NEEL-SCHAFFER

Traffic Study

PLANT VOGTLE

CONSTRUCTION OF TWO NEW UNITS

Waynesboro, GA

Prepared for:
Southern Company

July 2009

TRAFFIC STUDY

PLANT VOGTLE
CONSTRUCTION OF TWO NEW UNITS

Prepared for:
Southern Company

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1. INTRODUCTION

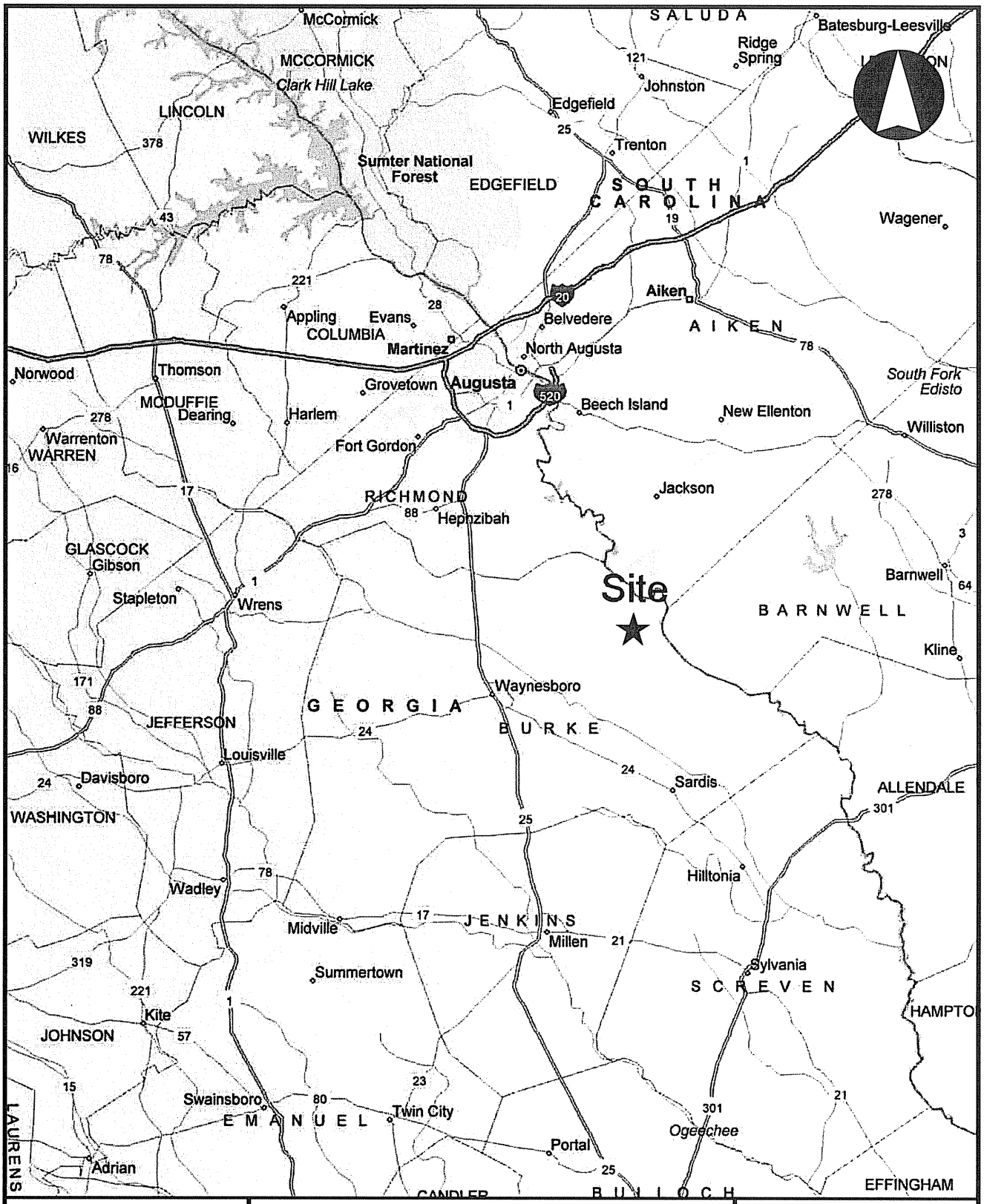
At the request of Southern Company, Neel-Schaffer has prepared a Traffic Study for the construction of two additional nuclear units at Plant Vogtle on River Road in Waynesboro, Georgia. The Plant Vogtle site is located on the north side of River Road, east of Hancock Road. The two new units will be in addition to the existing two nuclear units.

The two units will add traffic to the area due to construction and operation once construction is complete. The purpose of this report is to analyze the traffic impacts that will result due to the construction of the two additional nuclear units on the Plant Vogtle site. This report includes analysis results and recommendations based on the construction estimates submitted by Southern Company. Specifically, the study analyzes current, interim construction, and future traffic demand, intersection capacities, access to/from the site, surrounding existing intersections and recommendations to help alleviate the construction's traffic impacts within the study area.

This report analyzes traffic impacts of the construction, which is expected to be completed by 2017, and impacts of the operation of the two additional units. Staffing for the construction of the units is expected to ramp up until it reaches a maximum in 2013 and then decrease until construction is complete. Due to this ramp up and since construction will be spread over such a long period of time, the traffic impacts have been analyzed in two stages. Section 2 of this report analyzes existing conditions, Section 3 analyzes the impacts of the two stages of construction, and Section 4 analyzes the impacts of the operation of the two new units.

1.1 STUDY AREA

The Plant Vogtle site is located in northwestern Burke County, west of downtown Waynesboro. River Road serves as the main access route for the plant. Highway 56, GA Highway 80, and GA Highway 23 also provide access to the plant. Figure 1 shows the location of the project in relation to its regional area.



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Plant Vogtle - Waynesboro, GA

Site Location Map

Figure 1

1.2 PROJECT DESCRIPTION

As previously mentioned, two additional units will be constructed on the Plant Vogtle site. For the purposes of the report, the traffic for the construction will be analyzed in two portions. The first stage of construction will be analyzed at the beginning of year 2011 when the proposed construction staff is planned to be approximately 1,200 workers. The second stage of construction will be analyzed for spring 2013 when the construction staff will be at its maximum – approximately 4,300 workers.

The client has indicated that construction access to the site will be provided by three new entrances on River Road. These new accesses will be located west of the existing plant access across from Ebenezer Church Road and east of Hancock Road. The construction entrances are expected to be temporary and will not operate once construction of the two additional units is complete. Plans provided by an engineer for The Shaw Group, Inc. indicate that a left turn/deceleration lane will provided on River Road at the construction entrances. The plans also show that an acceleration lane will be provided on River Road for traffic exiting the construction entrances.

This report analyzes the traffic impacts that will result due to the construction of the two additional nuclear units on the Plant Vogtle site. This report also analyzes the projected traffic volumes once construction is complete and all four units are in operation. The report summarizes the traffic analyses conducted and recommends measures to maintain safe and efficient traffic flow.

2. EXISTING CONDITIONS

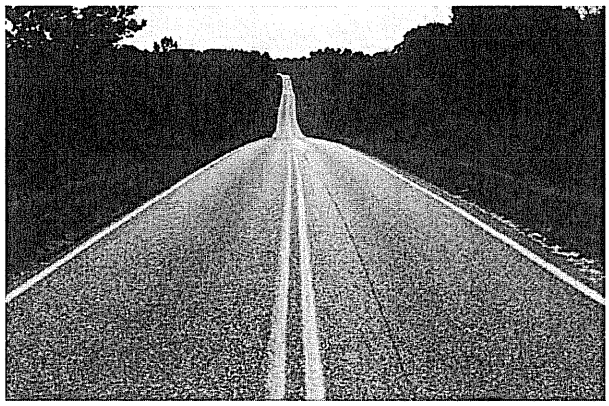
2.1 GEOMETRICS AND TRAFFIC CONTROL

A comprehensive field inventory of the study area and surrounding roadway network was conducted. The field inventory included collection of geometric data, traffic volumes and traffic control in the study area. The following presents a description of the study area:

ROADWAYS:

River Road generally travels in a northwest-southeast direction and provides a connection between Highway 56 and the Plant Vogtle and Plant Wilson sites. In the vicinity of the project site, River Road has one travel lane in each direction, as shown in the photo to the right. A left turn lane is provided at a few existing intersections along River Road. Along the majority of River Road, there is no shoulder provided on either side of the road. The posted speed limit on River Road northwest of Hancock Road is 55 mph. Southeast of Hancock Road, the speed limit is posted at 45 mph.

South-eastbound River Road near Ben Hatcher Road

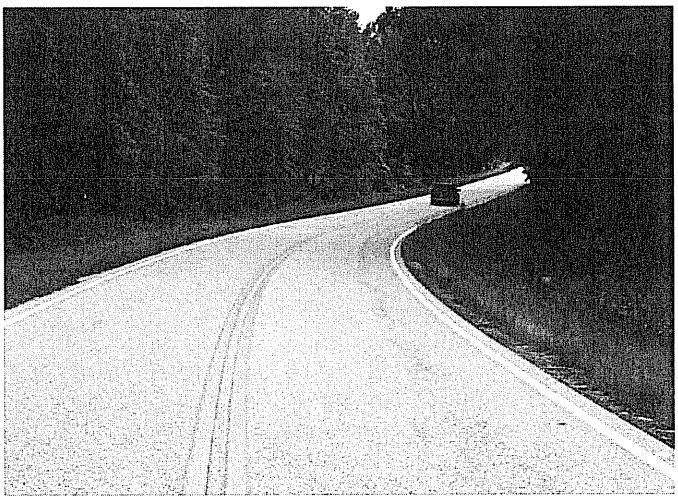


South-westbound Ben Hatcher Road southwest of River Road

Ben Hatcher Road generally travels in a southwest-northeast direction and provides a connection between Highway 23 and River Road. Southwest of River Road, Ben Hatcher Road has one travel lane in each direction, no shoulder, and no posted speed limit. This section of Ben Hatcher Road is shown in the photo to the left. Northeast of River Road, Ben Hatcher Road is a dirt road with a posted speed limit of 35 mph.

Hancock Road generally travels in a southwest-northeast direction and provides a connection between Highway 23 and River Road. It should be noted that between Claxton-Lively Road and Highway 23, Hancock Road is referred to as Hancock Landing Road. Southwest of River Road, Hancock Road has one travel lane in each direction, no shoulder, and no posted speed limit. This section of Hancock Road is shown in the photo to the right. Northeast of River Road, Hancock Road provides a paved access to the C & J Convenience store. Beyond the store access, Hancock Road becomes a gravel road with no posted speed limit.

South-westbound Hancock Road southwest of River Road



South-westbound Ebenezer Church Road southwest of River Road

Ebenezer Church Road extends southeast from River Road across from the Plant Vogtle main gate access and provides a connection to Highway 23. Ebenezer Church Road has one travel lane in each direction, though it widens to provide a turn lane at the intersection with River Road. There is no shoulder provided on either side of Ebenezer Church Road, as shown in the photo to the left. The speed limit is not posted on Ebenezer Church Road.

INTERSECTIONS:

The intersection of **River Road and Ben Hatcher Road** is a four-legged intersection that is controlled by stop signs on Ben Hatcher Road. River Road will be considered the northbound and southbound approaches. The northbound and southbound approaches on River Road each consist of a single lane for left turning, through, and right turning movements. The eastbound and westbound approaches on Ben Hatcher Road each consist of a single shared lane for left turning, through, and right turning movements. It should be noted that the westbound approach on Ben Hatcher Road is a dirt road. The eastbound approach on Ben Hatcher Road is shown in the photo to the right.

Eastbound Ben Hatcher Road at River Road

The intersection of **River Road and Hancock Road** is a four-legged intersection that is controlled by stop signs on Hancock Road. River Road will be considered the northbound and southbound approaches. The northbound approach on River Road, shown in the photo to the left, consists of a single lane for left turning movements and a single shared lane for through and right turning movements. The southbound approach on River Road consists of single lane for left turning, through, and right turning movements. The eastbound and westbound approaches on Hancock Road each consist of a single shared lane for left turning, through, and right turning movements. It should be noted that the southbound approach on Hancock Road is paved for a short section and is gravel beyond the entrance to the C & J Convenience store.

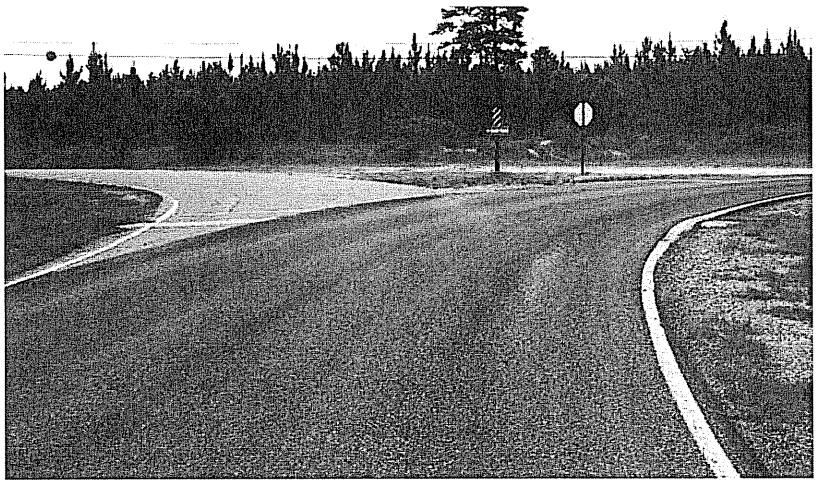
Northbound River Road at Hancock Road

The intersection of **River Road and Ebenezer Church Road/Plant Vogtle access** is a partially off-set four-legged intersection controlled by stop signs on the Ebenezer Church Road and Plant Vogtle access approaches. At this intersection, River Road will be considered the eastbound and westbound approaches. The eastbound approach on River Road, shown in the photo to the right, consists of a single lane for left turning movements and a shared lane for through and right turning movements. The westbound approach on River Road consists of a single shared lane for left turning, through, and right turning movements. The Plant Vogtle access is median-divided with the southbound exit aligning with Ebenezer Church Road. The northbound entrance is located just east of Ebenezer Church Road. As a result, drivers who wish to go straight across from Ebenezer Church Road to the plant access must turn right onto River Road and then left into the access. The northbound approach on Ebenezer Church Road, shown in the photo to the left, consists of a single lane for left turning movements and a single lane for right turning movements. The southbound approach on the Plant Vogtle access consists of one lane for left turning movements, one lane for through movements, and one lane for right turning movements. It should be noted that the Plant Vogtle access has two lanes for entering traffic.

Eastbound River Road at Ebenezer Church Road/Plant Vogtle Access

Eastbound Ben Hatcher Road at River Road

The intersection of **River Road and the Plant Wilson access road** is a T-intersection that is controlled by a stop sign on the westbound approach on River Road. All approaches to this intersection consist of a single lane. The eastbound approach on River Road is shown in the photo to the right. It appears that a dirt path has been worn creating an island in the middle of the intersection. The low traffic volumes at this intersection provide adequate existing traffic operations.



Eastbound River Road at the Plant Wilson access road

2.2 EXISTING TRAFFIC VOLUMES

In order to provide traffic volumes for the traffic analyses conducted in this report, turning movement counts were conducted at the following intersections:

- River Road and Ben Hatcher Road
- River Road and Hancock Road
- River Road and Ebenezer Church Road/existing Plant Vogtle access
- River Road and Plant Wilson access

Specifically, the counts were conducted on a typical weekday during the AM and PM peak shift changes from 5:30-8:00 AM and 3:30-6:30 PM. From the counts obtained, the peak hours of traffic were found to be 6:00-7:00 AM and 4:45-5:45 PM. The AM and PM peak hour turning movement volumes are shown in Figure 2. A detailed summary of the turning movement counts is included as Appendix A.

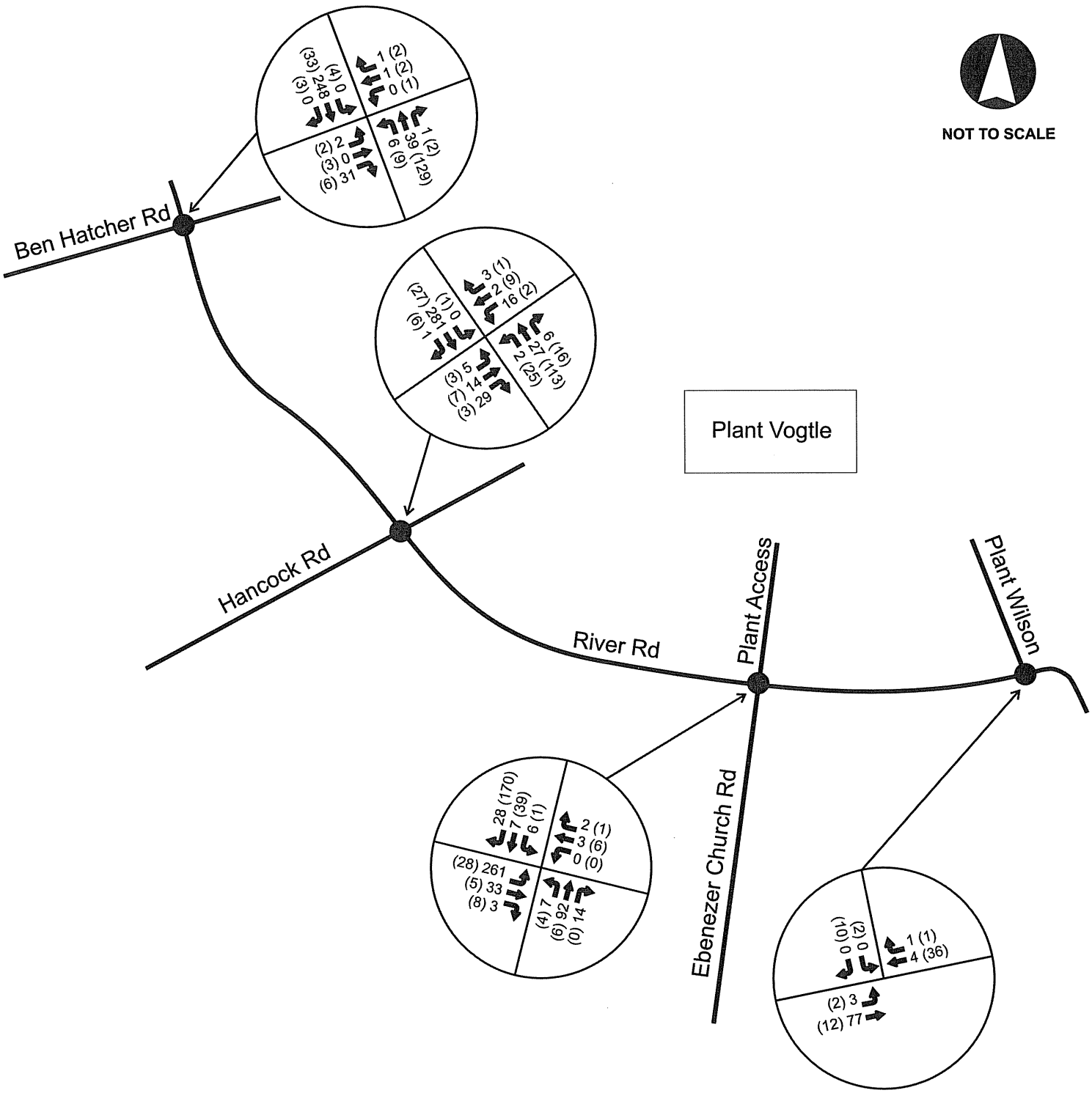


Figure 2

Existing Peak Hour
Traffic Volumes - 2009
AM (PM)

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2.3 ANALYSIS OF EXISTING CONDITIONS

Capacity analyses provide an indication of how well the study area intersections and mainline segments serve existing and future traffic demands. A primary result of capacity analyses is the assignment of level of service (LOS) to traffic facilities. The concept of level of service is defined as a qualitative measure of traffic flow describing operational conditions within a traffic stream based on road conditions and the perceptions of motorists. A level of service designation provides an index to the quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for signalized and unsignalized intersections. They are assigned letter designations from A to F, with LOS A representing the best operating conditions and LOS F the worst. Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year.

The levels of service of unsignalized intersections are determined by application of a procedure described in the 2000 *HCM.* The procedure accounts for lane configuration on both the minor and major approaches, and conflicting traffic stream volumes. First, the theoretical maximum or "potential capacity" of vehicles for each minor approach lane is calculated based on a gap acceptance procedure. The capacities are then compared to the demand at the respective minor approaches to determine the average control delay for each vehicle. Average control delay is used as the criterion for estimating level of service for minor street traffic. Table 1 summarizes the relationship between control delay, description of delay, and level of service for an unsignalized intersection.

TABLE 1

Level of Service Criteria
Unsignalized Intersections

Level of Service	Average Control Delay (Seconds/Vehicle)	Description of Delay
A	≤10	Conditions with little or no delay on stop-controlled approaches
B	>10 and ≤15	Conditions with short delays on stop-controlled approaches
C	>15 and ≤25	Conditions with average delays on stop-controlled approaches
D	>25 and ≤35	Conditions with longer delays to stop-controlled approaches
E	>35 and ≤50	Operating conditions at or near capacity level, with very long delays for stopped-controlled traffic
F	>50	Conditions where traffic demand exceeds the capacity of an approach lane, with extreme delays resulting

Source: *Highway Capacity Manual*, TRB 2000

The existing traffic volumes shown in Figure 2 were analyzed to determine the existing traffic operations of the intersections studied. The capacity analyses were conducted using Highway Capacity Software (HCS). The results of the capacity analyses are presented in Table 2. As shown in Table 2, HCS indicates that all turning movements at the intersections studied operate at LOS C or better during both peak hours, while most operate at LOS A. These results indicate good traffic operations and minimal existing delay. The capacity analysis worksheets from HCS are presented in Appendix B.

TABLE 2
Level of Service
Existing Conditions

Intersection	Turning Movement	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
River Road and Ben Hatcher Road	Northbound Left Turns	A	7.8	A	7.3
	Southbound Left Turns	A	7.3	A	7.5
	Westbound Left/Thru/Right	A	9.8	A	9.7
	Eastbound Left/Thru/Right	A	10.0	A	9.3
River Road and Hancock Road	Northbound Left Turns	A	7.9	A	7.3
	Southbound Left Turns	A	7.3	A	7.5
	Westbound Left/Thru/Right	B	11.3	B	10.3
	Eastbound Left/Thru/Right	B	10.9	A	10.0
River Road and Ebenezer Church Road/Plant Vogtle Access	Eastbound Left Turns	A	7.7	A	7.3
	Westbound Left Turns	A	7.3	A	7.2
	Northbound Left Turns	C	16.4	B	11.0
	Northbound Thru/Right	C	19.4	A	9.5
	Southbound Left Turns	C	20.3	A	9.0
	Southbound Thru	C	16.0	A	9.8
	Southbound Right Turns	A	8.4	A	9.0

3. TRAFFIC IMPACTS – CONSTRUCTION

3.1 TRIP GENERATION

Traffic volumes expected to be generated by the construction of the two additional units were forecasted using construction staff data provided by Plant Vogtle, existing traffic patterns, and expected travel characteristics.

Based on the existing staff numbers and the number of actual vehicles entering the Plant Vogtle site, it is estimated that approximately 20% of the current plant staff travel as a carpool. This estimation was further supported by the prediction of a Plant Vogtle representative. Since most of the construction traffic will be out-of-towners who will camp on property in the vicinity of the plant site, it is expected that a slightly higher percentage of construction staff will carpool. For a conservative estimate, it was assumed that 25% of the construction staff will carpool.

As previously mentioned, the construction traffic was analyzed in two stages. These two stages were chosen solely for the purposes of this report. Based on the data provided by Plant Vogtle staff, the first stage of construction will be January 2011 and will bring approximately 1,200 people. The second stage of construction will by March 2013 and will bring approximately 4,300 people (total – including first stage). Plant Vogtle staff has estimated that approximately 75% of the staff will be working the day shift.

Table 3 presents the trip generation for the two phases of construction. The numbers shown below represent the amount of vehicles that can be expected to enter and exit the site during the AM and PM peak shift changes from 5:30-8:00 AM and 3:30-6:30 PM. For a conservative analysis in this report, it will be assumed that all vehicles will enter and exit during the peak hours of 6:00-7:00 AM and 4:45-5:45 PM. This assumption would cover the worst case scenario.

TABLE 3
Trip Generation
Construction Staff

Date	Staff #	AM Peak		PM Peak	
		Enter	Exit	Enter	Exit
January 2011	1,200	675	225	225	675
March 2013	4,300	2,419	806	806	2,419

3.2 TRIP DISTRIBUTION & ASSIGNMENT

Trips generated by the construction traffic were distributed based upon existing traffic patterns, access to the construction site, the locations of nearby residential and population centers, and the locations of nearby camping locations.

The directional distributions for the construction traffic are shown in Figure 3. The total new traffic generated by each stage the construction traffic was assigned to the roadway network according to the directional distributions. The total assignment of the first (January 2011) and second (March 2013) stage of construction is shown in Figures 4 and 5, respectively.

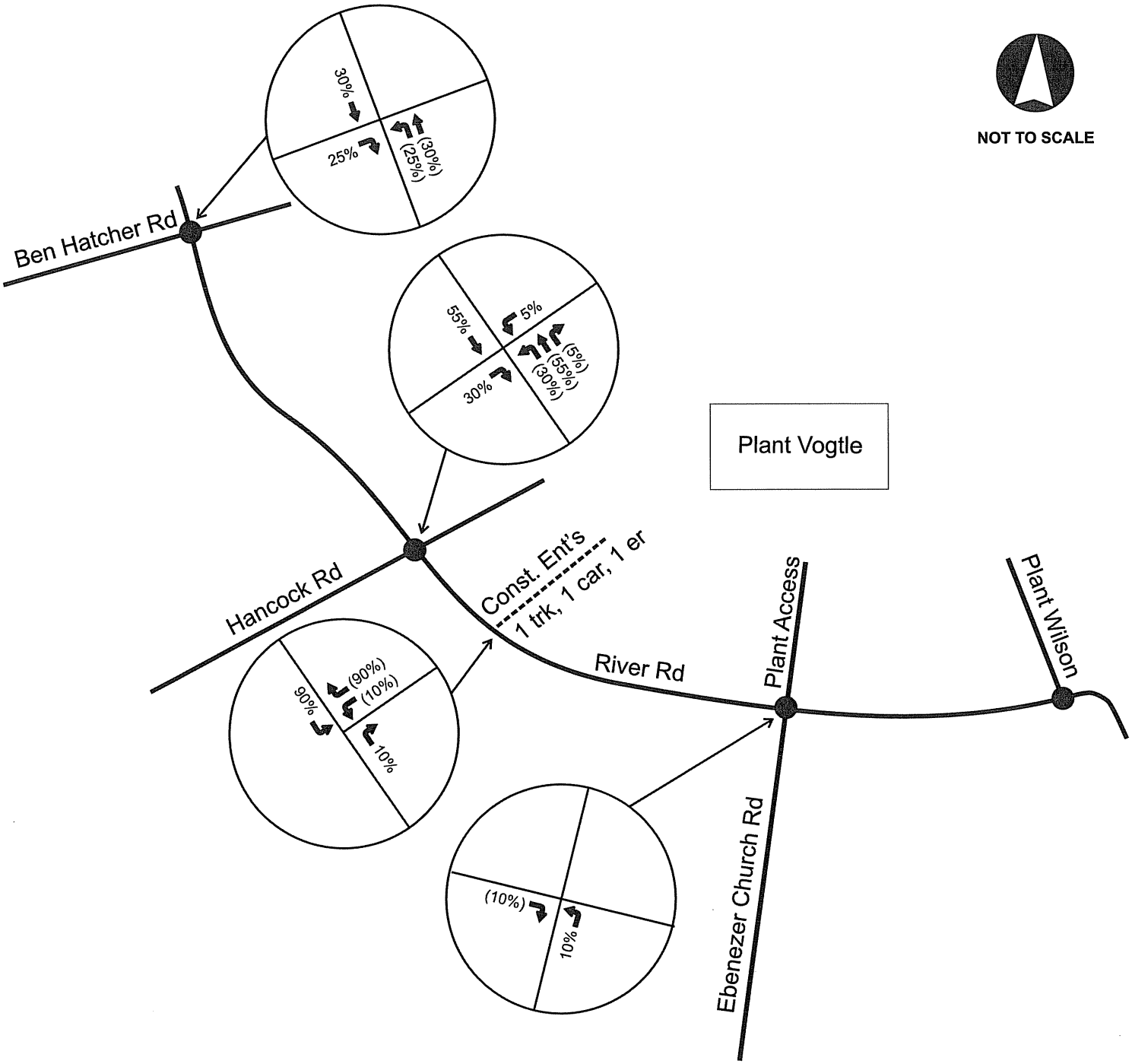

Figure 3

Projected Distribution of
Construction Traffic - No Restrictions
Enter (Exit)

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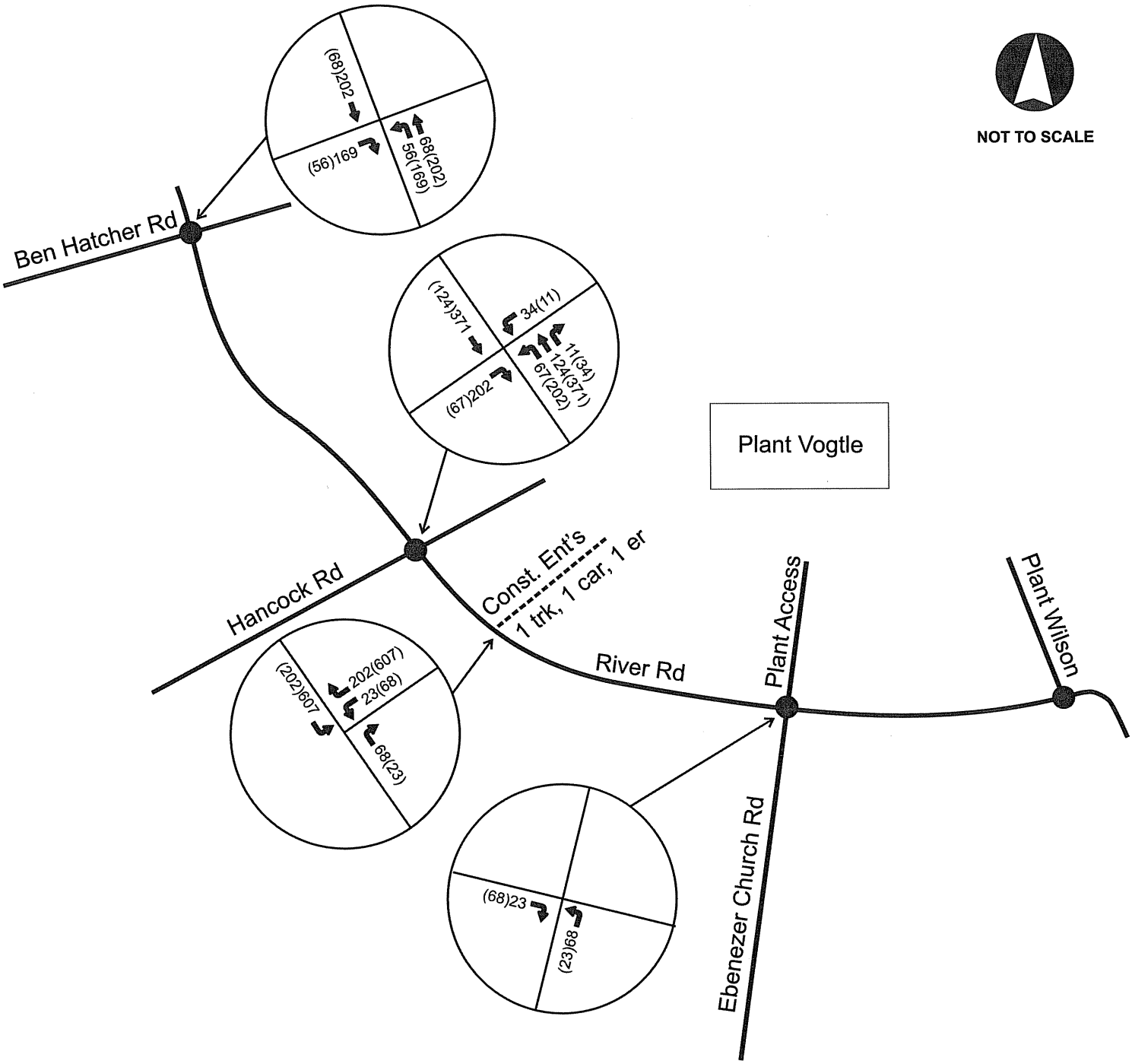

Figure 4

January 2011 Projected Assignment of Construction Traffic - No Restrictions

AM (PM)

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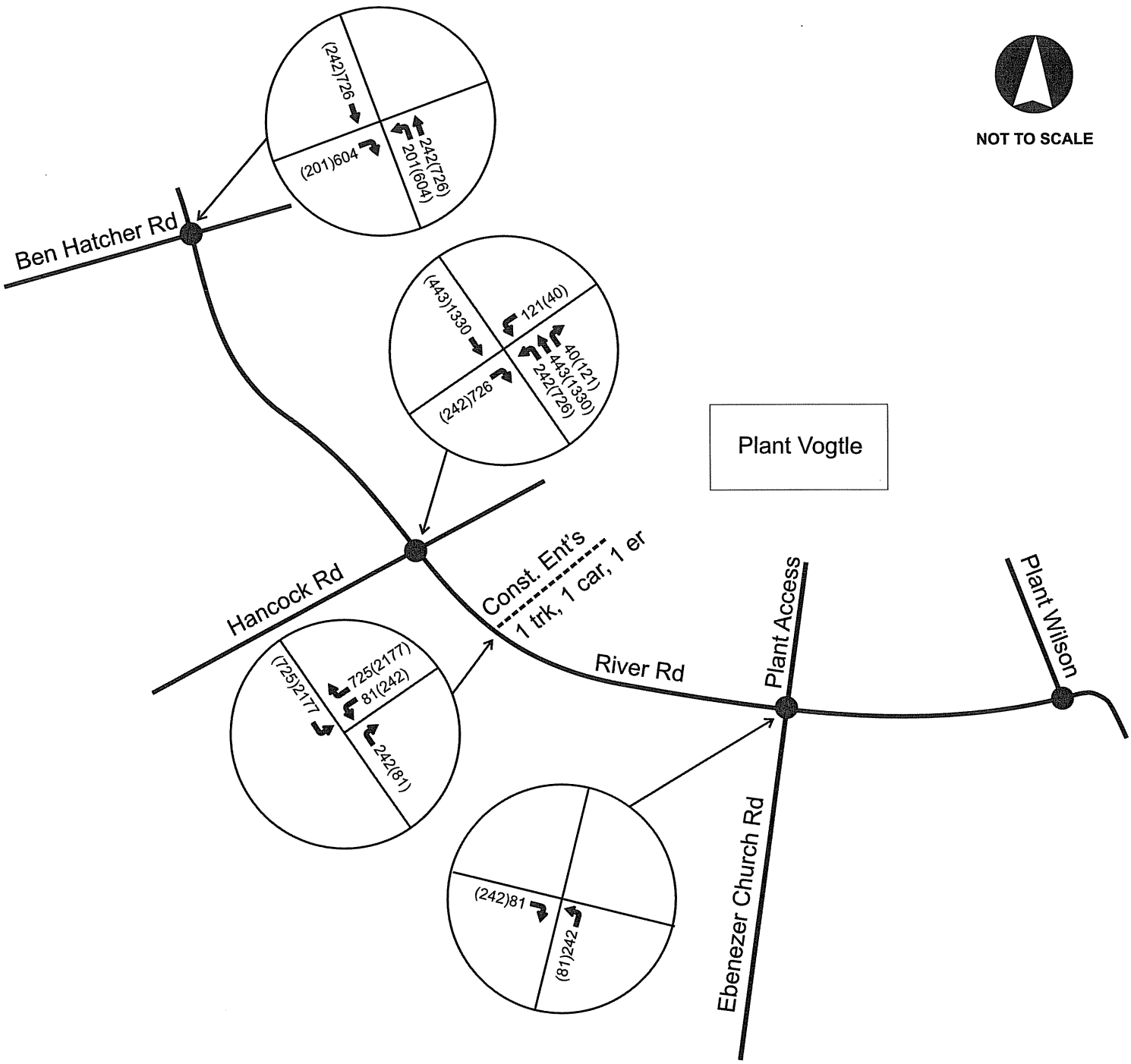

Figure 5

March 2013 Projected Assignment
of Construction Traffic - No Restrictions
AM (PM)

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3.3 ANALYSIS OF PROJECTED TRAFFIC VOLUMES

The traffic assignments for each phase of construction were added to the existing traffic volumes to establish the total projected AM and PM peak hour traffic volumes. The total projected traffic volumes for January 2011 are shown in Figure 6. Figure 7 shows the total projected traffic volumes for March 2013. These traffic volumes represent the projected traffic volumes expected at each stage of development, assuming the existing plant traffic utilizes the existing routes (is free to travel along River Road in front of the construction entrances).

Capacity analyses were conducted to determine the roadway impacts the construction traffic will have on the roadway network within the study area. The capacity analyses were conducted using HCS. For the initial analyses conducted, it was assumed that all existing intersections will keep the existing traffic control and roadway geometry.

For the purposes of this report, the individual construction entrances were not analyzed, as it was expressed by Plant Vogtle and an engineer for The Shaw Group, Inc. that these intersections have already been designed.

The results of the capacity analyses for January 2011 are presented in Table 4. As shown in Table 4, HCS indicates that the westbound approach on Hancock Road at River Road will operate at LOS F and E during the AM and PM peak hours, respectively. It should be noted that it is typical for the minor approach to an unsignalized intersection similar to River Road and Hancock Road to experience increased delay. It should also be noted that the traffic volumes on this approach are very low (55 in AM and 23 in PM). All other turning movements at the intersections studies are shown to operate to LOS D or better, while most are shown at LOS A or B. The capacity analysis worksheets from HCS are presented in Appendix B.

Based on the projected levels of service at the intersections studied, there are no roadway improvements that would significantly improve the traffic operations at the intersections studied. There are several minor improvements such as improving pavement markings and signage that are detailed in the Conclusions & Recommendations section of this report. It should be noted that these minor improvements would be recommended even if Plant Vogtle was not adding the two new units.

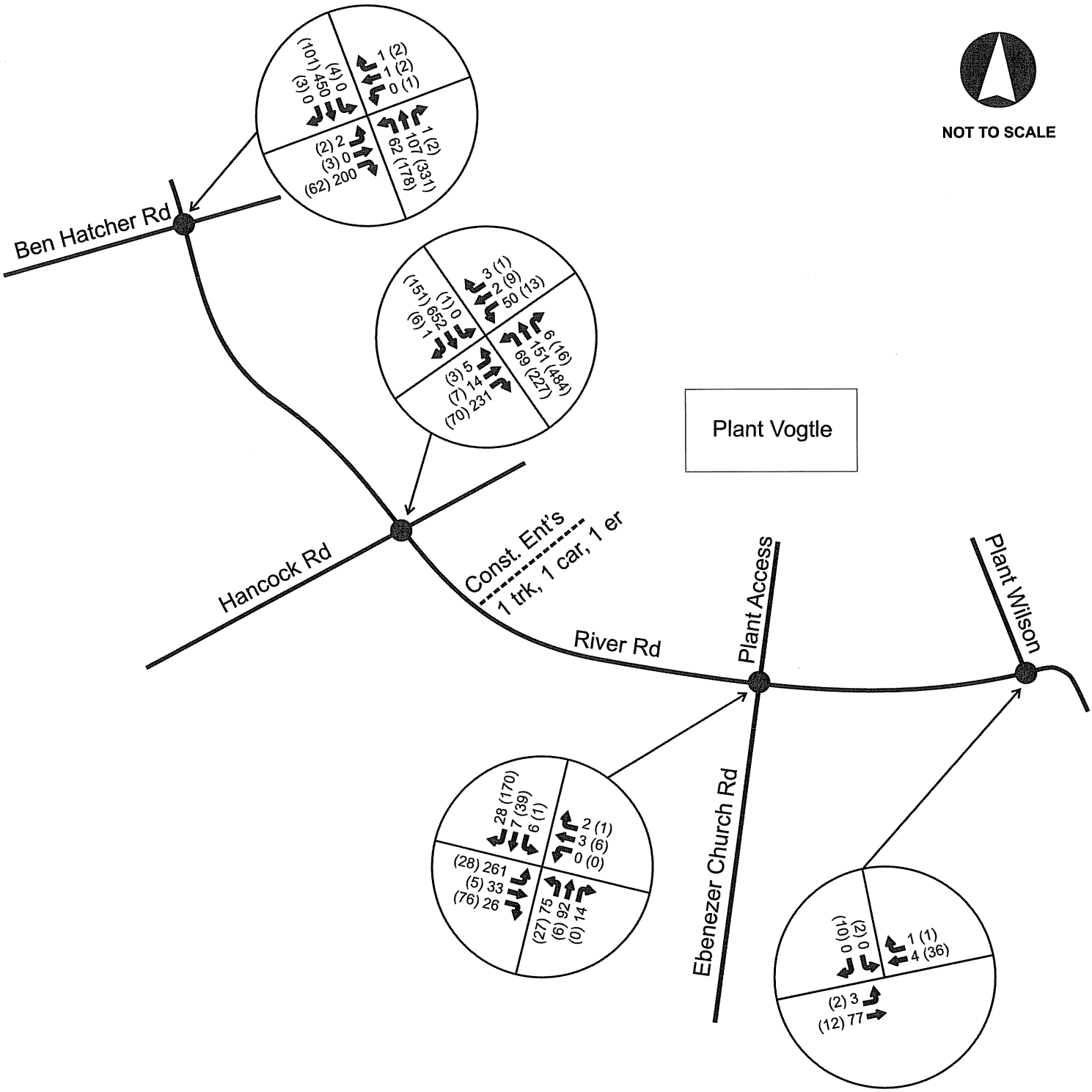

Figure 6

January 2011 Projected Peak Hour
Traffic Volumes - No Restrictions
AM (PM)

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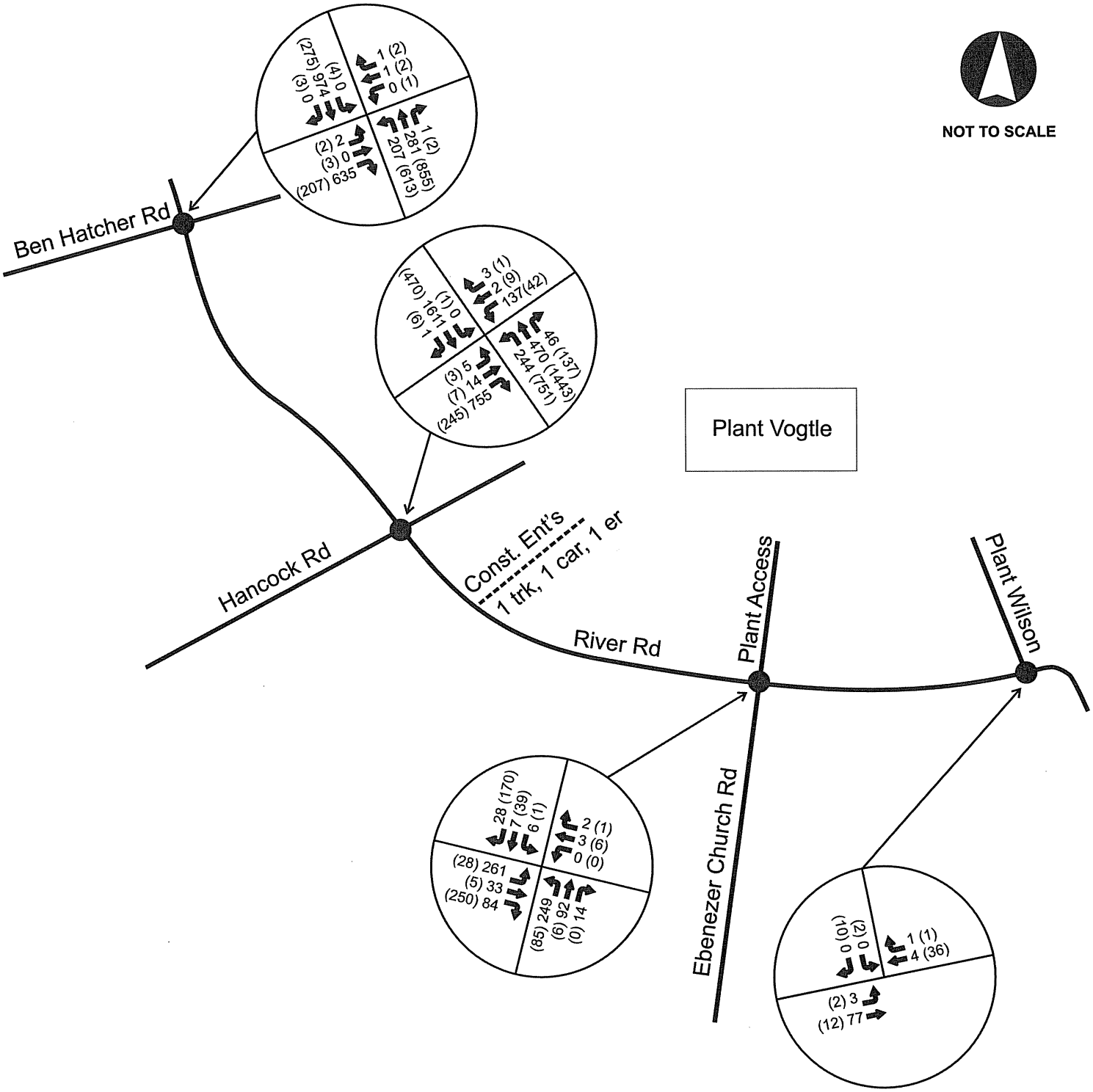

Figure 7

March 2013 Projected Peak Hour Traffic Volumes - No Restrictions

AM (PM)

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TABLE 4
Level of Service
January 2011 Projected Conditions

Intersection	Turning Movement	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
River Road and Ben Hatcher Road	Northbound Left Turns	A	8.6	A	7.8
	Southbound Left Turns	A	7.4	A	8.0
	Westbound Left/Thru/Right	B	12.6	C	16.9
	Eastbound Left/Thru/Right	C	15.3	B	10.1
River Road and Hancock Road	Northbound Left Turns	A	9.4	A	8.1
	Southbound Left Turns	A	7.5	A	8.5
	Westbound Left/Thru/Right	F	195.7	E	39.5
	Eastbound Left/Thru/Right	D	32.3	B	12.8
River Road and Ebenezer Church Road/Plant Vogtle Access	Eastbound Left Turns	A	7.7	A	7.3
	Westbound Left Turns	A	7.3	A	7.2
	Northbound Left Turns	C	20.4	B	11.7
	Northbound Thru/Right	C	19.8	A	9.8
	Southbound Left Turns	C	20.7	A	9.3
	Southbound Thru	C	16.4	B	10.3
	Southbound Right Turns	A	8.4	A	9.0

The results of the capacity analyses for March 2013 are presented in Table 5 on the following page. As shown in Table 5, HCS indicates that the eastbound and westbound approaches on Ben Hatcher Road and Hancock Road at River Road will operate at LOS F during both peak hours. It should be noted that it is typical for the minor approach to an unsignalized intersection similar to River Road and Hancock Road to experience increased delay. However, the delay projected to be experienced at these intersections in 2013 is beyond what drivers can be expected to tolerate. All other turning movements at the intersection studied are shown to operate with delays that are manageable to typical drivers. The capacity analysis worksheets from HCS are presented in Appendix B.

TABLE 5
Level of Service
March 2013 Projected Conditions

Intersection	Turning Movement	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
River Road and Ben Hatcher Road	Northbound Left Turns	B	13.5	B	11.1
	Southbound Left Turns	A	7.9	A	10.0
	Westbound Left/Thru/Right	F	--	F	--
	Eastbound Left/Thru/Right	F	--	F	--
River Road and Hancock Road	Northbound Left Turns	E	43.0	C	20.3
	Southbound Left Turns	A	8.6	B	15.0
	Westbound Left/Thru/Right	F	--	F	--
	Eastbound Left/Thru/Right	F	--	F	--
River Road and Ebenezer Church Road/Plant Vogtle Access	Eastbound Left Turns	A	7.7	A	7.3
	Westbound Left Turns	A	7.5	A	7.8
	Northbound Left Turns	F	71.0	B	14.2
	Northbound Thru/Right	C	20.8	B	10.4
	Southbound Left Turns	C	21.8	A	9.9
	Southbound Thru	C	17.5	B	11.9
	Southbound Right Turns	A	8.4	A	9.0

Additional analyses were conducted to determine what, if any, improvements could be made to improve the delay and levels of service the roadway network studied. The analyses indicate that the following roadway improvements would improve the traffic operations on the roadway network studied:

- A northbound left turn lane on River Road at Ben Hatcher Road
- An eastbound right turn lane on Hancock Road at River Road
- Adding a northbound approach on Ebenezer Church Road to align with the northbound entrance to Plant Vogtle

These recommendations are shown in more detail in the Conclusions & Recommendations section of this report. The Conclusions & Recommendations section also includes other operational and logistical recommendations for the roadway network that would improve the traffic operations within the study area.

4. TRAFFIC IMPACTS – Plants 3 & 4

4.1 TRIP GENERATION

Traffic volumes expected to be generated by the two additional units were forecasted using plant staff data provided by Plant Vogtle, existing traffic patterns, and expected travel characteristics.

As previously discussed, based on the existing staff numbers and the number of actual vehicles entering the Plant Vogtle site, it is estimated that approximately 20% of the current plant staff travel as a carpool. This estimation was further supported by the prediction of a Plant Vogtle representative. As a result, it was assumed that 20% of the staff for the two additional units will carpool.

Based on data provided by Plant Vogtle staff, upon completion of construction of the two additional units in 2017, approximately 850 new staff members will be employed at the two new units. Approximately 75% of these persons will work the dayshift. These 850 new staff will be in addition to the 900 staff currently employed for the two existing units.

Table 6 presents the trip generation for the two new units. The numbers shown below represent the amount of vehicles that can be expected to enter and exit the site during the AM and PM peak shift changes from 5:30-8:00 AM and 3:30-6:30 PM. For a conservative analysis in this report, it will be assumed that all vehicles will enter and exit during the peak hours of 6:00-7:00 AM and 4:45-5:45 PM.

TABLE 6
Trip Generation
Two Additional Units Staff

Date	Staff #	AM Peak		PM Peak	
		Enter	Exit	Enter	Exit
January 2017	850	510	170	170	510

4.2 TRIP DISTRIBUTION & ASSIGNMENT

Trips generated by the additional two units were distributed based upon existing traffic patterns, access to the site, and the locations of nearby residential and population centers.

The directional distributions for the additional unit traffic are shown in Figure 8. The total new traffic generated by the new units was assigned to the roadway network according to the directional distributions shown in Figure 8. The total assignment of the new units' traffic is shown in Figure 9.

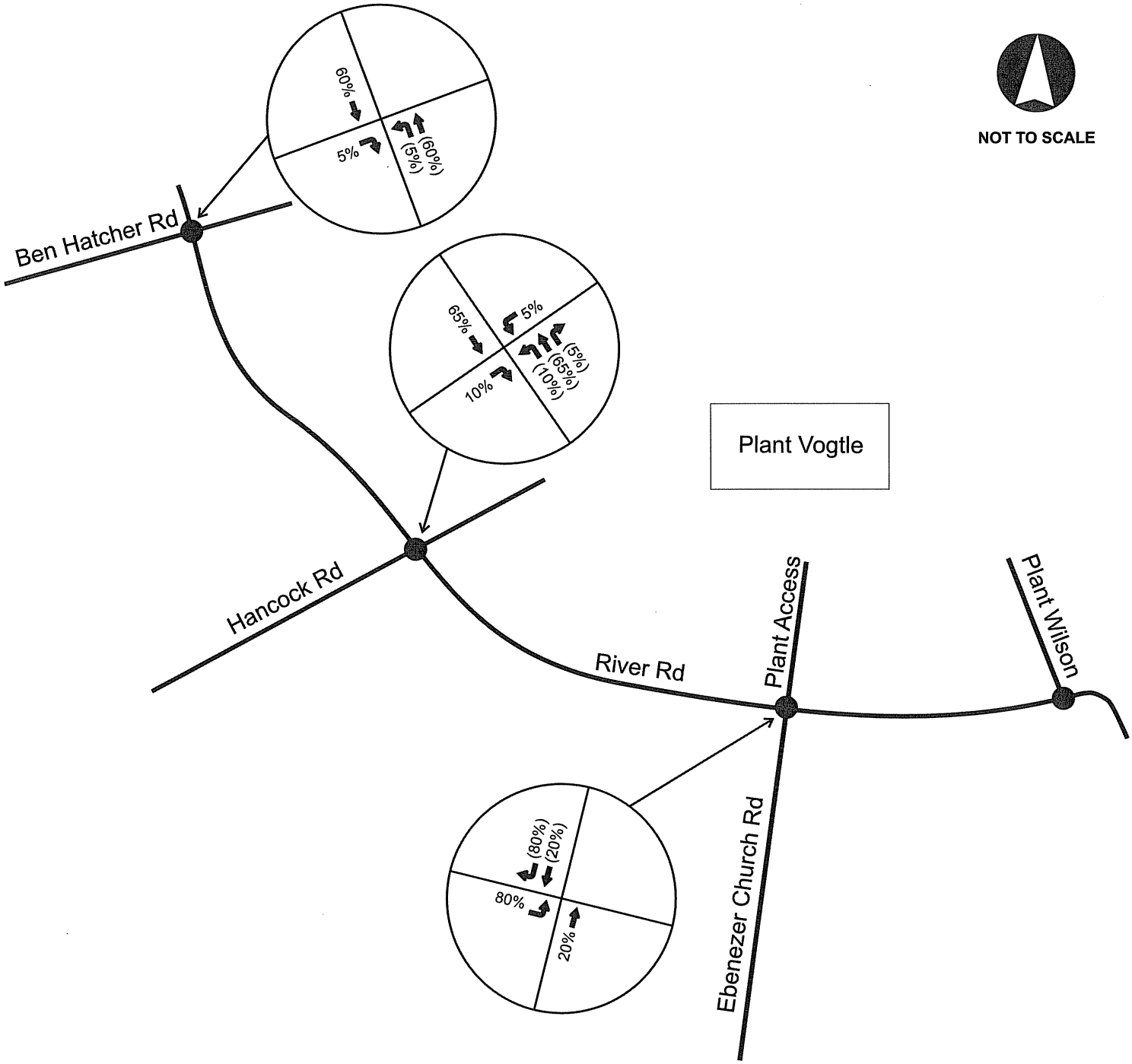

Figure 8

Existing & Projected Distribution of Plant Traffic - No Restrictions

Enter (Exit)

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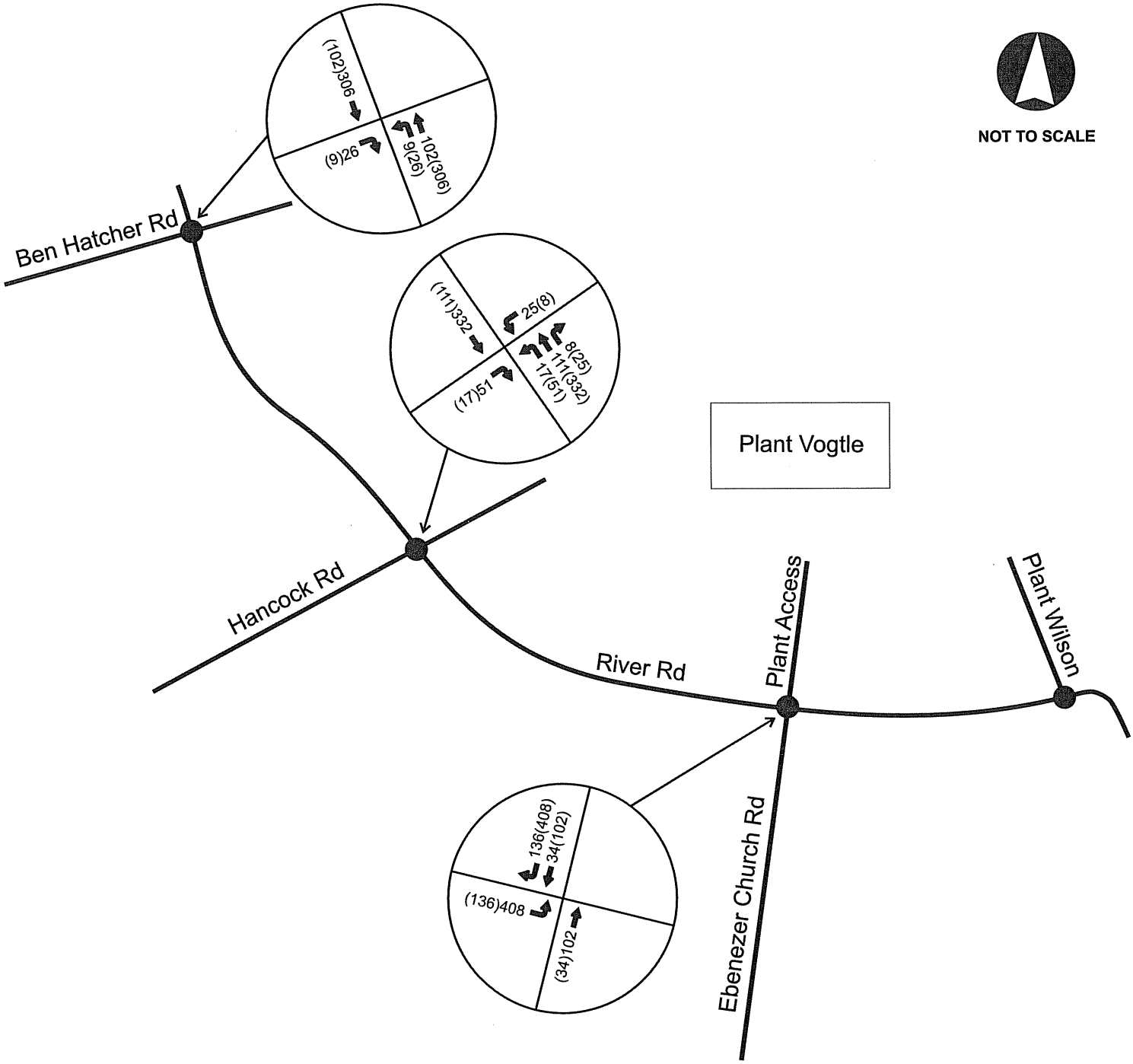

Figure 9

Assignment of Units 3 & 4
Traffic - No Restrictions
AM (PM)

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4.3 ANALYSIS OF PROJECTED TRAFFIC VOLUMES

The traffic assignments for the additional two units were added to the existing traffic volumes to establish the total projected AM and PM peak hour traffic volumes at the completion of the construction project. The total projected traffic volumes are shown in Figure 10. These traffic volumes represent the projected traffic volumes expected at the completion of construction in 2017. It is expected that all construction traffic will be gone at this time.

Capacity analyses were conducted to determine the roadway impacts the additional units will have on the roadway network within the study area. The capacity analyses were conducted using HCS. For the initial analyses conducted, it was assumed that all roadways and intersections will keep the existing roadway geometry and traffic control. For a conservative analysis, it was assumed that none of the recommended improvements for the construction traffic will be constructed.

The results of the capacity analyses are presented in Table 7. As shown in Table 7, HCS indicated that the northbound and southbound approaches on Ebenezer Church Road and the Plant Vogtle access will experience significant delays during the AM peak hour with no improvements to the existing roadways. All other turning movements are expected to operate at LOS D or better once all four units are in operation. It is expected that most turning movements will operate at LOS A or B. The capacity analysis worksheets from HCS are presented in Appendix B.

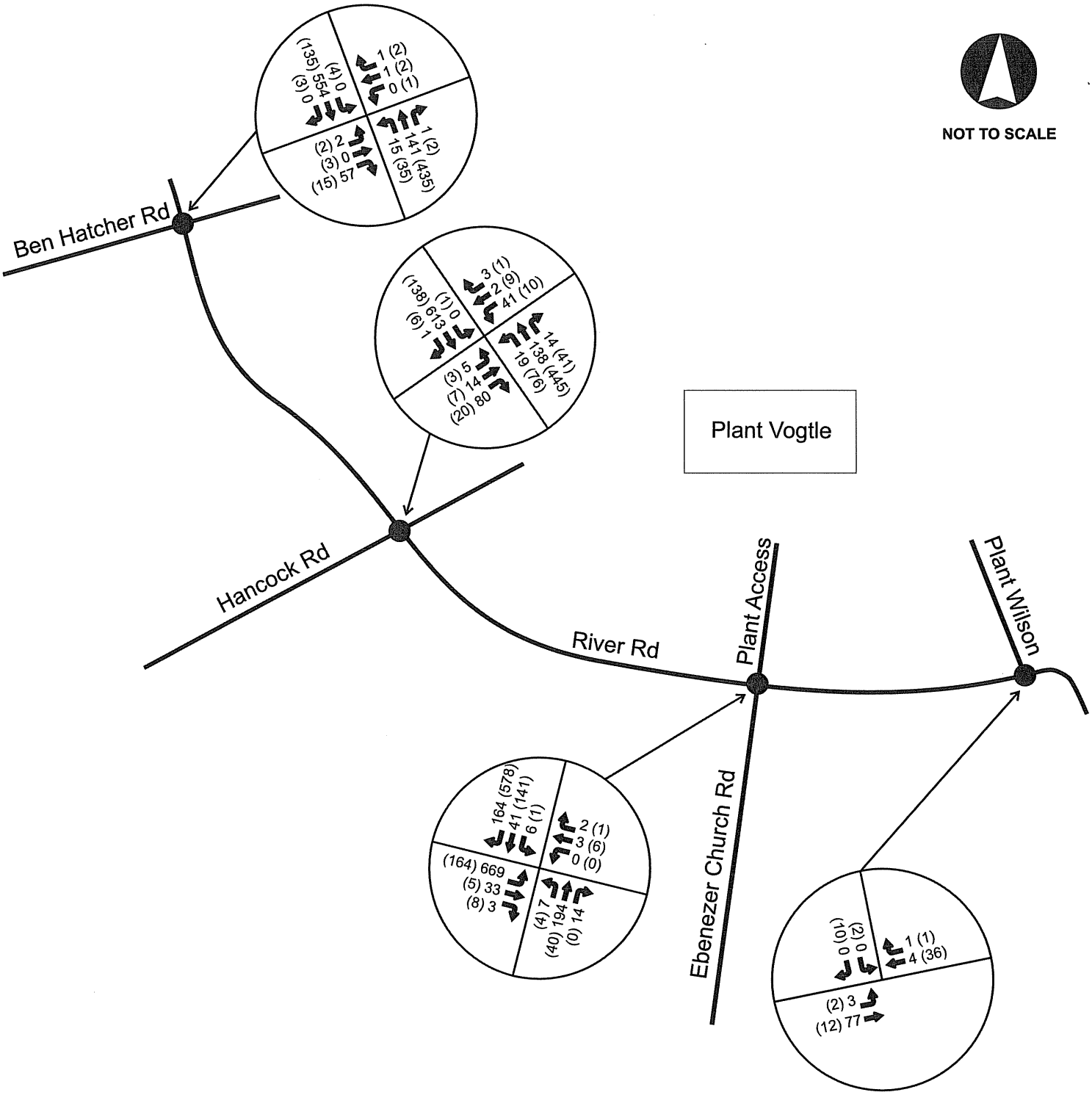

Figure 10

2017 Projected Peak Hour
Traffic Volumes - No Restrictions
AM (PM)

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TABLE 7
Level of Service
Completion of Two Additional Units – Projected Conditions

Intersection	Turning Movement	AM Peak Hour		PM Peak Hour	
		LOS	Delay (sec/veh)	LOS	Delay (sec/veh)
River Road and Ben Hatcher Road	Northbound Left Turns	A	8.8	A	7.6
	Southbound Left Turns	A	7.5	A	8.3
	Westbound Left/Thru/Right	B	12.8	B	14.0
	Eastbound Left/Thru/Right	B	13.6	B	10.8
River Road and Hancock Road	Northbound Left Turns	A	9.0	A	7.7
	Southbound Left Turns	A	7.5	A	8.5
	Westbound Left/Thru/Right	D	28.9	C	19.2
	Eastbound Left/Thru/Right	C	17.1	B	12.3
River Road and Ebenezer Church Road/Plant Vogtle Access	Eastbound Left Turns	A	9.0	A	7.5
	Westbound Left Turns	A	7.3	A	7.2
	Northbound Left Turns	F	261	D	34.0
	Northbound Thru/Right	F	--	B	13.0
	Southbound Left Turns	F	--	B	12.5
	Southbound Thru	F	143.6	B	12.6
	Southbound Right Turns	A	9.0	B	13.0

5. ANALYSIS OF STUDY AREA & ROUTES TO PLANT

As previously mentioned, three new construction access locations for the construction of the two additional units will be provided along River Road between Hancock Road and Ebenezer Church Road/Plant Vogtle access. While these construction entrances were not specifically analyzed in this report, their impact on the adjacent roadway was evaluated.

Field investigations were made and analyses were performed to determine if rerouting plant traffic during construction of the two additional plants would provide adequate traffic operations and improved flow within the study area. Based on the existing traffic volumes, approximately 80% of the plant traffic travels along River Road where the construction entrances will be located. Allowing the plant traffic to mix with the construction traffic will not only cause delays for the plant traffic, but also for the construction traffic. As a result, it is recommended that current employees traveling to and from the main plant gate across from Ebenezer Church Road be redirected to another route.

Results of the field investigations and travel time data provided by Plant Vogtle staff, it is recommended that employees travel along Highway 23 to either Jack Delaigle Road or Ebenezer Church Road, rather than River Road during the construction. Jack Delaigle Road provides a connection to Ebenezer Church Road. Ebenezer Church Road then provides a direct connection to the main Plant Vogtle gate. It should be noted that an additional route – Highway 23 to Claxton Lively to Son Delaigle Road to Jack Delaigle Road to Ebenezer Church Road – was also analyzed. However, this route is less appealing due to its circuitous path to Ebenezer Church Road and a section of one-lane dirt road.

As previously discussed, this study has analyzed the construction in two phases – January 2011 (first ramp-up of staffing) and March 2013 (maximum staffing). It is expected that traffic operations during the first phase of construction would operate adequately without rerouting plant traffic. However, it is recommended that plant staff be urged to go ahead and begin rerouting their trips as soon as possible. The rerouting of plant traffic will be needed to be in place by the second phase of construction in March 2013.

At which time the plant staff begins to take the new routes along Highway 23, it is recommended that eastbound left turn lanes be constructed along Highway 23 at Jack Delaigle Road and Ebenezer Church Road. It appears that these additional turn lanes can be accomplished within the existing right-of-way and with minimal earthwork.

It should be noted that the intersection of River Road and the Plant Wilson access was not included in the technical analysis of this report. This is due to the low traffic volumes at this intersection along with the fact that very little, if any, new traffic is expected to traverse this intersection. This intersection also provides access to a Plant Vogtle gate that is currently not in use. The configuration and traffic control at

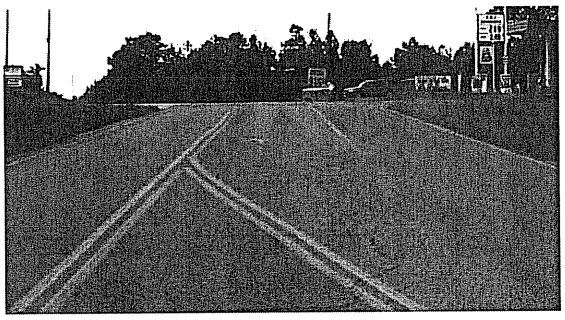
this intersection is very non-intuitive. The westbound approach on River Road, which would appear to be the main approach, is controlled with a stop sign. There is also a dirt road that has been worn that could provide cut-through trips without having to stop at the stop sign. This intersection is shown in the photo to the left. If at any time in the future, the Plant Vogtle gate is opened or staffing at Plant Wilson is increased, it is recommended that this intersection be examined in further detail to determine appropriate configuration and traffic control.

North-westbound River Road at Plant Wilson access

6. CONCLUSIONS AND RECOMMENDATIONS

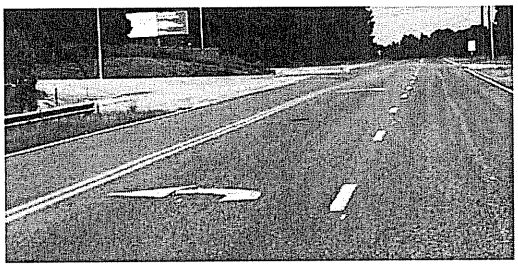
As discussed throughout this report, the construction of the two additional units was analyzed to be developed in two portions – January 2011 and March 2013. This analysis was performed to ensure that traffic mitigations would be complete for various stages of construction staffing. As a result, the recommended improvements have also been divided into the first and second phases of construction. As previously discussed, the individual construction entrances were not analyzed, as it was expressed by Plant Vogtle and The Shaw Group that these intersections have already been designed. The following summarizes the recommended roadway and traffic control improvements within the study area to be in place by the first phase of construction – January 2011. It should be noted that these minor improvements are based on the existing conditions not meeting typical standards for pavement markings and would be recommended even if Plant Vogtle was not adding the two new units. The recommendations are described as follows:

- Restripe the northbound left turn lane on River Road at Hancock Road to be compliant with the Manual on Uniform Traffic Control Devices (MUTCD). The existing left turn arrow, shown in the photo to the right, is barely visible and the striping of the lane has started to show wear. The existing pavement markings should be milled and new markings painted.



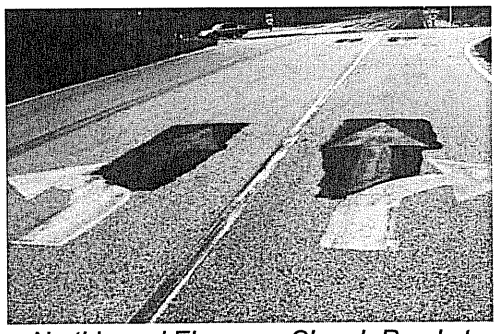
Northbound River Road at Hancock Road

- Restripe the eastbound left turn lane on River Road at the Plant Vogtle access across from Ebenezer Church Road to be compliant with the MUTCD. The existing single dashed white line, shown in the photo to the right, is non-standard. The existing pavement markings should be milled and new markings painted.



Eastbound River Road at Plant Access

- Restripe the northbound approach on Ebenezer Church Road at River Road to show more visible and clearer to understand turn lane arrows. The restriping should be compliant with the MUTCD. The existing arrows, shown in the photo to the right, have been painted over and it makes it difficult to determine what laneage is intended. The existing pavement markings should be milled and new markings painted.



Northbound Ebenezer Church Road at River Road

In conclusion, it is expected that implementation of the above recommendations will provide adequate and efficient traffic operations for the study area based on existing traffic volumes as well as the first phase of construction in January 2011.

Additional recommendations have been developed for the second phase of construction in March 2013. The following summarizes the recommended roadway and traffic control improvements proposed within the study area to be in place by March 2013. It should be noted that these recommendations could certainly be completed prior to this date, as implementation would only improve traffic operations at an earlier time. The recommendations are described as follows:

- It is recommended that a northbound left turn lane be provided on River Road at Ben Hatcher Road. This left turn lane should include at least 350 feet of storage and designed to Georgia Department of Transportation (GDOT) and the American Association of State Highway and Transportation Officials (AASHTO) standards.

- It is recommended that the existing northbound left turn lane on River Road at Hancock Road be extended by an additional 250 feet. With this extension, the turn lane at this location should include at least 350 feet of storage and be designed to GDOT and AASHTO standards.

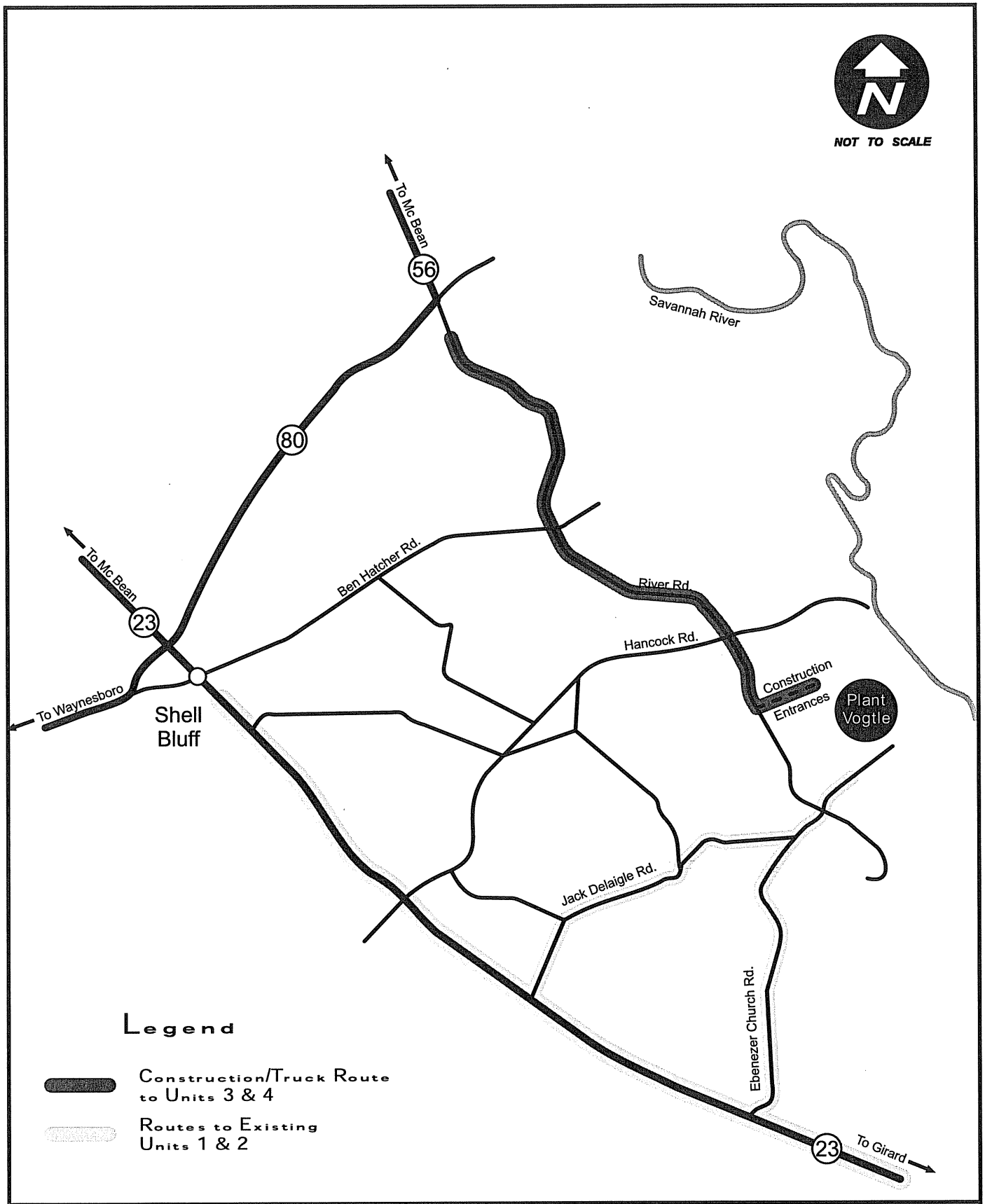
- An eastbound right turn lane is recommended to be provided on Hancock Road at River Road. This right turn lane should include at least 350 feet of storage and should be designed according to GDOT and AASHTO standards.

- It is recommended that the existing plant traffic (those working as part of units 1 and 2) be rerouted to avoid the construction access locations along River Road. The routes recommended for plant traffic to take during this time are Highway 23 to either Jack Delaigle Road or Ebenezer Church Road. Jack Delaigle Road provides a connection to Ebenezer Church Road. Ebenezer Church Road provides a direct connection to the main plant gate. Figure 11 shows the recommended routes for traffic.

- Prior to rerouting traffic, an eastbound left turn lane is recommended on Highway 23 at Jack Delaigle Road and Ebenezer Church Road. Each of these left turn lanes should include at least 200 feet of storage and should be designed to GDOT and AASHTO standards.

- Prior to rerouting plant traffic to utilize Ebenezer Church Road, it is recommended that Ebenezer Church Road be realigned so that the northbound approach at River Road aligns with the northbound entrance to the Plant Vogtle gate. This recommendation is shown conceptually in Figure 12.

- In addition to the roadway improvements listed above, as construction traffic begins to ramp up, it is recommended that the construction staff be given



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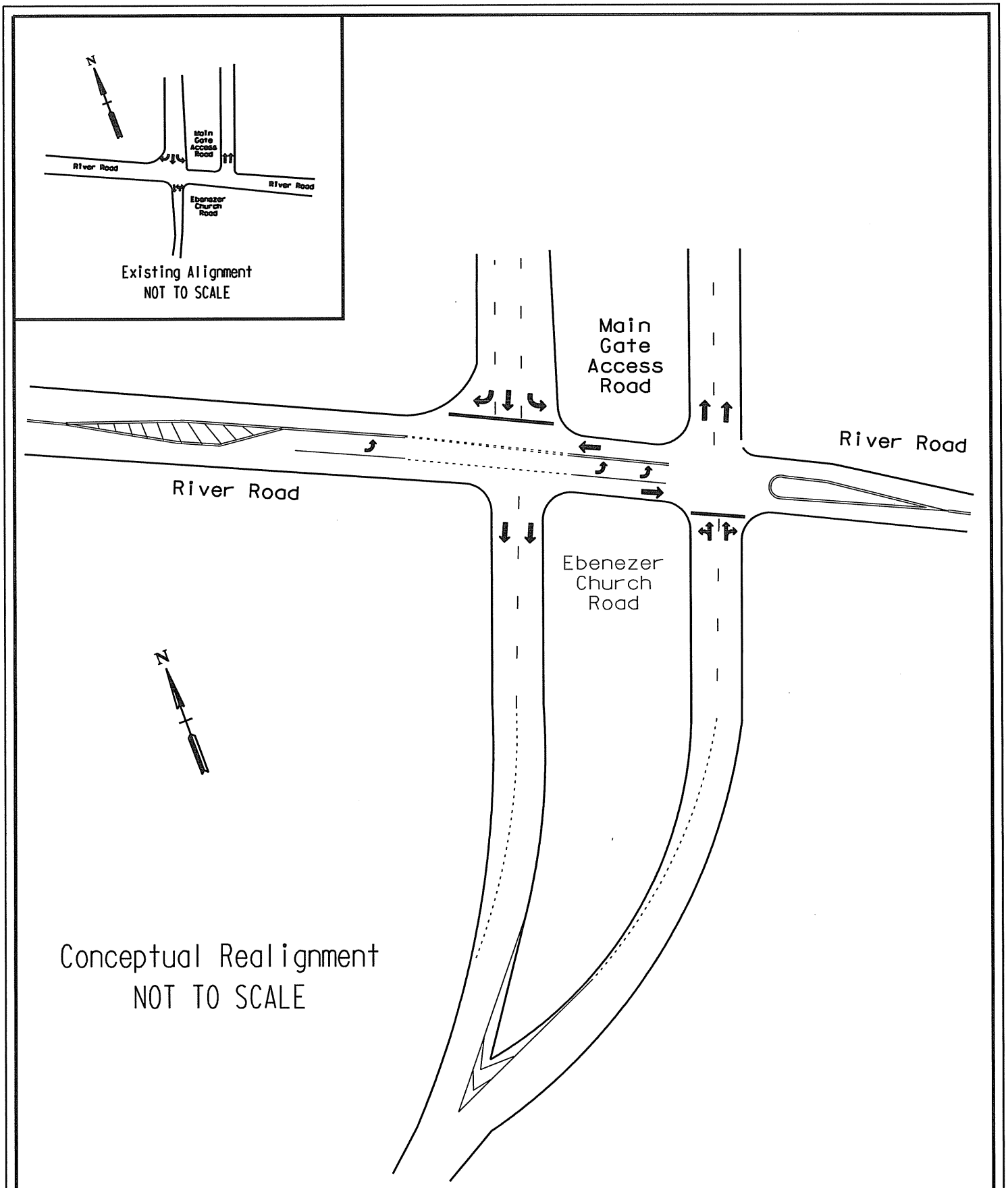
Plant Vogtle - Waynesboro, GA

Recommended Routes

Figure 11



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Plant Vogtle - Waynesboro, GA

Conceptual Realignment

Figure 12

varied shift times so traffic does not arrive and depart during such a condensed time period. All analyses in this report were conducted assuming all construction traffic would arrive and depart within the AM and PM peak hours (6:00-7:00 AM and 4:45-5:45 PM). An example for this flexible shift time would be to allow half of the construction staff to arrive at 6:15 and the other half arrive no earlier than 7:15.

In conclusion, it is expected that implementation of the above recommendations will provide adequate and efficient traffic operations for the study area based on the second phase of construction and highest level of construction staff.

Based on the analyses of the full operation of all four units (no construction traffic), no further roadway or traffic control improvements are recommended. The above recommendations will provide more than adequate traffic operations within the study area. However, as discussed in the recommendations for construction traffic, it is recommended that the plant staff be given varied shift times so traffic does not arrive and depart during such a condensed time period. All analyses in this report were conducted assuming traffic for all four units would arrive and depart within the peak hours (6:00-7:00 AM and 4:45-5:45 PM). An example for this flexible shift time would be to allow staff for two of the units to arrive at 6:15 and staff for the other two to arrive no earlier than 7:15.

APPENDIX

A. Traffic Count Data

B. Capacity Analysis Worksheets

Appendix A

Traffic Count Data

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

Intersection: River Road at Plant Wilson
Date: 4/29/2009
Recorder: Traffic Data
N-S Project Number: 7607-001
Notes: The peak hours are different at this I/S (6:30 & 3:30) than the others (6:00 & 4:45)

	Northbound			Southbound			Eastbound			Westbound		
				Plant Wilson Access			River Road			River Road		
Start Time	1	2	3	4	5	6	7	8	9	10	11	12
5 :30				0		0	1	0			0	0
5 :45				0		0	4	4			0	1
6 :00				0		0	2	4			0	0
6 :15				0		1	1	10			1	2
6 :30				0		0	0	13			0	1
6 :45				0		0	0	21			3	0
7 :00				0		0	1	20			0	0
7 :15				0		0	2	23			1	0
7 :30				0		1	3	6			0	0
7 :45				0		0	0	5			2	1
8 :00												
8 :15												
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3 :15												
3 :30				0		0	0	4			16	0
3 :45				0		0	0	4			1	1
4 :00				2		7	0	4			12	0
4 :15				0		3	2	0			7	0
4 :30				0		7	0	0			5	0
4 :45				0		0	0	1			3	0
5 :00				0		0	0	1			0	0
5 :15				0		0	0	2			0	0
5 :30				0		0	0	1			1	0
5 :45				0		0	0	0			2	0
6 :00				0		0	0	0			2	0
6 :15				0		0	0	2			0	0
6 :30												
6 :45												
AM Peak	0	0	0	0	0	0	3	77	0	0	4	1
Mid Peak	0	0	0	0	0	0	0	4	0	0	16	0
PM Peak	0	0	0	2	0	10	2	12	0	0	36	1

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

Intersection: River Road at Ben Hatcher Road
Date: 4/28/2009
Recorder: Traffic Data
N-S Project Number: 7607-001
Notes:

	Northbound			Southbound			Eastbound			Westbound		
	River Road			River Road			Ben Hatcher Road			Ben Hatcher Road		
Start Time	1	2	3	4	5	6	7	8	9	10	11	12
5 :30	1	4	0	0	31	0	1	0	1	0	0	1
5 :45	1	8	0	0	46	3	0	0	4	0	0	0
6 :00	1	13	0	0	64	0	0	0	2	0	0	0
6 :15	0	6	0	0	56	0	0	0	5	0	0	0
6 :30	3	8	0	0	84	0	0	0	19	0	0	1
6 :45	2	12	1	0	44	0	2	0	5	0	1	0
7 :00	2	8	0	0	34	0	0	0	1	1	1	2
7 :15	1	1	0	0	26	1	0	0	2	0	0	0
7 :30	1	1	0	0	16	1	1	1	1	0	0	0
7 :45	0	1	0	1	14	1	0	0	0	1	1	0
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3 :30	0	38	0	1	14	0	0	0	1	0	0	0
3 :45	4	32	1	0	2	0	1	0	0	0	0	0
4 :00	4	37	1	0	3	0	0	0	4	2	0	0
4 :15	5	40	1	0	1	2	1	0	5	1	1	0
4 :30	6	29	0	0	10	0	1	1	0	0	0	0
4 :45	3	22	0	3	5	0	0	1	3	0	1	2
5 :00	5	53	1	0	13	1	0	1	1	1	1	0
5 :15	1	24	0	0	7	1	1	0	1	0	0	0
5 :30	0	30	1	1	8	1	1	1	1	0	0	0
5 :45	4	21	0	0	10	0	2	0	3	1	1	0
6 :00	3	22	1	0	13	1	1	2	0	0	0	2
6 :15	0	12	1	1	7	1	0	0	1	0	0	0
6 :30												
6 :45												
AM Peak	6	39	1	0	248	0	2	0	31	0	1	1
Mid Peak	0	38	0	1	14	0	0	0	1	0	0	0
PM Peak	9	129	2	4	33	3	2	3	6	1	2	2

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

Intersection: River Road at Ebenezer Church Rd/Plant Vogtle
Date: 4/29/2009
Recorder: Traffic Data
N-S Project Number: 7607-001
Notes:

	Northbound			Southbound			Eastbound			Westbound		
	Ebenezer Church Road			Plant Vogtle Access			River Road			River Road		
Start Time	1	2	3	4	5	6	7	8	9	10	11	12
5 :30	0	8	0	0	2	7	19	1	0	0	0	0
5 :45	0	9	2	0	3	12	41	7	1	0	0	0
6 :00	0	18	1	0	1	5	50	4	0	0	0	0
6 :15	2	18	5	0	1	4	66	8	1	0	2	0
6 :30	4	30	5	2	3	8	82	7	1	0	0	0
6 :45	1	26	3	4	2	11	63	14	1	0	1	2
7 :00	0	6	2	4	1	4	31	14	2	0	0	0
7 :15	1	4	1	5	0	0	20	19	1	1	0	0
7 :30	0	2	2	3	0	0	9	3	1	0	0	1
7 :45	0	2	0	1	0	1	5	3	0	1	0	1
8 :00												
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3 :00												
3 :15												
3 :30	1	1	0	4	39	75	1	2	1	6	10	2
3 :45	0	1	0	3	5	20	2	0	2	1	2	0
4 :00	2	1	1	1	9	33	2	2	0	1	11	3
4 :15	0	2	2	0	1	24	2	0	0	3	8	0
4 :30	1	1	0	0	4	24	2	0	0	1	9	2
4 :45	3	1	0	0	9	34	4	1	0	0	4	0
5 :00	1	2	0	0	16	54	10	2	1	0	1	1
5 :15	0	1	0	0	2	33	11	1	3	0	0	0
5 :30	0	2	0	1	12	49	3	1	4	0	1	0
5 :45	0	0	0	0	9	23	1	0	0	0	2	0
6 :00	0	3	0	1	3	7	7	0	1	1	1	0
6 :15	1	2	0	1	2	7	5	1	0	0	1	0
6 :30												
6 :45												
AM Peak	7	92	14	6	7	28	261	33	3	0	3	2
Mid Peak	1	1	0	4	39	75	1	2	1	6	10	2
PM Peak	4	6	0	1	39	170	28	5	8	0	6	1

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INTERSECTION TURNING MOVEMENT COUNT SUMMARY

Intersection: River Road at Hancock Road
Date: 4/28/2009
Recorder: Traffic Data
N-S Project Number: 7607-001
Notes:

	Northbound			Southbound			Eastbound			Westbound		
	River Road			River Road			Hancock Road			Hancock Road		
Start Time	1	2	3	4	5	6	7	8	9	10	11	12
5 :30	2	4	0	0	21	0	0	1	2	0	0	0
5 :45	0	7	1	0	46	1	2	0	2	1	0	0
6 :00	2	10	1	0	61	0	0	1	5	1	1	0
6 :15	0	2	1	0	64	0	1	5	7	3	0	1
6 :30	0	8	3	0	89	0	0	3	10	6	1	0
6 :45	0	7	1	0	67	1	4	5	7	6	0	2
7 :00	0	3	1	0	28	2	0	0	4	1	1	0
7 :15	0	1	1	0	37	0	0	1	1	1	1	0
7 :30	0	0	0	0	16	1	1	2	1	1	2	1
7 :45	1	3	3	0	8	0	0	1	1	0	0	0
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3 :15												
3 :30	2	51	2	0	3	0	1	3	0	1	1	1
3 :45	3	23	3	0	1	1	0	0	0	1	1	1
4 :00	0	42	2	0	1	1	1	2	0	0	0	0
4 :15	0	37	0	0	1	1	0	1	1	0	0	2
4 :30	0	34	2	0	4	1	0	3	0	0	1	0
4 :45	6	36	4	0	6	3	0	3	1	0	1	0
5 :00	4	34	3	0	10	1	1	2	1	1	3	0
5 :15	8	26	5	0	7	2	1	1	1	1	5	1
5 :30	7	17	4	1	4	0	1	1	0	0	0	0
5 :45	5	23	11	1	6	3	0	3	0	2	1	1
6 :00	4	17	3	0	9	0	0	3	2	1	3	3
6 :15	0	7	0	0	2	3	0	2	1	0	0	1
6 :30												
6 :45												
AM Peak	2	27	6	0	281	1	5	14	29	16	2	3
Mid Peak	2	51	2	0	3	0	1	3	0	1	1	1
PM Peak	25	113	16	1	27	6	3	7	3	2	9	1

Appendix B

Capacity Analysis Worksheets

Existing Conditions

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: Ex AM Peak
Intersection: River Rd & Ben Hatcher Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009
Project ID: Plant Vogtle - 7287-004
East/West Street: Ben Hatcher Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	6	39	1	0	248	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	6	43	1	0	275	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	1	1	2	0	31
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	1	1	2	0	34
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	6	0		2			36	
C(m) (vph)	1300	1577		750			759	
v/c	0.00	0.00		0.00			0.05	
95% queue length	0.01	0.00		0.01			0.15	
Control Delay	7.8	7.3		9.8			10.0-	
LOS	A	A		A			A	
Approach Delay				9.8			10.0-	
Approach LOS				A			A	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: Ex PM Peak
Intersection: River Rd & Ben Hatcher Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009
Project ID: Plant Vogtle - 7287-004
East/West Street: Ben Hatcher Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	9	129	2	4	33	3
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	10	143	2	4	36	3
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	2	2	2	3	6
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	1	2	2	2	3	6
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	10	4		5			11	
C(m) (vph)	1584	1450		771			855	
v/c	0.01	0.00		0.01			0.01	
95% queue length	0.02	0.01		0.02			0.04	
Control Delay	7.3	7.5		9.7			9.3	
LOS	A	A		A			A	
Approach Delay				9.7			9.3	
Approach LOS				A			A	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: Ex AM Peak
Intersection: River Rd & Hancock Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009
Project ID: Plant Vogtle - 7287-004
East/West Street: Hancock Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	2	27	6	0	281	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	2	30	6	0	312	1
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	16	2	3	5	14	29
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	17	2	3	5	15	32
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR		LTR			LTR	
v (vph)	2	0		22			52	
C(m) (vph)	1259	1588		591			666	
v/c	0.00	0.00		0.04			0.08	
95% queue length	0.00	0.00		0.12			0.25	
Control Delay	7.9	7.3		11.3			10.9	
LOS	A	A		B			B	
Approach Delay				11.3			10.9	
Approach LOS				B			B	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: Ex PM Peak
Intersection: River Rd & Hancock Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009
Project ID: Plant Vogtle - 7287-004
East/West Street: Hancock Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	25	113	16	1	27	6
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	27	125	17	1	30	6
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	2	9	1	3	7	3
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	2	10	1	3	7	3
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR		LTR			LTR	
v (vph)	27	1		13			13	
C(m) (vph)	1588	1453		687			735	
v/c	0.02	0.00		0.02			0.02	
95% queue length	0.05	0.00		0.06			0.05	
Control Delay	7.3	7.5		10.3			10.0-	
LOS	A	A		B			A	
Approach Delay				10.3			10.0-	
Approach LOS				B			A	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: Ex AM Peak
Intersection: River Rd & Ebenezer/Plant
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009
Project ID: Plant Vogtle - 7287-004
East/West Street: River Rd
North/South Street: Ebenezer Church/Plant
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	261	33	3	0	3	2
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	290	36	3	0	3	2
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7	92	14	6	7	28
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	7	102	15	6	7	31
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	1	1	0	1	1	1
Configuration	L	TR		L	T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR	L		TR	L	T	R
v (vph)	290	0	7		117	6	7	31
C(m) (vph)	1630	1584	322		365	241	333	1085
v/c	0.18	0.00	0.02		0.32	0.02	0.02	0.03
95% queue length	0.65	0.00	0.07		1.36	0.08	0.06	0.09
Control Delay	7.7	7.3	16.4		19.4	20.3	16.0	8.4
LOS	A	A	C		C	C	C	A
Approach Delay				19.3			11.3	
Approach LOS				C			B	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: Ex PM Peak
Intersection: River Rd & Ebenezer/Plant
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2009
Project ID: Plant Vogtle - 7287-004
East/West Street: River Rd
North/South Street: Ebenezer Church/Plant
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	28	5	8	0	6	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	31	5	8	0	6	1
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided		/			
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	6	0	1	39	170
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	6	0	1	43	188
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	1	1	0	1	1	1
Configuration	L	TR		L	T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR	L		TR	L	T	R
v (vph)	31	0	4		6	1	43	188
C(m) (vph)	1627	1619	602		800	895	798	1083
v/c	0.02	0.00	0.01		0.01	0.00	0.05	0.17
95% queue length	0.06	0.00	0.02		0.02	0.00	0.17	0.63
Control Delay	7.3	7.2	11.0		9.5	9.0	9.8	9.0
LOS	A	A	B		A	A	A	A
Approach Delay				10.1			9.2	
Approach LOS				B			A	

January 2011 (First Phase of Construction) Conditions

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2011 Constr AM Peak
Intersection: River Rd & Ben Hatcher Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2011
Project ID: Plant Vogtle - 7287-004
East/West Street: Ben Hatcher Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	62	107	1	0	450	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	68	118	1	0	500	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	1	1	2	0	200
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	1	1	2	0	222
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	68	0		2			224	
C(m) (vph)	1075	1482		475			571	
v/c	0.06	0.00		0.00			0.39	
95% queue length	0.20	0.00		0.01			1.86	
Control Delay	8.6	7.4		12.6			15.3	
LOS	A	A		B			C	
Approach Delay				12.6			15.3	
Approach LOS				B			C	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2011 Constr PM Peak
Intersection: River Rd & Ben Hatcher Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2011
Project ID: Plant Vogtle - 7287-004
East/West Street: Ben Hatcher Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	178	331	2	4	101	3
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	197	367	2	4	112	3
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	2	2	2	3	62
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	1	2	2	2	3	68
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	197	4		5			73	
C(m) (vph)	1487	1201		307			782	
v/c	0.13	0.00		0.02			0.09	
95% queue length	0.46	0.01		0.05			0.31	
Control Delay	7.8	8.0		16.9			10.1	
LOS	A	A		C			B	
Approach Delay				16.9			10.1	
Approach LOS				C			B	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2011 Constr AM Peak
Intersection: River Rd & Hancock Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2011
Project ID: Plant Vogtle - 7287-004
East/West Street: Hancock Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	69	151	6	0	652	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	76	167	6	0	724	1
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	50	2	3	5	14	231
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	55	2	3	5	15	256
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR		LTR			LTR	
v (vph)	76	0		60			276	
C(m) (vph)	887	1416		65			397	
v/c	0.09	0.00		0.92			0.70	
95% queue length	0.28	0.00		4.44			5.11	
Control Delay	9.4	7.5		195.7			32.3	
LOS	A	A		F			D	
Approach Delay				195.7			32.3	
Approach LOS				F			D	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2011 Constr PM Peak
Intersection: River Rd & Hancock Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2011
Project ID: Plant Vogtle - 7287-004
East/West Street: Hancock Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	227	484	16	1	151	6
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	252	537	17	1	167	6
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	13	9	1	3	7	70
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	14	10	1	3	7	77
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR		LTR			LTR	
v (vph)	252	1		25			87	
C(m) (vph)	1416	1026		129			548	
v/c	0.18	0.00		0.19			0.16	
95% queue length	0.65	0.00		0.69			0.56	
Control Delay	8.1	8.5		39.5			12.8	
LOS	A	A		E			B	
Approach Delay				39.5			12.8	
Approach LOS				E			B	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2011 Constr AM Peak
Intersection: River Rd & Ebenezer/Plant
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2011
Project ID: Plant Vogtle - 7287-004
East/West Street: River Rd
North/South Street: Ebenezer Church/Plant
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	261	33	26	0	3	2
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	290	36	28	0	3	2
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	75	92	14	6	7	28
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	83	102	15	6	7	31
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	1	1	0	1	1	1
Configuration	L	TR		L	T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR	L		TR	L	T	R
v (vph)	290	0	83		117	6	7	31
C(m) (vph)	1630	1551	316		359	235	322	1085
v/c	0.18	0.00	0.26		0.33	0.03	0.02	0.03
95% queue length	0.65	0.00	1.03		1.39	0.08	0.07	0.09
Control Delay	7.7	7.3	20.4		19.8	20.7	16.4	8.4
LOS	A	A	C		C	C	C	A
Approach Delay				20.1			11.4	
Approach LOS				C			B	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2011 Constr PM Peak
Intersection: River Rd & Ebenezer/Plant
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2011
Project ID: Plant Vogtle - 7287-004
East/West Street: River Rd
North/South Street: Ebenezer Church/Plant
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	28	5	76	0	6	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	31	5	84	0	6	1
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	27	6	0	1	39	170
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	30	6	0	1	43	188
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	1	1	0	1	1	1
Configuration	L	TR		L	T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR	L		TR	L	T	R
v (vph)	31	0	30		6	1	43	188
C(m) (vph)	1627	1519	566		763	845	725	1083
v/c	0.02	0.00	0.05		0.01	0.00	0.06	0.17
95% queue length	0.06	0.00	0.17		0.02	0.00	0.19	0.63
Control Delay	7.3	7.4	11.7		9.8	9.3	10.3	9.0
LOS	A	A	B		A	A	B	A
Approach Delay				11.4			9.3	
Approach LOS				B			A	

March 2013 (Second Phase of Construction) Conditions

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2013 Constr AM Peak
Intersection: River Rd & Ben Hatcher Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2013
Project ID: Plant Vogtle - 7287-004
East/West Street: Ben Hatcher Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	207	281	1	0	974	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	230	312	1	0	1082	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	1	1	2	0	635
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	1	1	2	0	705
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	230	0		2			707	
C(m) (vph)	652	1259		0			262	
v/c	0.35	0.00					2.70	
95% queue length	1.59	0.00					60.04	
Control Delay	13.5	7.9					804.3	
LOS	B	A		F			F	
Approach Delay							804.3	
Approach LOS							F	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2013 Constr PM Peak
Intersection: River Rd & Ben Hatcher Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2013
Project ID: Plant Vogtle - 7287-004
East/West Street: Ben Hatcher Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	613	855	2	4	275	3
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	681	950	2	4	305	3
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	2	2	2	3	207
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	1	2	2	2	3	230
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	681	4		5			235	
C(m) (vph)	1264	730						
v/c	0.54	0.01						
95% queue length	3.35	0.02						
Control Delay	11.1	10.0-						
LOS	B	A						
Approach Delay								
Approach LOS								

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2013 Constr AM Peak
Intersection: River Rd & Hancock Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2013
Project ID: Plant Vogtle - 7287-004
East/West Street: Hancock Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	244	470	46	0	1611	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	271	522	51	0	1790	1
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	137	2	3	5	14	755
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	152	2	3	5	15	838
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR		LTR			LTR	
v (vph)	271	0		157			858	
C(m) (vph)	350	1010						
v/c	0.77	0.00						
95% queue length	6.29	0.00						
Control Delay	43.0	8.6						
LOS	E	A						
Approach Delay								
Approach LOS								

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2013 Constr PM Peak
Intersection: River Rd & Hancock Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2013
Project ID: Plant Vogtle - 7287-004
East/West Street: Hancock Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	751	1443	137	1	470	6
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	834	1603	152	1	522	6
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	42	9	1	3	7	245
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	46	10	1	3	7	272
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR		LTR			LTR	
v (vph)	834	1		57			282	
C(m) (vph)	1049	361		0			0	
v/c	0.80	0.00						
95% queue length	8.77	0.01						
Control Delay	20.2	15.0-						
LOS	C	B		F			F	
Approach Delay								
Approach LOS								

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2013 Constr AM Peak
Intersection: River Rd & Ebenezer/Plant
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2013
Project ID: Plant Vogtle - 7287-004
East/West Street: River Rd
North/South Street: Ebenezer Church/Plant
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	261	33	84	0	3	2
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	290	36	93	0	3	2
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	249	92	14	6	7	28
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	276	102	15	6	7	31
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	1	1	0	1	1	1
Configuration	L	TR		L	T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR	L		TR	L	T	R
v (vph)	290	0	276		117	6	7	31
C(m) (vph)	1630	1469	301		344	220	296	1085
v/c	0.18	0.00	0.92		0.34	0.03	0.02	0.03
95% queue length	0.65	0.00	8.73		1.47	0.08	0.07	0.09
Control Delay	7.7	7.5	71.0		20.8	21.8	17.5	8.4
LOS	A	A	F		C	C	C	A
Approach Delay				56.0			11.7	
Approach LOS				F			B	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2013 Constr PM Peak
Intersection: River Rd & Ebenezer/Plant
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2013
Project ID: Plant Vogtle - 7287-004
East/West Street: River Rd
North/South Street: Ebenezer Church/Plant
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	28	5	250	0	6	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	31	5	277	0	6	1
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L		TR	LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	85	6	0	1	39	170
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	94	6	0	1	43	188
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	1	1	0	1	1	1
Configuration	L		TR	L	T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR	L		TR	L	T	R
v (vph)	31	0	94		6	1	43	188
C(m) (vph)	1627	1292	483		675	731	566	1083
v/c	0.02	0.00	0.19		0.01	0.00	0.08	0.17
95% queue length	0.06	0.00	0.71		0.03	0.00	0.25	0.63
Control Delay	7.3	7.8	14.2		10.4	9.9	11.9	9.0
LOS	A	A	B		B	A	B	A
Approach Delay				14.0			9.6	
Approach LOS				B			A	

2017 (Full Operation of Four Units – No Construction) Conditions

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2017 Four Units AM Peak
Intersection: River Rd & Ben Hatcher Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2017
Project ID: Plant Vogtle - 7287-004
East/West Street: Ben Hatcher Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	15	141	1	0	554	0
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	16	156	1	0	615	0
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	0	1	1	2	0	57
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	0	1	1	2	0	63
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	16	0		2			65	
C(m) (vph)	974	1435		464			485	
v/c	0.02	0.00		0.00			0.13	
95% queue length	0.05	0.00		0.01			0.46	
Control Delay	8.8	7.5		12.8			13.6	
LOS	A	A		B			B	
Approach Delay				12.8			13.6	
Approach LOS				B			B	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2017 Four Units PM Peak
Intersection: River Rd & Ben Hatcher Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2017
Project ID: Plant Vogtle - 7287-004
East/West Street: Ben Hatcher Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	35	435	2	4	135	3
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	38	483	2	4	150	3
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	1	2	2	2	3	15
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	1	2	2	2	3	16
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	LTR	LTR		LTR			LTR	
v (vph)	38	4		5			21	
C(m) (vph)	1440	1088		404			644	
v/c	0.03	0.00		0.01			0.03	
95% queue length	0.08	0.01		0.04			0.10	
Control Delay	7.6	8.3		14.0			10.8	
LOS	A	A		B			B	
Approach Delay				14.0			10.8	
Approach LOS				B			B	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2017 Four Units AM Peak
Intersection: River Rd & Hancock Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2017
Project ID: Plant Vogtle - 7287-004
East/West Street: Hancock Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	19	138	14	0	613	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	21	153	15	0	681	1
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	41	2	3	5	14	80
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	45	2	3	5	15	88
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR		LTR			LTR	
v (vph)	21	0		50			108	
C(m) (vph)	920	1422		200			404	
v/c	0.02	0.00		0.25			0.27	
95% queue length	0.07	0.00		0.95			1.06	
Control Delay	9.0	7.5		28.9			17.1	
LOS	A	A		D			C	
Approach Delay				28.9			17.1	
Approach LOS				D			C	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2017 Four Units PM Peak
Intersection: River Rd & Hancock Rd
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2017
Project ID: Plant Vogtle - 7287-004
East/West Street: Hancock Rd
North/South Street: River Rd
Intersection Orientation: NS Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Northbound			Southbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	76	445	41	1	138	6
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	84	494	45	1	153	6
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Westbound			Eastbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	10	9	1	3	7	20
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	11	10	1	3	7	22
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			No /
Lanes	0	1	0	0	1	0
Configuration		LTR			LTR	

Delay, Queue Length, and Level of Service

Approach	NB	SB	Westbound			Eastbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR		LTR			LTR	
v (vph)	84	1		22			32	
C(m) (vph)	1433	1040		275			522	
v/c	0.06	0.00		0.08			0.06	
95% queue length	0.19	0.00		0.26			0.20	
Control Delay	7.7	8.5		19.2			12.3	
LOS	A	A		C			B	
Approach Delay				19.2			12.3	
Approach LOS				C			B	

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2017 Four Units AM Peak
Intersection: River Rd & Ebenezer/Plant
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2017
Project ID: Plant Vogtle - 7287-004
East/West Street: River Rd
North/South Street: Ebenezer Church/Plant
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	669	33	3	0	3	2
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	743	36	3	0	3	2
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	7	194	14	6	41	164
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	7	215	15	6	45	182
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	1	1	0	1	1	1
Configuration	L	TR		L	T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR	L		TR	L	T	R
v (vph)	743	0	7		230	6	45	182
C(m) (vph)	1630	1584	20		68	0	64	1085
v/c	0.46	0.00	0.35		3.38		0.70	0.17
95% queue length	2.46	0.00	1.00		23.86		3.09	0.60
Control Delay	9.0	7.3	261.8		1201		143.6	9.0
LOS	A	A	F		F	F	F	A
Approach Delay				1173				
Approach LOS				F				

HCS2000: Unsignalized Intersections Release 4.1f

TWO-WAY STOP CONTROL SUMMARY

Analyst: DCD
Agency/Co.: Neel-Schaffer
Date Performed: 6/24/2009
Analysis Time Period: 2017 Four Units PM Peak
Intersection: River Rd & Ebenezer/Plant
Jurisdiction:
Units: U. S. Customary
Analysis Year: 2017
Project ID: Plant Vogtle - 7287-004
East/West Street: River Rd
North/South Street: Ebenezer Church/Plant
Intersection Orientation: EW Study period (hrs): 0.25

Vehicle Volumes and Adjustments

Major Street: Approach	Eastbound			Westbound		
Movement	1	2	3	4	5	6
	L	T	R	L	T	R
Volume	164	5	8	0	6	1
Peak-Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	182	5	8	0	6	1
Percent Heavy Vehicles	0	--	--	0	--	--
Median Type/Storage	Undivided			/		
RT Channelized?						
Lanes	1	1	0	0	1	0
Configuration	L	TR		LTR		
Upstream Signal?		No			No	

Minor Street: Approach	Northbound			Southbound		
Movement	7	8	9	10	11	12
	L	T	R	L	T	R
Volume	4	40	0	1	14	578
Peak Hour Factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Hourly Flow Rate, HFR	4	44	0	1	15	642
Percent Heavy Vehicles	0	0	0	0	0	0
Percent Grade (%)		0			0	
Flared Approach: Exists?/Storage			No /			/
Lanes	1	1	0	1	1	1
Configuration	L	TR		L	T	R

Delay, Queue Length, and Level of Service

Approach	EB	WB	Northbound			Southbound		
Movement	1	4	7	8	9	10	11	12
Lane Config	L	LTR	L		TR	L	T	R
v (vph)	182	0	4		44	1	15	642
C(m) (vph)	1627	1619	128		494	480	491	1083
v/c	0.11	0.00	0.03		0.09	0.00	0.03	0.59
95% queue length	0.38	0.00	0.10		0.29	0.01	0.09	4.07
Control Delay	7.5	7.2	34.0		13.0	12.5	12.6	13.0
LOS	A	A	D		B	B	B	B
Approach Delay				14.8			13.0	
Approach LOS				B			B	