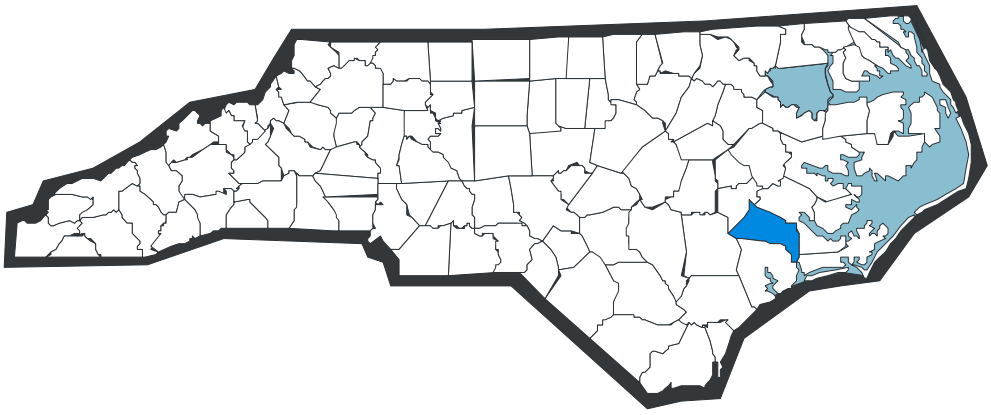
ANNUAL MONITORING REPORT FOR 2006
CLAYHILL FARMS



CLAYHILL FARMS MITIGATION SITE
JONES COUNTY, NORTH CAROLINA
TIP No. R-2105 WM
(EEP Project Number .00018)
2006 Annual Monitoring Report (Year 1 of 5)

Submitted to:
North Carolina Department of Environment and Natural Resources
Ecosystem Enhancement Program
Raleigh, North Carolina

Design Firm:
Office of Natural Environment & Roadside Environmental Unit
North Carolina Department of Transportation
Raleigh, North Carolina

April 2007

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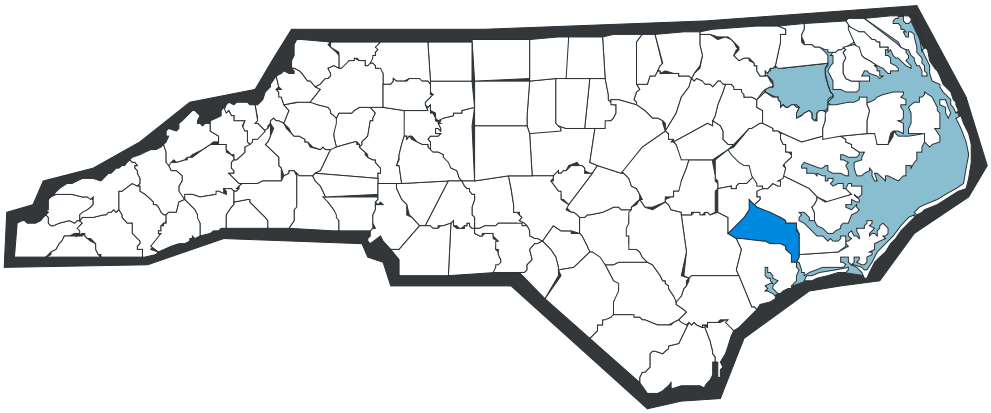

CLAYHILL FARMS MITIGATION SITE
JONES COUNTY, NORTH CAROLINA
TIP No. R-2105 WM
(EEP Project Number .00018)
2006 Annual Monitoring Report (Year 1 of 5)

Axiom Environmental, Inc.

Ecosystem Enhancement PROGRAM

Submitted to:
North Carolina Department of Environment and Natural Resources
Ecosystem Enhancement Program
Raleigh, North Carolina

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

Design Firm:
Office of Natural Environment & Roadside Environmental Unit
North Carolina Department of Transportation
Raleigh, North Carolina

April 2007

EXECUTIVE SUMMARY

The Clayhill Farms Stream and Wetland Restoration Site (Site) is located in southern Jones County, approximately 1 mile north of the Town of Kuhns and 0.75 mile north of the Carteret County/Jones County line. The Site is located east of Highway 58 and is bordered by the Croatan National Forest to the north, east, and west and by various forested and residential parcels to the south. Site streams, Billy's Branch and other unnamed tributaries to Hunters Creek, bisect the Site. The project is located within the White Oak River Basin in United States Geological Survey (USGS) 14-digit Hydrologic Unit 03020106010060 (North Carolina Division of Water Quality [NCDWQ] subbasin 03-05-01). This document serves as the 2006 Year One Annual Monitoring Report.

Twenty groundwater gauges were maintained and monitored for the year 1 (2006) growing season. Groundwater hydrology within 12 inches of the soil surface is occurring for greater than 12.5 percent of the growing season for the year 1 (2006) growing season at Gauges GW1 through GW9. Gauges GW14 and GW15 fell between 5 and 12.5 percent of the growing season and the remainder of the gauges were saturated or inundated for less than 5 percent of the growing season (Gauges GW10 through GW13 and GW16 through GW20). Gauges that did not meet success criteria were located within the lower half of the Site near the restored stream channel. These gauges will continue to be monitored closely; a jurisdictional wetland delineation may be necessary at the end of the five-year monitoring period to accurately quantify successful wetlands within the Site.

Ten 10-meter square vegetation plots were monitoring for the year 1 (2006) monitoring season. Based on stem counts, the average plot density monitored at this Site is greater than the required 320 stems per acre and is considered successful. The average plot density has been measured at 470 stems per acre, or approximately 12 stems per plot for 2006 (year 1) monitoring. The dominant species identified at the Site were overcup oak (*Quercus lyrata*), tupelo species (*Nyssa biflora* and *Nyssa* sp.), and long-leaf pine (*Pinus palustris*). Eight out of the ten individual vegetation plots were well-above the success criteria with 364 to 1093 planted stems per acre.

Vegetation problem areas noted during year 1 (2006) monitoring consisted of a large area of poor planted stem survival adjacent to the restored stream (near Reach 1). Poor survival may have resulted from soil infertility or drought. Planted seedlings exhibited various degrees of vigor at the Site. Overall, vigor was noted as good. In addition, herbaceous vegetation on the lower half of the Site adjacent to the restored stream is not establishing well most likely due to soil infertility. Willow stakes on the lower half of the Site have been slow to sprout with many of the stakes just starting to put off shoots as of March 2007. Shoot output indicates the stakes are alive and establishing a root system to aid in stabilization of the stream banks.

Twenty permanent cross-sections and five 600-foot reaches were established and measured in year 1 (2006). The as-built channel geometry compares favorably with the emulated, stable E/C stream type as set forth in the detailed mitigation plan. The current monitoring has demonstrated that dimension was stable over the course of the year 1 (2006) monitoring.

Two stream problem areas were noted during year 1 (2006) monitoring. Both problem areas are stressed cross-vanes with failing right bank arms resulting from a lack of footers. Additional inspections and monitoring of bed and banks up and downstream of compromised structures is recommended prior to initiation of proactive maintenance measures.

In summary, the restoration site achieved success criteria for vegetation and stream attributes in the First Monitoring Year (2006). The upper half of the restoration site achieved hydrology success criteria for the First Monitoring Year (2006).

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1.0 PROJECT BACKGROUND

1.1 Project Description

The Clayhill Farms Stream and Wetland Restoration Site (Site) is located in southern Jones County, approximately 1 mile north of the Town of Kuhns and 0.75 mile north of the Carteret County/Jones County line. The Site is located east of Highway 58 and is bordered by the Croatan National Forest to the north, east, and west and by various forested and residential parcels to the south. Site streams, Billy's Branch and other unnamed tributaries to Hunters Creek, bisect the Site (Figure 1). The project is located within the White Oak River Basin in United States Geological Survey (USGS) 14-digit Hydrologic Unit 03020106010060 (North Carolina Division of Water Quality [NCDWQ] subbasin 03-05-01).

Directions to the Site:
From Raleigh, North Carolina

- Travel east on US Highway 70 to Kinston
- Turn right and go south on NC 58 to US 17
- Turn right on US 17/NC 58 and continue south approximately 6 miles to Maysville
- From Maysville, continue south on NC 58 approximately 8 miles to left on SR 1100 (Hunters Creek Road)
- Then make an immediate left onto a gravel road with a gate. The gate has a combination lock to access the Site.

1.2 Purpose

In order to demonstrate successful mitigation, hydrologic, vegetative, and stream monitoring must be conducted for five years or until success criteria are achieved. Success criteria are based on federal guidelines for wetland mitigation. These guidelines stipulate criteria for both hydrologic conditions, vegetation survival, and stream morphology. The following report details the results of monitoring for the 2006 (year 1) growing season at the Clayhill Farms Stream and Wetland Mitigation Site.

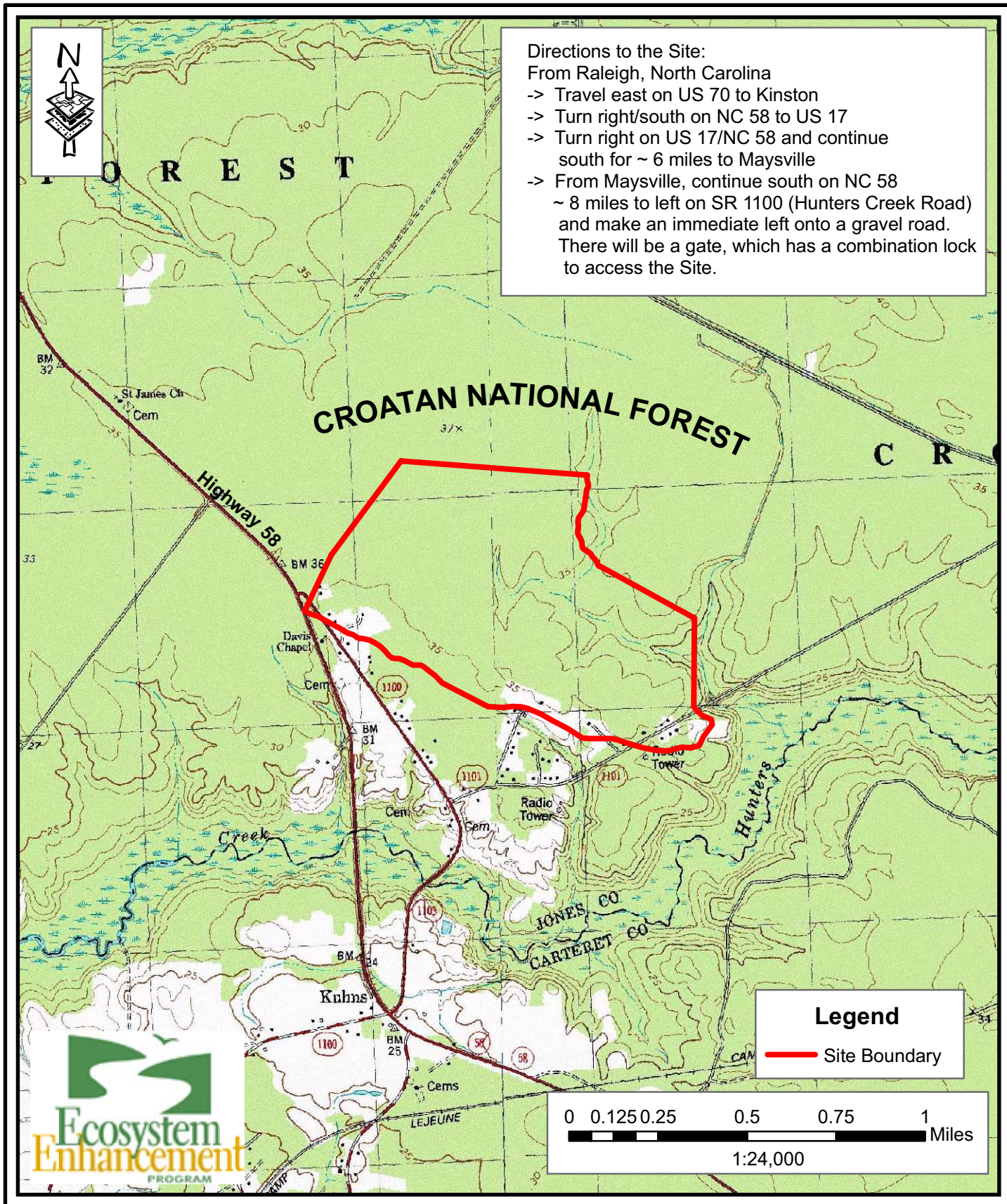
1.3 Project History

September 2005	Mitigation Plan
2006	Final Design (90%)
2006	Site Construction
2006	Planting
November 2006	Vegetation Monitoring (Year 1)
March-November 2006	Hydrologic Monitoring (Year 1)

2.0 HYDROLOGY

2.1 Success Criteria

Success criteria for wetland hydrology at Clayhill Farms require inundation or saturation within 12 inches of the ground surface for a consecutive period of 12.5 percent of the growing season, or if the hydroperiod is within 20 percent of an approved reference wetland hydroperiod within drought years. The growing season for Jones County begins March 15 and ends November 11 (242 days). In order to attain hydrologic success, saturation within 12 inches of the ground surface is required for at least 30 consecutive days (12.5 percent of the growing season).



Axiom Environmental, Inc
2126 Rowland Pond Drive
Willow Spring, NC 27592
(919) 215-1693
(919) 341-3839 fax
Axiom Environmental, Inc.

SITE LOCATION
CLAYHILL FARMS RESTORATION SITE
EEP Project Number .00018
Year 1 (2006) Monitoring Report
Jones County, North Carolina

CLF	FIGURE 1
Date: March 2007	
Project: 06-021	

2.2 Hydrologic Description

Twenty groundwater monitoring gauges have been maintained and monitored throughout the year 1 (2006) growing season (Figures 2A-2B). Daily rainfall data recorded from a rain gauge maintained and monitored on the Site was used for seasonal comparison. Graphs of groundwater hydrology and precipitation are included in Appendix A.

2.3 Results of Hydrologic Monitoring

2.3.1 Site Data

Groundwater hydrology within 12 inches of the soil surface is occurring for greater than 12.5 percent of the growing season for the year 1 (2006) monitoring period at Gauges GW1 through GW9. Gauges GW14 and GW15 fell between 5 and 12.5 percent of the growing season and the remainder of the gauges were saturated or inundated for less than 5 percent of the growing season (Gauges GW10 through GW13 and GW16 through GW20).

The following table summarizes success criteria achievement for Site gauges.

Table 1. Summary of Groundwater Gauge Results for Years 1 through 5
Clayhill Farms (EEP Project Number .00018)

Gauge	Success Criteria Achieved/Max Consecutive Days During Growing Season (Percentage)				
	Year 1 (2006)	Year 2 (2007)	Year 3 (2008)	Year 4 (2009)	Year 5 (2010)
GW1	Yes/34 days (14.0 percent)				
GW2	Yes/68 days (28.1 percent)				
GW3	Yes/81 days (33.5 percent)				
GW4	Yes/81 days (33.5 percent)				
GW5	Yes/66 days (27.3 percent)				
GW6	Yes/37 days (15.3 percent)				
GW7	Yes/69 days (28.5 percent)				
GW8	Yes/68 days (28.1 percent)				
GW9	Yes/38 days (15.7 percent)				
GW10	No/7 days (2.9 percent)				
GW11	No/2 days (0.8 percent)				

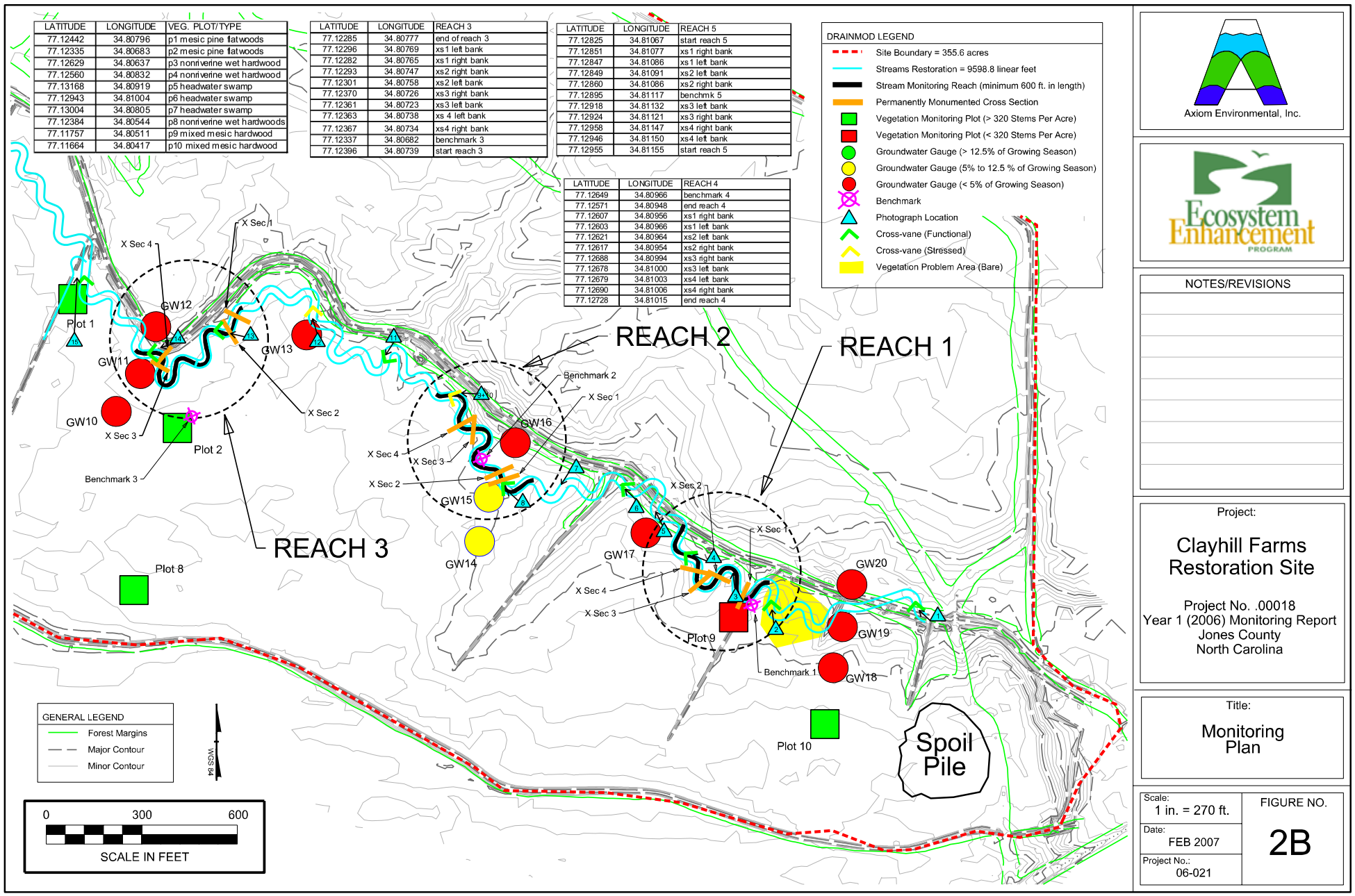
Table 12. Summary of Groundwater Gauge Results for Years 1 through 5 (continued)					
Gauge	**Success Criteria Achieved/Max Consecutive Days During Growing Season (Percentage)**				
	Year 1 (2006)	**Year 2 (2007)**	**Year 3 (2008)**	**Year 4 (2009)**	**Year 5 (2010)**
GW12	No/5 days (2.1 percent)				
GW13	No/6 days (2.5 percent)				
GW14	No/18 days (7.4 percent)				
GW15	No/24 days (9.9 percent)				
GW16	No/0 days (0 percent)				
GW17	No/7 days (2.9 percent)				
GW18	No/5 days (2.1 percent)				
GW19	No/6 days (2.5 percent)				
GW20	No/11 days (4.5 percent)				

2.3.2 Climatic Data

Climatic data for the year 1 (2006) growing season is compared to 30-year historical data from the station at the New Bern Craven County Airport (Figure 3) (NOAA 2004). The Site experienced above normal rainfall for the months of June, October, and November 2006, and below normal rainfall for the months of March, July, and September 2006. The remainder of the growing season for year 1 (2006) experienced rainfall totals that fell within the average 30-year historic range.

2.4 Hydrologic Conclusions

Twenty gauges were maintained and monitored for the year 1 (2006) growing season; gauge results are depicted on Figures 2A-2B. Nine of the twenty monitored gauges within restoration areas met success criteria of inundation/saturation within 12 inches of the surface for at least 12.5 percent of the growing season with a presence of hydrophytic vegetation. Gauges that did not meet success criteria were located within the lower/downstream half of the Site near the restored stream channel. These gauges will continue to be monitored closely; a jurisdictional wetland delineation may be necessary at the end of the five-year monitoring period to accurately quantify successful wetlands within the Site.


LATITUDE | LONGITUDE | VEG. PLOT/TYPE
77.12442 | 34.80796 | p1 mesic pine flatwoods
77.12335 | 34.80683 | p2 mesic pine flatwoods
77.12629 | 34.80637 | p3 nonriverine wet hardwood
77.12560 | 34.80832 | p4 nonriverine wet hardwood
77.13168 | 34.80919 | p5 headwater swamp
77.12943 | 34.81004 | p6 headwater swamp
77.13004 | 34.80805 | p7 headwater swamp
77.12384 | 34.80544 | p8 nonriverine wet hardwoods
77.11757 | 34.80511 | p9 mixed mesic hardwood
77.11664 | 34.80417 | p10 mixed mesic hardwood
LATITUDE | LONGITUDE | REACH 3
77.12285 | 34.80777 | end of reach 3
77.12296 | 34.80769 | xs1 left bank
77.12282 | 34.80765 | xs1 right bank
77.12293 | 34.80747 | xs2 right bank
77.12301 | 34.80758 | xs2 left bank
77.12370 | 34.80726 | xs3 right bank
77.12361 | 34.80723 | xs3 left bank
77.12363 | 34.80738 | xs 4 left bank
77.12367 | 34.80734 | xs4 right bank
77.12337 | 34.80682 | benchmark 3
77.12396 | 34.80739 | start reach 3
LATITUDE | LONGITUDE | REACH 5
77.12825 | 34.81067 | start reach 5
77.12851 | 34.81077 | xs1 right bank
77.12847 | 34.81086 | xs1 left bank
77.12849 | 34.81091 | xs2 left bank
77.12860 | 34.81086 | xs2 right bank
77.12895 | 34.81117 | benchmk 5
77.12918 | 34.81132 | xs3 left bank
77.12924 | 34.81121 | xs3 right bank
77.12958 | 34.81147 | xs4 right bank
77.12946 | 34.81150 | xs4 left bank
77.12955 | 34.81155 | start reach 5
LATITUDE | LONGITUDE | REACH 4
77.12649 | 34.80966 | benchmark 4
77.12571 | 34.80948 | end reach 4
77.12607 | 34.80956 | xs1 right bank
77.12603 | 34.80966 | xs1 left bank
77.12621 | 34.80964 | xs2 left bank
77.12617 | 34.80954 | xs2 right bank
77.12688 | 34.80994 | xs3 right bank
77.12678 | 34.81000 | xs3 left bank
77.12679 | 34.81003 | xs4 left bank
77.12690 | 34.81006 | xs4 right bank
77.12728 | 34.81015 | end reach 4
DRAINMOD LEGEND
Site Boundary = 355.6 acres
Streams Restoration = 9598.8 linear feet
Stream Monitoring Reach (minimum 600 ft. in length)
Permanently Monumented Cross Section
Vegetation Monitoring Plot (> 320 Stems Per Acre)
Vegetation Monitoring Plot (< 320 Stems Per Acre)
Groundwater Gauge (> 12.5% of Growing Season)
Groundwater Gauge (5% to 12.5 % of Growing Season)
Groundwater Gauge (< 5% of Growing Season)
Benchmark
Photograph Location
Cross-vane (Functional)
Cross-vane (Stressed)
Vegetation Problem Area (Bare)
REACH 1
REACH 2
REACH 3
Plot 1
Plot 2
Plot 8
Plot 9
Plot 10
Spoil Pile
GW10
GW11
GW12
GW13
GW14
GW15
GW16
GW17
GW18
GW19
GW20
X Sec 1
X Sec 2
X Sec 3
X Sec 4
Benchmark 1
Benchmark 2
Benchmark 3
GENERAL LEGEND
Forest Margins
Major Contour
Minor Contour
NAD83
0
300
600
SCALE IN FEET
Axiom Environmental, Inc.
Ecosystem Enhancement PROGRAM
NOTES/REVISIONS
Project:
Clayhill Farms Restoration Site
Project No. .00018
Year 1 (2006) Monitoring Report
Jones County
North Carolina
Title:
Monitoring Plan
Scale:
1 in. = 270 ft.
Date:
FEB 2007
Project No.:
06-021
FIGURE NO.
2B

LATITUDE	LONGITUDE	VEG. PLOT/TYPE
77.12442	34.80796	p1 mesic pine flatwoods
77.12335	34.80683	p2 mesic pine flatwoods
77.12629	34.80637	p3 nonriverine wet hardwood
77.12560	34.80832	p4 nonriverine wet hardwood
77.13168	34.80919	p5 headwater swamp
77.12943	34.81004	p6 headwater swamp
77.13004	34.80805	p7 headwater swamp
77.12384	34.80544	p8 nonriverine wet hardwoods
77.11757	34.80511	p9 mixed mesic hardwood
77.11664	34.80417	p10 mixed mesic hardwood

LATITUDE	LONGITUDE	REACH 4
77.12649	34.80966	benchmark 4
77.12571	34.80948	end reach 4
77.12607	34.80956	xs1 right bank
77.12603	34.80966	xs1 left bank
77.12621	34.80964	xs2 left bank
77.12617	34.80954	xs2 right bank
77.12688	34.80994	xs3 right bank
77.12678	34.81000	xs3 left bank
77.12679	34.81003	xs4 left bank
77.12690	34.81006	xs4 right bank
77.12728	34.81015	end reach 4

LATITUDE	LONGITUDE	REACH 3
77.12285	34.80777	end of reach 3
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77.12301	34.80758	xs2 left bank
77.12370	34.80726	xs3 right bank
77.12361	34.80723	xs3 left bank
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77.12337	34.80682	benchmark 3
77.12396	34.80739	start reach 3

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77.12825	34.81067	start reach 5
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77.12847	34.81086	xs1 left bank
77.12849	34.81091	xs2 left bank
77.12860	34.81086	xs2 right bank
77.12895	34.81117	benchmk 5
77.12918	34.81132	xs3 left bank
77.12924	34.81121	xs3 right bank
77.12958	34.81147	xs4 right bank
77.12946	34.81150	xs4 left bank
77.12955	34.81155	start reach 5

GENERAL LEGEND
- Forest Margins
- Major Contour
- Minor Contour

DRAINMOD LEGEND
- Site Boundary = 355.6 acres
- Streams Restoration = 9598.8 linear feet
- Stream Monitoring Reach (minimum 600 ft. in length)
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- Groundwater Gauge (< 5% of Growing Season)
- Benchmark
- Photograph Location
- Cross-vane (Functional)
- Cross-vane (Stressed)

REACH 5
REACH 4
REACH 3
Benchmark 5
Benchmark 4
X Sec 1
X Sec 2
X Sec 3
X Sec 4
GW1
GW2
GW3
GW4
GW5
GW6
GW8
GW9
GW11
GW12
GW13
Plot 1
Plot 4
Plot 5
Plot 6
Plot 7
0 300 600
SCALE IN FEET

Axiom Environmental, Inc.

Ecosystem Enhancement Program

NOTES/REVISIONS

Project:

Clayhill Farms Restoration Site

Project No. .00018
Year 1 (2006) Monitoring Report
Jones County
North Carolina

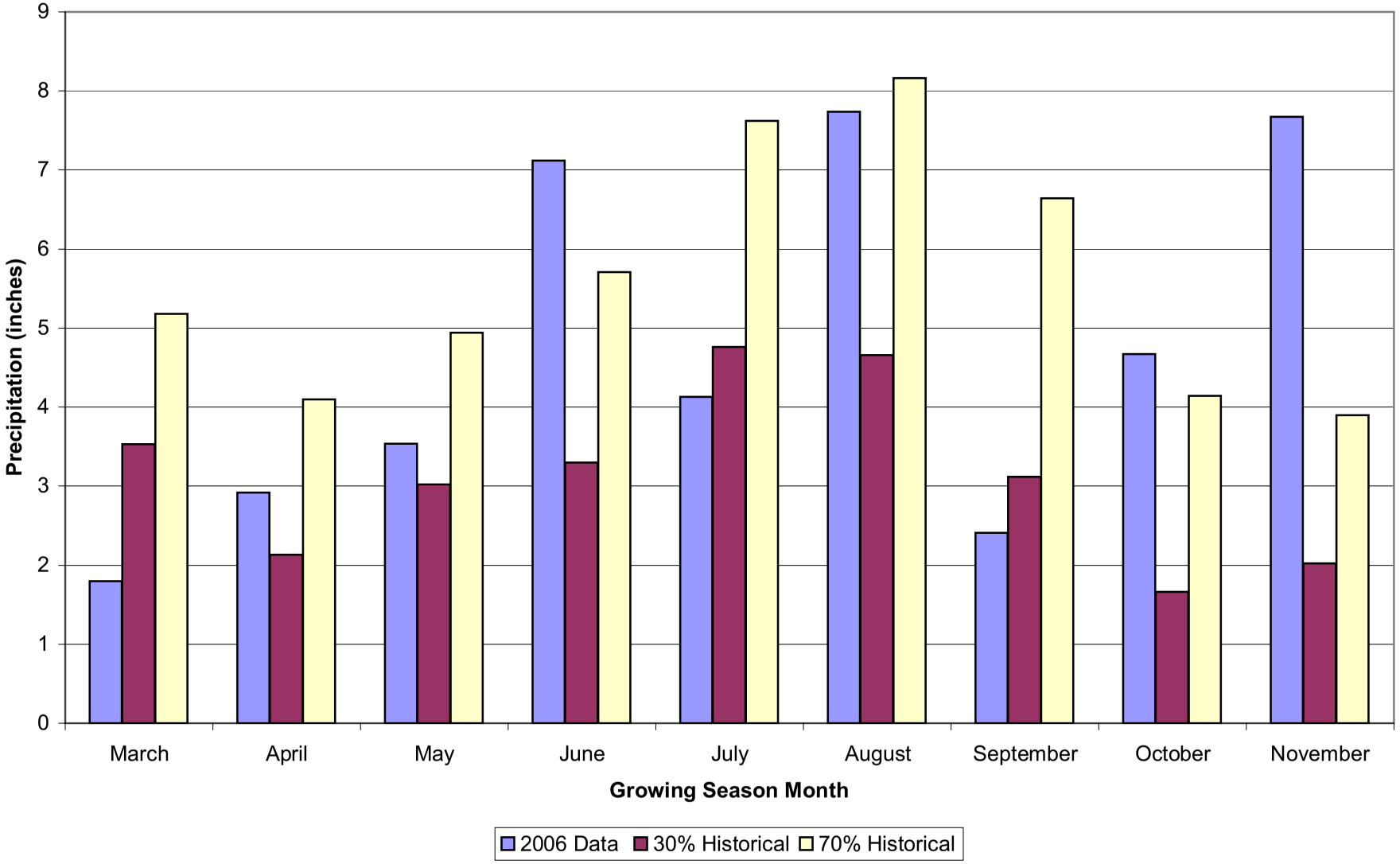
Title:

Monitoring Plan

Scale: 1 in. = 270 ft.
Date: FEB 2007
Project No.: 06-021

FIGURE NO.
2A

Figure 3. 2006 Climatic Data vs. 30-year Historic Data



3.0 VEGETATION

3.1 Success Criteria
Wetland vegetation success criteria at Clayhill Farms require an average across the Site of 320 stems per acre of approved target species surviving for the first three years of monitoring, 290 stems per acre in year four, and 260 stems per acre in year five.

3.2 Description of Planted Areas
According to the 2005 *Revised Clayhill Farms Wetland and Stream Mitigation Plan*, planted species were to include the following communities as described in Schafale and Weakley (1990):

1. Coastal Plain Small Stream Swamp
2. Nonriverine Wet Hardwoods Forest
3. Mesic Pine Flatwoods
4. Mixed-Mesic Hardwood Forest (Coastal Plain subtype)
5. Coastal Plain Bottomland Hardwood Forest (Blackwater subtype)

3.3 Results of Vegetation Monitoring
Ten 10-meter square vegetation plots were established as depicted in Figures 2A-2B in November 2006. These plots were surveyed in mid- to late November 2006 for the year 1 (2006) monitoring season; results are included in Table 2 and pictures are included in Appendix B. No reference area was studied; therefore, no comparisons could be made to reference conditions. Three plots (Plots 5, 6, and 7) were established in the Headwater Swamp, three plots (Plots 4, 3, and 8) in the Nonriverine Wet Hardwood Forest, two plots (Plots 1 and 2) in the Mesic Pine Flatwoods, and two plots (Plots 9 and 10) in the Mixed-Mesic Hardwood Forest restoration areas.

Based on stem counts, the average plot density monitored at this Site is greater than 320 stems per acre and is considered successful. The average plot density has been measured at 470 stems per acre, or approximately 12 stems per plot for 2006 (year 1) monitoring. The dominant species identified at the Site were overcup oak (*Quercus lyrata*), tupelo species (*Nyssa biflora* and *Nyssa* sp.), and long-leaf pine (*Pinus palustris*). Eight out of the ten individual vegetation plots were well-above the success criteria with 364 to 1093 planted stems per acre. Vegetation plots 7 and 9 were low with 243 and 162 planted stems per acre, respectively. However, when counting additional pine (*Pinus* sp.) stem natural recruits, the stems per acre totals increase to greater than 320 with 324 and 445 stems per acre, respectively.

Herbaceous vegetation is vigorous throughout the Site with the exception of the lower half of the Site adjacent to the restored stream.

Table 2. Stem Counts for Planted Species Arranged by Plot

Clayhill Farms (EEP Project Number .00018)

Species	Year 1 (2006) Individual Plots (0.0247 acre each)										Year 1 (2006) Totals	% Survival
	1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**		
Betula nigra	-	-	1	1	-	-	-	1	-	-	3	*
Fraxinus pennsylvanica	-	-	1	2	2	2	-	-	-	-	7	*
Fraxinus sp.	-	-	-	-	-	-	1	-	-	-	1	*
Nyssa biflora	-	-	-	9	-	-	-	-	-	-	9	*
Nyssa sp.	-	-	14	-	-	-	2	-	-	-	16	*
Pinus palustris	10	3	-	-	-	-	-	-	-	-	13	*
Pinus sp.	-	6	-	-	-	-	-	-	-	3	9	*
Quercus lyrata	-	-	11	4	7	4	1	8	-	6	41	*
Quercus nigra	-	-	-	-	-	-	-	-	3	2	5	*
Quercus pagoda	-	-	-	2	-	-	-	-	-	3	5	*
Quercus phellos	-	-	-	-	-	-	-	-	1	-	1	*
Taxodium distichum	-	-	-	-	-	4	2	-	-	-	6	*
Total Stems Per Plot	**10**	**9**	**27**	**18**	**9**	**10**	**6**	**9**	**4**	**14**	**116**	*
Stems Per Acre	**405**	**364**	**1093**	**729**	**364**	**405**	**243**	**364**	**162**	**567**	**470**	*

* - Percent survival can not be determined this year since it was the first year of measurements.

3.4 Vegetation Conclusions
Based on the number of stems counted, the average plot density monitored at this Site is greater than 320 stems per acre and is considered successful for 2006 (year 1) monitoring. The average plot density has been measured at 470 stems per acre, or approximately 12 stems per plot.

The vegetation problem area within the Site is depicted on Figure 2B. A large area of poor planted stem survival was observed adjacent to the restored stream (near Reach 1) during year 1 (2006) monitoring. Poor survival may have resulted from soil infertility or drought.

Planted seedlings exhibited various degrees of vigor at the Site. Overall, vigor was noted as good.

Herbaceous vegetation on the lower half of the Site adjacent to the restored stream is not establishing well most likely due to soil infertility. In addition, willow stakes on the lower half of the Site have been slow to sprout with many of the stakes just starting to put off shoots as of March 2007. Shoot output indicates stakes are alive and establishing a root system to aid in stream bank stabilization.

4.0 STREAM ASSESSMENT

4.1 Success Criteria
Success criteria dictate that there should be little or no change in the as-built cross-sections. If a change takes place it should be determined if the change is to a more unstable condition (downcutting, erosion) or to a more stable condition (settling, increase in vegetative diversity, deposition along the banks, decrease in the width-depth ratio, decrease in cross-sectional area). The as-built longitudinal profile should show that bed features are neither aggrading or degrading; however, short-term aggradation/degradation may occur depending on the peak annual discharge. Bed features should be consistent with those observed in typical E- and C-type channels. The as-built pattern should not change and the riffle-pool sequence should remain constant. A significant coarsening of bed materials is not expected due to the sand/silt/clay substrate; therefore, bed materials will not be analyzed for stream success.

4.2 Stream Description
Twenty permanent cross-sections were established, permanently monumented, and measured during year 1 (2006) surveys. Measurements of each cross-section include points at all breaks in slope including top of bank, bankfull, and thalweg. Riffle cross-sections have been classified using the Rosgen stream classification system. Longitudinal profiles were measured along five 600-foot reaches. Longitudinal profile measurements include thalweg, water surface, bankfull, and top of low bank; each taken at the head of facets (i.e. riffle, run, pool, and glide) and the maximum pool depth. The surveys are also used to calculate sinuosity. In addition, channel substrate is not expected to coarsen over time and is not monitored for success at this Site. Monitoring reaches and cross-sections are depicted on Figures 2A-2B.

4.3 Stream Assessment Results

4.3.1 Quantitative Stream Measurements
During the year 1 (2006) monitoring period 20 cross-sections and five 600-foot reaches were measured. Tables for quantitative assessements are included below. Cross-section plots and longitudinal profile and pattern plots for year 1 (2006) monitoring are included in Appendix C. Stream photographs are also included in Appendix C.

Table 3A. Morphology and Hydraulic Monitoring Summary																				
Clayhill Farms (EEP Project Number .00018)																				
Reach 1 (608 linear feet)																				
Parameter	**Cross Section 1**					**Cross Section 2**					**Cross Section 3**					**Cross Section 4**				
	Pool					**Riffle**					**Pool**					**Riffle**				
Dimension	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
BF Width (ft)	13.6					10.6					10.3					15.4				
Floodprone Width (ft) (approx)	150.0					150.0					150.0					150.0				
BF Cross Sectional Area (ft^2)	10.8					9.8					9.6					11.9				
BF Mean Depth (ft)	0.8					0.9					0.9					0.8				
BF Max Depth (ft)	2.3					1.7					1.7					2.1				
Width/Depth Ratio						11.5										20.0				
Entrenchment Ratio						14.1										9.7				
Wetted Perimeter(ft)	15.0					11.8					11.0					16.3				
Hydraulic radius (ft)	0.7					0.8					0.9					0.7				
Substrate	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**14**	**28.8**	**21**	**MY4**	**MY5**
d50 (mm)	N/A					N/A					N/A					N/A				
d84 (mm)	N/A					N/A					N/A					N/A				
Parameter	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**					**MY-04 (2009)**			**MY-05 (2010)**			**MY-06 (2011)**		
Pattern	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**		
Channel Beltwidth (ft)	37.3	82.7	76.1																	
Radius of Curvature (ft)	18.9	27.5	24.4																	
Meander Wavelength (ft)	103.5	141.7	133.0																	
Meander Width ratio	3.0	6.6	6.1																	
Profile																				
Riffle length (ft)	10.6	56.9	37.1																	
Riffle slope (ft/ft)	0.0010	0.0104	0.0031																	
Pool length (ft)	4.5	17.9	9.2																	
Pool spacing (ft)	77.6	108.9	97.1																	
Additional Reach Parameters	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**					**MY-04 (2009)**			**MY-05 (2010)**			**MY-06 (2011)**		
Valley Length (ft)	336.59																			
Channel Length (ft)	608.74																			
Sinuosity	1.8																			
Water Surface Slope (ft/ft)	0.0021																			
BF slope (ft/ft)	0.0021																			
Rosgen Classification	C/E																			
Number of Bankfull Events	1																			
Extent of BF floodplain (area)	sed deposits on FP																			

Table 3B. Morphology and Hydraulic Monitoring Summary																				
Clayhill Farms (EEP Project Number .00018)																				
Reach 2 (640 linear feet)																				
Parameter	**Cross Section 1**					**Cross Section 2**					**Cross Section 3**					**Cross Section 4**				
	Riffle					**Pool**					**Riffle**					**Pool**				
Dimension	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
BF Width (ft)	10.1					13.5					12.9					17.2				
Floodprone Width (ft) (approx)	150.0					150.0					150.0					150.0				
BF Cross Sectional Area (ft^2)	10.0					18.1					12.6					20.5				
BF Mean Depth (ft)	1.0					1.3					1.0					1.2				
BF Max Depth (ft)	1.8					2.8					2.1					3.0				
Width/Depth Ratio	10.2										13.1									
Entrenchment Ratio	14.8										11.6									
Wetted Perimeter(ft)	11.0					11.8					14.0					18.9				
Hydraulic radius (ft)	0.9					1.2					0.9					1.1				
Substrate	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**14**	**28.8**	**21**	**MY4**	**MY5**
d50 (mm)	N/A					N/A					N/A					N/A				
d84 (mm)	N/A					N/A					N/A					N/A				
Parameter	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**				**MY-04 (2009)**			**MY-05 (2010)**			**MY-06 (2011)**				
Pattern	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**		
Channel Beltwidth (ft)	27.0	75.6	60.4																	
Radius of Curvature (ft)	18.9	27.5	24.4																	
Meander Wavelength (ft)	113.4	142.4	124.4																	
Meander Width ratio	2.0	5.6	4.5																	
Profile																				
Riffle length (ft)	21.7	97.9	29.1																	
Riffle slope (ft/ft)	0.0000	0.0026	0.0016																	
Pool length (ft)	5.7	27.7	14.1																	
Pool spacing (ft)	75.4	102.3	86.4																	
Additional Reach Parameters	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**				**MY-04 (2009)**			**MY-05 (2010)**			**MY-06 (2011)**				
Valley Length (ft)	404.6																			
Channel Length (ft)	640.2																			
Sinuosity	1.6																			
Water Surface Slope (ft/ft)	0.0007																			
BF slope (ft/ft)	0.0007																			
Rosgen Classification	C/E																			
Number of Bankfull Events	1																			
Extent of BF floodplain (area)	sed deposits on FP																			

Table 3C. Morphology and Hydraulic Monitoring Summary																				
Clayhill Farms (EEP Project Number .00018)																				
Reach 3 (650 linear feet)																				
Parameter	**Cross Section 1**					**Cross Section 2**					**Cross Section 3**					**Cross Section 4**				
	Riffle					**Pool**					**Riffle**					**Pool**				
Dimension	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
BF Width (ft)	9.6					9.5					8.5					12.3				
Floodprone Width (ft) (approx)	150.0					150.0					150.0					150.0				
BF Cross Sectional Area (ft^2)	6.7					7.0					5.5					11.8				
BF Mean Depth (ft)	0.7					0.7					0.6					1.0				
BF Max Depth (ft)	1.6					1.7					1.4					2.2				
Width/Depth Ratio	13.8										13.2									
Entrenchment Ratio	15.6										17.6									
Wetted Perimeter(ft)	10.4					11.8					9.0					13.2				
Hydraulic radius (ft)	0.6					0.7					0.9					0.9				
Substrate	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**14**	**28.8**	**21**	**MY4**	**MY5**
d50 (mm)	N/A					N/A					N/A					N/A				
d84 (mm)	N/A					N/A					N/A					N/A				
Parameter	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**					**MY-04 (2009)**			**MY-05 (2010)**		**MY-06 (2011)**				
Pattern	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**		
Channel Beltwidth (ft)	45.0	90.0	55.9																	
Radius of Curvature (ft)	18.9	27.5	24.4																	
Meander Wavelength (ft)	56.0	142.4	127.1																	
Meander Width ratio	4.5	9.0	5.6																	
Profile																				
Riffle length (ft)	6.3	86.3	20.2																	
Riffle slope (ft/ft)	0.0000	0.0221	0.0037																	
Pool length (ft)	2.8	20.3	9.1																	
Pool spacing (ft)	71.4	97.7	90.9																	
Additional Reach Parameters	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**					**MY-04 (2009)**			**MY-05 (2010)**		**MY-06 (2011)**				
Valley Length (ft)	351.56																			
Channel Length (ft)	650.39																			
Sinuosity	1.9																			
Water Surface Slope (ft/ft)	0.0026																			
BF slope (ft/ft)	0.0026																			
Rosgen Classification	C																			
Number of Bankfull Events	1																			
Extent of BF floodplain (area)	sed deposits on FP																			

Table 3D. Morphology and Hydraulic Monitoring Summary																				
Clayhill Farms (EEP Project Number .00018)																				
Reach 4 (689 linear feet)																				
Parameter	**Cross Section 1**					**Cross Section 2**					**Cross Section 3**					**Cross Section 4**				
	Pool					**Riffle**					**Pool**					**Riffle**				
Dimension	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
BF Width (ft)	12.2					7.4					8.4					9.5				
Floodprone Width (ft) (approx)	150.0					150.0					150.0					150.0				
BF Cross Sectional Area (ft^2)	7.7					3.4					5.2					5.1				
BF Mean Depth (ft)	0.6					0.5					0.6					0.5				
BF Max Depth (ft)	1.4					0.9					1.3					1.2				
Width/Depth Ratio						15.7										17.7				
Entrenchment Ratio						20.4										15.7				
Wetted Perimeter(ft)	12.6					11.8					8.9					9.9				
Hydraulic radius (ft)	0.6					0.5					0.6					0.5				
Substrate	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**14**	**28.8**	**21**	**MY4**	**MY5**
d50 (mm)	N/A					N/A					N/A					N/A				
d84 (mm)	N/A					N/A					N/A					N/A				
Parameter	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**				**MY-04 (2009)**			**MY-05 (2010)**			**MY-06 (2011)**				
Pattern	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**		
Channel Beltwidth (ft)	18.6	54.4	36.0																	
Radius of Curvature (ft)	18.9	27.5	24.4																	
Meander Wavelength (ft)	84.0	118.2	111.0																	
Meander Width ratio	2.0	5.8	3.8																	
Profile																				
Riffle length (ft)	27.8	96.9	35.0																	
Riffle slope (ft/ft)	0.0000	0.0018	0.0006																	
Pool length (ft)	2.1	20.0	11.6																	
Pool spacing (ft)	52.9	74.8	69.1																	
Additional Reach Parameters	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**				**MY-04 (2009)**			**MY-05 (2010)**			**MY-06 (2011)**				
Valley Length (ft)	534.3																			
Channel Length (ft)	689.31																			
Sinuosity	1.3																			
Water Surface Slope (ft/ft)	0.0005																			
BF slope (ft/ft)	0.0005																			
Rosgen Classification	C																			
Number of Bankfull Events	1																			
Extent of BF floodplain (area)	sed deposits on FP																			

Table 3E. Morphology and Hydraulic Monitoring Summary																				
Clayhill Farms (EEP Project Number .00018)																				
Reach 5 (646 linear feet)																				
Parameter	**Cross Section 1**					**Cross Section 2**					**Cross Section 3**					**Cross Section 4**				
	Pool					**Riffle**					**Pool**					**Riffle**				
Dimension	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**
BF Width (ft)	8.3					6.4					7.5					6.0				
Floodprone Width (ft) (approx)	150.0					150.0					150.0					150.0				
BF Cross Sectional Area (ft^2)	4.1					3.1					4.0					3.0				
BF Mean Depth (ft)	0.5					0.5					0.5					0.5				
BF Max Depth (ft)	1.1					0.9					1.0					0.9				
Width/Depth Ratio						13.0										11.8				
Entrenchment Ratio						23.6										25.2				
Wetted Perimeter(ft)	8.7					11.8					7.8					6.4				
Hydraulic radius (ft)	0.5					0.5					0.5					0.5				
Substrate	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**MY1**	**MY2**	**MY3**	**MY4**	**MY5**	**14**	**28.8**	**21**	**MY4**	**MY5**
d50 (mm)	N/A					N/A					N/A					N/A				
d84 (mm)	N/A					N/A					N/A					N/A				
Parameter	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**			**MY-04 (2009)**			**MY-05 (2010)**				**MY-06 (2011)**				
Pattern	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**	**Min**	**Max**	**Med**		
Channel Beltwidth (ft)	16.2	44.5	31.3																	
Radius of Curvature (ft)	18.9	27.5	24.4																	
Meander Wavelength (ft)	82.6	100.1	92.7																	
Meander Width ratio	2.3	6.3	4.4																	
Profile																				
Riffle length (ft)	17.6	35.9	25.2																	
Riffle slope (ft/ft)	0.0000	0.0015	0.0004																	
Pool length (ft)	4.1	26.0	17.0																	
Pool spacing (ft)	44.5	67.0	55.5																	
Additional Reach Parameters	**MY-01 (2006)**			**MY-02 (2007)**		**MY-03 (2008)**			**MY-04 (2009)**			**MY-05 (2010)**				**MY-06 (2011)**				
Valley Length (ft)	503.25																			
Channel Length (ft)	646.4																			
Sinuosity	1.3																			
Water Surface Slope (ft/ft)	0.05%																			
BF slope (ft/ft)	0.0005																			
Rosgen Classification	C/E																			
Number of Bankfull Events	1																			
Extent of BF floodplain (area)	sed deposits on FP																			

The as-built channel geometry compares favorably with the emulated, stable E/C stream type stream reaches as set forth in the detailed mitigation plan. The current monitoring has demonstrated dimension was stable over the course of the year 1 (2006) monitoring.

4.3.2 Bankfull Events

Documented bankfull events are included in Table 4 and the following picture.

Table 4. Verification of Bankfull Events

Clayhill Farms (EEP Project Number .00018)

Date of Data Collection	Date of Occurrence	Method	Photo (if available)
September 1, 2006	September 1, 2006	Total of 4.74 inches of rain documented by the onsite rain gauge over a two-day period from August 31 (4.06 inches) to September 1, 2006 (0.68 inches).	Photo above

4.4 Stream Assessment Conclusions

Based on stream measurements, the channel geometry compares favorably with the emulated, stable E/C stream type stream reaches as set forth in the detailed mitigation plan. The current monitoring has demonstrated dimension was stable over the course of the year 1 (2006) monitoring.

Stream problem areas within the Site are depicted on Figures 2A through 2B. Two problem areas were noted for the year 1 (2006) monitoring. Both problem areas are stressed cross-vanes with failing right bank arms resulting from a lack of footers; photographs of each are included in Appendix C. Additional inspections and monitoring of bed and banks up and downstream of compromised structures is recommended prior to initiation of proactive maintenance measures.

5.0 OVERALL CONCLUSIONS/RECOMMENDATIONS

Twenty gauges were maintained and monitored for the year 1 (2006) growing season. Nine of the twenty monitored gauges within restoration areas met success criteria of inundation/saturation within 12 inches of the surface for at least 12.5 percent of the growing season with a presence of hydrophytic vegetation. Gauges that did not meet success criteria were located within the lower half of the Site near the restored stream channel. These gauges will continue to be monitored closely; a jurisdictional wetland delineation may be necessary at the end of the five-year monitoring period to accurately quantify successful wetlands within the Site.

Based on the number of stems counted, the average plot density monitored at this Site is greater than 320 stems per acre and is considered successful for 2006 (year 1) monitoring. The average plot density has been measured at 470 stems per acre, or approximately 12 stems per plot.

The vegetation problem area within the Site is a large area of poor planted stem survival observed adjacent to the restored stream (near Reach 1). Poor survival may have resulted from soil infertility or drought. Herbaceous vegetation on the lower half of the Site adjacent to the restored stream is not establishing well most likely due to soil infertility. In addition, willow stakes on the lower half of the Site have been slow to sprout with many of the stakes just starting to put off shoots as of March 2007. Shoot output indicates stakes are alive and establishing a root system to aid in stream bank stabilization.

Based on stream measurements, the channel geometry compares favorably with the emulated, stable E/C stream type stream reaches as set forth in the detailed mitigation plan. The current monitoring has demonstrated dimension was stable and is considered successful for the year 1 (2006) monitoring.

Stream problem areas within the Site included two stressed cross-vanes with failing right bank arms resulting from a lack of footers. Additional inspections and monitoring of bed and banks up and downstream of compromised structures is recommended prior to initiation of proactive maintenance measures.

In summary, the restoration site achieved success criteria for vegetation and stream attributes in the First Monitoring Year (2006). The upper half of the restoration site achieved hydrology success criteria for the First Monitoring Year (2006).

6.0. REFERENCES

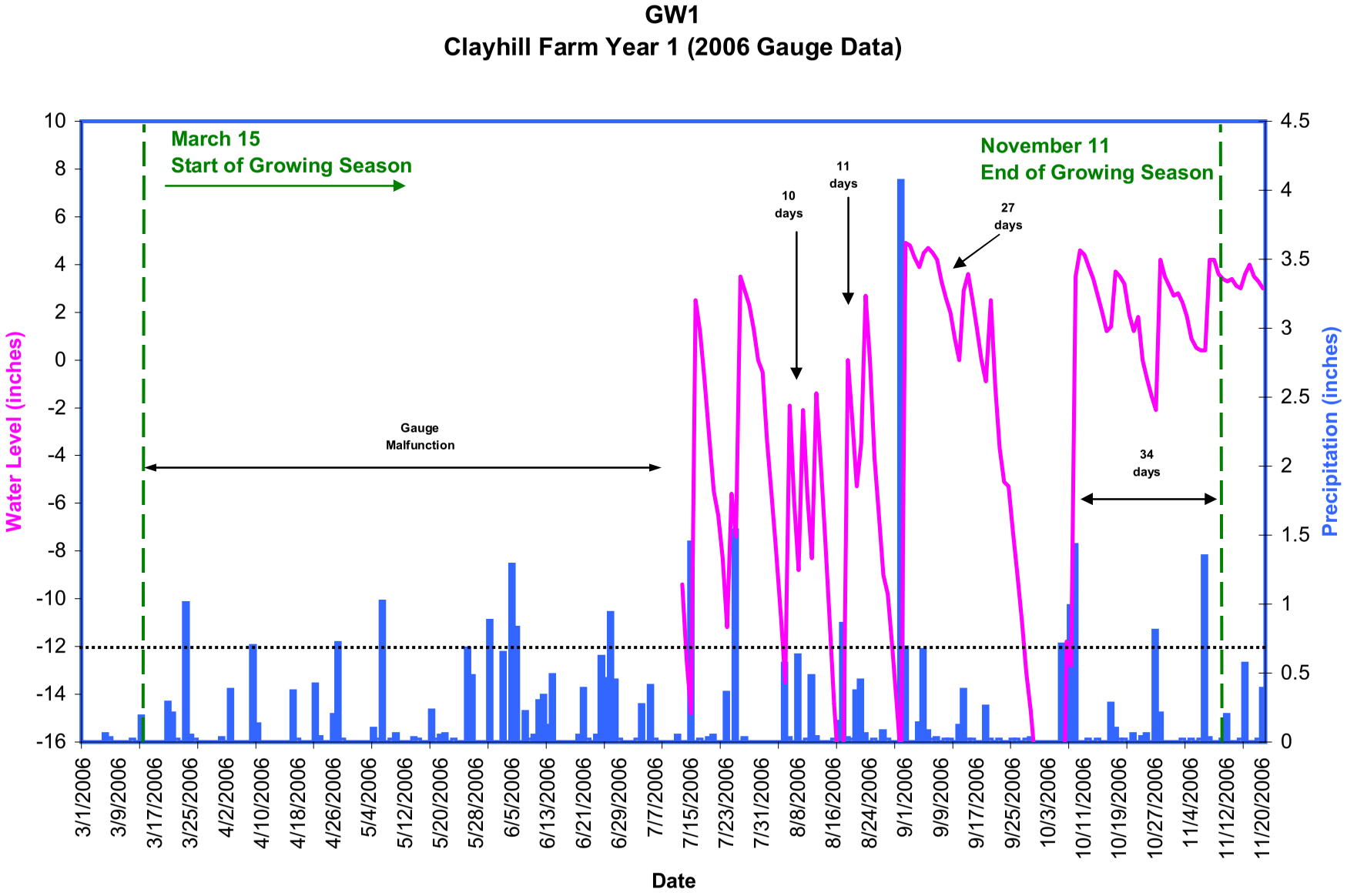
National Oceanic and Atmospheric Administration (NOAA). 2004. Climatography of the United States No. 20; Monthly Station Climate Summaries, 1971-2000. National Oceanic and Atmospheric Administration, National Environmental Satellite, Data, and Information Service, National Climatic Data Center, Asheville, North Carolina.

North Carolina Department of Transportation (NCDOT). 2006. Revised Wetland and Stream Mitigation Plan for the Clayhill Farms Property, Jones County, North Carolina, TIP No. R-2105 WM. Office of Natural Environment & Roadside Environmental Unit.

Schafale, M.P. and A.S. Weakley. 1990. Classification of the Natural Communities of North Carolina: Third Approximation. North Carolina Natural Heritage Program, Division of Parks and Recreation, North Carolina Department of Environment, Health, and Natural Resources. Raleigh, North Carolina.

APPENDIX A

YEAR 1 (2006) GROUNDWATER/SURFACEWATER GAUGE GRAPHS


GW1
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
10 days
11 days
27 days
34 days
Gauge Malfunction
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
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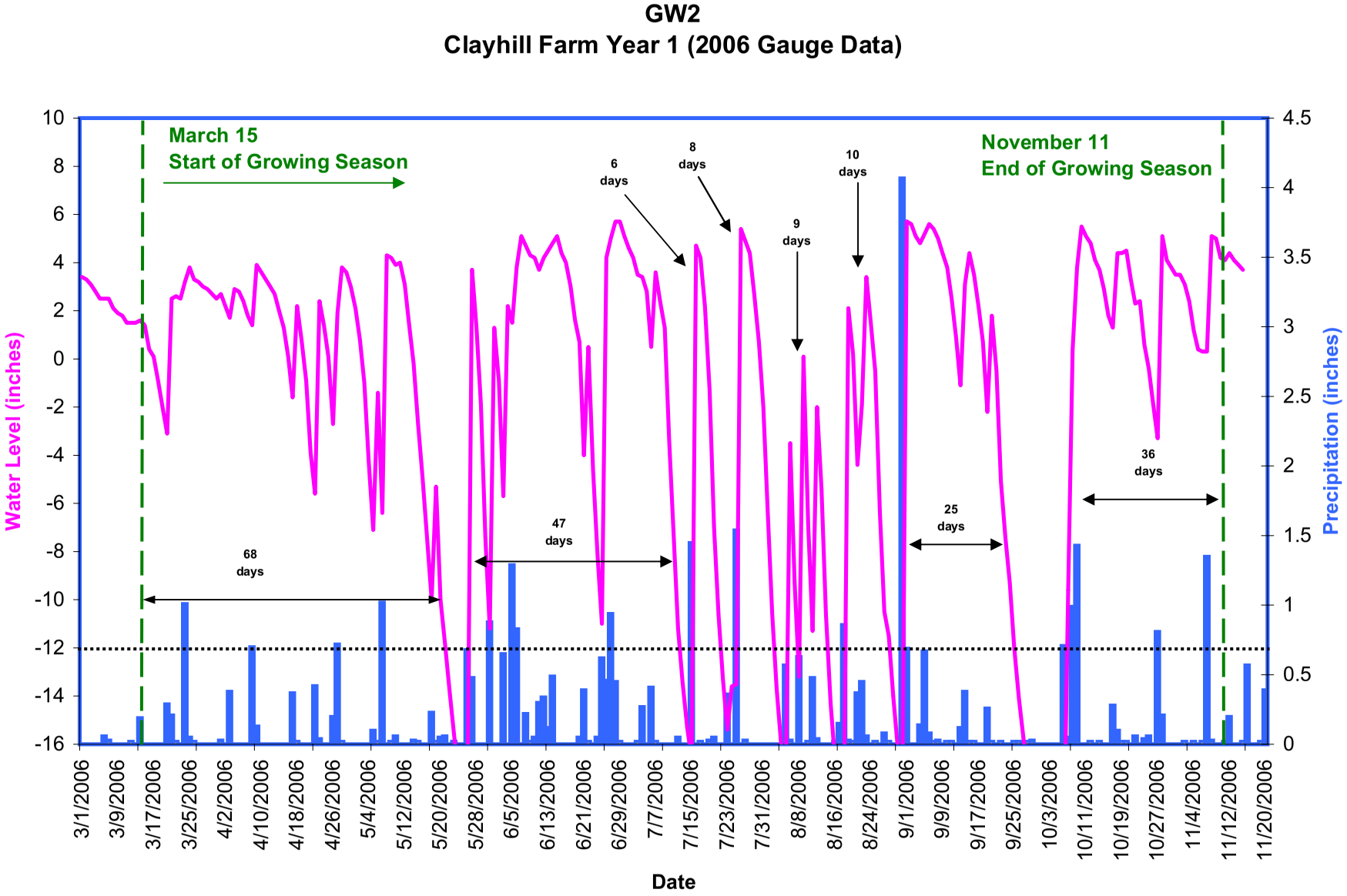
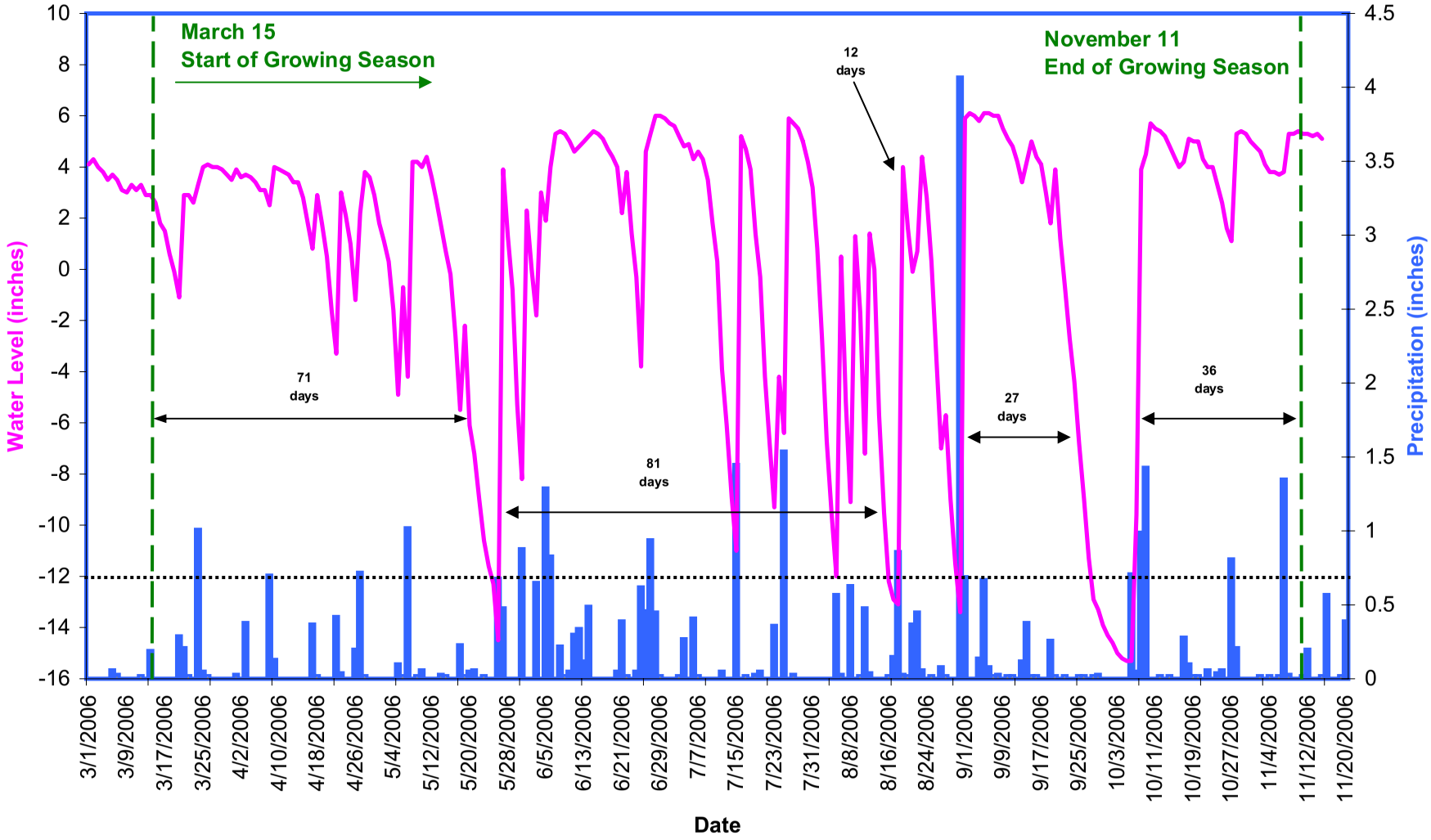
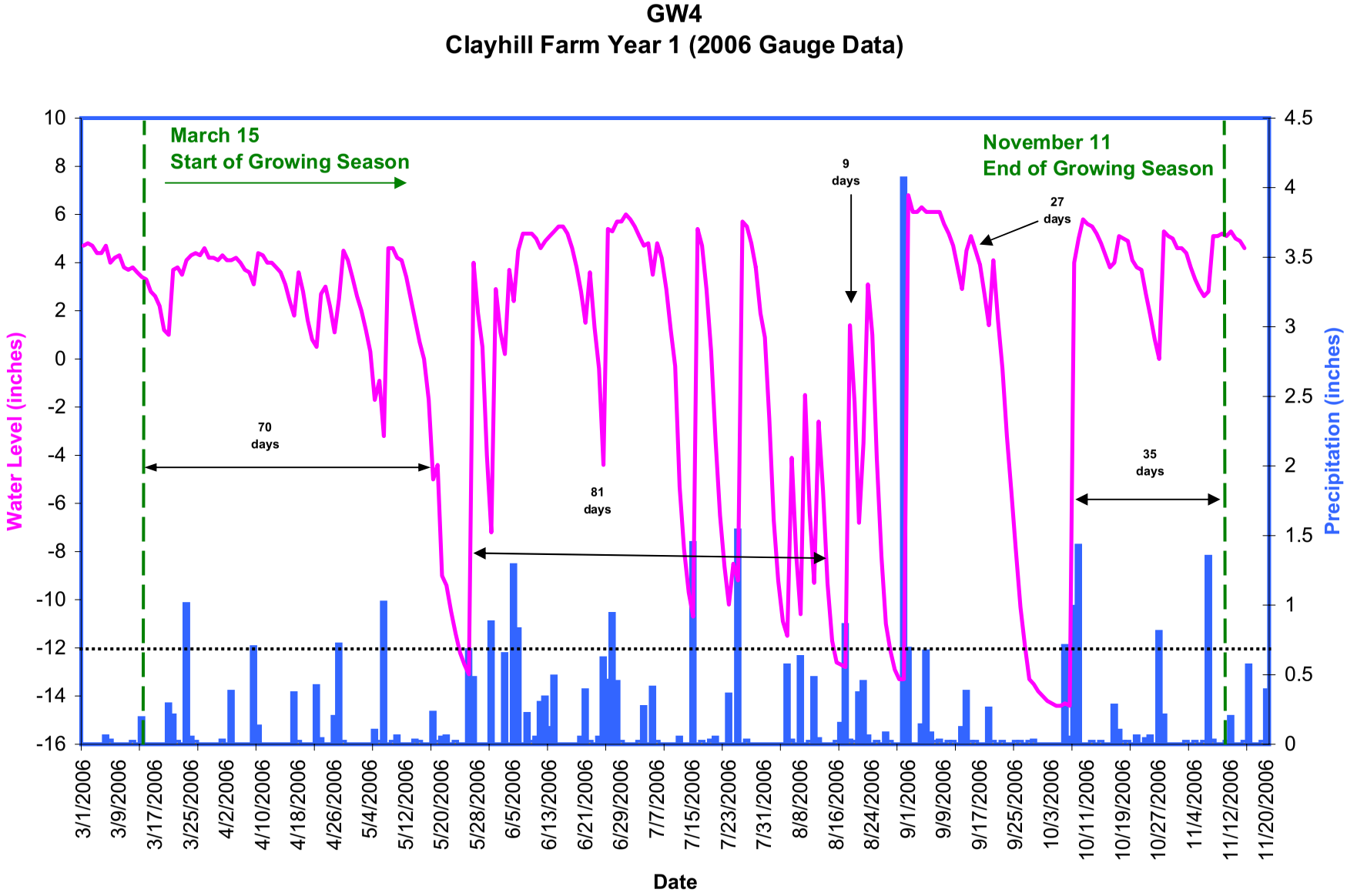
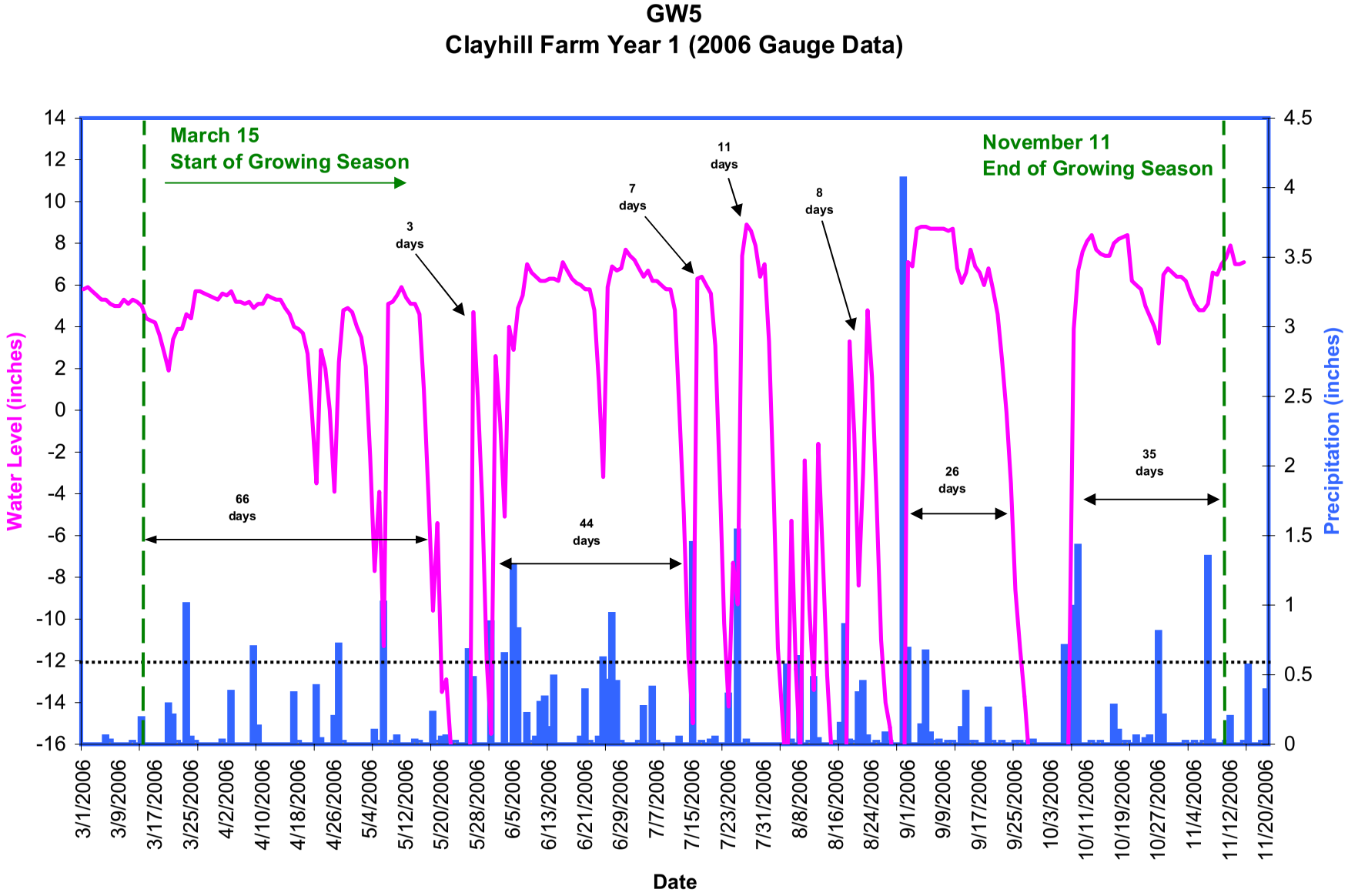
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006

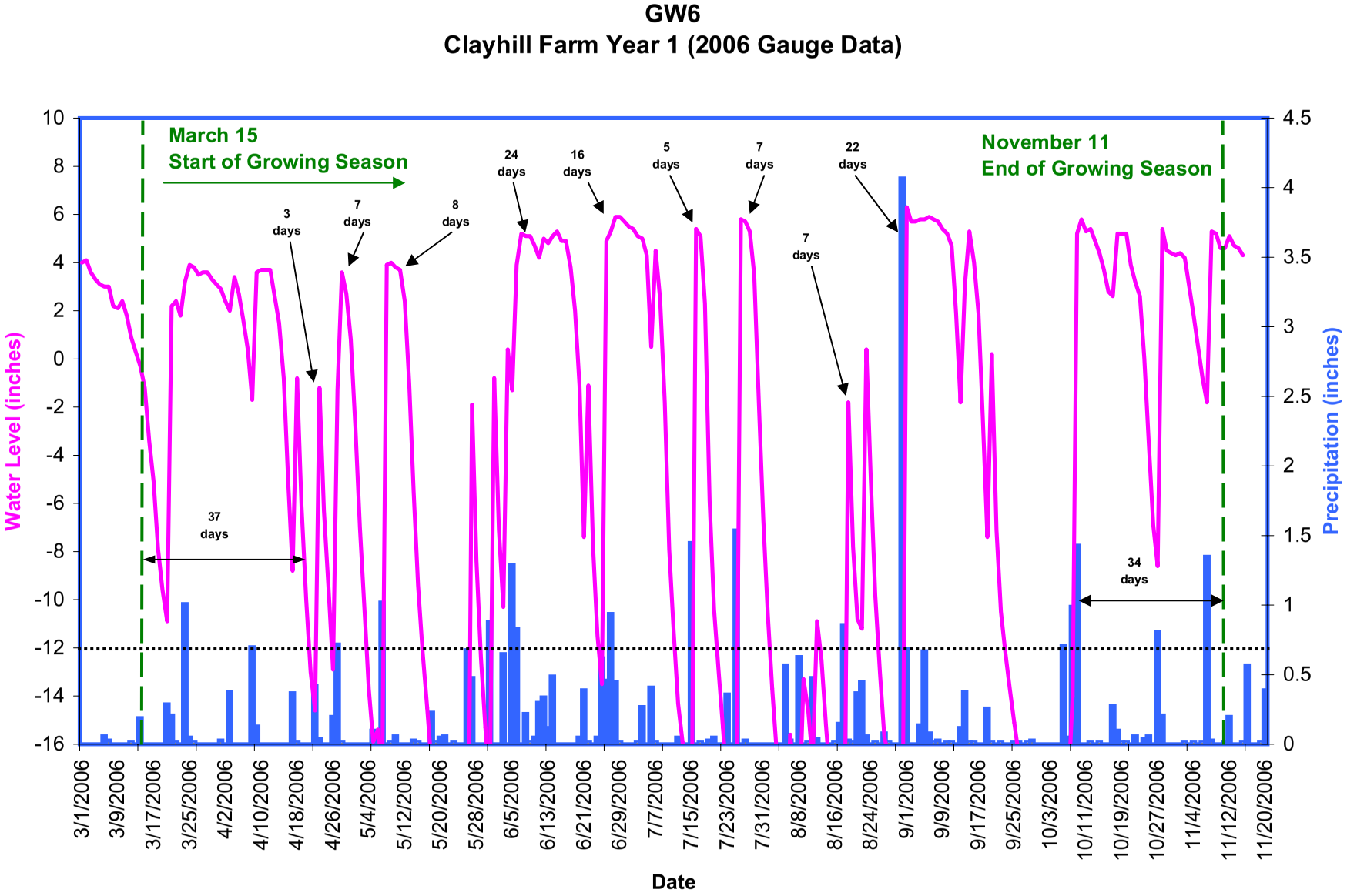

GW2
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
6 days
8 days
9 days
10 days
68 days
47 days
25 days
36 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006

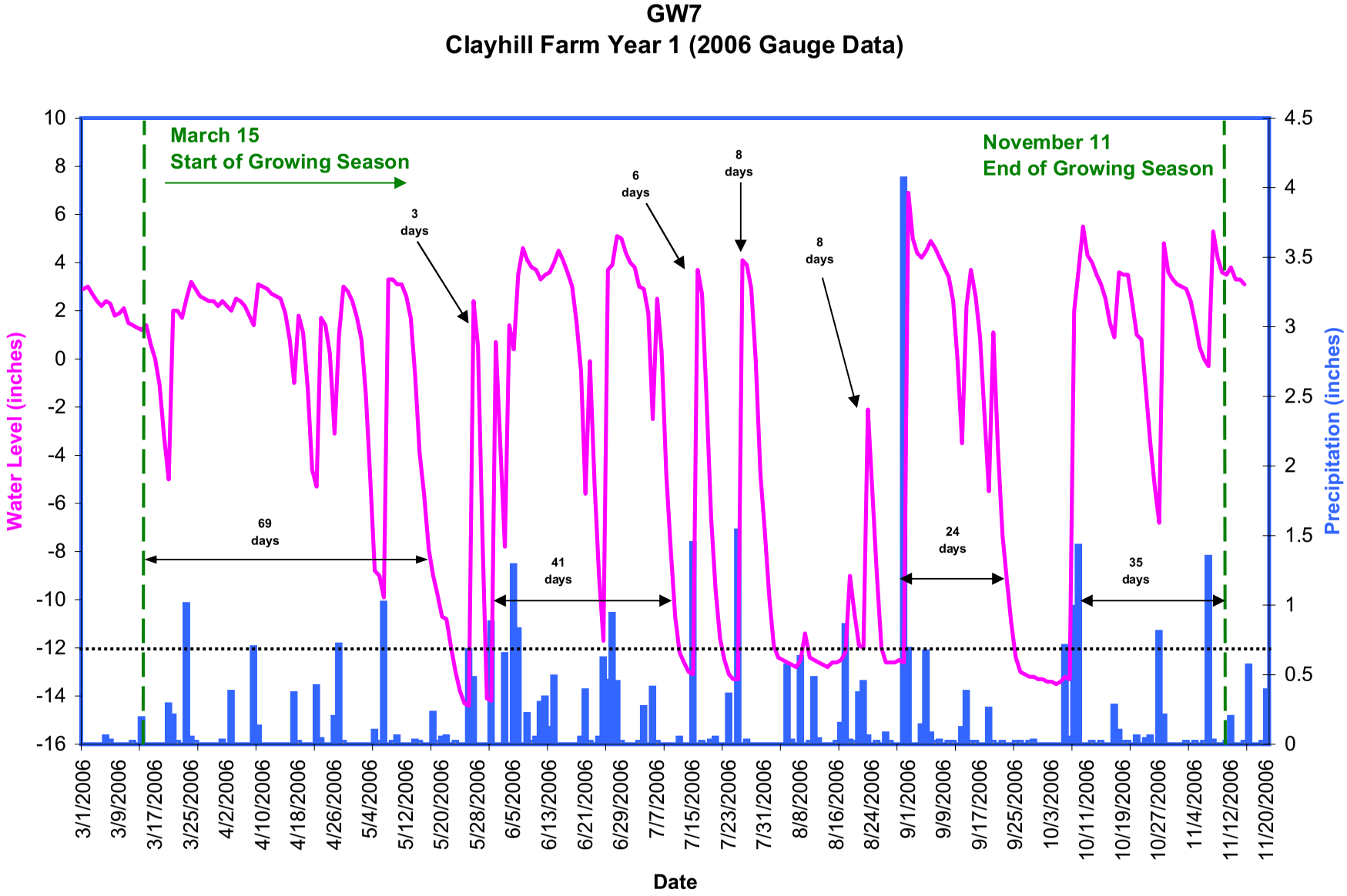
GW3
Clayhill Farm Year 1 (2006 Gauge Data)

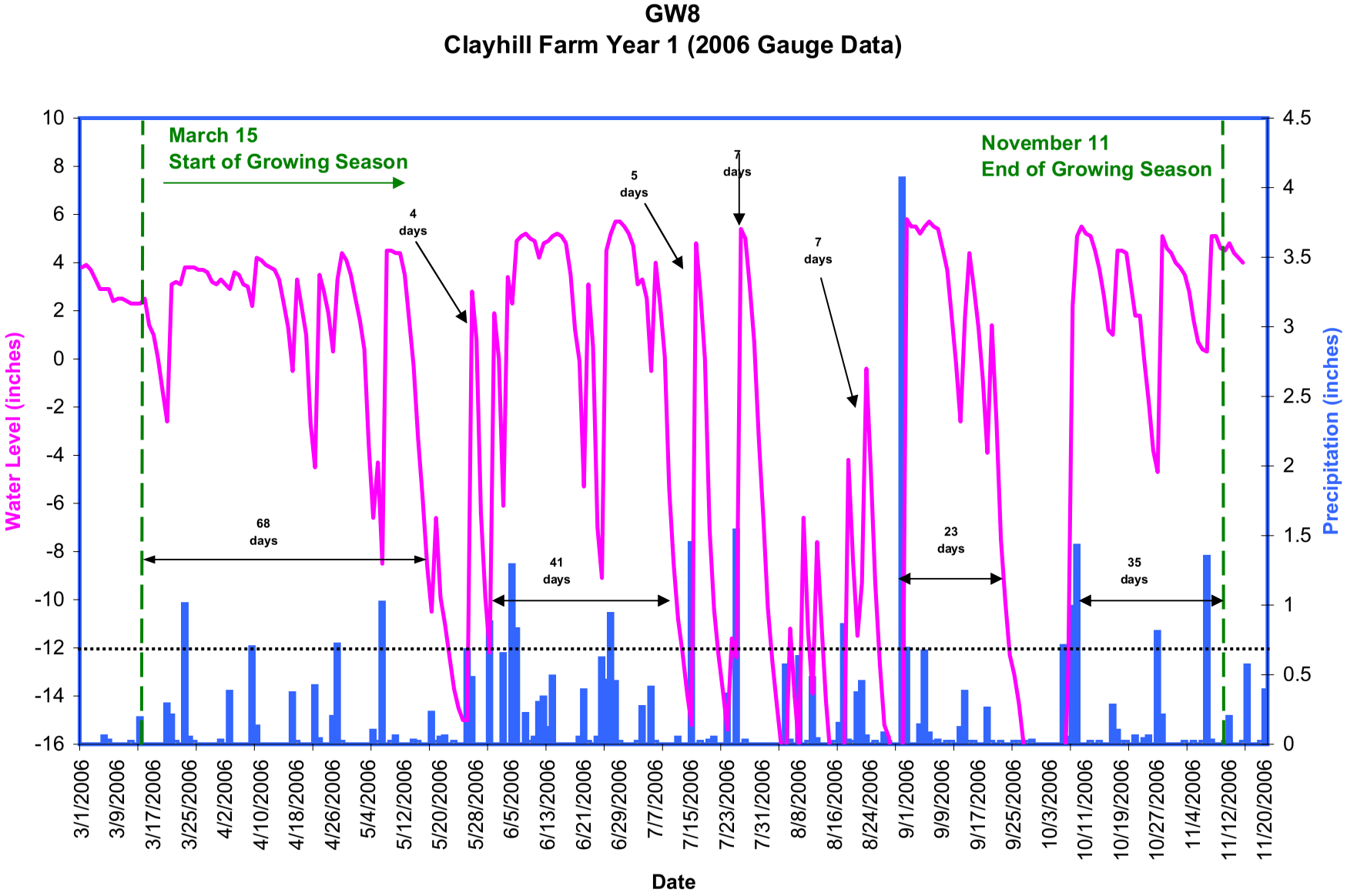


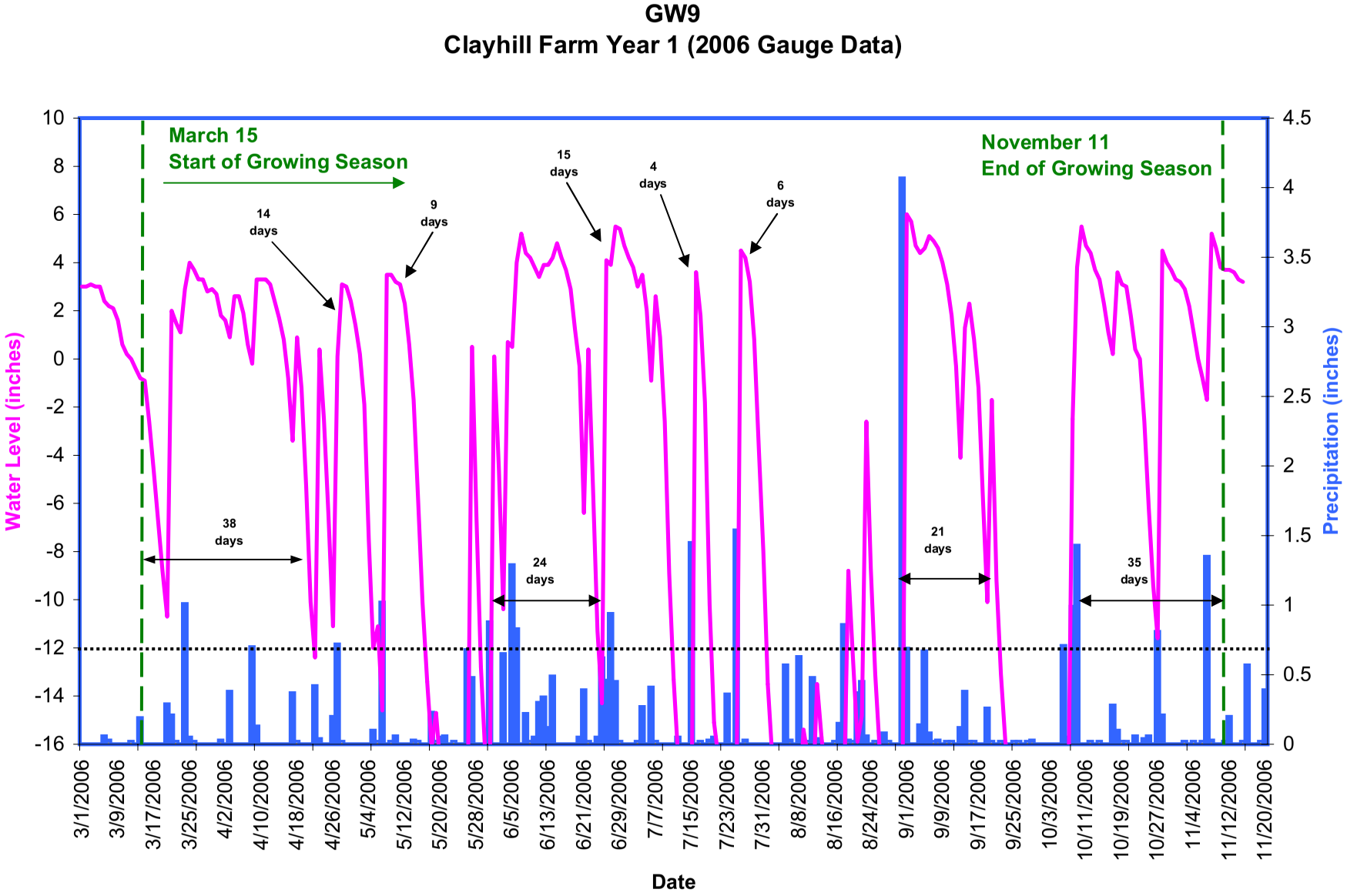

GW4
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
70
days
81
days
9
days
27
days
35
days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006


GW5
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
3 days
7 days
11 days
8 days
66 days
44 days
26 days
35 days
Water Level (inches)
Precipitation (inches)
Date
14
12
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006

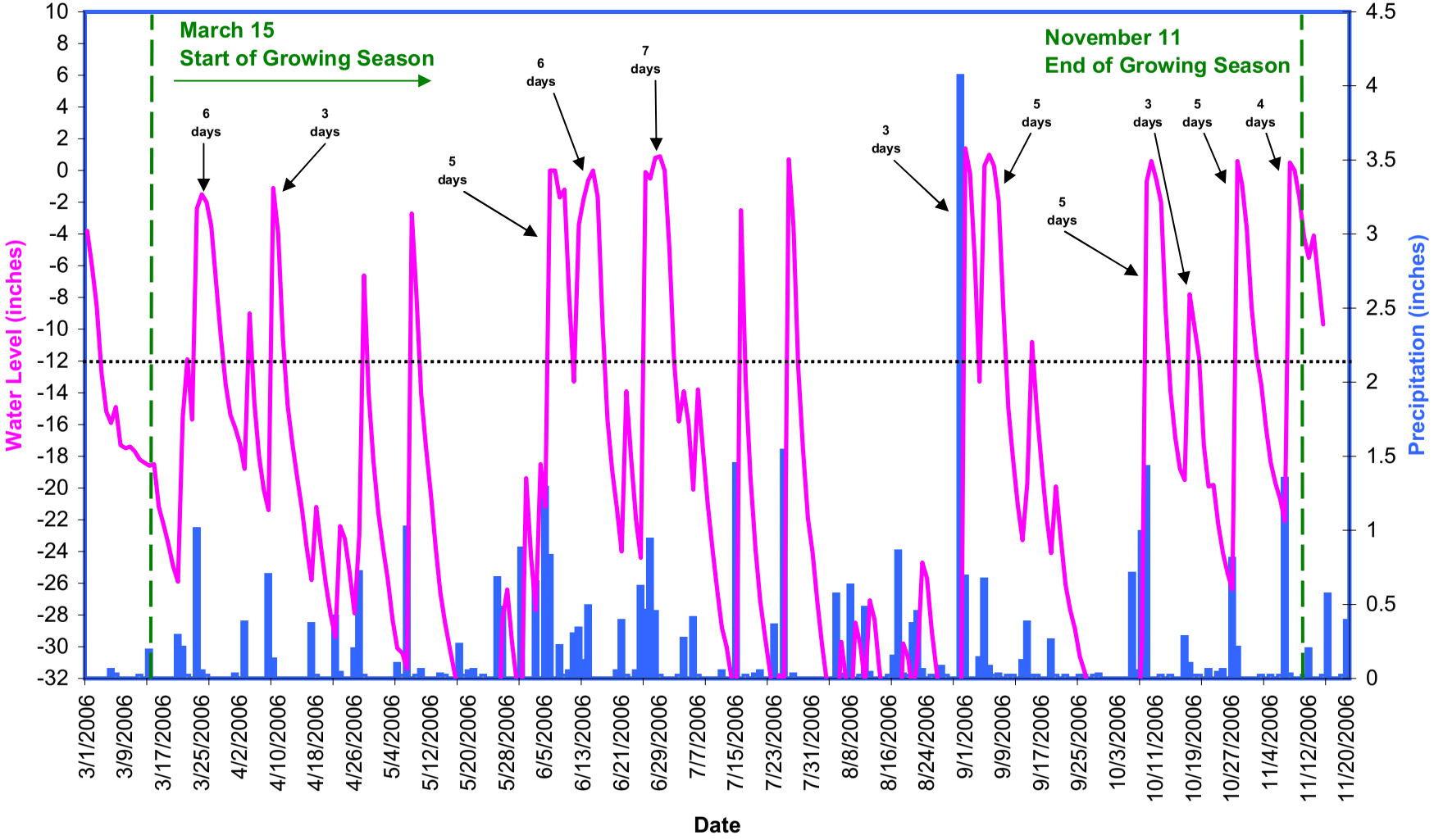

GW6
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
37 days
3 days
7 days
8 days
24 days
16 days
5 days
7 days
7 days
22 days
34 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006


GW7
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
3 days
6 days
8 days
8 days
69 days
41 days
24 days
35 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006

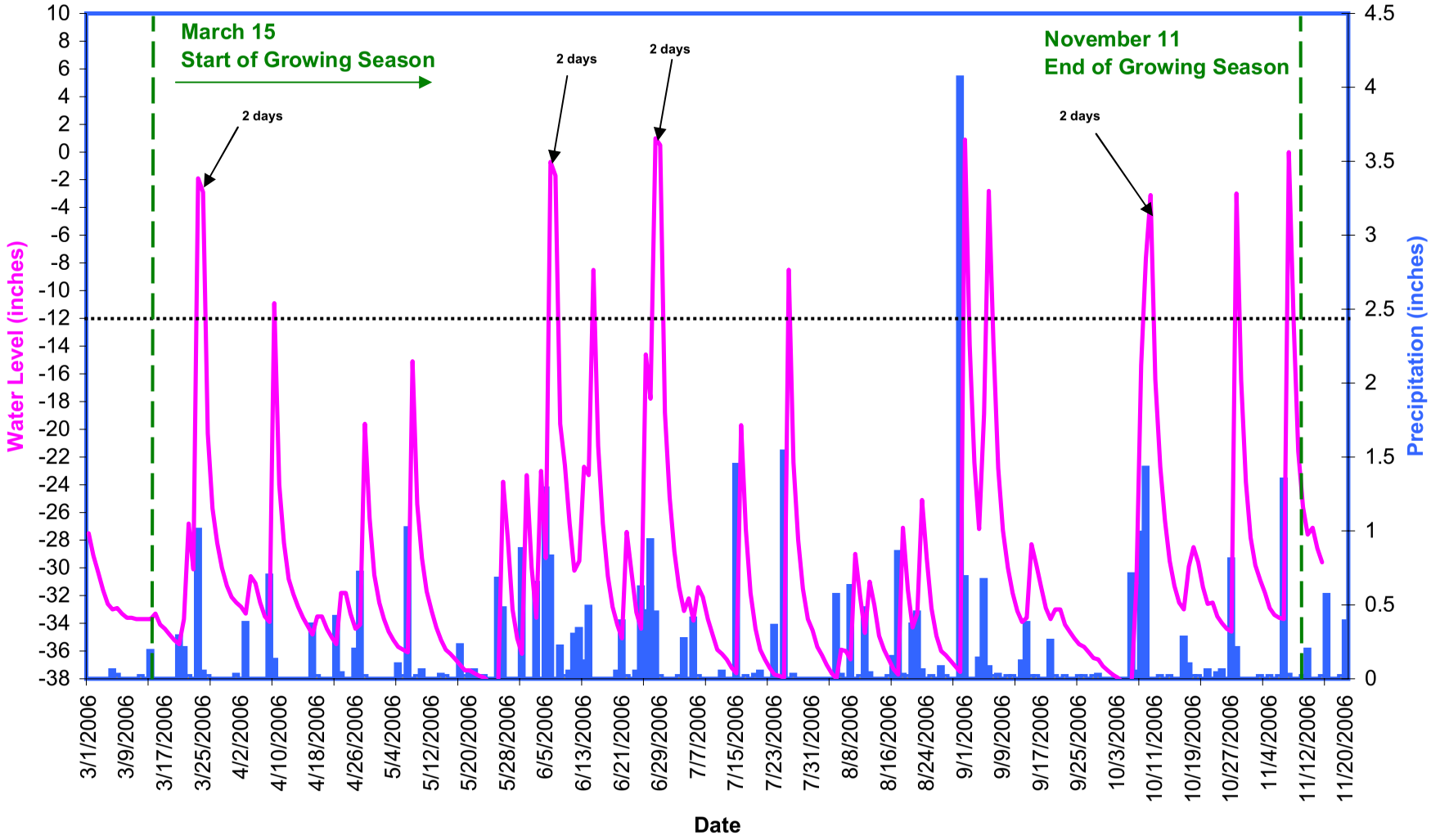

GW8
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
4 days
5 days
7 days
7 days
68 days
41 days
23 days
35 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006


GW9
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
14 days
9 days
15 days
4 days
6 days
38 days
24 days
21 days
35 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006

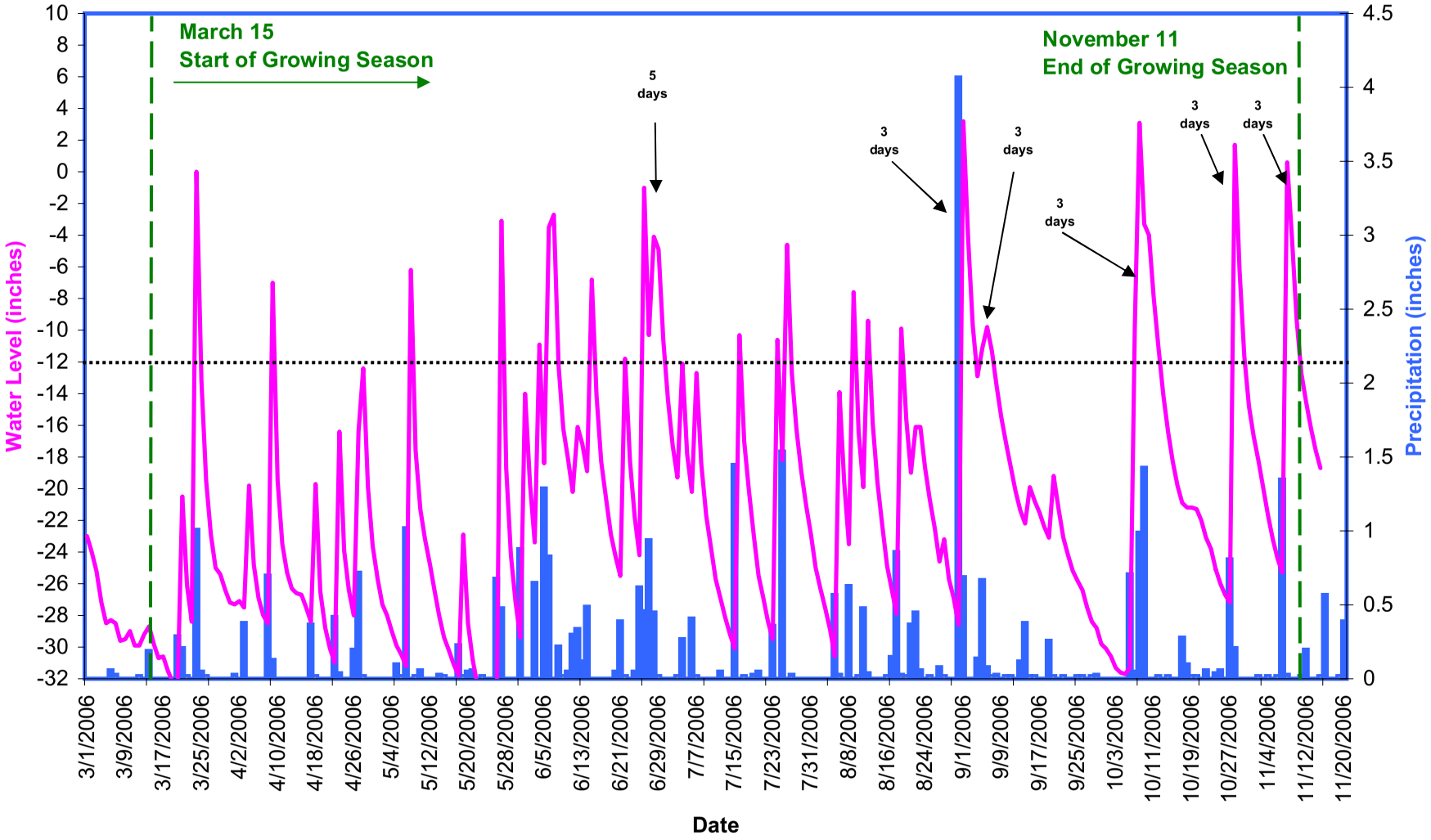
GW10
Clayhill Farm Year 1 (2006 Gauge Data)

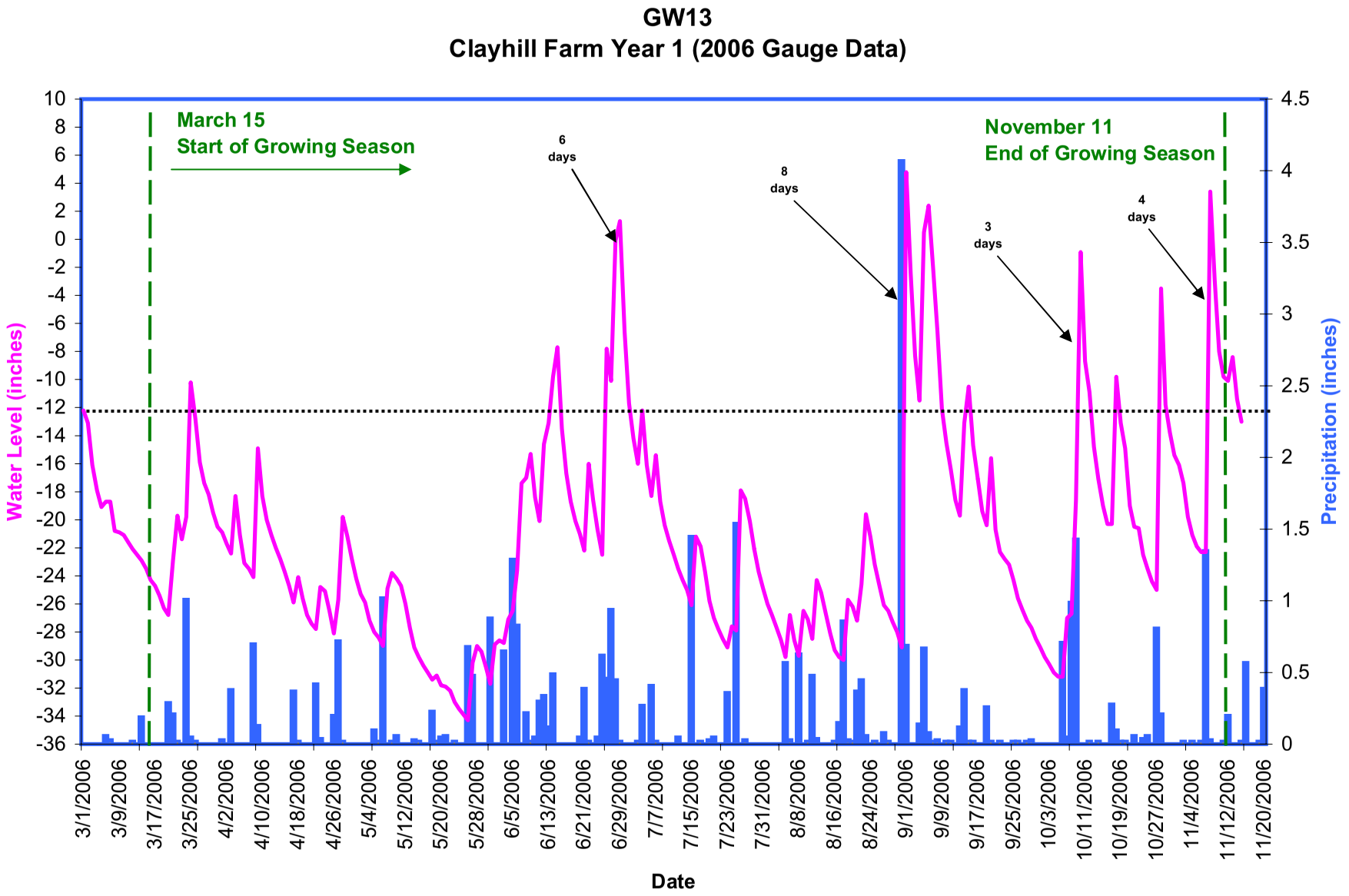


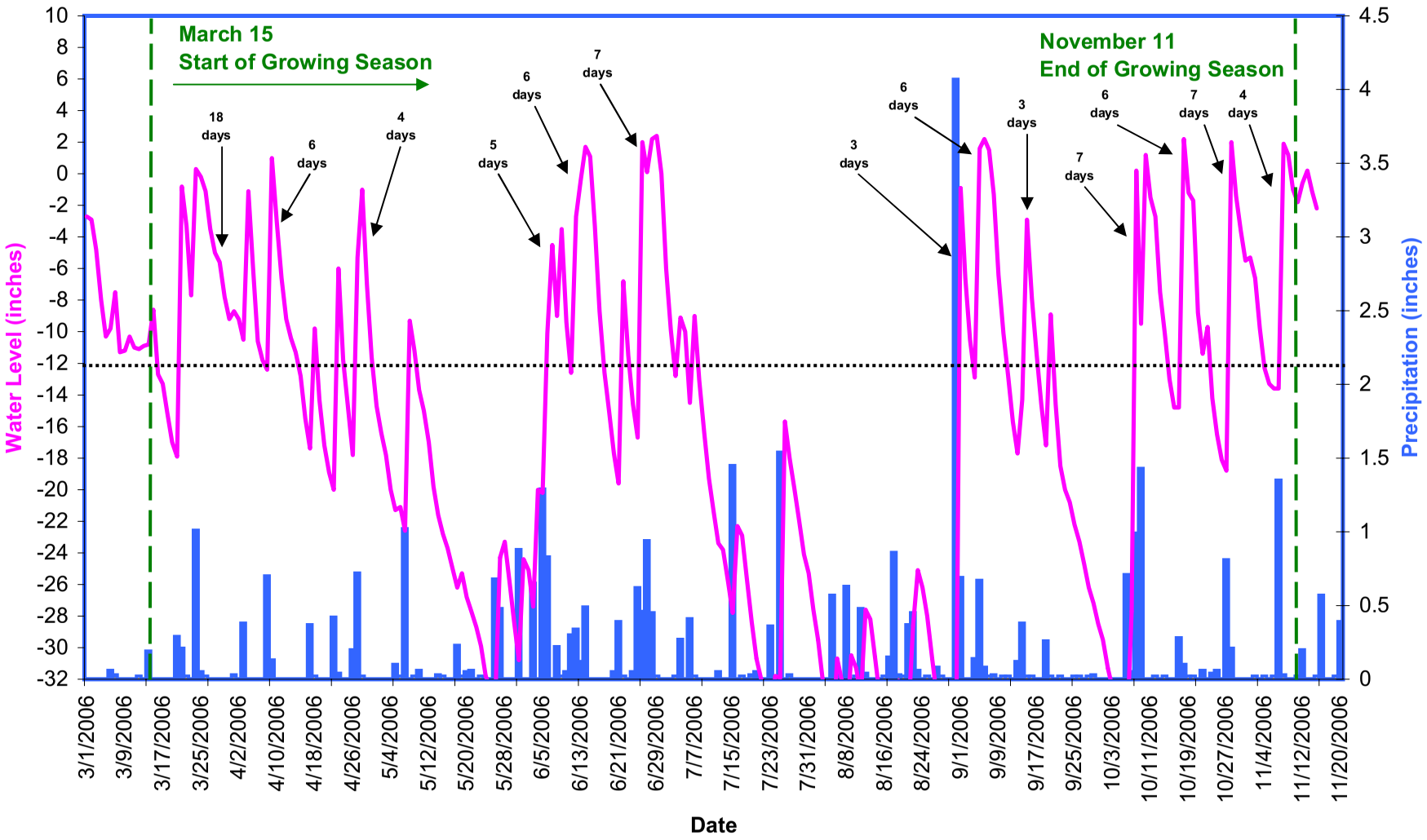
GW11
Clayhill Farm Year 1 (2006 Gauge Data)

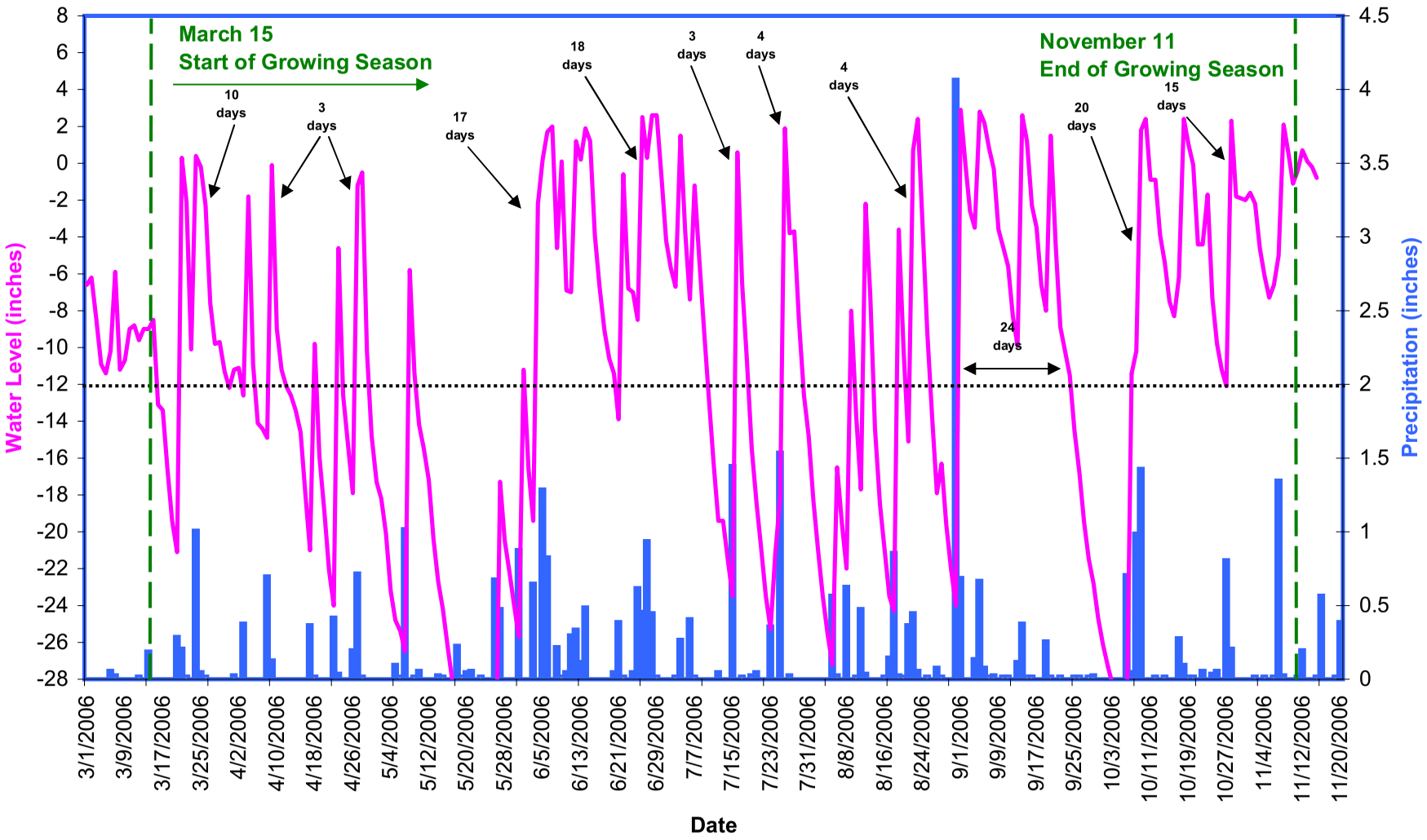


GW12
Clayhill Farm Year 1 (2006 Gauge Data)

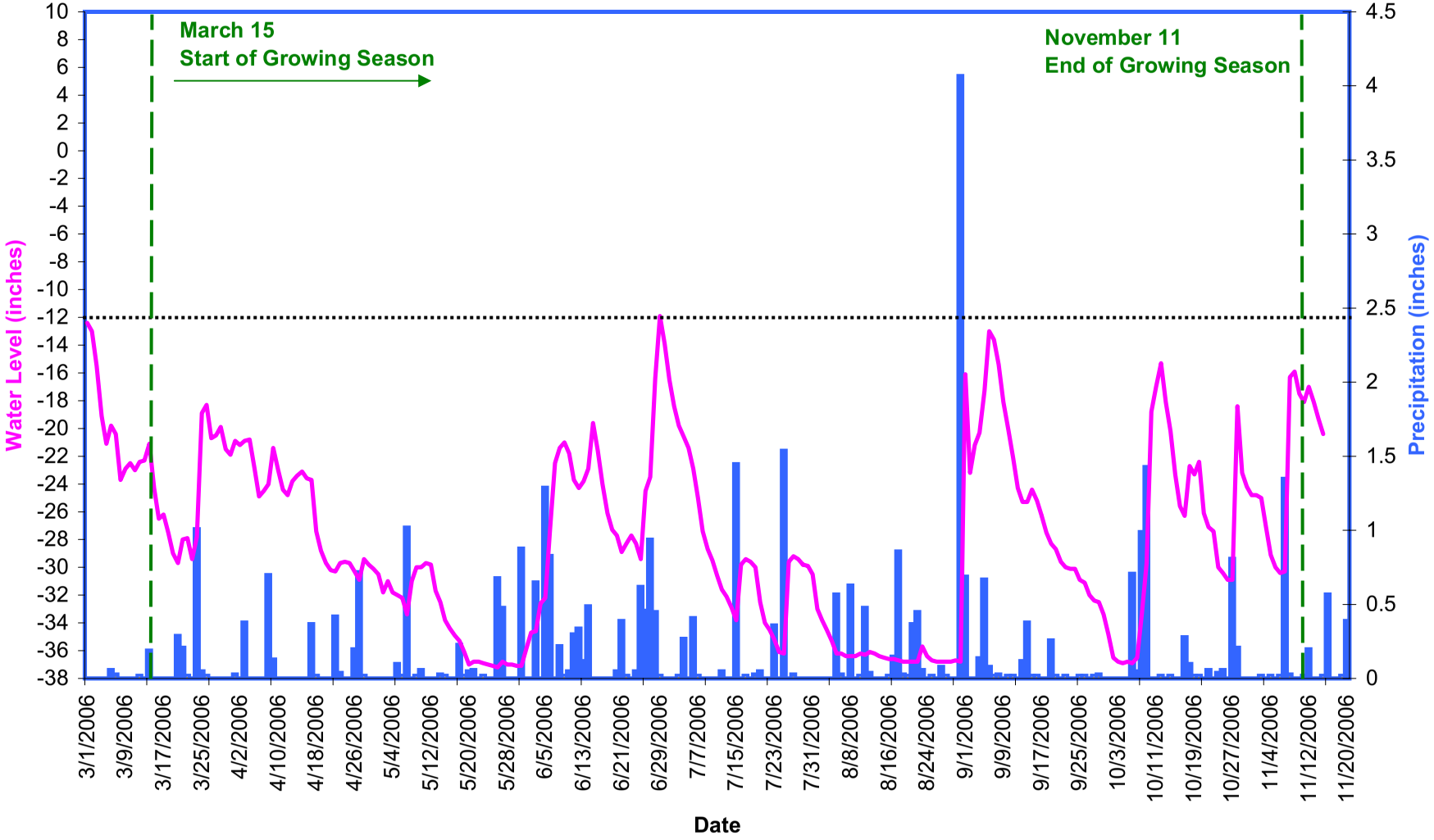


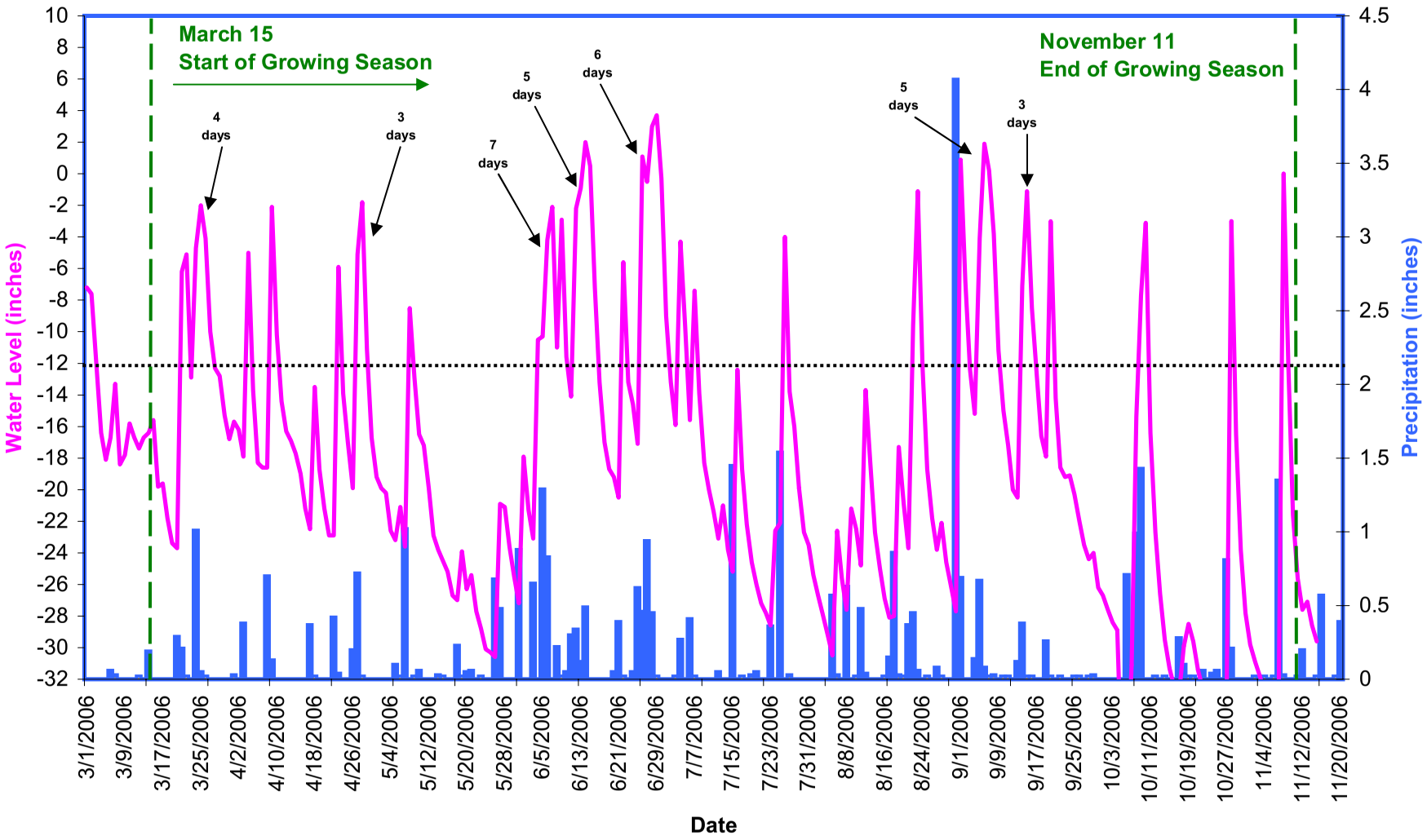

GW13
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
6 days
8 days
3 days
4 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
-32
-34
-36
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006

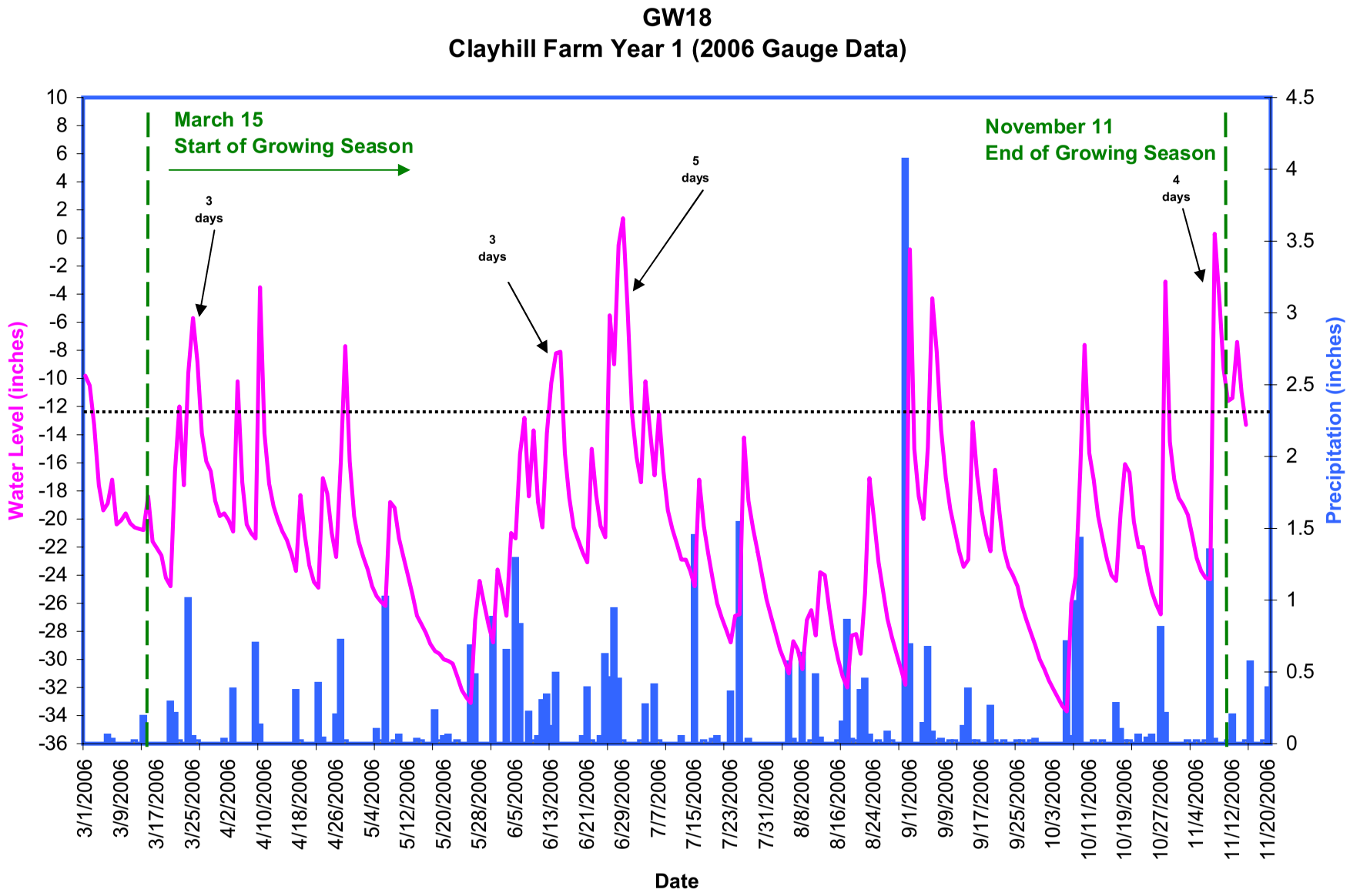

GW14
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
18 days
6 days
4 days
5 days
6 days
7 days
3 days
6 days
3 days
7 days
6 days
7 days
4 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
-32
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006


GW15
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
10 days
3 days
17 days
18 days
3 days
4 days
4 days
24 days
20 days
15 days
Water Level (inches)
Precipitation (inches)
Date
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006

GW16
Clayhill Farm Year 1 (2006 Gauge Data)




GW17
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
4 days
3 days
7 days
5 days
6 days
5 days
3 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
-32
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006


GW18
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
3 days
3 days
5 days
4 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
-32
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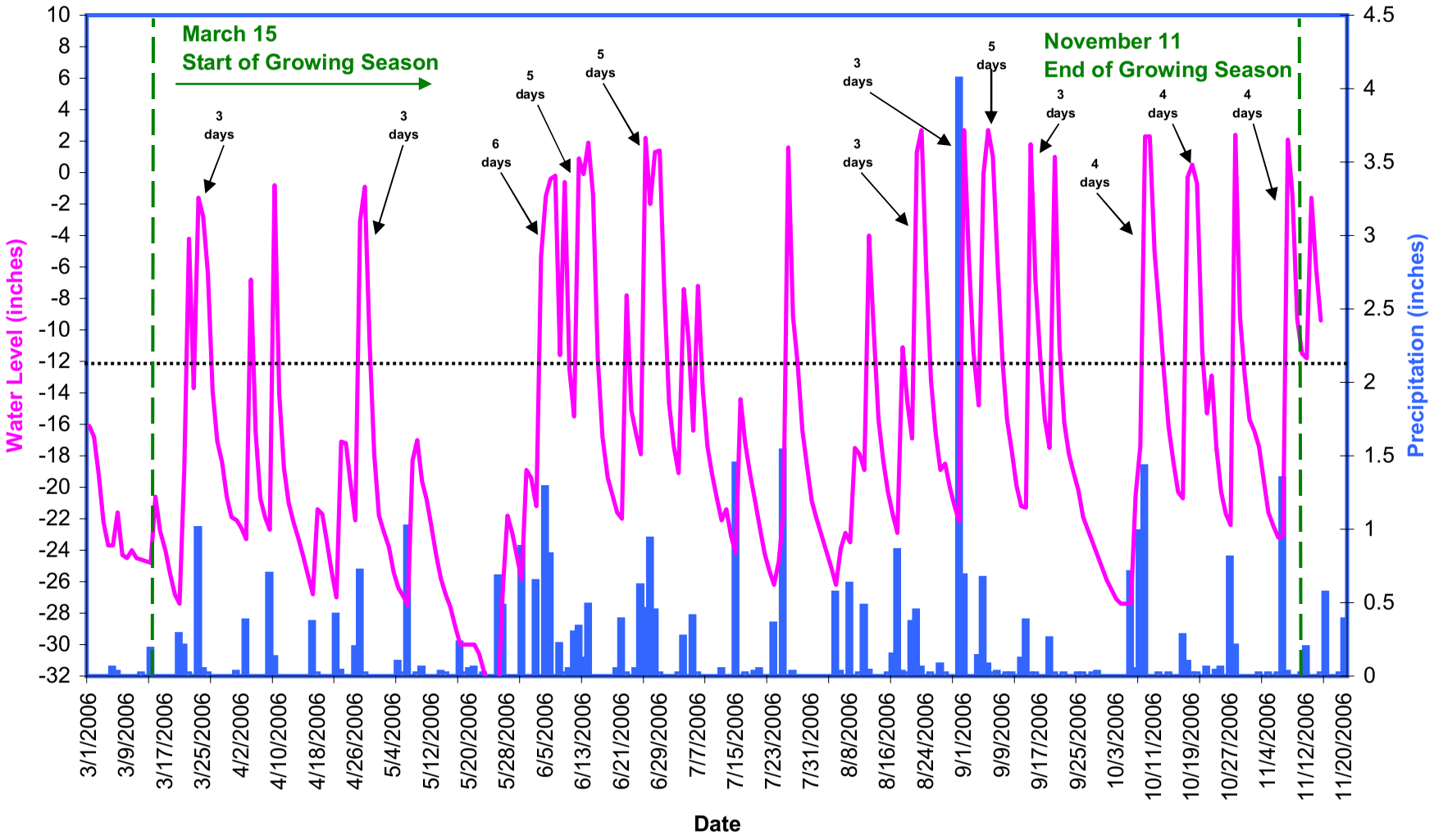
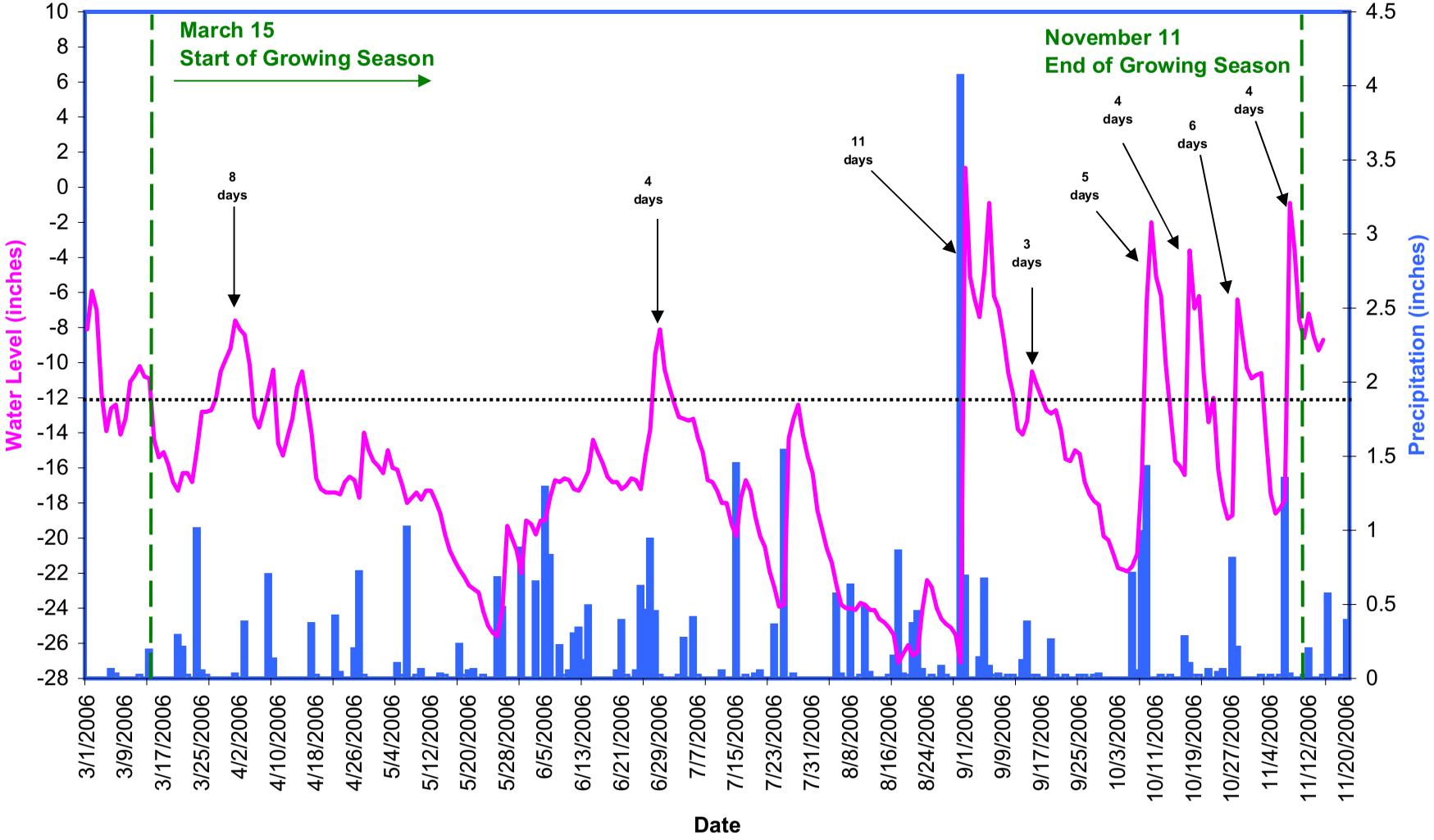
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006


GW19
Clayhill Farm Year 1 (2006 Gauge Data)
March 15
Start of Growing Season
November 11
End of Growing Season
3 days
3 days
6 days
5 days
5 days
3 days
3 days
5 days
3 days
4 days
4 days
4 days
Water Level (inches)
Precipitation (inches)
Date
10
8
6
4
2
0
-2
-4
-6
-8
-10
-12
-14
-16
-18
-20
-22
-24
-26
-28
-30
-32
4.5
4
3.5
3
2.5
2
1.5
1
0.5
0
3/1/2006
3/9/2006
3/17/2006
3/25/2006
4/2/2006
4/10/2006
4/18/2006
4/26/2006
5/4/2006
5/12/2006
5/20/2006
5/28/2006
6/5/2006
6/13/2006
6/21/2006
6/29/2006
7/7/2006
7/15/2006
7/23/2006
7/31/2006
8/8/2006
8/16/2006
8/24/2006
9/1/2006
9/9/2006
9/17/2006
9/25/2006
10/3/2006
10/11/2006
10/19/2006
10/27/2006
11/4/2006
11/12/2006
11/20/2006

GW20
Clayhill Farm Year 1 (2006 Gauge Data)



APPENDIX B

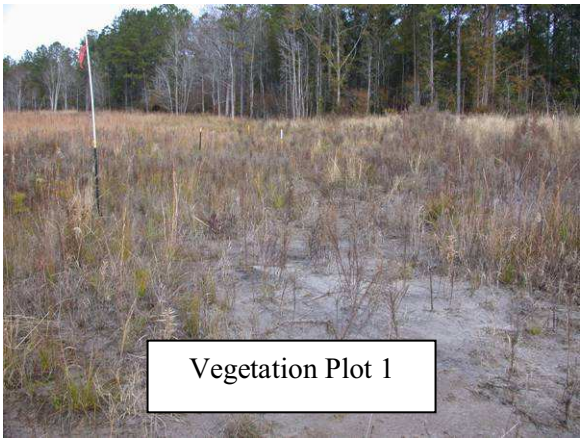
VEGETATION MONITORING PHOTOGRAPHS

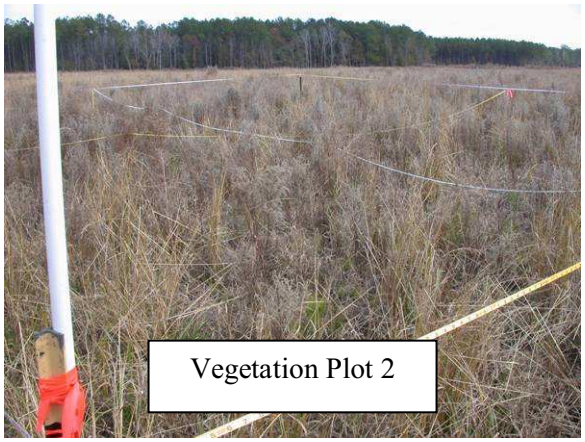
Clayhill Farms

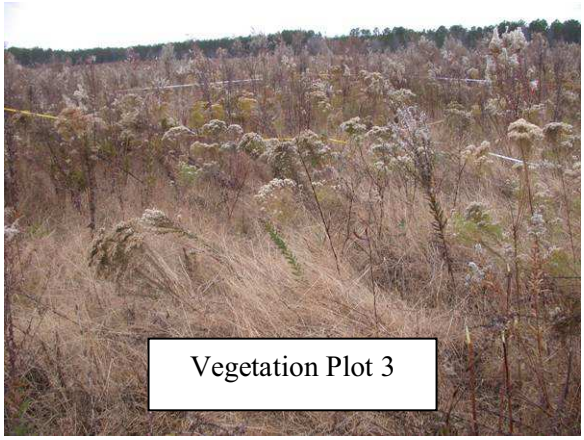
Vegetation Monitoring Plot Photographs

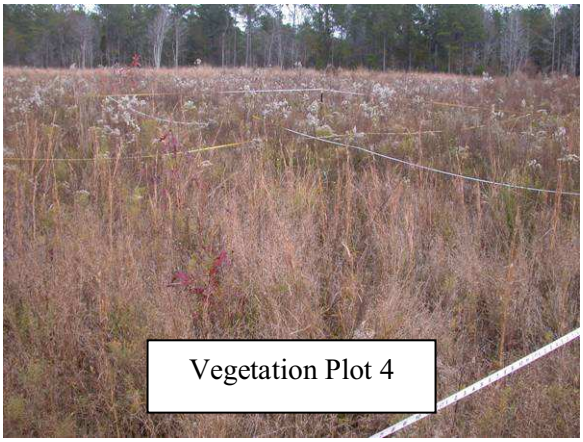
Year 1 (2006) Annual Monitoring

Pictures Taken November 2006









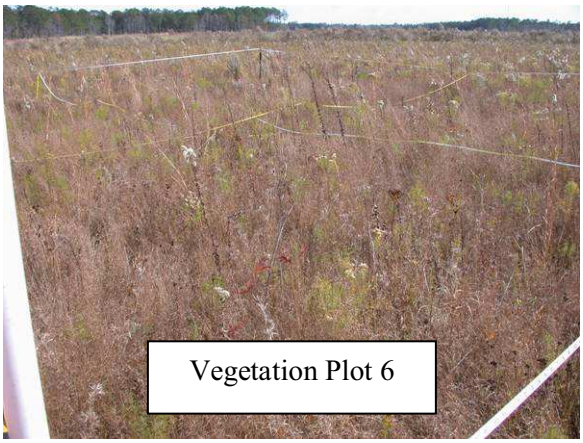
Clayhill Farms

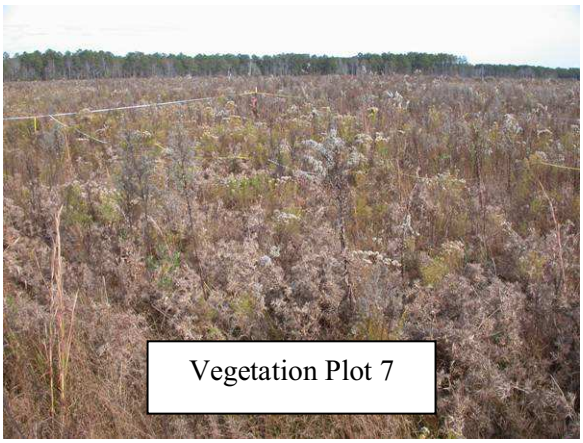
Vegetation Monitoring Plot Photographs

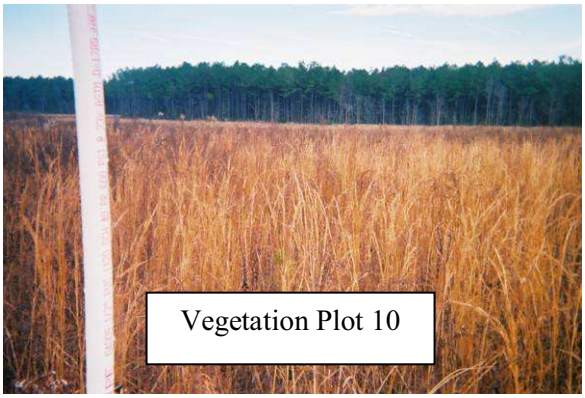
Year 1 (2006) Annual Monitoring

Pictures Taken November 2006

(continued)







Clayhill Farms

Vegetation Problem Area Photographs

Year 1 (2006) Annual Monitoring

Pictures Taken November 2006

Problem Area Photo 1

Problem Area Photo 2

Problem Area Photo 3

Problem Area Photo 4

APPENDIX C

STREAM MONITORING DATA AND PHOTOGRAPHS

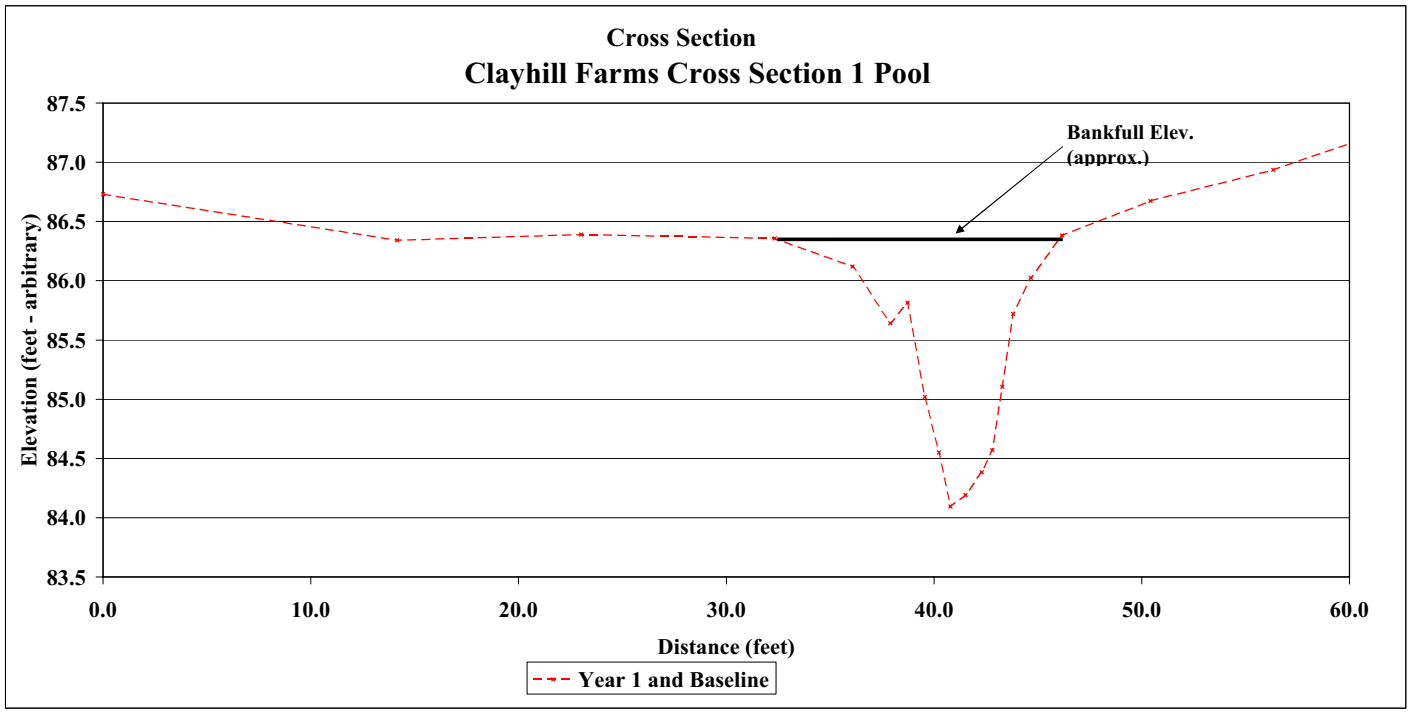
Project Name	Clayhill Farms
Cross Section	Cross Section 1
Feature	Pool
Date	1/3/07
Crew	Lewis, Jeffers

Reach 1

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	86.7						
14.2	86.3						
23.0	86.4						
32.3	86.4						
36.1	86.1						
37.9	85.6						
38.7	85.8						
39.6	85.0						
40.2	84.6						
40.8	84.1						
41.5	84.2						
42.3	84.4						
42.8	84.6						
43.3	85.1						
43.8	85.7						
44.7	86.0						
46.2	86.4						
50.4	86.7						
56.3	86.9						
62.2	87.3						

Photo of Reach 1 Cross-Section 1 - Looking Upstream

	2006	2007	2008	2009	2010
Area	10.8				
Width	13.6				
Mean Depth	0.8				
Max Depth	2.3				
W/D					



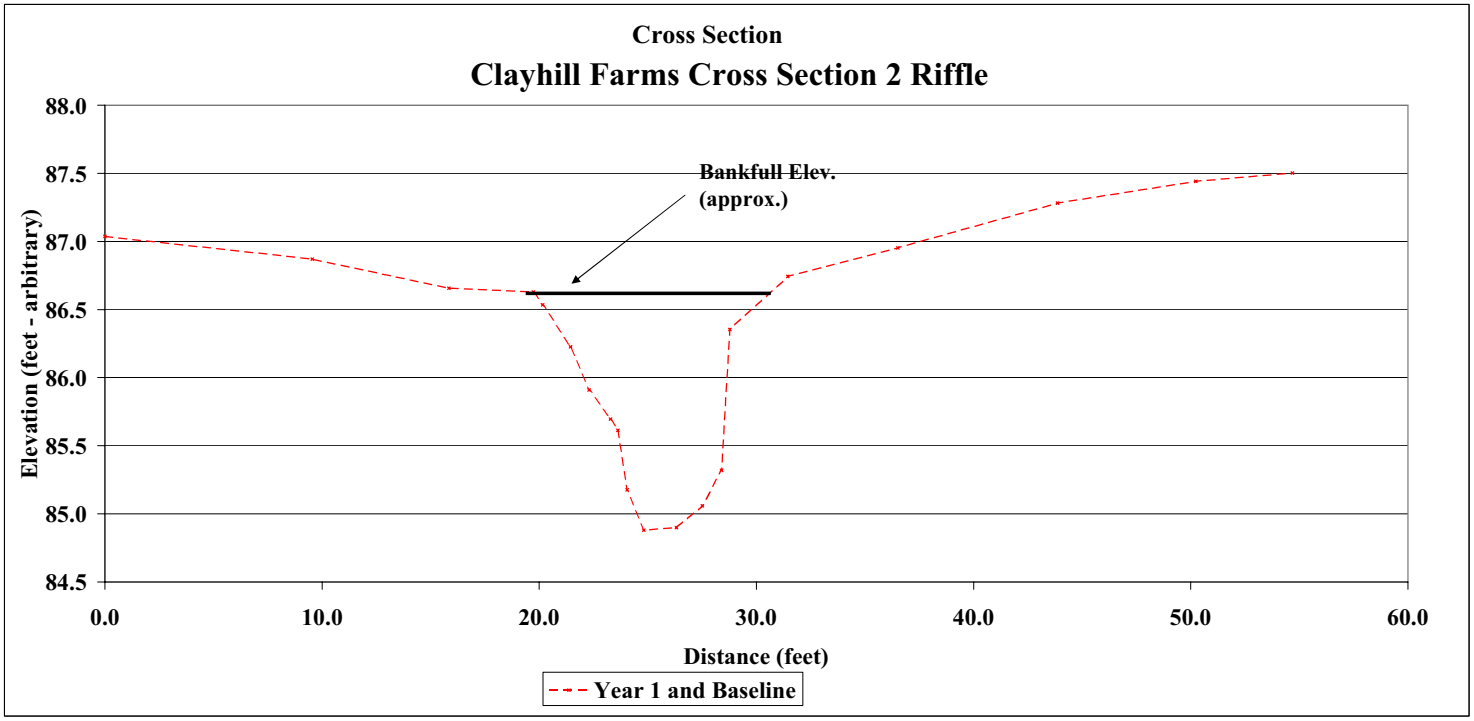
Project Name	Clayhill Farms
Cross Section	Cross Section 2
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

Reach 1

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	87.0						
9.6	86.9						
15.8	86.7						
19.7	86.6						
20.2	86.5						
21.4	86.2						
22.3	85.9						
23.3	85.7						
23.6	85.6						
24.0	85.2						
24.8	84.9						
26.3	84.9						
27.5	85.1						
28.4	85.3						
28.8	86.4						
31.5	86.7						
36.5	87.0						
43.9	87.3						
50.2	87.4						
54.7	87.5						

Photo of Reach 1 Cross-Section 2 - Looking Upstream

	2006	2007	2008	2009	2010
Area	9.8				
Width	10.6				
Mean Depth	0.9				
Max Depth	1.7				
W/D	11.5				



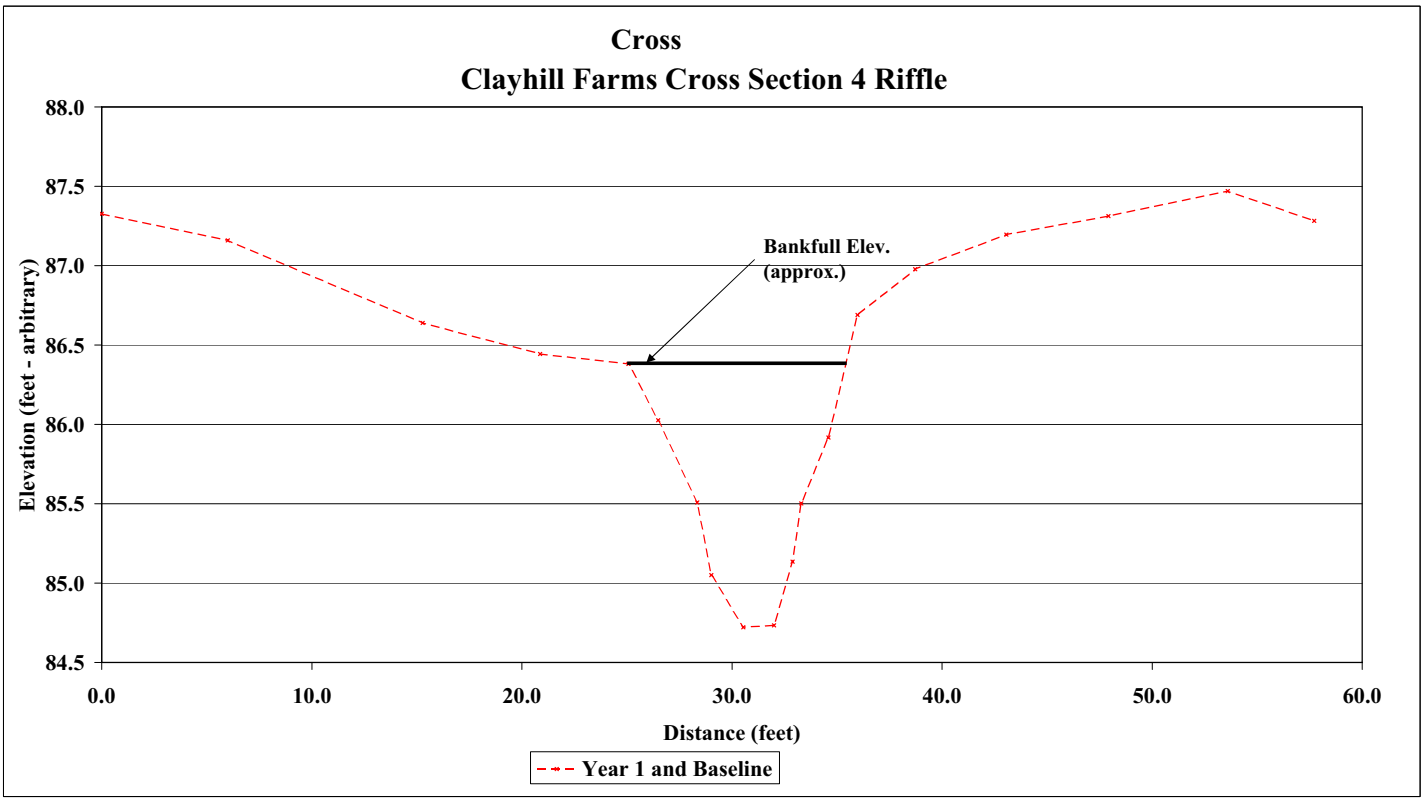
Project Name	Clayhill Farms
Cross Section	Cross Section 3
Feature	Pool
Date	1/3/07
Crew	Lewis, Jeffers

Reach 1

2006 Year 1 and Baseline Station	2006 Year 1 and Baseline Elevation	2007 Year 2 Station	2007 Year 2 Elevation	2008 Year 3 Station	2008 Year 3 Elevation	2009 Year 4 Station	2009 Year 4 Elevation
0.0	87.3						
6.0	87.2						
15.3	86.6						
20.9	86.4						
25.1	86.4						
26.5	86.0						
28.3	85.5						
29.0	85.1						
30.5	84.7						
32.0	84.7						
32.9	85.1						
33.3	85.5						
34.6	85.9						
36.0	86.7						
38.7	87.0						
43.1	87.2						
47.9	87.3						
53.6	87.5						
57.7	87.3						

Photo of Reach 1 Cross-Section 3 - Looking Upstream

	2006	2007	2008	2009	2010
Area	9.6				
Width	10.3				
Mean Depth	0.9				
Max Depth	1.7				
W/D	NA				



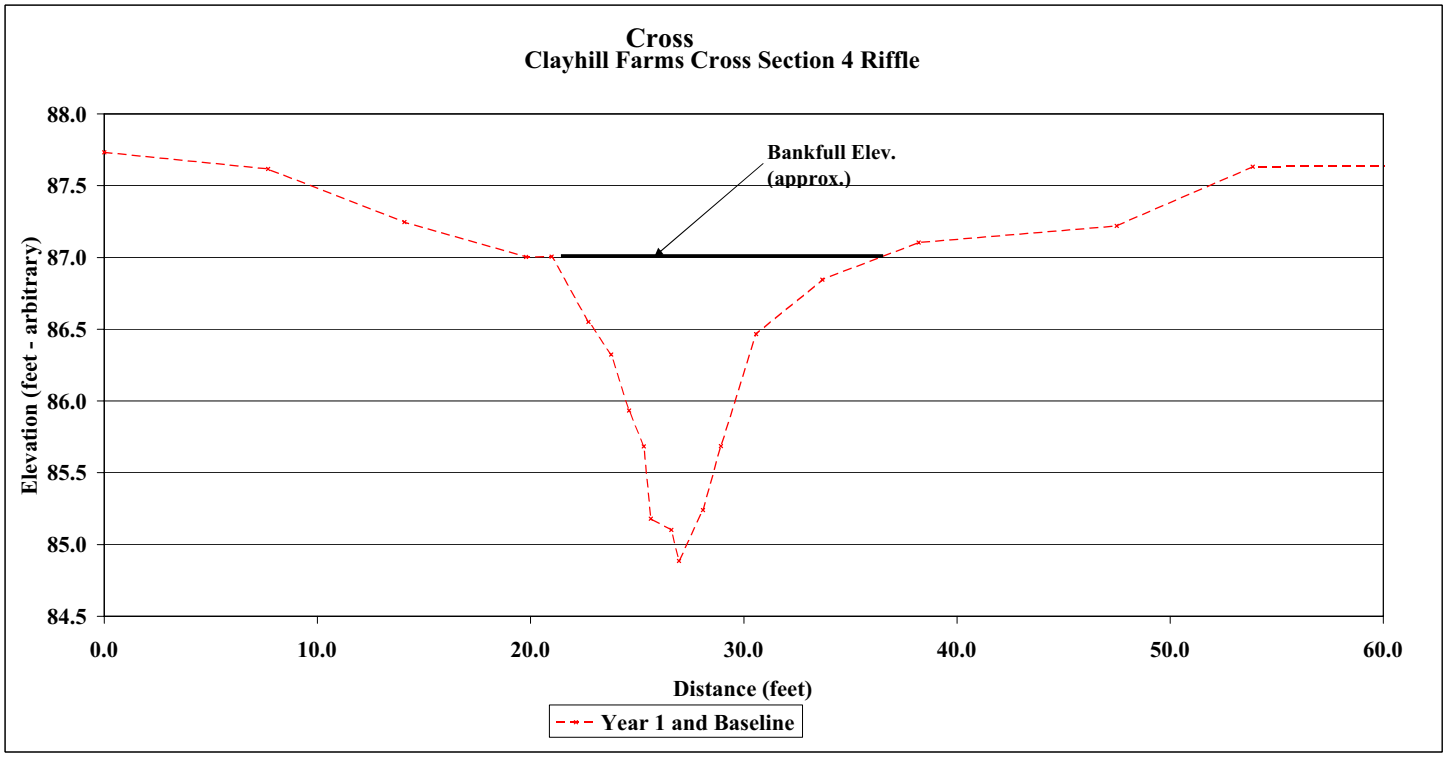
Project Name	Clayhill Farms
Cross Section	Cross Section 4
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

Reach 1

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	87.7						
7.7	87.6						
14.1	87.2						
19.8	87.0						
21.0	87.0						
22.7	86.6						
23.8	86.3						
24.6	85.9						
25.3	85.7						
25.6	85.2						
26.6	85.1						
27.0	84.9						
28.1	85.2						
28.9	85.7						
30.6	86.5						
33.7	86.8						
38.2	87.1						
47.5	87.2						
53.9	87.6						
60.1	87.6						

Photo of Reach 1 Cross-Section 4 - Looking Upstream

	2006	2007	2008	2009	2010
Area	11.9				
Width	15.4				
Mean Depth	0.8				
Max Depth	2.1				
W/D	20.0				



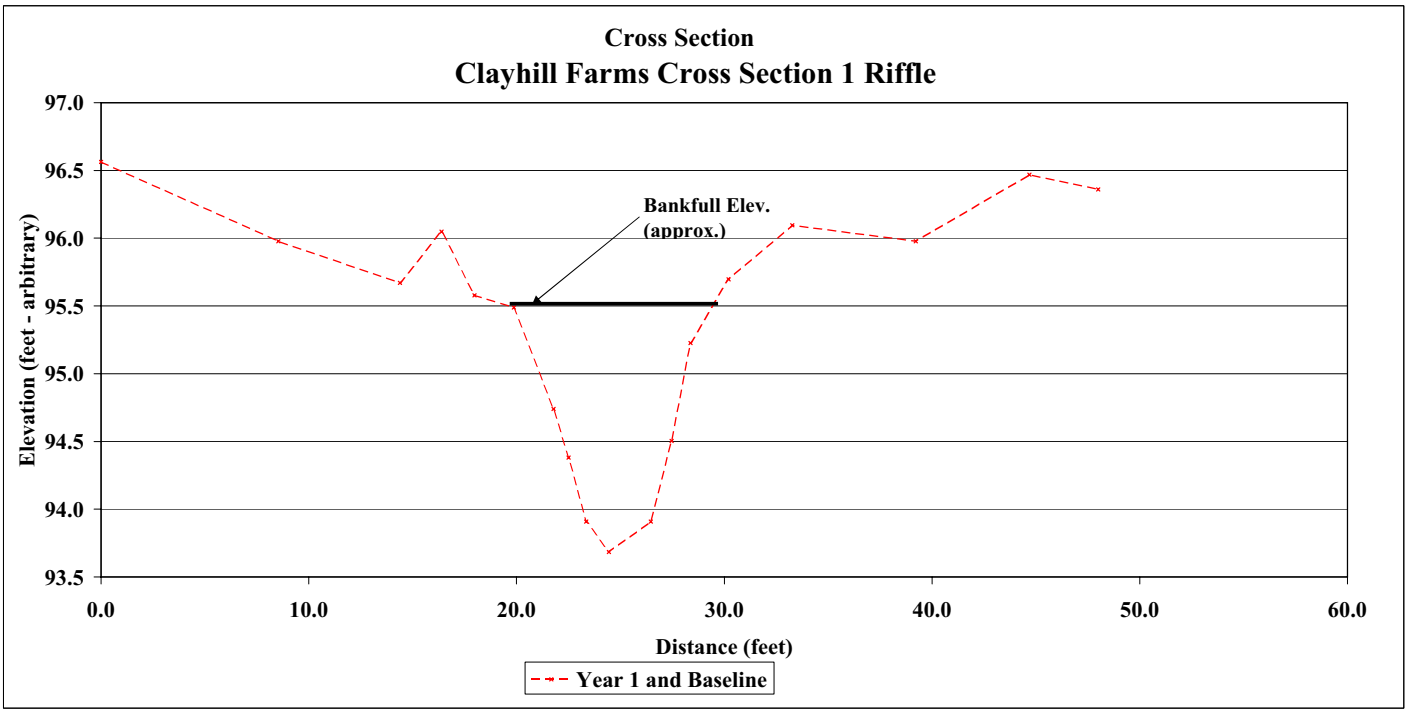
Project Name	Clayhill Farms
Cross Section	Cross Section 1
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

Reach 2

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	96.6						
8.5	96.0						
14.4	95.7						
16.4	96.0						
18.0	95.6						
19.9	95.5						
21.8	94.7						
22.5	94.4						
23.4	93.9						
24.4	93.7						
26.5	93.9						
27.5	94.5						
28.4	95.2						
30.2	95.7						
33.3	96.1						
39.2	96.0						
44.7	96.5						
48.0	96.4						

Photo of Reach 2 Cross-Section 1 - Looking Upstream

	2006	2007	2008	2009	2010
Area	10.0				
Width	10.1				
Mean Depth	1.0				
Max Depth	1.8				
W/D	10.2				



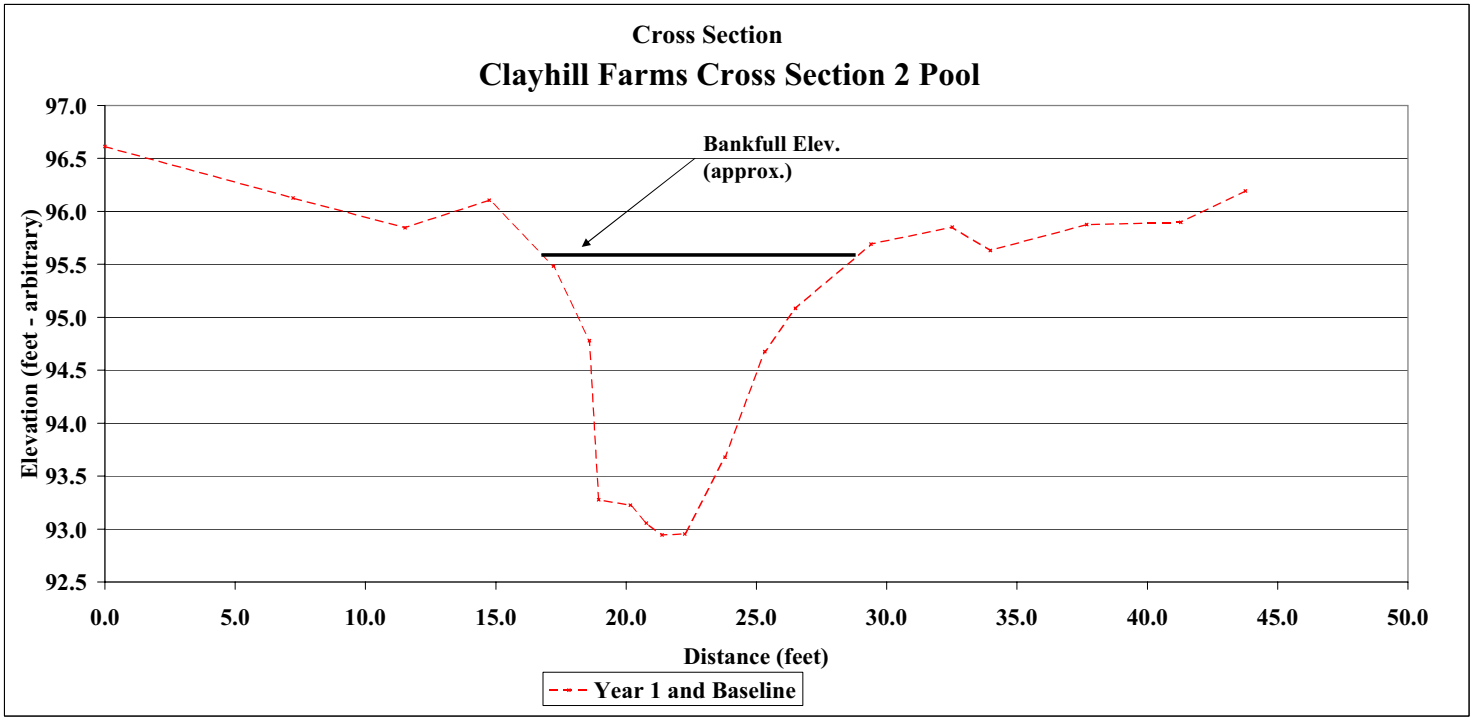
Project Name	Clayhill Farms
Cross Section	Cross Section 2
Feature	Pool
Date	1/3/07
Crew	Lewis, Jeffers

Reach 2

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	96.6						
7.2	96.1						
11.5	95.8						
14.7	96.1						
17.2	95.5						
18.6	94.8						
18.9	93.3						
20.2	93.2						
20.8	93.1						
21.4	92.9						
22.3	93.0						
23.8	93.7						
25.3	94.7						
26.5	95.1						
29.4	95.7						
32.5	95.9						
34.0	95.6						
37.7	95.9						
41.3	95.9						
43.8	96.2						

Photo of Reach 2 Cross-Section 2 - Looking Upstream

	2006	2007	2008	2009	2010
Area	18.1				
Width	13.5				
Mean Depth	1.3				
Max Depth	2.8				
W/D	NA				



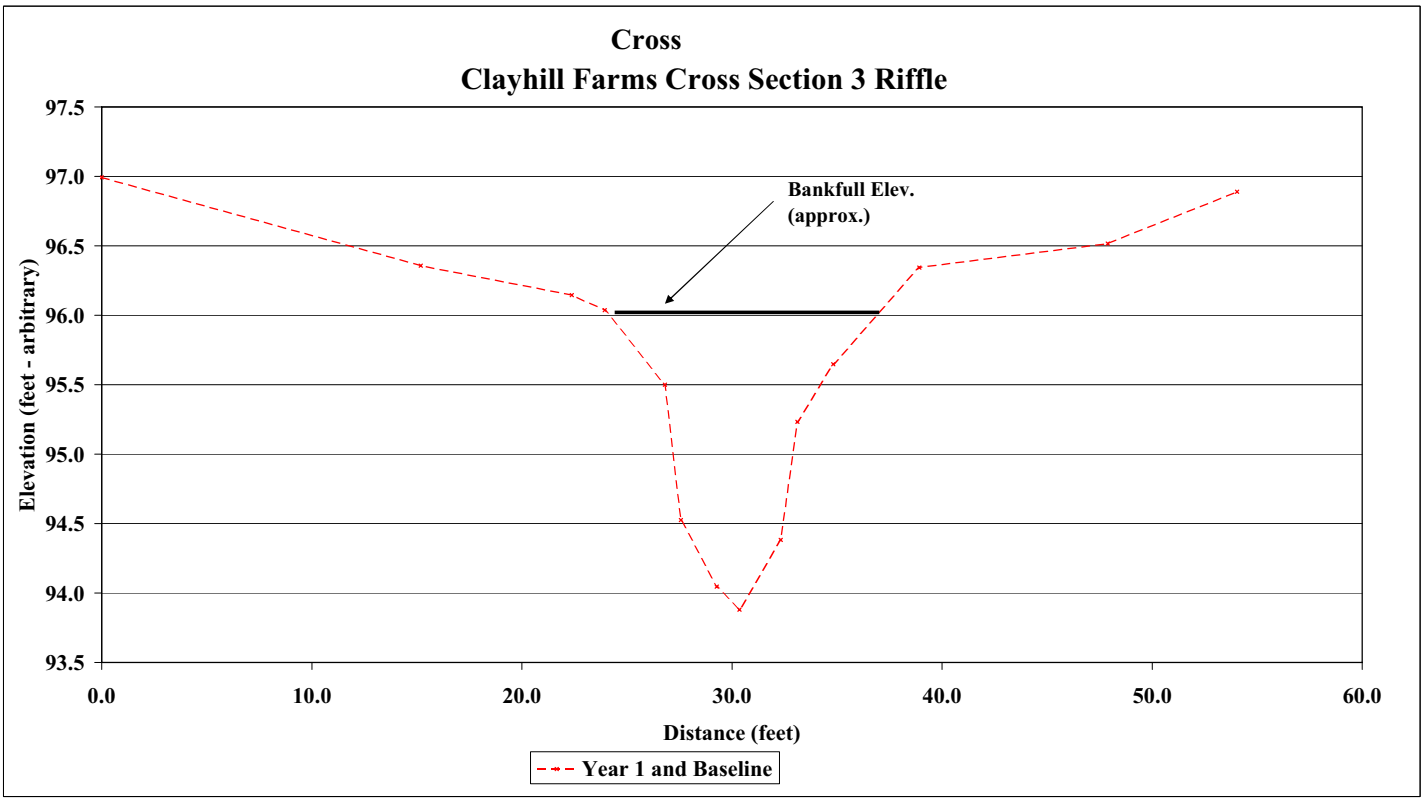
Project Name	Clayhill Farms
Cross Section	Cross Section 3
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

Reach 2

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	97.0						
15.2	96.4						
22.4	96.1						
24.0	96.0						
26.8	95.5						
27.6	94.5						
29.3	94.0						
30.4	93.9						
32.3	94.4						
33.1	95.2						
34.8	95.6						
38.9	96.3						
47.9	96.5						
54.1	96.9						

Photo of Reach 2 Cross-Section 3 - Looking Upstream

	2006	2007	2008	2009	2010
Area	12.6				
Width	12.9				
Mean Depth	1.0				
Max Depth	2.1				
W/D	13.1				



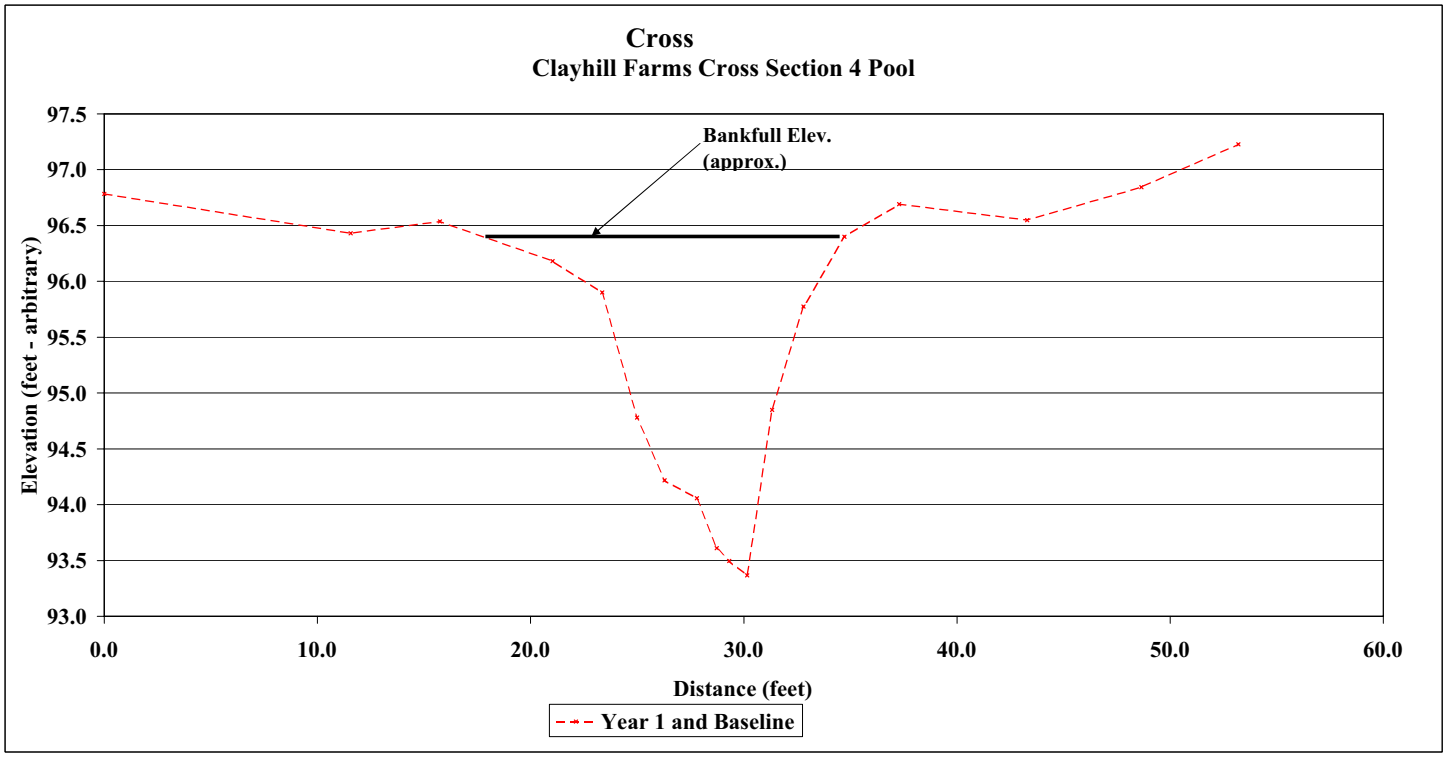
Project Name	Clayhill Farms
Cross Section	Cross Section 4
Feature	Pool
Date	1/3/07
Crew	Lewis, Jeffers

Reach 2

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	96.8						
11.6	96.4						
15.7	96.5						
21.0	96.2						
23.4	95.9						
25.0	94.8						
26.3	94.2						
27.8	94.1						
28.7	93.6						
29.3	93.5						
30.2	93.4						
31.3	94.8						
32.8	95.8						
34.7	96.4						
37.3	96.7						
43.3	96.5						
48.7	96.8						
53.2	97.2						

Photo of Reach 2 Cross-Section 4 - Looking Upstream

	2006	2007	2008	2009	2010
Area	20.5				
Width	17.2				
Mean Depth	1.2				
Max Depth	3.0				
W/D	NA				



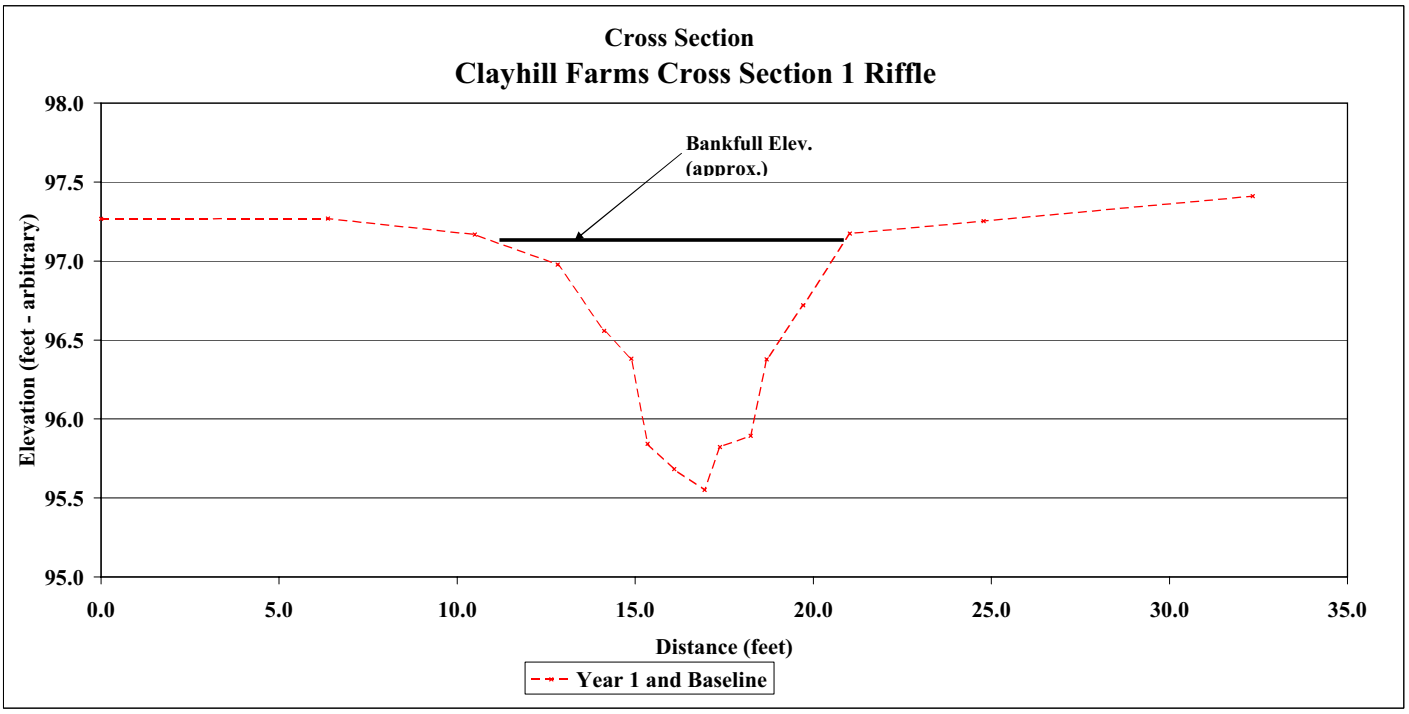
Project Name	Clayhill Farms
Cross Section	Cross Section 1
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

Reach 3

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	97.3						
6.4	97.3						
10.5	97.2						
12.8	97.0						
14.1	96.6						
14.9	96.4						
15.3	95.8						
16.1	95.7						
16.9	95.6						
17.4	95.8						
18.2	95.9						
18.7	96.4						
19.7	96.7						
21.0	97.2						
24.8	97.3						
32.3	97.4						

Photo of Reach 3 Cross-Section 1 - Looking Upstream

	2006	2007	2008	2009	2010
Area	6.7				
Width	9.6				
Mean Depth	0.7				
Max Depth	1.6				
W/D	13.8				



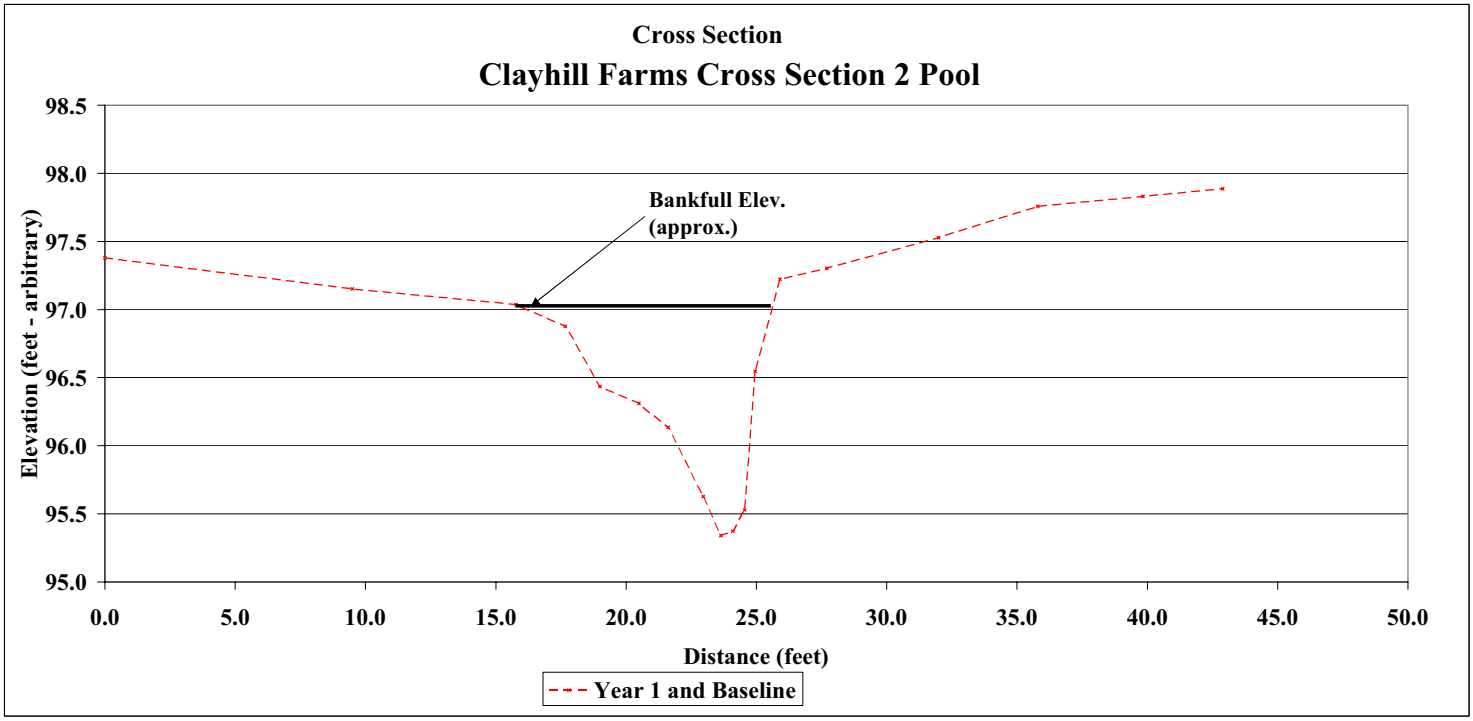
Project Name	Clayhill Farms
Cross Section	Cross Section 2
Feature	Pool
Date	1/3/07
Crew	Lewis, Jeffers

Reach 3

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	97.4						
9.5	97.2						
15.8	97.0						
17.7	96.9						
19.0	96.4						
20.5	96.3						
21.6	96.1						
23.0	95.6						
23.6	95.3						
24.1	95.4						
24.5	95.5						
25.0	96.5						
25.9	97.2						
27.7	97.3						
32.0	97.5						
35.8	97.8						
39.8	97.8						
42.9	97.9						

Photo of Reach 3 Cross-Section 2 - Looking Upstream

	2006	2007	2008	2009	2010
Area	7.0				
Width	9.5				
Mean Depth	0.7				
Max Depth	1.7				
W/D	NA				



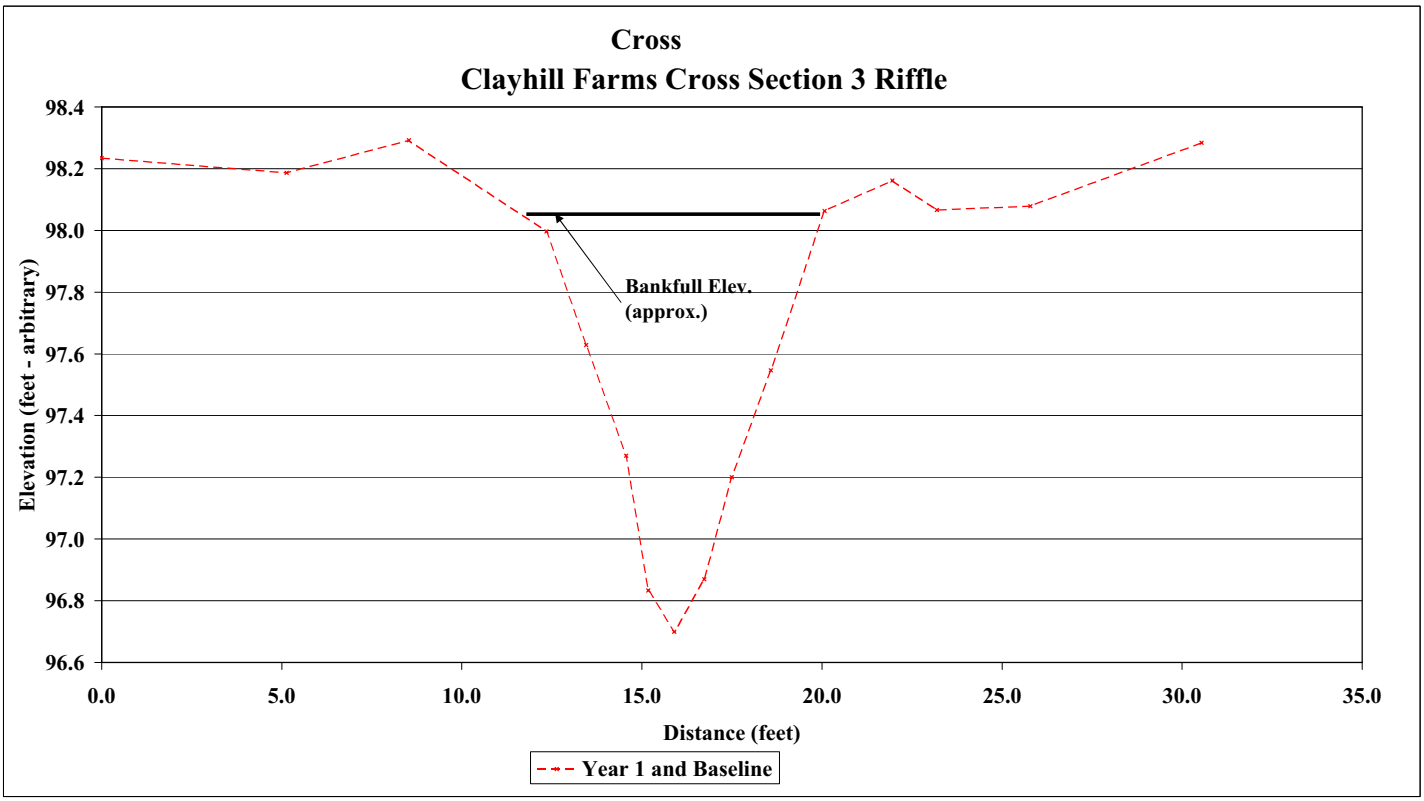
Project Name	Clayhill Farms
Cross Section	Cross Section 3
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

Reach 3

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	98.2						
5.1	98.2						
8.5	98.3						
12.4	98.0						
13.4	97.6						
14.6	97.3						
15.2	96.8						
15.9	96.7						
16.7	96.9						
17.5	97.2						
18.6	97.5						
20.1	98.1						
22.0	98.2						
23.2	98.1						
25.8	98.1						
30.5	98.3						

Photo of Reach 3 Cross-Section 3 - Looking Upstream

	2006	2007	2008	2009	2010
Area	5.5				
Width	8.5				
Mean Depth	0.6				
Max Depth	1.4				
W/D	13.2				



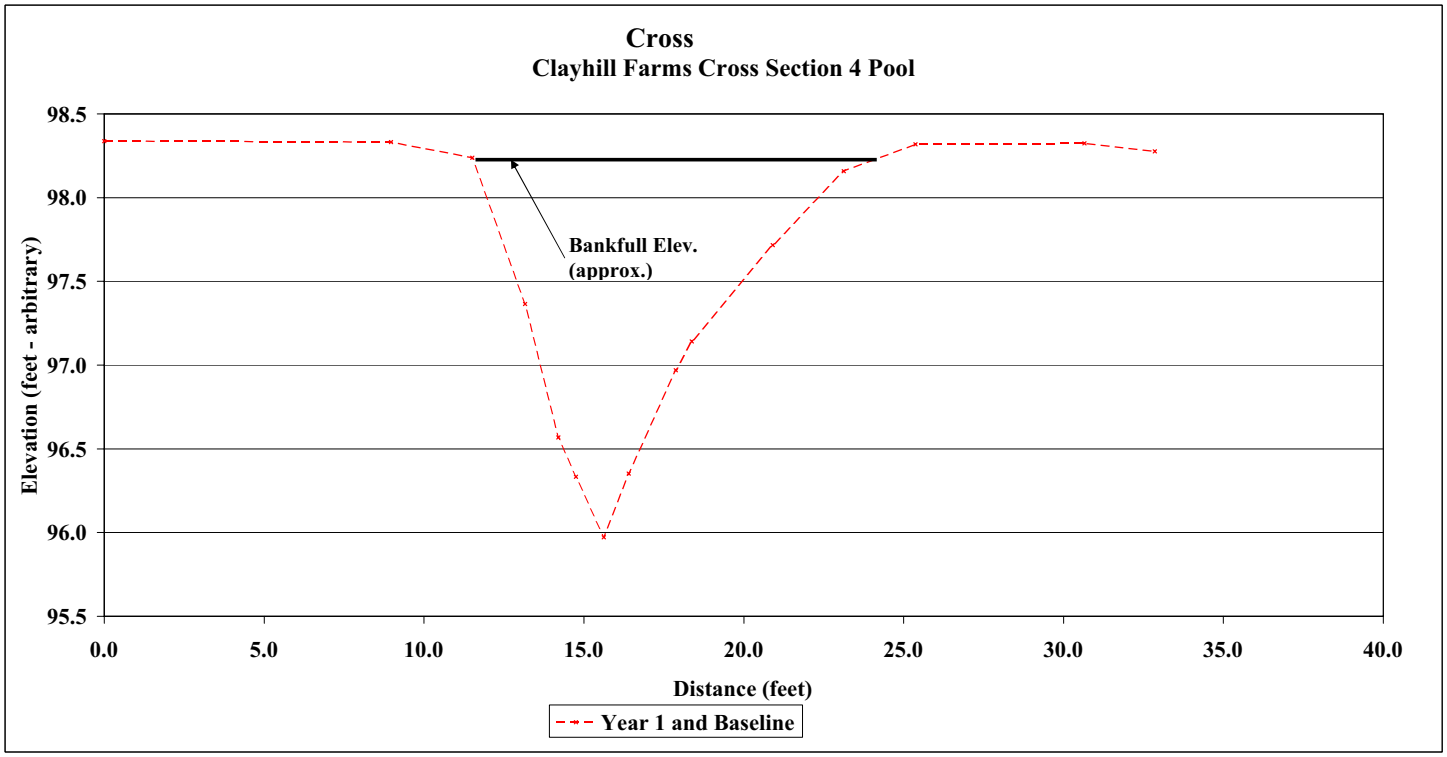
Project Name Clayhill Farms
Cross Section Cross Section 4
Feature Pool
Date 1/3/07
Crew Lewis, Jeffers

Reach 3

2006 Year 1 and Baseline Station	2006 Year 1 and Baseline Elevation	2007 Year 2 Station	2007 Year 2 Elevation	2008 Year 3 Station	2008 Year 3 Elevation	2009 Year 4 Station	2009 Year 4 Elevation
0.0	98.3						
9.0	98.3						
11.5	98.2						
13.2	97.4						
14.2	96.6						
14.8	96.3						
15.6	96.0						
16.4	96.4						
17.9	97.0						
18.4	97.1						
20.9	97.7						
23.1	98.2						
25.4	98.3						
30.7	98.3						
32.9	98.3						

Photo of Reach 3 Cross-Section 4 - Looking Upstream

	2006	2007	2008	2009	2010
Area	11.8				
Width	12.3				
Mean Depth	1.0				
Max Depth	2.2				
W/D	NA				



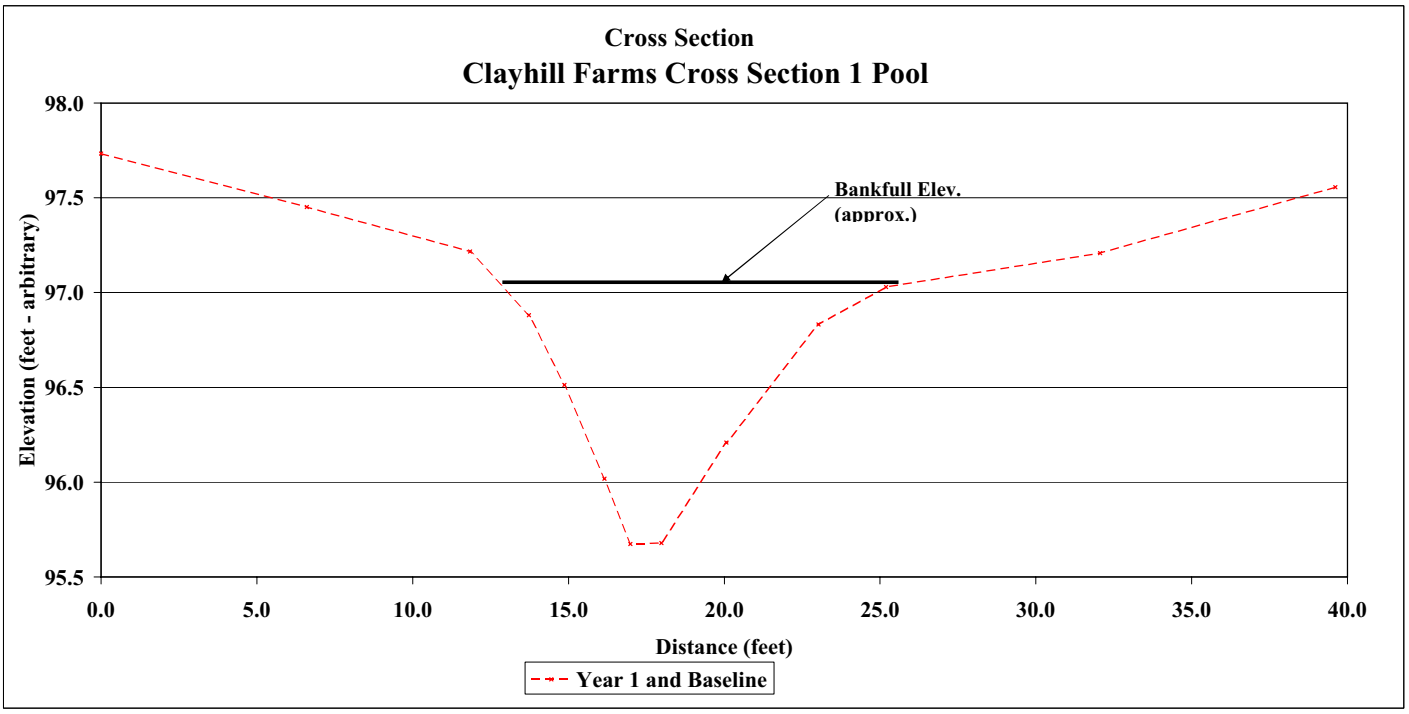
Project Name	Clayhill Farms
Cross Section	Cross Section 1
Feature	Pool
Date	1/3/07
Crew	Lewis, Jeffers

Reach 4

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	97.7						
6.6	97.5						
11.8	97.2						
13.7	96.9						
14.9	96.5						
16.1	96.0						
17.0	95.7						
18.0	95.7						
20.1	96.2						
23.0	96.8						
25.2	97.0						
32.1	97.2						
39.6	97.6						

Photo of Reach 4 Cross-Section 1 - Looking Upstream

	2006	2007	2008	2009	2010
Area	7.7				
Width	12.2				
Mean Depth	0.6				
Max Depth	1.4				
W/D	N/A	N/A	N/A	N/A	N/A



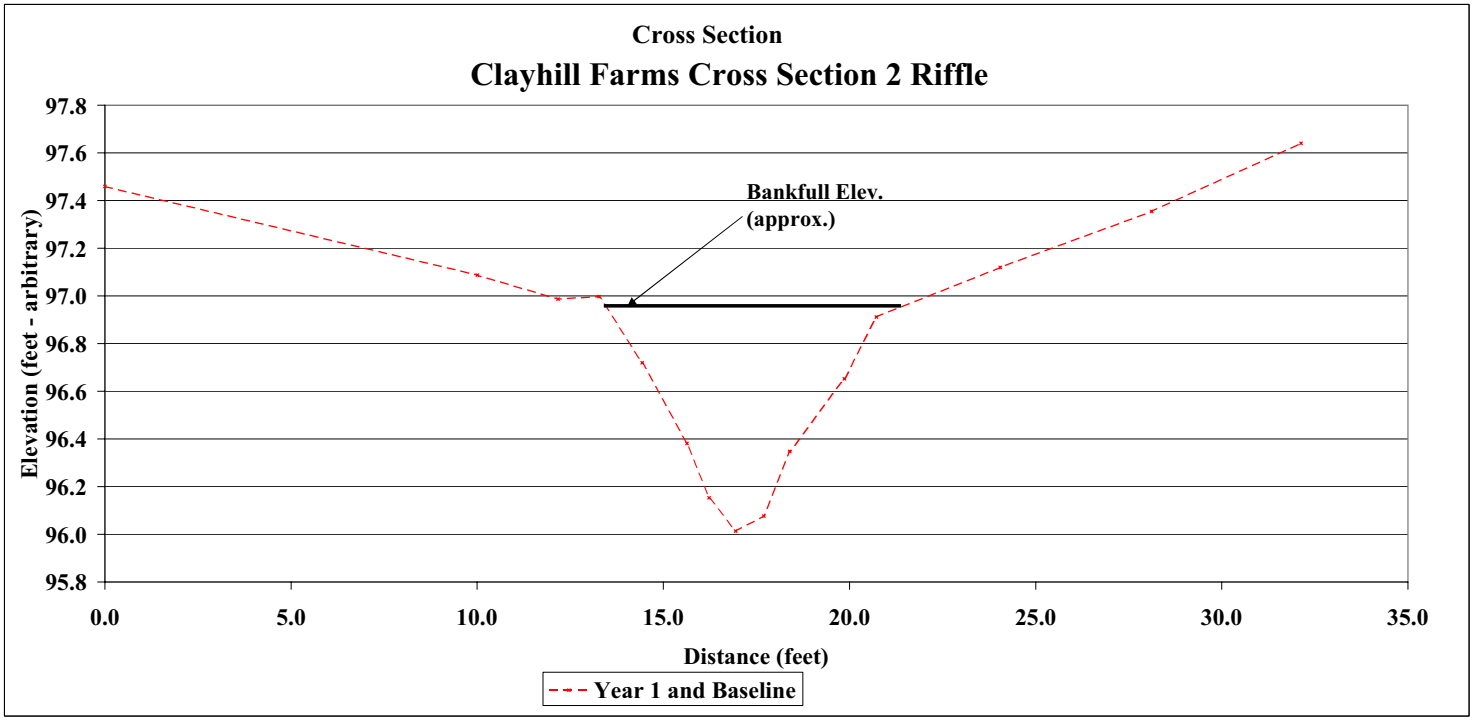
Project Name	Clayhill Farms
Cross Section	Cross Section 2
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

Reach 4

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	97.5						
10.0	97.1						
12.2	97.0						
13.3	97.0						
14.4	96.7						
15.6	96.4						
16.2	96.2						
16.9	96.0						
17.7	96.1						
18.4	96.3						
19.9	96.7						
20.7	96.9						
24.1	97.1						
28.1	97.4						
32.1	97.6						

Photo of Reach 4 Cross-Section 2 - Looking Upstream

	2006	2007	2008	2009	2010
Area	3.4				
Width	7.4				
Mean Depth	0.5				
Max Depth	0.9				
W/D	15.7				



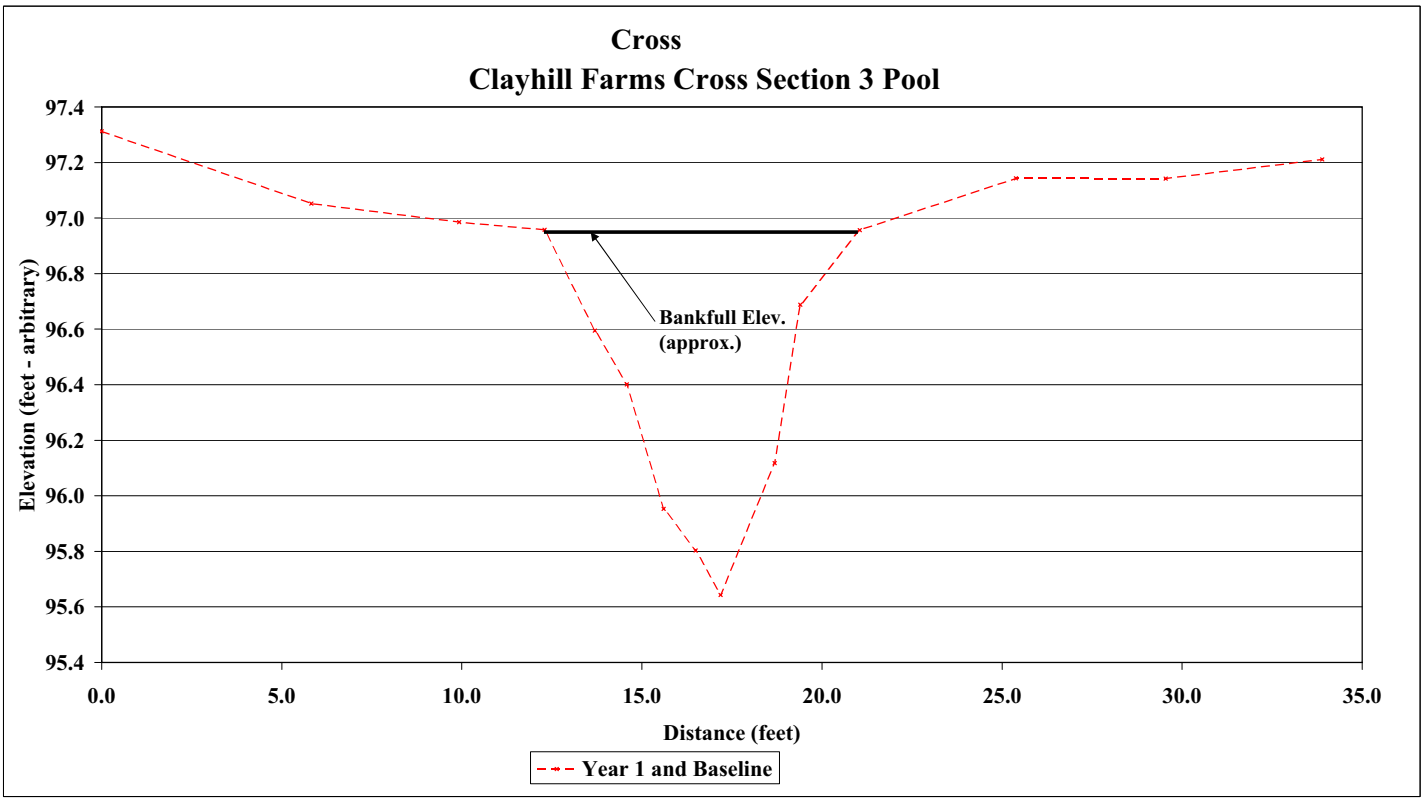
Project Name	Clayhill Farms
Cross Section	Cross Section 3
Feature	Pool
Date	1/3/07
Crew	Lewis, Jeffers

Reach 4

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	97.3						
5.8	97.1						
9.9	97.0						
12.3	97.0						
13.7	96.6						
14.6	96.4						
15.6	96.0						
16.5	95.8						
17.2	95.6						
18.7	96.1						
19.4	96.7						
21.0	97.0						
25.4	97.1						
29.5	97.1						
33.9	97.2						

Photo of Reach 4 Cross-Section 3 - Looking Upstream

	2006	2007	2008	2009	2010
Area	5.2				
Width	8.4				
Mean Depth	0.6				
Max Depth	1.3				
W/D	N/A	N/A	N/A	N/A	N/A



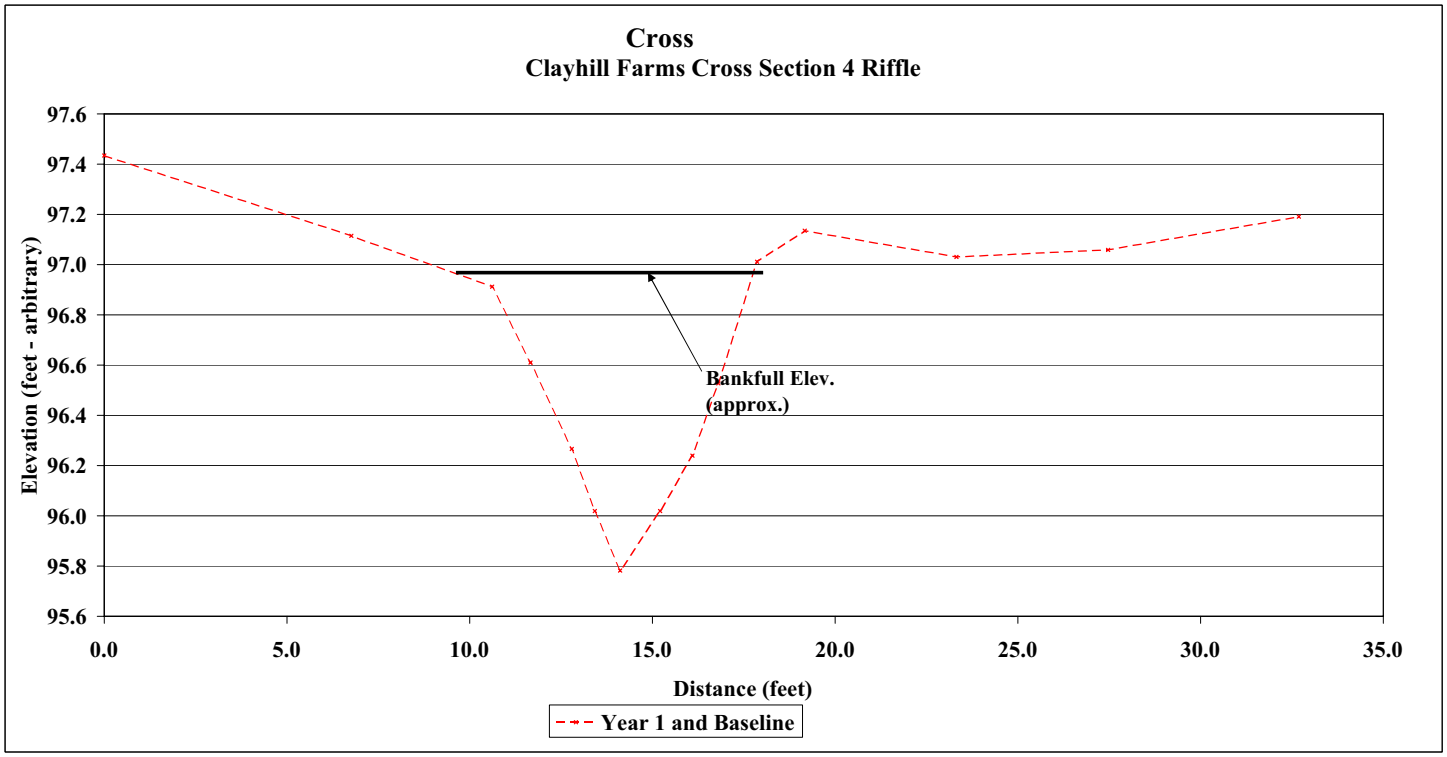
Project Name	Clayhill Farms
Cross Section	Cross Section 4
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

Reach 4

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	97.4						
6.8	97.1						
10.6	96.9						
11.7	96.6						
12.8	96.3						
13.4	96.0						
14.1	95.8						
15.2	96.0						
16.1	96.2						
16.8	96.5						
17.9	97.0						
19.2	97.1						
23.3	97.0						
27.5	97.1						
32.7	97.2						

Photo of Reach 4 Cross-Section 4 - Looking Upstream

	2006	2007	2008	2009	2010
Area	5.1				
Width	9.5				
Mean Depth	0.5				
Max Depth	1.2				
W/D	17.7				



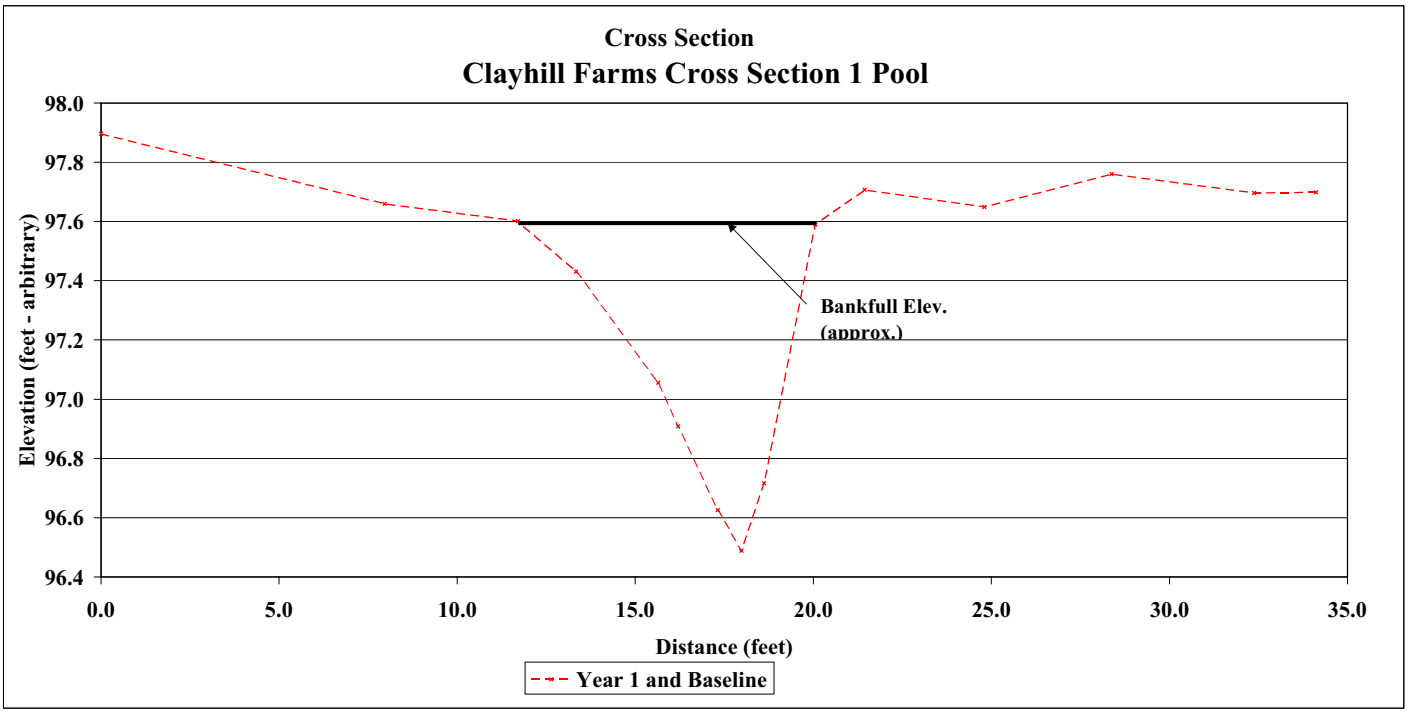
Project Name	Clayhill Farms
Cross Section	Cross Section 1
Feature	Pool
Date	1/3/07
Crew	Lewis, Jeffers

Reach 5

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	97.9						
8.0	97.7						
11.7	97.6						
13.3	97.4						
15.6	97.1						
16.2	96.9						
17.3	96.6						
18.0	96.5						
18.6	96.7						
20.1	97.6						
21.4	97.7						
24.8	97.6						
28.4	97.8						
32.4	97.7						
34.1	97.7						

Photo of Reach 5 Cross-Section 1 - Looking Upstream

	2006	2007	2008	2009	2010
Area	4.1				
Width	8.3				
Mean Depth	0.5				
Max Depth	1.1				
W/D	N/A	N/A	N/A	N/A	N/A



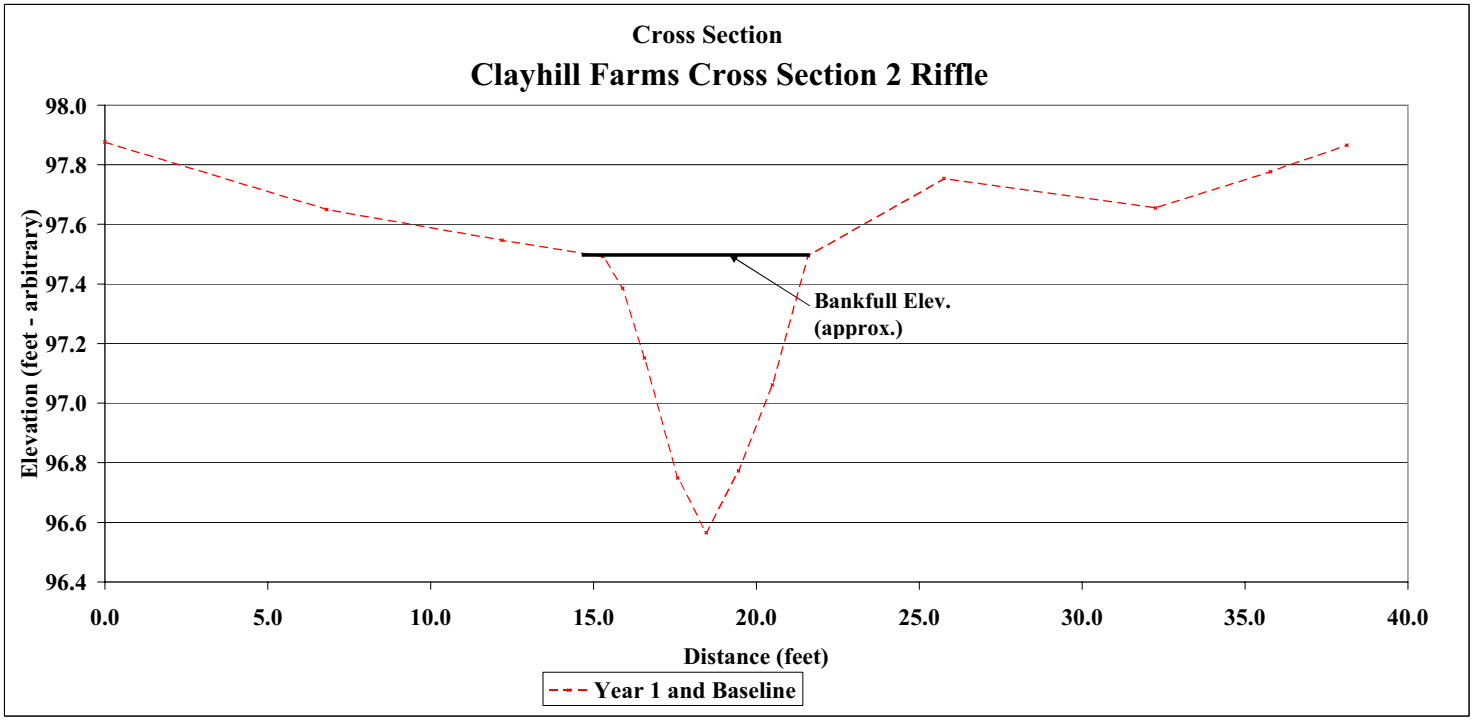
Project Name	Clayhill Farms
Cross Section	Cross Section 2
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

Reach 5

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	97.9						
6.8	97.6						
12.2	97.5						
15.3	97.5						
15.9	97.4						
16.6	97.2						
17.6	96.7						
18.5	96.6						
19.4	96.8						
20.5	97.1						
21.6	97.5						
25.8	97.8						
32.3	97.7						
35.8	97.8						
38.1	97.9						

Photo of Reach 5 Cross-Section 2 - Looking Upstream

	2006	2007	2008	2009	2010
Area	3.1				
Width	6.4				
Mean Depth	0.5				
Max Depth	0.9				
W/D	13.0				



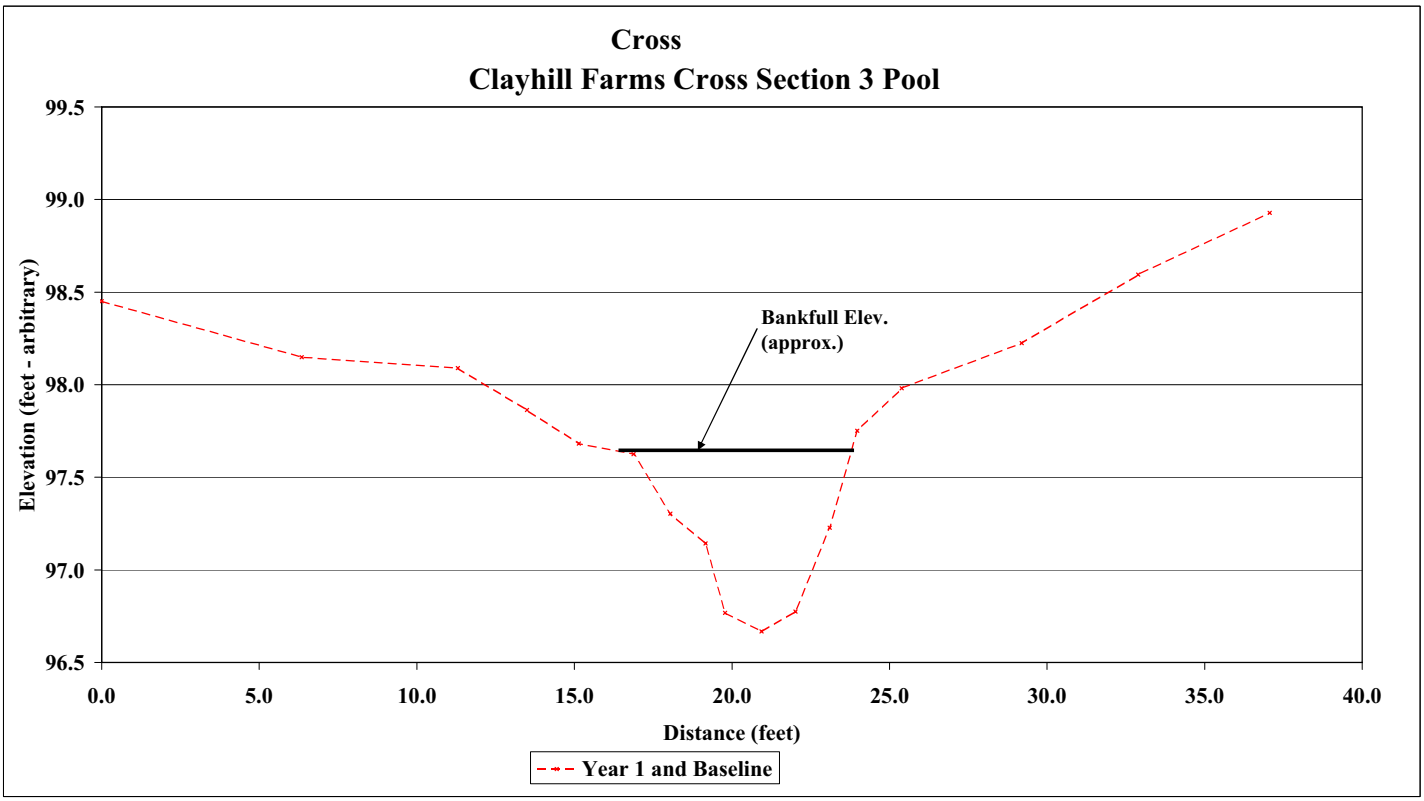
Project Name	Clayhill Farms
Cross Section	Cross Section 3
Feature	Pool
Date	1/3/07
Crew	Lewis, Jeffers

Reach 5

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	98.5						
6.3	98.1						
11.3	98.1						
13.5	97.9						
15.1	97.7						
16.9	97.6						
18.0	97.3						
19.2	97.1						
19.8	96.8						
20.9	96.7						
22.0	96.8						
23.1	97.2						
24.0	97.8						
25.4	98.0						
29.2	98.2						
32.9	98.6						
37.1	98.9						

Photo of Reach 5 Cross-Section 3 - Looking Upstream

	2006	2007	2008	2009	2010
Area	4.0				
Width	7.5				
Mean Depth	0.5				
Max Depth	1.0				
W/D	N/A	N/A	N/A	N/A	N/A



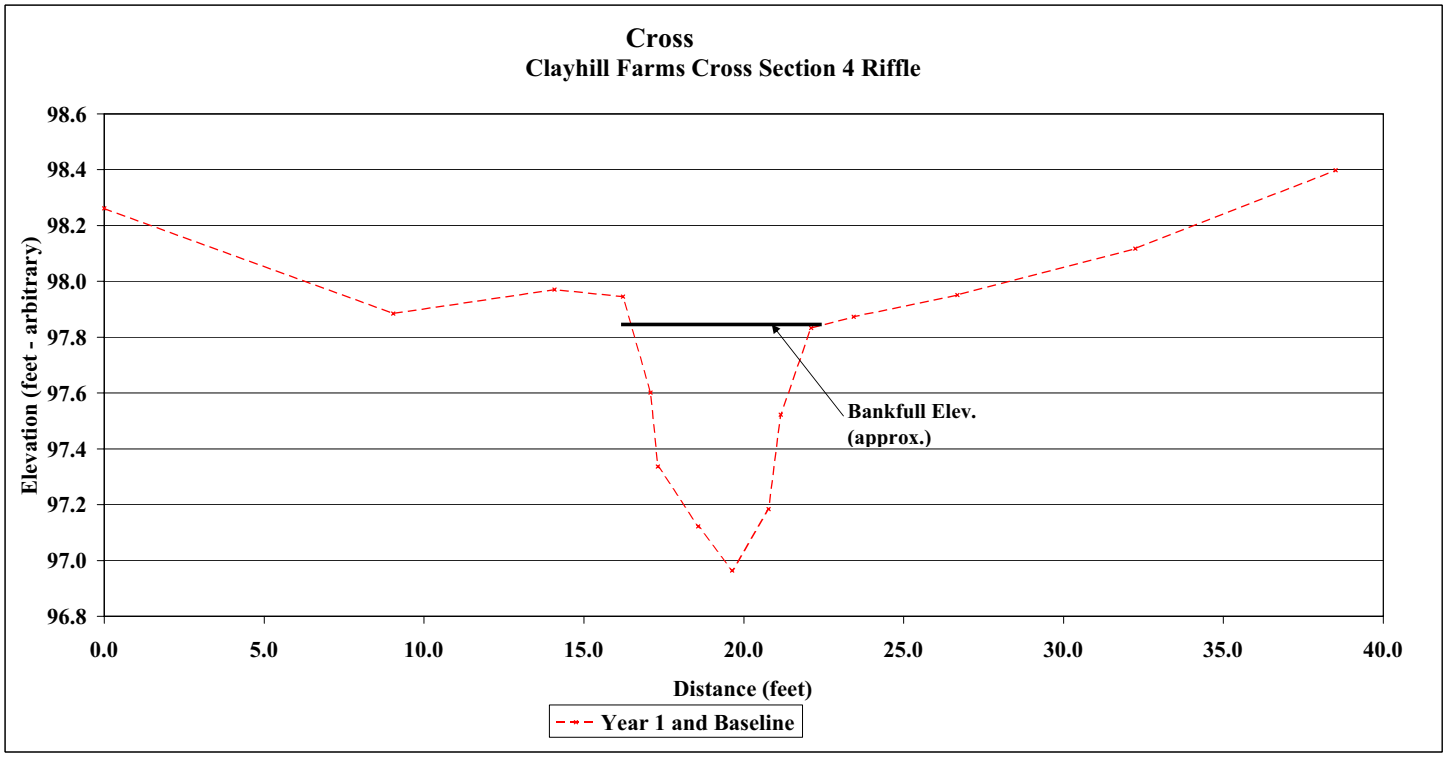
Project Name	Clayhill Farms
Cross Section	Cross Section 4
Feature	Riffle
Date	1/3/07
Crew	Lewis, Jeffers

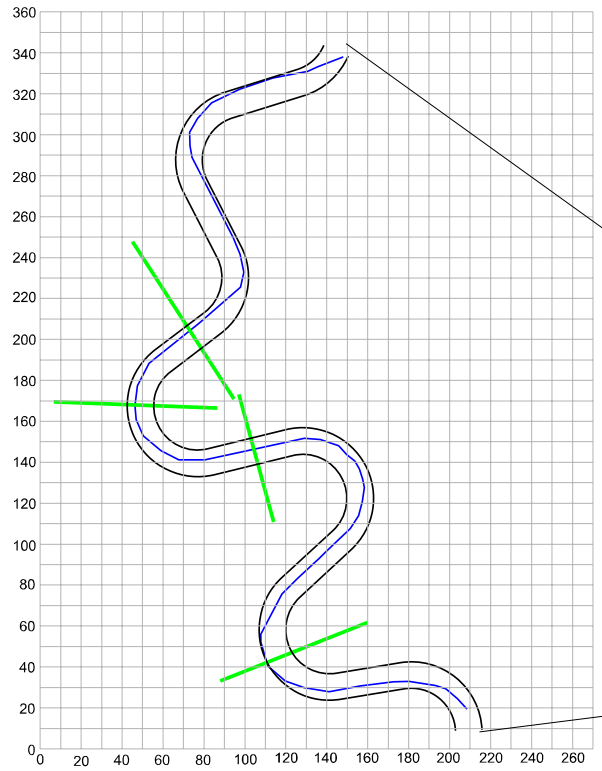
Reach 5

2006 Year 1 and Baseline		2007 Year 2		2008 Year 3		2009 Year 4	
Station	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**	**Station**	**Elevation**
0.0	98.3						
9.0	97.9						
14.1	98.0						
16.2	97.9						
17.1	97.6						
17.3	97.3						
18.6	97.1						
19.6	97.0						
20.8	97.2						
21.2	97.5						
22.1	97.8						
23.4	97.9						
26.7	98.0						
32.2	98.1						
38.5	98.4						

Photo of Reach 5 Cross-Section 4 - Looking Upstream

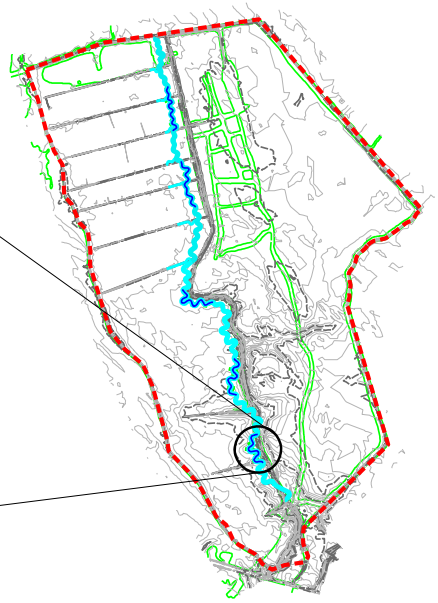
	2006	2007	2008	2009	2010
Area	3.0				
Width	6.0				
Mean Depth	0.5				
Max Depth	0.9				
W/D	11.8				



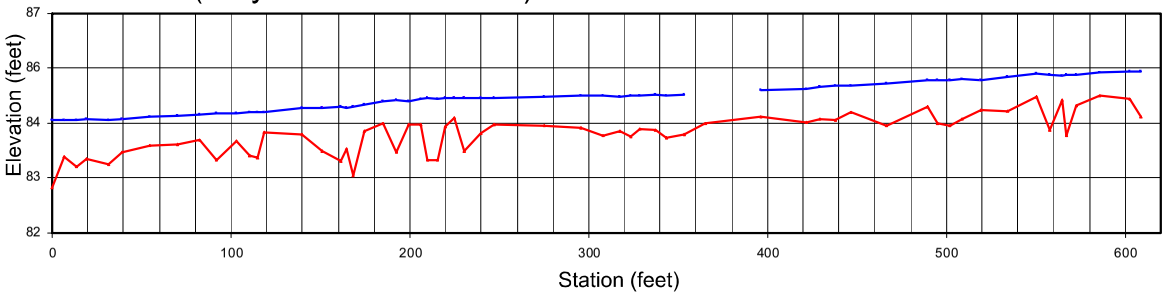


Pattern
Beltwidth = 76.1 (37.3 - 82.7) ft
Radius of Curvature = 24.4 (18.9 - 27.5) ft
Meander Wavelength = 133.0 (103.5 - 141.7) ft
Meander Width Ratio = 6.1 (3.0 - 6.6)
Pool-to-Pool Spacing = 97.1 (77.6 - 108.9) ft

Pattern Legend
- Stream Banks
- Thalweg
- Cross Section



Reach 1 (Clayhill Farms - Profile)



Profile
Save = 0.0021 rise/run
Svalley = 0.0042 rise/run
Sriffle = 0.004 (0 - 0.0031) rise/run
Spool = 0.0009 (0 - 0.0031) rise/run
Srun = 0.0021 (0 - 0.0081) rise/run
Sglide = 0.002 (0 - 0.0077) rise/run

Profile Legend
- 2006 Bed Elevation
- Water Surface Elevation

Axiom Environmental, Inc.

Ecosystem Enhancement Program

NOTES/REVISIONS

Project:

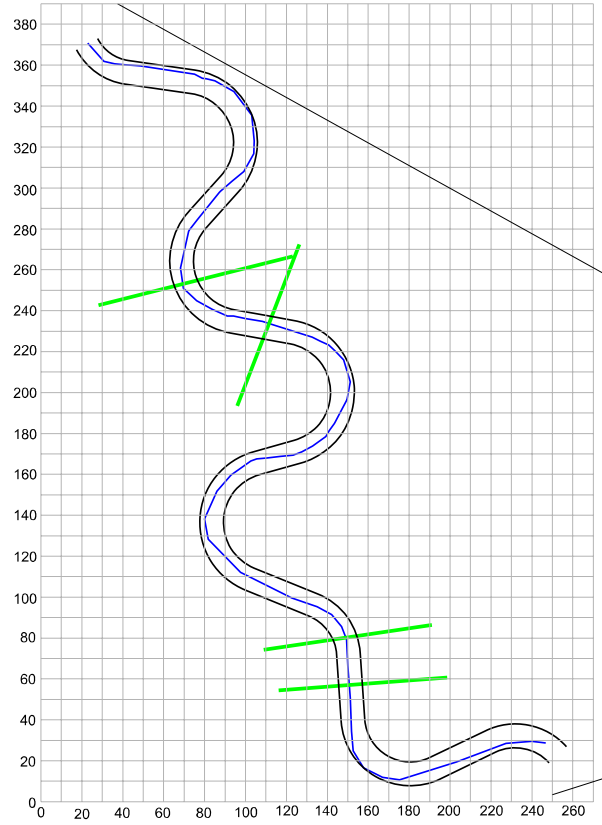
Clayhill Farms Restoration Site

Project No. 91
Year 1 (2006) Monitoring Report
Jones County
North Carolina

Title:

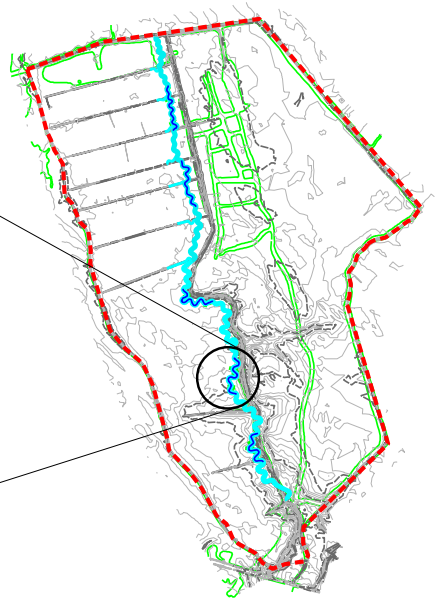
Reach 1: Profile and Pattern

Scale:	FIGURE NO.
No Scale	C1
Date: FEB 2007	
Project No.: 06-021	

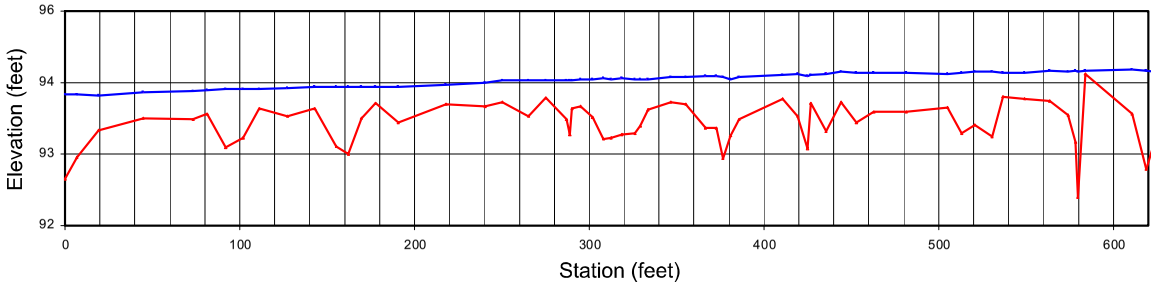


Pattern
Beltwidth = 60.4 (27.0 - 75.6) ft
Radius of Curvature = 24.4 (19.4 - 28.8) ft
Meander Wavelength = 124.4 (113.4 - 142.4) ft
Meander Width Ratio = 4.5 (2.0 - 5.6)
Pool-to-Pool Spacing = 86.4 (75.4 - 102.3) ft

Pattern Legend
- Stream Banks
- Thalweg
- Cross Section



Reach 2 (Clayhill Farms - Profile)



Profile
Save = 0.0007 rise/run
Svalley = 0.0015 rise/run
Sriffle = 0.0015 (0 - 0.0026) rise/run
Spool = 0.0007 (0 - 0.0032) rise/run
Srun = 0.0021 (0 - 0.0085) rise/run
Sglide = 0.0014 (0 - 0.0043) rise/run

Profile Legend
- 2006 Bed Elevation
- Water Surface Elevation

Axiom Environmental, Inc.

Ecosystem Enhancement Program

NOTES/REVISIONS

Project:

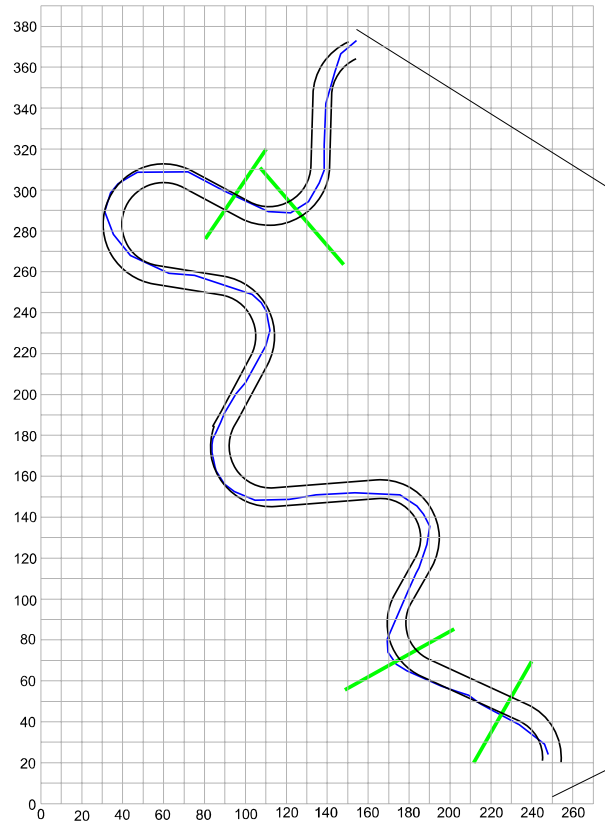
Clayhill Farms Restoration Site

Project No. 91
Year 1 (2006) Monitoring Report
Jones County
North Carolina

Title:

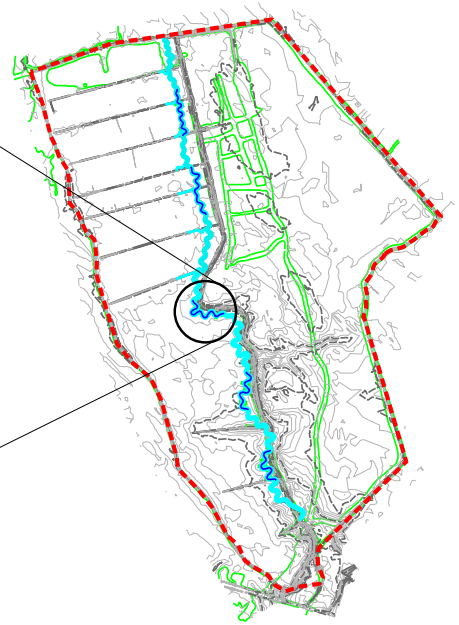
Reach 2: Profile and Pattern

Scale:	FIGURE NO.
No Scale	C2
Date: FEB 2007	
Project No.: 06-021	

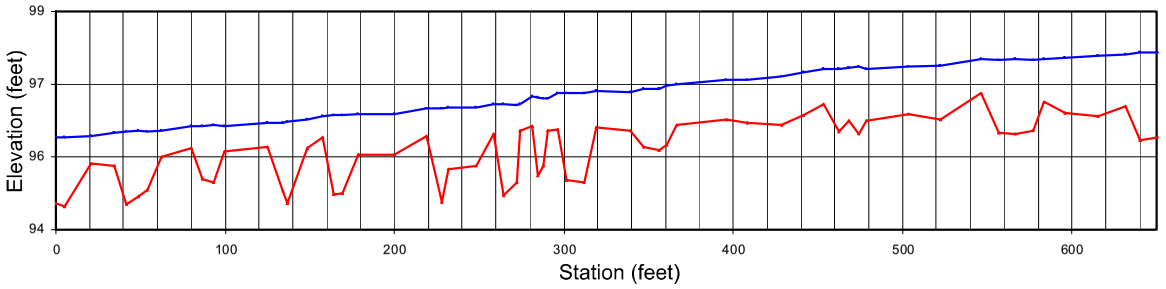


Pattern
Beltwidth = 55.9 (45.0 - 90.0) ft
Radius of Curvature = 21.1 (18.4 - 24.7) ft
Meander Wavelength = 127.1 (56.0 - 142.4) ft
Meander Width Ratio = 5.6 (4.5 - 9.0)
Pool-to-Pool Spacing = 90.9 (71.4 - 97.7) ft

Pattern Legend
- Stream Banks
- Thalweg
- Cross Section



Reach 3 (Clayhill Farms - Profile)



Profile
Save = 0.0026 rise/run
Svalley = 0.0044 rise/run
Sriffle = 0.0064 (0 - 0.0221) rise/run
Spool = 0.0016 (0 - 0.0049) rise/run
Srun = 0.003 (0 - 0.0069) rise/run
Sglide = 0.0014 (0 - 0.0067) rise/run

Profile Legend
- 2006 Bed Elevation
- Water Surface Elevation

Axiom Environmental, Inc.

Ecosystem Enhancement Program

NOTES/REVISIONS

Project:

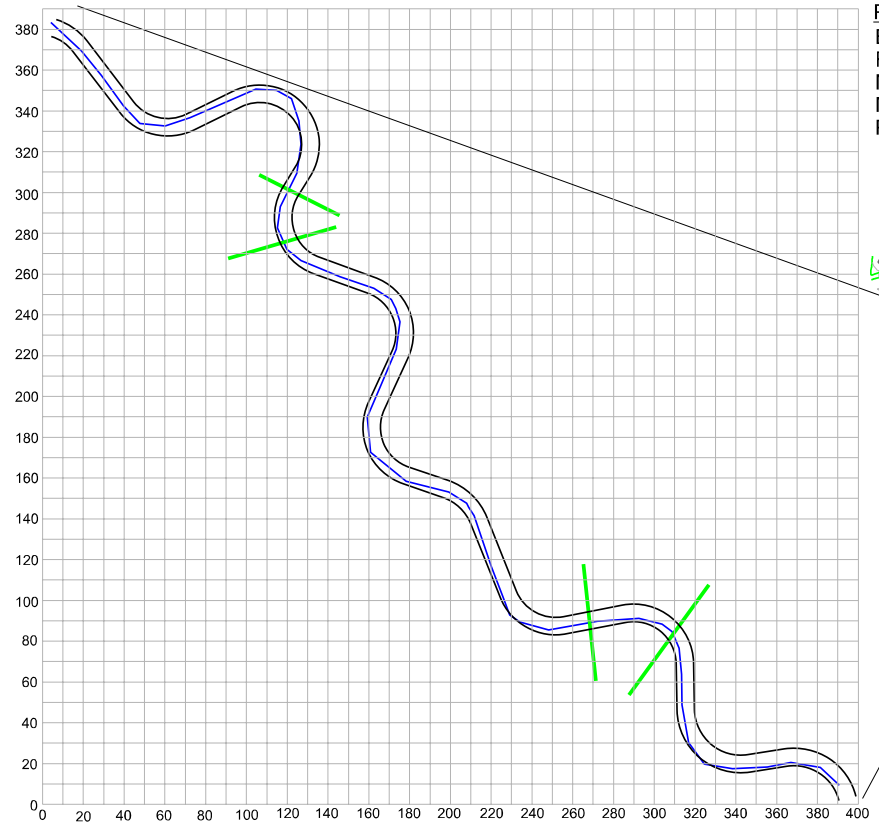
Clayhill Farms Restoration Site

Project No. 91
Year 1 (2006) Monitoring Report
Jones County
North Carolina

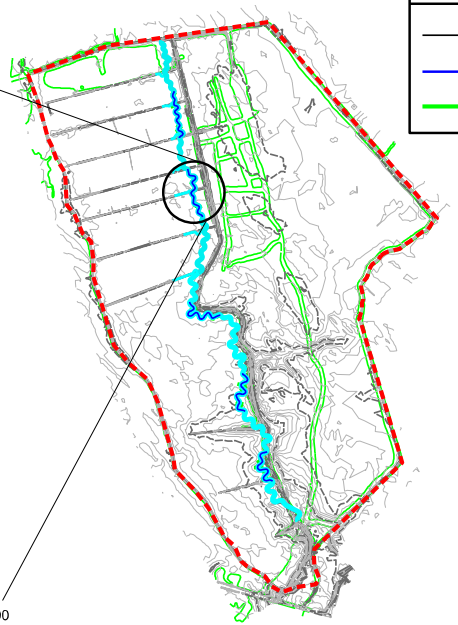
Title:

Reach 3: Profile and Pattern

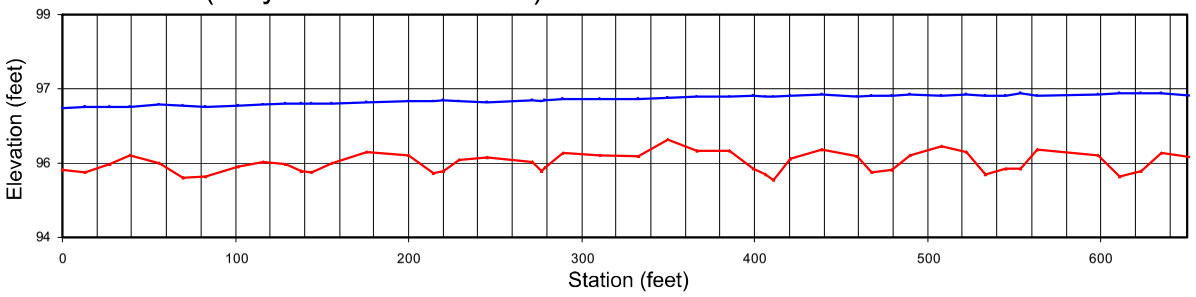
Scale:	FIGURE NO.
No Scale	C3
Date: FEB 2007	
Project No.: 06-021	



Pattern
Beltwidth = 36.0 (18.6 - 54.4) ft
Radius of Curvature = 21.9 (17.4 - 26.7) ft
Meander Wavelength = 111.0 (84.0 - 118.2) ft
Meander Width Ratio = 3.8 (2.0 - 5.8)
Pool-to-Pool Spacing = 69.1 (52.9 - 74.8) ft



Pattern Legend
- Stream Banks
- Thalweg
- Cross Section



Profile
Save = 0.0005 rise/run
Svalley = 0.0005 rise/run
Sriffle = 0.0007 (0 - 0.0018) rise/run
Spool = 0.0019 (0 - 0.0101) rise/run
Srun = 0.0008 (0 - 0.0035) rise/run
Sglide = 0.0007 (0 - 0.0038) rise/run

Profile Legend
- 2006 Bed Elevation
- Water Surface Elevation

Axiom Environmental, Inc.

Ecosystem Enhancement Program

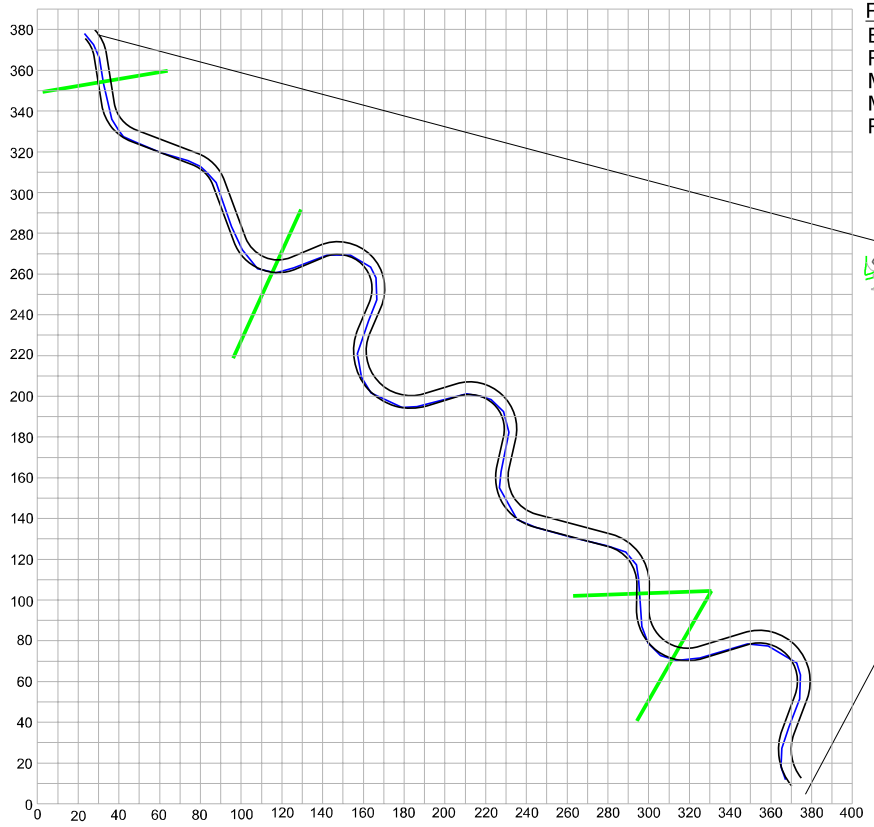
NOTES/REVISIONS

Project:
Clayhill Farms Restoration Site
Project No. 91
Year 1 (2006) Monitoring Report
Jones County
North Carolina

Title:
Reach 4: Profile and Pattern

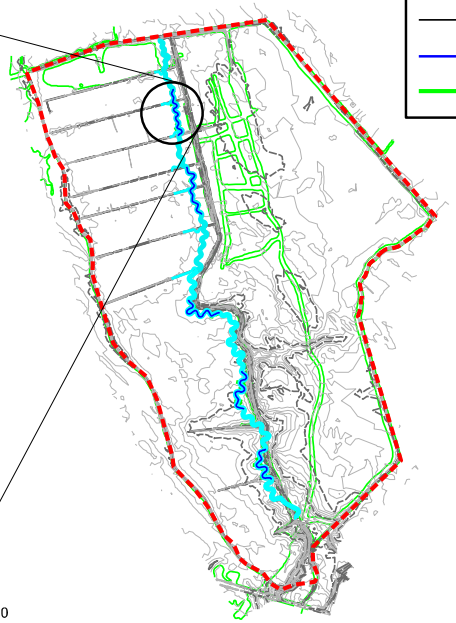
Scale: No Scale
Date: FEB 2007
Project No.: 06-021

FIGURE NO.
C4



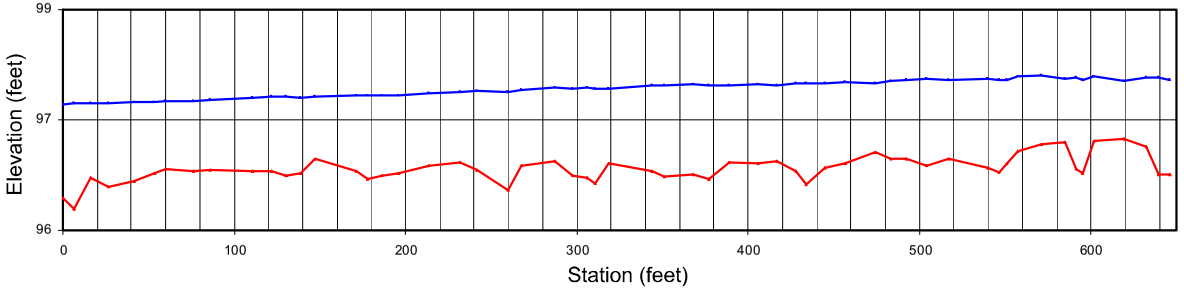
Pattern

Beltwidth = 31.3 (16.2 - 44.5) ft
Radius of Curvature = 20.4 (14.0 - 25.5) ft
Meander Wavelength = 92.7 (82.6 - 100.1) ft
Meander Width Ratio = 4.4 (2.3 - 6.3)
Pool-to-Pool Spacing = 55.5 (44.5 - 67.0) ft



Pattern Legend

- Stream Banks
- Thalweg
- Cross Section



Profile

Save = 0.0005 rise/run
Svalley = 0.0007 rise/run
Sriffle = 0.0006 (0 - 0.0015) rise/run
Spool = 0.0002 (0 - 0.0015) rise/run
Srun = 0.0019 (0 - 0.0071) rise/run
Sglide = 0.0012 (0 - 0.0031) rise/run

Profile Legend

- 2006 Bed Elevation
- Water Surface Elevation

Axiom Environmental, Inc.

Ecosystem Enhancement Program

NOTES/REVISIONS

Project:

Clayhill Farms Restoration Site

Project No. 91
Year 1 (2006) Monitoring Report
Jones County
North Carolina

Title:

Reach 5: Profile and Pattern

Scale: No Scale

Date: FEB 2007

Project No.: 06-021

FIGURE NO.

C5

Clayhill Farms

Stream Monitoring Fixed-Photo and Problem Area Photographs

Year 1 (2006) Annual Monitoring

Pictures Taken March 2007

Clayhill Farms

Stream Monitoring Fixed-Photo and Problem Area Photographs

Year 1 (2006) Annual Monitoring

Pictures Taken March 2007

(continued)

Clayhill Farms

Stream Monitoring Fixed-Photo and Problem Area Photographs

Year 1 (2006) Annual Monitoring

Pictures Taken March 2007

(continued)

Clayhill Farms

Stream Monitoring Fixed-Photo and Problem Area Photographs

Year 1 (2006) Annual Monitoring

Pictures Taken March 2007

(continued)

Stream Photo 16

Stream Photo 17

Stream Photo 18

Stream Photo 19

Stream Photo 20