

ANNUAL WETLAND MONITORING REPORT YEAR 1 (2006)

GATLIN SWAMP WETLAND RESTORATION SITE
MARTIN COUNTY, NORTH CAROLINA
(Contract # D05024-2)



Prepared for:

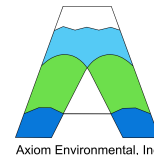
NORTH CAROLINA DEPARTMENT OF ENVIRONMENT AND NATURAL
RESOURCES
ECOSYSTEM ENHANCEMENT PROGRAM
RALEIGH, NORTH CAROLINA



Prepared by:



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Axiom Environmental, Inc.
2126 Rowland Pond Drive
Willow Spring, North Carolina 27592

October 2006

EXECUTIVE SUMMARY

Restoration Systems, L.L.C. (Restoration Systems) has completed the restoration of nonriverine wetlands at the Gatlin Swamp Wetland Restoration Site (hereafter referred to as the "Site") to assist the North Carolina Ecosystem Enhancement Program (EEP) in fulfilling restoration goals in the region. The Site is located approximately 1.5 miles southwest of Oak City, in Martin County (Figure 1). The Site encompasses approximately 150.2 acres of land situated in an expansive interstream flat characterized primarily by timber production and agriculture. The project provides 138.7 acres of non-riverine wetland restoration, with benefits to water quality and wildlife in a watershed that is highly dissected for agriculture and timber production.

The Site is located within sub-basin 03-02-09 of the Roanoke River Basin. This area is part of United States Geological Survey (USGS) Hydrologic Unit (HU) 03010107 of the South Atlantic/Gulf Region (14-digit HU 03010107120020). Site features drain to Etheridge Swamp and Conoho Creek, which is a major tributary to the Roanoke River.

A Detailed Wetland Restoration Plan was completed for the Site in September 2005. The plan outlined methods designed to restore agricultural fields that had been ditched, drained, and cleared for row crop production. Prior to implementation, the entire 150.2 acre Site contained 138.7 acres of hydric soil that had been effectively drained and contained no jurisdictional wetlands. The Detailed Wetland Restoration Plan outlined restoration procedures including 1) ditch cleaning prior to backfill, 2) depression construction, 3) impervious ditch plug construction, 4) ditch backfilling, 5) floodplain soil scarification, and 6) plant community restoration.

The following objectives are proposed to provide mitigation credit requested under the EEP Request For Proposal (RFP) #16-D05024 dated October 22, 2004:

- Provide 125 acres of nonriverine Wetland Mitigation Units, as calculated in accordance with the requirements stipulated in RFP #16-D05024.
- Restore approximately 125 acres of wetland through filling agricultural ditches, removal of spoil castings, eliminating row crop production activities, and/or planting with native forest species.
- Protect the Site in perpetuity with a conservation easement which is held by the State of North Carolina.

As constructed, the Site provides 138.7 acres of non-riverine wetland restoration and 11.5 acres of forested upland buffer (Figure 2).

In summary, the Site achieved the defined (or targeted) success criteria;

1. Saturation (free water) within one foot of the soil surface for a minimum of 5 percent (12 consecutive days) of the growing season, for all Site groundwater gauges in the First Monitoring Year (Year 2006).
2. Vegetation plots across the Site were well above the required 320 stems per acre with an average of 708 tree stems per acre in the First Monitoring Year (Year 2006).

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**GATLIN SWAMP WETLAND RESTORATION SITE
ANNUAL MONITORING REPORT
YEAR 1 (2006)
MARTIN COUNTY, NORTH CAROLINA**

1.0 INTRODUCTION

Restoration Systems established the Gatlin Swamp Wetland Restoration Site (Site) in the Coastal Plain region of the Roanoke River Basin (14-digit HU 03010107120020). The Site is located approximately 1.5 miles southwest of Oak City, in Martin County (Figure 1). The Site encompasses approximately 150.2 acres of land situated in an expansive interstream flat characterized primarily by timber production and agriculture. The project offers 138.7 acres of nonriverine wetland restoration, with benefits to water quality and wildlife in a watershed that is highly dissected for agriculture and timber production.

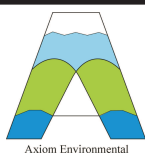
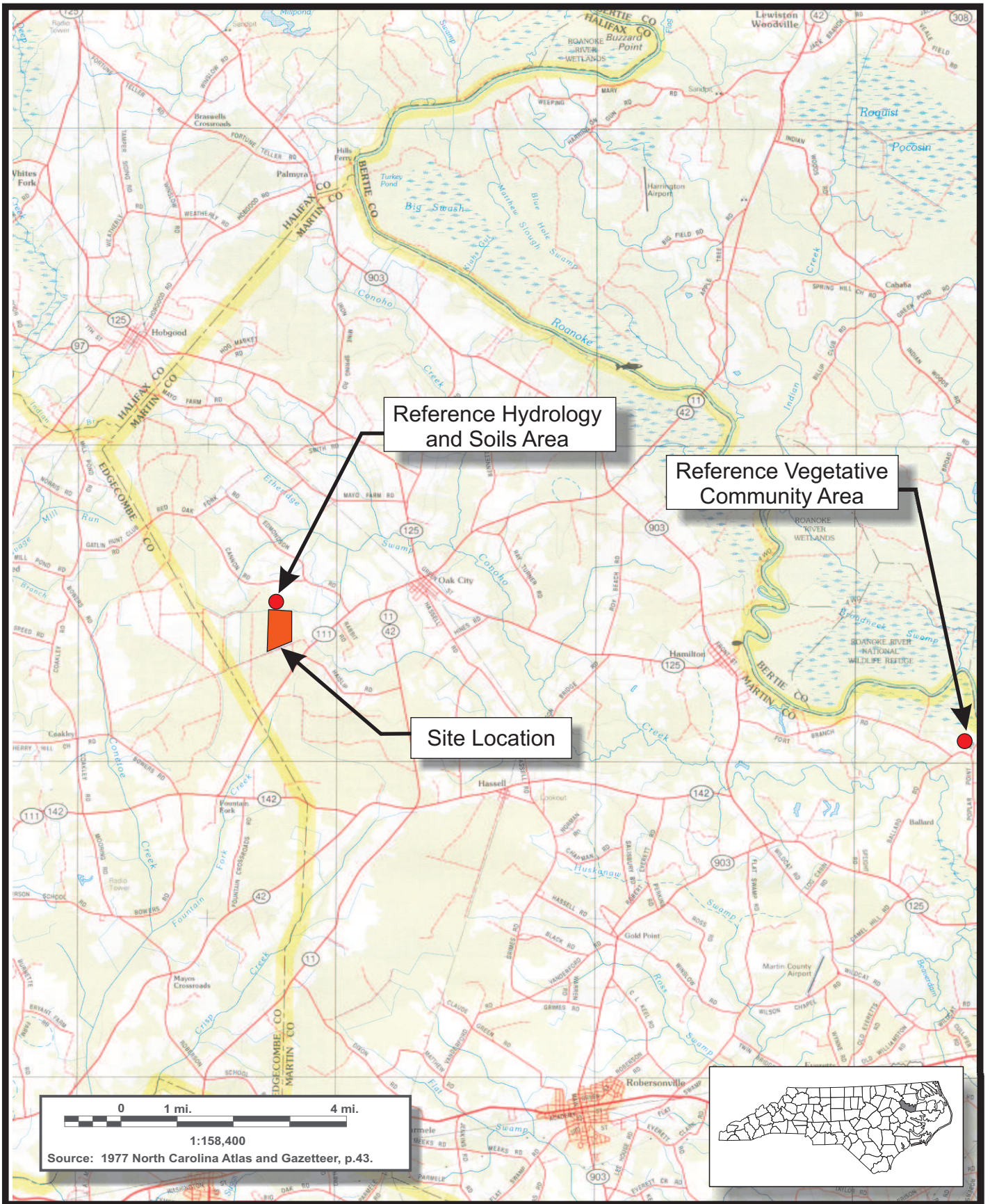
A Detailed Wetland Restoration Plan was completed for the Site in September 2005. The plan outlined methods designed to restore agricultural fields that had been ditched, drained, and cleared for row crop production. Prior to implementation, the entire 150.2 acre Site contained 138.7 acres of hydric soil that had been effectively drained and contained no jurisdictional wetlands. The Detailed Wetland Restoration Plan outlined restoration procedures including 1) ditch cleaning prior to backfill, 2) depression construction, 3) impervious ditch plug construction, 4) ditch backfilling, 5) floodplain soil scarification, and 6) plant community restoration.

The following objectives are proposed to provide mitigation credit requested under the EEP Request For Proposal (RFP) #16-D05024 dated October 22, 2004:

- Provide 125 acres of nonriverine Wetland Mitigation Units, as calculated in accordance with the requirements stipulated in RFP #16-D05024.
- Restore approximately 125 acres of wetland through filling agricultural ditches, removal of spoil castings, eliminating row crop production activities, and/or planting with native forest species.
- Protect the Site in perpetuity with a conservation easement which is held by the State of North Carolina.

As constructed, the Site provides 138.7 acres of non-riverine wetland restoration and 11.5 acres of forested upland buffer (Figure 2).

Upon completion of the detailed restoration plan, construction schematics were developed and construction was initiated in October 2005. Anderson Farms completed earthwork and grading at the Site in December of 2005. Carolina Silvics completed planting of the Site in January 2006. Axiom Environmental, Inc. completed as-built mitigation plan and as-built construction drawings in January 2006.



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Willow Springs, NC 27592
(919) 215-1693
(919) 341-3839 fax

SITE LOCATION
GATLIN SWAMP WETLAND RESTORATION SITE
Martin County, North Carolina

Dwn. by:	WGL
Ckd by:	WGL
Date:	Jan 2006
Project:	05-009

FIGURE

1

Information on project managers, owners, and contractors follows:

Owner Information

Restoration Systems, L.L.C.
George Howard and John Preyer
1101 Haynes Street, Suite 107
Raleigh, North Carolina 27604
(919) 755-9490

Designer Information

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2126 Rowland Pond Drive
Willow Spring, North Carolina 27592
(919) 215-1693

Earthwork Contractor Information

Anderson Farms
Gary Wilkerson and Richard Anderson
179 NC 97 East
Tarboro, North Carolina 27886
(252) 823-4730

Planting Contractor Information

Carolina Silvics
Dwight McKinney
908 Indian Trail Road
Edenton, North Carolina 27932
(919) 523-4375

2.0 MONITORING PROGRAM

The Site monitoring protocol consists of a comparison between reference and restoration areas along with evaluation of jurisdictional wetland criteria (Environmental Laboratory 1987). Monitoring will entail analysis of two primary parameters: hydrology and vegetation. Monitoring of restoration efforts will be performed for a minimum of 5 years or until success criteria are fulfilled. The monitoring program is described below.

2.1 Wetland Hydrology

2.1.1 Hydrology Monitoring Procedure

After hydrological modifications were completed at the Site, continuously recording monitoring gauges were installed in accordance with specifications outlined in *Installing Monitoring Wells/Piezometers in Wetlands* (NCWRP 1993). Monitoring gauges were set to a depth of approximately 24 inches below the soil surface. Screened portions of each gauge were surrounded by filter fabric, buried in a sand screen, and sealed with a bentonite cap to prevent siltation and surface flow infiltration during floods.

Five monitoring gauges were installed in wetland restoration areas to provide representative coverage of the Site (Figure 2). Two gauges were also placed in a reference area in similar landscape positions to use as comparison with onsite conditions (Figure 1). Hydrological



RESTORATION SYSTEMS
1101 HAYNES STREET, #107
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NOTES/REVISIONS

Project:
**Gatlin Swamp
Wetland Restoration
Site**

**Martin County
North Carolina**

Title:
**MONITORING
PLAN**

Scale:
1" = 400'
Date:
JAN 2006
Project No.:
05-009

FIGURE NO.
2

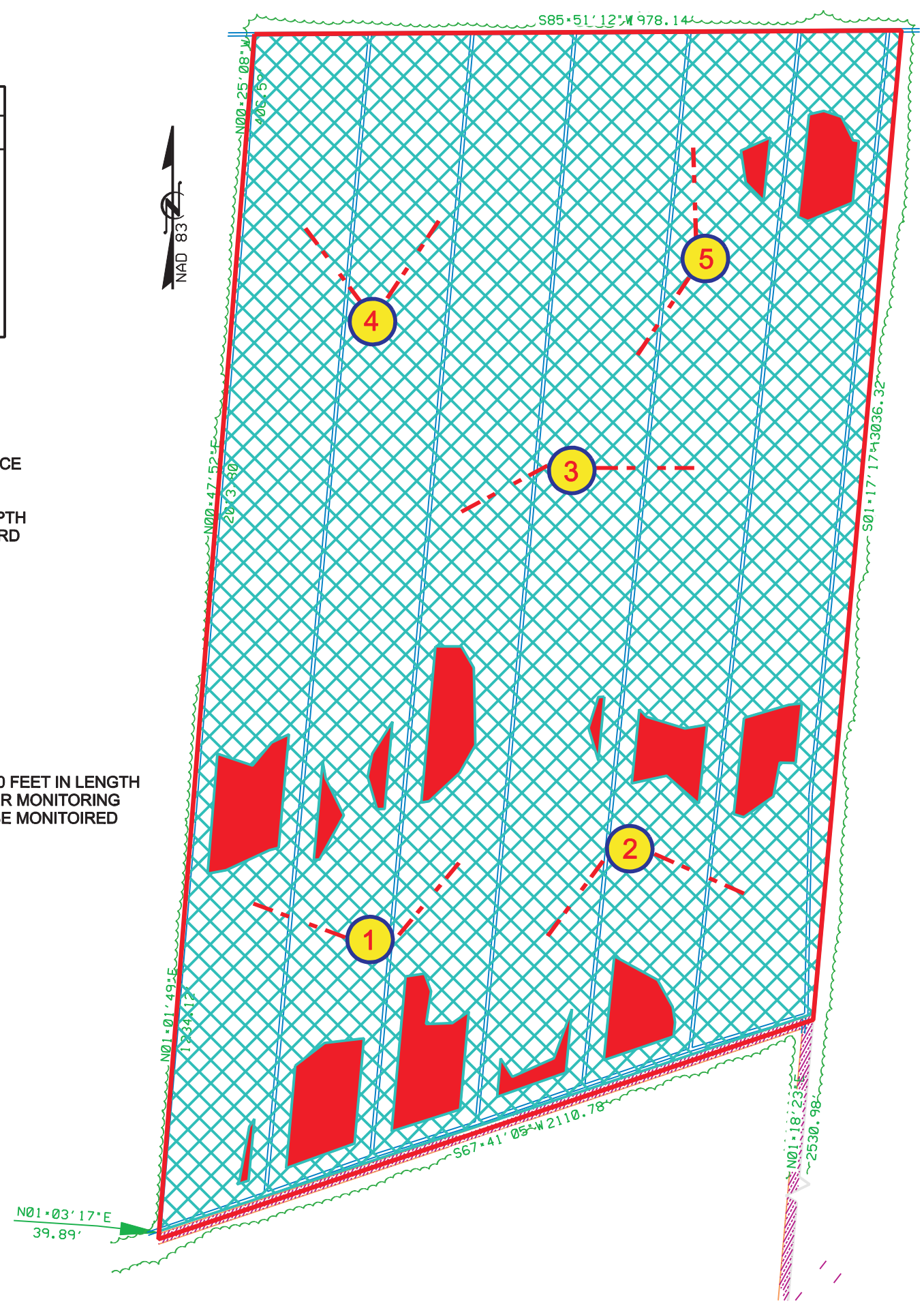
LEGEND		
DESCRIPTION	SYMBOL	AREA
SITE BOUNDARY		150.2 AC
WETLAND RESTORATION		138.7 AC
UPLAND		
GROUNDWATER GAUGE		
VEGETATION PLOTS		

GROUNDWATER GAUGES

INFINITY CONTINUOUS MONITORING GAUGES INSTALLED IN ACCORDANCE WITH SPECIFICATIONS OUTLINED IN U.S. ARMY CORPS OF ENGINEERS, INSTALLING MONITORING WELLS/PIEZOMETERS IN WETLANDS (WRP TECHNICAL NOTE HY-IA-3.1, AUGUST 1993). SCREENS ARE SET TO A DEPTH OF APPROXIMATELY 18 INCHES. GAUGES ARE PROGRAMMED TO RECORD AT 24-HOUR INTERVALS. DAILY RAINFALL IS CORRELATED FROM DATA OBTAINED AT A NATIONAL WEATHER SERVICE STATION LOCATED IN TARBORO (STATION 318500 - COOP).

VEGETATION MONITORING PLOT

VEGETATION MONITORING PLOTS ARE COMPRISED OF TRANSECTS, 600 FEET IN LENGTH AND 8 FEET IN WIDTH CENTERED ON EACH OF THE FIVE GROUNDWATER MONITORING GAUGES. IN EACH MONITORING PLOT, VEGETATION PARAMATERS TO BE MONITOIED INCLUDE SPECIES COMPOSITION AND DENSITY.



sampling will be performed in restoration and reference areas during the growing season (March 16 and November 14) at daily intervals necessary to satisfy the hydrology success criteria within each physiographic landscape area.

2.1.2 Hydrologic Success Criteria

Target hydrological goals have been developed using regulatory wetland hydrology criteria and reference wetland sites.

Regulatory Wetland Hydrology Criteria

The regulatory wetland hydrology criterion requires saturation (free water) within 1 foot of the soil surface for 5 percent of the growing season under normal climatic conditions. In some instances, the regulatory wetland hydroperiod may extend between 5 and 12.5 percent of the growing season.

Reference Groundwater Modeling

The reference groundwater model forecasted the wetland hydroperiod in restoration areas will range between approximately 2 and 26 percent of the growing season in early successional phases. Because wetland hydroperiods during old field stages of wetland development are projected to extend for less than 12.5 percent of the growing season, wetland monitoring plans that extend for a five year period after restoration will utilize a minimum 5 percent wetland hydrology criterion to substantiate restoration success.

Reference Wetland Sites

Two monitoring gauges were installed in reference wetlands located in the northern and eastern periphery of the Site. Wetland hydroperiods measured by groundwater gauges located within the reference areas will be compared to hydroperiods exhibited by groundwater gauges in the restoration area to further evaluate restoration success. Success criteria outlined by the groundwater model indicates that the wetland restoration area should maintain saturation within one foot of the soil surface for at least 74 percent of the hydroperiod exhibited by the reference wetland gauges in any given year.

Under normal climatic conditions, the hydrologic success criterion requires saturation (free water) within one foot of the soil surface for a minimum of 5 percent of the growing season. This hydroperiod translates to saturation for a minimum, 12-day (5 percent) consecutive period during the growing season, which extends from March 16 and November 14 (USDA 1977).

In atypical dry years, the hydroperiod must exceed 75 percent of the hydroperiod exhibited by the reference gauges. Reference gauge data will be used to compare wetland hydroperiods between the restoration areas and relatively undisturbed reference wetlands. This data will supplement regulatory evaluation of success criteria and also provide information that will allow interpretation of mitigation success in years not supporting "normal" rainfall conditions.

2.1.3 Hydrological Monitoring Results and Comparison with Success Criteria

Hydrographs for each monitoring location are provided in Appendix A along with daily rainfall totals for 2006 from a rain gauge located onsite and at the Highway Patrol Station located in Martin County (SCONC 2006). The rain gauge located onsite malfunctioned at the end of June

2006; therefore, data collected by the State Climate Office of North Carolina at a nearby station is included. Groundwater data presented in Table 1 were collected through October 26, 2006 for reference and restoration area gauges, which corresponds to 225 days of the 244-day annual growing season. Data will continue to be downloaded monthly until the end of the 2006 growing season (November 14, 2006) and will be available upon request.

All Site groundwater gauges achieved the defined (or targeted) success criteria for hydrology, saturation (free water) within one foot of the soil surface for a minimum of 5 percent (12 consecutive days) of the growing season, in the First Monitoring Year (Year 2006) (Table 1).

Table 1. 2006 (Year 1) Groundwater Gauge Results

Gauge	Max Consecutive Days Saturated During Growing Season (Percentage) *	Defined (or Targeted) Success Criteria Achieved
1	56 days (23 %)	Yes
2	56 days (23 %)	Yes
3	56 days (23 %)	Yes
4	56 days (23 %)	Yes
5	174 days (71 %)	Yes
Ref 1	101 days (41 %)	Yes
Ref 2	117 days (48 %)	Yes

* Gauge data presented in the table were collected through October 26, 2006 for the Gatlin Swamp reference and restoration area gauges. Data will continue to be downloaded monthly for the remainder of the 2006 growing season (until November 14, 2006) and will be available upon request.

2.2 Vegetation

2.2.1 Vegetation Monitoring Procedure

Restoration monitoring procedures for vegetation are designed in accordance with United States Environmental Protection Agency guidelines presented in Mitigation Site Type (MiST) documentation (USEPA 1990) and United States Army Corps of Engineers (USACE) Compensatory Hardwood Mitigation Guidelines (USDOA 1993). The following presents a general discussion of the monitoring program.

During the first year, vegetation received visual evaluations on a periodic basis to ascertain the degree of overtopping of planted species by nuisance species. Quantitative sampling was conducted in late summer of the first year. Subsequently, quantitative sampling of vegetation will be performed between June 1 and September 30 of each monitoring year for five years or until the vegetation success criteria are achieved.

Five sample transects were installed within planted areas of the Site to equally represent the various hydrologic regimes (Figure 2). Each transect is 600 feet in length and 7.25 feet in width (0.1 acre). Transects were centered on the five groundwater monitoring gauges and are defined by the corresponding gauge number. In each sample plot, vegetation parameters monitored include species composition and species density. Photographs of the five vegetation plots are included in Appendix B.

2.2.2 Vegetation Success Criteria

Success criteria have been established to verify that the vegetation component supports community elements necessary for floodplain forest development. Success criteria are dependent upon the density and growth of Character forest species. Additional success criteria are dependent upon density and growth of "Character Tree Species." Character Tree Species include planted species and species identified through inventory of an approved reference (relatively undisturbed) forest community used to design the planting plan. All canopy tree species planted and identified in the reference forest will be utilized to define "Character Tree Species" as termed in the success criteria.

Table 2. Character Tree Species

PLANTED SPECIES	REFERENCE SITE SPECIES
Loblolly Pine (<i>Pinus taeda</i>)	Northern Red Oak (<i>Quercus rubra</i>)
Pond Pine (<i>Pinus serotina</i>)	Red Maple (<i>Acer rubrum</i>)
Swamp Chestnut Oak (<i>Quercus michauxii</i>)	White Oak (<i>Quercus alba</i>)
Cherrybark Oak (<i>Quercus pagoda</i>)	Bitternut Hickory (<i>Carya cordiformis</i>)
Southern Red Oak (<i>Quercus falcata</i>)	Hop Hornbean (<i>Ostrya virginiana</i>)
Water Oak (<i>Quercus nigra</i>)	Tulip Tree (<i>Liriodendron tulipifera</i>)
Willow Oak (<i>Quercus phellos</i>)	Sweetgum (<i>Liquidambar styraciflua</i>)
Sweetbay (<i>Magnolia virginiana</i>)	American Beech (<i>Fagus grandiflora</i>)
River Birch (<i>Betula nigra</i>)	Mockernut Hickory (<i>Carya tomentosa</i>)
	American Sycamore (<i>Platanus occidentalis</i>)
	Ironwood (<i>Carpinus carolinia</i>)
	Black Walnut (<i>Juglans nigra</i>)
	Hackberry (<i>Celtis laevigata</i>)
	Green Ash (<i>Fraxinus pennsylvanica</i>)

An average density of 320 stems per acre of Character Tree Species must be surviving in the first three monitoring years. Subsequently, 290 Character Tree Species per acre must be surviving in year 4 and 260 Character Tree Species per acre in year 5. Planted species must represent a minimum of 30 percent of the required stems per acre total (96 stems/acre). Planted Character Tree Species may serve as a seed source for species maintenance during mid-successional phases of forest development. Each naturally recruited Character Tree Species may represent up to 10 percent of the required stems per acre total. In essence, seven naturally recruited Character Tree Species may represent a maximum of 70 percent of the required stems per acre total. Additional stems of naturally recruited species above the 10 percent and 70 percent thresholds are discarded from the statistical analysis.

If vegetation success criteria are not achieved based on average density calculations from combined plots over the entire restoration area, supplemental planting may be performed with tree

species listed in the Restoration Plan or observed in the Reference Site. Supplemental planting will be performed as needed until achievement of vegetation success criteria.

No quantitative sampling requirements are proposed for herb assemblages as part of the vegetation success criteria. Development of floodplain forests over several decades will dictate the success in migration and establishment of desired understory and groundcover populations.

2.2.3 Vegetation Sampling Results and Comparison to Success Criteria

Quantitative sampling of vegetation was conducted in August 2006. Results are provided in Table 3. Vegetation success criteria for year 1 (320 tree stems per acre) were exceeded for the 2006 annual monitoring year with an average of 708 tree stems per acre across the Site. Each individual vegetation plot met success criteria with a range of 550 to 770 tree stems per acre.

3.0 CONCLUSIONS

The Site achieved the defined (or targeted) success criteria, with saturation (free water) within one foot of the soil surface for a minimum of 5 percent (12 consecutive days) of the growing season, for all Site groundwater gauges in the First Monitoring Year (Year 2006). Also, vegetation plots across the Site were well above the required 320 stems per acre with an average of 708 tree stems per acre in the First Monitoring Year (Year 2006).

Documented animal species that utilize the developing wetland ecosystem are listed in Appendix C.

TABLE 3
2006 VEGETATION MONITORING DATA AND RESULTS

Note: Each plot totals 0.1 acre in size.

Community	Pine Flatwoods							
	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Total Stems Plots 1-5	Total Stems/Acre	Total Stems/Acre Counting Towards Success Criteria*
Species (Note: bold species were planted)	Plot 1	Plot 2	Plot 3	Plot 4	Plot 5	Total Stems Plots 1-5	Total Stems/Acre	Total Stems/Acre Counting Towards Success Criteria*
Character Tree Species (count toward success criteria)								
<i>Betula nigra</i> (river birch)	5	11	11	6	13	46	92	92
<i>Clethra alnifolia</i> (coastal sweetpepperbush)				14		14	28	28
<i>Diospyros virginiana</i> (persimmon)	1					1	2	2
<i>Liquidambar styraciflua</i> (sweetgum)		1		2		3	6	6
<i>Magnolia virginiana</i> (sweetbay)	4	2	2	2	2	12	24	24
<i>Pinus</i> sp. (pine)	10	10	12	6	7	45	90	90
<i>Populus heterophylla</i> (cottonwood)	26	18	18	12	7	81	162	32
<i>Quercus falcata/pagoda</i> (southern red/cherrybark oak)	28	7	19	13	15	82	164	164
<i>Quercus michauxii</i> (swamp chestnut oak)	11	18	13	8	13	63	126	126
<i>Quercus nigra</i> (water oak)	3	1	4	4	3	15	30	30
<i>Quercus pagoda</i> (cherrybark oak)		4				4	8	8
<i>Quercus phellos</i> (willow oak)	8	12		3	9	32	64	64
<i>Quercus</i> sp. (oak)				4		4	8	8
<i>Salix</i> sp. (willow)	38			54	6	98	196	32
<i>Taxodium distichum</i> (bald cypress)	1					1	2	2
Species that Don't Count Toward Success Criteria								
<i>Baccharis halimifolia</i> (eastern baccharis)	3	5	3			11	22	0
<i>Rhus copallinum</i> (winged sumac)	1		1	4		6	12	0
TOTAL	139	89	83	132	75	518	1036	708
TOTAL STEMS/PLOT COUNTING TOWARDS SUCCESS CRITERIA	77	67	64	55	68			
TOTAL STEMS/ACRE COUNTING TOWARDS SUCCESS CRITERIA	770	670	640	550	680			

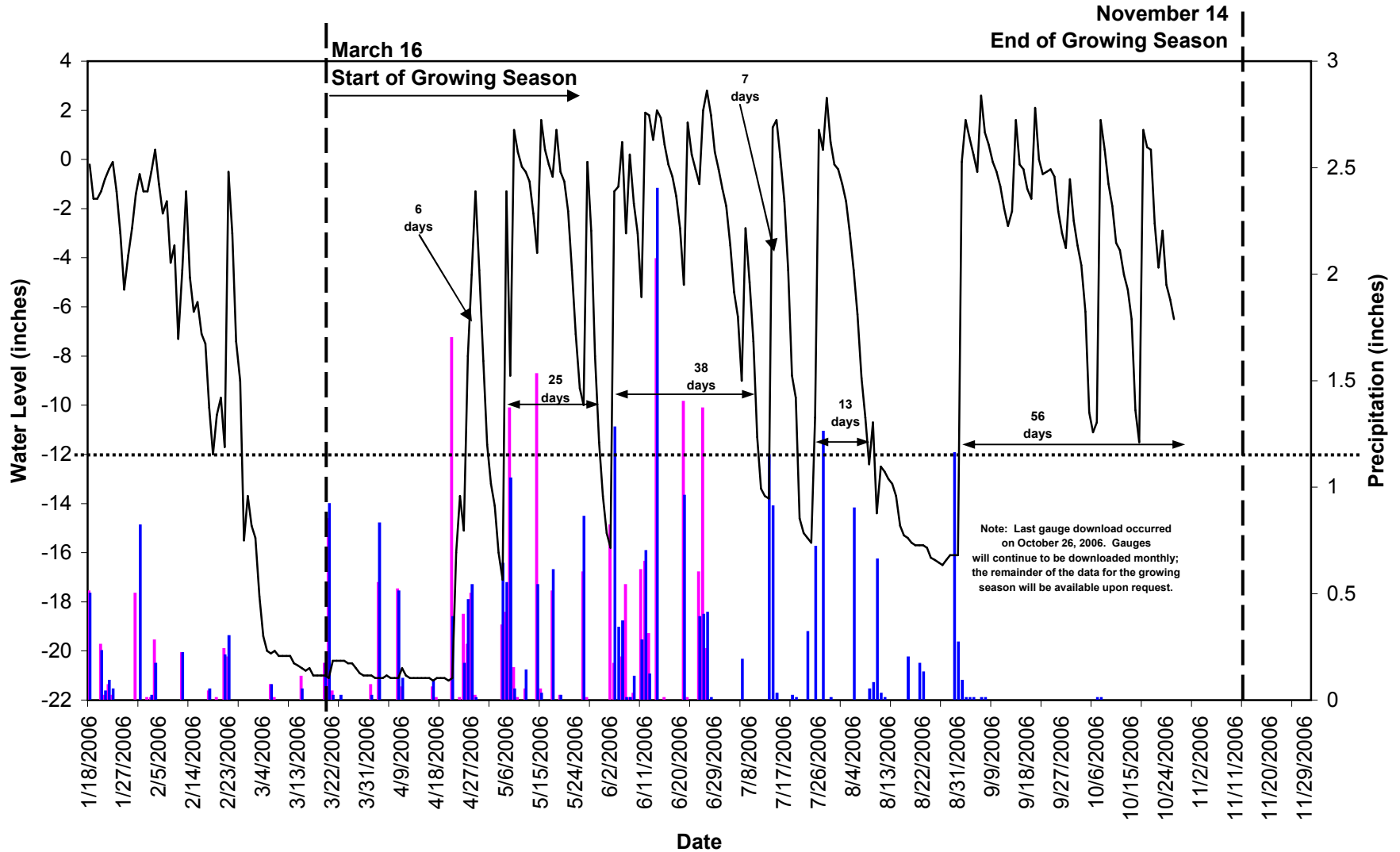
* Success criteria requires that no naturally recruited species may make up more than 10 percent of the 320 stem/acre total. Using this criteria, no naturally recruited species can provide more than 32 stems/acre towards success criteria (or 3.2 stems/0.1 acre plot).

4.0 REFERENCES

- Environmental Laboratory. 1987. Corps of Engineers Wetland Delineation Manual. Technical Report Y-87-1. United States Army Corps of Engineers Waterways Experiment Station, Vicksburg, MS.
- North Carolina Wetlands Restoration Program (NCWRP). 1993. Installing Monitoring Wells/Piezometers in Wetlands (WRP Technical Note HY-IA-3.1). North Carolina Department of Environment, Health, and Natural Resources, Raleigh, North Carolina.
- State Climate Office of North Carolina (SCONC). 2006. North Carolina Climate Retrieval and Observations Network of the Southeast Database. (online). Available: <http://www.nc-climate.ncsu.edu/cronos/> [October 9, 2006]. State Climate Office of North Carolina, Raleigh, North Carolina.
- United States Department of Agriculture (USDA). 1977. Soil Survey of Martin County, North Carolina. United States Department of Agriculture, Natural Resources Conservation Service.
- United States Department of the Army (USDOA). 1993 (unpublished). Compensatory Hardwood Mitigation Guidelines. United States Army Corps of Engineers, Wilmington District.
- United States Environmental Protection Agency (USEPA). 1990. Mitigation Site Classification (MiST). A Methodology to Classify Pre-Project Mitigation Sites and Develop Performance Standards for Construction and Restoration of Forested Wetlands. USEPA Workshop, August 13-15, 1989. USEPA Region IV and Hardwood Research Cooperative, North Carolina State University, Raleigh, NC.

**APPENDIX A
GAUGE DATA**

GAUGE 1 (2006 Gauge Data)



█ Onsite Rain Gauge (inches)
 █ Station Rain Data (inches)
 — Water Level (inches)

Gauge 1

Data Acquired: September 25, 2006

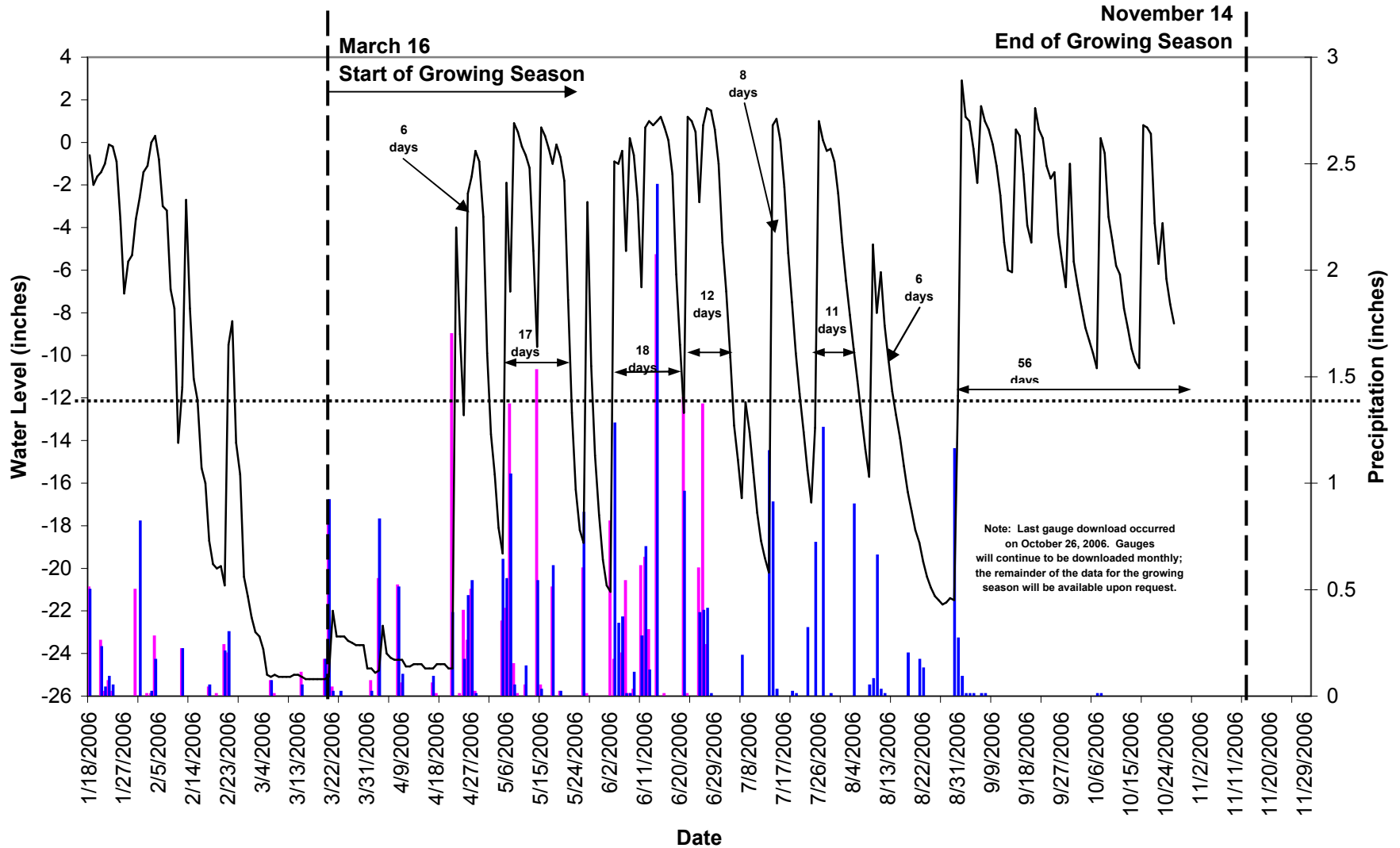
Serial Number: 9DE5D3D

CD: Consecutive Days Saturation (within 12 inches of the soil surface) During the Growing Season

JD: Julian Days During the Growing Season

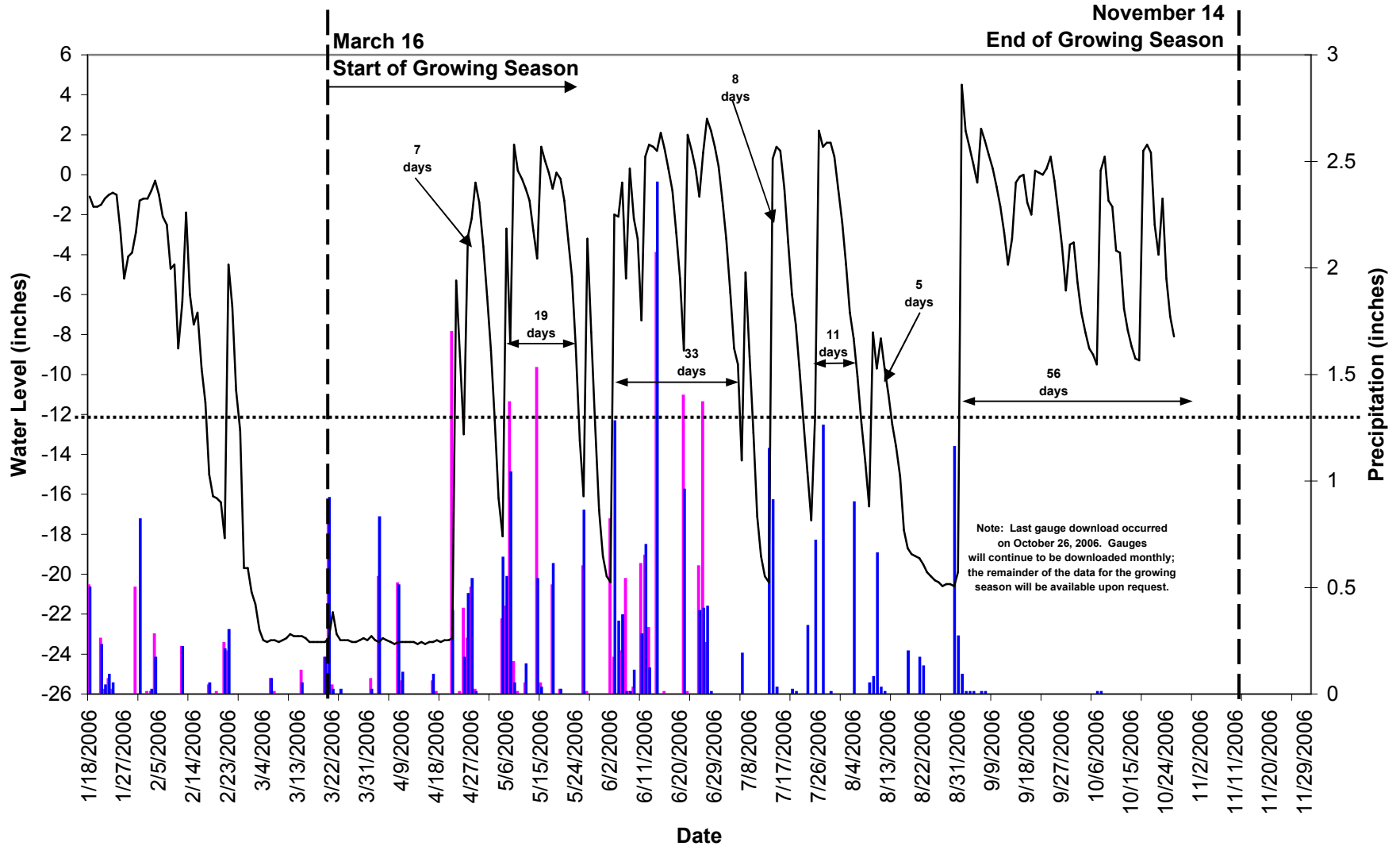
Date	Time	Water Level (inches)	CD	JD	(continued)					(continued)				
					Date	Time	Water Level (inches)	CD	JD	Date	Time	Water Level (inches)	CD	JD
18-Jan-06	5:00:00	-0.2			31-Mar-06	5:00:00	-21		16	11-Jun-06	5:00:00	1.9	9	88
19-Jan-06	5:00:00	-1.6			1-Apr-06	5:00:00	-21		17	12-Jun-06	5:00:00	1.8	10	89
20-Jan-06	5:00:00	-1.6			2-Apr-06	5:00:00	-21.1		18	13-Jun-06	5:00:00	0.8	11	90
21-Jan-06	5:00:00	-1.3			3-Apr-06	5:00:00	-21.1		19	14-Jun-06	5:00:00	2	12	91
22-Jan-06	5:00:00	-0.8			4-Apr-06	5:00:00	-21.1		20	15-Jun-06	5:00:00	1.7	13	92
23-Jan-06	5:00:00	-0.4			5-Apr-06	5:00:00	-21		21	16-Jun-06	5:00:00	0.6	14	93
24-Jan-06	5:00:00	-0.1			6-Apr-06	5:00:00	-21.1		22	17-Jun-06	5:00:00	-0.2	15	94
25-Jan-06	5:00:00	-1.3			7-Apr-06	5:00:00	-21.1		23	18-Jun-06	5:00:00	-0.7	16	95
26-Jan-06	5:00:00	-3			8-Apr-06	5:00:00	-21.1		24	19-Jun-06	5:00:00	-1.5	17	96
27-Jan-06	5:00:00	-5.3			9-Apr-06	5:00:00	-20.7		25	20-Jun-06	5:00:00	-2.8	18	97
28-Jan-06	5:00:00	-3.9			10-Apr-06	5:00:00	-21		26	21-Jun-06	5:00:00	-5.1	19	98
29-Jan-06	5:00:00	-2.8			11-Apr-06	5:00:00	-21.1		27	22-Jun-06	5:00:00	1.5	20	99
30-Jan-06	5:00:00	-1.4			12-Apr-06	5:00:00	-21.1		28	23-Jun-06	5:00:00	0.2	21	100
31-Jan-06	5:00:00	-0.6			13-Apr-06	5:00:00	-21.1		29	24-Jun-06	5:00:00	-0.4	22	101
1-Feb-06	5:00:00	-1.3			14-Apr-06	5:00:00	-21.1		30	25-Jun-06	5:00:00	-1	23	102
2-Feb-06	5:00:00	-1.3			15-Apr-06	5:00:00	-21.1		31	26-Jun-06	5:00:00	2	24	103
3-Feb-06	5:00:00	-0.5			16-Apr-06	5:00:00	-21.1		32	27-Jun-06	5:00:00	2.8	25	104
4-Feb-06	5:00:00	0.4			17-Apr-06	5:00:00	-21.2		33	28-Jun-06	5:00:00	1.8	26	105
5-Feb-06	5:00:00	-1			18-Apr-06	5:00:00	-21.1		34	29-Jun-06	5:00:00	0.3	27	106
6-Feb-06	5:00:00	-2.2			19-Apr-06	5:00:00	-21.1		35	30-Jun-06	5:00:00	-0.4	28	107
7-Feb-06	5:00:00	-1.7			20-Apr-06	5:00:00	-21.1		36	1-Jul-06	5:00:00	-1.2	29	108
8-Feb-06	5:00:00	-4.2			21-Apr-06	5:00:00	-21.2		37	2-Jul-06	5:00:00	-1.9	30	109
9-Feb-06	5:00:00	-3.5			22-Apr-06	5:00:00	-21.1		38	3-Jul-06	5:00:00	-3.5	31	110
10-Feb-06	5:00:00	-7.3			23-Apr-06	5:00:00	-16		39	4-Jul-06	5:00:00	-5.4	32	111
11-Feb-06	5:00:00	-4.5			24-Apr-06	5:00:00	-13.7		40	5-Jul-06	5:00:00	-6.4	33	112
12-Feb-06	5:00:00	-1.3			25-Apr-06	5:00:00	-15.1		41	6-Jul-06	5:00:00	-9	34	113
13-Feb-06	5:00:00	-4.8			26-Apr-06	5:00:00	-8	1	42	7-Jul-06	5:00:00	-2.8	35	114
14-Feb-06	5:00:00	-6.2			27-Apr-06	5:00:00	-4.7	2	43	8-Jul-06	5:00:00	-5	36	115
15-Feb-06	5:00:00	-5.8			28-Apr-06	5:00:00	-1.3	3	44	9-Jul-06	5:00:00	-7.4	37	116
16-Feb-06	5:00:00	-7.1			29-Apr-06	5:00:00	-4.5	4	45	10-Jul-06	5:00:00	-11.3	38	117
17-Feb-06	5:00:00	-7.5			30-Apr-06	5:00:00	-8.2	5	46	11-Jul-06	5:00:00	-13.4		118
18-Feb-06	5:00:00	-10.1			1-May-06	5:00:00	-11.6	6	47	12-Jul-06	5:00:00	-13.7		119
19-Feb-06	5:00:00	-12			2-May-06	5:00:00	-13.2		48	13-Jul-06	5:00:00	-13.8		120
20-Feb-06	5:00:00	-10.4			3-May-06	5:00:00	-14.1		49	14-Jul-06	5:00:00	1.3	1	121
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27-Feb-06	5:00:00	-15.5			10-May-06	5:00:00	-0.3	5	56	21-Jul-06	5:00:00	-14.6		128
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1-Mar-06	5:00:00	-14.9			12-May-06	5:00:00	-0.9	7	58	23-Jul-06	5:00:00	-15.4		130
2-Mar-06	5:00:00	-15.4			13-May-06	5:00:00	-2.2	8	59	24-Jul-06	5:00:00	-15.6		131
3-Mar-06	5:00:00	-17.8			14-May-06	5:00:00	-3.8	9	60	25-Jul-06	5:00:00	-10.5		132
4-Mar-06	5:00:00	-19.4			15-May-06	5:00:00	1.6	10	61	26-Jul-06	5:00:00	1.2	1	133
5-Mar-06	5:00:00	-20			16-May-06	5:00:00	0.4	11	62	27-Jul-06	5:00:00	0.4	2	134
6-Mar-06	5:00:00	-20.1			17-May-06	5:00:00	-0.2	12	63	28-Jul-06	5:00:00	2.5	3	135
7-Mar-06	5:00:00	-20			18-May-06	5:00:00	-0.7	13	64	29-Jul-06	5:00:00	0.7	4	136
8-Mar-06	5:00:00	-20.2			19-May-06	5:00:00	1.2	14	65	30-Jul-06	5:00:00	-0.2	5	137
9-Mar-06	5:00:00	-20.2			20-May-06	5:00:00	-0.5	15	66	31-Jul-06	5:00:00	-0.4	6	138
10-Mar-06	5:00:00	-20.2			21-May-06	5:00:00	-0.9	16	67	1-Aug-06	5:00:00	-1	7	139
11-Mar-06	5:00:00	-20.2			22-May-06	5:00:00	-2.1	17	68	2-Aug-06	5:00:00	-1.7	8	140
12-Mar-06	5:00:00	-20.5			23-May-06	5:00:00	-4.5	18	69	3-Aug-06	5:00:00	-3	9	141
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14-Mar-06	5:00:00	-20.7			25-May-06	5:00:00	-9.3	20	71	5-Aug-06	5:00:00	-6.3	11	143
15-Mar-06	5:00:00	-20.8			26-May-06	5:00:00	-10	21	72	6-Aug-06	5:00:00	-8.9	12	144
16-Mar-06	5:00:00	-20.7		1	27-May-06	5:00:00	-0.1	22	73	7-Aug-06	5:00:00	-10.5	13	145
17-Mar-06	5:00:00	-21		2	28-May-06	5:00:00	-2.9	23	74	8-Aug-06	5:00:00	-12.4		146
18-Mar-06	5:00:00	-21		3	29-May-06	5:00:00	-8	24	75	9-Aug-06	5:00:00	-10.7	1	147
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20-Mar-06	5:00:00	-21		5	31-May-06	5:00:00	-13.7		77	11-Aug-06	5:00:00	-12.5		149
21-Mar-06	5:00:00	-21.1		6	1-Jun-06	5:00:00	-15.2		78	12-Aug-06	5:00:00	-12.7		150
22-Mar-06	5:00:00	-20.4		7	2-Jun-06	5:00:00	-15.8		79	13-Aug-06	5:00:00	-13		151
23-Mar-06	5:00:00	-20.4		8	3-Jun-06	5:00:00	-1.3	1	80	14-Aug-06	5:00:00	-13.2		152
24-Mar-06	5:00:00	-20.4		9	4-Jun-06	5:00:00	-1.1	2	81	15-Aug-06	5:00:00	-13.7		153
25-Mar-06	5:00:00	-20.4		10	5-Jun-06	5:00:00	0.7	3	82	16-Aug-06	5:00:00	-14.9		154
26-Mar-06	5:00:00	-20.5		11	6-Jun-06	5:00:00	-3	4	83	17-Aug-06	5:00:00	-15.3		155
27-Mar-06	5:00:00	-20.5		12	7-Jun-06	5:00:00	0.2	5	84	18-Aug-06	5:00:00	-15.4		156
28-Mar-06	5:00:00	-20.7		13	8-Jun-06	5:00:00	-1.8	6	85	19-Aug-06	5:00:00	-15.6		157
29-Mar-06	5:00:00	-20.9		14	9-Jun-06	5:00:00	-3	7	86	20-Aug-06	5:00:00	-15.7		158
30-Mar-06	5:00:00	-21		15	10-Jun-06	5:00:00	-5.6	8	87	21-Aug-06	5:00:00	-15.7		159

GAUGE 2 (2006 Gauge Data)



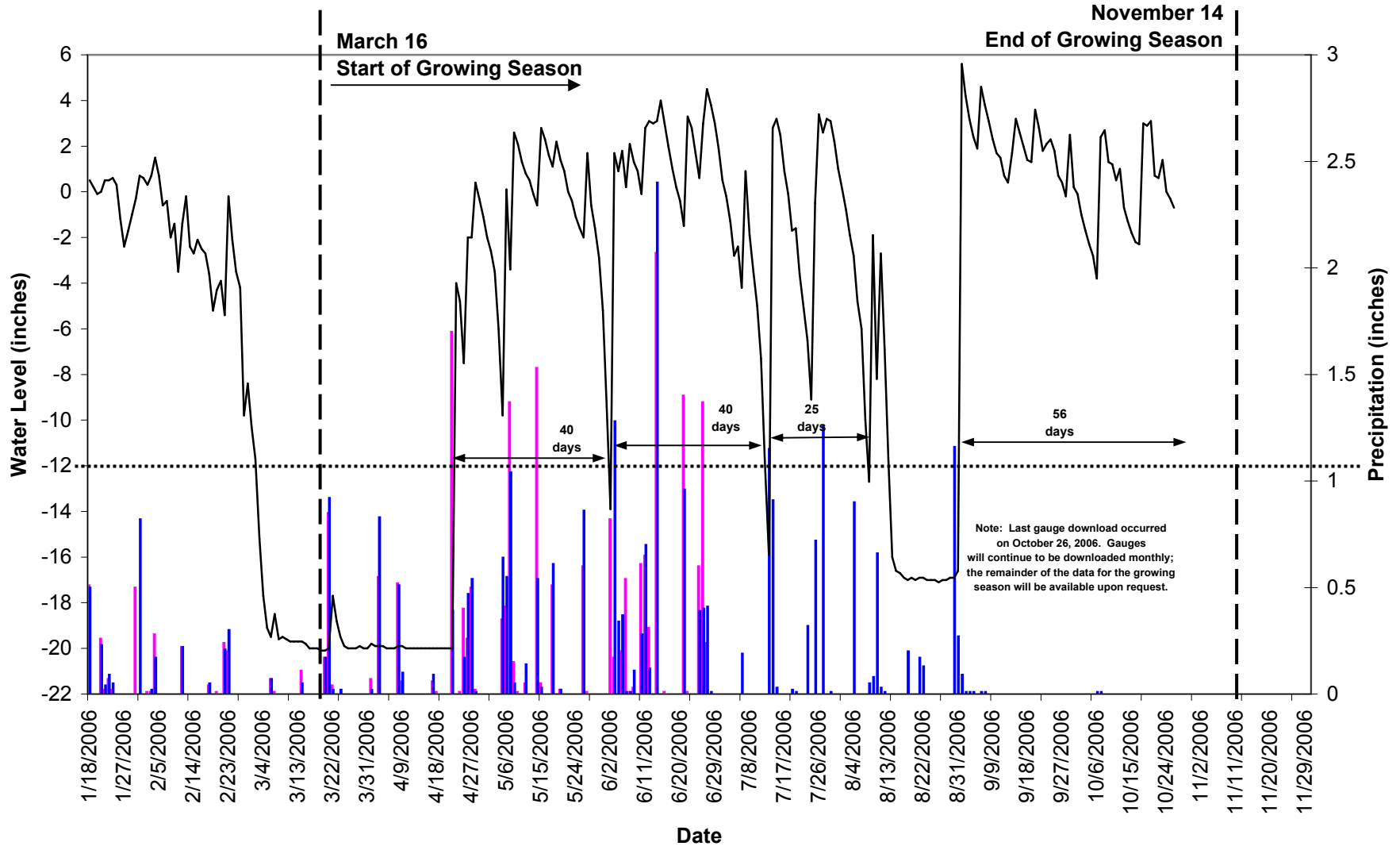
Onsite Rain Gauge (inches)
 Station Rain Data (inches)
 Water Level (inches)

GAUGE 3 (2006 Gauge Data)



█ Onsite Rain Gauge (inches)
 █ Station Rain Data (inches)
 — Water Level (inches)

GAUGE 4 (2006 Gauge Data)



█ Onsite Rain Gauge (inches)
 █ Station Rain Data (inches)
 — Water Level (inches)

Gauge 4

Data Acquired: September 25, 2006

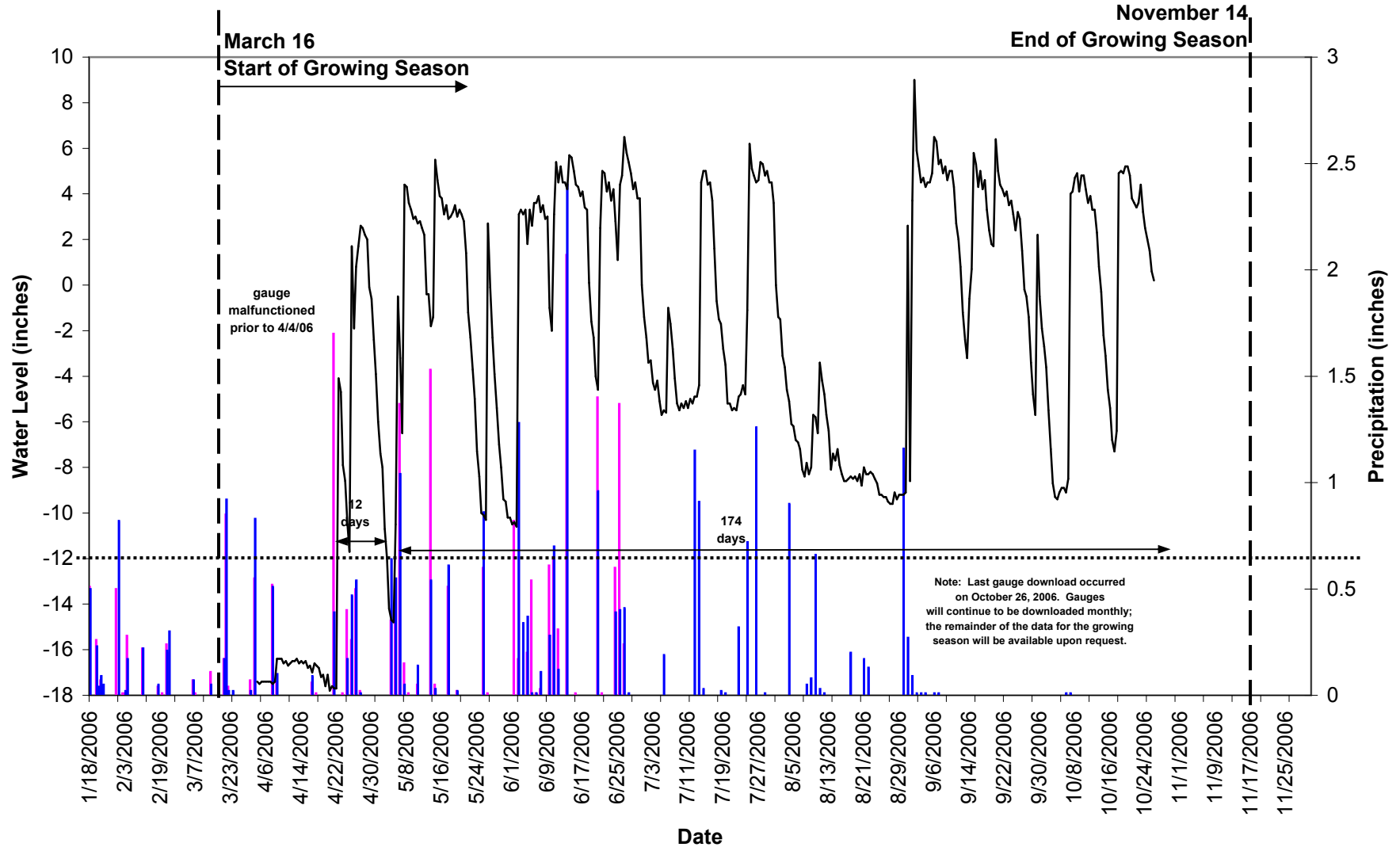
Serial Number: 9DE7267

CD: Consecutive Days Saturation (within 12 inches of the soil surface) During the Growing Season

JD: Julian Days During the Growing Season

					(continued)										(continued)				
Date	Time	Water Level (inches)	CD	JD	Date	Time	Water Level (inches)	CD	JD	Date	Time	Water Level (inches)	CD	JD	Date	Time	Water Level (inches)	CD	JD
18-Jan-06	5:00:00	0.5			31-Mar-06	5:00:00	-20		16	11-Jun-06	5:00:00	2.8		9	88				
19-Jan-06	5:00:00	0.2			1-Apr-06	5:00:00	-19.8		17	12-Jun-06	5:00:00	3.1		10	89				
20-Jan-06	5:00:00	-0.1			2-Apr-06	5:00:00	-19.9		18	13-Jun-06	5:00:00	3		11	90				
21-Jan-06	5:00:00	0			3-Apr-06	5:00:00	-19.9		19	14-Jun-06	5:00:00	3.1		12	91				
22-Jan-06	5:00:00	0.5			4-Apr-06	5:00:00	-19.9		20	15-Jun-06	5:00:00	4		13	92				
23-Jan-06	5:00:00	0.5			5-Apr-06	5:00:00	-20		21	16-Jun-06	5:00:00	3		14	93				
24-Jan-06	5:00:00	0.6			6-Apr-06	5:00:00	-20		22	17-Jun-06	5:00:00	2		15	94				
25-Jan-06	5:00:00	0.3			7-Apr-06	5:00:00	-20		23	18-Jun-06	5:00:00	1		16	95				
26-Jan-06	5:00:00	-1.2			8-Apr-06	5:00:00	-19.9		24	19-Jun-06	5:00:00	0.2		17	96				
27-Jan-06	5:00:00	-2.4			9-Apr-06	5:00:00	-19.9		25	20-Jun-06	5:00:00	-0.4		18	97				
28-Jan-06	5:00:00	-1.7			10-Apr-06	5:00:00	-20		26	21-Jun-06	5:00:00	-1.5		19	98				
29-Jan-06	5:00:00	-1			11-Apr-06	5:00:00	-20		27	22-Jun-06	5:00:00	3.3		20	99				
30-Jan-06	5:00:00	-0.3			12-Apr-06	5:00:00	-20		28	23-Jun-06	5:00:00	2.8		21	100				
31-Jan-06	5:00:00	0.7			13-Apr-06	5:00:00	-20		29	24-Jun-06	5:00:00	1.7		22	101				
1-Feb-06	5:00:00	0.6			14-Apr-06	5:00:00	-20		30	25-Jun-06	5:00:00	0.6		23	102				
2-Feb-06	5:00:00	0.3			15-Apr-06	5:00:00	-20		31	26-Jun-06	5:00:00	3		24	103				
3-Feb-06	5:00:00	0.7			16-Apr-06	5:00:00	-20		32	27-Jun-06	5:00:00	4.5		25	104				
4-Feb-06	5:00:00	1.5			17-Apr-06	5:00:00	-20		33	28-Jun-06	5:00:00	3.8		26	105				
5-Feb-06	5:00:00	0.7			18-Apr-06	5:00:00	-20		34	29-Jun-06	5:00:00	3		27	106				
6-Feb-06	5:00:00	-0.6			19-Apr-06	5:00:00	-20		35	30-Jun-06	5:00:00	1.9		28	107				
7-Feb-06	5:00:00	-0.4			20-Apr-06	5:00:00	-20		36	1-Jul-06	5:00:00	0.5		29	108				
8-Feb-06	5:00:00	-2			21-Apr-06	5:00:00	-20		37	2-Jul-06	5:00:00	-0.2		30	109				
9-Feb-06	5:00:00	-1.4			22-Apr-06	5:00:00	-20		38	3-Jul-06	5:00:00	-1.3		31	110				
10-Feb-06	5:00:00	-3.5			23-Apr-06	5:00:00	-4	1	39	4-Jul-06	5:00:00	-2.8		32	111				
11-Feb-06	5:00:00	-1.4			24-Apr-06	5:00:00	-4.8	2	40	5-Jul-06	5:00:00	-2.4		33	112				
12-Feb-06	5:00:00	-0.2			25-Apr-06	5:00:00	-7.5	3	41	6-Jul-06	5:00:00	-4.2		34	113				
13-Feb-06	5:00:00	-2.4			26-Apr-06	5:00:00	-2	4	42	7-Jul-06	5:00:00	0.9		35	114				
14-Feb-06	5:00:00	-2.7			27-Apr-06	5:00:00	-2	5	43	8-Jul-06	5:00:00	-1.9		36	115				
15-Feb-06	5:00:00	-2.1			28-Apr-06	5:00:00	0.4	6	44	9-Jul-06	5:00:00	-3.5		37	116				
16-Feb-06	5:00:00	-2.5			29-Apr-06	5:00:00	-0.3	7	45	10-Jul-06	5:00:00	-5		38	117				
17-Feb-06	5:00:00	-2.7			30-Apr-06	5:00:00	-1.1	8	46	11-Jul-06	5:00:00	-7.3		39	118				
18-Feb-06	5:00:00	-3.6			1-May-06	5:00:00	-2	9	47	12-Jul-06	5:00:00	-11.8		40	119				
19-Feb-06	5:00:00	-5.2			2-May-06	5:00:00	-2.6	10	48	13-Jul-06	5:00:00	-15.9		41	120				
20-Feb-06	5:00:00	-4.3			3-May-06	5:00:00	-3.5	11	49	14-Jul-06	5:00:00	2.8		1	121				
21-Feb-06	5:00:00	-3.9			4-May-06	5:00:00	-6	12	50	15-Jul-06	5:00:00	3.2		2	122				
22-Feb-06	5:00:00	-5.4			5-May-06	5:00:00	-9.8	13	51	16-Jul-06	5:00:00	2.5		3	123				
23-Feb-06	5:00:00	-0.2			6-May-06	5:00:00	0.1	14	52	17-Jul-06	5:00:00	0.9		4	124				
24-Feb-06	5:00:00	-2.1			7-May-06	5:00:00	-3.4	15	53	18-Jul-06	5:00:00	-0.1		5	125				
25-Feb-06	5:00:00	-3.5			8-May-06	5:00:00	2.6	16	54	19-Jul-06	5:00:00	-1.7		6	126				
26-Feb-06	5:00:00	-4.2			9-May-06	5:00:00	2.1	17	55	20-Jul-06	5:00:00	-1.6		7	127				
27-Feb-06	5:00:00	-9.8			10-May-06	5:00:00	1.3	18	56	21-Jul-06	5:00:00	-3.6		8	128				
28-Feb-06	5:00:00	-8.4			11-May-06	5:00:00	0.8	19	57	22-Jul-06	5:00:00	-5.1		9	129				
1-Mar-06	5:00:00	-10.3			12-May-06	5:00:00	0.5	20	58	23-Jul-06	5:00:00	-6.5		10	130				
2-Mar-06	5:00:00	-11.7			13-May-06	5:00:00	-0.1	21	59	24-Jul-06	5:00:00	-9.1		11	131				
3-Mar-06	5:00:00	-15.2			14-May-06	5:00:00	-0.6	22	60	25-Jul-06	5:00:00	-0.5		12	132				
4-Mar-06	5:00:00	-17.7			15-May-06	5:00:00	2.8	23	61	26-Jul-06	5:00:00	3.4		13	133				
5-Mar-06	5:00:00	-19.1			16-May-06	5:00:00	2.3	24	62	27-Jul-06	5:00:00	2.6		14	134				
6-Mar-06	5:00:00	-19.5			17-May-06	5:00:00	1.6	25	63	28-Jul-06	5:00:00	3.2		15	135				
7-Mar-06	5:00:00	-18.5			18-May-06	5:00:00	1.1	26	64	29-Jul-06	5:00:00	3.1		16	136				
8-Mar-06	5:00:00	-19.6			19-May-06	5:00:00	2.2	27	65	30-Jul-06	5:00:00	2.2		17	137				
9-Mar-06	5:00:00	-19.5			20-May-06	5:00:00	1.4	28	66	31-Jul-06	5:00:00	1		18	138				
10-Mar-06	5:00:00	-19.6			21-May-06	5:00:00	0.9	29	67	1-Aug-06	5:00:00	0.1		19	139				
11-Mar-06	5:00:00	-19.7			22-May-06	5:00:00	0	30	68	2-Aug-06	5:00:00	-0.8		20	140				
12-Mar-06	5:00:00	-19.7			23-May-06	5:00:00	-0.4	31	69	3-Aug-06	5:00:00	-1.9		21	141				
13-Mar-06	5:00:00	-19.7			24-May-06	5:00:00	-1.1	32	70	4-Aug-06	5:00:00	-2.8		22	142				
14-Mar-06	5:00:00	-19.7			25-May-06	5:00:00	-1.6	33	71	5-Aug-06	5:00:00	-4.8		23	143				
15-Mar-06	5:00:00	-19.8			26-May-06	5:00:00	-2	34	72	6-Aug-06	5:00:00	-6		24	144				
16-Mar-06	5:00:00	-20		1	27-May-06	5:00:00	1.7	35	73	7-Aug-06	5:00:00	-10		25	145				
17-Mar-06	5:00:00	-20		2	28-May-06	5:00:00	-0.6	36	74	8-Aug-06	5:00:00	-12.7		26	146				
18-Mar-06	5:00:00	-20		3	29-May-06	5:00:00	-1.6	37	75	9-Aug-06	5:00:00	-1.9		1	147				
19-Mar-06	5:00:00	-20.1		4	30-May-06	5:00:00	-2.9	38	76	10-Aug-06	5:00:00	-8.2		2	148				
20-Mar-06	5:00:00	-20.1		5	31-May-06	5:00:00	-5.2	39	77	11-Aug-06	5:00:00	-2.7		3	149				
21-Mar-06	5:00:00	-20		6	1-Jun-06	5:00:00	-9.4	40	78	12-Aug-06	5:00:00	-6.9		4	150				
22-Mar-06	5:00:00	-17.7		7	2-Jun-06	5:00:00	-13.9		79	13-Aug-06	5:00:00	-11.8		5	151				
23-Mar-06	5:00:00	-18.8		8	3-Jun-06	5:00:00	1.7	1	80	14-Aug-06	5:00:00	-16		152					
24-Mar-06	5:00:00	-19.5		9	4-Jun-06	5:00:00	0.9	2	81	15-Aug-06	5:00:00	-16.6		153					
25-Mar-06	5:00:00	-19.9		10	5-Jun-06	5:00:00	1.8	3	82	16-Aug-06	5:00:00	-16.7		154					
26-Mar-06	5:00:00	-20		11	6-Jun-06	5:00:00	0.2	4	83	17-Aug-06	5:00:00	-16.9		155					
27-Mar-06	5:00:00	-20		12	7-Jun-06	5:00:00	2.1	5	84	18-Aug-06	5:00:00	-17		156					
28-Mar-06	5:00:00	-20		13	8-Jun-06	5:00:00	1.3	6	85	19-Aug-06	5:00:00	-16.9		157					
29-Mar-06	5:00:00	-19.9		14	9-Jun-06	5:00:00	0.9	7	86	20-Aug-06	5:00:00	-17		158					
30-Mar-06	5:00:00	-20		15	10-Jun-06	5:00:00	-0.1	8	87	21-Aug-06	5:00:00	-16.9		159					

GAUGE 5 (2006 Gauge Data)

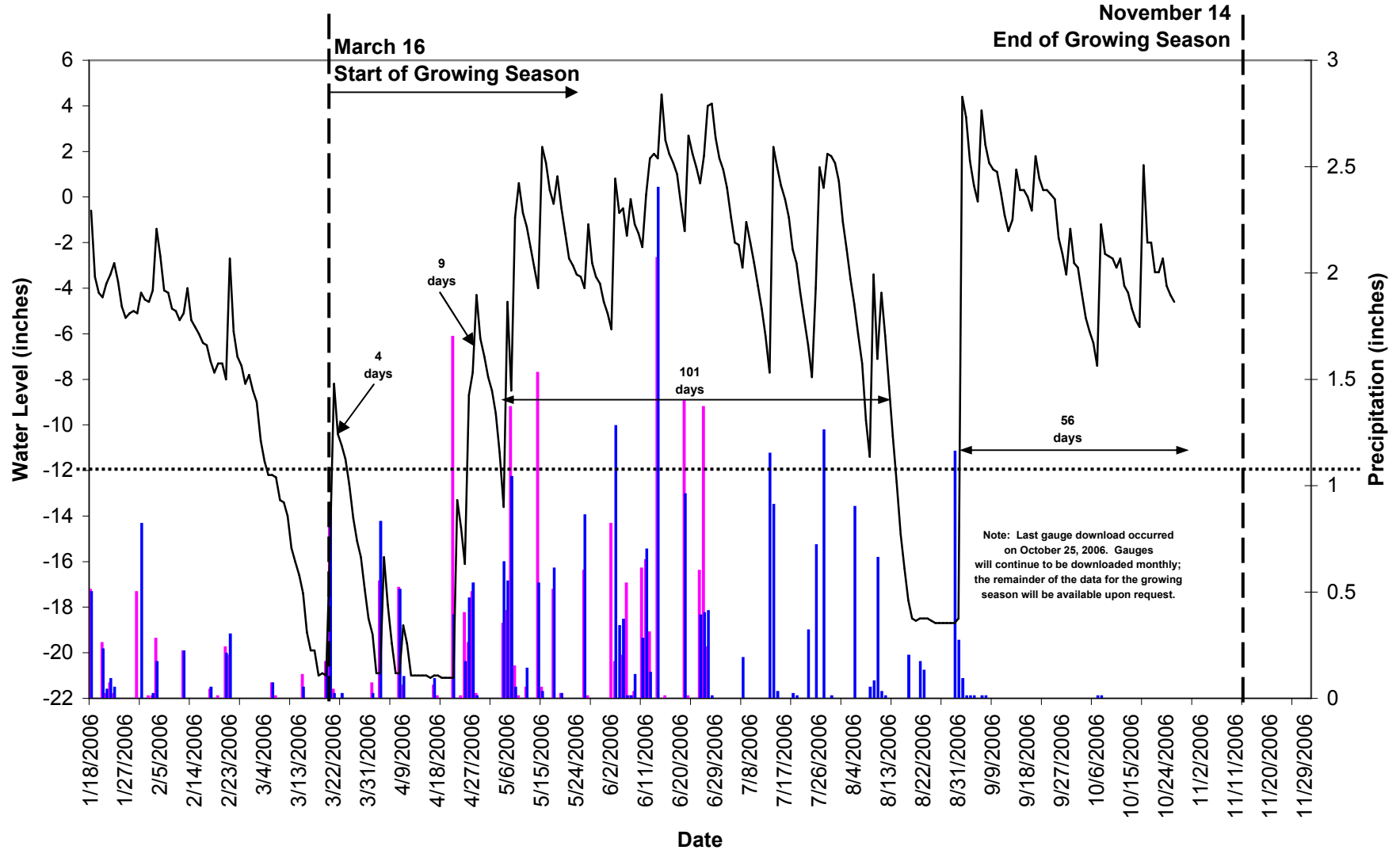


█ Onsite Rain Gauge (inches)
 █ Station Rain Data (inches)
 — Water Level (inches)

Page 2 Gauge 5

Page 2 Gauge 5					(continued)					(continued)				
Date	Time	Water Level (inches)	CD	JD	Date	Time	Water Level (inches)	CD	JD	Date	Time	Water Level (inches)	CD	JD
21-Jul-06	0:00:00	-5.2	77	128	30-Aug-06	0:00:00	-9.2	117	168	8-Oct-06	12:00:00	4.9	156	207
21-Jul-06	12:00:00	-5.5	77	128	30-Aug-06	12:00:00	-9.1	117	168	9-Oct-06	0:00:00	4.1	157	208
22-Jul-06	0:00:00	-5.4	78	129	31-Aug-06	0:00:00	2.6	118	169	9-Oct-06	12:00:00	4.8	157	208
22-Jul-06	12:00:00	-5.5	78	129	31-Aug-06	12:00:00	-8.6	118	169	10-Oct-06	0:00:00	4.8	158	209
23-Jul-06	0:00:00	-4.9	79	130	1-Sep-06	0:00:00	3.7	119	170	10-Oct-06	12:00:00	4.2	158	209
23-Jul-06	12:00:00	-4.8	79	130	1-Sep-06	12:00:00	9	119	170	11-Oct-06	0:00:00	3.6	159	210
24-Jul-06	0:00:00	-4.4	80	131	2-Sep-06	0:00:00	5.9	120	171	11-Oct-06	12:00:00	3.9	159	210
24-Jul-06	12:00:00	-4.8	80	131	2-Sep-06	12:00:00	5.2	120	171	12-Oct-06	0:00:00	3.3	160	211
25-Jul-06	0:00:00	-1.1	81	132	3-Sep-06	0:00:00	4.5	121	172	12-Oct-06	12:00:00	3.3	160	211
25-Jul-06	12:00:00	6.2	81	132	3-Sep-06	12:00:00	4.7	121	172	13-Oct-06	0:00:00	2.3	161	212
26-Jul-06	0:00:00	5.1	82	133	4-Sep-06	0:00:00	4.3	122	173	13-Oct-06	12:00:00	0.8	161	212
26-Jul-06	12:00:00	4.8	82	133	4-Sep-06	12:00:00	4.5	122	173	14-Oct-06	0:00:00	-0.3	162	213
27-Jul-06	0:00:00	4.5	83	134	5-Sep-06	0:00:00	4.5	123	174	14-Oct-06	12:00:00	-2.2	162	213
27-Jul-06	12:00:00	4.6	83	134	5-Sep-06	12:00:00	4.9	123	174	15-Oct-06	0:00:00	-3.1	163	214
28-Jul-06	0:00:00	5.4	84	135	6-Sep-06	0:00:00	6.5	124	175	15-Oct-06	12:00:00	-4.6	163	214
28-Jul-06	12:00:00	5.3	84	135	6-Sep-06	12:00:00	6.3	124	175	16-Oct-06	0:00:00	-5.4	164	215
29-Jul-06	0:00:00	4.8	85	136	7-Sep-06	0:00:00	5.3	125	176	16-Oct-06	12:00:00	-6.8	164	215
29-Jul-06	12:00:00	5	85	136	7-Sep-06	12:00:00	5.5	125	176	17-Oct-06	0:00:00	-7.3	165	216
30-Jul-06	0:00:00	4.5	86	137	8-Sep-06	0:00:00	4.9	126	177	17-Oct-06	12:00:00	-6.4	165	216
30-Jul-06	12:00:00	4.5	86	137	8-Sep-06	12:00:00	5.2	126	177	18-Oct-06	0:00:00	4.9	166	217
31-Jul-06	0:00:00	3.6	87	138	9-Sep-06	0:00:00	4.6	127	178	18-Oct-06	12:00:00	5	166	217
1-Aug-06	0:00:00	0	88	139	9-Sep-06	12:00:00	5	127	178	19-Oct-06	0:00:00	4.9	167	218
1-Aug-06	12:00:00	-1.4	88	139	10-Sep-06	0:00:00	5	128	179	19-Oct-06	12:00:00	5.2	167	218
2-Aug-06	0:00:00	-1.5	89	140	10-Sep-06	12:00:00	4.3	128	179	20-Oct-06	0:00:00	5.2	168	219
2-Aug-06	12:00:00	-3.1	89	140	11-Sep-06	0:00:00	2.7	129	180	20-Oct-06	12:00:00	4.8	168	219
3-Aug-06	0:00:00	-3.6	90	141	11-Sep-06	12:00:00	2	129	180	21-Oct-06	0:00:00	3.8	169	220
3-Aug-06	12:00:00	-4.6	90	141	12-Sep-06	0:00:00	0.8	130	181	21-Oct-06	12:00:00	3.6	169	220
4-Aug-06	0:00:00	-5.1	91	142	12-Sep-06	12:00:00	-1.2	130	181	22-Oct-06	0:00:00	3.4	170	221
4-Aug-06	12:00:00	-6.1	91	142	13-Sep-06	0:00:00	-2.4	131	182	22-Oct-06	12:00:00	3.6	170	221
5-Aug-06	0:00:00	-6.2	92	143	13-Sep-06	12:00:00	-3.2	131	182	23-Oct-06	0:00:00	4.4	171	222
5-Aug-06	12:00:00	-6.8	92	143	14-Sep-06	0:00:00	-0.6	132	183	23-Oct-06	12:00:00	3.2	171	222
6-Aug-06	0:00:00	-6.9	93	144	14-Sep-06	12:00:00	0.7	132	183	24-Oct-06	0:00:00	2.5	172	223
6-Aug-06	12:00:00	-7.2	93	144	15-Sep-06	0:00:00	5.8	133	184	24-Oct-06	12:00:00	2	172	223
7-Aug-06	0:00:00	-8.1	94	145	15-Sep-06	12:00:00	5.3	133	184	25-Oct-06	0:00:00	1.5	173	224
7-Aug-06	12:00:00	-8.4	94	145	16-Sep-06	0:00:00	4.3	134	185	25-Oct-06	12:00:00	0.6	173	224
8-Aug-06	0:00:00	-7.8	95	146	16-Sep-06	12:00:00	5	134	185	26-Oct-06	0:00:00	0.2	174	225
8-Aug-06	12:00:00	-8.3	95	146	17-Sep-06	0:00:00	4.2	135	186					
9-Aug-06	0:00:00	-8	96	147	17-Sep-06	12:00:00	4.6	135	186					
9-Aug-06	12:00:00	-5.7	96	147	18-Sep-06	0:00:00	3.3	136	187					
10-Aug-06	0:00:00	-5.8	97	148	18-Sep-06	12:00:00	2.4	136	187					
10-Aug-06	12:00:00	-6.5	97	148	19-Sep-06	0:00:00	1.8	137	188					
11-Aug-06	0:00:00	-3.4	98	149	19-Sep-06	12:00:00	1.7	137	188					
11-Aug-06	12:00:00	-4.2	98	149	20-Sep-06	0:00:00	6.4	138	189					
12-Aug-06	0:00:00	-4.8	99	150	20-Sep-06	12:00:00	5	138	189					
12-Aug-06	12:00:00	-5.7	99	150	21-Sep-06	0:00:00	4.4	139	190					
13-Aug-06	0:00:00	-6.4	100	151	21-Sep-06	12:00:00	4.2	139	190					
13-Aug-06	12:00:00	-8.1	100	151	22-Sep-06	0:00:00	3.9	140	191					
14-Aug-06	0:00:00	-7.4	101	152	22-Sep-06	12:00:00	4.1	140	191					
14-Aug-06	12:00:00	-7.7	101	152	23-Sep-06	0:00:00	3.5	141	192					
15-Aug-06	0:00:00	-7.2	102	153	23-Sep-06	12:00:00	3.7	141	192					
15-Aug-06	12:00:00	-7.9	102	153	24-Sep-06	0:00:00	3.1	142	193					
16-Aug-06	0:00:00	-8.3	103	154	24-Sep-06	12:00:00	2.4	142	193					
16-Aug-06	12:00:00	-8.6	103	154	25-Sep-06	0:00:00	3.2	143	194					
17-Aug-06	0:00:00	-8.6	104	155	25-Sep-06	12:00:00	2.9	143	194					
17-Aug-06	12:00:00	-8.5	104	155	26-Sep-06	0:00:00	1.5	143	194					
18-Aug-06	0:00:00	-8.4	105	156	26-Sep-06	12:00:00	-0.2	144	195					
18-Aug-06	12:00:00	-8.5	105	156	27-Sep-06	0:00:00	-0.5	144	195					
19-Aug-06	0:00:00	-8.4	106	157	27-Sep-06	12:00:00	-1.4	145	196					
19-Aug-06	12:00:00	-8.6	106	157	28-Sep-06	0:00:00	-3.4	145	196					
20-Aug-06	0:00:00	-8.3	107	158	28-Sep-06	12:00:00	-4.8	146	197					
20-Aug-06	12:00:00	-8.8	107	158	29-Sep-06	0:00:00	-5.7	146	197					
21-Aug-06	0:00:00	-8	108	159	29-Sep-06	12:00:00	2.2	147	198					
21-Aug-06	12:00:00	-8.3	108	159	30-Sep-06	0:00:00	-0.5	147	198					
22-Aug-06	0:00:00	-8.3	109	160	30-Sep-06	12:00:00	-1.9	148	199					
22-Aug-06	12:00:00	-8.2	109	160	1-Oct-06	0:00:00	-2.7	148	199					
23-Aug-06	0:00:00	-8.3	110	161	1-Oct-06	12:00:00	-3.6	149	200					
23-Aug-06	12:00:00	-8.5	110	161	2-Oct-06	0:00:00	-5.5	149	200					
24-Aug-06	0:00:00	-8.7	111	162	2-Oct-06	12:00:00	-7.2	150	201					
24-Aug-06	12:00:00	-9.2	111	162	3-Oct-06	0:00:00	-8.7	150	201					
25-Aug-06	0:00:00	-9.2	112	163	3-Oct-06	12:00:00	-9.3	151	202					
25-Aug-06	12:00:00	-9.3	112	163	4-Oct-06	0:00:00	-9.4	151	202					
26-Aug-06	0:00:00	-9.3	113	164	4-Oct-06	12:00:00	-9.1	152	203					
26-Aug-06	12:00:00	-9.5	113	164	5-Oct-06	0:00:00	-8.9	152	203					
27-Aug-06	0:00:00	-9.6	114	165	5-Oct-06	12:00:00	-8.9	153	204					
27-Aug-06	12:00:00	-9.6	114	165	6-Oct-06	0:00:00	-9.1	153	204					
28-Aug-06	0:00:00	-9.1	115	166	6-Oct-06	12:00:00	-8.5	154	205					
28-Aug-06	12:00:00	-9.4	115	166	7-Oct-06	0:00:00	4	154	205					
29-Aug-06	0:00:00	-9.2	116	167	7-Oct-06	12:00:00	4.1	155	206					
29-Aug-06	12:00:00	-9.2	116	167	8-Oct-06	0:00:00	4.7	156	207					

REFERENCE GAUGE 1 (2006 Gauge Data)



█ Onsite Rain Gauge (inches) █ Station Rain Data (inches) — Water Level (inches)

Reference Gauge 1

Data Acquired: September 25, 2006

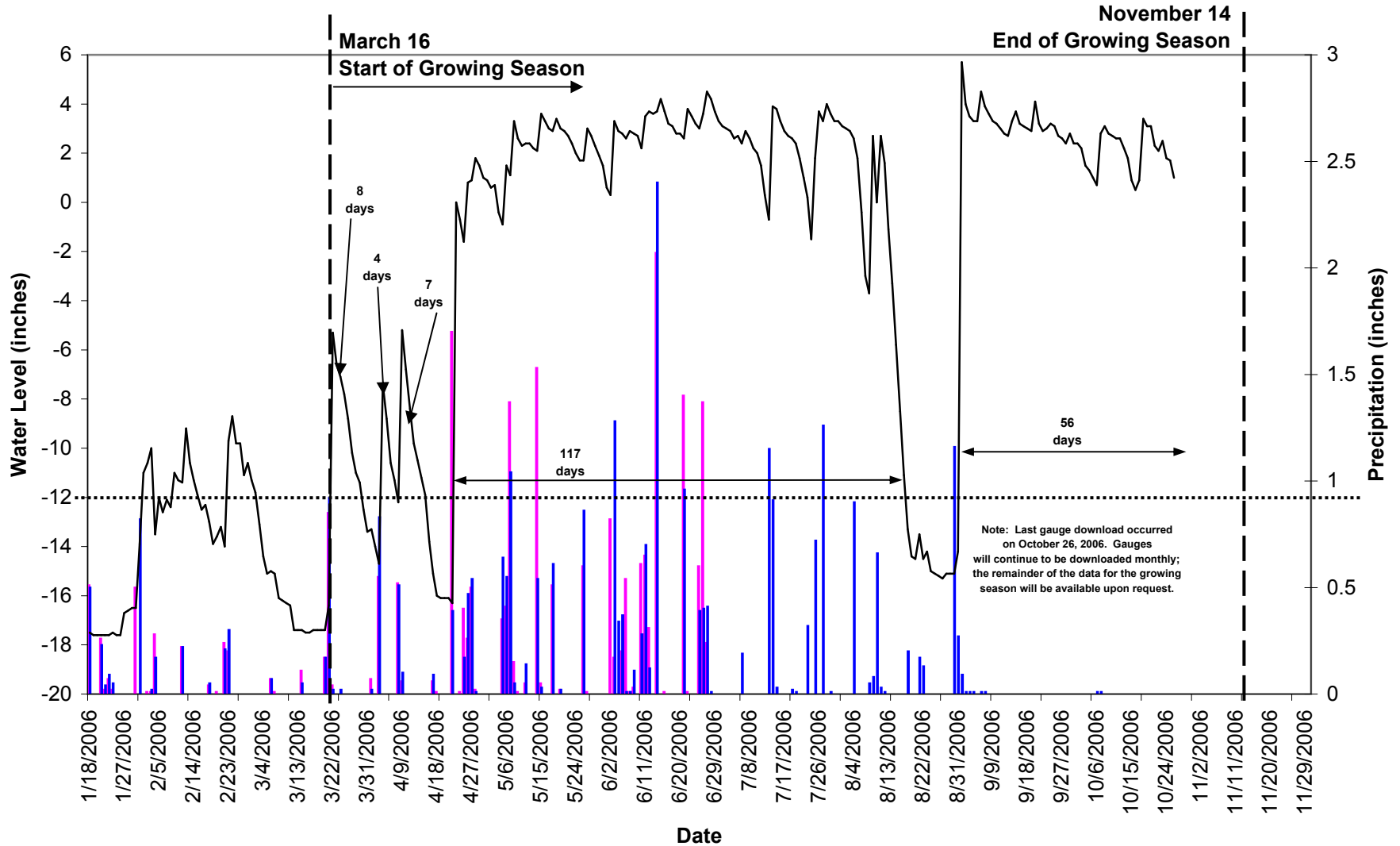
Serial Number: A3C0E6F

CD: Consecutive Days Saturation (within 12 inches of the soil surface) During the Growing Season

JD: Julian Days During the Growing Season

					(continued)										(continued)				
Date	Time	Water Level (inches)	CD	JD	Date	Time	Water Level (inches)	CD	JD	Date	Time	Water Level (inches)	CD	JD	Date	Time	Water Level (inches)	CD	JD
18-Jan-06	5:00:00	-0.6			31-Mar-06	5:00:00	-18.5		16	11-Jun-06	5:00:00	0.1		37	88				
19-Jan-06	5:00:00	-3.5			1-Apr-06	5:00:00	-19.2		17	12-Jun-06	5:00:00	1.7		38	89				
20-Jan-06	5:00:00	-4.2			2-Apr-06	5:00:00	-20.9		18	13-Jun-06	5:00:00	1.9		39	90				
21-Jan-06	5:00:00	-4.4			3-Apr-06	5:00:00	-20.9		19	14-Jun-06	5:00:00	1.7		40	91				
22-Jan-06	5:00:00	-3.8			4-Apr-06	5:00:00	-15.8		20	15-Jun-06	5:00:00	4.5		41	92				
23-Jan-06	5:00:00	-3.4			5-Apr-06	5:00:00	-17.9		21	16-Jun-06	5:00:00	2.5		42	93				
24-Jan-06	5:00:00	-2.9			6-Apr-06	5:00:00	-19.6		22	17-Jun-06	5:00:00	1.9		43	94				
25-Jan-06	5:00:00	-3.7			7-Apr-06	5:00:00	-20.9		23	18-Jun-06	5:00:00	1.5		44	95				
26-Jan-06	5:00:00	-4.8			8-Apr-06	5:00:00	-20.9		24	19-Jun-06	5:00:00	1		45	96				
27-Jan-06	5:00:00	-5.3			9-Apr-06	5:00:00	-18.8		25	20-Jun-06	5:00:00	-0.3		46	97				
28-Jan-06	5:00:00	-5.1			10-Apr-06	5:00:00	-19.6		26	21-Jun-06	5:00:00	-1.5		47	98				
29-Jan-06	5:00:00	-5			11-Apr-06	5:00:00	-21		27	22-Jun-06	5:00:00	2.7		48	99				
30-Jan-06	5:00:00	-5.1			12-Apr-06	5:00:00	-21		28	23-Jun-06	5:00:00	1.9		49	100				
31-Jan-06	5:00:00	-4.2			13-Apr-06	5:00:00	-21		29	24-Jun-06	5:00:00	1.3		50	101				
1-Feb-06	5:00:00	-4.5			14-Apr-06	5:00:00	-21		30	25-Jun-06	5:00:00	0.6		51	102				
2-Feb-06	5:00:00	-4.6			15-Apr-06	5:00:00	-21		31	26-Jun-06	5:00:00	1.8		52	103				
3-Feb-06	5:00:00	-4.1			16-Apr-06	5:00:00	-21.1		32	27-Jun-06	5:00:00	4		53	104				
4-Feb-06	5:00:00	-1.4			17-Apr-06	5:00:00	-21		33	28-Jun-06	5:00:00	4.1		54	105				
5-Feb-06	5:00:00	-2.6			18-Apr-06	5:00:00	-21		34	29-Jun-06	5:00:00	2.6		55	106				
6-Feb-06	5:00:00	-4.1			19-Apr-06	5:00:00	-21.1		35	30-Jun-06	5:00:00	1.7		56	107				
7-Feb-06	5:00:00	-4.2			20-Apr-06	5:00:00	-21.1		36	1-Jul-06	5:00:00	1.2		57	108				
8-Feb-06	5:00:00	-4.9			21-Apr-06	5:00:00	-21.1		37	2-Jul-06	5:00:00	0.4		58	109				
9-Feb-06	5:00:00	-5			22-Apr-06	5:00:00	-21.1		38	3-Jul-06	5:00:00	-0.9		59	110				
10-Feb-06	5:00:00	-5.4			23-Apr-06	5:00:00	-13.3		39	4-Jul-06	5:00:00	-2		60	111				
11-Feb-06	5:00:00	-5.1			24-Apr-06	5:00:00	-14.5		40	5-Jul-06	5:00:00	-2.1		61	112				
12-Feb-06	5:00:00	-4			25-Apr-06	5:00:00	-16.1		41	6-Jul-06	5:00:00	-3.1		62	113				
13-Feb-06	5:00:00	-5.4			26-Apr-06	5:00:00	-8.7	1	42	7-Jul-06	5:00:00	-1.1		63	114				
14-Feb-06	5:00:00	-5.7			27-Apr-06	5:00:00	-7.7	2	43	8-Jul-06	5:00:00	-2		64	115				
15-Feb-06	5:00:00	-6			28-Apr-06	5:00:00	-4.3	3	44	9-Jul-06	5:00:00	-2.9		65	116				
16-Feb-06	5:00:00	-6.4			29-Apr-06	5:00:00	-6.2	4	45	10-Jul-06	5:00:00	-3.9		66	117				
17-Feb-06	5:00:00	-6.5			30-Apr-06	5:00:00	-7	5	46	11-Jul-06	5:00:00	-4.9		67	118				
18-Feb-06	5:00:00	-7.2			1-May-06	5:00:00	-7.9	6	47	12-Jul-06	5:00:00	-6.1		68	119				
19-Feb-06	5:00:00	-7.7			2-May-06	5:00:00	-8.5	7	48	13-Jul-06	5:00:00	-7.7		69	120				
20-Feb-06	5:00:00	-7.3			3-May-06	5:00:00	-9.5	8	49	14-Jul-06	5:00:00	2.2		70	121				
21-Feb-06	5:00:00	-7.3			4-May-06	5:00:00	-11.2	9	50	15-Jul-06	5:00:00	1.3		71	122				
22-Feb-06	5:00:00	-8			5-May-06	5:00:00	-13.6		51	16-Jul-06	5:00:00	0.5		72	123				
23-Feb-06	5:00:00	-2.7			6-May-06	5:00:00	-4.6	1	52	17-Jul-06	5:00:00	-0.1		73	124				
24-Feb-06	5:00:00	-5.9			7-May-06	5:00:00	-8.5	2	53	18-Jul-06	5:00:00	-0.9		74	125				
25-Feb-06	5:00:00	-7			8-May-06	5:00:00	-0.9	3	54	19-Jul-06	5:00:00	-2.3		75	126				
26-Feb-06	5:00:00	-7.4			9-May-06	5:00:00	0.6	4	55	20-Jul-06	5:00:00	-2.9		76	127				
27-Feb-06	5:00:00	-8.2			10-May-06	5:00:00	-0.7	5	56	21-Jul-06	5:00:00	-4.2		77	128				
28-Feb-06	5:00:00	-7.8			11-May-06	5:00:00	-1.3	6	57	22-Jul-06	5:00:00	-5.4		78	129				
1-Mar-06	5:00:00	-8.5			12-May-06	5:00:00	-2.2	7	58	23-Jul-06	5:00:00	-6.5		79	130				
2-Mar-06	5:00:00	-9			13-May-06	5:00:00	-3.1	8	59	24-Jul-06	5:00:00	-7.9		80	131				
3-Mar-06	5:00:00	-10.7			14-May-06	5:00:00	-4	9	60	25-Jul-06	5:00:00	-4		81	132				
4-Mar-06	5:00:00	-11.6			15-May-06	5:00:00	2.2	10	61	26-Jul-06	5:00:00	1.3		82	133				
5-Mar-06	5:00:00	-12.2			16-May-06	5:00:00	1.5	11	62	27-Jul-06	5:00:00	0.4		83	134				
6-Mar-06	5:00:00	-12.2			17-May-06	5:00:00	0.3	12	63	28-Jul-06	5:00:00	1.9		84	135				
7-Mar-06	5:00:00	-12.3			18-May-06	5:00:00	-0.3	13	64	29-Jul-06	5:00:00	1.8		85	136				
8-Mar-06	5:00:00	-13.3			19-May-06	5:00:00	0.9	14	65	30-Jul-06	5:00:00	1.5		86	137				
9-Mar-06	5:00:00	-13.4			20-May-06	5:00:00	-0.5	15	66	31-Jul-06	5:00:00	0.7		87	138				
10-Mar-06	5:00:00	-14			21-May-06	5:00:00	-1.6	16	67	1-Aug-06	5:00:00	-1.1		88	139				
11-Mar-06	5:00:00	-15.4			22-May-06	5:00:00	-2.7	17	68	2-Aug-06	5:00:00	-2.3		89	140				
12-Mar-06	5:00:00	-16			23-May-06	5:00:00	-3	18	69	3-Aug-06	5:00:00	-3.6		90	141				
13-Mar-06	5:00:00	-16.6			24-May-06	5:00:00	-3.4	19	70	4-Aug-06	5:00:00	-4.7		91	142				
14-Mar-06	5:00:00	-17.4			25-May-06	5:00:00	-3.5	20	71	5-Aug-06	5:00:00	-6		92	143				
15-Mar-06	5:00:00	-19.1			26-May-06	5:00:00	-4	21	72	6-Aug-06	5:00:00	-7.3		93	144				
16-Mar-06	5:00:00	-19.9		1	27-May-06	5:00:00	-1.2	22	73	7-Aug-06	5:00:00	-9.8		94	145				
17-Mar-06	5:00:00	-19.9		2	28-May-06	5:00:00	-2.9	23	74	8-Aug-06	5:00:00	-11.4		95	146				
18-Mar-06	5:00:00	-21		3	29-May-06	5:00:00	-3.5	24	75	9-Aug-06	5:00:00	-3.4		96	147				
19-Mar-06	5:00:00	-20.9		4	30-May-06	5:00:00	-3.8	25	76	10-Aug-06	5:00:00	-7.1		97	148				
20-Mar-06	5:00:00	-21		5	31-May-06	5:00:00	-4.6	26	77	11-Aug-06	5:00:00	-4.2		98	149				
21-Mar-06	5:00:00	-15.4		6	1-Jun-06	5:00:00	-5.1	27	78	12-Aug-06	5:00:00	-6.1		99	150				
22-Mar-06	5:00:00	-8.2	1	7	2-Jun-06	5:00:00	-5.8	28	79	13-Aug-06	5:00:00	-8.3	100	151					
23-Mar-06	5:00:00	-10.4	2	8	3-Jun-06	5:00:00	0.8	29	80	14-Aug-06	5:00:00	-10.5	101	152					
24-Mar-06	5:00:00	-10.9	3	9	4-Jun-06	5:00:00	-0.7	30	81	15-Aug-06	5:00:00	-12.5		153					
25-Mar-06	5:00:00	-11.5	4	10	5-Jun-06	5:00:00	-0.5	31	82	16-Aug-06	5:00:00	-14.8		154					
26-Mar-06	5:00:00	-12.6		11	6-Jun-06	5:00:00	-1.7	32	83	17-Aug-06	5:00:00	-16.3		155					
27-Mar-06	5:00:00	-14.1		12	7-Jun-06	5:00:00	-0.1	33	84	18-Aug-06	5:00:00	-17.7		156					
28-Mar-06	5:00:00	-15.1		13	8-Jun-06	5:00:00	-1.2	34	85	19-Aug-06	5:00:00	-18.5		157					
29-Mar-06	5:00:00	-15.8		14	9-Jun-06	5:00:00	-1.6	35	86	20-Aug-06	5:00:00	-18.6		158					
30-Mar-06	5:00:00	-17.2		15	10-Jun-06	5:00:00	-2.2	36	87	21-Aug-06	5:00:00	-18.5		159					

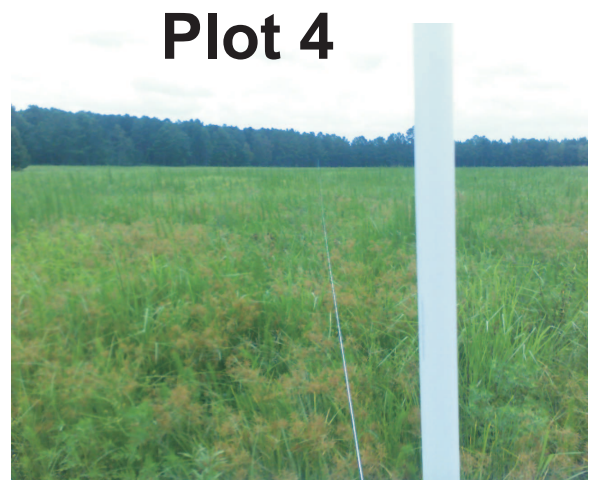
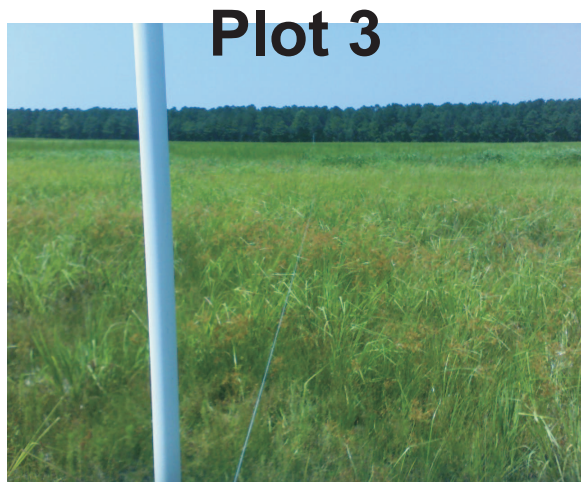
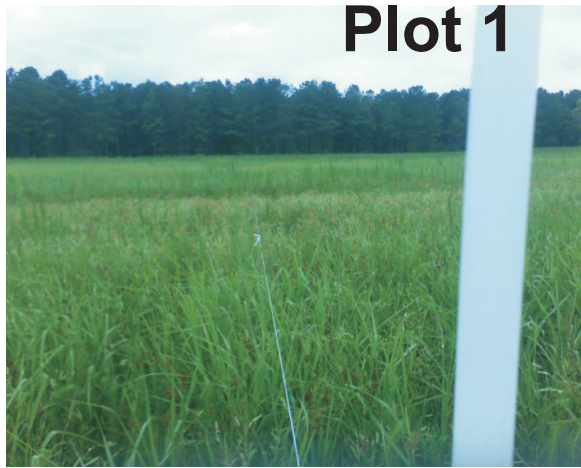
REFERENCE GAUGE 2 (2006 Gauge Data)



█ Onsite Rain Gauge (inches)
 █ Station Rain Data (inches)
 — Water Level (inches)

APPENDIX B
VEGETATION PLOT PHOTOGRAPHS

Gatlin Swamp Wetland Restoration Site
Year 1 (2006) Annual Monitoring Report
Vegetation Plot Photographs Taken August 2006



APPENDIX C
WILDLIFE OBSERVATIONS

WILDLIFE OBSERVED AT GATLIN SWAMP RESTORATION SITE		
BIRDS*:		Aug 15 & 17 2006
Great Egret	<i>Ardea alba</i>	x
Turkey Vulture	<i>Cathartes aura</i>	x
Red-tailed Hawk	<i>Buteo jamaicensis</i>	x
Northern Bobwhite	<i>Colinus virginianus</i>	x
Killdeer	<i>Charadrius vociferus</i>	x
Spotted Sandpiper	<i>Actitis macularia</i>	x
Mourning Dove	<i>Zenaida macroura</i>	x
Ruby-throated Hummingbird	<i>Archilochos colubris</i>	x
Pileated Woodpecker	<i>Dryocopus pileatus</i>	x
Barn Swallow	<i>Hirundo rustica</i>	x
American Crow	<i>Corvus brachyrhynchos</i>	x
Carolina Wren	<i>Thryothorus ludovicianus</i>	x
Summer Tanager	<i>Piranga rubra</i>	x
Indigo Bunting	<i>Passerina cyanea</i>	x
American Goldfinch	<i>Carduelis tristis</i>	x
Eastern Towhee	<i>Pipilo erythrophthalmus</i>	x
MAMMALS:		Aug 15 & 17 2006
White-tailed Deer	<i>Odocoileus virginianus</i>	x
Black Bear	<i>Ursus americanus</i>	x
Rabbit (scat)	<i>Sylvilagus sp.</i>	x
REPTILES and AMPHIBIANS:		Aug 15 & 17 2006
Green Tree Frog	<i>Hyla cinerea</i>	x
Pickerel Frog	<i>Rana palustris</i>	x
crayfish (chimneys)		x
*Bird list: <u>The Sibley Guide to Birds</u> by David Allen Sibley. National Audubon Society. 2000. Chanticleer Press, Inc.		
Aug (15 and 17) 2006 – these were observations made incidental to other work.		