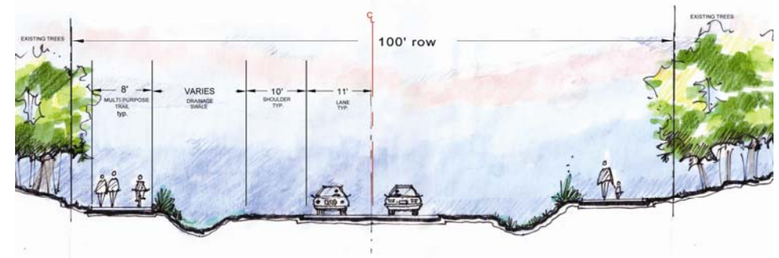
❖ **HAWK Signal on Buford Highway at Town Center Avenue**

Modify the HAWK signal design to restripe the crosswalk over Buford Highway so that it terminates on the Town Center side of Buford Highway into the channelized right turn island instead of into the right turn lane as it does now. Another alternative would be to move the HAWK signal to a mid-block location.

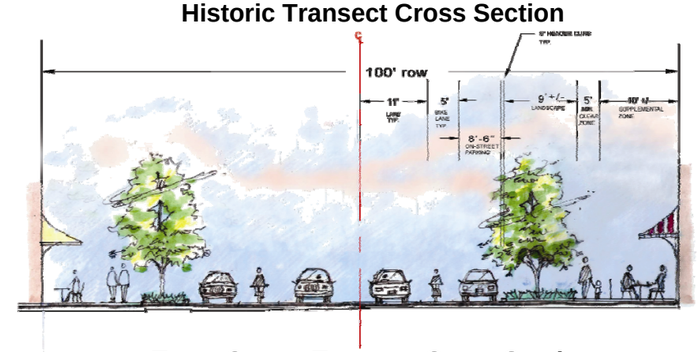


Buford Highway Road Character Cross Sections

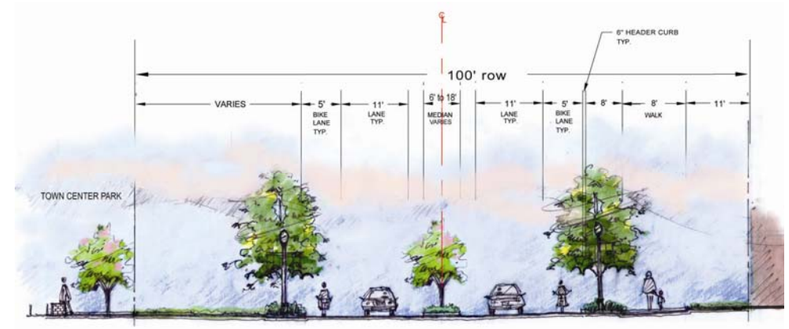
Rural Transect Cross Section



Historic Transect Cross Section



Town Center Transect Cross Section



❖ **Suwanee Dam Road and Main Street/Brogdon Road**

Modify the intersection of Suwanee Dam Road and Main Street/Brogdon Road. Concepts considered included a roundabout treatment and "Michigan-left" designs but were ruled infeasible due to the intersection's proximity to the railroad. Previously considered concepts include closing the median and providing access to Old Town Suwanee via the existing signalized intersection of Suwanee Dam Road and the Library/Shadowbrook Church. While the concerns about maintaining the existing access to Old Town Suwanee and businesses located on Brogdon Road and Main Street are valid, it is likely that future congestion and safety issues at this intersection could effectively close off the current access. Therefore, it is recommended that the City of Suwanee continue to address a reasonable approach to this intersection with business owners, the public, and in coordination with the City of Sugar Hill.

Long-Term Traffic Operations and Safety Projects

❖ **Add turning lanes to Buford Highway at McGinnis Ferry Road**

Intersection operations indicated current level of service (LOS) D/E degrading to LOS E/F in the 2030 Build condition. This project would add an additional left turn lane on northbound Buford Highway and a right turn lane on southbound Buford Highway.

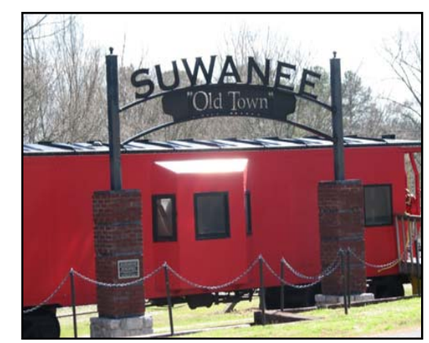
❖ **Provide traffic signal control at:**

Lawrenceville-Suwanee Road and Suwanee Avenue (Project includes a dedicated eastbound left turn lane from Suwanee Avenue to Lawrenceville-Suwanee Road)

Satellite Boulevard and Martin Farm Road

Buford Highway and Russell Street (Alternatives considered include a traditional signalized intersection with dedicated northbound and southbound turn lanes or a single-lane roundabout.)

All locations identified for signals are currently unsignalized. Traffic projections indicate a significant increase in traffic volumes with proposed development in the *Downtown Suwanee Master Plan*. Signal control will likely be needed to safety and effectively manage traffic. To implement traffic signals, traffic signal warrants and DOT approval will be required.



The heart of Old Town Suwanee

Buford Highway Transportation Study

Community Meeting Sign-In Sheet – March 18, 2010

NAME	ADDRESS	PHONE NUMBER	E-MAIL
Tom Rogers	541 B. Hwy (23)	770-945-2425	
Cliff Johnson	450 Buford Hwy 23	7-945-2102	SUWANEE LUMBER CO., INC.
DONALD JOHNSON	450 BUFORD HWY	770-945-2102	" " " "
Benny Johnson	450 Buford Hwy	" " "	" " "
Brian Fitzgerald	85 Buford Hwy	770-361-0110	
Karen + Miles Williams	740 Hwy 23 Suwanee, Ga 30024	770-561-3082	willimilo@aol.com
Robert Robinson	14 Hwy 23	7-945-9021	
DAN FOSTER	914 BISCAYNE Way	7-614-5750	dfoster@suwanee.com
Rob Sumner	3210 Mill View Ct	678-743-1271	
Jimmy Spero	895 LANDOVER CROSSING		
Paul Kinney	878 Mill Creek Run	7-945-8315	PKINNEY@BELLSOUTH.NET

Buford Highway Transportation Study

Community Meeting Sign-In Sheet – March 18, 2010

NAME	ADDRESS	PHONE NUMBER	E-MAIL
LaRonna Sheerin	3410 Smithtown	7-634-7909	

Buford Highway Transportation Study

Community Meeting Sign-In Sheet – March 18, 2010

NAME	ADDRESS	PHONE NUMBER	E-MAIL
Dick Goodman	415 Pringle Dr	678-714-6514	~~[illegible]~~ dickgoodman@bellsouth.net
Fred Williams	67 Lake Dr. Winder, GA 30680	770-868-1197	

Buford Highway Transportation Study

Public Information Open House Comment Form

Thank you for attending the Buford Highway Public Information Open House. The City of Suwanee is interested in obtaining feedback on the following project recommendations:

- **Relocation of Cross-walk at HAWK Signal**
- **Suwanee Dam Road and Main Street/Brogdon Road Safety Improvement**
- **Buford Highway at McGinnis Ferry Road Turning Lanes**
- **Traffic Signal Control at:**
  - **Lawrenceville-Suwanee Road and Suwanee Avenue**
  - **Satellite Boulevard and Martin Farm Road**
  - **Buford Highway and Russell Street (could consider roundabout treatment)**
- **Access to George Pierce Park from Lawrenceville-Suwanee Road at Suwanee Avenue or Mohawk Trail**
- **Buford Highway Context-Sensitive Redesign for Multiple Modes**

1) What do you like BEST about the recommendations?

_____
_____
_____
_____

2) What do you like LEAST about the recommendations?

_____
_____
_____
_____

3) Did we miss anything? If so, please explain.

_____
_____
_____
_____

Buford Highway Transportation Study
Public Information Open House Comment Form

4) How would you rank the implementation priority of these projects?

Project	Priority			
	High (Implement within 1 to 2 years)	**Moderate** (Implement within 3 to 5 years)	**Low** (Implement 5 to 10 years from now)	**Don't Know**
Relocate HAWK signal				
Suwanee Dam Road and Main Street/Brogdon Road Safety Project				
Buford Highway at McGinnis Ferry Road Turning Lanes				
Lawrenceville-Suwanee Road and Suwanee Avenue Signal Control				
Satellite Boulevard and Martin Farm Road Signal Control				
Buford Highway and Russell Street Roundabout				
George Pierce Park Access from Lawrenceville-Suwanee Road				
Buford Highway Context-Sensitive Redesign for Multiple Modes				

5) If Buford Highway was developed in phases, which section should receive highest priority? Rural, Historic, or Town Center? _____

6) How long have you lived in Suwanee? _____

7) In what neighborhood (subdivision/ street) do you live? (Please list City in which you reside if not in Suwanee) _____

8) How did you find out about tonight's meeting? _____

9) Is this meeting time and location convenient for you? _____

10) Please provide any other comments you may have about this study and recommendations.

_____
_____
_____
_____
_____
_____
_____

Buford Highway Transportation Study

Public Meeting Open House
Thursday, March 18, 2010
City of Suwanee Crossroads Center

Comment Form Summary

1) What do you like BEST about the recommendations?

- Median along Buford Highway at Town Center and traffic circle at Russell Street.
- Seems to be a nice plan for the future, minus a few things.
- Sidewalks, paths, walking.

2) What do you like LEAST about the recommendations?

- No information on plan of res. and comm. blending 25 to 35 mph on Buford Highway. I think it would make Highway 23 a road to avoid. I heard it contains mostly local traffic, which I question.
- It does not extend to Suwanee Creek Park.

3) Did we miss anything? If so, please explain.

- No answer on cost. It is or should be obvious. It is time to be careful how every dime is spent. Make sure the City is financially sound and you get your bang for the buck for all monies spent. Who will care if you "look good" in the poor house?

4) How would you rank the implementation priority of these projects? (Number of respondents)

Project	Priority			
	High (Implement within 1 to 2 years)	**Moderate** (Implement within 3 to 5 years)	**Low** (Implement 5 to 10 years from now)	**Don't Know**
Relocate HAWK signal	**2**	**1**		
Suwanee Dam Road and Main Street/Brogdon Road Safety Project	**1**	**2**		
Buford Highway at McGinnis Ferry Road Turning Lanes		**3**		
Lawrenceville-Suwanee Road and Suwanee Avenue Signal Control		**2**	**1**	
Satellite Boulevard and Martin Farm Road Signal Control		**2**	**1**	
Buford Highway and Russell Street Roundabout	**1**	**1**	**1**	
George Pierce Park Access from Lawrenceville-Suwanee Road	**1**		**2**	
Buford Highway Context-Sensitive Redesign for Multiple Modes	**2**		**1**	

5) If Buford Highway was developed in phases, which section should receive highest priority? Rural, Historic, or Town Center?

- Town Center (2 respondents)
- Historic section.

6) How long have you lived in Suwanee?

- Four years.
- Twenty-one years.
- Thirty years.

7) In what neighborhood (subdivision/ street) do you live? (Please list City in which you reside if not in Suwanee)

- Stonecypher.
- Mary Lou and Highway 23.
- Mill Creek.

8) How did you find out about tonight's meeting?

- Website and previous meeting.
- Word of mouth.
- City newsletter and email.

9) Is this meeting time and location convenient for you?

- Yes. (2 respondents)
- The majority of people showed at 6:30pm, should say time should be at 6:30 or 7:00pm.

10) Please provide any other comments you may have about this study and recommendations.

- The sooner the better!

Buford Highway Transportation Study

Transportation Coordination Meeting
Tuesday, November 17, 2009 – 2:30 pm
City of Suwanee

Meeting Notes

Attendees

Haley Fleming, Atlanta Regional Commission
Dahshi Marshall, Atlanta Regional Commission
Robert Mahoney, Georgia Department of Transportation, District 1
Robert Hughes, Georgia Department of Transportation, Office of Program Delivery
Vince Edwards, Gwinnett County Department of Transportation
Matthew Dickison, City of Suwanee
Joshua Campbell, City of Suwanee
James Miller, City of Suwanee
Eric Lusher, URS Corporation
Kristen Wescott, URS Corporation

Summary

One task of the Buford Transportation Study is to coordinate with the agencies and jurisdictions that have a stake in Buford Highway's future, including Gwinnett County, Georgia Department of Transportation (GDOT), Atlanta Regional Commission (ARC), Norfolk Southern, City of Duluth and City of Suwanee. Representatives from each jurisdiction were invited to an initial transportation coordination meeting and met on Tuesday, November 17 to discuss Buford Highway. The Buford Highway study corridor extends from McGinnis Ferry Road to the driveway at George Pierce Park. The following provides a summary of the meeting.

Following a welcome and brief introductions, Ms. Wescott, URS Project Manager, presented the study purpose and background, initial study findings, and meeting purpose, which was to discuss future needs and potential improvements to Buford Highway. The study is a follow-up to the *Downtown Suwanee Master Plan*, which was completed early in 2009.

Suwanee has grown tremendously, and there has been development in and around Buford Highway, most notably Town Center at southeast of the intersection of Buford Highway and Lawrenceville-Suwanee Road. However, Buford Highway has not changed much. Ms. Wescott indicated that through the planning process, the need to accommodate pedestrian and bicycle travel in the Buford Highway corridor has grown. Each of the city's plans since 2000 has identified a need for improvements. Buford Highway provides a critical connection between the historic Old Town Suwanee area and the Town Center.

Buford Highway is out of context with the existing development, being a relatively high-speed (45 mph) rural highway in design. In addition, the GDOT long range plan identifies plans to widen Buford Highway from two to four lanes from Sugarloaf Parkway to State Route 20. The *Downtown Suwanee Master Plan* plans for more intensive urban growth in nodal developments along Buford Highway, north of McGinnis Ferry Road, at Russell Street, and at Town Center. The study needs to reconcile existing and future development with transportation infrastructure.

Buford Highway Transportation Study

Transportation Coordination Meeting
Tuesday, November 17, 2009 – 2:30 pm
City of Suwanee

The City of Suwanee is interested in continuing similar style of development as Town Center along Buford Highway, with three to five story buildings facing Buford Highway. The City would like Buford Highway to better accommodate the existing pedestrians, and the demand for pedestrian facilities is anticipated to grow as development increases. Data collection efforts for this study observed twenty-three pedestrians crossing at the HAWK signal location between 4:00 and 6:00 pm. The City has already experienced some safety problems related to pedestrian-vehicle conflicts with pedestrians crossing Buford Highway, particularly during events at Town Center Park. Overall, the City would like the speed limit lowered and plans for additional street crossings as development occurs. The development plans show managed access at cross streets. The City supports an alternate development patterns along Buford Highway than is evident in other communities. In Duluth and Buford, Buford Highway is four lanes and is characterized by highway strip commercial developments.

Preliminary findings from traffic counts indicate that more capacity may be needed along Buford Highway. However, future traffic growth has yet to be determined. Existing traffic trends could not be reliably determined due to variation, but it appears that the traffic volumes along Buford Highway have been relatively flat. It was mentioned that the McGinnis Ferry crossing at I-85 is under construction (open 2011), and it could influence travel behavior along Buford Highway, but it wasn't evident whether it would increase or decrease traffic. In terms of widening, Buford Highway is not a high priority corridor, and that is unlikely to change in the near future.

Related to posted and design speed on Buford Highway, GDOT bases design on the 85th percentile speed. Lowering speed can occur if travel changes and vehicles travel slower. Although it is commonplace across Georgia that there are speed reductions on state highways through small towns, there is not an existing policy to do so; posted and design speeds are based on actual travel speeds.

The designation of Buford Highway as a state route was discussed. Efforts to reroute SR 13/US 23 from Buford Highway to an alternate facility such as Peachtree Industrial Boulevard have been pursued previously. Moving the state route designation from Buford Highway to another facility would require changing the designation in municipalities beyond the City of Suwanee and would therefore require multi-jurisdictional cooperation.

Design elements on Buford Highway, such as using roundabouts to slow traffic at intersections, were discussed. GDOT includes roundabout evaluation at intersection nodes when warrant thresholds are met. However, at 45 mph, certain criteria would need to be met. If Buford Highway was widened, it would require an urban section with a 20 to 24-foot median and 16-foot urban shoulder. Access is driven by the GDOT driveway manual. In lieu of redesigning Buford Highway, it may be possible to add bicycle and pedestrian facilities in the right-of-way with a special encroachment permit.

The greatest existing obstacles to create a Buford Highway that meets the City's vision are its 45 mph speed, designation as a state route, and funding. As part of the study, it was suggested that the implementation plan include smaller projects such as cross-walk improvements or access management which could move Buford Highway in the direction the city desires.

The study team will continue the transportation analysis and develop recommendations in early 2010. A second transportation coordination meeting is tentatively scheduled for March 3, 2010. A facilitated community meeting will be conducted February 9, 2010 at 6:30 pm. The city will also conduct an open house on March 18, 2010 at 6:30 pm.

Buford Highway Transportation Study

Transportation Coordination Meeting
Tuesday, November 17, 2009 – 2:30 pm
City of Suwanee

Agenda

I. Welcome & Introductions

II. Study Purpose & Background

- Study Origin
- Comprehensive Plan
- Downtown Suwanee Master Plan

III. Study Findings to Date

- Stakeholder Input
- Data Collection and Traffic Counts

IV. Discussion

- What is the future of Buford Highway?
- How can Buford Highway be redesigned to serve both local and regional multimodal transportation needs?
  - Posted Speed
  - Pedestrian Facilities
  - Bicycle Facilities
  - Vehicle Travel
  - Land Use & Access Management
- What are the key elements to achieving a win-win?
- What factors may limit outcome?

IV. Next Steps

- Coordination Meeting 2 – March 3, 2010 (tentative)
- Community Meeting – February 9, 2010, 6:30 pm
- City Open House – March 18, 2010, 6:30 pm

Buford Highway Transportation Study

Study Purpose & Background

Purpose

- Determine future multimodal transportation needs for Buford Highway from McGinnis Ferry Road to George Pierce Park.
- Identify alternatives for Buford Highway to balance transportation and development needs.
- Develop project implementation plan to identify priorities.

Background

Old Town Master Plan (2002)

- Recommended six-foot sidewalks and multiuse path from McGinnis Ferry Road to George Pierce Park.

Alternative Modes Master Plan

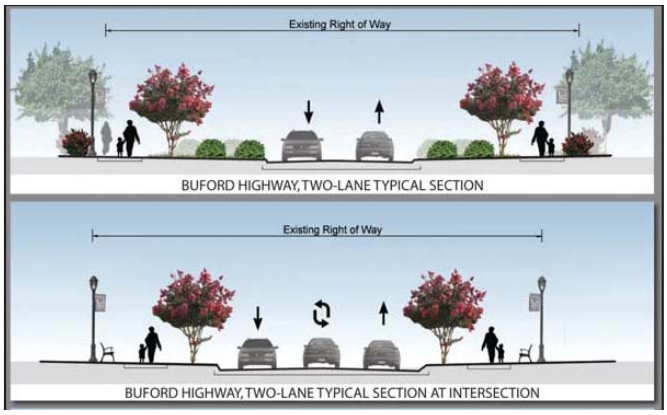
- Recommended ten-foot sidewalk on Buford Highway from Lawrenceville-Suwanee Road to George Pierce Park and five-foot sidewalk from George Pierce Park to Dollar Circle.

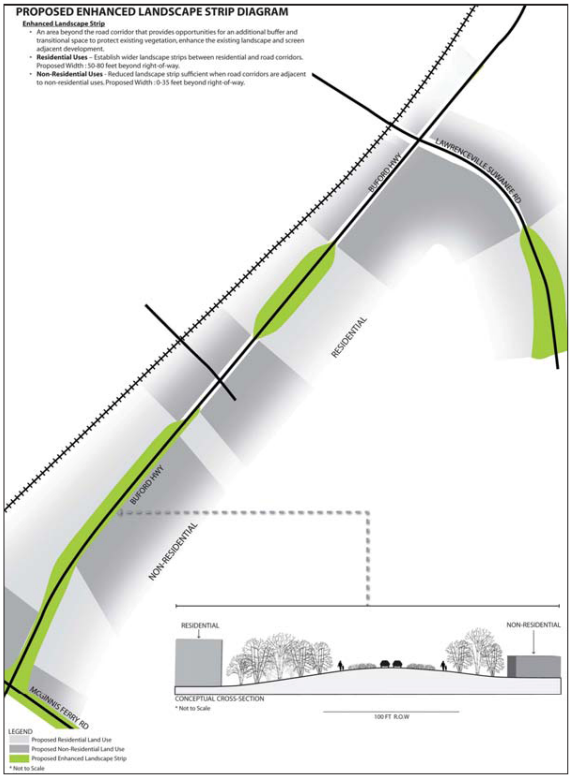
2030 Comprehensive Plan (2008)

- Identified need for sidewalks along Buford Highway through entire city limits.
- For future development, the Old Town Character Area vision is to extend Town Center to Russell Street with pedestrian-oriented design.

Downtown Suwanee Master Plan (2009)

- Identified Buford Highway as integral for linking Town Center to historic Old Town Suwanee.
- Recommended Buford Highway corridor study to evaluate traffic demands and develop context-sensitive framework for future direction.
- Identified development nodes north of McGinnis Ferry Road at White Street, Russell Street, and Town Center.
- Proposed separating vehicular lanes from bicycle and pedestrian facility with landscape buffer.





Buford Highway Transportation Study Fact Sheet

November 2009

Study Purpose

The City of Suwanee is undertaking a detailed planning and traffic engineering study for Buford Highway (US 23/SR 13) from McGinnis Ferry Road to George Pierce Park. The purpose of the study is to identify what types of multimodal improvements are needed long-term to meet community and mobility needs.

The study will draw upon the recently updated *Downtown Suwanee Master Plan*, which identified future development nodes along Buford Highway and identified the need to connect the historic Old Town Suwanee with Town Center Suwanee. Town Center is a major civic attraction for the community with a new City Hall, Park, and Amphitheater as well as a shopping, dining, and living destination. The Old Town is the historic center anchored by Pierce's Corner. Likewise, the City's desire to strengthen linkages between these two centers of the community to other destinations such as George Pierce Park and the Suwanee Greenway is an ongoing effort.

The study offers the opportunity to examine more closely the existing and future travel patterns and traffic demands and desired development plans to determine how to balance competing demands for this segment of Buford Highway.

For More Project Information

City's Website: www.suwanee.com

Project Contacts:

Matthew Dickison, AICP
Planning Division Director
City of Suwanee
770-904-3371

or

Kristen Wescott, AICP
Project Manager, URS Corporation
678-808-8830

STUDY AREA MAP

Study Tasks and Schedule

The Study is anticipated to be completed by April 2010. Major tasks include the following:

- *Collect traffic counts in and around the study area*
- *Conduct public and stakeholder outreach*
- *Conduct a traffic impact and circulation analysis*
- *Identify transportation strategies, projects, and programs*
- *Develop implementation plan*

The heart of Old Town Suwanee

Pedestrians Crossing Buford Highway to Town Center Suwanee

Mark your calendar

Community Meeting
Tuesday, February 9, 2010
Suwanee City Hall

Buford Highway Transportation Study

Transportation Coordination Meeting
Wednesday, March 3, 2010 – 11:00 a.m.
City of Suwanee

Meeting Notes

Attendees

Jonathan Tuley, Atlanta Regional Commission
Andrew Heath, Georgia Department of Transportation, Office of Planning
Robert Mahoney, Georgia Department of Transportation, District 1
Vince Edwards, Gwinnett County Department of Transportation
Joshua Campbell, City of Suwanee
Matthew Dickison, City of Suwanee
Catherine Dixon, City of Suwanee
James Miller, City of Suwanee
Eric Lusher, URS Corporation
Kristen Wescott, URS Corporation

Summary

One task of the Buford Transportation Study is to coordinate with the agencies and jurisdictions that have a stake in Buford Highway's future, including Gwinnett County, Georgia Department of Transportation (GDOT), Atlanta Regional Commission (ARC), Norfolk Southern, City of Duluth and City of Suwanee. Representatives from each jurisdiction were invited to transportation coordination meeting and met on Wednesday, March 3, 2010 to discuss Buford Highway. The Buford Highway study corridor extends from McGinnis Ferry Road to the driveway at George Pierce Park. The purpose of this meeting was to present an overview of the traffic results and draft project recommendations. The following provides a summary of the meeting.

Following a welcome and brief introductions, Ms. Wescott, URS Project Manager, introduced Eric Lusher, who presented the study's technical approach and analysis results. The traffic and circulation analysis focused on ten intersections on Buford Highway and the immediately surrounding area. The traffic assessment asked the question of what will the corridor look like by 2030. This question was answered by evaluating two alternative scenarios for 2030, a build and no-build condition. The build condition assumed the development identified in the *Downtown Suwanee Master Plan* would occur. In addition, the traffic analysis looked at regional versus local traffic and identified that most traffic on Buford Highway is local (originating and destined in Suwanee or Gwinnett County) and this trend is anticipated to continue. Only a small percentage of trips are regional. The meeting participants were provided a copy of the executive summary of the traffic analysis report.

Kristen Wescott presented the draft project recommendations and provided a summary description and accompanying illustrations to participants. She noted that Buford Highway is not just a concern for the City of Suwanee. Adjacent jurisdictions of Duluth and Norcross are also trying to improve Buford Highway to better serve their communities. The City is interested in working with the Georgia Department of Transportation (GDOT) to achieve mutual agreement on a future design of Buford Highway within the City of Suwanee. Discussion comments regarding specific recommendations included the following:

Buford Highway Transportation Study

Transportation Coordination Meeting
Wednesday, March 3, 2010 – 11:00 a.m.
City of Suwanee

Preferred Context-sensitive Design for Buford Highway

- The on-street parking shown on the preferred design for Buford Highway may not be feasible.
- Consider a ten-foot multi-purpose trail instead of eight-feet.
- Consider 12-foot travel lanes to accommodate truck travel.
- What is the process for defining a new project for Buford Highway to include the preferred context-sensitive design? Would the existing project be redefined or would a new project identification number be assigned?
- Could the project that identifies widening of Buford Highway from Sugarloaf Parkway to SR 20 (PI# 0002393) be removed from the GDOT long-range plan?

Widening Buford Highway for Vehicular Mobility

- The available clear zone would probably provide room for a ten-foot versus eight-foot wide multi-purpose trail. Ten feet is the typical trail width used by GDOT.

Signalization or Roundabout treatments for Lawrenceville-Suwanee Road and Suwanee Avenue, Satellite Boulevard and Martin Farm Road, and Buford Highway and Russell Street

- Roundabout options were reviewed for all of the locations identified for signalization. The roundabout operational analysis suggests that this treatment would operate best at Russell Street and Buford Highway because it would be a one-lane roundabout. At the other locations, a two-lane road enters a four-lane road, complicating the design and operations.
- It appears a lower travel speed on Buford Highway could be achieved with the preferred design combined with a roundabout at Russell Street and Buford Highway.

Access to George Pierce Park from Lawrenceville-Suwanee Road

- Was alternative access from Smithtown Road examined? Potential access was not specifically reviewed, but because of Suwanee Creek and associated watershed, providing access from Smithtown is probably infeasible.

At the conclusion of the meeting, Ms. Wescott encouraged participants to make additional comments on the recommendations. The time to make changes to the recommendations is during the planning stage. In addition, participants were invited to the final open house meeting on March 18, 2010 and City Council presentation on April 15, 2010.

Attached for reference include:

- Meeting Agenda
- Proposed Transportation Projects and Strategies
- Draft Recommendations Project ID Map
- SR 13 Route Revision Alternatives
- Sign-in Sheet

Buford Highway Transportation Study

Transportation Coordination Meeting
Wednesday, March 3, 2010 11 am
City of Suwanee

Agenda

I. Welcome & Introductions

II. Traffic Assessment

- Approach
- Summary

III. Proposed Transportation Projects & Strategies

- Strategies
- Operations & Safety Projects
- Future Design Alternatives
- Discussion

IV. Next Steps

- City Open House – March 18, 2010, 6:30 pm
- City Council Presentation – April 16, 2010, 5:30 pm

Buford Highway Transportation Study

Technical Traffic Memorandum

Executive Summary

In 2009, the City of Suwanee completed an update of the *Downtown Suwanee Master Plan* as part of the Atlanta Regional Commission (ARC) Livable Centers Initiative (LCI) program. As a follow up to the *Downtown Suwanee Master Plan*, the City of Suwanee is now undertaking a detailed planning and traffic engineering study for Buford Highway (US 23/SR 13) from McGinnis Ferry Road to George Pierce Park. The purpose of the study is to identify what types of multimodal improvements are needed long-term to meet community and mobility needs. As part of the traffic engineering components of this study, a Highway Capacity Manual (HCM) based analysis using Synchro 7 software of existing and future conditions was conducted to determine the potential impacts to traffic during weekday AM and PM peak hours of implementing the development recommendations of the *Downtown Suwanee Master Plan.*

Four basic scenarios were considered. The results indicated in each scenario are provided below:

2009 Existing Conditions - Analysis of traffic conditions observed in the year 2009 - The analysis indicates varied LOS conditions in the study area. The signalized intersections along the Buford Highway corridor operate adequately with the exception of Level of Service (LOS) E observed during the PM peak hour. Field observations generally agree with these analysis results, with the exception that train crossings during the PM peak hour have been observed to significantly affect the nearby intersection of Buford Highway and Lawrenceville-Suwanee Road/Suwanee Dam Road. Many of the unsignalized intersections appear to operate adequately although a few intersections stand out due to observations of LOS E and F, much of which could be due to limitations in the analysis capabilities. Field observations did not indicate that congestion predicted by Synchro at the intersections of Satellite Boulevard & Martin Farm Road, Lawrenceville-Suwanee Road & Suwanee Avenue, Buford Highway & Russell Street, and McGinnis Ferry Road & Scales Road. However, field observations do indicate the congestion predicted by Synchro at the intersection of Suwanee Dam Road & Main Street/Brogdon Road.

2010 No Build Conditions - Analysis of projected traffic conditions for the year 2010 with the assumption that no changes in development within the Downtown Suwanee study area will take place - Conditions are predicted to be similar to the 2009 Existing Conditions.

2030 No Build Conditions - Analysis of projected traffic conditions for the year 2030 with the assumption that no changes in development within the Downtown Suwanee study area will take place. In effect, this scenario assumes no additional development in Downtown Suwanee through the year 2030 - Despite the growth to the year 2030, the results indicate only minor degradation in LOS from the 2010 No Build Condition scenario. In particular, the three Buford Highway signalized intersections still operate similar to the conditions observed in 2009.

2030 Build Conditions - Analysis of projected traffic conditions for the year 2030 with the assumption that the development recommendations of the *Downtown Suwanee Master Plan* will be implemented - The results indicate notable degradation in LOS when compared to the 2030 No Build Condition scenario. In particular, LOS conditions at both Buford Highway & McGinnis Ferry Road and Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road are predicted to degrade into LOS E or F. Many of the unsignalized intersections also indicate significant degradation in LOS – some of which may be due to the limitation in unsignalized intersection analysis described earlier. However, the projected growth in development in this scenario would likely necessitate improvements to several of these unsignalized intersections to maintain acceptable LOS. A second phase of this project will use this analysis to address such potential transportation improvements.

Buford Highway Transportation Study

Proposed Transportation Projects and Strategies

Strategies

Petition for reduced speed limit

- Current posted speed (45 mph) and actual travel speeds of vehicles on Buford Highway are higher than desired.
- Reducing speed limit would provide safer pedestrian access in downtown and between Town Center and Historic Old Town.

Work with GDOT to implement a context sensitive road design

- Want to achieve a more context-sensitive design that better accommodates the multimodal travel, with vehicles, bicycles, and pedestrians sharing the road.
- Strategy would maintain Buford Highway as a state and federal route.

Move state and federal route designations (SR 13/US 23) to another route

- Gain more local control over the future of Buford Highway to provide more flexibility in design, traffic, and policies related to Buford Highway.
- Implement the community vision.

Short-term Operations and Safety Projects

Discuss possible relocation of cross-walk at HAWK signal to island with GDOT

- Current cross-section terminates into Town Center Avenue right-turn lane to northbound Buford Highway. Vehicles turning cannot see HAWK signal and may not see pedestrians within the cross-walk.
- Address concern about safety at current cross-walk location.

Address safety concerns at Suwanee Dam Road and Main Street/Brogdon Road

- Safety data and community input express concern about this intersection.
- Distance to signal and railroad tracks is too short to extend left turn lanes from Suwanee Dam Road to Buford Highway
- Consider alternative access to downtown Suwanee and median closure

Long-term Operations and Safety Projects

Add turning lanes to Buford Highway at McGinnis Ferry Road

- Intersection operations indicated current level of service (LOS) D/E degrading to LOS E/F in 2030 Build condition.
- Project would add additional left turn lane on northbound Buford Highway and right turn lane on southbound Buford Highway.

Provide traffic signal control at:

Lawrenceville-Suwanee Road and Suwanee Avenue
Satellite Boulevard and Martin Farm Road
Buford Highway and Russell Street (could consider roundabout treatment)

- All locations are currently unsignalized.
- Projections indicate a significant increase in traffic volumes with proposed development in the *Downtown Suwanee Master Plan*.
- Signal control will be needed to safety and effectively manage traffic.
- Signal warrants and DOT approval will be required.

Future Roadway and Design Alternatives

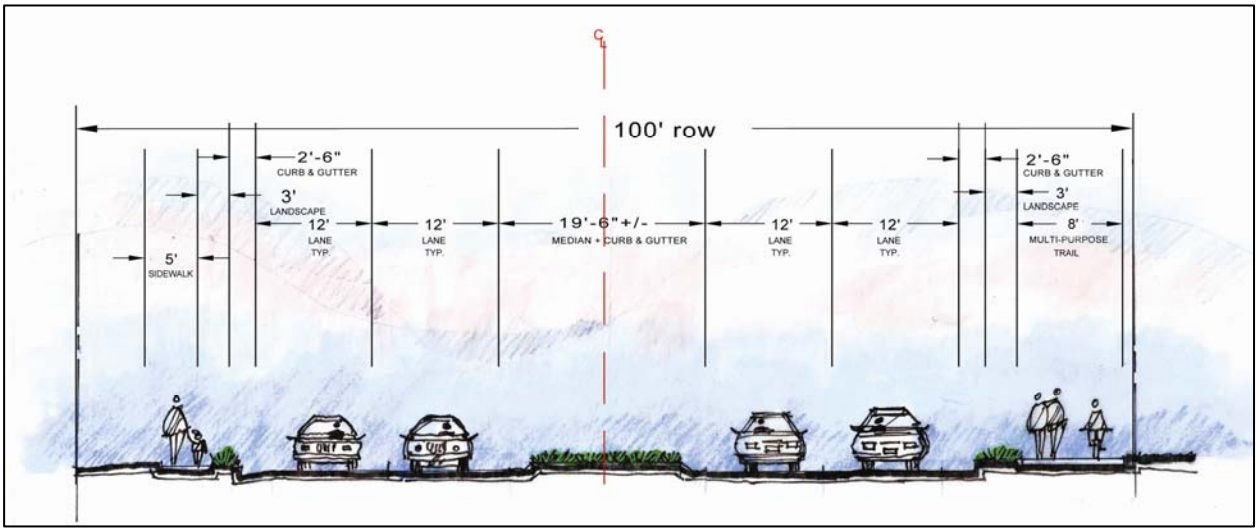
Provide access to George Pierce Park from Lawrenceville-Suwanee Road at Suwanee Avenue or Mohawk Trail

- Provide additional access point to major regional park.
- Project would provide access to Park from Lawrenceville-Suwanee Road at either Suwanee Avenue or Mohawk Trail.
- Project should be coordinated with Gwinnett County Parks and Recreation Department and coincide with the redevelopment proposed in the *Downtown Suwanee Master Plan*.

Buford Highway Options

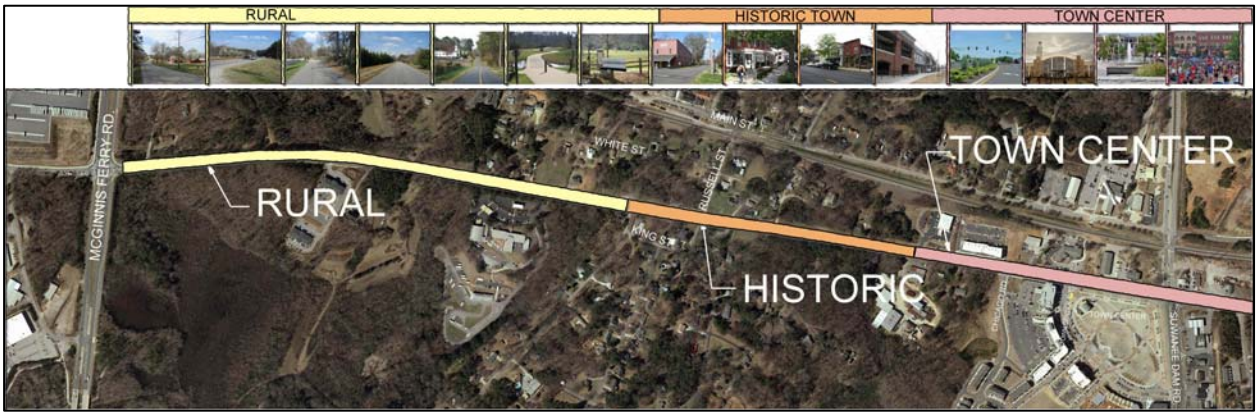
Option A: Redesign Buford Highway primarily for regional vehicular mobility

- Focuses on providing vehicular mobility
- Meets design criteria for state-owned arterial



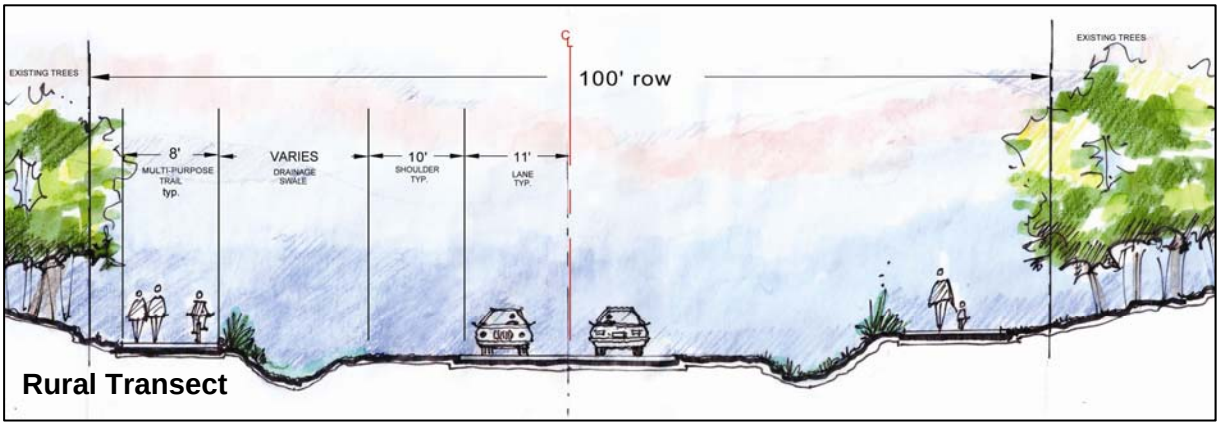
Option B: Redesign Buford Highway to complement existing and future land use, respect community character, and improve multimodal mobility (Transect)

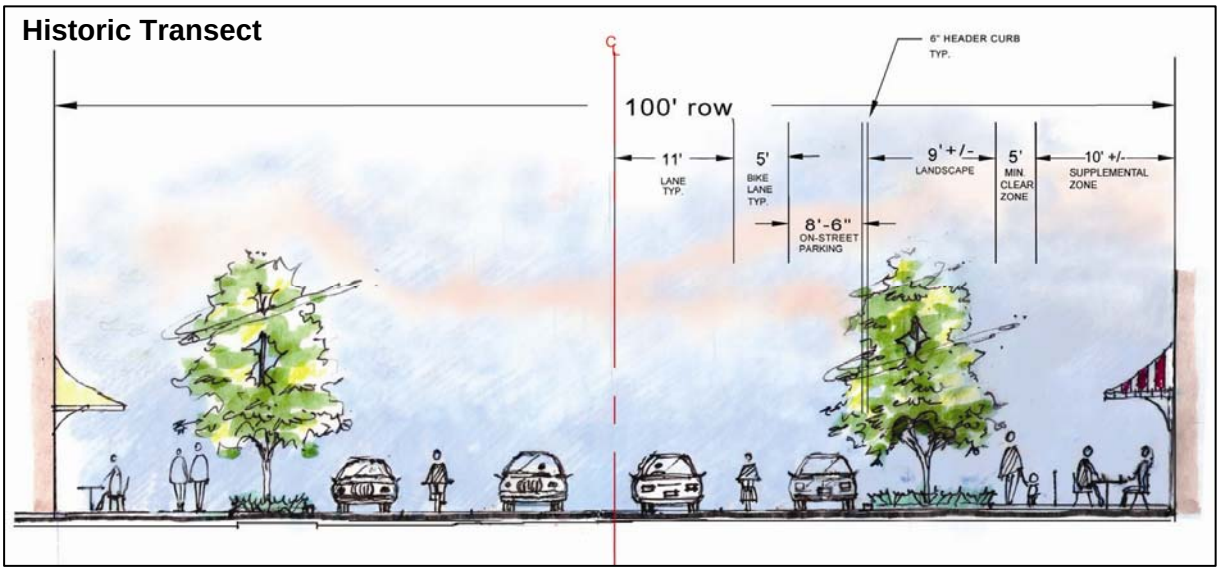
- Transitions from Suwanee Farm Village to Historic Old Town to Town Center.
- Streetscape respects characteristics of each area.

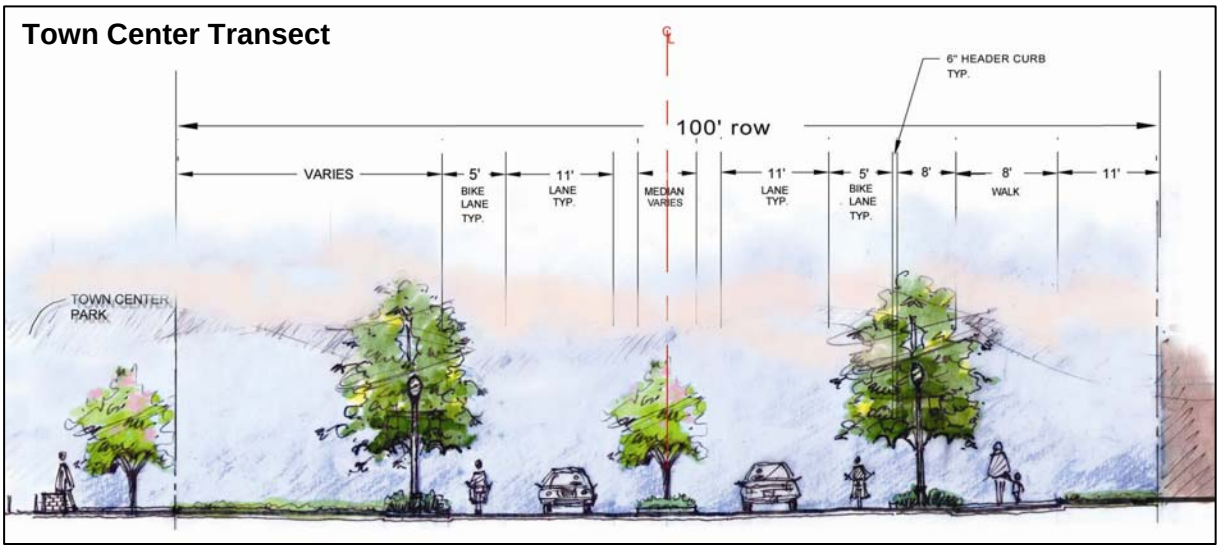


Buford Highway Transportation Study

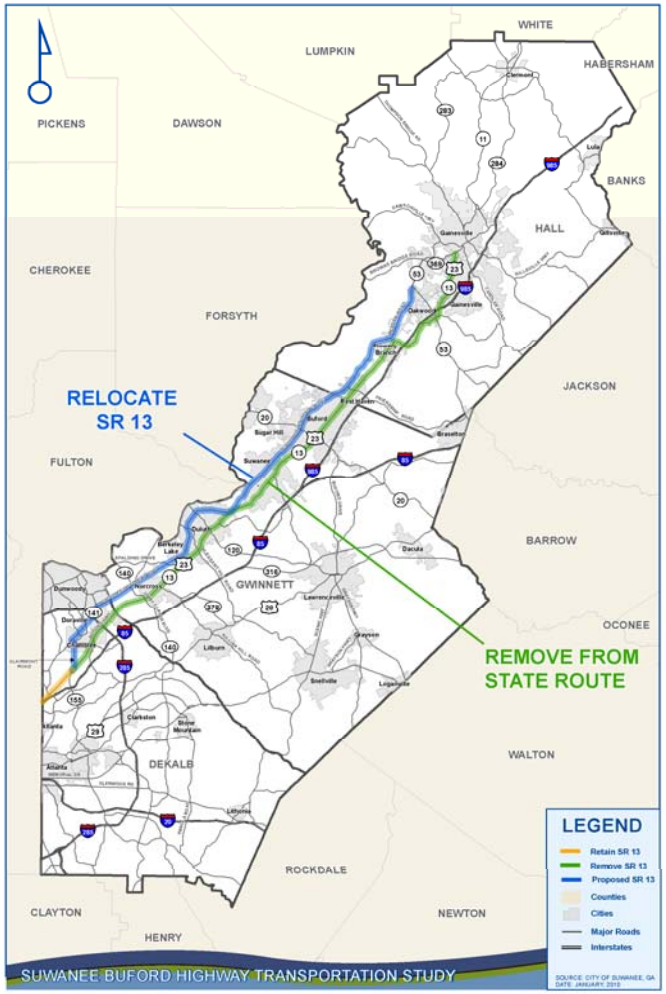
Proposed Transportation Projects and Strategies



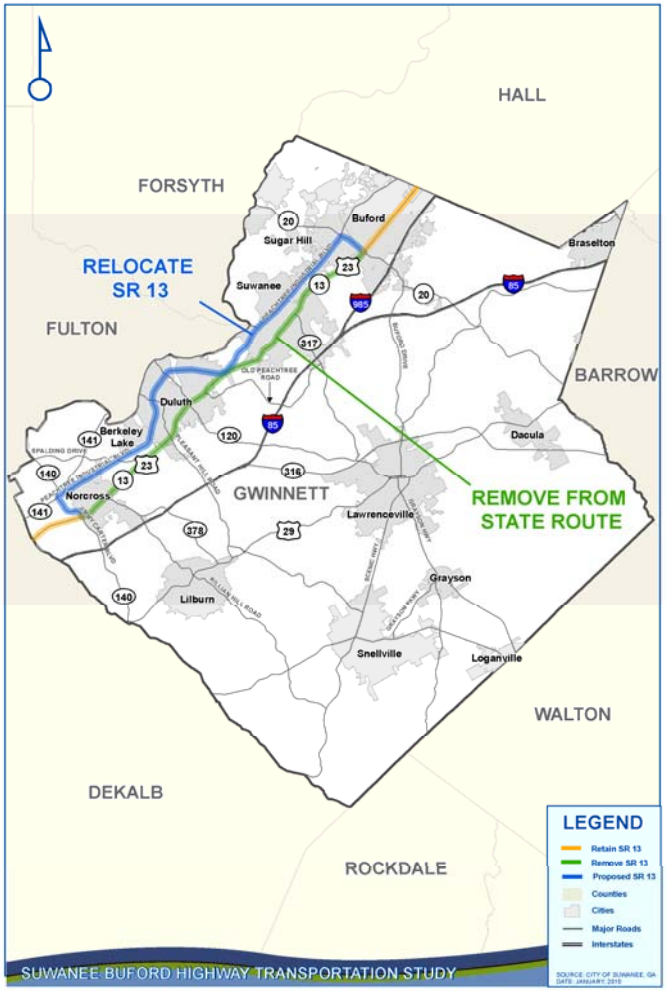




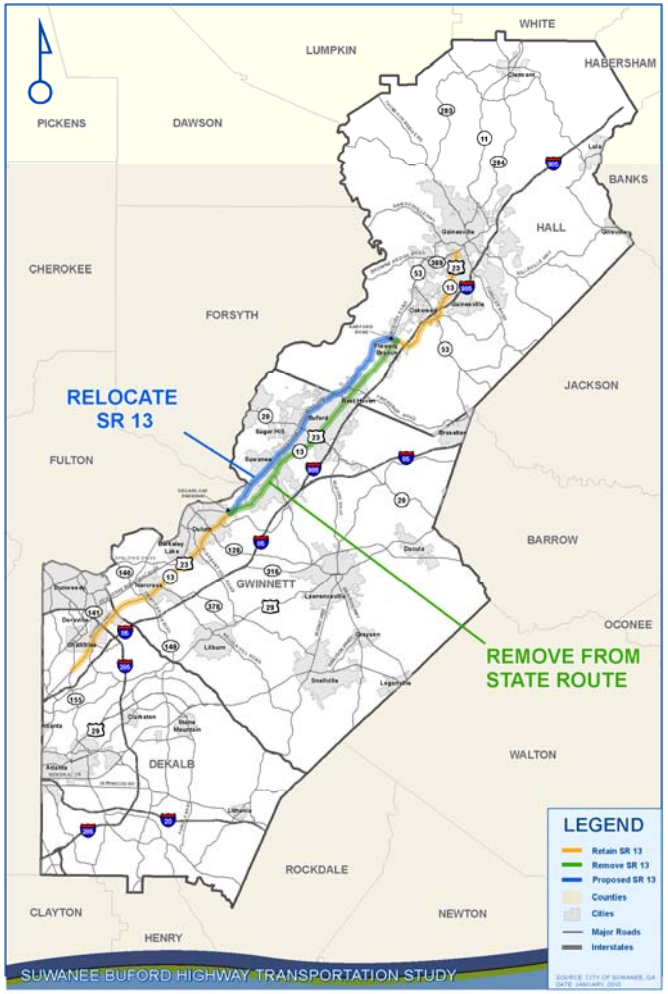
SR 13 ROUTE REVISION - ALTERNATIVE 1



SR 13 ROUTE REVISION - ALTERNATIVE 2



SR 13 ROUTE REVISION - ALTERNATIVE 3



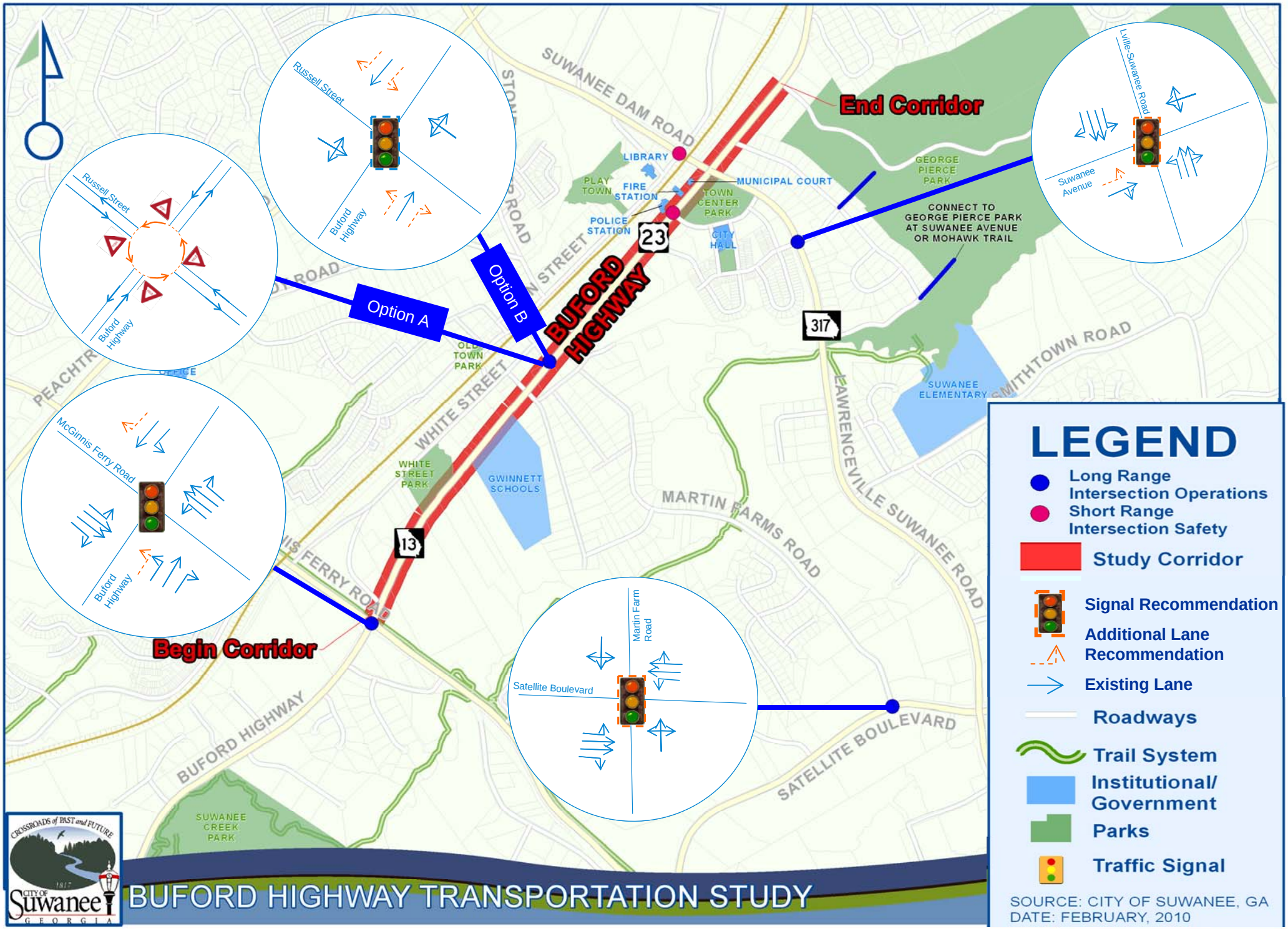
State Route Revision	County	SR 13 Miles Removed from Buford Highway		SR 13 Miles Added to Peachtree Industrial Boulevard and McEver Road (Hall)	
		Centerline Miles	Lane Miles	Centerline Miles	Lane Miles
Alternative 1	DeKalb	5.1	29.4	**	**
	Gwinnett	22.9	70.2	21.1	84.4
	Hall	14.3	28.6	10	22.4
Alternative 2	Gwinnett	16.9	47.2	17.5	70
Alternative 3	Gwinnett	11.6	30.2	11.3	45.2
	Hall	5.5	11	6.5	26

Note: All distances are approximate.

** Within DeKalb County, Peachtree Industrial Boulevard is already State Route 141 so no miles would be added to the state route system. The SR 13 designation would be changed to Peachtree Industrial Boulevard, which would become SR 13/141.

DRAFT

BUFORD HIGHWAY PROJECT RECOMMENDATIONS



Buford Highway Transportation Study

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Catherine Dixon

Buford Highway Transportation Study

City Council Workshop Presentation

April 15, 2010

Overview

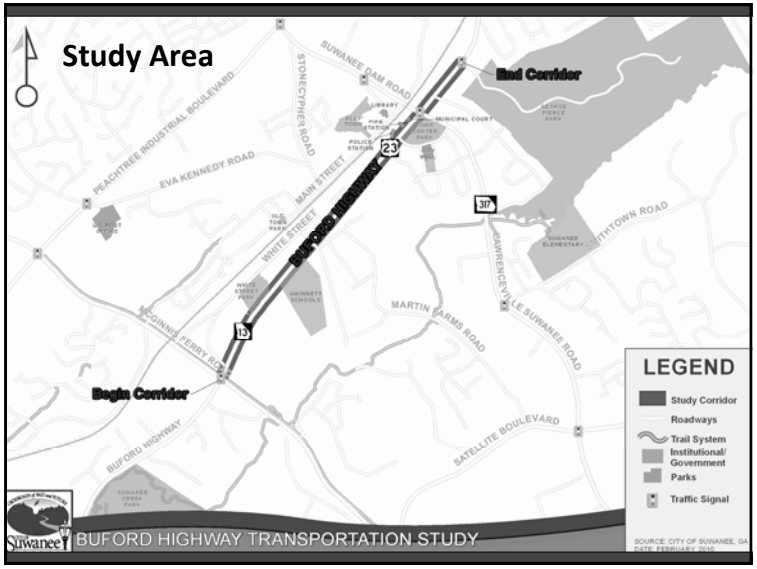
- Purpose
- Process
  - Assessment
  - Community Outreach
- Findings
- Recommendations
- Next Steps

Study Purpose

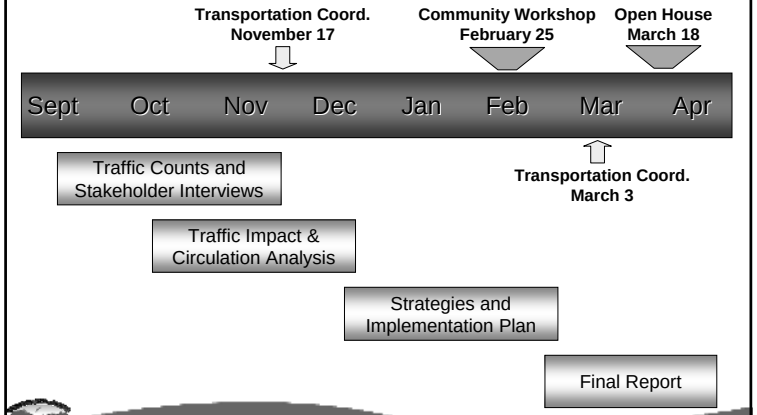
- Achieve improved multimodal access, connectivity and safety along Buford Highway
- Complement *Downtown Suwanee Master Plan* recommendations
- Provide context-sensitive design to accommodate multimodal travel
- Integrate community values and goals

Artist rendering from Downtown Suwanee Master Plan

Study Area



Tasks and Timeline



Community Input

- *Change role of Buford Highway from a regional through-street to a local main street*
- *Support development patterns that create a place to live, shop, and work*
- *Improve connection between Old Town and Town Center*
- *Improve safety, particularly for alternative modes*
- *Preserve corridor assets*

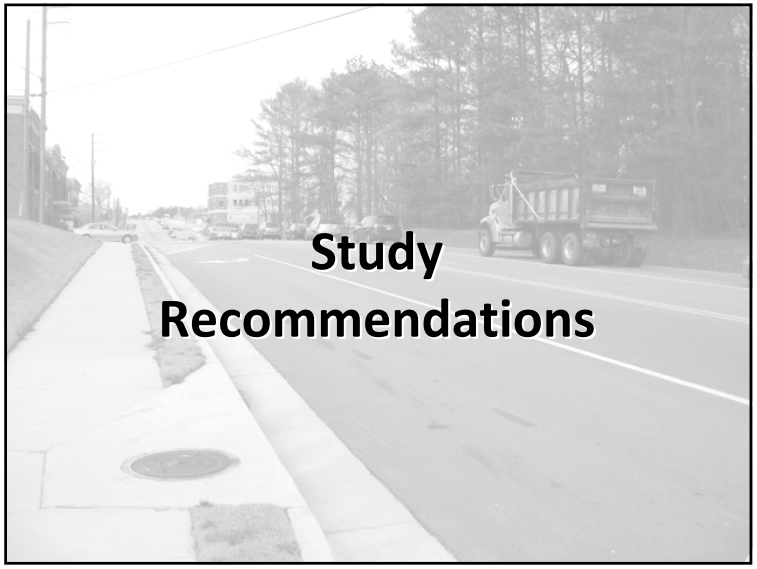
Traffic Analysis

Purpose & Tasks

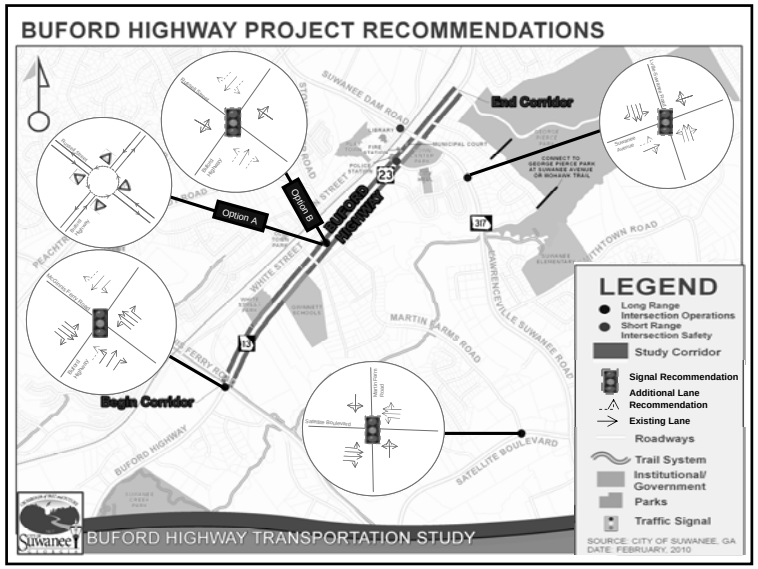
- Collect traffic data to identify existing and future mobility needs
- Develop future traffic growth estimates
- Understand travel patterns
- Estimate projected traffic impacts of *Downtown Suwanee Master Plan*

Major Findings

- Currently, Buford Highway operates fairly well except for a few pinch points
- Future traffic growth will result in poor conditions at most intersections
- Majority of trips are local, directed within Suwanee or Gwinnett County (less than 2 percent regional)



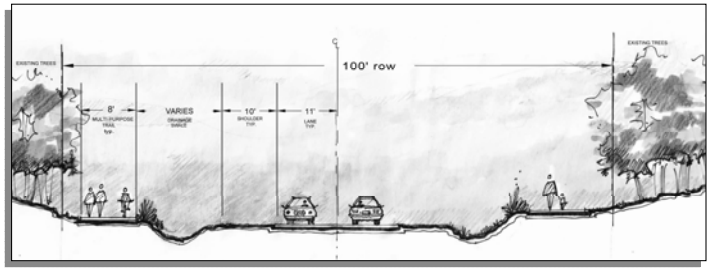
Study Recommendations



Recommended Redesign for Buford Highway: *The Transect*

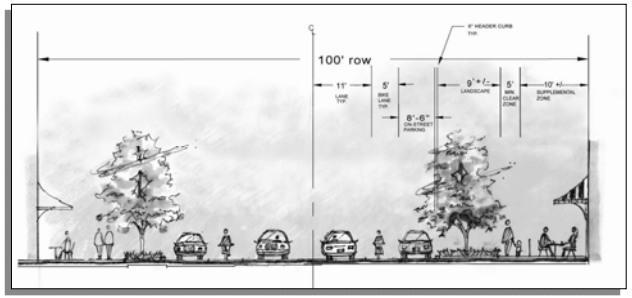
- Transitions from Suwanee Farm Village to Historic Old Town to Town Center
- Streetscape respects characteristics of each area

Rural Transect



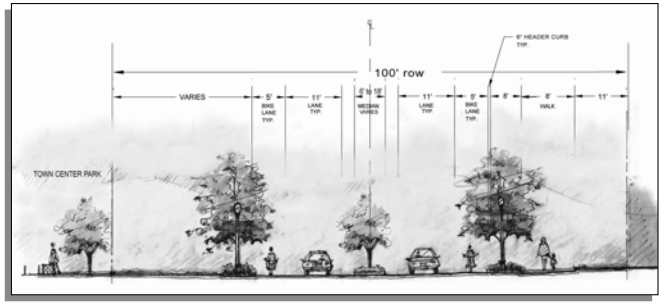
- Transitions from existing tree canopy with natural, landscaped buffer
- Includes broad multi-purpose path

Historic Transect



- Supports development node in Historic Old Town
- Includes broad sidewalks, bicycle lanes, and street trees

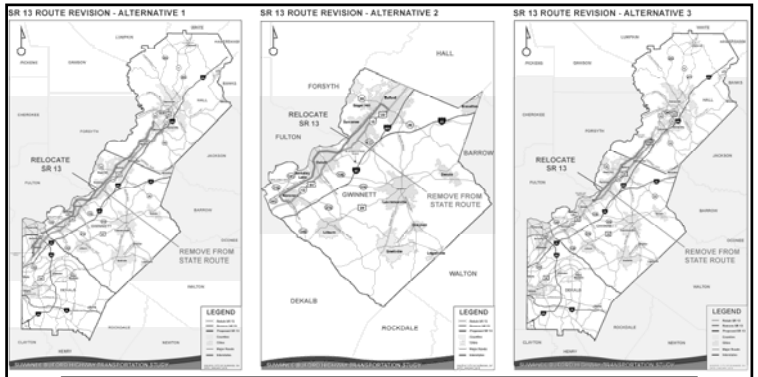
Town Center Transect



- Complements Town Center Park and civic center
- Provides landscaped median which serves as gateway feature

Strategies

- Work with GDOT to implement a context sensitive road design
- Petition for reduced speed limit
- Move state and federal route designations (SR 13/US 23) to alternate route



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** Within DeKalb County, Peachtree Industrial Boulevard is already State Route 141 so no miles would be added to the state route system. The SR 13 designation would be changed to Peachtree Industrial Boulevard, which would become SR 13/141.

Next Steps

- Adopt Study
- Submit Buford Highway Concept for ARC pre-qualification during call for projects
- Complete ARC scoping study if selected for funding

Print this page Close

3 cities take Buford Highway into future

By Shane Blatt
The Atlanta Journal-Constitution

4:35 a.m. Friday, February 19, 2010

Two years ago, three newly elected mayors met for lunch at a Ruby Tuesday in Duluth.

On the table: soda, salads, burgers — and Buford Highway.

Duluth's Nancy Harris, Norcross' Bucky Johnson and Suwanee's Dave Williams have a vested interest in the highway. After all, this artery shoots straight through the heart of their respective cities, with up to 33,610 vehicles on average zipping through parts of the corridor each day.

But for these enclaves, Buford is a road riddled with transportation, safety and zoning issues. It's where exhaust-belching cars crawl from block to block, where pedestrians stroll along broken sidewalks, where traffic lights dance on looping wires strung from tired utility poles, where a hodgepodge of shops and aging strip malls mingle with industrial warehouses and town homes.

So over a meal in January 2008, Williams and his mayoral counterparts pledged to transform more than eight incorporated miles of a 16-mile stretch of Buford Highway from the DeKalb County line to the city of Suwanee.

In March, Duluth is expected to put the finishing touches on its Buford Highway master plan, a vision that could include mixed-use developments, pedestrian overpasses and decorative gateways. In January, Norcross applied for $2 million in mostly state transportation and Atlanta Regional Commission funds that hold the promise of landscaped medians and, later on, sidewalks and underground utilities. And last week, Suwanee leaders met with state transportation officials to discuss streetscaping and keeping the road's growth in check.

"We're trying to unring a bell," Johnson said. "What we're looking for is a flow to [Buford Highway], rather than something that looks like a patchwork quilt. But it didn't get this way overnight, and it's going to take a long time to improve it."

And those improvements won't come easy. Because Buford Highway is a state road, the cities must get transportation officials' blessing to construct medians, plant trees and build gateways. With preliminary plans to narrow the lanes to slow traffic, Duluth would face the biggest roadblock.

"No, sir," Georgia Department of Transportation spokeswoman Teri Pope said of Duluth's "traffic-calming" idea. "There are a lot of restrictions put on state routes that most municipalities don't know about, don't want to know about."

In addition, the cities' boundaries don't touch, so there will be gaps of unincorporated highway that Gwinnett County planning officials have said they have no immediate plans to address. Still, city leaders hope their efforts will produce a "halo effect."

"I think if Norcross has a plan in place and Duluth has a plan in place, the property in between will look like one or both of us," Harris said. "It would set a precedent for how the area should look."

Duluth turns to TAD

The city of 26,000 in December green-lighted the creation of its first tax allocation district to spur redevelopment along a three-mile stretch of Buford Highway.

Last month, the city invited residents to weigh in on its redevelopment plan, which locals helped shape after months of input. The plan, 20 to 30 years out, called for landscaped medians and pedestrian overpasses, gateways at North Berkeley Lake and Old Peachtree roads and mixed-use developments.

“We’re looking at the big picture to make [Duluth] a more attractive place for businesses,” Harris said.

The city would almost double the size of its 60-acre downtown district, making Buford Highway the epicenter of a new live, work and shop environment, said economic development manager Chris McGahee.

There are just 400 undeveloped acres remaining in the city of 10 square miles. Most are family-owned or pose topography problems, so mixed-use, in-town living makes sense, McGahee said.

“We’ve all gotten a little bit tired of our moats, our castles, our subdivisions with the yards we have to maintain,” McGahee said. “We’re looking to be more communal.”

Judy Wilson, a 27-year Duluth resident, said she welcomes improvements. “Our city has nothing attractive on Buford Highway,” said Wilson, referring to industrial buildings and vacant lots. “It looks deserted, unkempt, abandoned. We need to fix the sidewalks, put in sewer.”

Woody Bell, also of Duluth, recalls riding his bicycle up and down the city’s stretch of Buford in the 1950s, when it was a rural two-lane road. In the early ’90s, it was widened and Duluth lost its tree canopy. Now empty land and vacant buildings mingle with Dairy Queens, ballet schools and the city’s Public Safety Center.

Bell, who owns Woody’s Nursery, said he’s not sold on the idea of flushing buildings up against the highway or creating medians that will hamper tractor-trailers from maneuvering in and out of his business.

“I think it’s got a lot of potential, if things are done right,” he said. “I just don’t want it to harm the people who are there.”

Norcross embraces Buford

Norcross’ downtown was once invisible from Buford Highway, a nearly conscious push a decade ago to distance the highway from the rustic historic district, officials said.

“It was almost a ‘don’t ask, don’t tell’ kind of relationship,” longtime Councilman Craig Newton said. “Then we came to the realization that if we ignore it, it’s not going to go away.”

In 2002, the city earmarked more than $400,000 for benches and sidewalks near Jimmy Carter Boulevard and Langford Road. Then last summer, Norcross took a significant step to reconnect its downtown by introducing Lillian Webb Park, a 4-acre, $4.5 million town center that sits 75 yards from Buford Highway. This spring, sidewalk and streetlight additions to Cemetery Street will further link Norcross’ quaint downtown with the highway, officials said.

As in Duluth, building improvements won’t happen overnight for the two miles that wind through Norcross. It’s a stretch of road where rundown auto-body and title shops mix with Asian- and Latino-run businesses.

Norcross leaders, working with the Gwinnett Village Community Improvement District, are using overlay districts to revitalize buildings. The designation should pave the way for single-story shopping centers to be transformed into multiple-story mixed-use developments, officials said.

“We’re really trying to bring up the level of standard of Buford Highway — of development, safety and mobility,” said Chuck Warbington, executive director of the Gwinnett Village Community Improvement District. “There was never any thought process on how Buford Highway developed back in the ’70s and ’80s. But you’re going to start seeing changes.”

In January, the district, in partnership with Norfolk Southern Railroad, completed $250,000 in sidewalk improvements just south of Norcross, from Jimmy Carter Boulevard to the DeKalb County line.

Mayra Esquea-Cruz, who manages Mi Pilon, a Dominican restaurant, with her sister, said sidewalk and median improvements are long overdue because “a lot of people do get killed crossing the street.” The Norcross Police Department reports one pedestrian fatality in the past 12 months.

Esquea-Cruz fears any changes to building or zoning requirements could work against her business. “A lot of these buildings are very old and out of code,” Esquea-Cruz said. “It’ll hit the Spanish businesses hard and require us to spend more money. We’ve already been hit hard by the economy and immigration.”

Suwanee writes history

For Suwanee, Buford Highway is not so bad. After all, just two lanes run through this city of 16,500 from Suwanee Creek to Sugar Hill, with no immediate plans to widen it.

But Williams wants to be proactive. If Buford Highway were to expand, he said, it could threaten Suwanee’s tree canopy, stymie pedestrian access and thwart efforts to link historic Old Town to the new town center.

“We don’t control the destiny of Buford Highway alone,” Williams said. “But if we don’t plan the future of that road, we know what we’re going to get: Doraville or Chamblee.”

So Williams and other city leaders met with state transportation officials last week, asking to collaborate on a future road design that GDOT and the Suwanee community can live with. Next week, Suwanee will engage its residents, with ideas that include bike lanes, on-street parking and even a roundabout.

Unlike Duluth and Norcross, Suwanee isn’t looking to redevelop existing properties. For Suwanee, it’s an issue of first-generation development — and how that comes about.

“If this were a baseball game, we’d be in the first inning,” Williams said. “Most of the history of that corridor has yet to be written.”

Williams’ colleagues in Duluth and Norcross could help him write that history.

Perhaps over lunch.

Glossary

Tax allocation districts: TADs are designated areas that can use public money to fund improvements. Bonds are issued, and they are paid off with the increased tax revenues as property in the district appreciates.

Community improvement districts: CIDs are self-taxing groups of commercial property owners that fund capital and beautification improvements along designated areas.

Overlay districts: Zoning districts that establish consistent architectural and design standards. In Norcross, for instance, such changes would be mandated if the property changed hands.

Suwanee asks for feedback on Buford Highway Study

February 18, 2010 | 09:01 AM

SUWANEE - The City of Suwanee will host a community meeting at 6:30 p.m. Feb. 25, to share plan alternatives being developed as part of the Buford Highway Transportation Study. The meeting will be at the Crossroads Center at 323 Buford Highway.

The Buford Highway transportation study, covering the area from McGinnis Ferry Road to the entrance of George Pierce Park, has been undertaken to determine what changes are needed to accommodate future development and multiple modes of transportation. Some potential solutions include bike lanes, a roundabout, on-street parking or additional travel lanes.

Led by URS Corporation, the context-sensitive study stems from the 2009 Downtown Master Plan and is supported by a grant from the Atlanta Regional Commission.

"Alternatives have been developed to preserve the existing character of Buford Highway while making the roadway more accommodating to various modes of transportation and anticipated development," said Planning Division Director Matthew Dickison. "Now we are asking for our residents to provide feedback. At the community meeting, we'll provide a brief presentation about how the plan was developed and then use interactive exercises to elicit feedback."

On March 18, the City will host an open house to share a final draft of the plan and receive additional community comments before the plan is considered by City Council. That meeting will be at 6:30 p.m. at City Hall, 330 Town Center Avenue.

Appendix C: Transportation Alternatives

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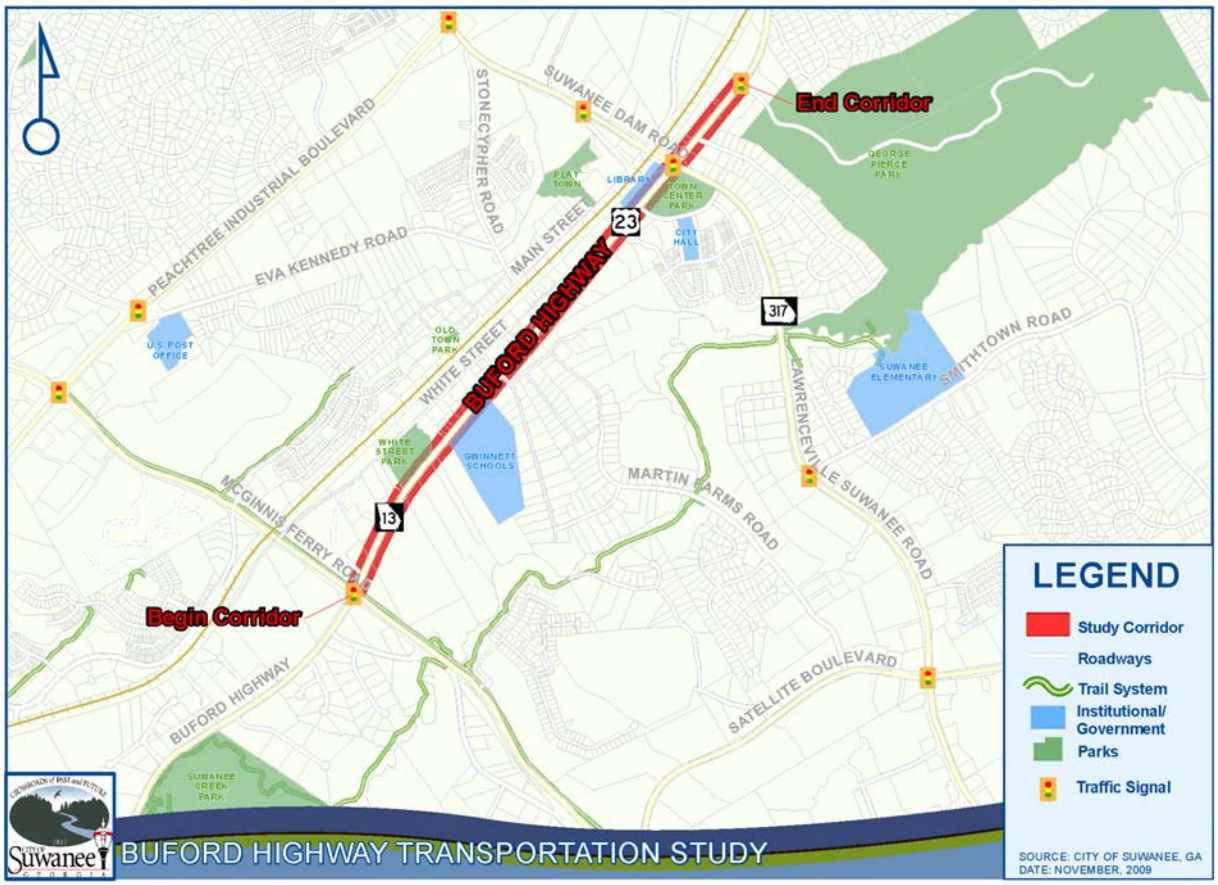
1.0 Introduction

The City of Suwanee is conducting a detailed planning and traffic engineering study for Buford Highway (US 23/SR 13) from McGinnis Ferry Road to George Pierce Park. The study area is shown in Figure 1. The purpose of the study is to identify what types of multimodal improvements are needed long-term to meet community and mobility needs. The study is building upon the recently updated *Downtown Suwanee Master Plan*, which identified future development nodes along Buford Highway and recognized the need to connect the historic Old Town Suwanee with Town Center Suwanee. Town Center is a major civic attraction for the community with a new City Hall, Park, and Amphitheater as well as a shopping, dining, and living destination. The Old Town is the historic center anchored by Pierce's Corner. The study offers the opportunity to examine more closely the existing and future travel patterns and traffic demands and desired development plans to determine how to balance competing demands for this segment of Buford Highway.

Figure 1: Study Area Map



1.1 Study Overview

The study is comprised of four major components: data collection, traffic impact and circulation analysis, alternatives and recommendations development, and public involvement. The study was initiated in October 2009 and completed in April 2010. At the outset of the study, new traffic data was collected at intersections along and around Buford Highway. This traffic data was used to better understand existing traffic patterns and demands as well as conduct the traffic impact assessment. The ARC Regional Model, combined with anticipated development identified in the *Downtown Suwanee Master Plan*, was used to examine future growth rates and develop future build and no-build conditions for Buford Highway. Findings from the analysis are included in the Traffic Technical Memorandum. In addition to the existing and future traffic assessment, the team interviewed local stakeholders identified by the City to gain a better understanding of the community's vision for Buford Highway.

1.2 Report Purpose

Based on findings from the traffic assessment and stakeholder interviews, combined with guidance from the City and informed by previous studies, this report identifies potential policies, strategies, and projects for Buford Highway and the immediately surrounding area. In addition, the report provides an implementation plan. The implementation plan provides a schedule and action plan for projects identified in this report.

2.0 Study Context

2.1 Downtown Master Plan

As acknowledged in the *Downtown Suwanee Master Plan*, the land use recommendations for the Buford Highway corridor include compact, mixed-use development at a pedestrian-scale (ranging from two to a maximum of five stories). The *Master Plan* recommends inclusion of mixed-use, commercial and residential uses, with an emphasis on offering a diversity of residential types, specifically multi-family and townhomes.

The Buford Highway corridor bisects three unique districts identified in the *Downtown Suwanee Master Plan*:

- Town Center District
- Historic Old Town Village District
- Suwanee Farm Village District

Each district has a unique character, scale and intended uses. Below is a synopsis of the relationship between the Buford Highway corridor and the proposed development recommended in each district:

Town Center District

The Town Center District is bisected by Buford Highway, with land use recommendations that enforce the design precedent established in the previous *Town Center Master Plan*. The properties along Buford Highway are intended to provide low- to mid-rise majority non-residential (i.e. commercial and office) and civic opportunities in order to facilitate the area as a true community hub for the City of Suwanee. Building placement fronts the roadway and relegates parking to the rear, facilitating an enhanced urban and pedestrian-oriented aesthetic. Emphasis is placed on enhancing both pedestrian and vehicular connections along Buford Highway, especially between the Town Center and the Historic Old Town Village Districts through limited driveways and a pedestrian-oriented streetscape to improve the corridor's overall desirability.

Historic Old Town Village District

The intersection of Buford Highway and Russell Street is intended as an extension of the Historic Old Town Village (i.e. Main Street), whereby an increase of low- to mid-rise majority non-residential options (i.e. commercial and office) would be prevalent from this intersection northeast along the corridor to Town Center. Buildings should front the roadway, provide outdoor patios/ seating areas, and parking at the rear. An improved streetscape, including wide sidewalks, pedestrian lighting and amenities (i.e. signage, benches, etc), and intersection enhancements (i.e. textured paving, reduced turning radii, pedestrian signals, etc.) allow this intersection to become a 'City of Suwanee Gateway' and a desirable address for new businesses.

Suwanee Farm Village District

Anchored by the Suwanee Farm conservation area (known today as the City's White Street Park), this District is planned as predominantly residential, incorporating a mix of dwelling types that transition from attached townhomes to mid- rise (three to five stories) majority residential developments near the McGinnis Ferry Road intersection (located to the southwest). Mid-rise (two to three stories) retail/ office and civic opportunities enhance the economic potential of the corridor, and complement the need for streetscaping and pedestrian amenities. To ensure desirability for residential dwellings, increased building setbacks, limited curb cuts and enhanced buffers (or existing tree save areas) are recommended along this southern portion of the Buford Highway corridor.

The proposed development form along the Buford Highway corridor for all three districts is intended to front the street, offer pedestrian amenities (i.e. front stoops, pedestrian lighting, landscaping and sidewalks), locate vehicular parking at the rear and require inter-parcel access, so as to reduce the number of driveways along Buford Highway.

Buford Highway is described as a Boulevard in the *Downtown Suwanee Master Plan*, defined as a primary community travel route with multimodal travel options, including bicycle lanes and pedestrian sidewalks. For the Buford Highway corridor to be compatible with the recommended development form and associated density of the three districts described above, the corridor must:

- Incorporate alternative modes of travel, specifically pedestrian-oriented;
- Allow inter-parcel connectivity;
- Reduce curb cuts and driveway access; and
- Enhance the aesthetics, safety and quality of the corridor, through landscaping and pedestrian improvements.

2.2 Stakeholder Input

Stakeholders representing the city, business leaders, and property owners were interviewed in October and November, 2009 for the Buford Highway Transportation Study. Specific to the study, the stakeholder interviews focused on identifying community issues and needs regarding Buford Highway as well as identifying what was desired long-term for Buford Highway. Detailed results of the stakeholder interviews were compiled in a summary report.

On the whole, stakeholders want the study to integrate the development concept along Buford Highway with multimodal transportation improvements to Buford Highway. The role of Buford Highway in the center of Suwanee needs to change from a pass-through highway to a central core "Main Street," one that better serves the community. The development patterns should result in a destination place to shop and include residential housing. Buford Highway needs to connect Town Center to Old Town in a way to encourage future development.

Safety was the most frequently cited transportation concern along Buford Highway. Buford Highway was identified as extremely dangerous for alternative transportation, particularly from Davis Street to McGinnis Ferry Road. There are no sidewalks or shoulders. It's difficult to walk along, and there is no buffer to protect pedestrians.

One of the most commonly cited observations about Buford Highway is that it is relatively unchanged, except for the development of Town Center and Town Center Park. It is unusual that development along Buford Highway has not occurred, as growth has occurred elsewhere in Suwanee. The greatest changes observed on Buford Highway include increased traffic volumes during commute times, the Pedestrian Hawk signal installation at Town Center, and upgrade of the signal at Lawrenceville-Suwanee Road.

2.3 Traffic and Circulation

A traffic study of existing and projected future conditions was conducted to determine likely impacts to the roadway system associated with implementing the development recommended in the *Downtown Suwanee Master Plan*. The analysis focused on the following intersections:

- Buford Highway & McGinnis Ferry Road
- McGinnis Ferry Road & Scales Road
- Buford Highway & George Pierce Park
- Russell Street & Main Street
- Suwanee Dam Road & Main Street/Brogdon Road
- Lawrenceville-Suwanee Road & Suwanee Avenue
- Satellite Boulevard & Martin Farm Road
- Buford Highway & Russell Street
- Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road
- Buford Highway & Town Center Avenue

Detailed documentation of this effort is included in a separate technical memorandum. The following summarizes the activities and findings from this analysis.

The analysis focused on the weekday AM and PM peak hours for 2009 (Existing Conditions) and the years 2010 and 2030, with and without the implementation of the development recommended in the *Downtown Suwanee Master Plan* (No-Build and Build Conditions). Data collection for the study included:

- Peak period turning movement traffic counts
- Field review
- Safety analysis

The main component of the effort was an operational analysis utilizing a Highway Capacity Manual (HCM) methodology with the Synchro 7 software program. This analysis indicated limited congestion in the 2009 existing peak hours. Of note was level of service (LOS) E observed at the intersection of Buford Highway and McGinnis Ferry Road in the PM peak hour and congestion at the intersection of Suwanee Dam Road and Main Street. Conditions in the year 2010 showed similar results to the year 2009. However, analysis of the year 2030 indicated degradation of many signalized and unsignalized intersections in the study area, particularly when development recommended in the *Downtown Suwanee Master Plan* is assumed as it was in the Build condition. The LOS results from the analysis are shown in Table 1.

Table 1: Intersection Level of Service (2009 – 2030)

Intersection	2009		2010 No Build		2030 No Build		2030 Build	
	AM	PM	AM	PM	AM	PM	AM	PM
Buford Highway & McGinnis Ferry Road	D	E	D	E	D	E	E	F
McGinnis Ferry Road & Scales Road (unsignalized)								
Northbound Scales Road	D	F	D	F	D	F	F	F
Southbound Scales Road	C	F	C	F	D	F	F	F
Buford Highway & George Pierce Park	A	A	A	A	A	A	A	A
Russell Street & Main Street (unsignalized)								
Northbound Main Street	A	A	A	A	A	A	D	C
Southbound Main Street	B	B	B	B	B	B	F	F
Suwanee Dam Road & Main Street/Brogdon Road (unsignalized)								
Northbound Main Street	F	F	F	F	F	F	F	F
Southbound Brogdon Road	E	D	E	D	E	F	F	F
Lawrenceville-Suwanee Road & Suwanee Avenue (unsignalized)								
Eastbound Suwanee Avenue	F	F	F	F	F	F	F	F
Westbound Suwanee Avenue	F	F	F	F	F	F	F	F
Satellite Boulevard & Martin Farm Road (unsignalized)								
Northbound Martin Farm Road	F	F	F	F	F	F	F	F
Southbound Martin Farm Road	F	F	F	F	F	F	F	F
Buford Highway and Russell Street (unsignalized)								
Eastbound Russell Street	D	F	D	F	D	F	F	F
Westbound Russell Street	C	E	C	E	C	E	F	F
Buford Highway & Lawrenceville-Suwanee Road/Suwanee Dam Road	C	D	C	D	C	D	D	E
Buford Highway & Town Center Avenue (unsignalized)								
Eastbound Town Center Avenue	C	D	C	D	C	D	F	F
Westbound Town Center Avenue	C	D	C	D	D	D	F	F

Other significant findings not directly related to the operational analysis include the following.

- The ARC travel demand model estimates that a majority of the trips along Buford Highway are local Suwanee based trips (52.4 percent in the year 2005 increasing to 59.6 percent in the year 2030) or Gwinnett based trips (46.1 percent in the year 2005 and 38.9 percent in the year 2030), while only a small amount of trips are regional (1.4 percent in 2005 and 1.5 percent in 2030).
- Likewise, the travel demand model is indicating that a large majority of the future growth on Buford Highway is likely to be locally-based as opposed to regionally-based. This analysis was used to determine the growth rate of regional traffic for the No-Build condition analysis and indicated only a 0.28 percent annual growth rate in regional traffic through the year 2030.

A safety analysis of reported crashes between the years 2003 through 2008 did not indicate any overall patterns in crashes that could be mitigated through improvements. However, field observations did indicate three locations with significant safety concerns:

- The newly installed HAWK signal located immediately north of Town Center Avenue on Buford Highway was observed to be utilized on several occasions. However, on many of these occasions, observations suggested that drivers along Buford Highway were unsure of how to travel relative to the different phases of the HAWK signal. Likewise, westbound traffic on Town Center Avenue making a right turn onto northbound Buford Highway is channelized directly into the pedestrian crossing path for the HAWK signal with a YIELD control. Vehicles making this movement cannot see the HAWK signal which could create an unsafe condition for a pedestrian or bicyclist utilizing the HAWK signal and pedestrian crossing path.
- Trains crossing at Suwanee Dam Road during the PM peak period sporadically contribute to significant congestion at the intersection of Buford Highway and Lawrenceville-Suwanee Road/Suwanee Dam Road including traffic queues on Suwanee Dam Road eastbound, Lawrenceville-Suwanee Road westbound, and Buford Highway northbound. The upcoming pre-emption at this intersection with the rail crossing will likely address some of the safety issues caused by this congestion (including eastbound queues backing onto the railroad tracks) but will not likely address the congestion. This congestion seems to be exacerbated by heavy vehicle movements from Suwanee Dam eastbound making a left onto Buford Highway. The storage length for the eastbound left turn at the intersection of Buford Highway and Lawrenceville-Suwanee /Suwanee Dam Road is too short to handle the demand in traffic which then spills out into the through lanes on Suwanee Dam Road. Observations indicate that in the PM peak period many of these vehicles are destined to George Pierce Park.
- The intersection of Suwanee Dam Road and Main Street/Brogdon Road has a number of issues often exacerbated by congestion spilling back from the intersection of Suwanee Dam Road and Buford Highway or trains utilizing the railroad in the PM peak hour. This only complicates a variety of potential safety issues including:
  - Westbound vehicles making a left turn from Suwanee Dam Road onto Main Street southbound despite the lack of a dedicated left turn lane which often results in westbound vehicles backing up onto the railroad crossing and/or situations where the probability of a rear-end vehicle collision is increased.
  - Vehicles making a left from southbound Brogdon Road onto Suwanee Dam Road often compete in the median with the aforementioned vehicles making a left from Suwanee Dam Road to Main Street. Incidentally, some of these vehicles from Brogdon Road were observed to be trucks.
- In addition, the intersection of Buford Highway and George Pierce Park operated well with the exception of whenever games begin or end at the park. When entering the park, many vehicles entering from southbound Buford Highway were observed to utilize the striped median to turn due to the lack of a dedicated southbound left turn lane. When games were ending, a significant queue was observed for vehicles attempting to exit the park. This heavy demand of vehicles (many turning westbound left onto Buford Highway) was also observed on Buford Highway approaching Lawrenceville-Suwanee Dam Road on such instances.

3.0 Transportation Projects, Strategies, and Programs

The Buford Highway Study Area extends approximately 2.6 miles along Buford Highway/ US 23/SR 13 from McGinnis Ferry Road to the driveway at George Pierce Park. Currently, Buford Highway is designated as an Urban Minor Arterial by the Georgia Department of Transportation (GDOT) and a Major Arterial by the City of Suwanee. The existing cross-section includes two through-lanes, and the posted speed is 45 miles per hour (mph). Major cross-streets include the four-lane McGinnis Ferry Road and Lawrenceville-Suwanee Road/SR 317-Suwanee Dam Road, which are each posted 45 mph as well.

As a follow-up to the *Downtown Suwanee Master Plan*, the Buford Highway Transportation Study has focused on Buford Highway. The study has provided the opportunity to look at existing and future mobility, accessibility, safety, and sustainability within the context of desired future development within the City. Short and long-term projects, strategies and policies have been identified to address identified needs. The following provides an overview of the project identification process. Complementary transportation strategies and policies are also identified.

3.1 Project, Strategy, and Policy Identification

The *Downtown Suwanee Master Plan* process provided an opportunity to establish vision and guidance about how the study area should be developed over the long term. One of the major transportation focus areas is to provide expanded options for traveling outside of a vehicle, whether by foot, bicycle, or transit. A major theme indicated by the prior planning process and reinforced by stakeholders is that transportation infrastructure is multimodal and fit with planned development. Buford Highway should better fit the context of a city street providing access to the Town Center and envisioned future development while also connecting Town Center to the historic Old Town.

3.2 Strategies and Programs

Two major concerns expressed about Buford Highway Strategies are safety and ownership. The City and stakeholders have indicated the posted speed and vehicular travel speeds on Buford Highway are too high in relation to new development around Town Center. Formerly, Buford Highway served as a major regional thoroughfare for long distance travel. Now, a majority of regional travel occurs on I-85 and Peachtree Industrial Boulevard, while Buford Highway serves more local traffic. Since the development of Town Center, completion of the pedestrian tunnel under the Norfolk Southern railroad linking Main Street to Buford Highway, and installation of HAWK pedestrian signal across Buford Highway at Town Center, the number of pedestrian crossings has increased. The speed of traffic on Buford Highway is a concern for those trying to cross the Highway. In addition, throughout the *Downtown Suwanee Master Plan* development and into this study, the fact that the state maintains ownership of Buford Highway means that any future changes to Buford Highway are subject to GDOT policies. GDOT policies, which govern all state owned and maintained roads, do not reflect or complement Suwanee's overall development vision for the Buford Highway corridor. In recognition of concerns about speed and ownership, two strategies are proposed.

3.2.1 State Route Revision

The future of Buford Highway and downtown Suwanee could differ based on whether Buford Highway remains a state route. As a state route, Buford Highway will be governed by GDOT rules and managed for regional, high-speed throughput. As a state route, Buford Highway will be subject to GDOT traffic, design, and access policies (such as requiring acceleration/ deceleration lanes for new developments as well turning radii to accommodate freight). It is unlikely that state will remove from its long-range plan the project to widen Buford Highway to four lanes (PI# 0002393). Any proposed project improvements will have to conform to GDOT standards.

If Buford Highway becomes a locally-maintained/owned street (either by the county or city), Suwanee would gain more local control over the future of Buford Highway. By removing Buford Highway from the state route system, the City could presume more flexibility in design, traffic, and policies related to Buford Highway. Local control can leave the door open to implement the community vision. In addition, the City may achieve a more context-sensitive design that better accommodates the multimodal travel, with vehicles, bicycles, and pedestrians sharing the road.

The primary challenge in getting a state route revision is achieving consensus from Suwanee's neighboring jurisdictions, counties, and GDOT to move the state route designation. Two potential revisions are proposed. Alternative 1, illustrated in Figure 2, proposes a multi-county state route revision, which transfers the state route designation from Buford Highway to Peachtree Industrial Boulevard and McEver Road within DeKalb, Gwinnett, and Hall Counties. Alternative 2, illustrated in Figure 3, proposes the revision only within Gwinnett County, which transfers the state route designation from Buford Highway to Peachtree Industrial Boulevard between SR 140 and SR 20. If the state route is moved, the local jurisdictions would take ownership of Buford Highway.

The process for making the state route revision includes making a written petition to GDOT for the change. Although Suwanee would be the coordinating applicant, it is important that the City begin discussions with its neighboring jurisdictions and Gwinnett County to gauge intent and agreement. The primary considerations on behalf of each institution are ownership, operations, and maintenance. If Buford Highway is removed from the state route system, then the local governments assuming ownership will be responsible for operations and maintenance. Likewise, if Peachtree Industrial Boulevard and McEver Road are added to the state route system, local ownership is lost and these facilities would be owned, operated, and maintained by GDOT. Table 2 provides approximate centerline and lane miles removed and proposed for the two revision alternatives.

Figure 2: SR 13 Route Revision, Alternative 1

Figure 3: SR 13 Route Revision, Alternative 2

Table 2: State Route Revision Alternatives

State Route Revision	County	SR 13 Miles Removed from Buford Highway		SR 13 Miles Added to Peachtree Industrial Boulevard and McEver Road (Hall)	
		Centerline Miles	Lane Miles	Centerline Miles	Lane Miles
Alternative 1	DeKalb	5.1	29.4	**	**
	Gwinnett	22.9	70.2	21.1	84.4
	Hall	14.3	28.6	10	22.4
Alternative 2	Gwinnett	16.9	47.2	17.5	70

Note: All distances are approximate.
** Within DeKalb County, Peachtree Industrial Boulevard is already State Route 141 so no miles would be added to the state route system. The SR 13 designation would be changed to Peachtree Industrial Boulevard, which would become SR 13/141.

Another consideration for the state route revision is what is planned for the facilities in question. A review of GDOT's Transportation Explorer (T-Rex) on-line project system indicates the following unlet projects are currently identified within the Construction Work Program (CWP) or Long Range Program (see Table 3).

Table 3: Planned Projects on Buford Highway, Peachtree Industrial Boulevard, and McEver Road

Facility	Project Description	County	Project ID No.	Length	Status
Buford Highway/US 23/SR 13	Miscellaneous and streetscape improvements from Lenox Road to Shallowford Terrace	DeKalb, Fulton	0008802, 0008803, 731770	5	CWP
	Miscellaneous improvements from Afton Lane to Shallowford Terrace, Phase II	DeKalb	0009400	2.73	Long Range
	Widen Buford Highway from Sugarloaf Parkway to SR 20	Gwinnett	0002393	8.03	Long Range
	Landscape/Beautify from CR 901/ North Berkeley Lake Road to SR 120	Gwinnett	0009070	2.15	CWP
	Bicycle/Pedestrian facility from CR 655/Amwiler Road to Jimmy Carter Boulevard	Gwinnett	0009075	1.78	CWP
	Widen Buford Highway from Old Peachtree Road to Sugarloaf Parkway	Gwinnett	132360	2.4	Long Range
	Widen Buford Highway from CS 1120/Sawnee Avenue to SR 347	Gwinnett, Hall	132950	1.59	CWP
	Widen Atlanta Highway from CR	Hall	0001822	3.88	Long

Facility	Project Description	County	Project ID No.	Length	Status
	528/Radford Road to South of SR 53				Range
	Traffic signal upgrades on SR 11, SR 13, SR 53, and SR 60	Hall	0007353	--	CWP
McEver Road	Widen McEver Road from CR 537/ Jim Crow Road to SR 53/Mundy Mill	Hall	122030	4.32	Long Range
	Widen McEver Road/CR 1293 from SR 347 to CR 537/Jim Crow Road	Hall	0001821	4.85	Long Range
	Intersection Improvement at CR 487, CR 1285, CR 357, CR 1287, CR 1294	Hall	0007389	2	Long Range

Source: GDOT T-Rex, accessed February 2, 2010

3.2.2 Speed Reduction

One of the concerns expressed by the City and stakeholders is how the current posted speed (45 mph) and actual travel speeds of vehicles on Buford Highway are higher than desired. The City seeks to provide safer pedestrian access to Town Center across Buford Highway. The higher travel speeds are not in context with the desire to create both a safer environment for pedestrians and an environment where pedestrians perceive a safer condition. These concerns are underscored by empirical data. Primary considerations for creating pedestrian and bicyclist safety are traffic volumes, design and separation, and traffic speed. As noted in the Federal Highway Administration (FHWA) *Pedestrian Facilities User Guide-Providing Safety and Mobility*, "Speeding has serious consequences when a pedestrian is involved. A pedestrian hit at 40 mph has an 85 percent chance of being killed; at 30 mph, the likelihood goes down to 45 percent, while at 20 mph, the fatality rate is only 5 percent. Faster speeds increase the likelihood of a pedestrian being hit. At higher speeds, motorists are less likely to see a pedestrian, and are even less likely to be able to stop in time to avoid hitting one."[1]

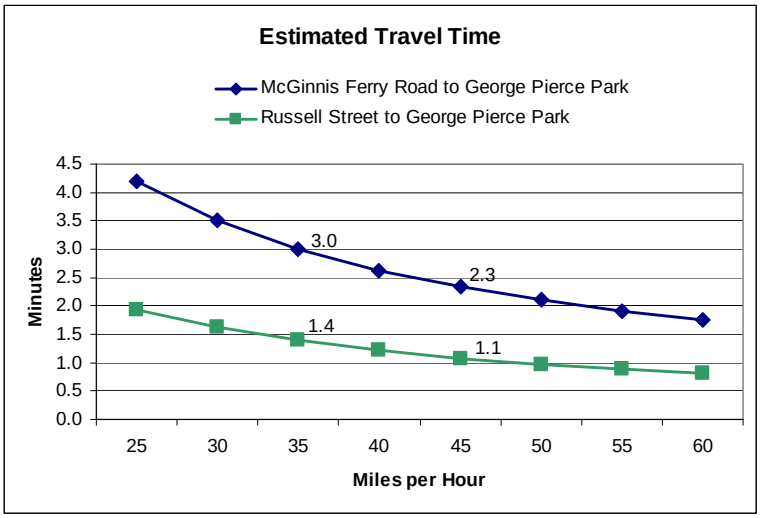
As a state highway, the City of Suwanee may petition GDOT and Gwinnett County for a speed zone reduction, as directed by Transportation Online Policy & Procedure System (TOPPS) directive 6780-4, "Establishment of Speed Zones." As noted in the directive, the means for determining speed limits is specified by an engineering and traffic investigation. Factors that are typically included in the traffic engineering and traffic investigation are:

- Field checks of existing travel speeds to calculate the 85th percentile speed and the pace speed;
- Roadside development;
- Roadway geometrics and design, which includes width, clearances, shoulders, sight distances, and stopping sight distances;
- Other conditions of the roadway, which includes parking and the presence of pedestrians and trucks;

[1] U.S. Department of Transportation, Federal Highway Administration, *Pedestrian Facilities User Guide-Providing Safety and Mobility*, Publication No. FHWA-RD-01-102, March 2002, page 13.

- Crash history; and
- A field test drive to confirm driving conditions.

As stated in the TOPPS 6780-4, "The speed limit will be set as a maximum speed limit under the best conditions."



As an element of this study, existing travel speeds, pedestrian crossing data, and vehicular crash data were reviewed. The 85th percentile speed in both the northbound and southbound direction on Buford Highway was 49 mph. Average speed was 42 mph, and the pace speed was 41 to 50 mph, with 62 to 64 percent of vehicles traveling within the pace speed range. At the HAWK signal location on Buford Highway at Town Center Avenue, pedestrian crossings were also tabulated. In the morning peak hour, no pedestrian crossings were recorded. However, in the afternoon, 14 pedestrian crossings occurred during the peak hour and 23 crossings occurred during the peak period (from 4:00 pm to 6:00 pm).

Vehicle crash data for 2005 through 2007, collected for the *Downtown Suwanee Master Plan*, was reviewed to determine any pattern or correlation that could be attributed to roadway design elements and vehicle speed.* The area reviewed extends from McGinnis Ferry Road and Suwanee Dam Road/Lawrenceville-Suwanee Road. For this review, crashes at intersections were eliminated from the review, as vehicle speeds are affected by intersection operations, particularly at signalized intersections.

During the time period reviewed, there were 17 crashes in the study area, of which four were injury crashes (with a total of six injuries) and no fatal crashes. Eleven of 17 crashes were rear-end type crashes, and three crashes occurred at night. The crash locations were spread evenly across the 1.31 mile study area with only one crash occurring at a curve. The crash data do not appear to indicate any consistent pattern that would indicate higher speeds and design are contributing factors of the crashes.

As a result of the preliminary engineering and traffic review, the current data do not strongly support a speed reduction petition. However, the option to petition is one that the City could undertake.

* Note: Two separate crash assessments were conducted for this study. One assessment focused on intersection safety for the traffic impact and circulation analysis. The other looked at crashes in relation to the speed concern.

3.3 Projects

As a result of the needs identified in the traffic analysis, a number of potential projects and strategies were developed. The traffic operations analysis indicated increased congestion in the year 2030, particularly in the Build alternative, where the development recommendations from the *Downtown Suwanee Master Plan* were assumed.

3.3.1 Short-Term Traffic Operations and Safety Projects

From the field review, two short-term projects and strategies are proposed to address primarily safety concerns.

HAWK Signal on Buford Highway at Town Center Avenue

Modify the HAWK signal design to restripe the crosswalk over Buford Highway so that it terminates on the Town Center side of Buford Highway into the channelized right turn island instead of into the right turn lane as it does now. Another alternative would be to move the HAWK signal to a mid-block location.

Suwanee Dam Road and Main Street/Brogdon Road

Modify the intersection of Suwanee Dam Road and Main Street/Brogdon Road. While the issues with this intersection are widely known in the community and have been broached previously in the *Downtown Suwanee Master Plan* and by the Downtown Development Authority, the operational analysis and field reviews conducted for this study indicate that the current issues at the intersection will likely increase in the future.

For this study, concepts including roundabout and “Michigan-left” designs were considered but ruled infeasible due to the intersection’s proximity to the railroad. Previously considered concepts include closing the median and providing access to Old Town Suwanee and the light-industrial businesses in Sugar Hill via the existing signalized intersection of Suwanee Dam Road and the Library/Shadowbrook Church. While the concerns about maintaining the existing access to Old Town Suwanee and businesses located on Brogdon Road and Main Street are valid, it is likely that future congestion and safety issues at this intersection could effectively close off the current access. Therefore, it is recommended that the City of Suwanee continue to address a reasonable approach to this intersection with business owners, the public, and in coordination with the City of Sugar Hill.

3.3.2 Long-Term Traffic Operations and Safety Projects

The following projects should be considered to be long-term and subject to the way in which the downtown Suwanee area develops. In particular, the recommendations, including signalization of intersections, are based on the assumption that those intersections will be the main entry and exit points for new development in downtown Suwanee and are pursuant to signal warrant analyses and subsequent permit review and approval by agencies such as GDOT. The following long-term intersection operations and safety projects are proposed.

McGinnis Ferry Road and Buford Highway

Install dual northbound left turn lanes and a dedicated southbound right turn lane on Buford Highway.

Lawrenceville Suwanee Road and Suwanee Avenue

Install a traffic signal with a dedicated eastbound left turn lane from Suwanee Avenue to Lawrenceville-Suwanee Road.

Satellite Boulevard and Martin Farm Road

Install a traffic signal.

Russell Street and Buford Highway

Install a traffic control at this intersection. Two options are proposed:

1. Add signalized intersection with dedicated northbound and southbound turn lanes
2. Add single-lane roundabout

Operational analysis of the two options indicated that the roundabout would have less congestion. Additionally, converting the existing four-way intersection to a roundabout will improve the vehicular safety of the intersection. As cited in *Synthesis of Highway Practice 264: Modern Roundabout Practice in the United States*, the percent change in average annual vehicle crash frequencies at 11 U.S. intersections converted to roundabouts was -37% in total crashes, -51% in injury crashes, and -29% in property damage only crashes. However, debate continues regarding pedestrian safety and roundabouts (some debates suggests that poorly designed roundabouts contribute to the perception by some that roundabouts are unsafe for pedestrians), and the development type at the intersection may necessitate a more traditional four-way intersection.

3.3.3 Roadway Projects

The proposed roadway projects include new access to George Pierce Park and two future alternatives for Buford Highway.

Access to George Pierce Park from Lawrenceville-Suwanee Road

Provide access to George Pierce Park from Lawrenceville-Suwanee Road at either Suwanee Avenue or Mohawk Trail. This improvement should be coordinated with Gwinnett County Parks and Recreation Department. The timing of the project should coincide with the redevelopment proposed in the *Downtown Suwanee Master Plan*.

Buford Highway - State Route

The long-range plan for GDOT indicates a planned widening of Buford Highway through the City of Suwanee from Sugarloaf Parkway to SR 20. In light of this planned project, the City is limited on what kind of improvements it can seek for Buford Highway. In the near term, even if the City desired to add pedestrian and bicycle facilities on Buford Highway (as indicated by previous planning efforts), any improvement would have to be designed with the expectation that Buford Highway would be widened to at least four lanes sometime in the future. Although approximately 100 feet of right-of-way is estimated to be available, the standard design with four vehicle lanes and a median would place pedestrian or bicycle facilities at the edge of the right-of-way. It is likely that either additional right-of-way or easements would be necessary for these improvements, particularly where turning lanes add additional lane width. Figure 4 illustrates a typical four-lane cross-section, while Figure 5 provides a plan view of the cross-section in the vicinity of Town Center.

Figure 4: Buford Highway GDOT Cross-Section

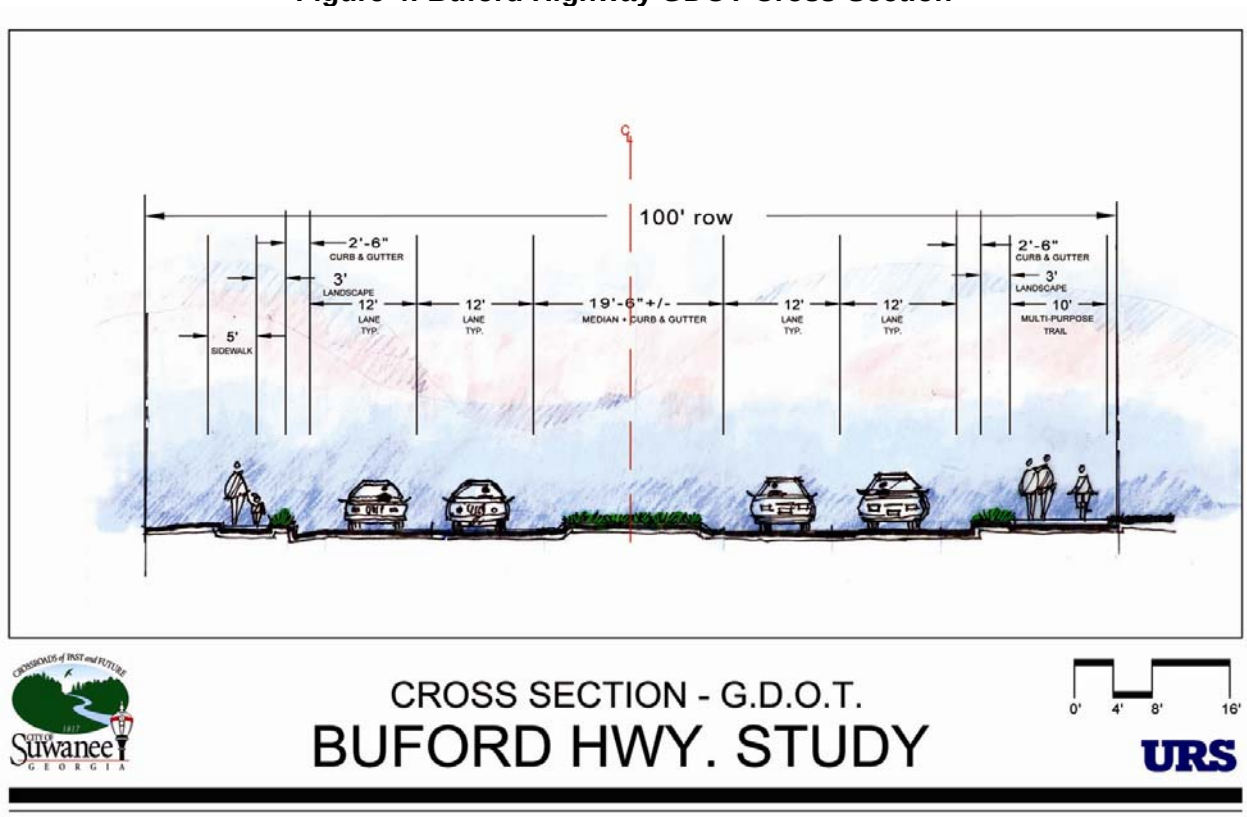
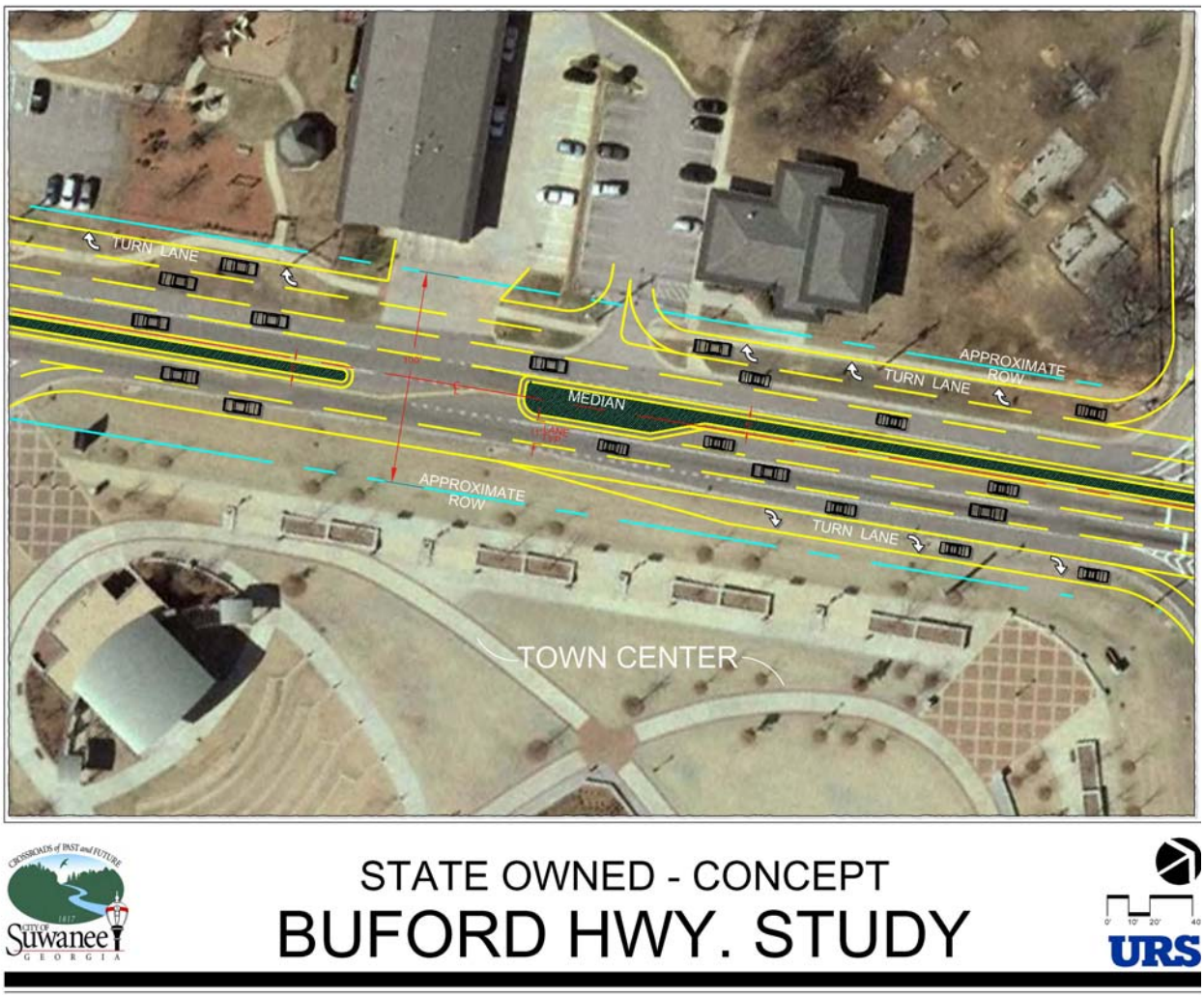


Figure 5: Buford Highway GDOT Cross-Section Applied near Town Center



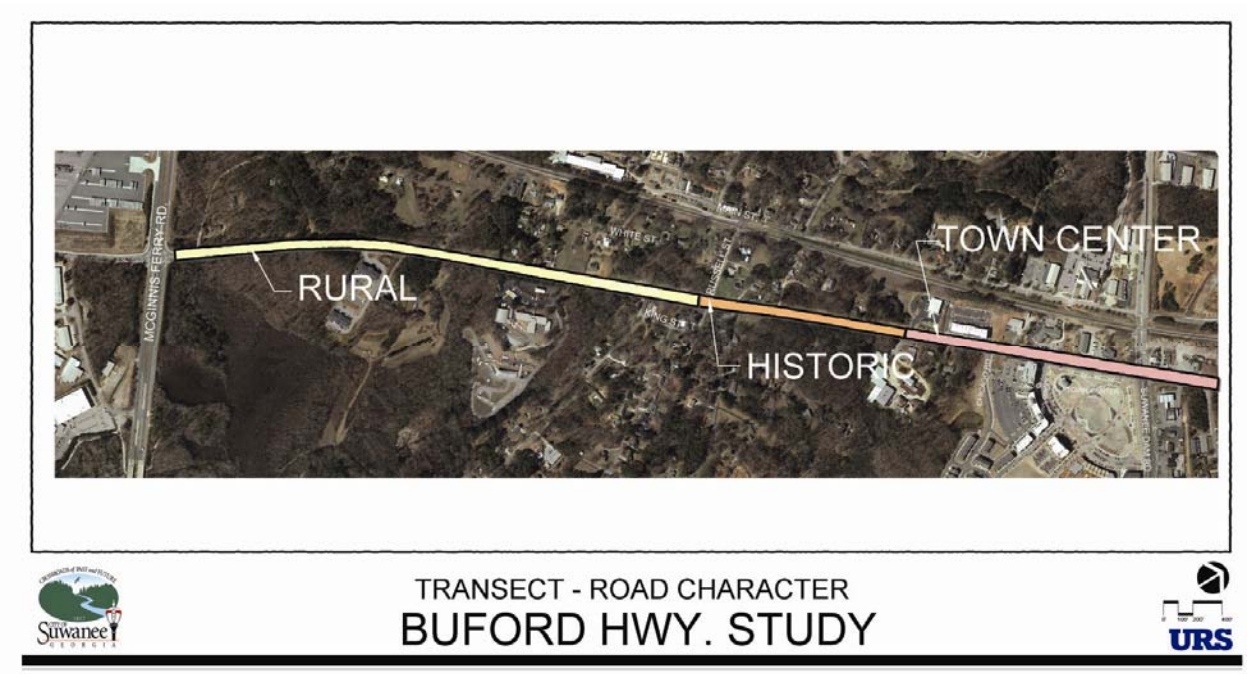
<u>Buford Highway - Local Road</u>

If the state route for Buford Highway is remitted to Peachtree Industrial Boulevard, Buford Highway can become a local road. As a local road, the future design of Buford Highway can become more flexible. Thus, Buford Highway can have greater context sensitivity and fit better with the existing and desired future development. Under this scenario, it is proposed that Buford Highway be designed to fit its land use *transect*. A transect is a cut or path through part of the environment showing a range of different characteristics and habitats. A *road transect* shows the different characteristics related to a town as it passes from an urban core to the rural and natural environments.

Roads, streets, and byways based on the transect are calibrated for each place and reflect local character and form. The City of Suwanee is well positioned to reflect and preserve these

existing characteristics due to the rich character existing in each transect. From the new Town Center, through the historic Old Town and into the more rural area south of Russell Street, Buford Highway passes through three distinct Transects, as illustrated in Figure 6.

Figure 6: Buford Highway Road Transect



Careful consideration and planning should be evaluated early on so that the road and architecture maybe designed to reflect and preserve these existing transect characteristics over time. It is more cost effective and viable to plan accordingly to maintain the existing character and form then to try and reverse the clock and rebuild what was already in place once the existing character has been eroded away. The proposed cross-sections for Buford Highway as they relate to the transect are illustrated in Figures 7 through 9. A plan view of how the cross-section could look in front of Town Center is shown in Figure 10.

Figure 7: Buford Highway Rural Transect Cross-Section

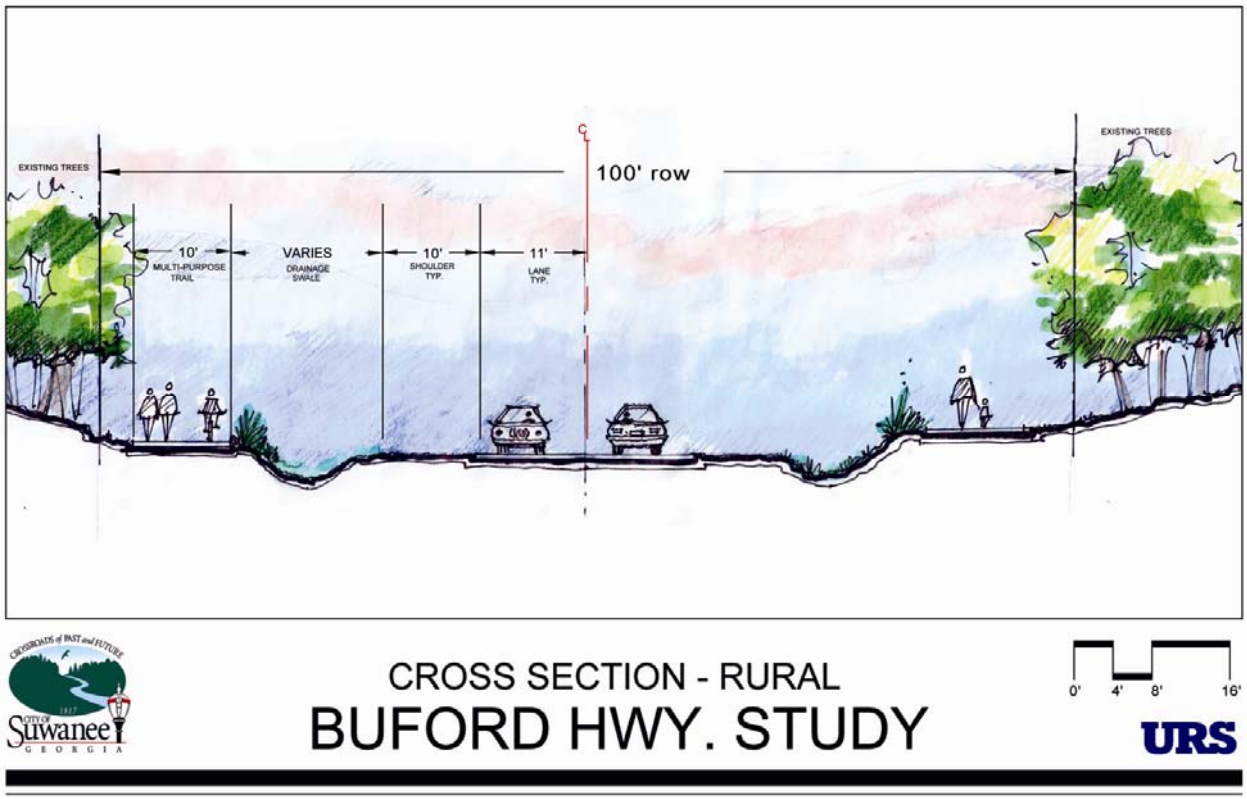


Figure 8: Buford Highway Historic Transect Cross-Section

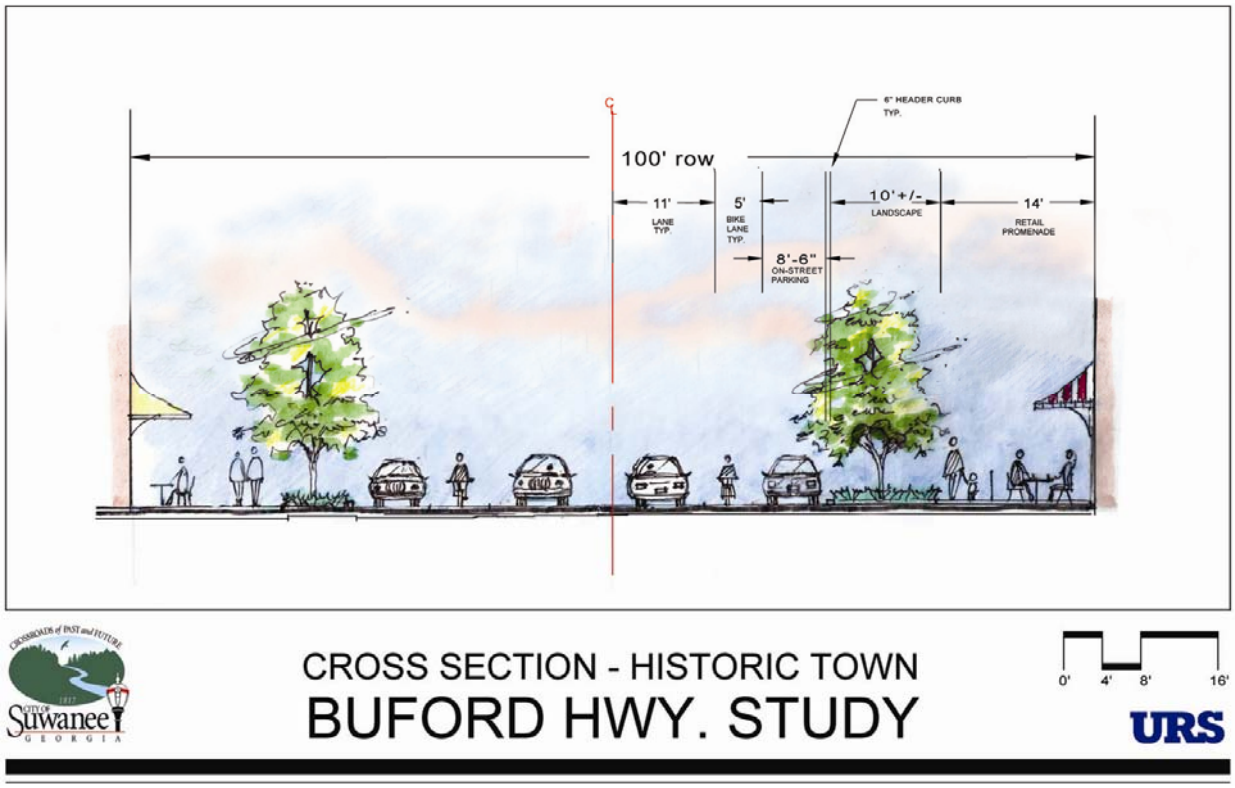


Figure 9: Buford Highway Town Center Transect Cross-Section

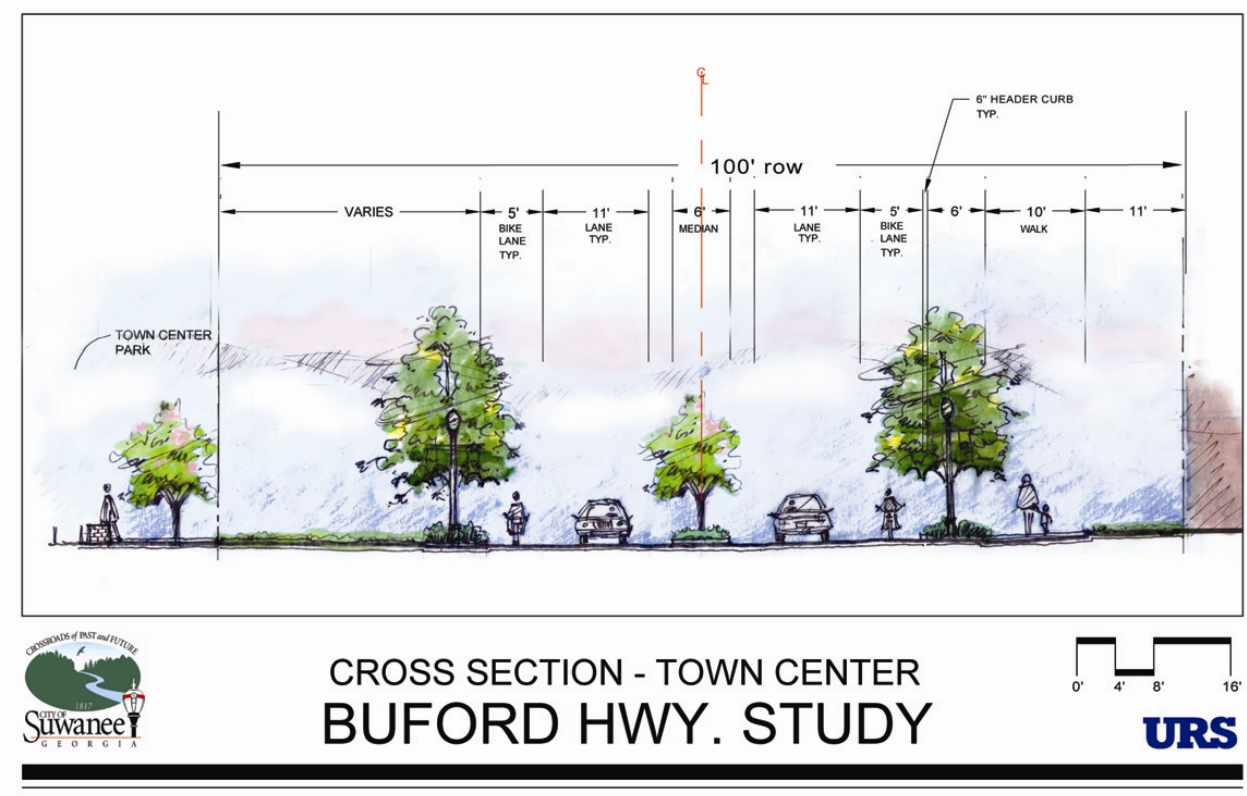
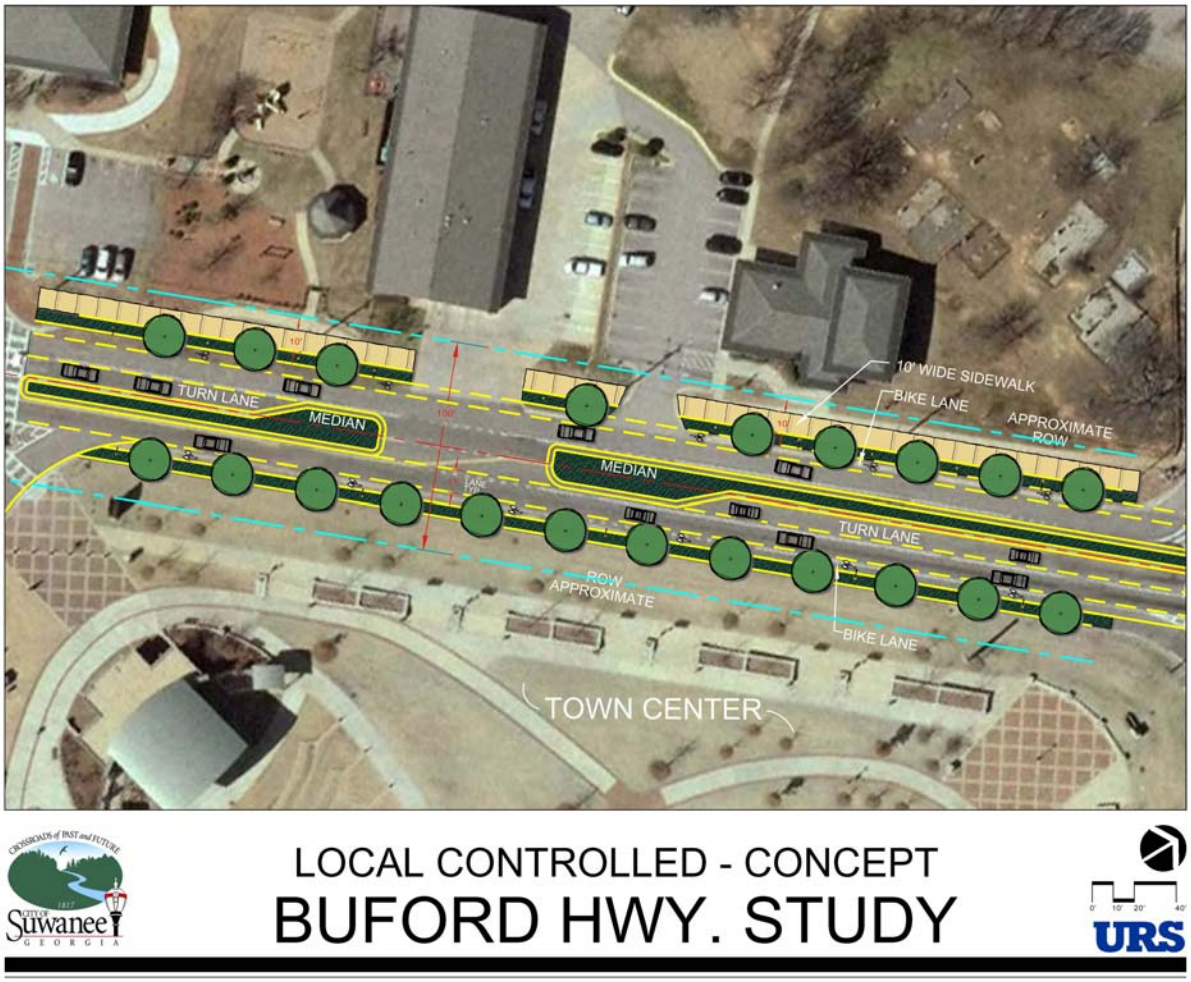


Figure 10: Buford Highway Locally Controlled Cross-Section Applied near Town Center



4.0 Implementation Plan

The Implementation Plan was developed to identify resources and actions necessary to implement recommended projects. The Action Plan in Table 4 includes estimated planning-level project costs, responsible parties, and recommended time periods. It should be noted that the project costs are in current 2010 dollars. The cost estimates for Buford Highway considered the unit costs based on GDOT's mean item averages as well as professional opinion of probable cost. Utilities and right-of-way are not included. Project cost estimates for the traffic operations improvements are based on the ARC costing tool.

Table 4: Action Plan

Action	Responsible Parties	Estimated Cost (if applicable)	Implementation Period		
			Short Term	Mid-Term	Long-Term
Initiate SR 13 Revision	City of Suwanee Gwinnett County GDOT	N/A	◆		
Initiate Speed Reduction Petition	City of Suwanee Gwinnett County GDOT	N/A	◆		
Modify HAWK Signal	City of Suwanee GDOT	TBD	◆		
Modify Suwanee Dam Road intersection with Main Street/Brogdon Road	City of Suwanee Gwinnett County	N/A	◆	◆	
Implement operational improvement for Buford Highway at McGinnis Ferry Road	City of Suwanee Gwinnett County GDOT	$465,000			◆
Implement operational improvement for Lawrenceville-Suwanee Road and Suwanee Avenue	City of Suwanee GDOT	$466,000			◆
Implement operational improvement for Satellite Boulevard and Martin Farm Road	City of Suwanee Gwinnett County	$250,000			◆
Implement operational improvement for Russell Street and Buford Highway	City of Suwanee GDOT	$492,000			◆
Construct new access to George Pierce Park from Lawrenceville-Suwanee Road	City of Suwanee Gwinnett County GDOT	$610,700			◆
Widen Buford Highway to four lanes (Buford Highway remains state-owned)	GDOT	$10,340,000			◆
Redesign Buford Highway to better fit local development character (Buford Highway becomes locally owned)	City of Suwanee Gwinnett County	$3,839,000			◆

Appendix D: Buford Highway Cost Estimates

Planning-level Cost Estimate for Buford Highway Transportation Study

Buford Highway from McGinnis Ferry Rd. to Suwanee Dam Rd.

Option A - 4 Lane w/ median

ITEM	ITEM DESCRIPTION	GDOT QUANTITY per 100 feet	UNIT	UNIT COST	Project Length 87.1568	COST
	ROADWAY ITEMS					
150-1000	Traffic Control	1	LS	1	$350,000	$350,000
153-1300	Field Engineers Office TP 3	1	EA	76757.66	1	$76,758
210-0000	Grading per mile	1	LM	250000	1.64726352	$411,816
310-1101	Gr Aggr Base Crs Incl. Matl.	179	TN	21.39	15571	$333,054
318-3000	Aggr Surface Crs	40	TN	23.64	3486	$82,415
402-1802	Recycled Asph Conc Patching, Incl Polymer-Modified		TN	94.72	0	$0
402-1812	Recycled Asph Conc Leveling Incl Bitum Matl & H Lime	10	TN	105.52	872	$91,968
402-3121	Recycled Asph Conc 25mm Superpave, GP 2 only, Incl Bitum Matl & H Lime	88	TN	63.86	7670	$489,799
402-3130	Recycled Asph Conc 12.5mm Superpave, GP 2 Only, Incl Bitum Matl & H Lime	22	TN	68.27	1917	$130,906
402-3190	Recycled Asph Conc 19mm Superpave, GP 1 or 2, Incl Bitum Matl & H Lime	29	TN	63.79	2557	$163,088
413-1000	Bitum. Tack Coat	37	GAL	1.96	3254	$6,378
432-5010	Mill Asphalt Conc. Pavement Variable Depth	20	SY	1.93	1743	$3,364
441-0104	Concrete Sidewalk, 4 in	89	SY	33.72	7757	$261,565
441-0746	Concrete Median, 8"	20	SY	57.29	1743	$99,864
441-4030	Concrete Valley Gutter, 8 in	36	SY	53.58	3138	$168,115
441-5002	Concrete Header Curb, 6" Type 2		LF	20.8	0	$0
441-6012	Conc Curb & Gutter, 6" x 24", Tp2	400	LF	32.18	34863	$1,121,882
441-6222	Concrete Curb & Gutter, 8" x30", Type 2		LF	18.91	0	$0
446-1002	Pvmt Reinf Strips, Type 2, Incl Bitum Binder		LF	15.01	0	$0
500-3107	ClassA Concrete - Retaining Wall	100	CY	759.76	8716	$75,976
500-3200	Class B Concrete	3	CY	392.26	218	$85,470
500-3900	Class B Concrete, Incl Reinf Steel	5	CY	803.44	436	$350,126
500-9999	Class B Conc Base or Pavement Widening		CY	173.86	0	$0
550-1180	Storm Drain Pipe, 18" RCP, H 1-10 Ft	100	LF	46.84	8716	$408,242
550-1240	Storm Drain Pipe, 24" RCP, H 1-10 Ft	50	LF	53.16	4358	$231,663
611-4003	Reconstruct Minor Drainage Str	2	EA	1331.71	174	$232,135
611-8050	Adjust Manhole to Grade	0	EA	1251.58	17	$21,817
611-8055	Adjust Minor Drainage Structure to Grade	0	EA	1600	9	$13,945
611-9000	Capping Minor Structure	0	EA	781.63	35	$27,250
634-1200	Right Of Way Marker	1	EA	101.14	122	$12,341
668-1100	Catch Basin, GP 1	1	EA	2745.73	109	$299,136
668-1110	Catch Basin, GP 1, Add Depth	3	LF	280.21	218	$61,056
668-2100	Drop Inlet, Gp 1	0	EA	3010.82	35	$104,965
668-2110	Drop Inlet, Gp 1, Add Depth	1	LF	362.55	87	$31,599
668-4300	Storm Sewr Manhole, Type 1	0	EA	2545.56	9	$22,186
668-4311	Storm Sewr Manhole, Type 1, Add Depth	2	LF	294.78	174	$51,384
	SUBTOTAL					
	SIGNING & MARKING ITEMS					
636-1020	Highway Signs, Type 1 Matl, Refl Sheeting, Type 3	6	SF	15.11	479	$7,243
636-1031	Highway Signs, Type 1 Matl, Refl Sheeting, Type 6	9	SF	19	784	$14,904
636-1032	Highway Signs, Type 2 Matl, Refl Sheeting, Type 6	7	SF	20.8	610	$12,690
636-2070	Galv Steel Posts Type 7	20	LF	8.09	1743	$14,102
636-2080	Galv Steel Posts Type 8	2	LF	9.31	139	$1,298
652-0094	Pavement Marking Symbol, TP 4		EA	43.48	0	$0
652-5301	Solid Traf Stripe, 6 In, White		LF	0	0	$0
652-5451	Solid Traffic Stripe, 5 In, White		LF		0	$0
652-6301	Skip Traf Stripe, 6 In, White		GLF		0	$0
652-6501	Skip Traffic Stripe, 5 In, White		GLF		0	$0
653-0110	Thermoplastic Pvmt Marking, Arrow, Type 1	1	EA	72.57	87	$6,325
653-0120	Thermoplastic Pvmt Marking, Arrow, Type 2	1	EA	72.77	122	$8,879
653-0130	Thermoplastic Pvmt Marking, Arrow, Type 3	0	EA	120.37	35	$4,196
653-0210	Thermoplastic Pvmt Marking, Word, Type 1	0	EA	116.48	35	$4,061
653-1501	Thermoplastic Solid Traf Stripe ,5", White	220	LF	0.69	19174	$13,230
653-1502	Thermoplastic Solid Traf Stripe ,5", Yellow	220	LF	0.65	19174	$12,463
653-1704	Thermoplastic Solid Traf Stripe ,24", White	12	LF	4.19	1046	$4,382
653-1804	Thermoplastic Solid Traf Stripe ,8", White	300	LF	2.11	26147	$55,170
653-3501	Thermoplastic Skip Traf Stripe ,5", White	200	GLF	0.56	17431	$9,762
653-6004	Thermoplastic Traf Striping, White	12	SY	2.84	1046	$2,970
653-6006	Thermoplastic Traf Striping, Yellow	10	SY	3.06	872	$2,667
654-1001	Raised Pvmt Markers Type 1		EA	3.12	0	$0
654-1003	Raised Pvmt Markers Type 3	1	EA	3.66	109	$399
657-1054	Preformed Plastic Solid Pvmt Mkg, 5", White, Type PB		LF		0	$0

Planning-level Cost Estimate for Buford Highway Transportation Study

	Buford Highway from McGinnis Ferry Rd. to Suwanee Dam Rd.					
	Option A - 4 Lane w/ median					
657-3054	Preformed Plastic Skip Pvmt Mkg, 5", White, Type PB		LF		0	$0
657-5000	Preformed Traf. Stipe White		SY		0	$0
657-6054	Preformed Solid Traf Stripe, % IN, Yellow, Tp PB		LF		0	$0
	SUBTOTAL					
	EROSION CONTROL					
163-0232	Temporary Grassing	5	AC	703.86	192	$135,243
163-0240	Mulch	25	TN	159.79	5284	$844,327
163-0530	Construct anc Remove Baled Straw Erosion Checks	200	LF	4.23	17431	$73,735
163-0550	Construct anc Remove Inlet Sediment Trap	25	EA	297.02	153	$45,303
165-0010	Maintenance of Temporary Silt Fence TP A	100	LF	1.4	52294	$73,212
165-0030	Maintenance of Temporary Silt Fence TP C	100	LF	1.63	13074	$21,310
165-0105	Maintenance of Inlet Sediment Trap	25	EA	102.35	153	$15,611
171-0010	Temporary Silt Fence TP A	200	LF	3	104588	$313,764
171-0030	Temporary Silt Fence TP C	200	LF	4.04	26147	$105,634
700-7000	Agricultural Lime	15	TN	59.69	1153	$68,815
700-7010	Liquid Lime	10	GL	22.95	961	$22,049
700-8000	Fertilizer Mixed Grade	5	TN	286.72	346	$99,165
700-8100	Fertilizer Nitrogen Content	25	LB	2.32	19214	$44,578
xxxx	perm grassing	5	AC	1063.2	384	$408,576
	SUBTOTAL					
	TRAFFIC SIGNAL ITEMS					
632-0003	Changeable Message Sign, Portable, Type 3	2	EA	15651.21		$31,302
639-3004	Steel Strain Pole, Type IV, W/45' Mast Arm		EA	7226.82		$0
647-1000	Traffic Signal Installation No 1	1	LS	125000		$125,000
647-1000	Traffic Signal Installation No 2	1	LS	125000		$125,000
647-1000	Traffic Signal Installation No 3		LS			$0
647-1000	Traffic Signal Installation No 4		LS			$0
647-2150	Pullbox Type V	4	EA	1826.2		$7,305
682-6233	Conduit, Nonmetal (HDPE), Type 3, 2"	200	LF	5.95		$1,190
938-1100	Intersection Video Detection System Assembly, Type A		EA	6004.69		$0
	SUBTOTAL					
	LANDSCAPE ITEMS					
	Trees		EA	450	0	$0
	Trees		EA	650	0	$0
	Lights		EA	2500	0	$0
	SUBTOTAL					
	UTILITIES					
	Power	100	EA	50	8716	$435,784
	Water	100	EA	25	8716	$217,892
	Tele	200	EA	15	17431	$261,470
	TOTAL			=		**$ 9,471,270.67**
					E/C @ 10 percent	$ 947,127.07
					Total	**$ 12,675,573.84**

Planning-level Cost Estimate for Buford Highway Transportation Study

Buford Highway from McGinnis Ferry Rd. to Suwanee Dam Rd.

Option B - Transect

ITEM	ITEM DESCRIPTION	Town Center QUANTITY per 100 feet	UNIT	UNIT COST	Project Length 21.707	COST	Historic QUANTITY per 100 feet	UNIT	UNIT COST	Project Length 14.3096	COST	Rural QUANTITY per 100 feet	UNIT	UNIT COST	Project Length 36.1402	COST
	ROADWAY ITEMS															
150-1000	Traffic Control	1	LS	1	$100,000	$100,000	1	LS	1	$50,000	$50,000		LS	25000	$1	$25,000
153-1300	Field Engineers Office TP 3		EA		1	$0		EA		1	$0		EA		1	$0
210-0000	Grading per mile	1	LM	250000	0.4102623	$102,566	1	LM	250000	0.27045144	$67,613	1	LM	250000	0.68304978	$170,762
310-1101	Gr Aggr Base Crs Incl. Matl.	238	TN	21.39	5171	$110,609	201	TN	21.39	2876	$61,523	50	TN	21.39	1807	$38,652
318-3000	Aggr Surface Crs	40	TN	23.64	868	$20,526	40	TN	23.64	572	$13,531	10	TN	23.64	361	$8,544
402-1802	Recycled Asph Conc Patching, Incl Polymer-Modified		TN	94.72	0	$0		TN	94.72	0	$0		TN	94.72	0	$0
402-1812	Recycled Asph Conc Leveling Incl Bitum Matl & H Lime	10	TN	105.52	217	$22,905	5	TN	105.52	72	$7,550		TN	105.52	0	$0
402-3121	Recycled Asph Conc 25mm Superpave, GP 2 only, Incl Bitum Matl &	117	TN	63.86	2547	$162,651	99	TN	63.86	1417	$90,467		TN	63.86	0	$0
402-3130	Recycled Asph Conc 12.5mm Superpave, GP 2 Only, Incl Bitum Ma	29	TN	68.27	637	$43,471	25	TN	68.27	354	$24,179		TN	68.27	0	$0
402-3190	Recycled Asph Conc 19mm Superpave, GP 1 or 2, Incl Bitum Matl &	39	TN	63.79	849	$54,157	33	TN	63.79	472	$30,123		TN	63.79	0	$0
413-1000	Bitum. Tack Coat	50	GAL	1.96	1081	$2,118	42	GAL	1.96	601	$1,178		GAL	1.96	0	$0
432-5010	Mill Asphalt Conc. Pavement Variable Depth	10	SY	1.93	217	$419	10	SY	1.93	143	$276		SY	1.93	0	$0
441-0104	Concrete Sidewalk, 4 in	111	SY	33.72	2412	$81,328	311	SY	33.72	4452	$150,117	222	SY	33.72	8031	$270,808
441-0746	Concrete Median, 8"	20	SY	57.29	434	$24,872	20	SY	57.29	286	$16,396		SY	57.29	0	$0
441-4030	Concrete Valley Gutter, 8 in	36	SY	53.58	781	$41,870	36	SY	53.58	515	$27,602		SY	53.58	0	$0
441-5002	Concrete Header Curb, 6" Type 2	400	LF	20.8	8683	$180,602	200	LF	20.8	2862	$59,528		LF	20.8	0	$0
441-6012	Conc Curb & Gutter, 6" x 24", Tp2		LF	32.18	0	$0		LF	32.18	0	$0		LF	32.18	0	$0
441-6222	Concrete Curb & Gutter, 8" x30", Type 2		LF	18.91	0	$0		LF	18.91	0	$0		LF	18.91	0	$0
446-1002	Pvmt Reinf Strips, Type 2, Incl Bitum Binder		LF	15.01	0	$0	200	LF	15.01	2862	$42,957		LF	15.01	0	$0
500-3107	ClassA Concrete - Retaining Wall		CY	759.76	0	$0		CY	759.76	0	$0		CY	759.76	0	$0
500-3200	Class B Concrete	3	CY	392.26	54	$21,287	3	CY	392.26	36	$14,033		CY	392.26	0	$0
500-3900	Class B Concrete, Incl Reinf Steel	5	CY	803.44	109	$87,201	5	CY	803.44	72	$57,485		CY	803.44	0	$0
500-9999	Class B Conc Base or Pavement Widening		CY	173.86	0	$0		CY	173.86	0	$0		CY	173.86	0	$0
550-1180	Storm Drain Pipe, 18" RCP, H 1-10 Ft	100	LF	46.84	2171	$101,676	100	LF	46.84	1431	$67,026		LF	46.84	0	$0
550-1240	Storm Drain Pipe, 24" RCP, H 1-10 Ft	50	LF	53.16	1085	$57,697	50	LF	53.16	715	$38,035		LF	53.16	0	$0
611-4003	Reconstruct Minor Drainage Str	1	EA	1331.71	11	$14,454	1	EA	1331.71	7	$9,528		EA	1331.71	0	$0
611-8050	Adjust Manhole to Grade	0	EA	1251.58	4	$5,434	0	EA	1251.58	3	$3,582		EA	1251.58	0	$0
611-8055	Adjust Minor Drainage Structure to Grade	0	EA	1600	2	$3,473	0	EA	1600	1	$2,290		EA	1600	0	$0
611-9000	Capping Minor Structure	0	EA	781.63	9	$6,787	0	EA	781.63	6	$4,474		EA	781.63	0	$0
634-1200	Right Of Way Marker	1	EA	101.14	30	$3,074	1	EA	101.14	20	$2,026		EA	101.14	0	$0
668-1100	Catch Basin, GP 1	0	EA	2745.73	9	$23,841	0	EA	2745.73	6	$15,716		EA	2745.73	0	$0
668-1110	Catch Basin, GP 1, Add Depth	3	LF	280.21	54	$15,206	3	LF	280.21	36	$10,024		LF	280.21	0	$0
668-2100	Drop Inlet, Gp 1	0	EA	3010.82	9	$26,142	0	EA	3010.82	6	$17,233		EA	3010.82	0	$0
668-2110	Drop Inlet, Gp 1, Add Depth	1	LF	362.55	22	$7,870	1	LF	362.55	14	$5,188		LF	362.55	0	$0
668-4300	Storm Sewr Manhole, Type 1	0	EA	2545.56	2	$5,526	0	EA	2545.56	1	$3,643		EA	2545.56	0	$0
668-4311	Storm Sewr Manhole, Type 1, Add Depth	1	LF	294.78	11	$3,199	1	LF	294.78	7	$2,109		LF	294.78	0	$0
	SUBTOTAL															
	SIGNING & MARKING ITEMS															
636-1020	Highway Signs, Type 1 Matl, Refl Sheeting, Type 3	6	SF	15.11	119	$1,804	6	SF	15.11	79	$1,189		SF	15.11	0	$0
636-1031	Highway Signs, Type 1 Matl, Refl Sheeting, Type 6	9	SF	19	195	$3,712	9	SF	19	129	$2,447		SF	19	0	$0
636-1032	Highway Signs, Type 2 Matl, Refl Sheeting, Type 6	7	SF	20.8	152	$3,161	7	SF	20.8	100	$2,083		SF	20.8	0	$0
636-2070	Galv Steel Posts Type 7	20	LF	8.09	434	$3,512	20	LF	8.09	286	$2,315		LF	8.09	0	$0
636-2080	Galv Steel Posts Type 8	2	LF	9.31	35	$323	2	LF	9.31	23	$213		LF	9.31	0	$0
652-0094	Pavement Marking Symbol, TP 4	2	EA	43.48	43	$1,888	2	EA		29	$0	4	EA	43.48	145	$6,286
652-5301	Solid Traf Stripe, 6 In, White	200	LF	0	4341	$564	100	LF		1431	$0	400	LF	0	14456	$1,879
652-5451	Solid Traffic Stripe, 5 In, White		LF			$0		LF			$0		LF	0	0	$0
652-6301	Skip Traf Stripe, 6 In, White		GLF			$0		GLF			$0		GLF		0	$0
652-6501	Skip Traffic Stripe, 5 In, White	0	GLF			$0		GLF			$0		GLF		0	$0
653-0110	Thermoplastic Pvmt Marking, Arrow, Type 1	2	EA	72.57	43	$3,151	2	EA	72.57	29	$2,077		EA	72.57	0	$0
653-0120	Thermoplastic Pvmt Marking, Arrow, Type 2	1	EA	72.77	30	$2,211	1	EA	72.77	20	$1,458		EA	72.77	0	$0
653-0130	Thermoplastic Pvmt Marking, Arrow, Type 3	0	EA	120.37	9	$1,045	0	EA	120.37	6	$689		EA	120.37	0	$0
653-0210	Thermoplastic Pvmt Marking, Word, Type 1	0	EA	116.48	9	$1,011	0	EA	116.48	6	$667		EA	116.48	0	$0
653-1501	Thermoplastic Solid Traf Stripe ,5", White	200	LF	0.69	4341	$2,996	200	LF	0.69	2862	$1,975		LF	0.69	0	$0
653-1502	Thermoplastic Solid Traf Stripe ,5", Yellow	200	LF	0.65	4341	$2,822		LF	0.65	0	$0		LF	0.65	0	$0
653-1704	Thermoplastic Solid Traf Stripe ,24", White	12	LF	4.19	260	$1,091	12	LF	4.19	172	$719		LF	4.19	0	$0
653-1804	Thermoplastic Solid Traf Stripe ,8", White	300	LF	2.11	6512	$13,741	300	LF	2.11	4293	$9,058		LF	2.11	0	$0
653-3501	Thermoplastic Skip Traf Stripe ,5", White	200	GLF	0.56	4341	$2,431	200	GLF	0.56	2862	$1,603		GLF	0.56	0	$0
653-6004	Thermoplastic Traf Striping, White	12	SY	2.84	260	$740	12	SY	2.84	172	$488		SY	2.84	0	$0
653-6006	Thermoplastic Traf Striping, Yellow	10	SY	3.06	217	$664	10	SY	3.06	143	$438		SY	3.06	0	$0

Planning-level Cost Estimate for Buford Highway Transportation Study

Buford Highway from McGinnis Ferry Rd. to Suwanee Dam Rd.

Option B - Transect

654-1001	Raised Pvmt Markers Type 1		EA	3.12	0	$0		EA	3.12	0	$0		EA	3.12	0	$0
654-1003	Raised Pvmt Markers Type 3		EA	3.66	0	$0		EA	3.66	0	$0		EA	3.66	0	$0
657-1054	Preformed Plastic Solid Pvmt Mkg, 5", White, Type PB		LF		0	$0		LF			$0		LF		0	$0
657-3054	Preformed Plastic Skip Pvmt Mkg, 5", White, Type PB		LF		0	$0		LF			$0		LF		0	$0
657-5000	Preformed Traf. Stipe White		SY		0	$0		SY			$0		SY		0	$0
657-6054	Preformed Solid Traf Stripe, % IN, Yellow, Tp PB		LF		0	$0		LF			$0		LF		0	$0
	SUBTOTAL															
	EROSION CONTROL															
163-0232	Temporary Grassing	5	AC	703.86	24	$16,842	5	AC	703.86	16	$11,102	5	AC	703.86	20	$14,020
163-0240	Mulch	25	TN	159.79	658	$105,143	25	TN	159.79	434	$69,312	25	TN	159.79	548	$87,527
163-0530	Construct anc Remove Baled Straw Erosion Checks	200	LF	4.23	2171	$9,182	200	LF	4.23	1431	$6,053	200	LF	4.23	1807	$7,644
163-0550	Construct anc Remove Inlet Sediment Trap	25	EA	297.02	20	$5,803	25	EA	297.02	13	$3,825	25	EA	297.02	0	$0
165-0010	Maintenance of Temporary Silt Fence TP A	100	LF	1.4	6512	$9,117	100	LF	1.4	4293	$6,010	100	LF	1.4	5421	$7,589
165-0030	Maintenance of Temporary Silt Fence TP C	100	LF	1.63	1628	$2,654	100	LF	1.63	1073	$1,749	100	LF	1.63	1355	$2,209
165-0105	Maintenance of Inlet Sediment Trap	25	EA	102.35	20	$2,000	25	EA	102.35	13	$1,318	25	EA	102.35	0	$0
171-0010	Temporary Silt Fence TP A	200	LF	3	13024	$39,073	200	LF	3	8586	$25,757	200	LF	3	10842	$32,526
171-0030	Temporary Silt Fence TP C	200	LF	4.04	3256	$13,154	200	LF	4.04	2146	$8,672	200	LF	4.04	2711	$10,950
700-7000	Agricultural Lime	15	TN	59.69	144	$8,569	15	TN	59.69	95	$5,649	15	TN	59.69	120	$7,134
700-7010	Liquid Lime	10	GL	22.95	120	$2,746	10	GL	22.95	79	$1,810	10	GL	22.95	100	$2,286
700-8000	Fertilizer Mixed Grade	5	TN	286.72	43	$12,349	5	TN	286.72	28	$8,141	5	TN	286.72	36	$10,280
700-8100	Fertilizer Nitrogen Content	25	LB	2.32	2393	$5,551	25	LB	2.32	1577	$3,659	25	LB	2.32	1992	$4,621
xxxx	perm grassing	5	AC	1063.2	48	$50,879	5	AC	1063.2	32	$33,540	5	AC	1063.2	40	$42,355
	SUBTOTAL															
	TRAFFIC SIGNAL ITEMS															
632-0003	Changeable Message Sign, Portable, Type 3	1	EA	15651.21		$15,651		EA	15651.21				EA	15651.21		
639-3004	Steel Strain Pole, Type IV, W/45' Mast Arm		EA	7226.82		$0		EA	7226.82				EA	7226.82		
647-1000	Traffic Signal Installation No 1	1	LS	100000		$100,000		LS	70100				LS	70100		
xxxx	Roundbaout	1	LS	75000		$75,000		LS					LS			
647-1000	Traffic Signal Installation No 3		LS			$0		LS					LS			
647-1000	Traffic Signal Installation No 4		LS			$0		LS					LS			
647-2150	Pullbox Type V	2	EA	1826.2		$3,652		EA	1826.2				EA	1826.2		
682-6233	Conduit, Nonmetal (HDPE), Type 3, 2"	250	LF	5.95		$1,488		LF	5.95				LF	5.95		
938-1100	Intersection Video Detection System Assembly, Type A		EA	6004.69		$0		EA	6004.69				EA	6004.69		
	SUBTOTAL															
	LANDSCAPE ITEMS															
	Trees	2	EA	450	43	$19,536		EA	450		$0		EA	450		
	Trees	4	EA	650	87	$56,438	4	EA	650	57	$37,205		EA	650		
	Lights	4	EA	2500	87	$217,070	4	EA	2500	57	$143,096		EA	2500		
	SUBTOTAL															
	UTILITIES															
	Power	100	EA	50	2171	$108,535	100	EA	50	1431	$71,548	50	EA	50	1807	$90,351
	Water	100	EA	25	2171	$54,268	100	EA	25	1431	$35,774		EA	25	0	$0
	Tele	200	EA	15	4341	$65,121	200	EA	15	2862	$42,929	50	EA	15	1807	$27,105
	SUBTOTAL															
	TOTAL					**$ 2,377,646.43**					**$ 1,439,998.85**					**$ 868,527**
					E/C @ 10 percent	$ 237,764.64					$ 143,999.88					$ 86,852.65
					Total	**$ 2,615,411.07**					**$ 1,583,998.73**					**$ 955,379.17**
															GRAND TOTAL	**$ 5,154,788.97**