APPENDIX 10.7

MONITORING PROGRAMS

10.7 MONITORING PROGRAMS

This appendix provides more details on the results of site-specific data collections, surveys, and monitoring programs conducted to support the information, descriptions, and findings in this SCA for GREC.

APPENDIX 10.7.1

TRANSPORTATION ANALYSIS

TRAFFIC IMPACT ANALYSIS
for
Florida Department of Environmental Protection
Site Certification

GAINESVILLE RENEWABLE ENERGY CENTER
Gainesville, Florida

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October 20, 2009

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INTRODUCTION

I. Project Description

The proposed Gainesville Renewable Energy Center (GREC) will be a 100 megawatt net biomass facility adjacent to the existing Deerhaven Electric Generating Facility in the City of Gainesville. The primary access will be located at an existing, secondary Gainesville Renewable Utilities (GRU) driveway on US 441. US 441 is a four (4) lane divided state roadway with a speed limit of 60 mph at the site. An emergency access is planned to be located on NW 128th Lane. For this analysis, all site traffic is assumed to directly enter from and exit to the US 441 driveway access. A map illustrating the location of the site is provided in **Exhibit 1**. This primary access is located approximately one half of a mile northwest of the existing main gate to the Deerhaven Electric Generating Facility. A 200 foot northwest right turn lane and 510 foot southeast left turn lane exist at the primary access on US 441.

The data and analysis provided in this report have utilized the base assumptions described in a methodology letter provided to FDOT dated August 5, 2009. Due to the uniqueness of this development, a memo has been provided by the project developer detailing information to support the base assumptions proposed in the methodology. The methodology and memo is included as **Appendices A** and **B**. This report will address the requirements of the Site Certification Application by providing an existing roadway conditions analysis, an analysis of conditions during the peak construction period (occurring in 2013), as well as the build-out condition of plant operations (occurring in 2014). The analysis performed for the application, as detailed in the methodology letter will be based on the City of Gainesville's Traffic Study Guidelines for the local development review process. As a part of the plant operations analysis, an analysis will be provided addressing the turn lane needs at the site entrance to accommodate passenger vehicles and truck delivery traffic.

II. Study Area

As defined by the City of Gainesville's Traffic Study Guidelines, this project is classified as a Minor Traffic Study because the proposed development is estimated to generate 63 PM peak hour trips. According to the Traffic Study Guidelines, projects generating between 50 and 99 peak hour trips would require a Minor Traffic Study, in which the study area shall include roadway segments wholly or partially within ½ mile of the project access points, or to the nearest intersecting major street, whichever is greater. The only segment within ½ mile of project access is Segment S-50: US 441 from NW 23rd Street to the Gainesville Metropolitan Area (GMA) boundary. Additionally, the intersection of US 441 and NW 43rd Street, located 1.3 miles southeast of the proposed project access, has been analyzed.

III. Growth Rates

A growth rate has been calculated to estimate future growth of background volumes using the previous 10 years (1999-2008) of FDOT daily counts along US 441 (0.3 Mile NW of SR 121). The rate was calculated at 1.4%; therefore, a minimum annual growth rate of 2% will be applied as required by the City of Gainesville Traffic Study Guidelines. Calculations were based on an average yearly growth and can be seen in **Appendix C**.

EXISTING CONDITIONS ANALYSIS

The following will provide a level of service (LOS) analysis based on current traffic conditions for the roadway and intersection located within the study area in support of *Section 3.2.7 Socioeconomics and Public Services* of GREC's Site Certification Application (SCA).

I. Roadway Analysis

Based upon the latest available Metropolitan Transportation Planning Organization's (MTPO) *Highway Level of Service Data* from the North Central Florida Regional Planning Council (NCFRPC), US 441 between NW 23rd Street and GMA has an adopted LOS standard of 'D'. The segment is operating at a level of service (LOS) 'B' with a daily available capacity of 17,100. Note that the MTPO's report is based on 2007 counts. Applying 2008 Average Daily Traffic counts (ADT's) obtained from the 2008 FDOT Traffic Information CD, the segment will maintain a LOS 'B' with an available capacity of 16,300. According to the City of Gainesville and City of Alachua, there are no reserved trips along the subject segment of US 441 at this time. **Table 1** provides the existing level of service summary for the study area.

Table 1: Existing Roadway Level of Service

Scenario	Roadway	To	From	Adopted LOS STD	MSV Table	2008 FDOT AADT	Percent Of Capacity	Available Service Volume	LOS
Existing	US 441	NW 23rd St.	GMA Boundary	D	35,700	19,400	54%	16,300	B

II. Intersection Analysis

The intersection of US 441 and NW 43rd Street (see Exhibit 1 for location) has been studied as requested by the City of Gainesville. The intersection is under the jurisdiction of the City of Alachua. In order to determine the existing background traffic volumes, a turning movement count was taken at the intersection on Thursday, September 17, 2009 from 7-9AM and 4-6PM, as seen in **Appendix C**. The existing signal timing information was obtained from the City of Gainesville. Using Synchro (transportation analysis software), results show that under existing conditions the intersection operates overall with a LOS 'B' during the AM peak hour and LOS 'C' during the PM peak hour. Synchro output files can be found in **Appendix D**.

III. Programmed Improvements

FDOT does not currently list any projects in the 5-year work program that would increase capacity on US 441 within the study area. At the current time, neither the City of Gainesville nor City of Alachua has any planned roadway project that would increase capacity. The current LOS standards and capacities are expected to remain constant during construction of the GREC as well as when fulltime plant operations begin.

TRANSPORTATION IMPACTS OF PEAK PLANT CONSTRUCTION

In support of *Section 5.1.2 Roads* and *Section 5.7.2 Impact on Human Populations-Transportation* of GREC's SCA, the following provides level of service (LOS) analysis based on the peak construction period. The construction period of GREC is projected to last 34 months with completion to occur no later than the end of 2014. Peak construction employment will reach approximately 426 in 2013. Employment will consist of 350 direct craft labor (construction labor), 65 indirect construction management and supervisory staff, and 11 operations and maintenance staff (plant operations). Truck deliveries could reach approximately 22 per day. The exact month when the peak truck deliveries will take place during the peak construction period is unknown. Therefore, they are conservatively assumed to peak at the same time as peak construction employment. The following provides an analysis of the peak construction period transportation impacts. A memo located in Appendix B has been supplied by the GREC describing the unique assumptions necessary to complete this analysis.

I. Trip Generation

Due to the uniqueness of this land use, ITE Trip Generation has not been utilized. Trip generation has been calculated using rates from similar power plant projects, actual directional split counts during construction from another power plant, and engineering judgment. Based on the submitted methodology statement, detailed assumptions and calculations are found in **Exhibit 2** for Daily, AM peak hour and PM peak hour. The results for the average daily, AM and PM peak hour trip generation at peak construction can be seen in **Table 2**.

Table 2: Peak Construction Trip Generation

	Enter	Exit	Total
Daily	514	514	1,028
AM	288	28	316
PM	28	288	316

II. Trip Distribution

Project traffic entering and exiting the primary driveway as calculated in the trip generation analysis has been distributed manually on US 441. Daily distribution has been used for roadway analysis and the AM and PM peak hour distribution has been used for intersection analysis. To estimate the distribution for the peak construction period, construction workers have been distributed based on different lodging considerations as seen in the chart on **Exhibit 3**. Local construction workers and plant operations employees have been distributed based on a turning movement count taken at the Deerhaven Electric Generating Facility. The count taken on Tuesday, June 16, 2009 from 6-8AM and 3-7PM, measured existing Deerhaven traffic distribution on US 441, as seen in Appendix C. The distribution indicated a 50%/50% split of daily traffic. Truck deliveries for the peak construction period have been distributed based on information provided in Appendix B. At the site, a 95% northwest / 5% southeast split of the trucks

has been projected to access the site on US 441. Overall, 736 daily trips enter/exit the site on US 441 from the northwest and 292 daily trips from the southeast. Exhibit 3 displays the distribution at the site.

III. Roadway Analysis

Daily peak construction traffic has been added to the estimated 2013 background traffic along the studied segment of US 441 between NW 23rd Street and GMA. The highest single point loading of project traffic is 736 trips that enter/exit the site on US 441 to the northwest. The resultant 2013 volume along the studied segment is 22,155 with an available service volume of 13,545. The LOS would remain at 'B'. **Exhibit 4** details the roadway LOS analysis for the peak construction period.

IV. Intersection Analysis

The intersection of US 441 and NW 43rd Street (see Exhibit 1 for location) has been studied with impacts from the peak construction traffic for the AM and PM peak hours. The AM and PM peak hour project trips have been distributed similarly to the distribution applied for the roadway analysis. **Exhibit 5** displays the distribution. The project trips have been added to the projected 2013 background traffic volumes, as seen in **Exhibit 6**. Using Synchro, results show that after applying a growth rate and peak construction traffic, the intersection maintains similar LOS as the existing conditions. Results are found in Exhibit 6. Synchro output files can be found in Appendix D.

TRANSPORTATION IMPACTS OF PLANT OPERATIONS

In support of *Section 6.9.1 Operational Traffic* of GREC's SCA, the following provides level of service (LOS) analysis based on the plant operations period. Once completed and under operation no later than the end of 2014, the total fulltime staff is projected to be 44 employees (approximately 31 employees working per day). In addition there will be truck traffic for fuel deliveries that will be transporting biomass fuel, and non-fuel deliveries that will be transporting sand, aqueous ammonia and other chemicals to the facility as well as removing fly ash and other waste materials from the facility. The following is a summary of the anticipated traffic impacts of plant operations. A memo located in Appendix B has been supplied by the GREC describing the unique assumptions necessary to complete this analysis.

I. Trip Generation

Trip generation has been calculated using rates from similar power plant projects, actual directional split counts from another power plant, and engineering judgment. Detailed assumptions and calculations are found in **Exhibit 7** for Daily, AM peak hour and PM peak hour. A summary for the average daily, AM and PM peak hour trip generation when plant operations begin can be seen in **Table 3**.

Table 3: Plant Operations Trip Generation

	Enter	Exit	Total
Daily	189	189	378
AM	45	18	63
PM	18	45	63

II. Trip Distribution

For plant operations, project traffic entering and exiting the primary driveway as calculated in the trip generation analysis has been distributed manually on US 441. As was done for the peak plant construction period, a daily distribution has been used for the roadway analysis and the AM and PM peak hour distribution has been used for intersection analysis. To estimate the distribution for the plant operations period, plant operators have been distributed based on the turning movement count taken at the Deerhaven Electric Generating Facility mentioned in the peak plant construction analysis. The proposed biomass facility will utilize forest residue, mill residue, and urban wood from the region. Fuel deliveries for the plant operations period have been distributed based on information provided by a certified forestry consultant (detailed in Appendix B). Non-fuel deliveries have been distributed according to known locations of resources. Appendix B also explains in detail the assumptions for distribution. **Exhibits 8** and **9** are maps displaying the distribution for fuel and non-fuel deliveries, respectively. Exhibit 8 shows forestry fuel deliveries, while Exhibit 9 shows mill residue and urban wood fuel deliveries along with non-fuel deliveries. Overall, 251 daily trips enter/exit the site on US 441 from the northwest and 127 daily trips from the southeast. Exhibit 3 displays the overall distribution at the site.

III. Roadway Analysis

Daily plant operations traffic has been added to the estimated 2014 background traffic along the studied segment of US 441 between NW 23rd Street and GMA. The highest single point loading of project traffic is 251 trips that enter/exit the site on US 441 to the northwest. The resultant 2014 volume along the studied segment is 22,099 with an available service volume of 13,601. The LOS would remain at 'B'. Exhibit 4 details the roadway LOS analysis for the peak construction period.

IV. Intersection Analysis

The intersection of US 441 and NW 43rd Street (see Exhibit 1 for location) has been studied with impacts from the plant operations traffic for the AM and PM peak hours. The AM and PM peak hour project trips have been distributed similarly to the distribution applied for the roadway analysis. Exhibit 5 displays the distribution. The project trips have been added to the projected 2014 background traffic volumes as seen in Exhibit 6. Using Synchro, results show that after applying a growth rate and plant operations traffic, the intersection maintains similar LOS from the existing conditions. Exhibit 6 provides the summary results of the intersection analysis for plant operations and can be compared to the peak plant construction period as well as existing conditions. Synchro output files can be found in Appendix D.

V. Turn Lane Analysis

Turn Lane Storage Calculation

The storage length for the southeastbound left turn lane was calculated using guidelines from FDOT's *Manual of Uniform Minimum Standards for Design, Construction and Maintenance for Streets and Highways ("Florida Greenbook").* Storage length is not required for the northwestbound right turn lane. At unsignalized intersections, the storage length, exclusive of taper, may be based on the number of turning vehicles which are likely to arrive in an average 2-minute period within the peak hour. Based on knowledge of the size and type of delivery vehicles accessing the site, 70 feet of storage per vehicle has been assumed. Based on the following formula, the storage length is calculated as follows:

Storage Length (S) = ((# turning vehicles per hour / 60 minutes) x 2 minutes) x 70'
= ((30 vph* / 60 min.) x 2 min.) x 70' (vehicle length) = 70'
S = 70' vehicle storage

* AM left turn volume greater than PM left turn volume, see Exhibit 5

Deceleration/Taper Lengths

The deceleration and taper lengths for both turn lanes were determined based on Index #301 – Turn Lanes from FDOT's *Roadway and Traffic Design Standards (2010)*. For a single left turn lane, a taper of 50 feet is required. With a posted (entry) speed of 60 mph a design speed of 65 mph was used, which corresponds with a clearance distance (L_1) of 170 feet (including taper) and a brake-to-stop distance (L_2) of 290 feet. Therefore, the total deceleration length (L) is 460 feet (including taper).

Turn Lane Length Summary

The total length of the left turn lane is the sum of the storage and deceleration lengths. For this location with its maximum estimated southeastbound left turning demand of 30 peak hour vehicles, the total lane length is calculated to be 530 feet (70 feet of storage + 460 feet for deceleration distance). Using the same deceleration and taper lengths, the northwestbound right turn lane would need to be 460 feet (no storage for right turning vehicles is needed).

Turn Lane Recommendations

Existing southeastbound left turn lane and northwestbound right turn lanes are 510 feet and 200 feet in length, including tapers, respectively. According to potential project traffic and posted speeds on US 441, the existing southeastbound left turn lane could be extended 20 feet to accommodate storage and deceleration length calculations. However, with low volumes on a four (4) lane roadway, ample sight distance, and opportunity in the median for additional stacking, it may not be necessary to extend the existing turn lane. The northwestbound right turn lane is recommended to be extended from 200 feet in length to 460 feet.

SUMMARY AND RECOMMENDATIONS

The analysis provided in this report demonstrates that the effects of the proposed Gainesville Renewable Energy Center on US 441 and at the intersection of US 441 and NW 43rd Street are not significant. Peak construction and plant operation time periods were reviewed for impacts. US 441 currently has a large amount of available capacity that will be able to accommodate the added project trips. The effects at the intersection of US 441 and NW 43rd Street are extremely minor due to the fact that the proposed GREC will be a low trip generator.

Turn lane lengths were calculated on US 441 at the primary access based on plant operations traffic. It was determined that the existing 510 foot southeastbound left turn lane could be required to be extended 20 feet; however, conditions may allow this extension to not be necessary. The northwestbound right turn lane is recommended to be extended from 200 feet to 460 feet. The peak construction traffic was not used for turn lane length calculations because the impacts will be short term and can be handled through maintenance of traffic (MOT).

EXHIBITS

N

CITY OF ALACHUA

CITY OF GAINESVILLE

US 441

CR 237

156th Aveneue

NW 128th Lane

NW 140rd Street

Project Site

Study Intersection

US 441

Waldo Road

NW 53rd Avenue

SR 26

Interstate 75

NW 39th Avenue

NW 143rd Street

NW 98th Street

NW 23rd Avenue

NW 43rd Street

NW 34th Street

NW 16th Avenue

NW 8th Avenue

NE 39th Avenue

Newberry Road

Hawthorne Road

Williston Road

Archer Road

EXHIBIT 1:
LOCATION MAP

October 14, 2009 (11:17:00 EST)
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Gainesville Renewable Energy Center
Peak Construction Trip Generation Analysis

DAILY

Description/ITE Code	Units	No. Units	Daily Trip Rate/Equation	Enter Split	Exit Split	Daily Trips	Daily Enter	Daily Exit
Industrial								
Construction Labor [1]	Employees	350	T = 3 (X) / 1.5 ppv	50%	50%	700	350	350
Management & Supervision [2]	Employees	65	T = 4 (X) / 1.0 ppv	50%	50%	260	130	130
Plant Operations [2]	Employees	11	T = 2 (X) / 1.0 ppv	50%	50%	22	11	11
Truck Deliveries	Trucks	23	T = 2 (X)	50%	50%	46	23	23
TOTAL						**1,028**	**514**	**514**

PM Peak Hour

Description/ITE Code	Units	No. Units	PM Peak Hour Trip Rate/Equation	PM Enter Split [4]	PM Exit Split [4]	PM Pk Trips	PM Enter	PM Exit
Industrial								
Construction Labor [3]	Employees	350	T = (X) / 1.5 ppv	8%	92%	233	19	214
Management & Supervision [3]	Employees	65	T = (X) / 1.0 ppv	8%	92%	65	5	60
Plant Operations [3]	Employees	11	T = (X) / 1.0 ppv	8%	92%	11	1	10
Truck Deliveries	Trucks	3	T = 2 (X)	50%	50%	7	3	4
TOTAL						**316**	**28**	**288**

AM Peak Hour

Description/ITE Code	Units	No. Units	PM Peak Hour Trip Rate/Equation	PM Enter Split [5]	PM Exit Split [5]	PM Pk Trips	PM Enter	PM Exit
Industrial								
Construction Labor [3]	Employees	350	T = (X) / 1.5 ppv	92%	8%	233	215	18
Management & Supervision [3]	Employees	65	T = (X) / 1.0 ppv	92%	8%	65	60	5
Plant Operations [3]	Employees	11	T = (X) / 1.0 ppv	92%	8%	11	10	1
Truck Deliveries	Trucks	3	T = 2 (X)	50%	50%	7	3	4
TOTAL						**316**	**288**	**28**

Note: ppv = persons per vehicle

1 Rate of 1.5 ppv is based on the analysis previously conducted for the Purdom Generating Station, Unit 8, and a PEF site in Polk County, Florida. Typically, the construction labor employees will enter/exit the site once each day. To be conservative, it is assumed that half the construction employee vehicles will enter/exit twice per day and the remaining employees will enter/exit once.

2 Management and supervision employees are estimated to enter and exit twice per day, while plant operations staff will remain on site the entirety of their shifts and will enter and exit the site once per day.

3 One (1) trip per employee assumed during the peak hours for each employee type (ppv anticipated to vary by employee type). One (1) trip per employee during the AM and PM peak hours is conservative compared to what ITE reports for AM (0.51 trips per employee) and PM (0.88 trips per employee) for a general heavy industrial land use (ITE Code 120).

4 The directional distribution for employee traffic in the PM peak is based on a study conducted for Florida Power Corporation's Polk County site, which reported 8% entering and 92% exiting.

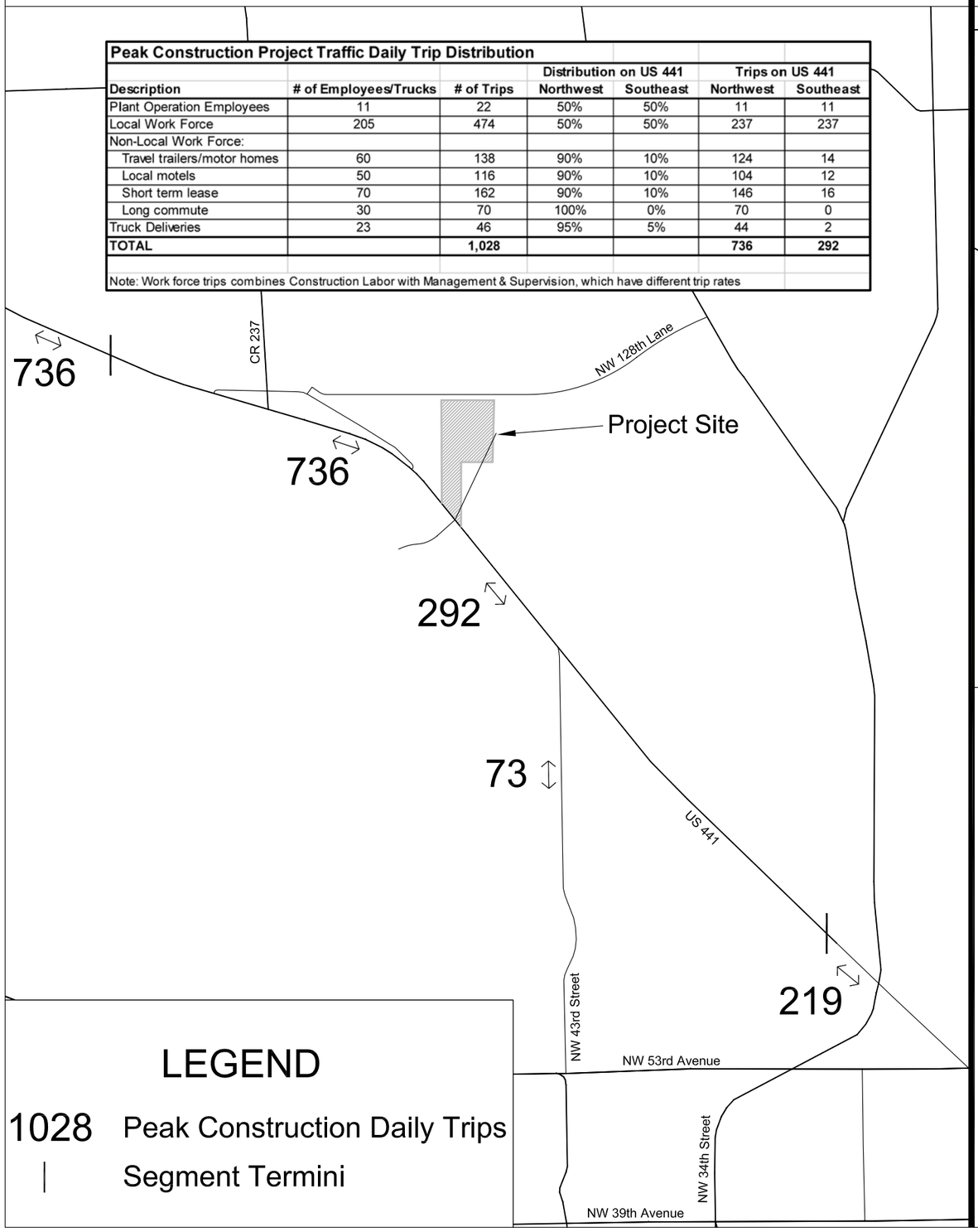
5 The directional distribution for employee traffic during the AM peak is assumed to be the inverse of the PM peak.

PEAK CONSTRUCTION

Peak Construction Project Traffic Daily Trip Distribution

Description	# of Employees/Trucks	# of Trips	Distribution on US 441 Northwest	Distribution on US 441 Southeast	Trips on US 441 Northwest	Trips on US 441 Southeast
Plant Operation Employees	11	22	50%	50%	11	11
Local Work Force	205	474	50%	50%	237	237
Non-Local Work Force:						
Travel trailers/motor homes	60	138	90%	10%	124	14
Local motels	50	116	90%	10%	104	12
Short term lease	70	162	90%	10%	146	16
Long commute	30	70	100%	0%	70	0
Truck Deliveries	23	46	95%	5%	44	2
TOTAL		**1,028**			**736**	**292**

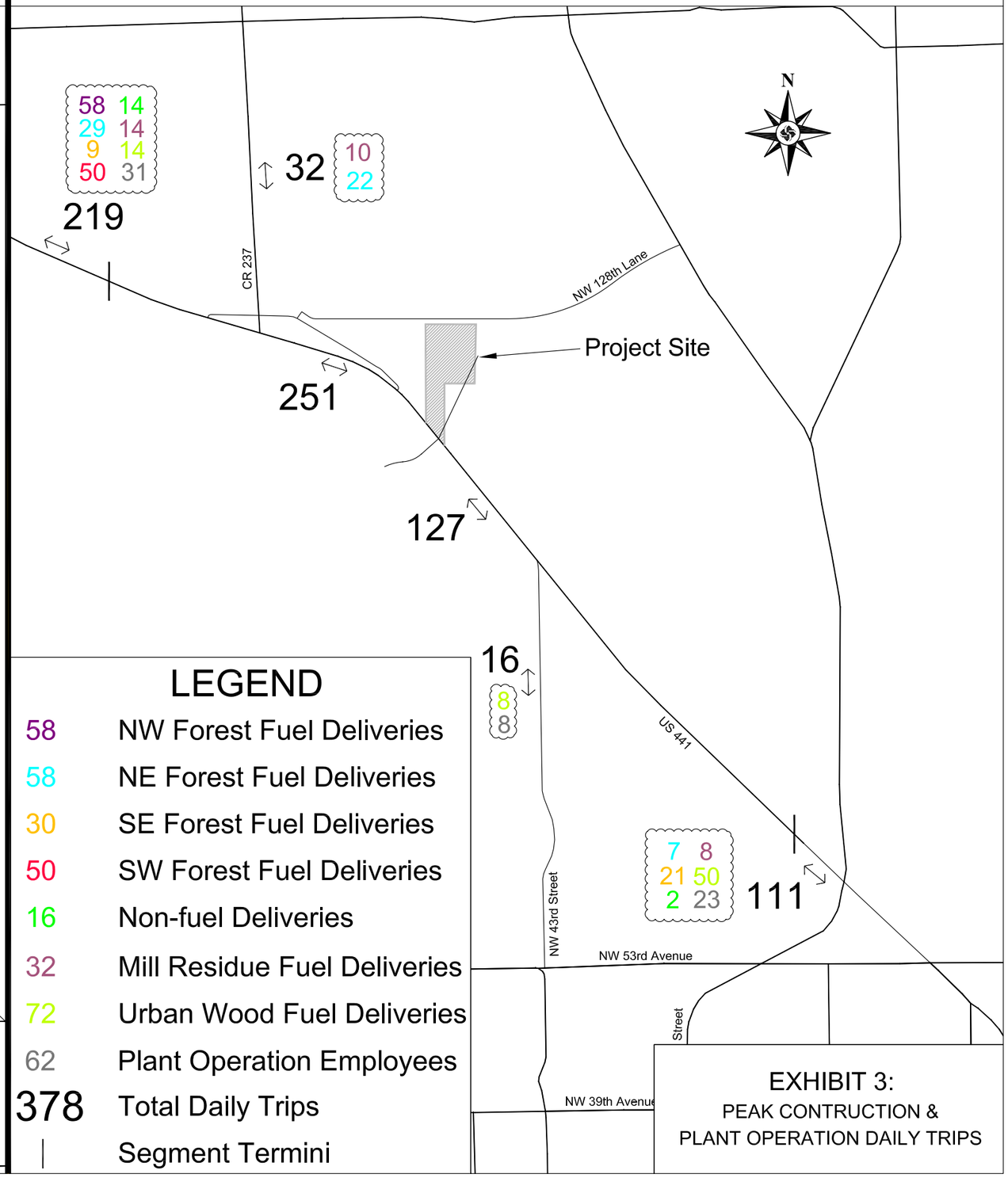
Note: Work force trips combines Construction Labor with Management & Supervision, which have different trip rates



LEGEND

1028	Peak Construction Daily Trips
|	Segment Termini

PLANT OPERATIONS



LEGEND

58	NW Forest Fuel Deliveries
58	NE Forest Fuel Deliveries
30	SE Forest Fuel Deliveries
50	SW Forest Fuel Deliveries
16	Non-fuel Deliveries
32	Mill Residue Fuel Deliveries
72	Urban Wood Fuel Deliveries
62	Plant Operation Employees
378	Total Daily Trips
|	Segment Termini

EXHIBIT 3:
PEAK CONTRUCTION &
PLANT OPERATION DAILY TRIPS

Roadway Level of Service*

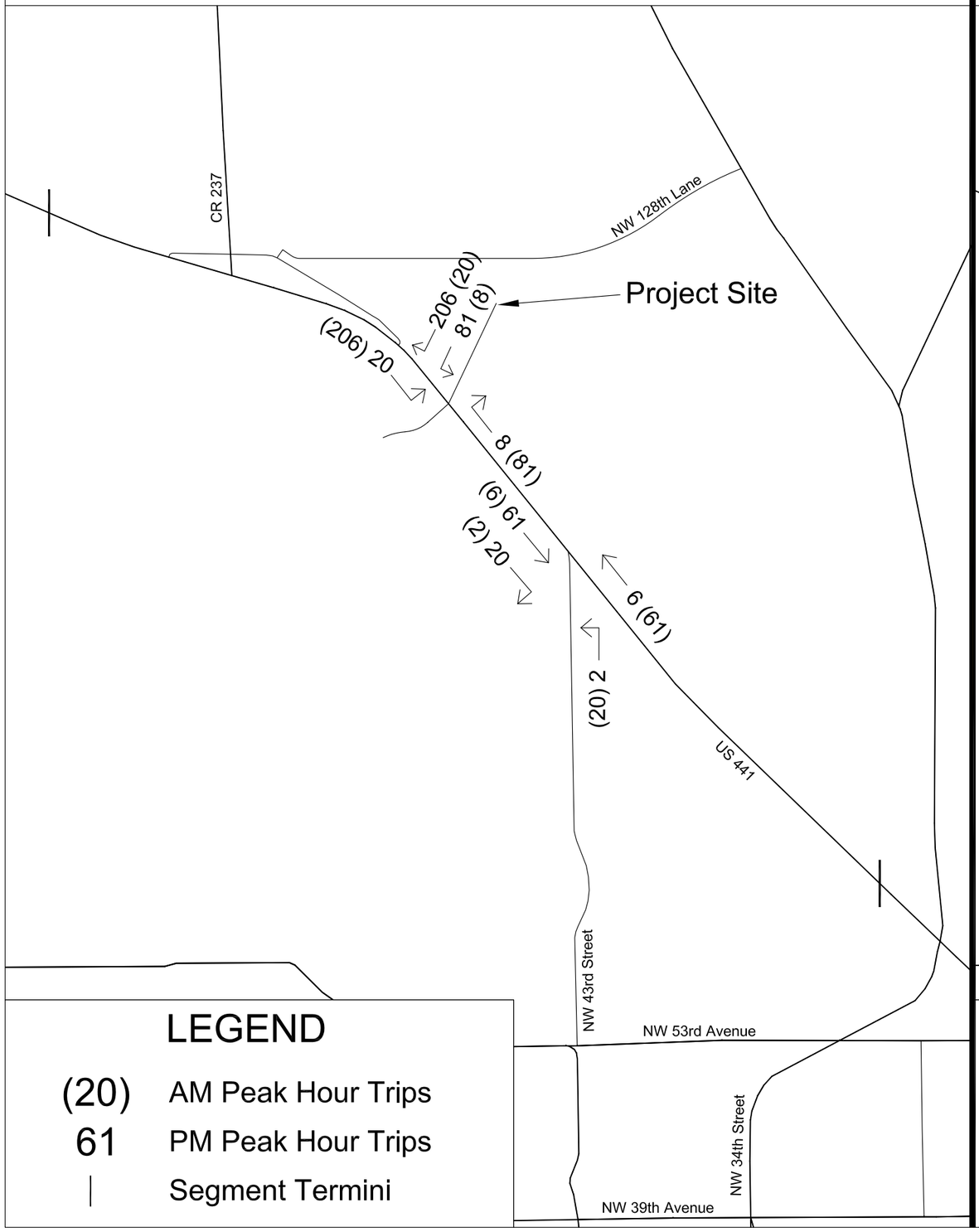
SCENARIO	ROADWAY	FROM SOUTH OR WEST TERMINI	TO NORTH OR EAST TERMINI	NUMBER OF LANES	ADOPTED LOS STD	MSV TABLE	2008 FDOT AADT	GROWTH RATE	2013 AADT	PEAK CONSTRUCTION PROJECT TRIPS	2013 W/ PROJECT AADT	PERCENT OF CAPACITY	AVAILABLE SERVICE VOLUME	LOS
Peak Construction	US 441	NW 23rd St.	GMA Boundary	4-D	D	35,700	19,400	2.0%	21,419	736	22,155	62%	13,545	B

SCENARIO	ROADWAY	FROM SOUTH OR WEST TERMINI	TO NORTH OR EAST TERMINI	NUMBER OF LANES	ADOPTED LOS STD	MSV TABLE	2008 FDOT AADT	GROWTH RATE	2014 AADT	PLANT OPERATIONS PROJECT TRIPS	2014 W/ PROJECT AADT	PERCENT OF CAPACITY	AVAILABLE SERVICE VOLUME	LOS
Plant Operations	US 441	NW 23rd St.	GMA Boundary	4-D	D	35,700	19,400	2.0%	21,848	251	22,099	62%	13,601	B

* The segment analyzed is consistent with the segmentation identified in the MTPO Multimodal LOS Report

EXHIBIT 4 - Roadway Level of Service

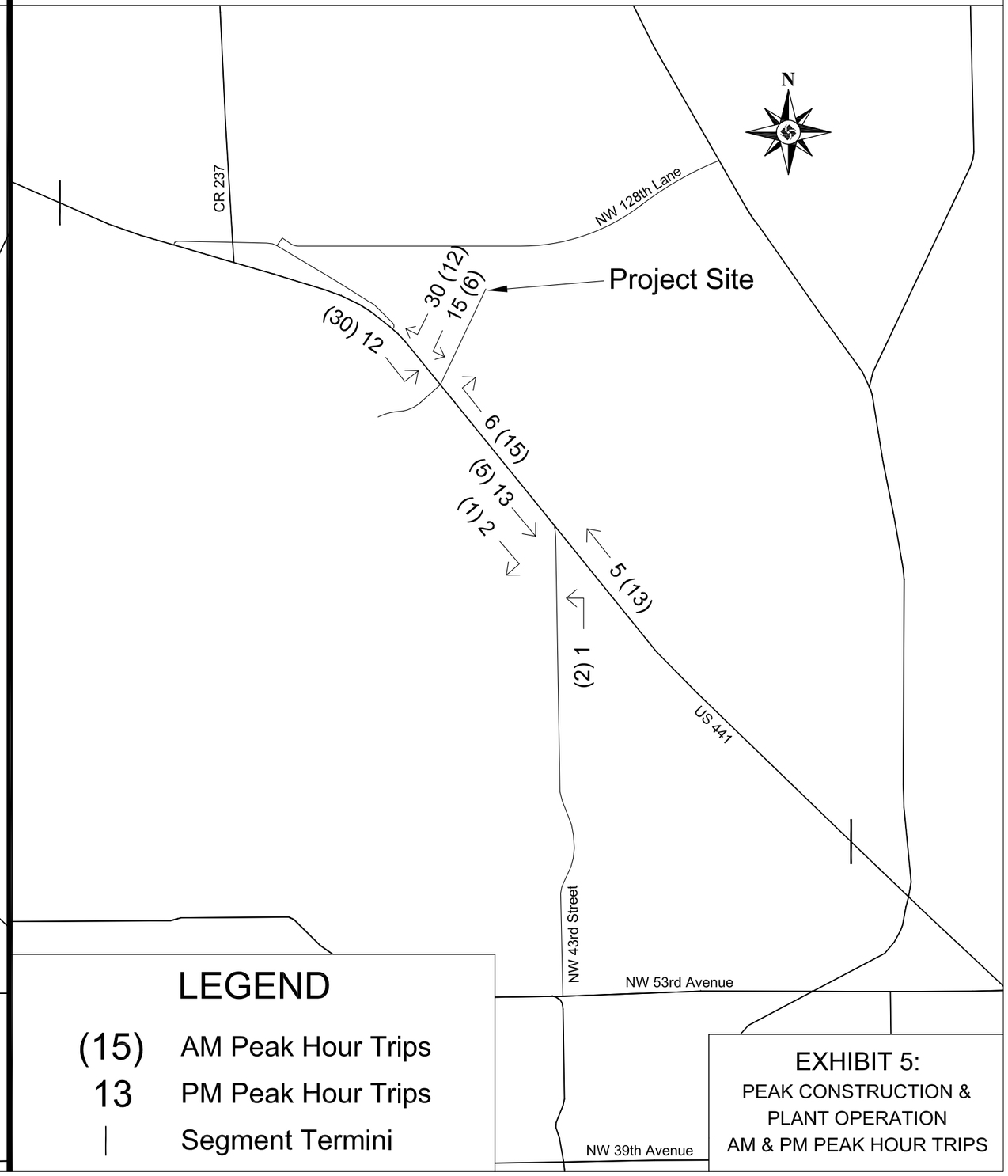
PEAK CONSTRUCTION



LEGEND

(20)	AM Peak Hour Trips
61	PM Peak Hour Trips
|	Segment Termini

PLANT OPERATIONS



LEGEND

(15)	AM Peak Hour Trips
13	PM Peak Hour Trips
|	Segment Termini

EXHIBIT 5:

PEAK CONSTRUCTION &
PLANT OPERATION
AM & PM PEAK HOUR TRIPS

October 14, 2009 (1:20:13 EST)
G:\PROJECTS\8527-002 GREC TRAFFIC\TRAFFIC\PRELIMMAP 101309.DWG

US 441 & NW 43rd Street

Intersection Volume and Project Trips

	SE		NW		NE	
AM Peak Period	T	R	L	T	L	R
Existing Volume (2009)	**1074**	**328**	**10**	**405**	**163**	**1**
Growth Rate	2%		2%		2%	
Future Volume at Peak Construction (2013)	**1163**	**355**	**11**	**438**	**176**	**1**
Project Trips	6	2	0	61	20	0
Future Volume at Peak Construction (2013) w/ Project Trips	**1169**	**357**	**11**	**499**	**196**	**1**
Future Volume at Plant Operations (2014)	**1186**	**362**	**11**	**447**	**180**	**1**
Project Trips	5	1	0	13	2	0
Future Volume at Plant Operations (2014) w/ Project Trips	**1191**	**363**	**11**	**460**	**182**	**1**
PM Peak Period						
Existing Volume (2009)	**553**	**315**	**21**	**992**	**347**	**7**
Growth Rate	2%		2%		2%	
Future Volume at Peak Construction (2013)	**599**	**341**	**23**	**1074**	**376**	**8**
Project Trips	61	20	0	6	2	
Future Volume at Peak Construction (2013) w/ Project Trips	**660**	**361**	**23**	**1080**	**378**	**8**
Future Volume at Plant Operations (2014)	**611**	**348**	**23**	**1095**	**383**	**8**
Project Trips	13	2	0	5	1	0
Future Volume at Plant Operations (2014) w/ Project Trips	**624**	**350**	**23**	**1100**	**384**	**8**

Synchro Results

	Overall	SE			NW			NE		
AM Peak Period	Intersection	Approach	T	R	Approach	L	T	Approach	L	R
Existing Volume (2009)	B	A	A	A	A	A	A	D	D	C
Future Volume at Peak Construction (2013)	B	A	B	A	A	A	A	D	D	C
Future Volume at Peak Construction (2013) w/ Project Trips	B	B	B	A	A	A	A	D	D	C
Future Volume at Plant Operations (2014)	B	A	B	A	A	A	A	D	D	C
Future Volume at Plant Operations (2014) w/ Project Trips	B	A	B	A	A	A	A	D	D	C
PM Peak Period										
Existing Volume (2009)	C	B	B	A	B	A	B	E	E	B
Future Volume at Peak Construction (2013)	C	B	B	A	B	A	B	E	E	B
Existing with Project Trips	C	B	B	A	B	A	B	E	E	B
Future Volume at Plant Operations (2014)	C	B	B	A	B	A	B	E	E	B
Future Volume at Plant Operations (2014) w/ Project Trips	C	B	B	A	B	A	B	E	E	B

EXHIBIT 6 - Intersection Volume and Project Trips / Synchro Results

Gainesville Renewable Energy Center
Plant Operations Trip Generation Analysis

DAILY

Description/ITE Code	Units	No. Units	Daily Trip Rate/Equation	Enter Split	Exit Split	Daily Trips	Daily Enter	Daily Exit
Industrial								
Plant Operations [1]	Employees	31	T = 2 (X) / 1.0 ppv	50%	50%	62	31	31
Fuel Deliveries	Trucks	150	T = 2 (X)	50%	50%	300	150	150
Non-Fuel Deliveries	Trucks	8	T = 2 (X)	50%	50%	16	8	8
TOTAL						**378**	**189**	**189**

* Conservative rate applied - based on heavy industrial land use rate of 0.82 trips per employee for Daily

PM Peak Hour

Description/ITE Code	Units	No. Units	PM Peak Hour Trip Rate/Equation [2]	PM Enter Split [3]	PM Exit Split [3]	PM Pk Trips	PM Enter	PM Exit
Industrial								
Plant Operations [1]	Employees	31	T = (X) / 1.0 ppv	8%	92%	31	2	29
Fuel Deliveries [5]	Trucks	15	T = 2 (X)	50%	50%	30	15	15
Non-Fuel Deliveries [6]	Trucks	1	T = 2 (X)	50%	50%	2	1	1
TOTAL						**63**	**18**	**45**

AM Peak Hour

Description/ITE Code	Units	No. Units	PM Peak Hour Trip Rate/Equation [2]	PM Enter Split [4]	PM Exit Split [4]	PM Pk Trips	PM Enter	PM Exit
Industrial								
Plant Operations [1]	Employees	31	T = (X) / 1.0 ppv	92%	8%	31	29	2
Fuel Deliveries [5]	Trucks	15	T = 2 (X)	50%	50%	30	15	15
Non-Fuel Deliveries [6]	Trucks	1	T = 2 (X)	50%	50%	2	1	1
TOTAL						**63**	**45**	**18**

Note: ppv = persons per vehicle

1 Plant operations staff will remain on site the entirety of their shifts and will enter and exit the site once per day (Once during the AM peak and once during the PM peak).

2 One (1) trip per employee assumed during the peak hours. One (1) trip per employee during the AM and PM peak hours is conservative compared to what ITE reports for AM (0.51 trips per employee) and PM (0.88 trips per employee) for a general heavy industrial land use (ITE Code 120).

3 The directional distribution for employee traffic in the PM peak is based on a study conducted for Florida Power Corporation's Polk County site, which reported 8% entering and 92% exiting.

4 The directional distribution for employee traffic during the AM peak is assumed to be the inverse of the PM peak.

5 Assumes fuel deliveries occur 10 hours per day (150 trucks per day / 10 hours per day = 15 trucks per hour).

6 Assumes non-fuel deliveries occur 8 hours per day (8 trucks per day / 8 hours per day = 1 truck per hour).

Plant Operations Trip Generation - EXHIBIT 7

N

15%
(9)

(29)
50%
from I10 East

70%
(41)

(17)
30%

(20)
35%

(13)
23%

(7)
12%

(22)
38%

CITY OF ALACHUA

(58)
100%

(29)
50%

(51)
88%

(50)
100%
30%
(9)

US 441

Interstate 75

(21)
70%

(7)
12%

(3)
10%

CITY OF GAINESVILLE

(25)
50%

(18)
60%

(9)
30%

(13)
26%

(12)
24%

LEGEND

30% (7) NW Forest Fuel Deliveries

15% (9) NE Forest Fuel Deliveries

10% (3) SE Forest Fuel Deliveries

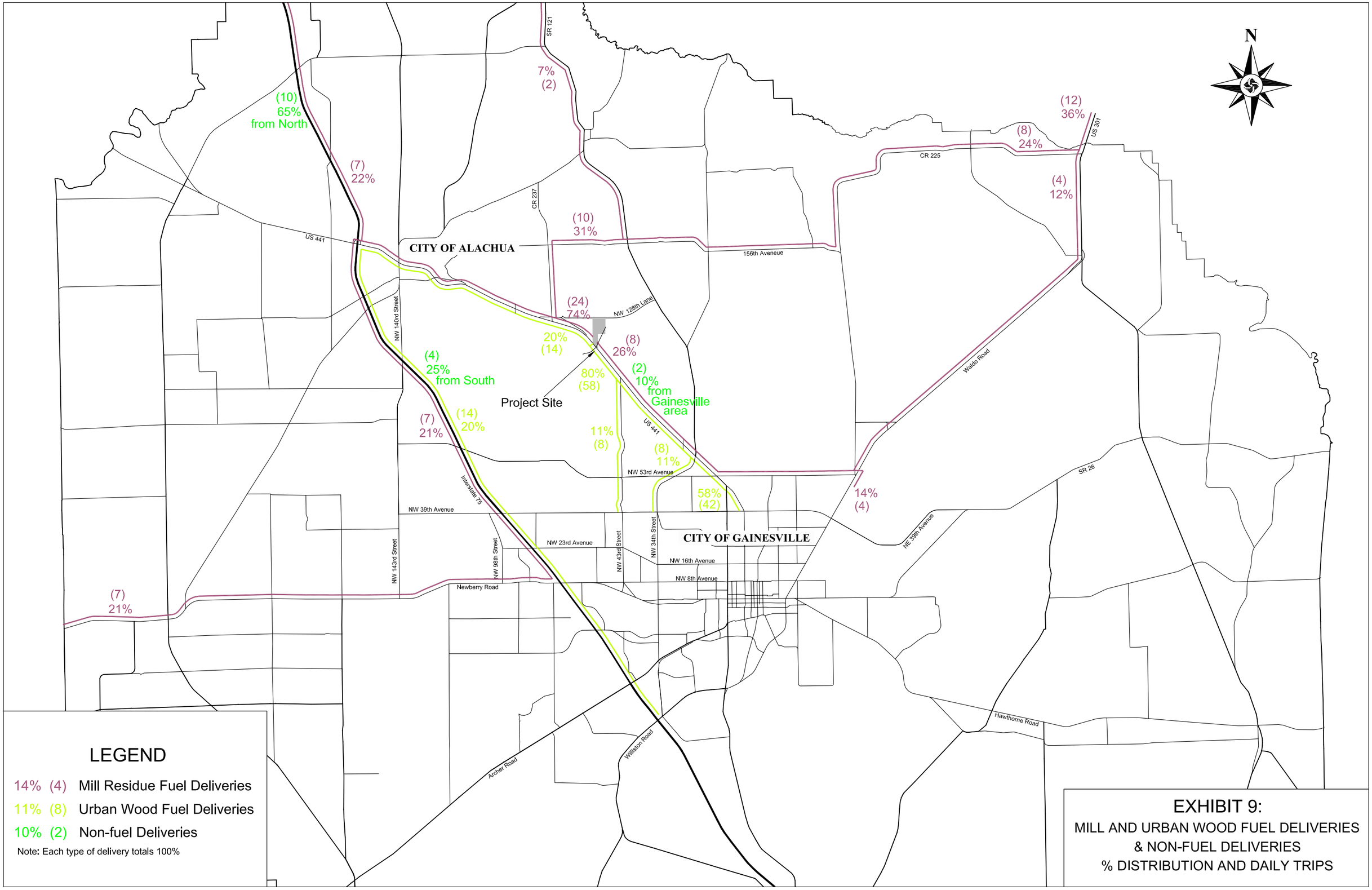
50% (25) SW Forest Fuel Deliveries

Note: Each quadrent totals 100%

EXHIBIT 8:

FORESTRY FUEL DELIVERIES
% DISTRIBUTION AND DAILY TRIPS

October 14, 2009 (11:17:00 EST)
G:\PROJECTS\0827-002 GREC TRAFFIC\TRAFFIC\PRELIMMAP 101309.DWG



LEGEND

14% (4) Mill Residue Fuel Deliveries

11% (8) Urban Wood Fuel Deliveries

10% (2) Non-fuel Deliveries

Note: Each type of delivery totals 100%

EXHIBIT 9:

MILL AND URBAN WOOD FUEL DELIVERIES
& NON-FUEL DELIVERIES
% DISTRIBUTION AND DAILY TRIPS

October 14, 2009 (1:20pm, EST)
G:\PROJECTS\8527-002 GREC TRAFFIC\TRAFFIC\PRELIMMAP 101309.DWG

Appendix A

Methodology Letter to
Florida Department of Transportation

GENESIS GROUP
FROM VISION TO REALITY

Engineering
Landscape Architecture
Planning
Survey
GIS

2507 Callaway Road
Suite 100
Tallahassee, Florida 32303

Tel 850.224.4400
Fax 850.681.3600
www.GenesisGroup.com

August 5, 2009

Mr. Jordan Green, P.E.
Rural Area Transportation Development Engineer
Florida Department of Transportation – District 2
Mail Station 2014
1109 S. Marion Avenue
Lake City, Florida 32025

Re: Transportation Impact Analysis Methodology for the Gainesville Renewable Energy Center (GREC)

Dear Mr. Green,

The proposed Gainesville Renewable Energy Center (GREC) will be a 100 megawatt net biomass facility adjacent to the existing Deerhaven Electric Generating Facility. Power plant facilities require submittal of a Site Certification Application to the Florida Department of Environmental Protection (FDEP). The Florida Department of Transportation (FDOT) will participate in the review of the application. This transportation methodology letter will serve to address the requirements of the Site Certification Application.

The data and analysis provided under this methodology will address the requirements of the Site Certification Application by providing an existing roadway conditions analysis, and analysis of conditions during the peak construction period, as well as the build-out condition of plant operations. The analysis performed for the application, as detailed in this methodology letter will be based on the City of Gainesville's Traffic Study Guidelines for the local development review process. A separate methodology will be submitted to the City of Gainesville for review to address local concurrency requirements for the build-out condition of plant operations only.

As a part of the plant operations analysis, an analysis will be provided addressing the turn lane needs at the site entrance to accommodate passenger vehicles and truck delivery traffic.

STUDY THRESHOLDS

As defined by the City of Gainesville Traffic Study Guidelines, this project is classified as a Minor Traffic Study because the proposed development is estimated to generate 63 PM peak hour trips. According to the Traffic Study Guidelines, projects generating between 50 and 99 peak hour trips would require a Minor Traffic Study, in which the study area shall include roadway segments wholly or partially within ½ mile of the project access points, or to the nearest intersecting major street, whichever is greater.

REQUIRED INFORMATION

Project Description

1. *Type of Development*
   The subject site is an approximately 136-acre parcel to be developed as a 100 megawatt net biomass facility adjacent to the existing Deerhaven Electric Generating Facility. Due to the uniqueness of this development, a memo has been provided by the developer detailing information to support the base assumptions proposed in the methodology. The memo is included in the **Appendix**.

2. *Build-out Year*
   The expected build-out year when full plant operations are scheduled will begin no later than 2014.

3. *Access*
   The primary access will be located at an existing driveway on US 441. This driveway is located approximately 0.5 miles northwest of the existing main gate to the Deerhaven Electric Generating Facility. A secondary access is planned to be located on NW 128th Lane. For this analysis, all site traffic is assumed to directly enter from and exit to the US 441 driveway connection. A map illustrating the location of the site is provided in **Exhibit 1.**

4. *Trip Generation*
   The results for the average daily, AM and PM peak hour trip generation at Peak Construction and Plant Operations periods can be seen below. Trip generation is based on a combination of employee traffic and truck deliveries. Detailed calculations are found in **Exhibits 2A and 2B** for Daily, AM peak hour and PM peak hour for the Peak Construction and Plant Operations periods, respectively**.**

   Peak Construction Trip Generation

	Enter	Exit	Total
Daily	514	514	1,028
AM	288	28	316
PM	28	288	316

   Plant Operations Trip Generation

	Enter	Exit	Total
Daily	189	189	378
AM	45	18	63
PM	18	45	63

Unique trip generation characteristics are described in the Appendix and detailed in Exhibits 2A and 2B. No internal capture or pass-by reductions have been applied.

5. *Trip Assignment*

Project trips will be assigned to the roadway network based on a manual distribution. The proposed biomass plant has specific traffic patterns associated with its daily operations. There are specific fuel-related resources needed to operate the plant and these resources would come from known areas. A traffic model would not be able to accurately reflect vehicular behaviors since a model assumes a certain amount of person trip productions and attractions from each traffic analysis zone (TAZ) to another. This would not be characteristic of this development. The site is a relatively low trip generator both on a daily and peak hour basis. Since the general distribution patterns are known, it is preferred that a manual distribution be used rather than rely on a traffic model that is not designed to address the unique characteristics of a power generating plant.

To estimate the distribution for plant operations, employees using the proposed US 441 access have been distributed based on a turning movement count taken Tuesday, June 16, 2009 at the Deerhaven Electric Generating Facility. The existing facility's driveway is located on US 441 just southeast of the proposed driveway. **Exhibit 3** shows the count and percentage breakdown. For fuel deliveries, the proposed biomass facility will operate by burning wood chips from the region. The distribution for trucks with fuel and non-fuel deliveries will be based on information provided by the developer's forestry consultant, as detailed in Appendix A. To estimate the distribution for the peak construction period, construction workers will be distributed based on different lodging considerations as see in the chart on **Exhibit 4**. Local construction workers and plant operations employees will be distributed based on the turning movement count taken, while truck deliveries will be based on information provided in Appendix A.

For the purposes of this study, all project trips will be using the primary GREC driveway located on US 441 and the enter/exit split will be determined as explained above.

The proposed Daily trip distribution and assignment is provided in Exhibit 4 for the peak construction period and overall plant operations. **Exhibit 5** illustrates the detail of the proposed trip distribution and assignment for the forest fuel deliveries and provides information on the general geographic areas where the fuel for the plant will be coming from. **Exhibit 6** provides information on the trip distribution and assignment of mill residue and urban wood fuel deliveries as well as the non-fuel deliveries servicing the proposed plant. The Daily distribution and assignment will be necessary for roadway segment level of service for concurrency and the site certification analysis. An AM and PM peak hour distribution will be developed similarly to the Daily distribution, which will be used for intersection and turn lane analyses for operational purposes.

Study Area

As required for a Minor Traffic Study by the City of Gainesville, the study area shall include roadway segments wholly or partially within ½ mile of the project access points, or to the nearest intersecting major street, whichever is greater. The only segment within ½ mile of project access is along US 441 from NW 23rd Street to the Gainesville Metropolitan Area (GMA) boundary. Additionally, the intersection of US 441 and NW 43rd Street, located 1.3 miles southeast of the proposed project access, will be analyzed.

Average Daily Traffic counts (ADT's) will be obtained from the 2008 FDOT Traffic Information CD. Turning movement counts at the intersection of US 441 and NW 43rd Street will be taken if recent counts are not available. It is recognized that summertime is not an acceptable period for performing traffic data collection to be used in a traffic analysis. Given the critical timing of the Site Certification Application, the Applicant will perform a preliminary analysis of the subject intersection using summertime turning movement counts. A follow-up analysis will be performed when the local and university school semesters resume.

Analysis of Conditions

1. *Significant Land Uses/Activities within ½ mile of Project Site*
   The location of this project is in a rural area. There are no significant land uses within ½ mile. There appears to be a development (not built out) across US 441 from the project access that will share the median opening. At this time, no additional projects will be considered to be included in the background as existing or future committed demand.

2. *Transportation System Serving the Project Site*
   US 441 is the primary arterial within ½ mile of the site and provides direct access to the site. There are no transit routes, sidewalks, or bicycle routes within ½ mile of the project.

3. *Programmed Transportation Modifications*
   Any proposed transportation system modifications in the study area as identified in FDOT's 5-Year Work Program, the local Transportation Improvement Plan (TIP) or the City's or Alachua County's Capital Improvements Element (CIE) will be reported and incorporated into the analysis as appropriate and assumed to reflect future capacity if scheduled for construction within the next three (3) years. Also, any proposed and/or scheduled/committed (funded) transportation system modifications, not listed in the Work Program, TIP or CIE, will be identified.

4. *Growth Rates*
   A growth rate has been calculated using the previous 10 years (1999-2008) of FDOT daily counts along US 441 (0.3 Mile NW of SR 121). The rate was calculated at 1.4%; therefore, a minimum annual growth rate of 2% will be applied as required by

the City of Gainesville Traffic Study Guidelines. Calculations were based on an average yearly growth and can be seen in **Exhibit 7**.

5. *Impacts on Roadway Segments and Intersections*
Existing daily traffic volumes and future (with development) traffic volumes will be calculated for the study area segment and intersection identified to be in the study area. As a basis, 2008 FDOT traffic counts will be used for US 441. Future volumes will be calculated by applying growth rates and adding any applicable reserved trips supplied by the City of Gainesville and the City of Alachua. The segment(s) analyzed will be consistent with the segmentation identified in the Metropolitan Transportation Planning Organization's (MTPO) Multimodal Level of Service (LOS) Report.

   To facilitate review, figures will be provided to illustrate the existing and future turning movement counts and shall differentiate existing, background, project and total traffic.

   For the study area segment and intersection identified, the future level of service will be calculated. Based on the anticipated low project traffic volume to be generated by the proposed site, no signal warrant analysis will be performed for unsignalized intersections in the study area.

6. *Summary of Transportation System Impacts*
A level of service (LOS) summary will be provided of the project impacts on the public roadway system within the study area. Given the location of the proposed site, there will be no impact on, or contribution to, the transit, pedestrian, or bicycle system.

   A northwest-bound right turn lane and southeast-bound left turn lane exists on US 441 at the proposed project driveway. Calculations will be conducted to determine if the turn lane lengths and deceleration lanes are sufficient to accommodate vehicular traffic accessing the site.

7. *Coordination with other Agencies and Local Governments*
The transportation analysis will be submitted with the Site Certification Application to the FDEP. All supporting documentation will be provided as exhibits, figures or in an appendix. All pages of the report (including maps, diagrams, figures, and appendices) shall be numbered. A separate document will be submitted to the City of Gainesville to satisfy local requirements and will follow a second, locally approved, methodology.

Transportation Methodology Approval

This document contains the transportation methodology assumptions agreed upon by the signature parties listed below. The parties hereto have caused this transportation methodology to be executed by their undersigned officials as duly authorized this _____ day of _____, 2009.

GENESIS GROUP (on behalf of the Applicant)

By: _____ Date: _____

Printed Name and Title _____

FLORIDA DEPARTMENT OF TRANSPORTATION

By: _____ Date: _____

Printed Name and Title _____

Appendix B

Traffic Impact Memo from
Project Developer

Gainesville Renewable Energy Center
An American Renewables Company

75 Arlington Street
5th Floor
Boston, MA 02116
(617) 482-6150
Fax (617) 482-6159
www.amrenewables.com

MEMORANDUM

To: Mike Munson and Ben Chandler, Genesis Group

From: Josh Levine

Date: June 19, 2009

Re: Gainesville Renewable Energy Center (GREC) – Traffic Impacts

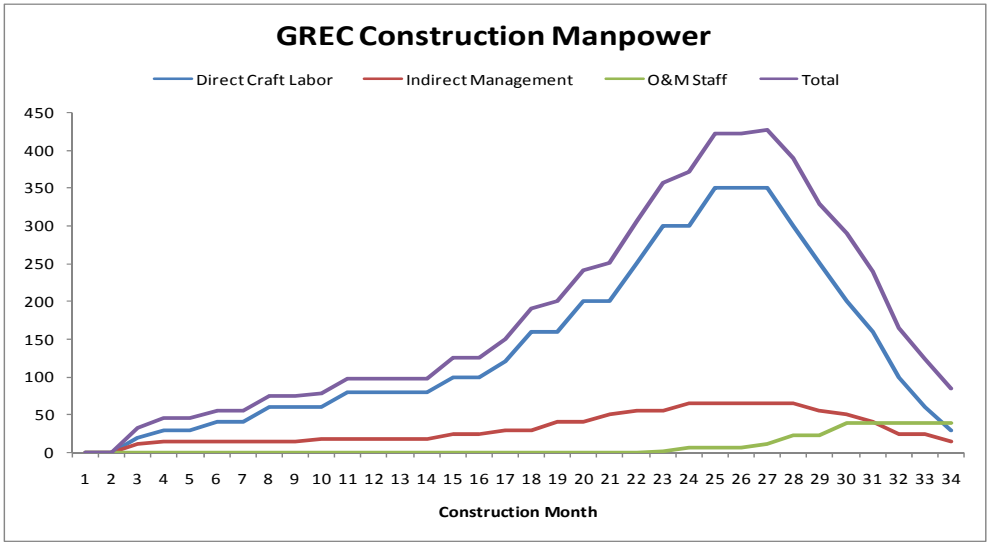
---

To analyze the traffic impacts that will occur due to the development and operation of GREC, we have divided this memo into two sections: construction impacts and operation impacts. The construction impacts section will be further divided into construction work force impacts and equipment delivery impacts. The operations impacts section will be divided into operational work force impacts, fuel delivery impacts, and other operational impacts, which includes impacts from the delivery of sand and chemicals and the removal of fly ash and other waste material. It is important to note that the information presented below is preliminary and is subject to revision as the project progresses.

Construction Impacts

Construction Work Force Impacts

The construction period of GREC is 34 months with a ramp up over time to the peak construction employment of approximately 425 in construction months 25 through 27. The following manpower graph/table shows direct craft labor, indirect construction management and supervisory staff, and the operations and maintenance (O&M) staff by construction month.



GREC Construction Manpower					
	Construction Month	Direct Craft Labor	Indirect Management	O&M Staff	Total
1	Dec-10	0	0	0	0
2	Jan-11	0	0	0	0
3	Feb-11	20	12	0	32
4	Mar-11	30	15	0	45
5	Apr-11	30	15	0	45
6	May-11	40	15	0	55
7	Jun-11	40	15	0	55
8	Jul-11	60	15	0	75
9	Aug-11	60	15	0	75
10	Sep-11	60	18	0	78
11	Oct-11	80	18	0	98
12	Nov-11	80	18	0	98
13	Dec-11	80	18	0	98
14	Jan-12	80	18	0	98
15	Feb-12	100	25	0	125
16	Mar-12	100	25	0	125
17	Apr-12	120	30	0	150
18	May-12	160	30	0	190
19	Jun-12	160	40	0	200
20	Jul-12	200	40	0	240
21	Aug-12	200	50	0	250
22	Sep-12	250	55	0	305
23	Oct-12	300	55	1	356
24	Nov-12	300	65	6	371
25	Dec-12	350	65	6	421
26	Jan-13	350	65	6	421
27	Feb-13	350	65	11	426
28	Mar-13	300	65	23	388
29	Apr-13	250	55	23	328
30	May-13	200	50	39	289
31	Jun-13	160	40	39	239
32	Jul-13	100	25	39	164
33	Aug-13	60	25	39	124
34	Sep-13	30	15	39	84

All direct craft labor and indirect management and supervisory staff will be hired through GREC's Engineer, Procure and Construct (EPC) contractor. Through discussions with numerous EPC contractors, we estimate that 50% of all construction staff will be hired from the local area, while 50% will be hired from outside the region. The local area will supply a large number of the civil, carpenter and general laborers as well as some of the specialized labor such as pipefitter/welders, boilermakers, millwrights and electricians.

For purposes of this memo, we have assumed that approximately 50% of the work force (~ 205 peak) will be local and will have a home-based residence. These 205 local hires will travel to and from the GREC construction site within a 40 mile radius of the jobsite from all directions following the pattern of current Deerhaven employees.

Of the remaining 210 employees at the peak (remaining direct craft labor and all supervisory staff) that will be coming from outside the region:

- 60 will utilize travel trailers or motor homes,
- 50 will rent by the week at local motels (returning home on most weekends),
- 70 will rent apartments with a short term lease, and
- 30 will deal with a long commute over 50 miles by carpool.

The 60 construction staff utilizing travel trailers or motor homes will stay in campgrounds that are located in northeast Gainesville, Alachua, and High Springs. All of these campgrounds are located to the north of the construction site and therefore these staff will utilize Interstate 75 South and Route 441 South to access the site from the north. We assume that the 120 staff staying in local motels/apartments will also locate to the north of the site due to less expensive rental rates and ease in accessing the jobsite from I-75 South/Rt. 441 South. The remaining 30 staff who will be commuting over 50 miles will utilize I-75 with half coming from the north and half coming from the south.

The O&M staff during the construction phase will consist of the actual long-term operational staff. Starting in construction month 23, the O&M staff will begin ramping up and will reach a level of 39 employees by construction month 30. The remaining 5 permanent O&M employees (bringing the total fulltime staff to 44) will begin after construction is finished. The O&M staff will be located in the local area and will commute within a 40 mile radius of the jobsite from all directions following the pattern of current Deerhaven employees.

Equipment Delivery Impacts

In addition to the construction labor/management, there will be a number of truck shipments during the construction phase. This will involve equipment and materials delivery, as well as concrete fill and also moving construction equipment on and off the site as required. During peak construction activities, construction vehicles and equipment will access the site. However, the majority of the heavy construction equipment such as cranes, graders and bulldozers will access the site and remain on site for long periods. There will be some oversized equipment and material deliveries that will be delivered to the site which will be coordinated with FDOT as required.

The total number of truck deliveries is difficult to estimate at this time but could be on the order of up to 500 deliveries per month during peak periods with an average of 65 deliveries per month over the 34 month construction period for construction related activities.

All major equipment and material deliveries will come from the north using I-75 South/Rt. 441 South as the access route to the site. Equipment and materials that arrive at the Port of Jacksonville will utilize the I-10 West to I-75 South/Rt. 441 South route for delivery to the site. Materials that arrive at the Port of Pensacola will utilize the I-10 East to I-75 South/Rt. 441 South route for delivery to site.

Gainesville Regional Utilities (GRU) has an agreement in place with the railroad CSXT for coal deliveries through 2019. It is possible that GREC's contractors and equipment vendors may make arrangements with GRU to utilize CSXT for some heavy hauls. However, at this point in time, these vendors plan to use over the road deliveries. In any event, deliveries utilizing this method would be minimal.

Operations Impacts

Once completed and under operation in late 2013, the total fulltime staff is projected to be 44 employees. In addition there will be truck traffic that will be transporting biomass fuel, sand, aqueous ammonia and other chemicals to the facility as well as removing fly ash and other waste materials from the facility. The following is a summary of the anticipated traffic impacts of plant operations.

Operational Work Force Impacts

The plant employees will be on two 12-hour shifts with office employees working a normal 8-hour, 5-day week. The majority of the employees will be working the first shift which will include approximately 26 employees during the normal peak hours of the work week. The second shift and weekends will have 5 employees on average. The facility staff will be located in the local area and will commute within a 40 mile radius of the jobsite from all directions following the pattern of current Deerhaven employees.

Fuel Delivery Impacts

Truck traffic related to biomass fuel deliveries is expected to occur 15 hours per day, 6 days per week from 5:00 AM to 8:00 PM. Based on expected operations and fuel quality, the facility will consume approximately 1 million tons of biomass fuel per year. This equates to between 130 and 150 trucks per day (based on 25 ton fuel loads).

We estimate that approximately 65% of the biomass fuel used at the plant will come directly from the forest. Based on an annual fuel consumption of 1,000,000 tons per year, this equates to 650,000 tons of forest-produced biomass. Based on the location of the major highways and the location of the major forest resources in the area, we divided the GREC plant procurement area for the forest-based fuels into four quadrants: NE, NW, SW, and SE based on a 75-mile radius from the proposed GREC site. The figure presented below depicts the major timberland areas within each quadrant (shaded green area) from which GREC can expect to receive forest-derived biomass fuel. In addition, the figure depicts the forest products mills within the GREC fuel procurement radius.

GREC Traffic Quadrants: Major Timber Resource Areas and Forest Products Mills

Of the 650,000 tons of forest-produced biomass it is estimated that the following amounts will come from the four quadrants identified above:

Forest-Produced Biomass Fuel for the GREC Plant

Quadrant	Percent	Tons/Year	Trucks/day*
NE	30%	195,000	25
NW	30%	195,000	25
SW	25%	162,500	21
SE	15%	97,500	13
TOTAL	**100%**	**650,000**	**84**

*Based on 25 tons/truck, delivering 6 days per week.

Most of the truck traffic from the NW and SW quadrants will use Interstate 75 and will most likely exit at Alachua and then travel U.S. 441 south to the plant site. Some of the fuel coming from the NW quadrant will originate close enough to U.S. 441 so that those trucks will travel to the site from the north on U.S. 441 without using I-75.

Most of the truck traffic from the NE quadrant would likely use S.R. 121 and U.S. 301. Traffic coming from S.R. 121 will probably enter U.S. 441 north of the plant via C.R. 237 and then travel south to the plant from there. Most of the traffic coming from U.S. 301 will probably travel south on 301 to C.R. 225, and then take that road west to C.R. 237. From C.R. 237 the trucks will take U.S. 441 south to the plant. Some of the NE quadrant traffic might also take U.S. 301 south all the way to C.R. 232, and then travel C.R. 232 to U.S. 441, then travel north on U.S. 441 to the plant. The distance of this more southerly route is about the same as the C.R. 225 route, but it might be avoided due to heavier traffic near Gainesville.

Most of the traffic coming from the SE quadrant will likely travel to U.S. 441 by way of C.R. 232 and approach the plant from the south on U.S. 441. However, some of the traffic originating from the western side of this quadrant would take I-75 north to Alachua and south on U.S. 441 to the plant.

The remaining 35% of the fuel for the plant will be made up of urban wood waste and, to a lesser extent, mill residues. Most of the urban wood waste will originate south of the plant in the Gainesville area. The majority of the wood-using mills likely to supply residue to the plant are located to the north of the plant site (see figure above). Of the 350,000 tons of urban wood waste and mill residues, we estimate the following amounts will come from north and south of the plant location:

Urban Wood Waste and Mill Residue Fuels for the GREC Plant

Origin	Percent	Tons/Year	Trucks/day*
South	50%	175,000	23
North	50%	175,000	23
TOTAL	**100%**	**350,000**	**46**

*Based on 25 tons/truck, delivering 6 days per week.

Other Operational Impacts

The primary other operational impacts are deliveries to the facility that include boiler bed sand, aqueous ammonia and miscellaneous chemicals as well as removals from the facility of fly ash, bottom ash and other waste material. These other impacts result in approximately 40 trucks per week during a 10-hour day, 5 days per week. The boiler bed sand and aqueous ammonia will most likely be coming from the Jacksonville, FL region and will utilize an I-10 West/I-75 South/Rt.441 South route.

Appendix C

Traffic Counts

Growth Rate Calculation

FDOT Count Station

Site: 3117 - SR 20, 0.3 Mile NW of SR 121

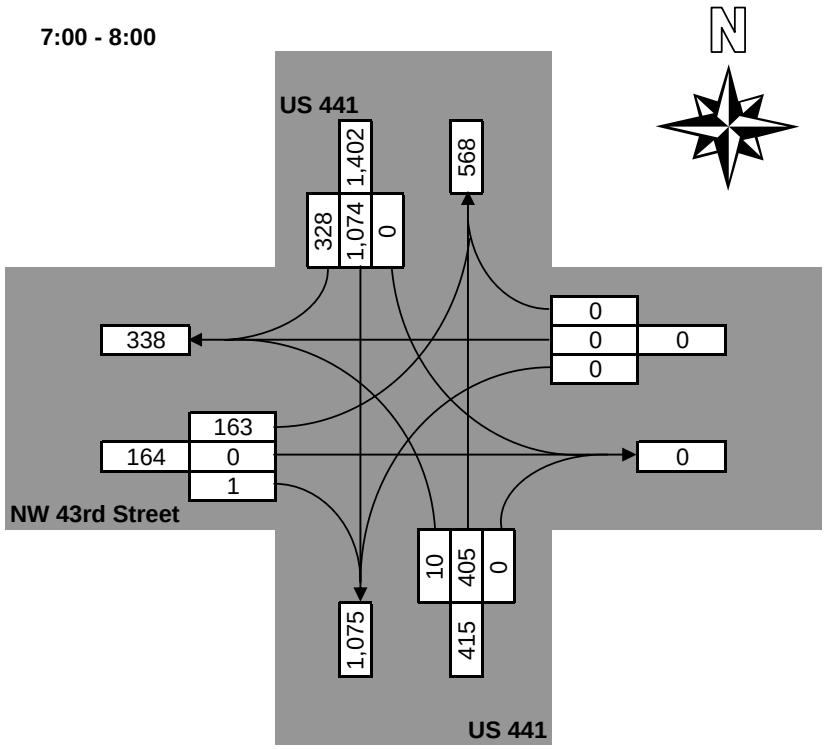
Year	AADT	Growth Rate
2008	19400	4.3%
2007	18600	-3.1%
2006	19200	0.0%
2005	19200	-1.5%
2004	19500	14.7%
2003	17000	-14.1%
2002	19800	8.2%
2001	18300	1.7%
2000	18000	2.9%
1999	17500	
	Average =	**1.4%**

GENESIS GROUP

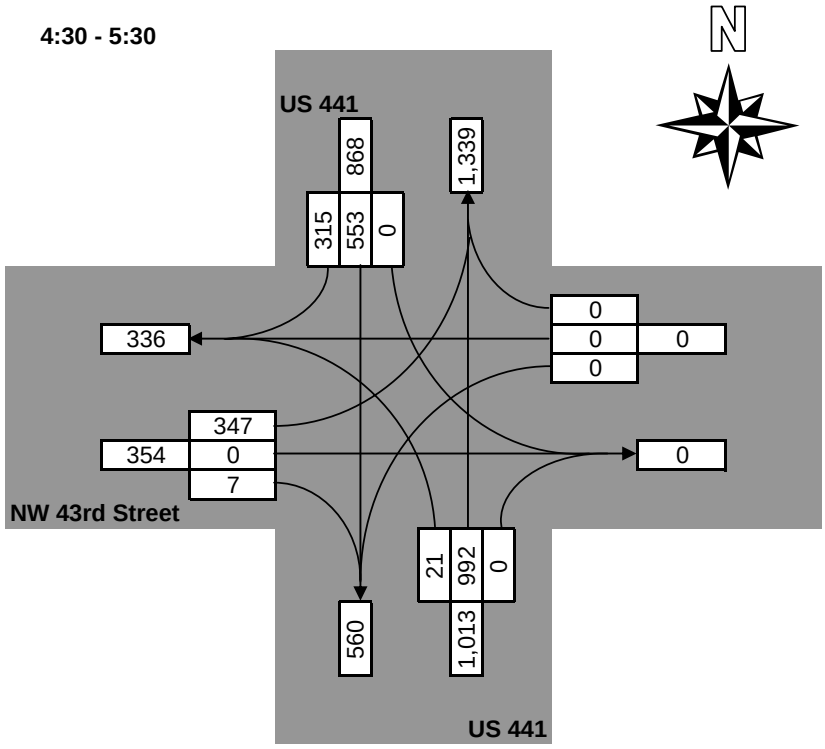
TURNING MOVEMENT STUDY

Intersection: US 441 / NW 43rd Street Date: 9/17/09

AM Peak 7:00 - 8:00



PM Peak 4:30 - 5:30



Driveway Count for Employee Trip Distribution

Location: Existing Deerhaven Electric Generating Facility Driveway

Date: Tuesday, June 16, 2009

	Entering from US 441		Exiting from Driveway	
	NW Rt	SE Lt	SW Lt	SW Rt
6 - 8 AM	34	38	5	7
	47%	53%	42%	58%
3 - 7 PM	5	2	48	45
	71%	29%	52%	48%
Total	39	40	53	52

Daily Distribution Assumption for Employee Traffic:

Vehicles to and from the northwest =	92	50%
Vehicles to and from the southeast =	92	50%

Appendix D

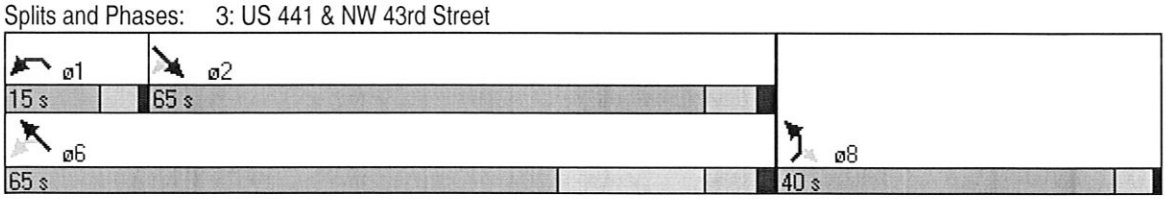
Synchro Outputs

Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1074	328	10	405	163	1
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.186		0.950	
Satd. Flow (perm)	3374	1509	330	3374	1687	1509
Satd. Flow (RTOR)		357				1
Lane Group Flow (vph)	1167	357	11	440	177	1
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.0	58.0	62.5	60.0	14.3	14.3
Actuated g/C Ratio	0.67	0.67	0.72	0.69	0.16	0.16
v/c Ratio	0.52	0.32	0.03	0.19	0.64	0.00
Control Delay	9.7	1.9	4.5	5.4	45.3	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	9.7	1.9	4.5	5.4	45.3	25.0
LOS	A	A	A	A	D	C
Approach Delay	7.9			5.4	45.2	
Approach LOS	A			A	D	
Queue Length 50th (ft)	133	0	1	37	88	0
Queue Length 95th (ft)	328	39	7	72	173	5
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	2251	1126	395	2839	685	613
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.32	0.03	0.15	0.26	0.00

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 86.9
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 10.5 Intersection LOS: B
Intersection Capacity Utilization 49.1% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: US 441 & NW 43rd Street

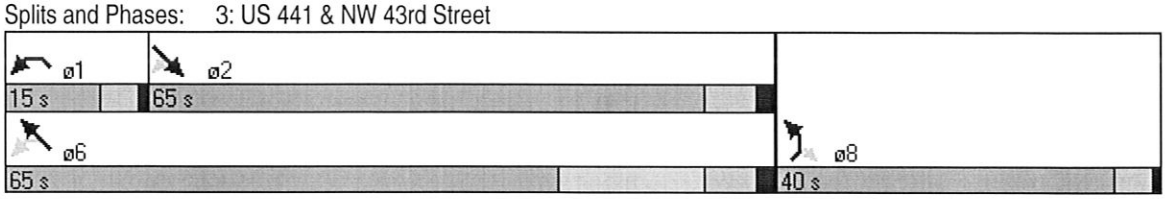


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	553	315	21	992	347	7
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.373		0.950	
Satd. Flow (perm)	3374	1509	662	3374	1687	1509
Satd. Flow (RTOR)		342				8
Lane Group Flow (vph)	601	342	23	1078	377	8
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.3	58.3	65.0	62.5	27.8	27.8
Actuated g/C Ratio	0.57	0.57	0.63	0.61	0.27	0.27
v/c Ratio	0.31	0.34	0.05	0.53	0.83	0.02
Control Delay	14.3	2.8	8.8	13.6	51.8	15.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	14.3	2.8	8.8	13.6	51.8	15.7
LOS	B	A	A	B	D	B
Approach Delay	10.1			13.5	51.1	
Approach LOS	B			B	D	
Queue Length 50th (ft)	97	0	6	212	216	0
Queue Length 95th (ft)	186	48	17	297	374	12
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	1909	1003	519	2407	581	525
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.31	0.34	0.04	0.45	0.65	0.02

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 103
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 18.1 Intersection LOS: B
Intersection Capacity Utilization 57.1% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 3: US 441 & NW 43rd Street

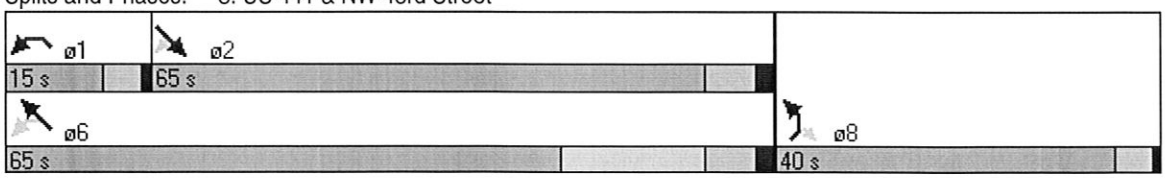


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1163	355	11	438	176	1
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.160		0.950	
Satd. Flow (perm)	3374	1509	284	3374	1687	1509
Satd. Flow (RTOR)		368				1
Lane Group Flow (vph)	1264	386	12	476	191	1
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.1	58.1	62.6	60.1	15.1	15.1
Actuated g/C Ratio	0.66	0.66	0.71	0.68	0.17	0.17
v/c Ratio	0.57	0.34	0.04	0.21	0.66	0.00
Control Delay	10.8	2.2	4.9	5.8	45.6	25.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	10.8	2.2	4.9	5.8	45.6	25.0
LOS	B	A	A	A	D	C
Approach Delay	8.8			5.7	45.5	
Approach LOS	A			A	D	
Queue Length 50th (ft)	156	3	2	43	96	0
Queue Length 95th (ft)	382	48	8	81	187	5
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	2231	1122	364	2813	679	608
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.57	0.34	0.03	0.17	0.28	0.00

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 87.8
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 11.2 Intersection LOS: B
Intersection Capacity Utilization 52.3% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: US 441 & NW 43rd Street

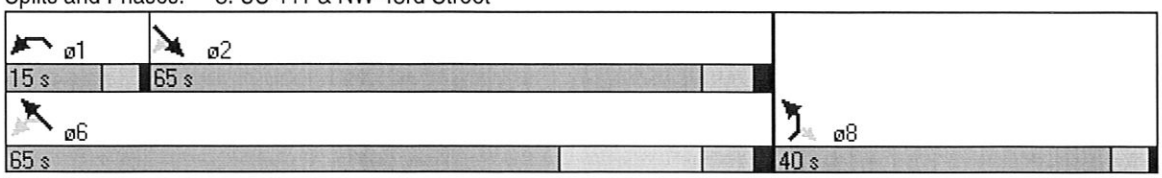


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	599	341	23	1074	376	8
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.344		0.950	
Satd. Flow (perm)	3374	1509	611	3374	1687	1509
Satd. Flow (RTOR)		371				9
Lane Group Flow (vph)	651	371	25	1167	409	9
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.2	58.2	67.4	64.9	29.7	29.7
Actuated g/C Ratio	0.54	0.54	0.63	0.61	0.28	0.28
v/c Ratio	0.36	0.38	0.05	0.57	0.88	0.02
Control Delay	16.3	2.9	8.9	14.7	58.0	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.3	2.9	8.9	14.7	58.0	15.4
LOS	B	A	A	B	E	B
Approach Delay	11.4			14.6	57.1	
Approach LOS	B			B	E	
Queue Length 50th (ft)	154	0	7	263	285	0
Queue Length 95th (ft)	204	49	18	334	#443	12
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	1832	989	486	2311	558	505
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.38	0.05	0.50	0.73	0.02

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 107.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 20.1 Intersection LOS: C
Intersection Capacity Utilization 60.9% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: US 441 & NW 43rd Street

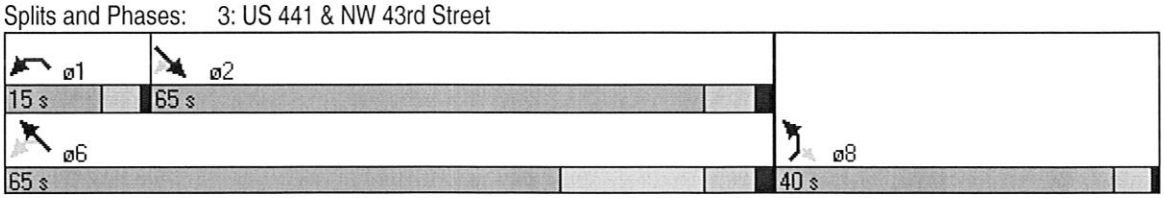


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1169	357	11	499	196	1
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.155		0.950	
Satd. Flow (perm)	3374	1509	275	3374	1687	1509
Satd. Flow (RTOR)		367				1
Lane Group Flow (vph)	1271	388	12	542	213	1
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.1	58.1	62.6	60.1	16.4	16.4
Actuated g/C Ratio	0.65	0.65	0.70	0.67	0.18	0.18
v/c Ratio	0.58	0.35	0.04	0.24	0.69	0.00
Control Delay	11.6	2.4	5.4	6.4	46.2	23.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.6	2.4	5.4	6.4	46.2	23.0
LOS	B	A	A	A	D	C
Approach Delay	9.4			6.4	46.1	
Approach LOS	A			A	D	
Queue Length 50th (ft)	166	3	2	53	108	0
Queue Length 95th (ft)	403	51	8	99	206	5
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	2199	1111	353	2773	669	599
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.35	0.03	0.20	0.32	0.00

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 89.1
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 12.0 Intersection LOS: B
Intersection Capacity Utilization 53.6% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: US 441 & NW 43rd Street

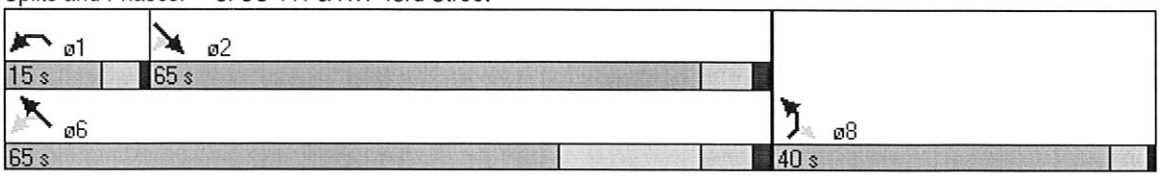


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	660	361	23	1080	378	8
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.313		0.950	
Satd. Flow (perm)	3374	1509	556	3374	1687	1509
Satd. Flow (RTOR)		392				9
Lane Group Flow (vph)	717	392	25	1174	411	9
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.2	58.2	67.4	64.8	29.8	29.8
Actuated g/C Ratio	0.54	0.54	0.63	0.60	0.28	0.28
v/c Ratio	0.39	0.39	0.06	0.58	0.88	0.02
Control Delay	16.8	2.9	9.0	14.8	58.1	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.8	2.9	9.0	14.8	58.1	15.4
LOS	B	A	A	B	E	B
Approach Delay	11.9			14.7	57.2	
Approach LOS	B			B	E	
Queue Length 50th (ft)	175	0	7	267	287	0
Queue Length 95th (ft)	227	50	18	336	#446	12
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	1830	998	456	2308	557	504
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.39	0.39	0.05	0.51	0.74	0.02

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 107.3
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 20.1 Intersection LOS: C
Intersection Capacity Utilization 61.2% ICU Level of Service B
Analysis Period (min) 15
\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: US 441 & NW 43rd Street

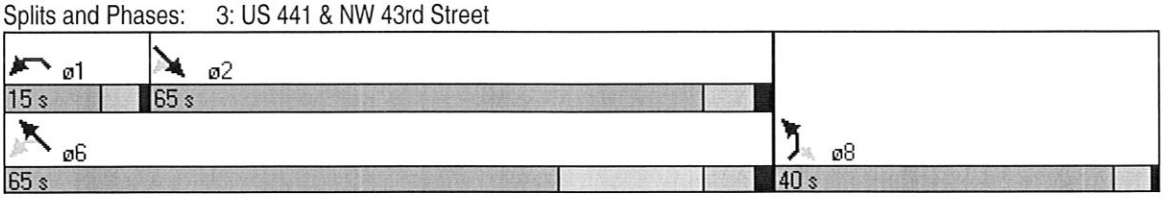


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1186	362	11	447	180	1
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.153		0.950	
Satd. Flow (perm)	3374	1509	272	3374	1687	1509
Satd. Flow (RTOR)		367				1
Lane Group Flow (vph)	1289	393	12	486	196	1
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.0	58.0	62.5	60.0	15.4	15.4
Actuated g/C Ratio	0.66	0.66	0.71	0.68	0.18	0.18
v/c Ratio	0.58	0.35	0.04	0.21	0.66	0.00
Control Delay	11.1	2.3	5.0	5.9	45.8	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.1	2.3	5.0	5.9	45.8	24.0
LOS	B	A	A	A	D	C
Approach Delay	9.1			5.9	45.7	
Approach LOS	A			A	D	
Queue Length 50th (ft)	164	4	2	44	99	0
Queue Length 95th (ft)	398	52	8	83	191	5
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	2224	1120	355	2804	677	606
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.35	0.03	0.17	0.29	0.00

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 88
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 11.4 Intersection LOS: B
Intersection Capacity Utilization 53.2% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: US 441 & NW 43rd Street

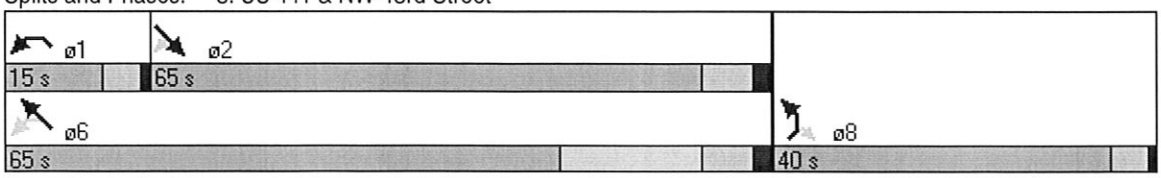


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	611	348	23	1095	383	8
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.337		0.950	
Satd. Flow (perm)	3374	1509	598	3374	1687	1509
Satd. Flow (RTOR)		378				9
Lane Group Flow (vph)	664	378	25	1190	416	9
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.2	58.2	67.4	64.8	30.1	30.1
Actuated g/C Ratio	0.54	0.54	0.63	0.60	0.28	0.28
v/c Ratio	0.36	0.38	0.06	0.59	0.88	0.02
Control Delay	16.6	2.9	9.0	15.1	58.5	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.6	2.9	9.0	15.1	58.5	15.4
LOS	B	A	A	B	E	B
Approach Delay	11.6			15.0	57.6	
Approach LOS	B			B	E	
Queue Length 50th (ft)	161	0	7	276	291	0
Queue Length 95th (ft)	208	49	18	343	#456	12
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	1825	990	477	2301	556	503
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.36	0.38	0.05	0.52	0.75	0.02

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 107.6
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 20.4 Intersection LOS: C
Intersection Capacity Utilization 61.9% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: US 441 & NW 43rd Street

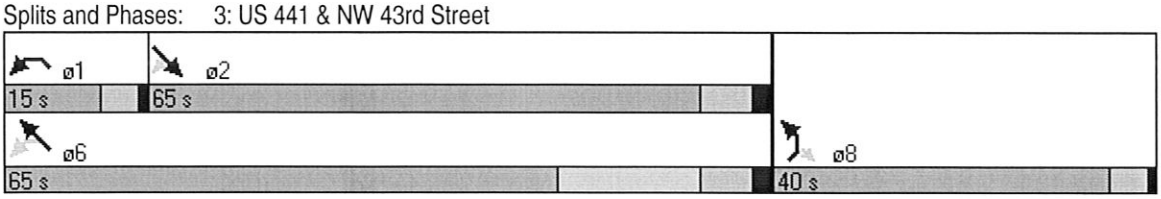


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	1191	363	11	460	182	1
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.151		0.950	
Satd. Flow (perm)	3374	1509	268	3374	1687	1509
Satd. Flow (RTOR)		367				1
Lane Group Flow (vph)	1295	395	12	500	198	1
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.1	58.1	62.6	60.1	15.5	15.5
Actuated g/C Ratio	0.66	0.66	0.71	0.68	0.18	0.18
v/c Ratio	0.58	0.35	0.04	0.22	0.67	0.00
Control Delay	11.2	2.4	5.0	6.0	45.8	24.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	11.2	2.4	5.0	6.0	45.8	24.0
LOS	B	A	A	A	D	C
Approach Delay	9.2			5.9	45.7	
Approach LOS	A			A	D	
Queue Length 50th (ft)	165	4	2	46	100	0
Queue Length 95th (ft)	403	52	8	87	193	5
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	2221	1119	352	2863	676	605
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.58	0.35	0.03	0.17	0.29	0.00

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 88.2
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 11.5 Intersection LOS: B
Intersection Capacity Utilization 53.4% ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 3: US 441 & NW 43rd Street

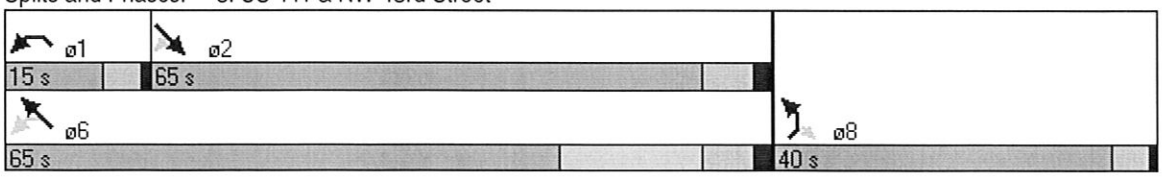


Lane Group	SET	SER	NWL	NWT	NEL	NER
Lane Configurations						
Volume (vph)	624	350	23	1100	384	8
Satd. Flow (prot)	3374	1509	1687	3374	1687	1509
Flt Permitted			0.330		0.950	
Satd. Flow (perm)	3374	1509	586	3374	1687	1509
Satd. Flow (RTOR)		380				9
Lane Group Flow (vph)	678	380	25	1196	417	9
Turn Type		Perm	pm+pt			Perm
Protected Phases	2		1	6	8	
Permitted Phases		2	6			8
Total Split (s)	65.0	65.0	15.0	65.0	40.0	40.0
Total Lost Time (s)	7.5	7.5	5.0	7.5	5.0	5.0
Act Effct Green (s)	58.2	58.2	67.4	64.9	30.2	30.2
Actuated g/C Ratio	0.54	0.54	0.63	0.60	0.28	0.28
v/c Ratio	0.37	0.38	0.06	0.59	0.88	0.02
Control Delay	16.7	2.9	9.0	15.2	58.6	15.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	16.7	2.9	9.0	15.2	58.6	15.4
LOS	B	A	A	B	E	B
Approach Delay	11.7			15.0	57.7	
Approach LOS	B			B	E	
Queue Length 50th (ft)	165	0	7	279	292	0
Queue Length 95th (ft)	213	49	18	345	#457	12
Internal Link Dist (ft)	584			665	989	
Turn Bay Length (ft)		250	450		225	
Base Capacity (vph)	1824	990	470	2299	555	502
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.37	0.38	0.05	0.52	0.75	0.02

Intersection Summary

Cycle Length: 120
Actuated Cycle Length: 107.7
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 20.5 Intersection LOS: C
Intersection Capacity Utilization 62.1% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: US 441 & NW 43rd Street



APPENDIX 10.7.2

GEOHYDROLOGY

APPENDIX 10.7.2.1

REGIONAL LITHOLOGIC LOGS

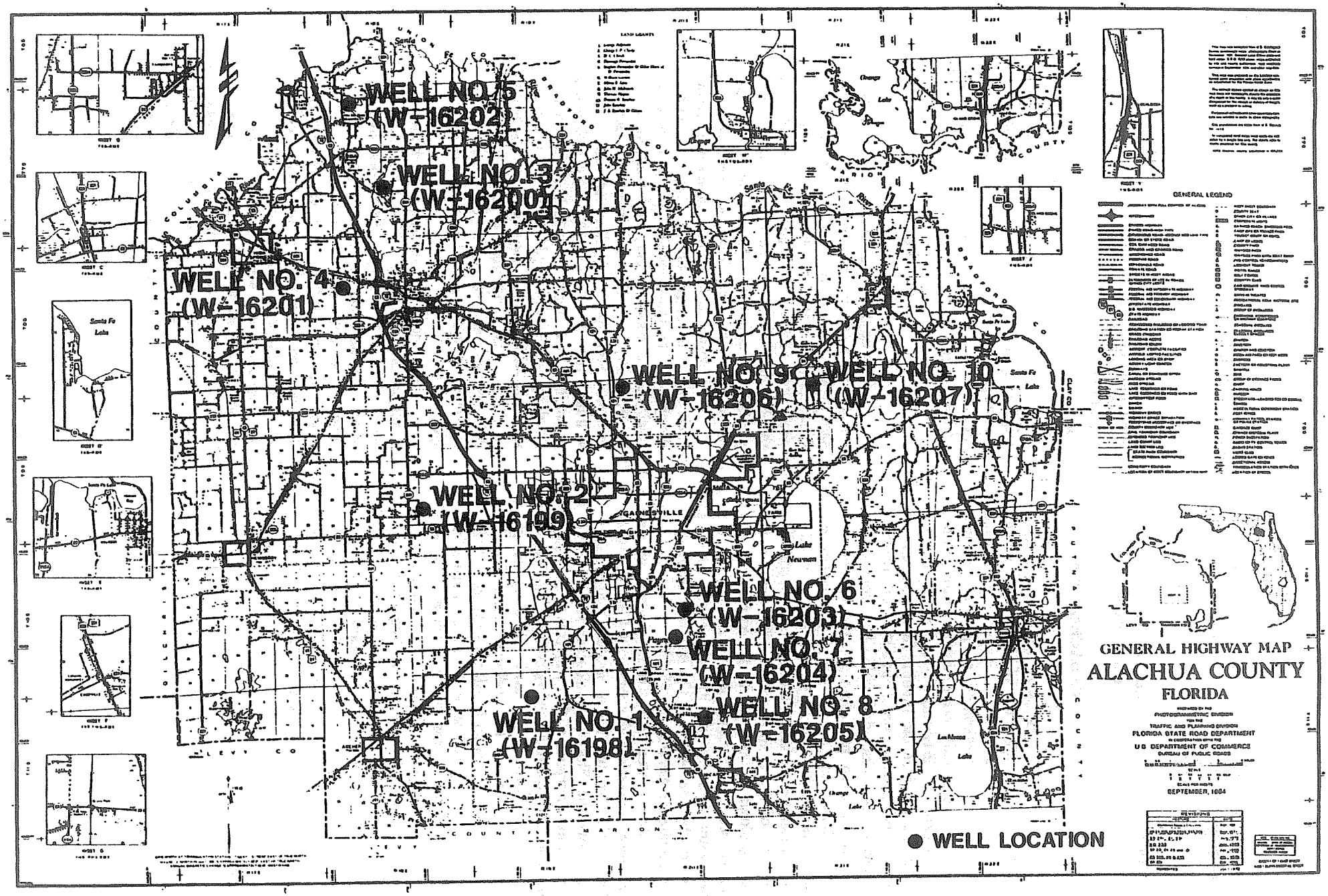


Figure 1: Core location map.

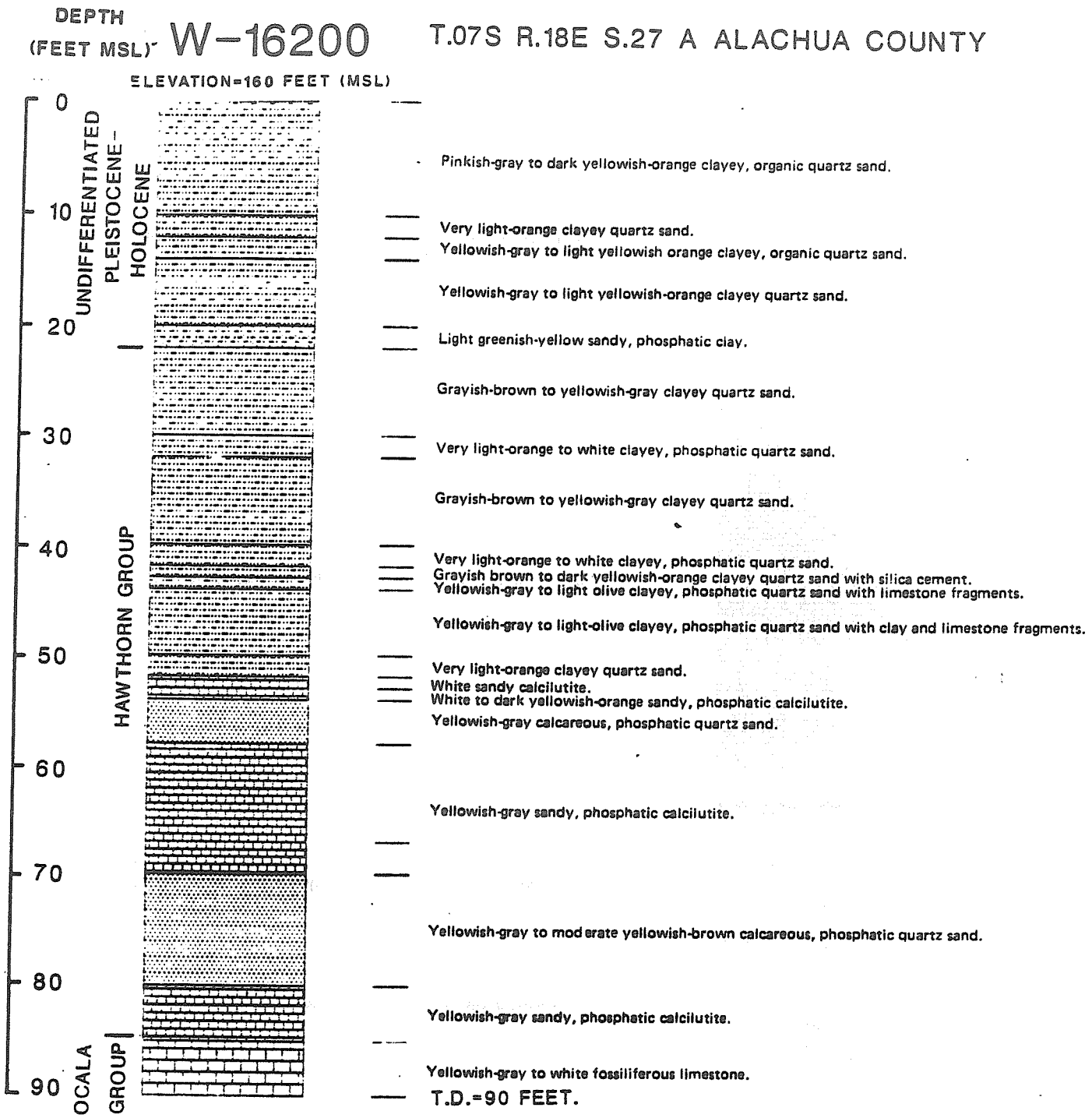


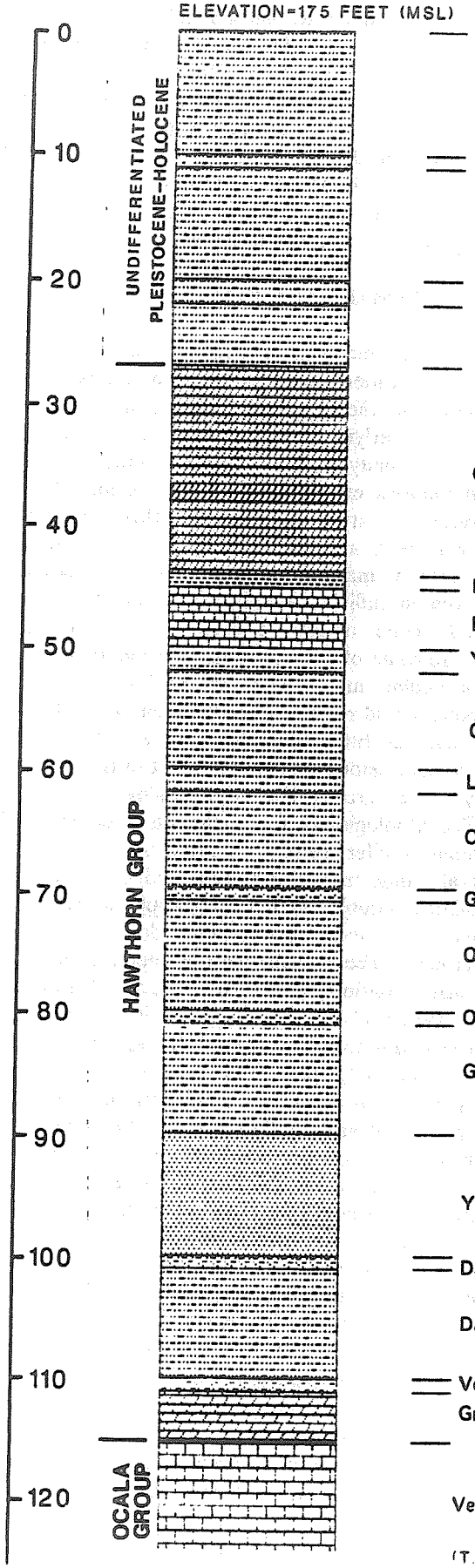
Figure 5: Columnar section for well #3 (W-16200).

DEPTH
(FEET MSL)

W-16206

ELEVATION=175 FEET (MSL)

T.09S R.20E S.06 ALACHUA COUNTY



Grayish-brown to moderate reddish-orange clayey, organic, quartz sand.

Light olive-gray clayey quartz sand.

Grayish-brown clayey, organic quartz sand.

Light olive-gray clayey quartz sand.

Grayish brown to moderate yellowish-brown clayey, phosphatic quartz sand.

Grayish brown to yellowish-gray sandy, clayey, phosphatic dolosilt.

Light olive-gray to yellowish gray sandy, dolomitic clay.

Light olive-gray sandy, clayey, phosphatic calcilutite.

Yellowish-gray clayey, phosphatic, dolomitic quartz sand.

Olive-gray clayey, phosphatic quartz sand with chert fragments.

Light olive-gray clayey, phosphatic quartz sand

Olive-gray to light olive gray clayey, phosphatic quartz sand.

Grayish orange to moderate yellowish-brown sandy, phosphatic clay.

Olive gray clayey, calcilutitic, phosphatic quartz sand.

Olive-gray sandy clay.

Grayish-brown calcilutitic, clayey, phosphatic quartz sand.

Yellowish-gray calcilutitic, phosphatic quartz sand with limestone fragments.

Dark greenish-gray calcilutitic, sandy clay.

Dark yellowish-brown clayey, phosphatic quartz sand with limestone fragments.

Very light-orange to light olive-gray sandy, calcilutitic, phosphatic clay.

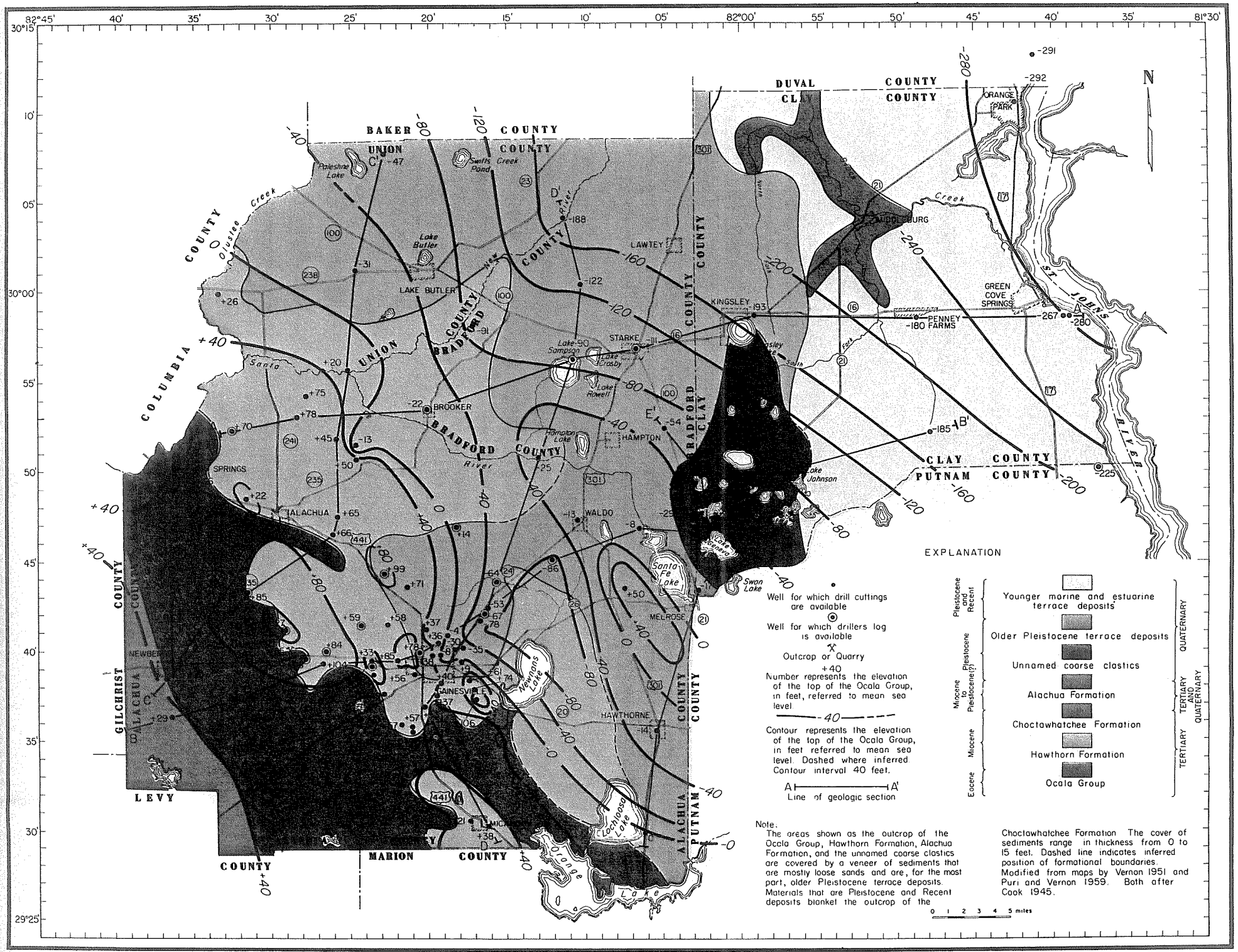
Grayish-brown sandy, phosphatic dolomite.

Very light-orange fossiliferous calcilutite.

(T.D.=125 FEET)

APPENDIX 10.7.2.2

REGIONAL GEOLOGIC MAP AND CROSS-SECTIONS



Note.
The areas shown as the outcrop of the Ocala Group, Hawthorn Formation, Alachua Formation, and the unnamed coarse clastics are covered by a veneer of sediments that are mostly loose sands and are, for the most part, older Pleistocene terrace deposits. Materials that are Pleistocene and Recent deposits blanket the outcrop of the Choctawhatchee Formation. The cover of sediments range in thickness from 0 to 15 feet. Dashed line indicates inferred position of formational boundaries. Modified from maps by Vernon 1951 and Puri and Vernon 1959. Both after Cook 1945.

Base taken from U S G S topographic quadrangles and Florida State Road Department maps

Figure 4. Generalized geologic map of Alachua, Bradford, Clay and Union

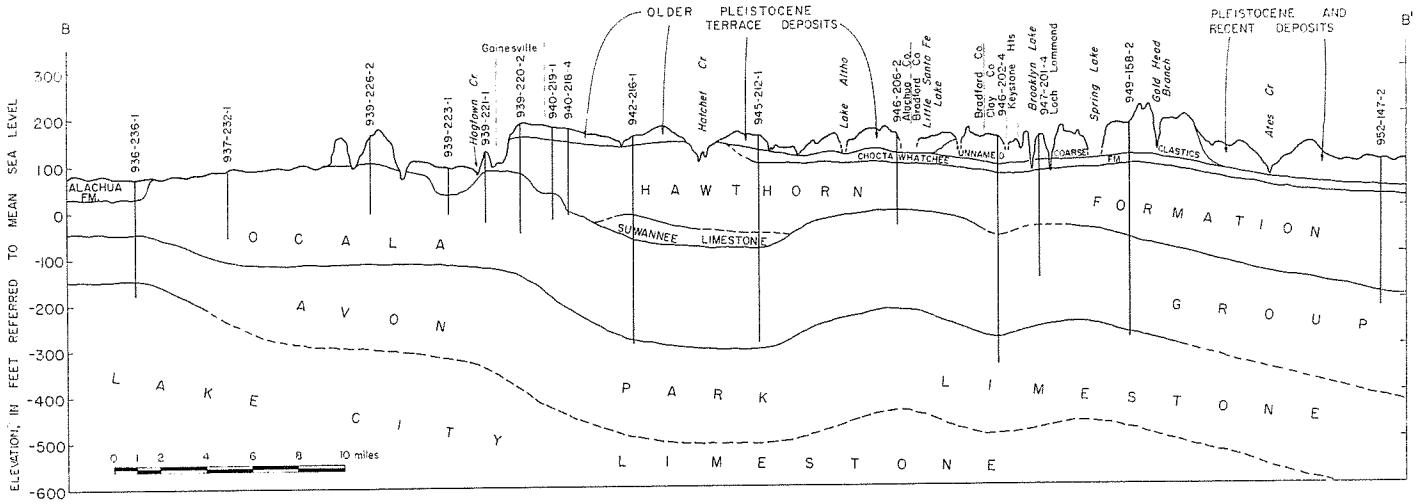


Figure 6. West-east geologic section in Alachua, Bradford, and Clay counties, Florida, along line B-B′ in figure 4.

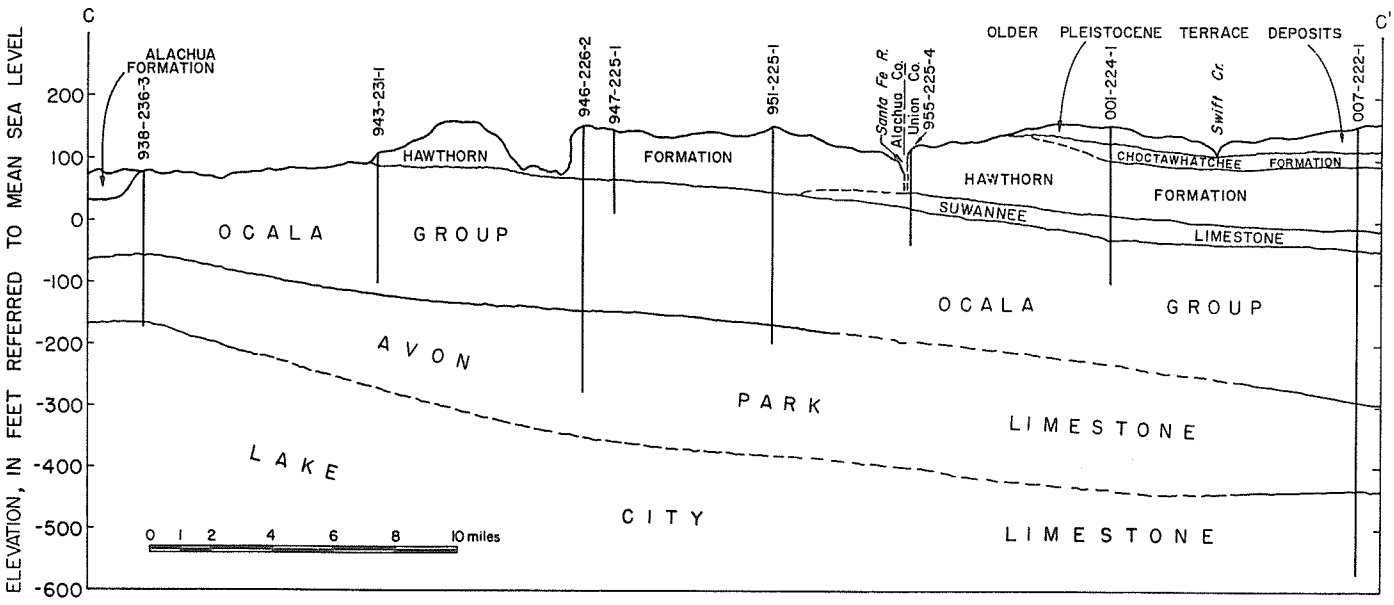


Figure 7. Southwest-northeast geologic section in Alachua and Union counties, Florida along line C-C′ in figure 4.

APPENDIX 10.7.2.3

DEEP WELL LITHOLOGY AND STRATIGRAPHY IN THE SITE AREA

Table 2.4-1 Description of Geologic Units Encountered During Drilling of Test-Injection Well and Shallow Borings

ERA	System	Series	Formation	Approximate Depth and (Thickness)	Description
CENOZOIC	Quaternary	Pleistocene	Alachua	0 (8')	Sand and clayey sand, gray, brown and black, disseminated organic matter.
		Pliocene	Bone Valley	8' (9')	Sand, white to yellow, clayey sands, varicolored clays and phosphate grains and pebbles.
		Miocene	Hawthorn	17' (93')	Clay and sandy clay, white to tan interbedded lenses of sandstone, siltsone, and sandy phosphatic limestone, firm.
	Tertiary	Eocene	Ocala Group	110' (220')	Limestone, white to tan, gray, moderately indurated, porosity - moldic, vugular, micrite cement, fossiliferous, heterostegina.
			Avon Park Limestone	330' (185')	Limestone, dolomitic, microcrystalline to very fine, tan to dark brown, moderate to well indurated, porosity - solution channel, vugular; interbedded limestone buff to cream, porosity - vugular, saccharoidal, moderate induration.
			Lake City Limestone	515' (505')	Limestone, dolomitic, microcystalline to fine, euhedral, subhedral, cream to brown, porosity - moldic, moderate to well indurated; interbedded dolostone, microcrystalline to fine, euhedral, light brown to drak brown, porosity - vugular, well indurated; interbedded lignite, fractured, pasty.
			Oldsmar Limestone	1020' (530')	Dolostone, cryptocrystalline to medium, euhedral, subhedral, light tan to drak brown, porosity - intercrystalline, pin-point vug, calcite cavity filling, moderate to well indurated; interbedded limestone, white to gray, light tan, porosity - moldic, vugular, poor to moderate induration, cavity filling micrite.
		Palecene	Cedar Keys Formation	1550' (445')	Dolostone, microcrystalline, cream to gray, euhedral, subhedral, porosity - intercrystalline, vugs filled by gypsum, trace anhydrite; interbedded anhydrite oolitic limestone, poor to moderate induration.
MESOZOIC	Cretaceous	Gulf	Lawson Limestone	1995' (180')	Limestone, dolomitic, very fine to medium, euhedral, subhedral, white to tan, chalky, pasty, porosity intergranular, poor to moderate induration, gypsum impregnations throughout. Upper zone coquinoid.

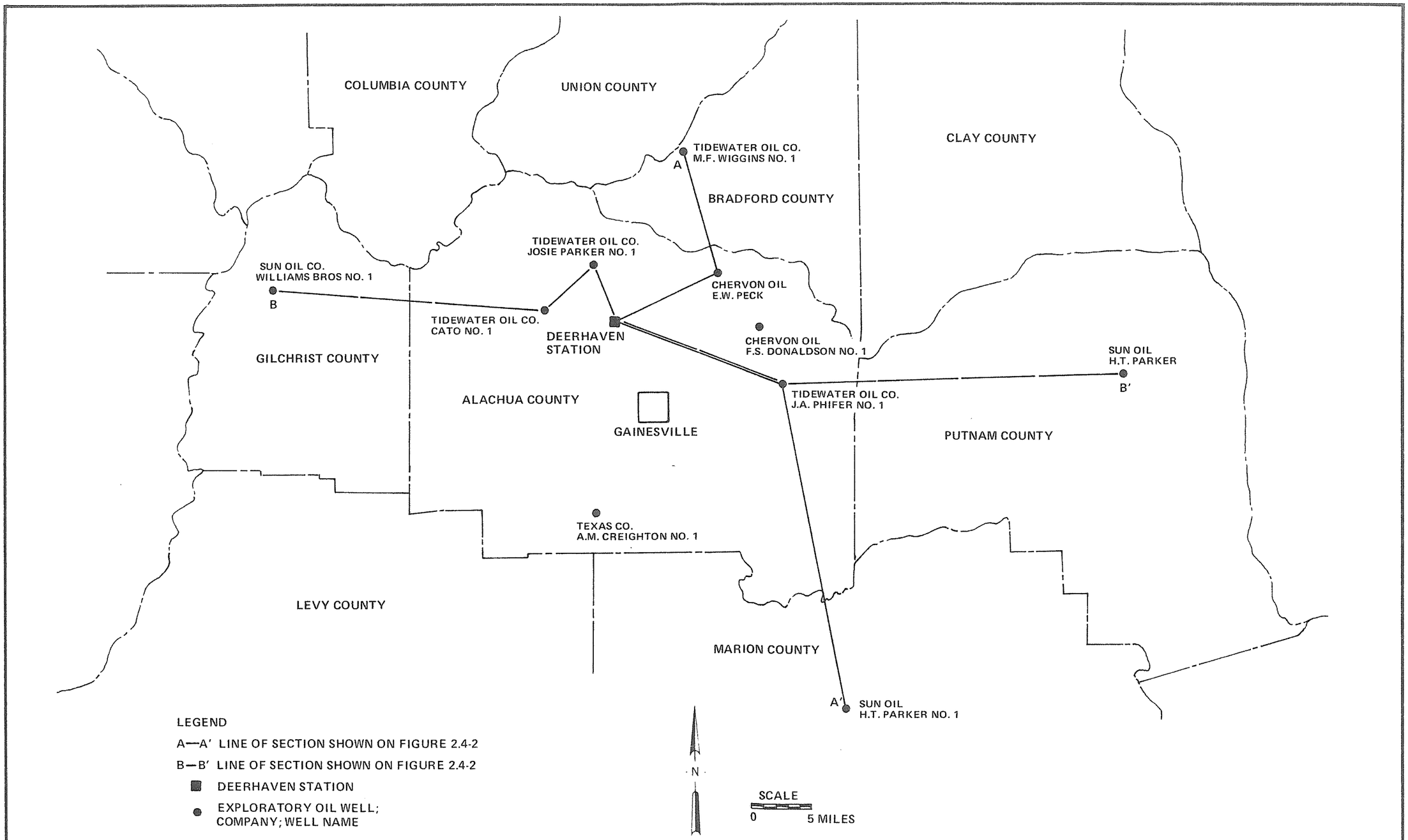


FIGURE 2.4-1 DEEP EXPLORATORY WELLS IN ALACHUA COUNTY AREA.

Table 2.4-1 Description of Geologic Units Encountered During Drilling of Test-Injection Well and Shallow Borings (continued)

ERA	System	Series	Formation	Approximate Depth and (Thickness)	Description
MESOZOIC	Cretaceous	Gulf	Taylor Beds	2225' (500')	White to cream chalky limestone separated by thin beds and seams of tan, crystalline dolomite, gray marl.
			Austin Beds	2725' (400')	Marly shales; fine-grained, argillaceous sandstones; sandy, micaceous clay; and some limestone.
			Eagle Ford Shale	3125' (100')	Sandy, dense, hard, shaly limestone interbedded with thin seams of sandstone and flecks of lignite; poorly sorted, slightly calcareous sandstone; blocky, micaceous shale.
	Tertiary	Gulf	Woodbine Sandstone	3225'	Micaceous, calcareous sand overlying calcareous shale and shaly limestone with lignite and gypsum; irregularly interbedded in the shale are a quartz sandstone with thin shale partings and a coarse sand and gravel conglomerate.
		Comanche		3275' (50')	Red, green, and brown clastics, largely shales and sandstones. The base is a coarse sand containing pebbles of Paleozic sediments.
	Triassic			3325'	Quartz diabase and igneous intrusives.
PALEOZIC	Lower Devonian or Upper Silurian ...?...?...?... Lower Rodovician				Quartzitic sandstones and black, micaceous shales; slightly fossiliferous.

NOTE: Data on the Alachua through Lawson Limestone foundations are as found from the pilot program for deep injection well.

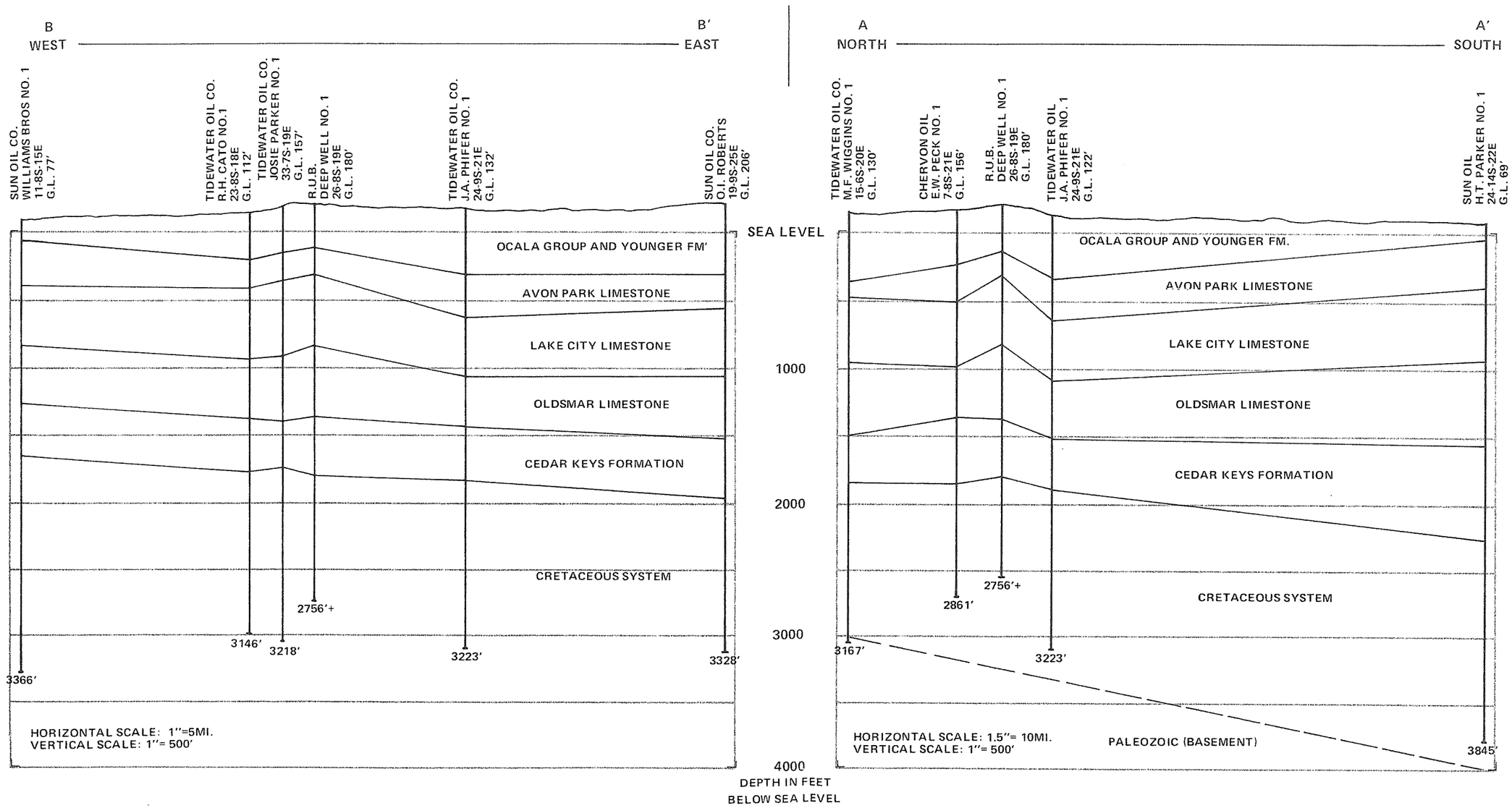


FIGURE 2.4-2 GEOLOGICAL CROSS-SECTIONS ALONG LINES A-A' AND B-B' PRESENTED IN FIGURE 2.4-1.

APPENDIX 10.7.2.4

SHALLOW STRATIGRAPHY AT THE GRU DGS PROPERTY

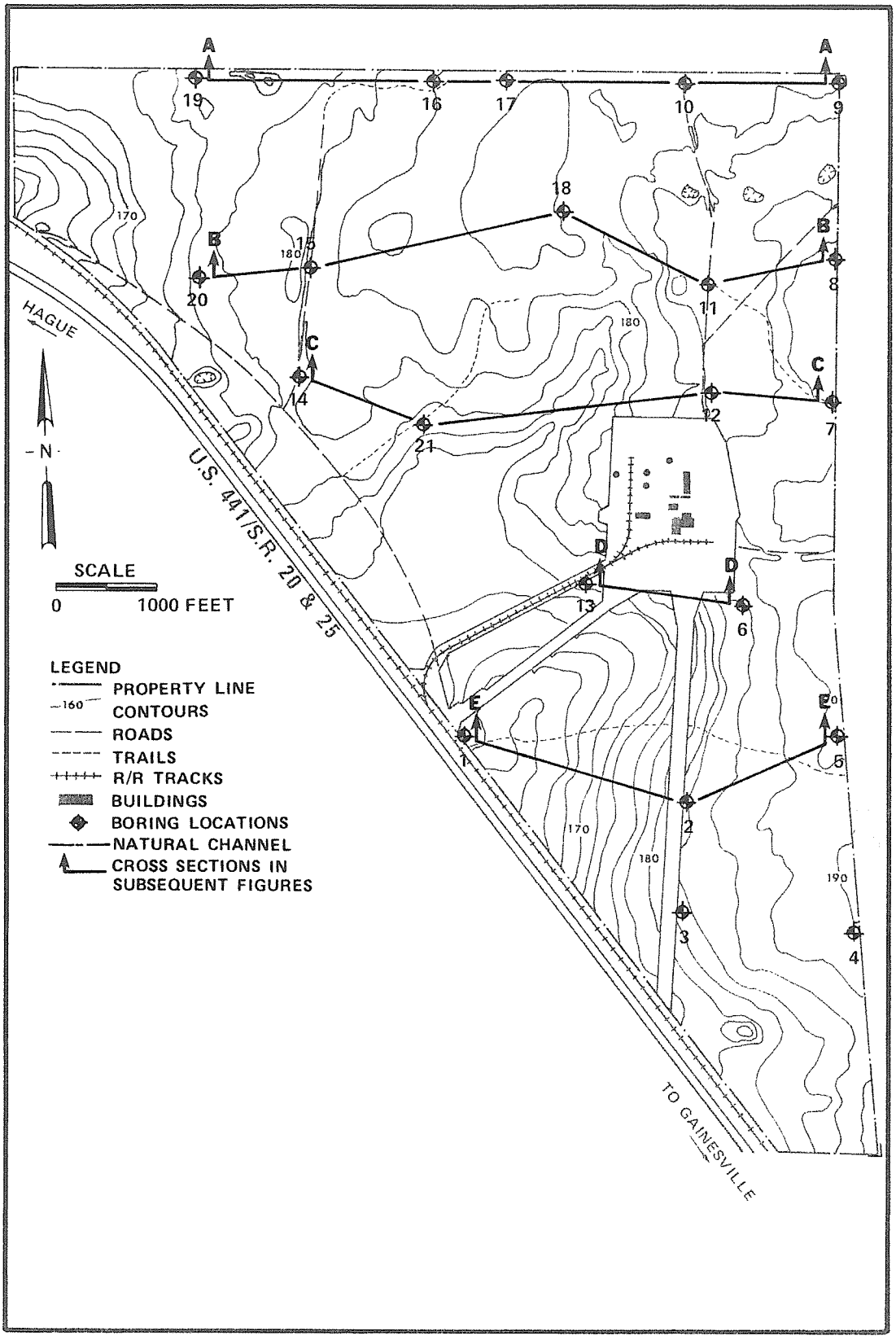


FIGURE 2.4-6 DEERHAVEN SITE BORING LOCATIONS.

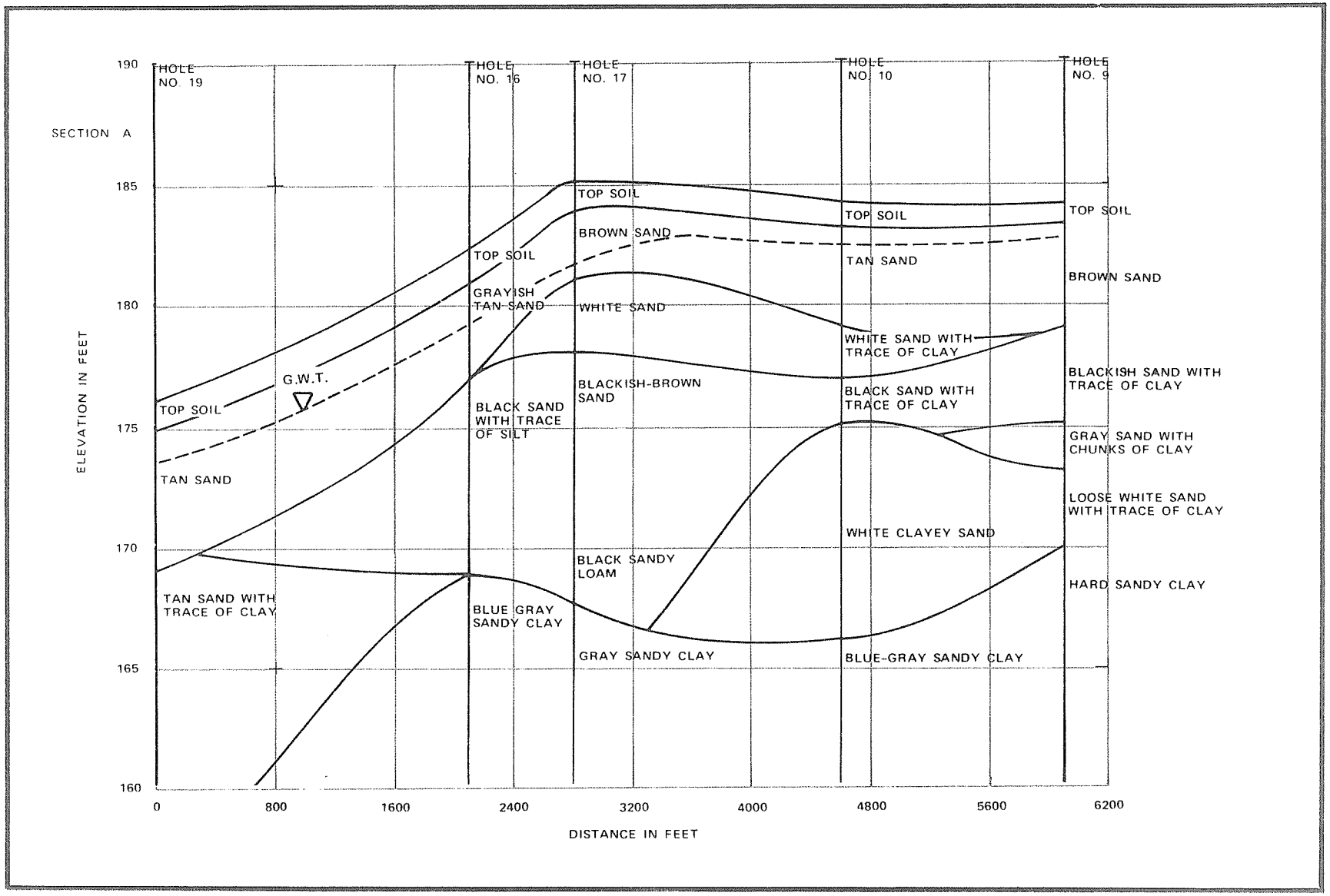


FIGURE 2.4-7 INFERRED STRATIFICATION IN SELECTED CROSS-SECTIONS OF DEERHAVEN SITE.

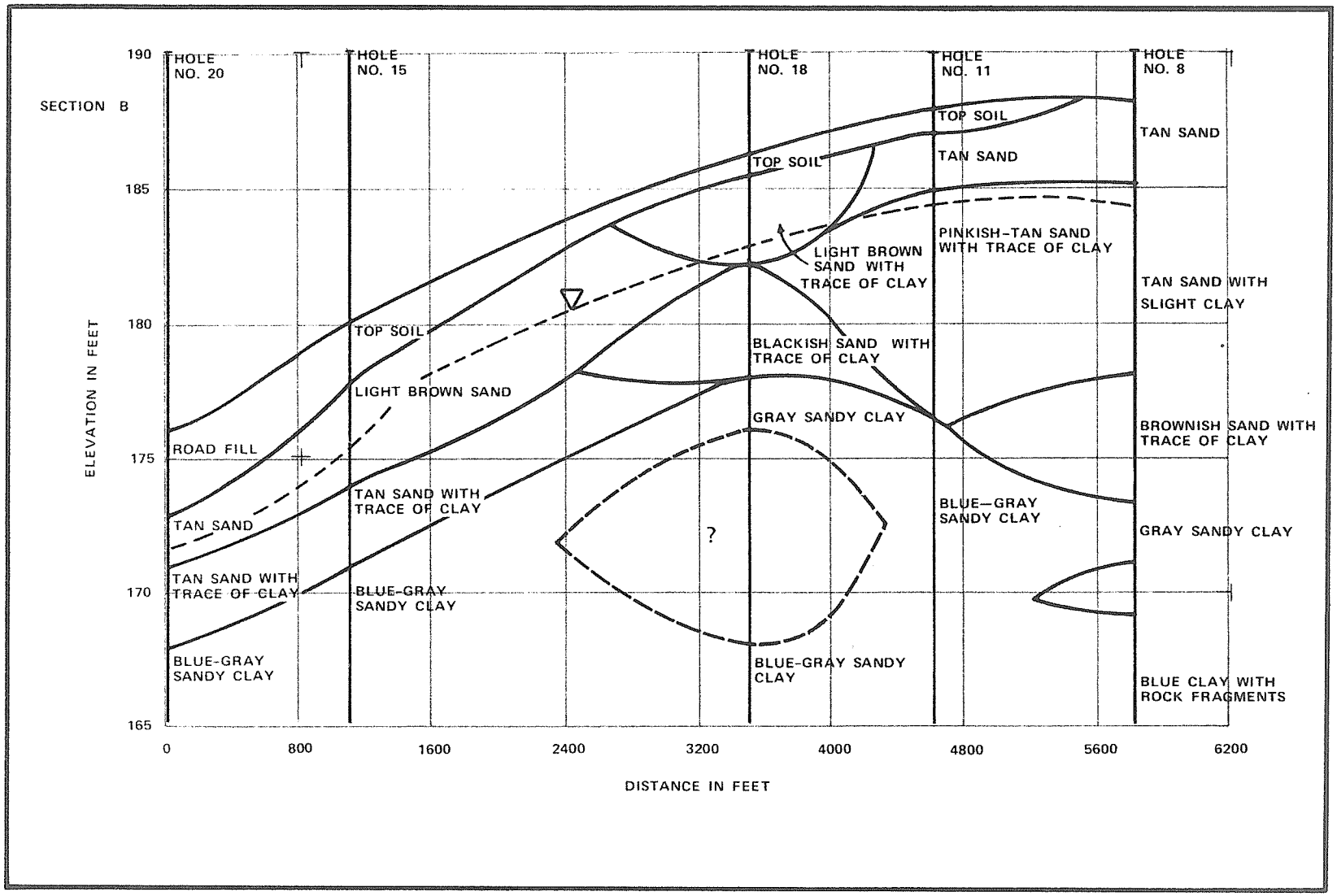


FIGURE 2.4-8 INFERRED STRATIFICATION IN SELECTED CROSS-SECTIONS OF DEERHAVEN SITE.

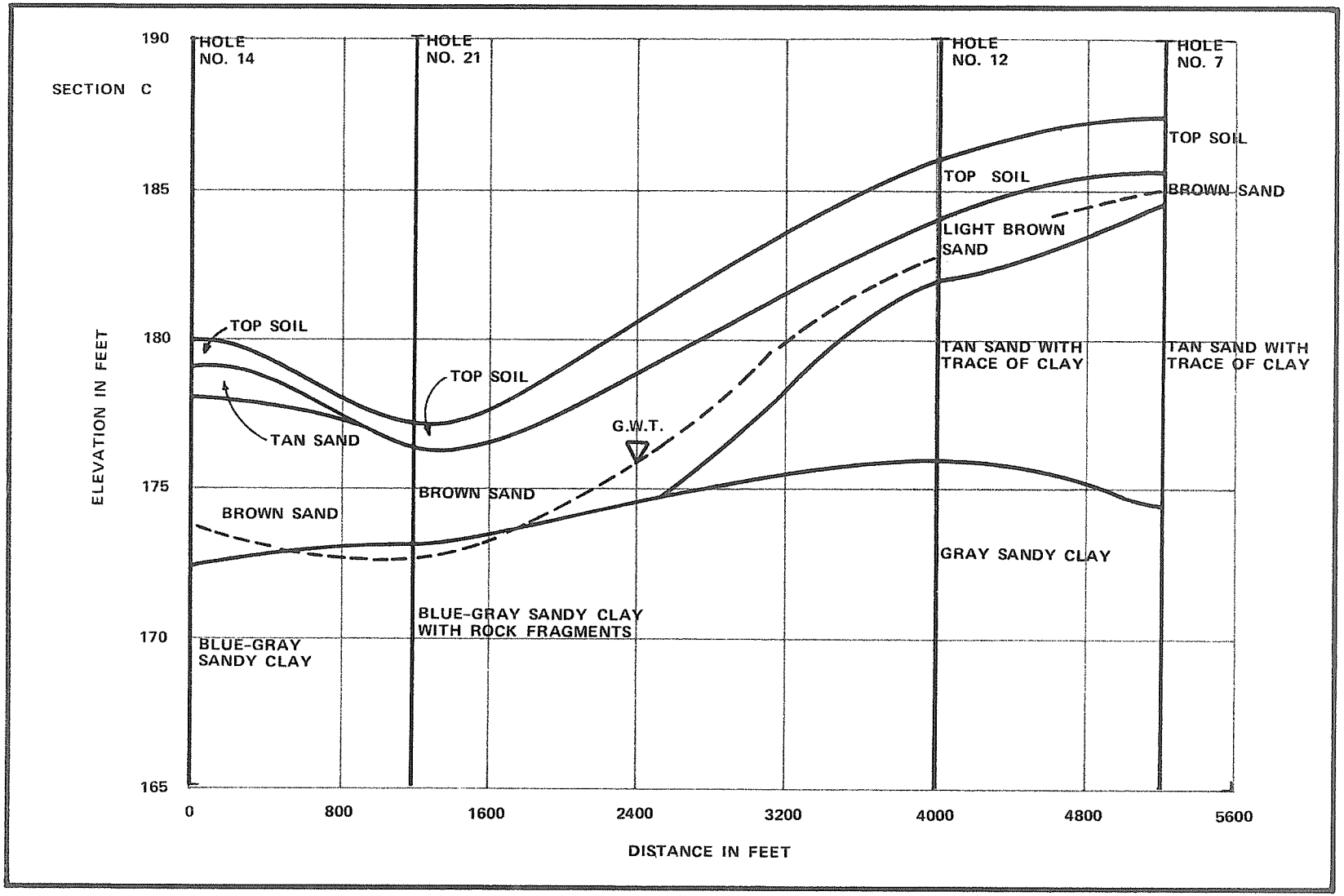


FIGURE 2.4-9 INFERRED STRATIFICATION IN SELECTED CROSS-SECTIONS OF DEERHAVEN SITE.

APPENDIX 10.7.2.5

GEOLOGIC STRUCTURE OF FLORIDA

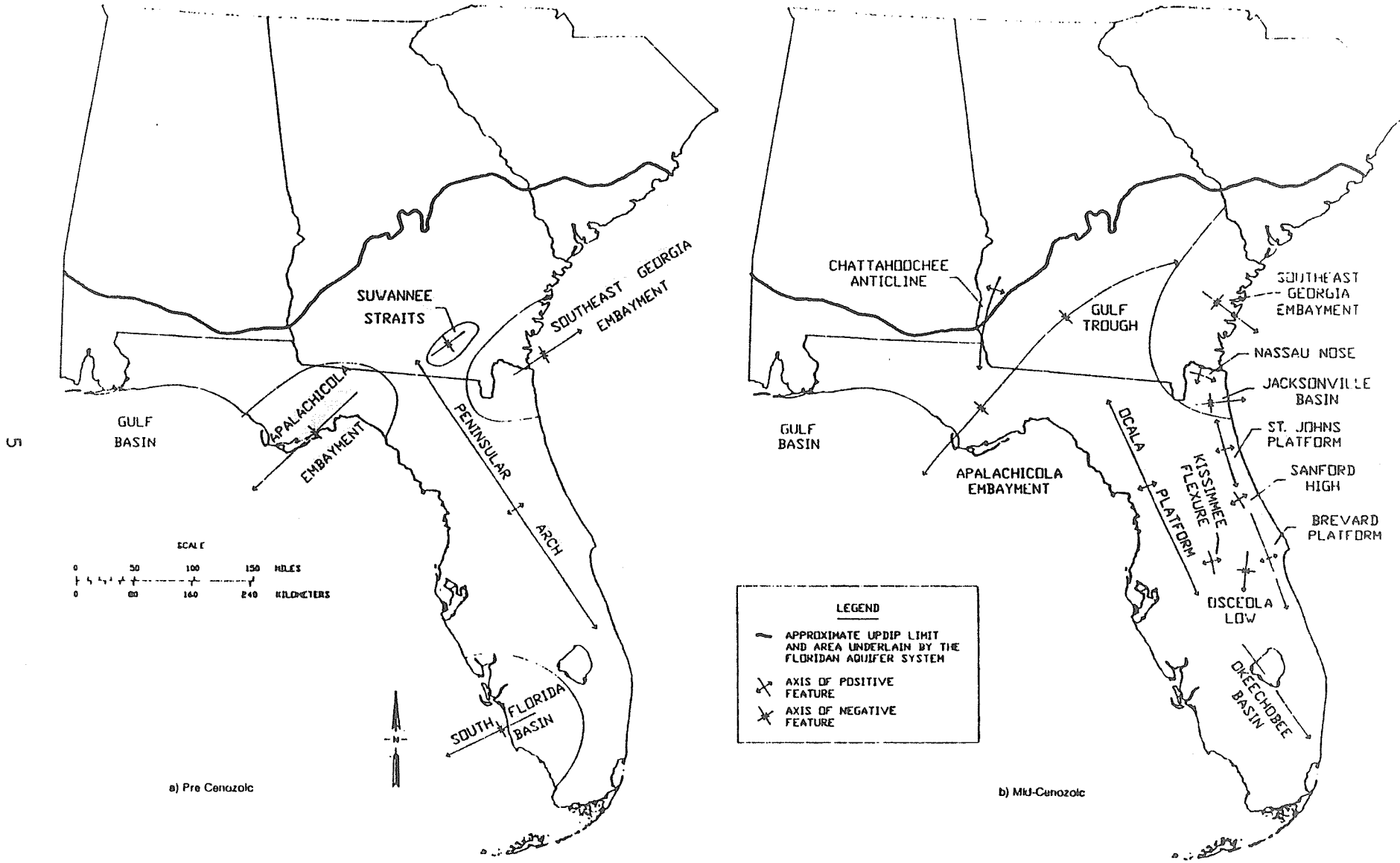


Figure 2. Structural Features of Florida
a) Pre-Cenozoic
b) Mid-Cenozoic

APPENDIX 10.7.2.6

LITHOLOGY FROM WELLS ON GRU DGS PROPERTY

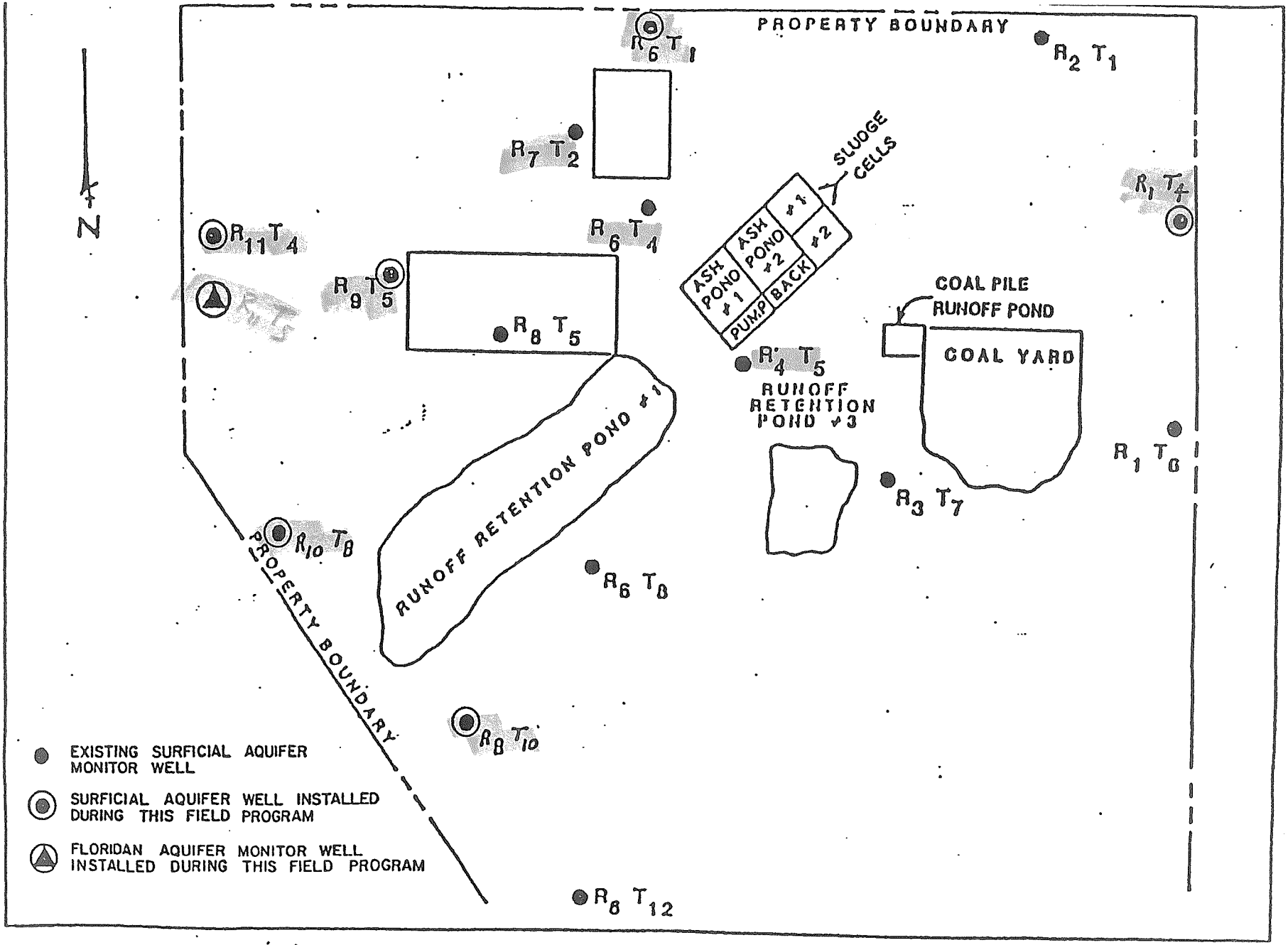


Figure A-1. Well Site Locations.

SUWANNEE RIVER
WATER MANAGEMENT DISTRICT
WELL COMPLETION REPORT

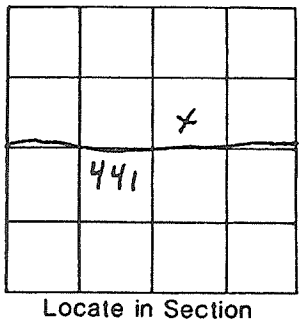
PERMIT # 47025

Owner	Address	City	State	Zip
Gainsville Regional utilities	P.O. Box 147117	Gainsville	Fla	32614

Contractor Signature	License #	Completion Date	Casing Depth	Total Depth
Michael C. Rice	2091	7-7-93	2	12

Type of work: Construct ✓ Repair ___ Abandon ___
Well Use: Private ___ Public ___ Monitor ✓ Irrigation ___
Industrial ___ Other ___
Method: Rotary ___ Cable Tool ___ Jet ___ Combination ___
Other Auger
Casing: Black Steel ___ Galvanized ___ PVC ✓ Other ___
Bags of Grout 1 Interval Grouted 0 Ft. to 12" Ft.
Static Water Level 2 Ft. below Top of Casing
Pumping Water Level ___ Ft. after ___ Hrs. at ___ GPM
Pump Size ___ H.P. Capacity ___ GPM

LOCATION
Located Near Deer Haven
441 Gainsville
County Alachua
27 8S 19E
1/4 1/4 Section Township Range
Subdivision Lot #
Latitude - Longitude



Locate in Section

Grout Thickness & Depth	Casing Diam.	Casing Depth	Depth (ft.) From	Depth (ft.) To	Examine cuttings at 20 ft. or smaller intervals and at changes. Give color, grain-size and type of material. Note any cavities. Indicate producing zones. Attach additional sheets if necessary.
9"x12"	2"	2'	0	3	Clay & Sand Gray
			3	6	Brown Sand
			6	10	Tan Sandy Clay
			10	12	Gray Clay
					20/30 Sand
					Grout
					# 4

Jerry McDonald
Driller's Signature Registration #

R4TS

SUWANNEE RIVER
WATER MANAGEMENT DISTRICT
WELL COMPLETION REPORT

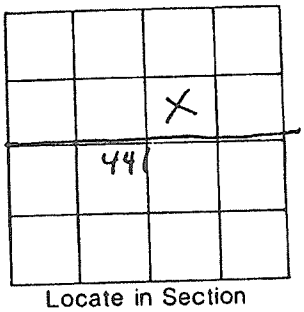
PERMIT # 47026

Gainsville Regional Utilities | P.O. Box 147117 | Gainsville | Flg | 32614
Owner | Address | City | State | Zip

Michael C. Rice | 7091 | 7-7-93 | 3' | 13'
Contractor Signature | License # | Completion Date | Casing Depth | Total Depth

Type of work: Construct ✓ Repair ___ Abandon ___
Well Use: Private ___ Public ___ Monitor ✓ Irrigation ___
Industrial ___ Other ___
Method: Rotary ___ Cable Tool ___ Jet ___ Combination ___
Other Auger
Casing: Black Steel ___ Galvanized ___ PVC ✓ Other ___
Bags of Grout 1 Interval Grouted 0 Ft. to 2' Ft.
Static Water Level 2' Ft. below Top of Casing
Pumping Water Level ___ Ft. after ___ Hrs. at ___ GPM
Pump Size ___ H.P. Capacity ___ GPM

LOCATION
Located Near Deer Haven
441 Gainsville
County Alachua
27 8S 19E
1/4 1/4 Section Township Range
Subdivision Lot #
Latitude - Longitude



Locate in Section

Grout Thickness & Depth	Casing Diam.	Casing Depth	Depth (ft.) From	Depth (ft.) To	Examine cuttings at 20 ft. or smaller intervals and at changes. Give color, grain-size and type of material. Note any cavities. Indicate producing zones. Attach additional sheets if necessary.
8"x2'	2"	3'	0	2	Clay & Sand Gray
			2	7	Brown Sand
			7	13	Gray Sandy clay
					20/30 Sand
					Grout
					#5

Jennifer McDonald
Driller's Signature | Registration #

RLTH

SUWANNEE RIVER
WATER MANAGEMENT DISTRICT
WELL COMPLETION REPORT

PERMIT # 47027

Gainsville Regional Utilities P.O. Box 147117 Gainsville Fla. 32614
Owner Address City State Zip

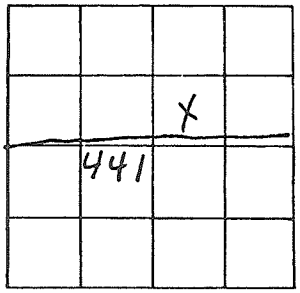
Michael C. Lee 2091 7-7-93 3' 8'
Contractor Signature License # Completion Date Casing Depth Total Depth

Type of work: Construct ✓ Repair ___ Abandon ___
Well Use: Private ___ Public ___ Monitor ✓ Irrigation ___
Industrial ___ Other ___
Method: Rotary ___ Cable Tool ___ Jet ___ Combination ___
Other Auger
Casing: Black Steel ___ Galvanized ___ PVC ✓ Other ___
Bags of Grout 1 Interval Grouted 0 Ft. to 2' Ft.
Static Water Level 2' Ft. below Top of Casing
Pumping Water Level ___ Ft. after ___ Hrs. at ___ GPM
Pump Size ___ H.P. Capacity ___ GPM

LOCATION
Located Near Deer Haven
441 Gainsville
County Alachua
27 8S 19E
1/4 1/4 Section Township Range

Subdivision Lot #

Latitude - Longitude



Locate in Section

Grout Thickness & Depth	Casing Diam.	Casing Depth	Depth (ft.) From	Depth (ft.) To	Examine cuttings at 20 ft. or smaller intervals and at changes. Give color, grain-size and type of material. Note any cavities. Indicate producing zones. Attach additional sheets if necessary.
8'x2'	2"	3'	0	2	clay + Sand Tan
			2	6	Brown Sand
			6	8	Tan Sandy clay
					20/30 Sand
					Grout
					#6

Jerry McDonald
Driller's Signature Registration #

R772

TABLE B-1. LITHOLOGIC LOG OF MONITOR WELL R_1T_4

Description	Depth (ft)	Thickness (ft)
Topsoil; black and gray, silty, fine-grained sand.....	0 - 1	1
Sand, fine-grained, tan; roots.....	1 - 2	1
Sand, fine-grained, slightly silty, tan...	2 - 4	2
Sand, fine-grained, slightly silty, gray..	4 - 6	2
Sand, fine to medium-grained, rounded, gray and brown.....	6 - 7	1
Sand, fine-grained, gray	7 - 8	1
Sand, fine to medium-grained, rounded, light to dark brown and gray.....	8 - 10	2
Sand, fine-grained, gray and tan.....	10 - 12	2
Clay, sandy, very stiff, blue-green.....	12 - 14	2

TABLE B-2. LITHOLOGIC LOG OF MONITOR WELL R_6T_1 (B)

Description	Depth (ft)	Thickness (ft)
Top soil; gray, silty, fine-grained sand..	0 - 2	2
Sand, fine-grained, tan.....	2 - 7	5
Sand, fine-grained, clayey, tight, gray...	7 - 8	1
Sand, fine to medium-grained, rounded, brown.....	8 - 10	2
Sand, fine-grained, slightly silty, dark brown.....	10 - 12	2
Sand, fine-grained, dark brown; medium-grained sand	12 - 14	2
Sand, fine-grained, slightly silty, dark brown.....	14 - 15	1
Clay, very sandy, stiff, gray.....	15 - 16	1
Clay, sandy, stiff, blue-green; sphorite.....	16 - 18	2

TABLE B-3. LITHOLOGIC LOG OF MONITOR WELL R_8T_{10}

Description	Depth (ft)	Thickness (ft)
Topsoil; black, fine-grained sand.....	0 - 2	2
Sand, fine-grained, slightly clayey, tan; iron stains.....	2 - 4	2
Sand, fine-grained, brown; 2" lense of gray, clayey sand.....	4 - 6	2
Sand, fine-grained, slightly silty, gray; iron stains.....	6 - 8	2
Sand, fine-grained, gray.....	8 - 9	1
Clay, sandy, stiff, gray.....	9 - 10	1
Sand, fine-grained, slightly silty, gray and tan.....	10 - 11	1
Clay, sandy, stiff, blue-green; limestone fragments.....	11 - 12	1
Clay, sandy, stiff, blue-green; limestone fragments.....	12 - 14	2

TABLE B-4. LITHOLOGIC LOG OF MONITOR WELL R_9T_5 (B)

Description	Depth (ft)	Thickness (ft)
Topsoil; black, fine-grained, silty sand; organics.....	0 - 2	2
Sand, slightly silty, fine to medium-grained, gray.....	2 - 8	6
Sand, fine-grained, white.....	8 - 9	1
Clay, sandy, stiff, gray.....	9 - 10	1
Sand, slightly silty, fine to medium-grained, stiff, gray.....	10 - 12	2
Clay, stiff, slightly sandy, blue-green; phosphorite.....	12 - 14	2

TABLE B-5. LITHOLOGIC LOG OF MONITOR WELL $R_{10}T_8$

Description	Depth (ft)			Thickness (ft)
Topsoil; gray, silty sand.....	0	-	2	2
Sand, clayey, medium-grained, gray.....	2	-	5	3
Sand, silty, fine-grained, tan.....	5	-	6	1
Sand, fine to medium-grained, light brown.	6	-	8	2
Sand, fine-grained, white.....	8	-	11	3
Clay, slightly sandy, hard, light blue-green; very fine-grained phosphorite.....	11	-	12	1

TABLE B-6. LITHOLOGIC LOG OF MONITOR WELL $R_{11}T_4$ (B)

Description	Depth (ft)	Thickness (ft)
Topsoil; black, silty, fine-grained, sand.....	0 - 2	2
Sand, fine-grained, silty, brown.....	2 - 3	1
Sand, fine-grained, slightly silty, gray..	3 - 11.5	8.5
Clay, sandy, stiff, gray.....	11.5 - 12.0	0.5
Sand, fine to medium-grained, white.....	12 - 13	1
Clay, slightly sandy, stiff, blue-green; phosphorite; limestone fragments.....	13 - 14	1

TABLE B-7. LITHOLOGIC LOG OF FLORIDAN AQUIFER MONITOR WELL (R11T5B)

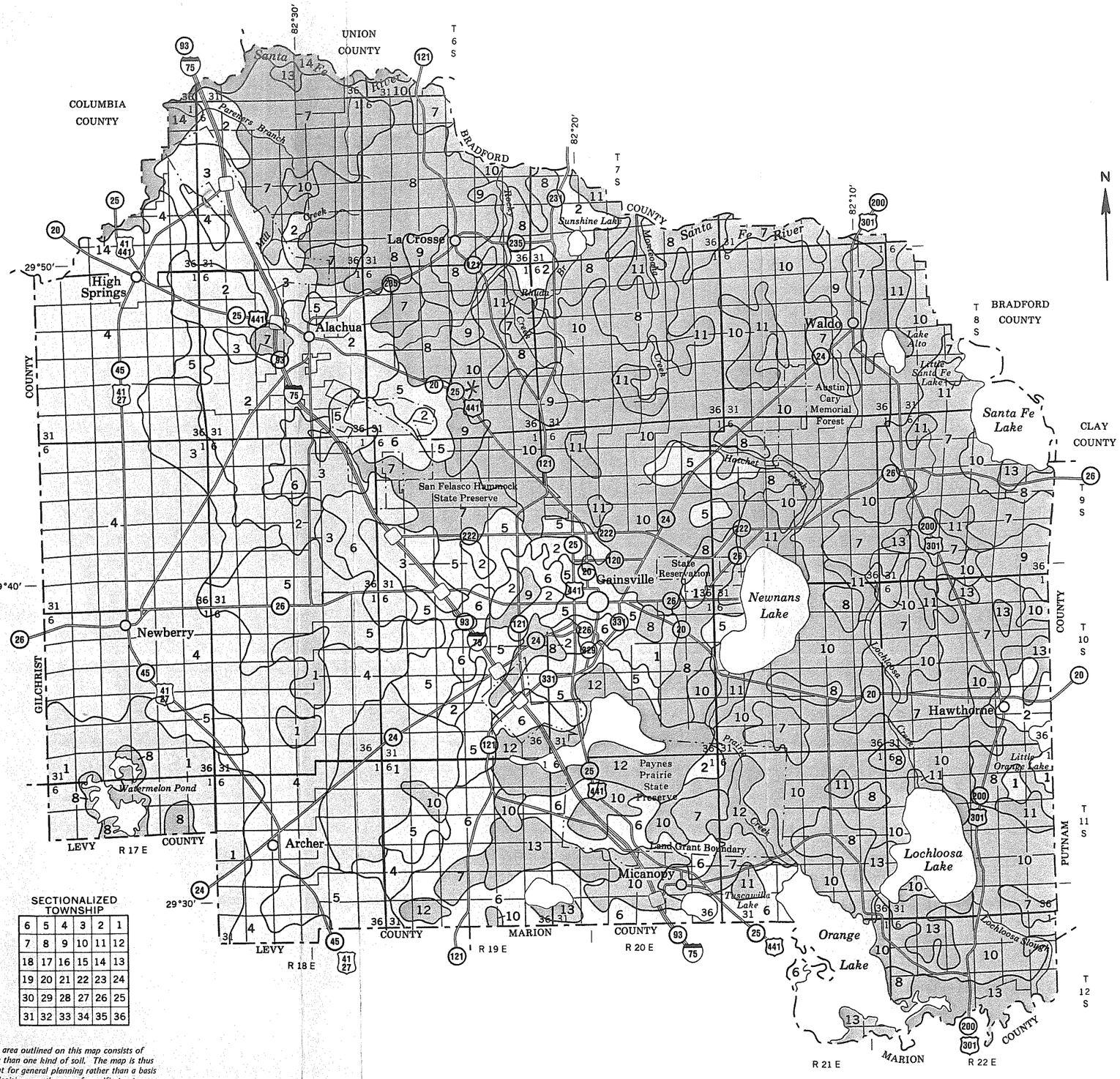
Description	Depth (ft)	Thickness (ft)
Sand, fine-grained, silty, gray and black.	0 - 2	2
Sand, fine-grained, brown.....	2 - 4	2
Sand, fine-grained, tan.....	4 - 6	2
Sand, fine-grained, gray.....	6 - 11	5
Clay, sandy, stiff, gray and blue-green...	11 - 20	9
Clay, slightly sandy, stiff, yellow.....	20 - 25	5
Clay, sandy, yellow.....	25 - 30	5
Clay, sandy, white and yellow.....	30 - 35	5
Clay, sandy, gray and yellow.....	35 - 40	5
Clay, sandy, gray, yellow and blue-green..	40 - 43	3
Clay, sandy, blue-green.....	43 - 48	5
Clay, sandy, blue-green, yellow.....	48 - 53	5
Clay, sandy, blue-green, gray and yellow..	53 - 57	4
Clay, sandy, gray; white limestone fragments.....	57 - 62	5
Clay, slightly sandy, gray to tan; limestone fragments.....	62 - 67	5
Clay, slightly sandy, tan; limestone fragments.....	67 - 72	5
Sand, fine-grained, clayey, tan; limestone fragments.....	72 - 75	3
Sand, fine-grained, slightly clayey, cream; limestone fragments.....	75 - 80	5
Limestone, clayey, sandy, tan; blue-green clay.....	80 - 85	5
Clay, slightly sandy, cream; limestone agments.....	85 - 95	10
Clay, sandy, cream to tan.....	95 - 100	5

TABLE A-7 (Continued)

Dolostone, hard, brown.....	100	- 104	4
Limestone, granular, white; brown, hard, dolostone.....	104	- 110	6
Limestone, clayey, granular, white.....	110	- 115	5
Limestone, slightly clayey, granular, white.....	115	- 120	5
Limestone, granular, moderately hard, white; blue-green and olive-green clay....	120	- 125	5
Limestone, granular, moderately hard, white.....	125	- 130	5
Limestone, granular, moderately hard, white.....	130	- 135	5
Limestone, granular, moderately hard, white; olive-green waxy, clay.....	135	- 145	10
Limestone, granular, moderately hard, white.....	145	- 164	19

APPENDIX 10.7.2.7

LOCAL SOILS MAPS AND CHARACTERISTICS



LEGEND

SOILS ON SAND RIDGES

1 — Candler-Apopka: Nearly level to sloping, excessively drained and well drained soils; some are s have thin lamellae of loamy sand and sandy loam below a depth of 50 inches, and some are san and are loamy below

SOILS ON UPLANDS

2 — Arredondo-Gainesville-Millhopper: Nearly level to sloping, well drained and moderately well dr sandy to a depth of 40 inches or more and are loamy below, and some are sandy to a depth of n

3 — Kendrick-Arredondo-Bonneau: Nearly level to sloping, well drained and moderately well draine a depth of 20 to 40 inches and are loamy below, and some are sandy to a depth of 40 to 80 inch

4 — Arredondo-Jonesville-Lake: Nearly level to gently sloping, well drained and excessively drained a depth of 20 to 40 inches, have a thin, loamy subsoil, and are underlain by limestone; some ar to 80 inches and are loamy below; some are sandy throughout

5 — Millhopper-Bonneau-Arredondo: Nearly level to sloping, moderately well drained and well drai to a depth of 40 to 80 inches and are loamy below, and some are sandy to a depth of 20 to 40 i below

6 — Blichton-Lochloosa-Bivans: Nearly level to strongly sloping, poorly drained and somewhat poor sandy to a depth of 20 to 40 inches and are loamy below, and some are sandy to a depth of less clayey below

SOILS ON THE FLATWOODS, ON SLIGHT KNOLLS, AND IN TRANSITIONAL AREAS BETWEE FLATWOODS

7 — Millhopper-Lochloosa-Sparr: Nearly level to gently sloping, moderately well drained and somev some are sandy to a depth of 40 to 80 inches and are loamy below, and some are sandy to a de and are loamy below

8 — Chipley-Tavares-Sparr: Nearly level, somewhat poorly drained and moderately well drained so throughout, and some are sandy to a depth of 40 to 80 inches and are loamy below

9 — Pelham-Mulat: Nearly level, poorly drained soils that are sandy to a depth of 20 to 40 inches a

10 — Pomona-Wauchula-Newnan: Nearly level, poorly drained and somewhat poorly drained soils t coated subsoil at a depth of less than 30 inches and a loamy subsoil between a depth of about 2

SOILS ON WET PRAIRIES AND IN MARSHES, SWAMPS, AND FLOOD PLAINS

11 — Monteocha-Surrency: Nearly level, very poorly drained soils; some are sandy to a depth of 40 i organic coated layer at a depth of 30 inches or less and are loamy below and some are sandy t inches and are loamy below

12 — Ledwith-Wauberg: Nearly level, very poorly drained and poorly drained soils; some have thin c less than 20 inches thick and are clayey below, and some are sandy to a depth of 20 to 40 inch

13 — Shenks-Terra Ceia-Okeechobee: Nearly level, very poorly drained soils of organic origin; some to 50 inches deep to clayey material, and some have organic material more than 51 inches thic

14 — Oleno-Pompano: Nearly level, poorly drained soils subject to occasional flooding; some have cl 26 to 47 inches deep to sandy, loamy, and clayey material, and some are sandy throughout

* SITE

SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Each area outlined on this map consists of more than one kind of soil. The map is thus meant for general planning rather than a basis for decisions on the use of specific tracts.

U.S. DEPARTMENT OF AGRICULTURE
SOIL CONSERVATION SERVICE

UNIVERSITY OF FLORIDA
INSTITUTE OF FOOD AND AGRICULTURAL SCIENCES
AND
AGRICULTURAL EXPERIMENT STATIONS, SOIL SCIENCE DEPARTME

FLORIDA DEPARTMENT OF AGRICULTURE AND CONSUMER SERVI

GENERAL SOIL MAP

ALACHUA COUNTY
FLORIDA

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km

COMPILED 1983

ALACHUA COUNTY, FLORIDA — SHEET NUMBER 28

ALACHUA COUNTY, FLORIDA — SHEET NUMBER 37

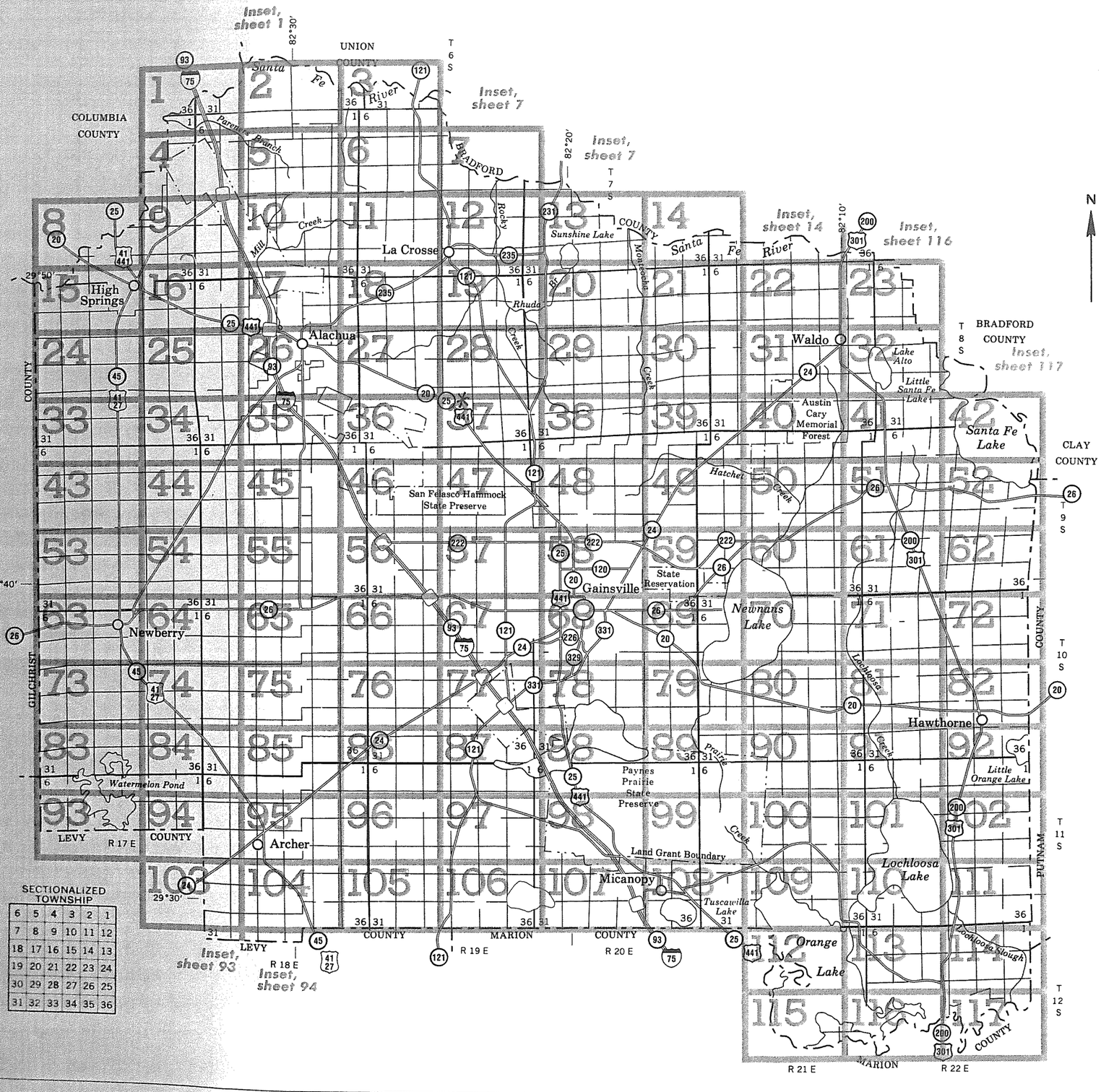
Table 2.4-2 Nomenclature and Characteristics of Soil Groups Shown on Figure 2.4-5

Map No.	Name	Hydraulic Category(1)	Stratum Depth (feet)	Permeability (feet/hour)
7B	Kanapaha Fine Sand (0 to 5% Slopes)	A/D	0 - 2	.5 - 1.7
			2 - 4.6	.05 - .17
			4.6 - 5.8	.017 - .05
			5.8 - 6.7	.017 - .05
8B	Sparr Fine Sand (0 to 5% Slopes)	A	0.0 - 4.0	0.67 - 1.67
			4.0 - 6.7	0.05 - 0.17
13	Pelham Sand	B/D	0.0 - 2.2	0.5 - 1.67
			2.2 - 5.7	0.05 - 0.17
14	Pomona Sand	B/D	0.0 - 2.2	0.5 - 1.67
			2.2 - 3.3	0.05 - 0.17
			3.3 - 4.3	0.5 - 1.67
			4.3 - 6.0	0.05 - 0.17
16	Surrency Sand	B/D	0.0 - 1.8	0.5 - 1.67
			1.8 - 2.6	0.5 - 1.67
			2.6 - 5.4	0.05 - 0.17
17	Wauchula Sand	B/D	0 - 0.6	0.5 - 1.67
			0.6 - 1.8	0.5 - 1.67
			1.8 - 2.3	0.05 - 0.5
			2.3 - 3.1	0.5 - 1.67
			3.1 - 6.7	0.05 - 0.5
18	Wauchula - Urban Land Complex	B/D	0 - 0.6	0.5 - 1.67
			0.6 - 1.8	0.5 - 1.67
			1.8 - 2.3	0.05 - 0.5
			2.3 - 3.1	0.5 - 1.67
			3.1 - 6.7	0.05 - 0.5
19	Pomona Variant Sand	D	0.0 - 1.4	0.5 - 1.67
			1.4 - 3.6	0.5 - 1.67
			3.6 - 5.1	0.5 - 1.67
			5.1 - 6.0	0.05 - 0.17
21	Electra Variant Sand	A	0.0 - 1.1	0.5 - 1.67
			1.1 - 4.3	0.5 - 1.67
			4.3 - 6.7	0.05 - 0.17

Table 2.4-2 Nomenclature and Characteristics of Soil Groups Shown on Figure 2.4-5 (continued)

Map No.	Name	Hydraulic Category(1)	Stratum Depth (feet)	Permeability (feet/hour)
24	Basinger Variant Sand	C	0.0 - 4.3 4.3 - 6.0	0.5 - 1.67 0.05 - 0.17
25	Basinger Variant Sand Depressional	C	0.0 - 4.3 4.3 - 6.0	0.5 - 1.67 0.05 - 0.17
28	Adamsville Sand (0 to 2% Slopes)	C	0.0 - 1.0 1.0 - 6.0	0.5 - 1.67 0.5 - 1.67

(1) A--High infiltration rate; low runoff potential
B--Moderate infiltration rate; moderately low runoff potential
C--Low infiltration rate; moderately high runoff potential
D--Very low infiltration rate; high runoff potential
A/D--Category D if natural; category A if drained
B/D--Category D if natural; category B if drained



SECTIONALIZED TOWNSHIP

6	5	4	3	2	1
7	8	9	10	11	12
18	17	16	15	14	13
19	20	21	22	23	24
30	29	28	27	26	25
31	32	33	34	35	36

Note:
* Deerhaven centered at T8S, R19E, Section 27.
See MAP sheets 28 and 37.

INDEX TO MAP SHEETS

ALACHUA COUNTY FLORIDA

Scale 1:253,440

1 0 1 2 3 4 Miles

1 0 4 8 Km

APPENDIX 10.7.2.8

LOCAL CLIMATE DATA

HIGH SPRINGS, FLORIDA (083956)

Period of Record Monthly Climate Summary

Period of Record : 10/1/1944 to 12/31/2008

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual
Average Max. Temperature (F)	68.3	71.5	77.2	83.0	88.9	91.2	92.2	91.9	89.5	82.8	76.2	69.6	81.9
Average Min. Temperature (F)	41.4	44.2	48.9	54.1	62.3	68.8	70.9	71.0	68.1	58.3	49.3	42.7	56.7
Average Total Precipitation (in.)	3.38	3.70	4.06	2.98	3.44	6.92	7.21	7.72	4.91	3.09	2.15	2.93	52.49
Average Total SnowFall (in.)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Average Snow Depth (in.)	0	0	0	0	0	0	0	0	0	0	0	0	0

Percent of possible observations for period of record.
Max. Temp.: 92.1% Min. Temp.: 91.9% Precipitation: 97.6% Snowfall: 97.9% Snow Depth: 97.9%
Check Station Metadata or Metadata graphics for more detail about data completeness.

Southeast Regional Climate Center, sercc@climate.ncsu.edu

APPENDIX 10.7.2.9

DATA FOR LOCAL SURFACE WATER DRAINAGE BASINS

Map no.	Station no.	Station name	Location	Drainage area (mi^2)	Other water years measured	Measurements	
						Date	Discharge (ft^3/s)
			ALACHUA COUNTY--Continued				
10	02321970	Hornsby Springs near High Springs, Fl.	Lat 29°50'59", long 82°35'36", in $SE^1/_4$ sec. 27, T. 7 S., R. 17 E., Alachua County, Hydrologic Unit 03110206, 0.9 mi upstream from confluence with Santa Fe River, and 1.6 mi north of High Springs, Fl.	Indeterminate	1972 1975 1985 1990-91	07-28-95 12-01-95	48.9 44.0
11	02322020	Turkey Creek Tributary at Hague, Fl.	Lat 29°46'15", long 82°25'47", in $SE^1/_4$ sec. 20, T. 8 S., R. 19 E., Alachua County, Hydrologic Unit 03110206, at culvert on U. S. Highway 441, 0.8 mi west of Hague, 4.0 mi east of Alachua, and 15.2 mi northwest of Gainesville, Fl.	1.68		05-31-95 11-07-95 06-04-96	1.68 0.94 1.50
12	02322049	Bad Dog Run near Alachua, Fl.	Lat 29°49'33", long 82°28'06", in $NE^1/_4$ sec. 1, T. 8 S., R. 18 E., Alachua County, Hydrologic Unit 03110206, at culvert on County Road 239, and 2.6 mi northeast of Alachua, Fl.	0.49		11-07-96 06-04-96	Dry Dry
13	02322050	Shiloh Run near Alachua, Fl.	Lat 29°49'06", long 82°28'21", in $SW^1/_4$ sec. 1, T. 8 S., R. 18 E., Alachua County, Hydrologic Unit 03110206, at culvert on County Road 239, 0.7 mi above mouth, and 2.8 mi northeast of Alachua, Fl.	0.32	1983-88	05-31-95 11-07-96 06-04-96	Dry 0.06 Dry
14	02322060	Mill Creek near High Springs, Fl	Lat 29°50'41", long 82°30'07", in $SW^1/_4$ sec. 27, T. 7 S., R. 18 E., Alachua County, Hydrologic Unit 03110206, at culvert on Old Bellamy Road, 3 mi southeast of Traxler, and 3.8 mi north of Alachua, and 5.7 mi east of High Springs, Fl.	4.4	1976	05-31-95 11-07-95 06-04-96	0.14 0.14 0.08
15	02322064	Townsend Branch near Alachua, Fl.	Lat 29°51'17", long 82°30'55", in $SE^1/_4$ sec. 37, T. 7 S., R. 18 E., Alachua County, Hydrologic Unit 03110206, at culvert on Old Bellamy Road, 2 mi southeast of Traxler, and 4.3 mi north of Alachua, Fl.	2.44		05-31-95 11-07-95 06-04-96	Dry Dry Dry
16	02322140	Poe Springs near High Springs, Fl.	Lat 29°49'33", long 82°38'58", in $NE^1/_4$ sec. 6, T. 8 S., R. 17 E., Alachua County, Hydrologic Unit 03110206, on left bank of Santa Fe River, 2.8 mi west of High Springs, Fl.	Indeterminate	1917 1929 1932 1942 1946 1956 1961 1972	07-28-95 12-01-95	49.7 50.2
			BRADFORD COUNTY				
17	02320730	Alligator Creek at State Highway 230 at Starke, Fl.	Lat 29°56'33", long 82°06'15'", in SE1/4 sec. 28, T. 6 S., R. 22 E., Bradford County, Hydrologic Unit 03110206, at bridge on State Road 230, and 0.5 mi east of the junction of State Road 230 with U. S. Highway 301at Starke, Fl.	17.7	1976	05-31-95 11-07-95 06-04-96	5.49 7.89 0.04
18	02320732	Alligator Creek at Starke, Fl.	Lat 29°56'10", long 82°06'43", in NW1/4 sec. 33, T. 6 S., R. 22 E., Bradford County, Hydrologic Unit 03110206, at bridge on U.S. Highway 301 at Starke, 0.5 mi south of intersection of U. S. Highway 301 and State Highway 100, and 13 mi upstream from mouth.	19.4	1956 1963-65 1967 1976-77 1982 1989-90 1992	08-23-90 09-27-90 05-31-95 11-07-95 06-04-96	4.71 1.01 6.11 9.47 0.09

Appendix II. Synoptic low-flow measurements for low-flow partial-record stations and miscellaneous sites in the Suwannee River Water Management District, 1990-96

Map no.	Station no.	Station name	Location	Drainage area (mi^2)	Other water years measured	Measurements	
						Date	Discharge (ft^3/s)
			ALACHUA COUNTY				
1	02320692	Santa Fe River near Hampton, Fl.	Lat 29°50'21", long 82°09'49", in SE1/4 sec. 35, T. 7 S., R. 21 E., Alachua County, Hydrologic Unit 03110206, at bridge on U.S. Highway 301, 2.3 mi southwest of Hampton, and 75 mi up-stream from mouth.	75.1	1956 1977	05-30-95 06-04-96	12.8 1.10
2	02320820	Santa Fe River near Monteocha, Fl.	Lat 29°50'49", long 82°15'51", NE1/4 sec. 35, T. 7 S., R. 20 E., Alachua County, Hydrologic Unit 03110206, at bridge on Rock Church Road, 3.8 mi northeast of Monteocha, and 68 mi upstream from mouth.	178	1977	05-30-95 11-07-95 06-04-96	16.6 45.0 6.92
3	02320827	Monteocha Creek at Monteocha, Fl.	Lat 29°47'47", long 82°17'20", in $NW^1/_4$ sec. 15, T. 8 S., R. 20 E, Alachua County, Hydrologic Unit 03110206, at culvert on State Highway 340, at Monteocha, Fl.	7.04	1958 1977	05-30-95 11-07-95 06-04-96	0.03 0.03 < 0.01
4	02320846	Rhuda Branch near Monteocha, Fl.	Lat 29°49'47", long 82°20'03", in $NE^1/_4$ sec. 6, T. 8 S., R. 20 E., Alachua County, Hydrologic Unit 03110206, at culvert on NW 192 Avenue, 0.3 mi south of Sunshine Lake, and 3.2 mi northwest of Monteocha, and 4.3 mi east of La Crosse, Fl.	1.45	1976-77	05-30-95 11-07-95 06-04-96	0.10 0.06 0.01
5	02320858	Rocky Creek near Monteocha, Fl.	Lat 29°48'02", long 82°22'18", in $NW^1/_4$ sec. 13, T. 8 S., R. 20 E., Alachua County, Hydrologic Unit 03110206, at wooden bridge on county road 0.8 mi east of State Road 121, 1.5 mi west of State Road 231, 3.5 mi southeast of La Crosse, and 5.0 mi west of Monteocha, Fl	11.1	1976-77	05-31-95 11-07-95 06-04-96	Dry < 0.01 Dry
6	02320867	University Creek near La Crosse, Fl.	Lat 29°49'11", long 82°23'05", in $SW^1/_4$ sec. 2, T. 8 S., R. 19 E., Alachua County, Hydrologic Unit 03110206, at culvert on State Highway 121, 1.3 mi north of the junction of State Road 121 with County Road 340, and 1.9 mi southwest of La Crosse, Fl.	5.16	1977	05-31-95 11-07-95 06-04-96	No Flow 0.13 No Flow
7	02320870	Rocky Creek near La Crosse, Fl.	Lat 29°50'23", long 82°22'36", in $NE^1/_4$ sec. 35, T. 7 S., R. 19 E., Alachua County, Hydrologic Unit 03110206, at culvert on State Highway 235, and 1.7 mi east of La Crosse, Fl.	22.6	1958 1967 1976-77 1992	05-31-95 11-07-95 06-04-96	No Flow No Flow No Flow
8	02320873	Rocky Creek tributary near La Crosse, Fl.	Lat 29°50'23", long 82°22'48", in $NE^1/_4$ sec. 35, T. 8 S, R. 19 E., Alachua County, Hydrologic Unit 03110206, at bridge on State Highway 235, and 1.5 mi east of La Crosse, Fl.	2.55	1958 1968	05-31-95 11-07-95 06-04-96	No Flow Dry No Flow
9	02321898	Santa Fe River at O'Leno State Park, Fl.	Lat 29°54'51", long 82°34'48", in $NE^1/_4$ sec. 2, T. 7 S., R. 17 E., Alachua County, Hydrologic Unit 03110206, at suspended foot bridge in park, 0.4 mi upstream from where river enters sink, 6.1mi north of High Springs, and 36 mi upstream from mouth.	820	1961 1977-83 1989-92	06-06-96	59.9

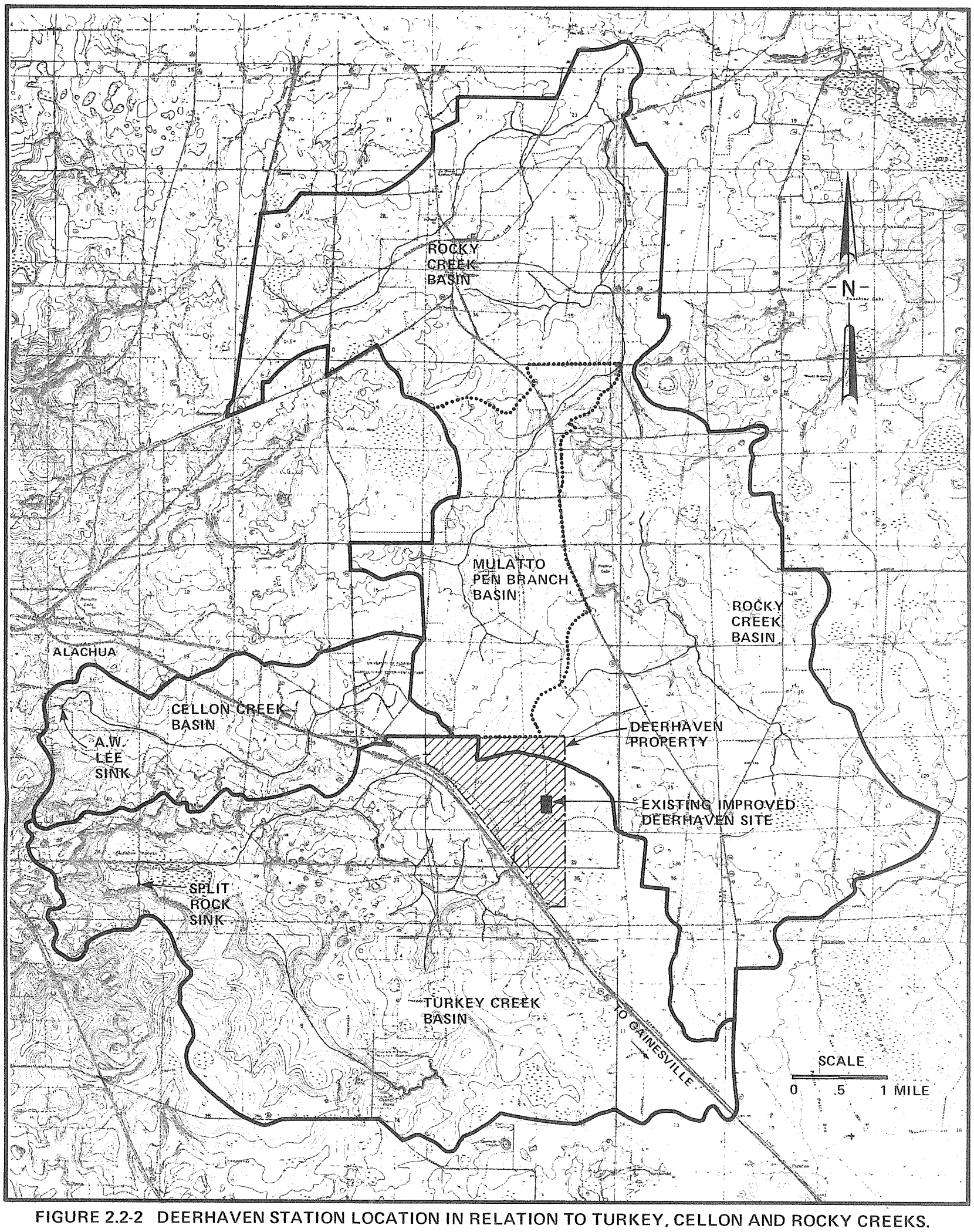


FIGURE 2.2-2 DEERHAVEN STATION LOCATION IN RELATION TO TURKEY, CELLON AND ROCKY CREEKS.

APPENDIX 10.7.3

CULTURAL RESOURCES

STOP **This record search is for informational purposes only and does NOT constitute a project review. This search only identifies resources recorded at the Florida Master Site File and does NOT provide project approval from the Division of Historical Resources. Contact the Compliance and Review Section of the Division of Historical Resources at 850-245-6333 for project review information.**

November 4, 2009

Florida Master Site File

Darren Stowe
ECT
1408 N. Westshore Blvd., Suite 115
Tampa, FL 33609
Email: dstowe@ectinc.com

In response to your inquiry of May 20, 2009, the Florida Master Site File lists no previously recorded archaeological sites, one resource group and no standing structures in the following parcel of Alachua County:

T08S, R19E, Section 27

When interpreting the results of our search, please consider the following information:

- **This search area may contain *unrecorded* archaeological sites, historical structures or other resources even if previously surveyed for cultural resources.**
- **Because vandalism and looting are common at Florida sites, we ask that you limit the distribution of location information on archaeological sites.**
- **While many of our records document historically significant resources, the documentation of a resource at the Florida Master Site File does not necessarily mean the resource is historically significant.**
- **Federal, state and local laws require formal environmental review for most projects. This search DOES NOT constitute such a review. If your project falls under these laws, you should contact the Compliance and Review Section of the Division of Historical Resources at 850-245-6333.**

Please do not hesitate to contact us if you have any questions regarding the results of this search.

Sincerely,

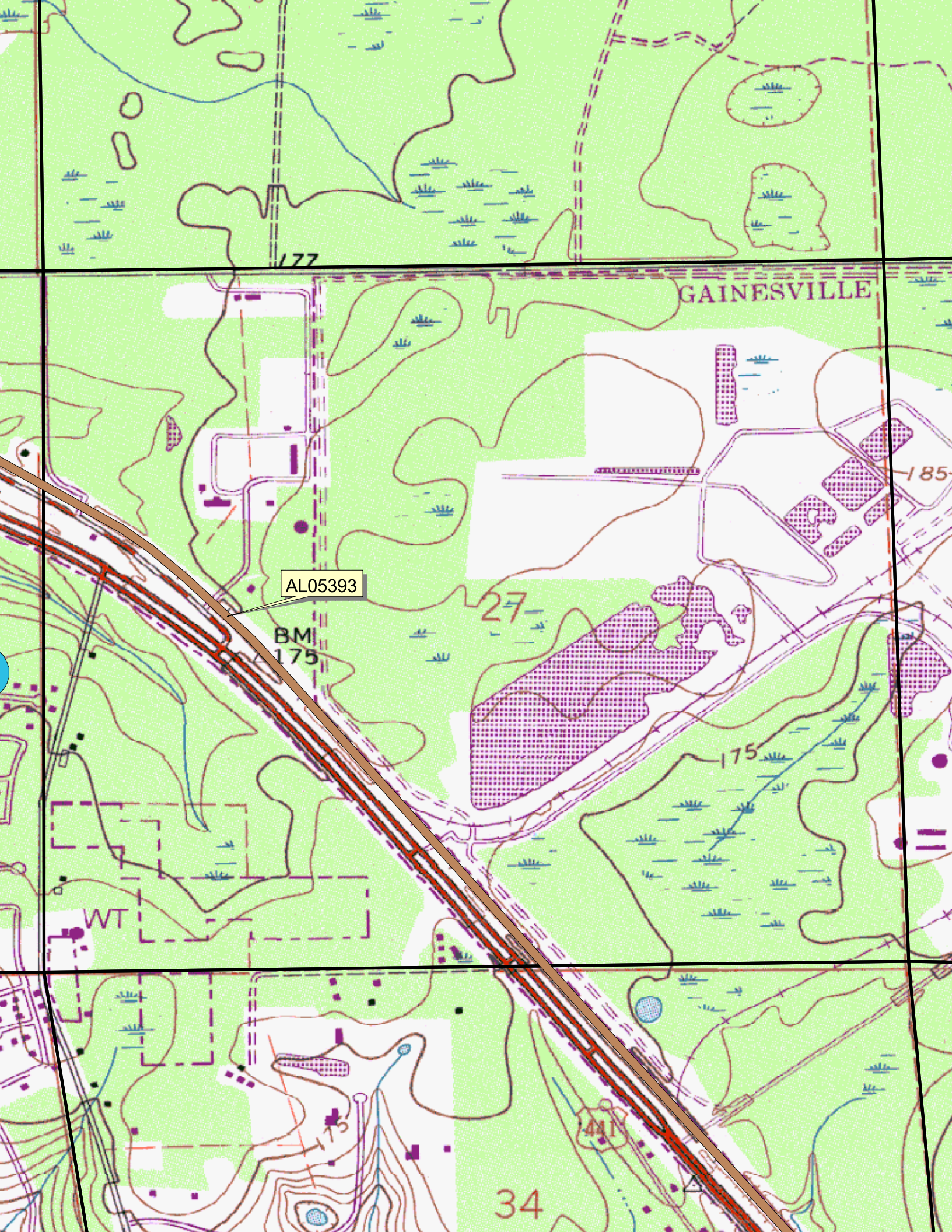
Celeste Ivory

Celeste Ivory
Assistant Supervisor
Florida Master Site File
mcivory@dos.state.fl.us

CULTURAL RESOURCES REPORT

SITEID	FORMNO	T-R-S	CR	SITENAME	NRLIST	SURVEY	LOCATION	OTHER
AL05393	200706	08S/19E/27	RG	ACL RAILROAD		14550	City: GAINESVILLE	RG Type: DLND, # Cntrib Resources: 2

1 site(s) evaluated; 1 form(s) evaluated. (1 RG)
Print date: 5/21/2009 8:24:22 AM


GAINESVILLE
AL05393
BM
175
27
185
175
WT
441
34