

**Haw Branch Mitigation Project  
Onslow County, North Carolina**

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NC ECOSYSTEM  
ENHANCEMENT PROGRAM

**Year 1 Monitoring Report**



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January 2007

## TABLE OF CONTENTS

1.0	SUMMARY .....	1
2.0	INTRODUCTION .....	1
2.1	Project Description .....	1
2.2	Project Purpose .....	4
3.0	HYDROLOGY .....	4
3.1	Success Criteria .....	4
3.2	Description of Hydrology Monitoring .....	4
3.3	Results of Hydrology Monitoring .....	7
3.4	Hydrology Conclusions .....	9
4.0	VEGETATION .....	11
4.1	Vegetation Success Criteria .....	11
4.2	Description of Species and Vegetation Monitoring .....	11
4.3	Results of Vegetation Monitoring .....	11
4.4	General Vegetation Observations and Conclusions .....	13
5.0	STREAM MONITORING .....	13
5.1	Stream Success Criteria .....	13
5.2	Description of Stream Monitoring .....	13
5.3	Results of Stream Monitoring .....	14
6.0	OVERALL CONCLUSIONS AND RECOMMENDATIONS .....	15

## LIST OF FIGURES

Figure 1.	Vicinity Map .....	2
Figure 2.	USGS Quadrangle .....	3
Figure 3.	Site Plan .....	5,6
Figure 4.	2006 Haw Branch Groundwater Hydrographs .....	8
Figure 5.	2006 Haw Branch Precipitation .....	10
Figure 6.	2006 Haw Branch Profile .....	10

## LIST OF TABLES

Table 1.	Project History .....	4
Table 2.	Hydrology Monitoring Results for 2006 (Year 1) .....	7
Table 3.	Onslow County Normal Rainfall and 2006 Observed Rainfall .....	9
Table 4.	Tree Species Recorded in the Wetland Restoration Area .....	12
Table 5.	2006 Vegetation Monitoring Plot Species Composition .....	12
Table 6.	Volunteers Tree Species within the Wetland Restoration Area: .....	13
Table 7.	Stream Problem Areas .....	15

## APPENDICES

Appendix A	As-Built Survey
Appendix B	2006 Profile and Cross Section Data
Appendix C	2006 Gauge Data
Appendix D	2006 Site Photos

## **1.0 SUMMARY**

This Annual Report details the monitoring activities during the 2006 growing season on the Haw Branch Mitigation Site. Construction of the site was completed in December 2005. The 2006 data represents results from the first year of hydrologic, vegetation monitoring, and stability for both wetlands and streams.

Restoration of the Haw Branch site involves stream restoration, and riverine wetland restoration. Restoration of the site involved the restoration of a stable meandering channel across hydric agricultural fields. The channel was designed and constructed using natural channel design techniques. Restoration also involved raising the local water table by filling drainage ditches on-site and creation of microtopography across the site. After construction, it was determined there was 11,169 linear feet of stream restoration and 25.0 acres of riverine wetland restoration. Appendix A contains the As-Built survey.

This Annual Report presents the data from six hydrologic monitoring stations, twenty vegetation monitoring plots, two crest gauges, rain gauge, and twenty one cross sections, as required by the approved Mitigation Plan for the site. Three of the hydrologic stations are equipped with manual groundwater gauges and three stations are equipped with automated gauges and a manual calibration gauge. In 2006, five of six hydrology monitoring gauges recorded wetland hydroperiods of at least 7 percent of the growing season. The remaining gauge exhibited a wetland hydroperiod of 4 percent of the growing season. Based on these results, it was concluded that the site is performing as designed. It is important to note that the hydrology of the targeted restored wetland system is highly variable across a given site, supporting the ecological and functional diversity that makes these systems so valuable.

Weather station data from the Jacksonville Weather Station were used in conjunction with a manual rain gauge located on the site to document local precipitation amounts. The manual gauge is used to validate observations made at the automated weather station. During the 2006 growing season, the rainfall total through the end of November was within normal limits. Rainfall was below normal limits in January through March; within normal limits in April, September, and October; and exceeded normal limits in June and November.

This Annual Report documents vegetation survival based on twenty vegetation-monitoring plots, as specified in the approved mitigation plan for this site. The monitoring plots that are 10 x 10 meters (0.025 acre) in size and are used to estimate survival of the woody vegetation planted on site. They are located to represent the different zones within the project. The vegetation monitoring shows a survival range of 560 stems per acre to 760 stems per acre with an overall average of 688 stems per acre. Overall, the site is expected to meet the initial vegetation survival criteria of 320 stems per acre surviving after the third growing season.

The restored stream channel has remained stable and is providing the intended habitat and hydrologic functions. All monitoring cross-sections and profile for 2006 showed very little adjustment in stream dimension. All potential problem areas are minor and localized. No corrective actions are recommended at this time as the channel appears to be moving toward stability.

## **2.0 INTRODUCTION**

### **2.1 Project Description**

The Haw Branch wetland and stream restoration site is located near the community of Richlands in Onslow County, North Carolina (Figure 1 and Figure 2). The site has a past history of agricultural use consisting primarily of row crop agriculture. Ditches on the site were used to increase subsurface

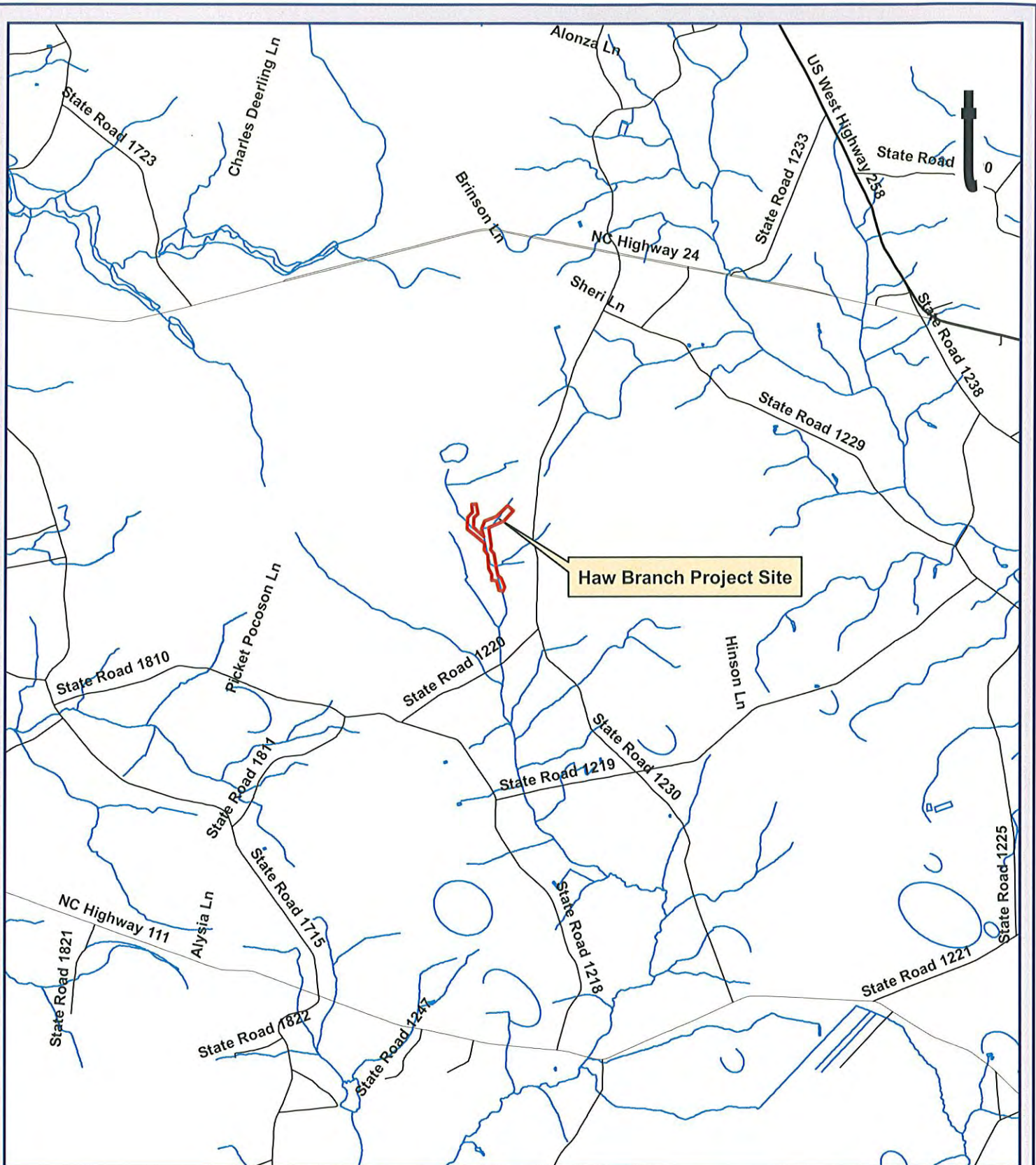


Figure 1.  
 Haw Branch Stream Mitigation Site  
 Project Location Map  
 Onslow County, NC



1 inch equals 1 miles



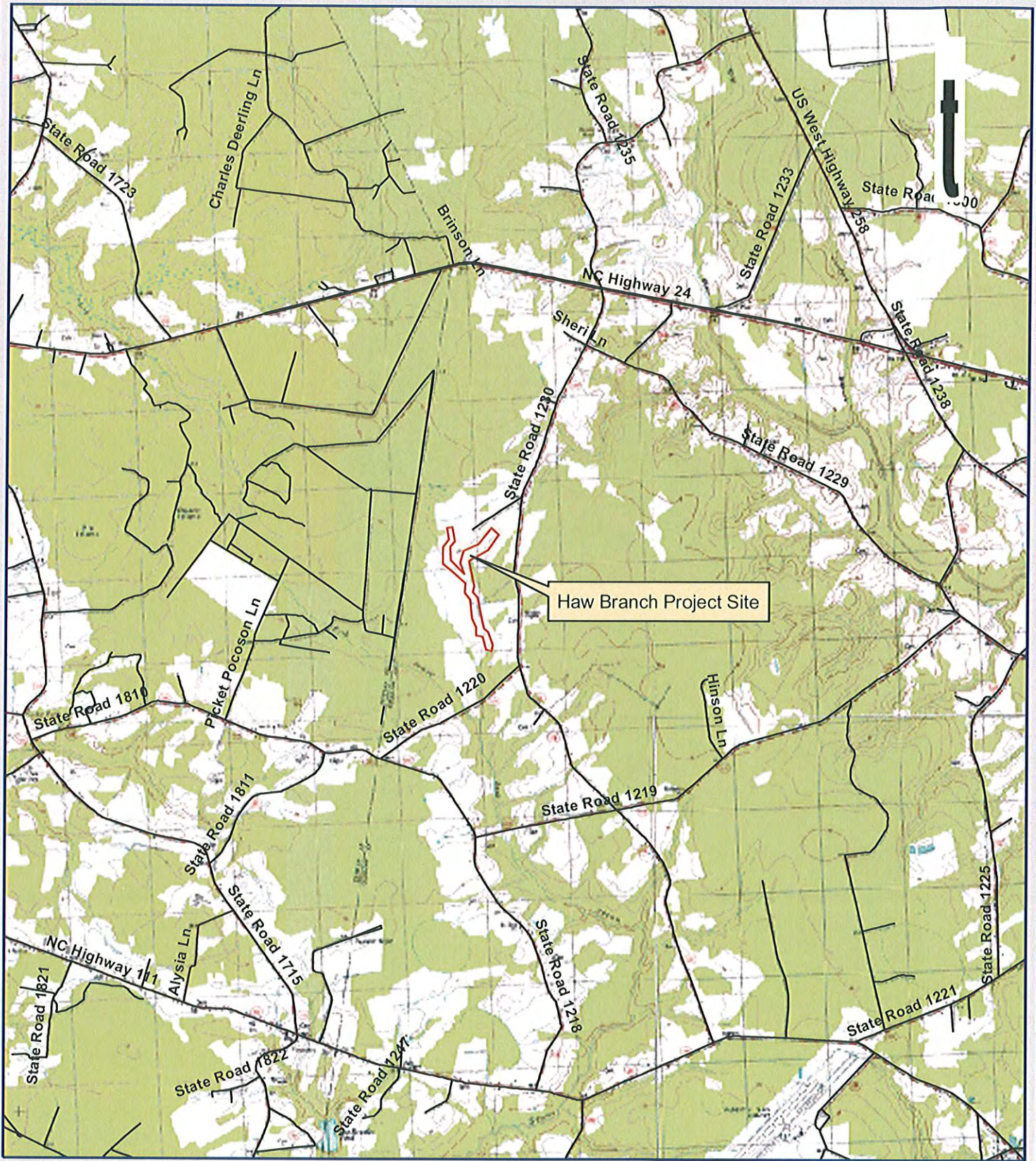


Figure 2.  
Haw Branch Stream Mitigation Site  
USGS Topographic Map  
Onslow County, NC



1 inch equals 1 miles

drainage when the land was under agricultural production. Construction of the site, including planting trees, was completed in December 2005. Groundwater, surface water, and rain gauges were functional beginning January 2006. The 2006 monitoring season represents the first year of monitoring for the site. As-built sheets for the Haw Branch Mitigation site are shown in Appendix A.

## 2.2 Project Purpose

Monitoring of the Haw Branch Site is required to demonstrate successful restoration based on the criteria found in the Restoration Plan and through a comparison to reference site conditions.

Hydrologic, vegetation, and stream monitoring are conducted on an annual basis. Success criteria must be met for five consecutive years. Table 1 details the project history and schedule.

Table 1. Project History

Project History	
January 2005	Construction Completed
January 2006	Post-restoration Monitoring Begins
November 2006	1st Annual Monitoring Report
November 2007 (scheduled)	2nd Annual Monitoring Report
November 2008 (scheduled)	3rd Annual Monitoring Report
November 2009 (scheduled)	4th Annual Monitoring Report
November 2010 (scheduled)	5th Annual Monitoring Report

## 3.0 HYDROLOGY

### 3.1 Hydrology Success Criteria

As stated in the approved Restoration Plan, to meet the hydrologic success criteria, the monitoring data must show that for each normal year of rainfall within the monitoring period, the site has been inundated or saturated within 12 inches of the soil surface for a minimum of 7 percent of the growing season (17 days). The day count is based on the growing season for Onslow County, which is 241 days long (20 March – 15 November). As specified in the approved Restoration Plan, data are collected from three automated and three manual groundwater gauges.

The Restoration Plan further specified that in order for the hydrologic data to be considered successful it must be demonstrated that precipitation is either within or below normal limits.

### 3.2 Description of Hydrology Monitoring

Three manual groundwater gauges, three automated Infinities groundwater gauges, and two manual stream crest gauges were installed across the site prior to the beginning of the 2006 growing season (Figure 3). The monitoring protocol for the site specifies that automated monitoring stations will be downloaded and checked for malfunctions on a monthly basis. During monthly site visits, manual groundwater gauges are read, the crest gauge is read, and rainfall totals are collected from the on-site rain gauge. During the 2006 growing season, all automated loggers performed well and no periods of missing data were incurred. The hydrologic monitoring data are presented in Appendix C.

Automatic groundwater gauges record water table elevations twice daily at 08:00 and 20:00 (8:00 AM and 8:00 PM). Infinities gauges employ pressure sensors that record water depth above the bottom of the sensor (with atmospheric pressure compensation). Immediately adjacent to each automatic gauge is a manual calibration gauge. The calibration water table depth is recorded at monthly downloads. To determine wetland hydroperiods the automatically recorded data are compared to the calibration data to determine a standard correction factor between the calibration gauge and the automatic gauge for each location. The standard correction factor is applied to correct daily readings. The corrected

WETLAND HYDROPERIOD

- > 7 %
- ◐ 5-7 %
- < 5 %

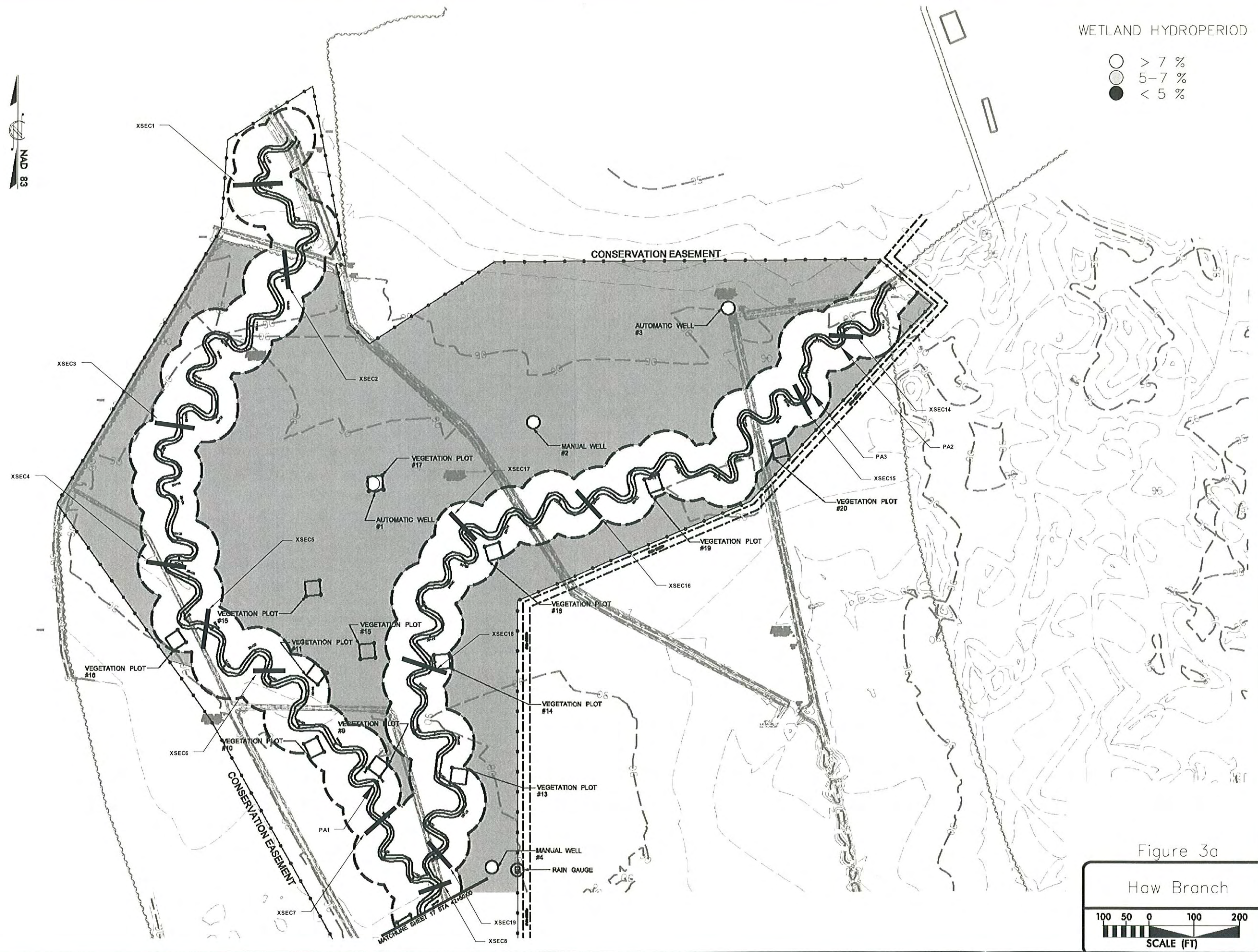
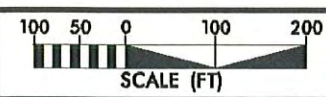


Figure 3a

Haw Branch



WETLAND HYDROPERIOD

- > 7 %
- ◐ 5-7 %
- < 5 %

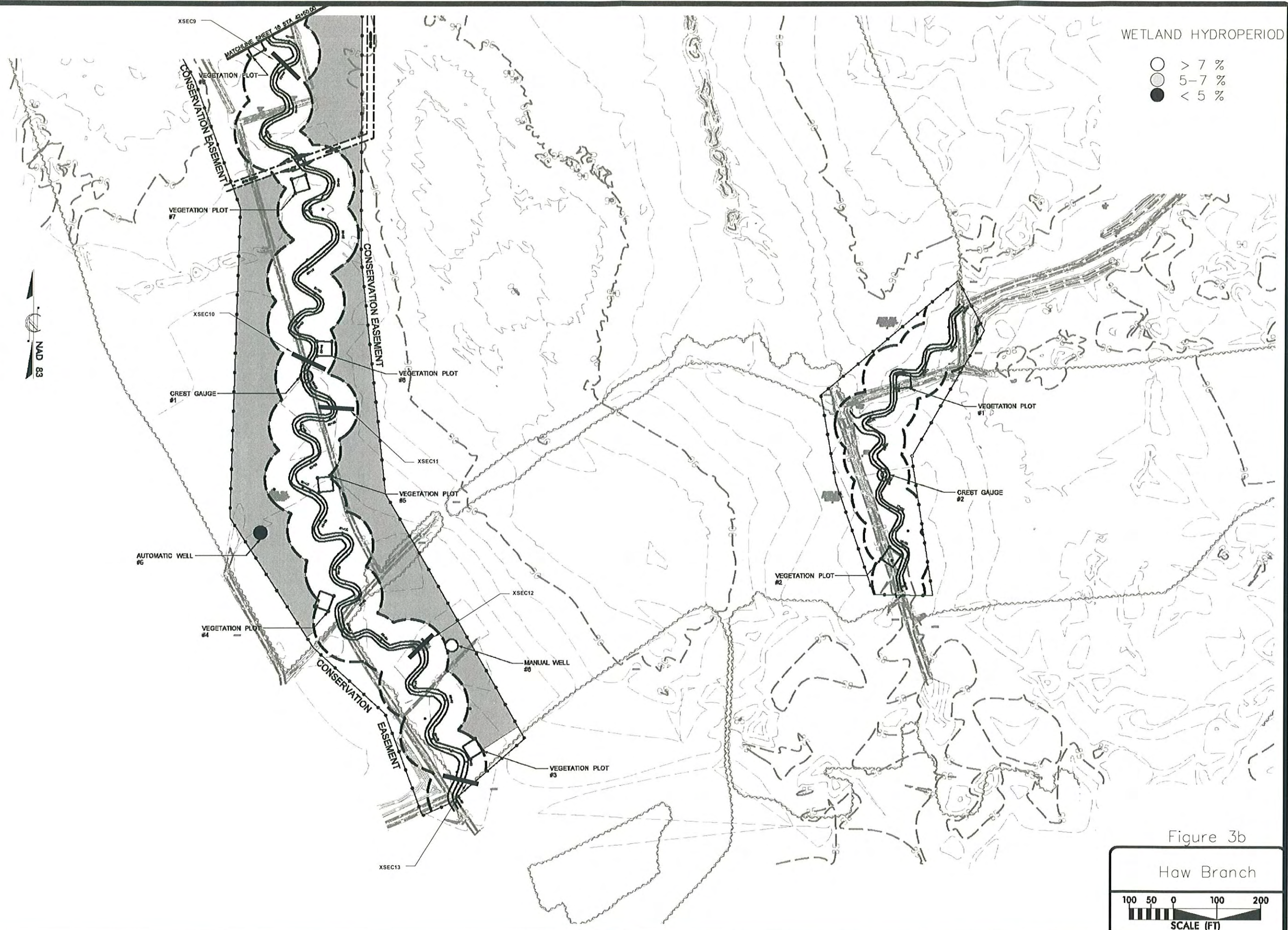
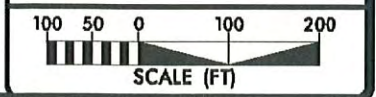


Figure 3b

Haw Branch





daily readings are used to determine wetland hydroperiods.

Water table depths are recorded monthly in manual groundwater wells. To calculate wetland hydroperiods interpolations are made between monthly readings by correlating twice daily automatic gauge readings. Each manual gauge is correlated to an automatic gauge based on proximity, landscape position, and the relationship of their groundwater depth readings (i.e. if their readings are separated by a consistent value). Once the appropriate automatic gauge has been selected a correction factor is calculated for each monthly gauge reading. A daily rate of change between monthly correction factors is calculated to determine the daily correction factor. The daily correction factor is then applied to the automatic gauge readings to calculate an estimated daily water table depth for the manual gauge. These daily readings are used to determine wetland hydroperiods.

Wetland hydroperiods are calculated from twice daily water table depth recordings. A wetland hydroperiod is defined as when the water table is equal to or less than 12 inches below ground surface for at least 24 hours. If a water table falls below 12 inches for two consecutive readings (24 hours) then the wetland hydroperiod ends at the last reading within 12 inches. If a water table falls below -12 inches for only one reading then maintains a reading above -12 inches for a minimum of 24 hours then the wetland hydroperiod is calculated continuously. This methodology accounts for minor technical malfunctions occasionally experienced by the automatic gauges.

### 3.3 Results of Hydrologic Monitoring

#### Site Data

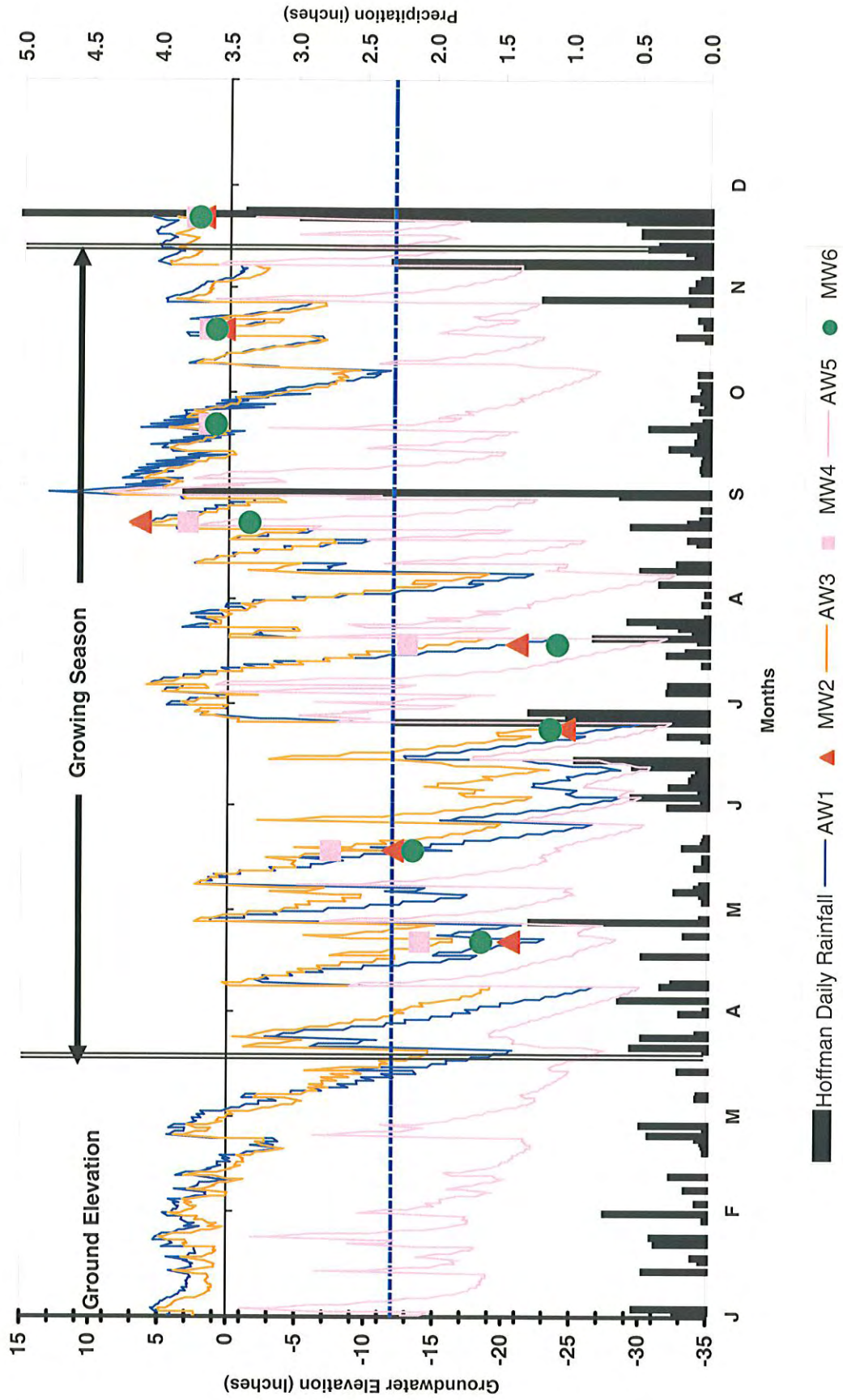
The following hydroperiod statistics were calculated for each monitoring station during the growing season: 1) most consecutive days that the water table was within twelve inches of the soil surface; 2) cumulative number of days that the water table was within twelve inches of the soil surface; and 3) number of times that the water table rose to within twelve inches of the soil surface. The results of these calculations are presented in Table 2. Figure 4 provide charts of the water depth for each of the monitoring gauges on the site. Raw hydrograph data collected from the monitoring gauges are provided in Appendix C.

Year 1 monitoring demonstrates that most of the site is functioning as designed, with varying degrees of wetness and saturation across the site. Gauges AW1, MW2, AW3, MW4, and MW6 exceeded the 7 percent hydrologic success criterion. Gauge AW5 documented saturated conditions at the site but fell short of the success criterion, but within the range of conditions of reference wetlands.

**Table 2.** Hydrology Monitoring Results for 2006 (Year 1)

<b>2006 Max Hydroperiod (Growing Season 20-Mar through 15-Nov, 241 days)</b>					
<b>Gauge</b>	<b>Consecutive</b>		<b>Cumulative</b>		<b>Occurrences</b>
	<b>Days</b>	<b>Percent of growing Season</b>	<b>Days</b>	<b>Percent of growing Season</b>	
AW1	99	41	160	66	7
MW2	99	41	---	---	6
AW3	101	42	183	76	10
MW4	78	32	---	---	6
AW5	9	4	32	13	16
MW6	64	27	---	---	6

Figure 4  
2006 Haw Branch Groundwater Hydrograph



**Reference Data**

The approved Restoration Plan provides that if the rainfall data for any given year during the monitoring period is not normal, the reference wetland data can be used to determine if there is a positive correlation between the performance of the restoration site and the natural hydrology of the reference site.

The Haw Branch reference well is located in Hoffman Forest and is maintained and controlled by North Carolina State University (NCSU). NCSU is responsible for data collection and dissemination. Several attempts to obtain these data were unsuccessful. The reference well data will be incorporated into the Year One monitoring report when it is available.

**Climate Data**

Table 3 and Figure 5 is a comparison of the 2006 monthly rainfall to historical precipitation for Onslow County. Observed precipitation data were collected from an automated weather station in Hoffman Forest (Onslow County). The rainfall total from the Onslow County gauge was within normal limits for the growing season. Rainfall was below normal limits in January through March; within normal limits in April, September, and October; and exceeded normal limits in June and November. Monthly rainfall data for December 2006 were not available at the time this report was compiled.

**Table 3.** Onslow County Normal Rainfall and 2006 Observed Rainfall

Month	Historic Average	Normal Limits		Hoffman Precipitation
		30 Percent	70 Percent	
January	5.17	4.00	6.13	3.05
February	4.16	2.43	4.59	1.52
March	4.64	3.37	5.14	1.62
April	3.15	1.79	4.12	3.19
May	3.67	2.58	4.27	1.05
June	4.95	2.98	5.86	8.22
July	7.22	5.06	8.6	3.25
August	7.55	4.97	8.77	2.73
September	6.77	3.4	8.74	5.5
October	3.7	1.88	4.9	2.02
November	3.67	2.61	4.47	19.58
December	3.32	2.13	4.26	NA
Annual Total	57.96	53.06	61.67	51.73

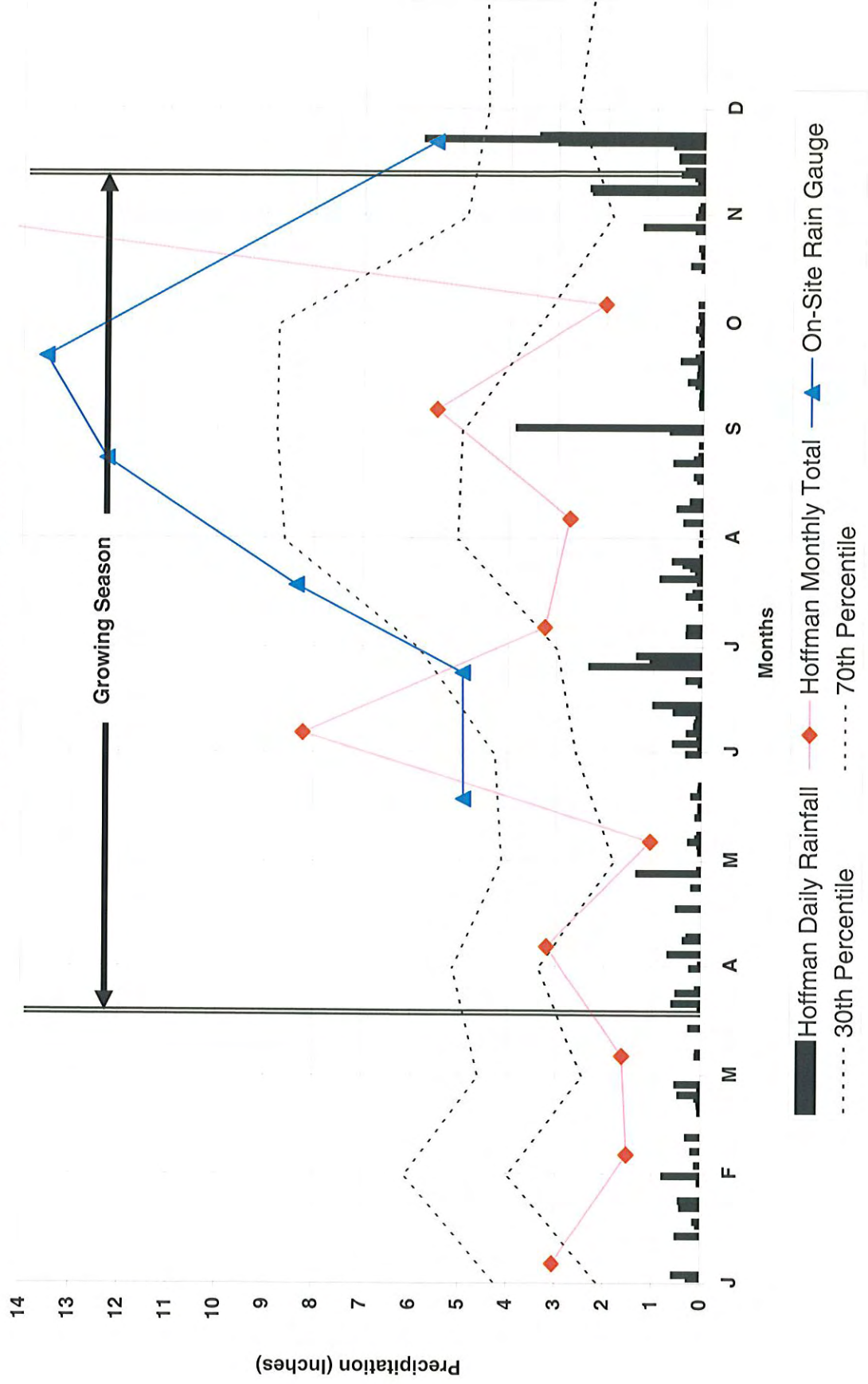
**3.4 Hydrology Conclusions**

Data collected from all the groundwater monitoring gauges on Haw Branch Mitigation Site indicate that five of six hydrology monitoring stations recorded hydroperiods of at least 7 percent of the growing season. Of the remaining gauges, (AW5) recorded a hydroperiod of 4 percent of the growing season.

Rainfall data indicates that the early 2006 growing season was abnormally dry. Of particular concern was the low rainfall during March. This is the first month of the growing season and is historically the period when the water table is closest to the surface for the longest continuous period.

Based on the generally positive results from the monitoring gauges and the low rainfall totals, it was concluded that most of the site is performing as designed. Particular attention will be paid to the AW5

**Figure 5**  
**2006 Haw Branch Precipitation**



area in subsequent monitoring seasons to determine if any corrective actions are required. One possible cause of the hydroperiod shortfalls is an offsite ditch that may provide subsurface drainage to this area.

#### **4.0 VEGETATION**

##### **4.1 Success criteria**

The interim measure of vegetative success for the Haw Branch Mitigation Plan will be survival of at least 320 three-year old planted trees per acre at the end of year 3 of the monitoring period. The final vegetative success criteria will be the survival of 260 five-year old planted trees per acre at the end of year five of the monitoring period.

Up to 20 percent of the site species composition may be comprised of volunteers (i.e. loblolly pine, red maple, sweet gum, etc.). Remedial action may be required should these present a problem and exceed 20 percent of the overall plant community.

##### **4.2 Description of species and monitoring protocol**

The following monitoring protocol was designed to predict vegetative survival. Twenty plots were established on the Haw Branch Site to monitor approximately 2 percent of the site. Sixteen plots are located adjacent to newly constructed stream channel to monitor the vegetation in the restored stream buffer. The other four plots are located to represent the range of conditions that exist on the site. Within the wetland restoration area the plots were randomly located within each zone and randomly oriented.

Plot construction consisted of metal fence posts at each of the four corners to clearly and permanently establish the area sampled. Ropes were laid out connecting all four corners to help in determining if trees close to the plot boundary were inside or outside of the plot. Trees on the boundary and trees just outside of the boundary that appear to have greater than 50 percent of their canopy inside the boundary were counted inside the plot. A piece of white PVC pipe ten feet tall was placed over the metal post on one corner to facilitate visual location of site throughout the five-year monitoring period.

All planted stems inside the plot were marked with orange flagging and with a 3 foot tall piece of half inch PVC to mark them as the planted stems (vs. any colonizers) and to help in locating them in the future. Flags are utilized to identify planted trees, because they will not interfere with the growth of the tree. Each stem was then tagged with a numbered aluminum tag.

##### **4.3 Results of Vegetation Monitoring**

The following tables present the results of the vegetation monitoring. Volunteers are also flagged during this process. Table 4 shows the tree species recorded in the Wetland Restoration Area. The composition of each plot is shown in Table 5. The plot is identified down the left column and the tree species is identified by the number along the top row. The species number correlates to the species identified in Table 4.

**Table 4.** Tree Species Recorded in the Wetland Restoration Area

ID	Scientific Name	Common Name	Wetland Status
1	<i>Quercus michauxii</i>	Swamp Chestnut Oak	FACW-
2	<i>Quercus phellos</i>	Coastal Willow Oak	FACW-
3	<i>Betula nigra</i>	River Birch	FACW
4	<i>Fraxinus pennsylvanica</i>	Green Ash	FACW
5	<i>Quercus lyrata</i>	Overcup Oak	OBL
6	<i>Celtis laevigata</i>	Sugar Berry	FACW
7	<i>Nyssa biflora</i>	Swamp Tupelo	OBL
8	<i>Taxodium distichum</i>	Bald Cypress	OBL
9	<i>Platanus occidentalis</i>	Sycamore	FACW-

**Table 5.** 2006 Vegetation Monitoring Plot Species Composition

Plot	1	2	3	4	5	6	7	8	9	Total	2006 Stem/ac	Planted Stem/ac
1	4	0	9	0	2	3	0	0	0	18	720	720
2	4	0	0	0	1	0	0	0	9	14	560	640
3	3	2	4	0	2	4	0	0	4	19	760	800
4	3	2	3	0	4	2	0	2	0	16	640	680
5	0	0	8	1	4	1	4	0	0	18	720	680
6	0	0	3	4	5	2	2	1	0	17	680	680
7	1	0	8	0	4	3	1	0	0	17	680	640
8	4	0	0	0	2	5	5	0	0	16	640	680
9	0	0	1	2	5	7	3	0	0	18	720	720
10	4	0	1	1	3	2	4	3	0	18	720	720
11	0	0	5	3	2	2	3	2	0	17	680	680
12	0	0	5	0	5	2	2	2	2	18	720	720
13	0	0	4	0	1	6	7	0	0	18	720	720
14	1	0	0	7	2	7	0	0	0	17	680	720
15	3	1	1	1	6	4	1	0	1	18	720	720
16	0	1	3	0	7	1	3	0	2	17	680	720
17	2	0	1	0	6	3	5	0	1	18	720	720
18	6	6	4	0	0	0	0	0	0	16	640	680
19	5	0	4	0	4	1	0	0	3	17	680	720
20	0	0	1	0	16	0	0	0	0	17	680	640

Average Stems/Acre: 688

Range of Stems/Acre: 560-760

Volunteer species are also monitored throughout the five-year monitoring period. Volunteer woody species were observed in most of the vegetation plots, but were deemed too small to count, especially in Plot 4. If these small volunteer trees persist into the next growing season, they will be flagged and added to the overall stems per acre assessment. The most common volunteer is sweetgum (*Liquidambar styraciflua*), though red maple (*Acer rubrum*) and river birch (*Betula nigra*) were also observed. Table 6 lists the most common woody volunteer species.

**Table 6.** Volunteers Tree Species within the Wetland Restoration Area

ID	Scientific Name	Common Name	Wetland Status
A	<i>Liquidambar styraciflua</i>	Sweetgum	FAC+
B	<i>Acer rubrum</i>	Red Maple	FAC
C	<i>Betula nigra</i>	River Birch	FACW

#### 4.4 Vegetation Observations and Conclusions

After construction of the mitigation site, a permanent ground cover seed mixture of Virginia wild rye (*Elymus virginicus*), switch grass (*Panicum virgatum*), and fox sedge (*Carex vulpinoidea*) was broadcast on the site at a rate of 10 pounds per acre. These species are present on the site. Hydrophytic herbaceous vegetation, including rush (*Juncus effusus*), spike-rush (*Eleocharis obtusa*), and sedge (*Carex* sp.), were observed across the site, particularly in areas having periodic inundation. The presence of these hydrophytic herbaceous plants helps to confirm the presence of wetland hydrology on the site.

An application of Oust, a pre-emergent herbicide, was applied to try and give the planted stems an edge on the growth potential at the start of the spring. This practice appears to have been successful as the site has good ground cover and the trees are growing well.

There are few weedy species occurring on the site, though none seem to present any problems for the woody or herbaceous hydrophytic vegetation. These weedy species mostly consist of annuals and do not threaten survival of the planted stems on this site. Any invasive weedy vegetation found in the future will be documented and discussed in quarterly reports.

The site was planted in coastal plain small stream swamp species in December 2005. There were twenty vegetation-monitoring plots established throughout the planting areas. The data reflects that the overall site is expected to meet the interim criteria of 320 trees per acres by the end of year three and the final success criteria of 260 live trees per acre by the end of year five.

## 5.0 STREAM MONITORING

### 5.1 Success Criteria

As stated in the approved Mitigation Plan, the stream restoration success criteria for the site include the following:

- Bankfull Events: Two bankfull flow events must be documented within the five-year monitoring period.
- Cross-sections: There should be little change in as-built cross-sections. Cross-sections shall be classified using the Rosgen stream classification method and all monitored cross-sections should fall within the quantitative parameters defined for "E" or "C" type channels.
- Longitudinal Profiles: The longitudinal profiles should show that the bedform features are remaining stable, e.g. they are not aggrading or degrading. Bedforms observed should be consistent with those observed in "E" and "C" type channels.
- Photo Reference Stations: Photographs will be used to subjectively evaluate channel aggradation or degradation, bank erosion, success of riparian vegetation and effectiveness of erosion control measures.

### 5.2 Description of Stream Monitoring

To document the stated success criteria, the following monitoring program was instituted following construction completion on the Haw Branch Site:

**Bankfull Events:** Two crest gauges were installed on the site to document bankfull events (Figure 3). The gauges are checked monthly and the highest out-of-bank flow event that occurred during the past month is recorded.

**Cross-sections:** Two permanent cross-sections were installed per 1,000 linear feet of stream restoration work, with one of the locations being a riffle cross-section and one location being a pool cross-section. A total of 21 permanent cross-sections were established across the mitigation site. Each cross-section was marked on both banks with permanent pins to establish the exact transect used. Permanent cross-section pins were surveyed and located relative to a common benchmark to facilitate easy comparison of year-to-year data. The annual cross-section surveys include points measured at all breaks in slope, including top of bank, bankfull, inner berm, edge of water, and thalweg. Riffle cross-sections are classified using the Rosgen stream classification system. Permanent cross-sections for 2006 (Year 1) were surveyed in September 2006.

**Longitudinal Profiles:** A longitudinal profile of approximately 3,000 feet was surveyed along the restoration reach. The longitudinal survey will take place in Years 3 and 5 as well. Measurements include thalweg, water surface, bankfull, and top of low bank. Each of these measurements is taken at the head of each feature, e.g. riffle, run, pool, and glide, and the max pool depth. A common benchmark will be used each year to facilitate comparison of year-to-year data. The longitudinal survey for 2006 (Year 1) was conducted during September 2006.

**Photo Reference Stations:** Photographs are used to visually document restoration success. Reference stations are marked with wooden stakes and Global Positioning Satellite (GPS) coordinates have been determined for each location. Reference photos are taken at each permanent cross-section from both streambanks. The survey tape is centered in the photographs of the bank, and the water line is located in the lower edge of the frame with as much of the bank as possible included in each photo. In-stream structures (e.g., rock vanes, cross vanes, and constructed riffles) are also photographed. Photo reference stations will be photographed at least once per year for at least 5 years following construction.

### **5.3 Results of Stream Monitoring**

One crest gauge was installed near the downstream end of UT1B and UT3 (Figure 3) following site construction. During 2006, bankfull events on the site were documented during at least two site visits. The largest stream flow documented by the UT1B crest gauge was a flow that occurred during October and was approximately 2.75 feet above the bankfull stage at the crest gauge. The largest stream flow documented by the UT3 crest gauge was a flow that occurred during September and was approximately 3.5 feet above the bankfull stage at the crest gauge. Stream monitoring data is provided in Appendix C.

Year 1 cross-section monitoring data for stream stability were collected during September 2006 and compared to baseline data collected in early 2006 (Appendix B). A longitudinal profile survey was conducted along the restoration reach from STA 38+56 (XS 7) to STA 69+62 (XS 13). The longitudinal profile information documents the elevations and locations of streambed features and in-stream grade control structures (Appendix B). The profile and cross-sections show that there has been very little adjustment to stream profile or dimension since construction. All monitored cross-sections fell within the quantitative parameters defined for "E" or "C" type channels.

In-stream structures installed within the restored stream included log vanes, log weirs, and root wads. Visual observations of structures throughout the past growing season have indicated that nearly all structures are functioning as designed. Log weirs placed in riffle areas have maintained riffle elevations and provided a downstream scour hole that provides habitat. Some minor areas of localized erosion



and piping of water around structures has been observed and will be monitored over the coming years to determine whether maintenance action is needed. Table 7 provides a summary of potential problem areas.

**Table 7.** Stream Problem Areas

Station	Feature	Problem
UT1A 38+00	Root Wad, Right Bank	Erosion behind root wad, low bank elevation
UT2 12+50	Root Wad, Left Bank	Erosion behind root wad
UT2 14+50	Right Bank	Localized erosion

All potential problem areas are minor and localized. No corrective actions are recommended at this time as the channel appears to be moving toward stability.

Photographs have been taken throughout the monitored season to document the evolution of the restored stream channel (Appendix D) Herbaceous vegetation is consistently present and locally dense along the restored stream. However, many areas of the stream banks lack herbaceous vegetation.

## 6.0 OVERALL CONCLUSIONS AND RECOMMENDATIONS

- First year hydrologic monitoring documents that suitable minimum wetland hydrology criteria have been achieved on most of the site. Of the six hydrology monitoring gauges, five recorded consecutive hydroperiods for at least 7 percent of the growing season. The remaining gauge exhibited a hydroperiod of 4 percent of the growing season.
- The restored stream channel has remained stable and is providing the intended habitat and hydrologic functions. All monitoring cross-sections and profile for 2006 showed very little adjustment in stream dimension.
- The site was planted in coastal plain small stream swamp species in December 2005. There were twenty vegetation-monitoring plots established throughout the planting areas. The data reflects that the overall site is expected to meet the interim criteria of 320 trees per acres by the end of year three and the final success criteria of 260 live trees per acre by the end of year five.
- All monitoring will continue through 2010.

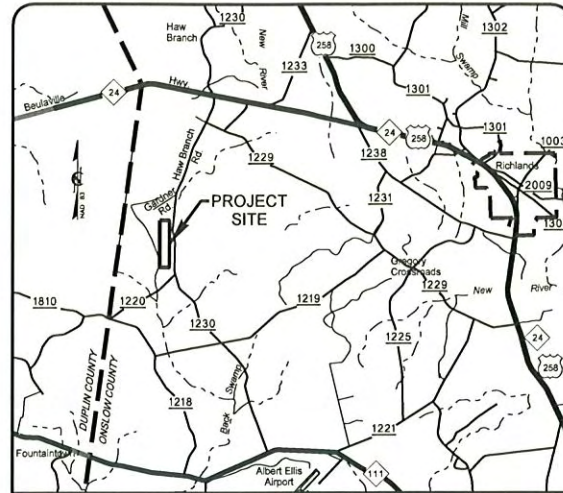
# **APPENDIX A**

## **As-Built Survey**

HAW BRANCH

0211R

PROJECT:



VICINITY MAP

INDEX OF SHEETS

- 1 ..... TITLE SHEET
- 1-A ..... STREAM CONVENTIONAL SYMBOLS  
GENERAL NOTES, STANDARD  
SPECIFICATIONS, AND  
VEGETATION SELECTION
- 1-B ..... CONVENTIONAL SYMBOLS
- 2 TO 2-B ..... TYPICAL POOL AND  
RIFLE CROSS SECTIONS,  
STRUCTURE DETAILS
- 4 TO 15 ..... PLAN VIEW OF PROPOSED AND  
EXISTING STREAM DESIGN
- 16 TO 17 ..... WETLAND OVERVIEW

EBX NEUSE I, LLC  
HAW BRANCH

ONSLOW COUNTY

LOCATION: SOUTH OF TOWN OF HAW BRANCH  
ALONG SR 1230

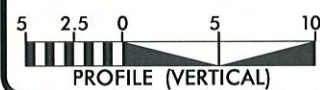
TYPE OF WORK: AS-BUILT PLANS



STATE	BUCK PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	0211R	1	32
NO.	DATE	CHECKED BY	APPROVED BY
1	2/15/06	JOHN HUTTON	KEVIN TWEEDY



GRAPHIC SCALES

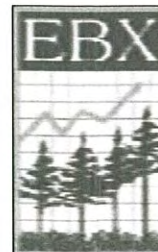


DESIGN SUMMARY

EXISTING STREAM LENGTH = 4,370 FEET  
 AS-BUILT STREAM LENGTH = 10,005 FEET

AS-BUILT RIVERINE WETLAND RESTORATION = 25.0 ACRES

PREPARED FOR THE OFFICE OF:  
EBX NEUSE I, LLC



2530 MERIDIAN PARKWAY, SUITE 200  
DURHAM, NORTH CAROLINA 27713

EBX CONTACT:  
THOMAS L. RINKER  
PROJECT MANAGER

PREPARED IN THE OFFICE OF:



8000 Regency Parkway Suite 200  
Cary, North Carolina 27511  
Phone: 919-463-5459  
Fax: 919-463-5490

December 2005  
COMPLETION DATE:

KEVIN TWEEDY, PE  
PROJECT ENGINEER

JOHN HUTTON  
PROJECT MANAGER

PROJECT ENGINEER

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027337  
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## CONSTRUCTION SEQUENCE

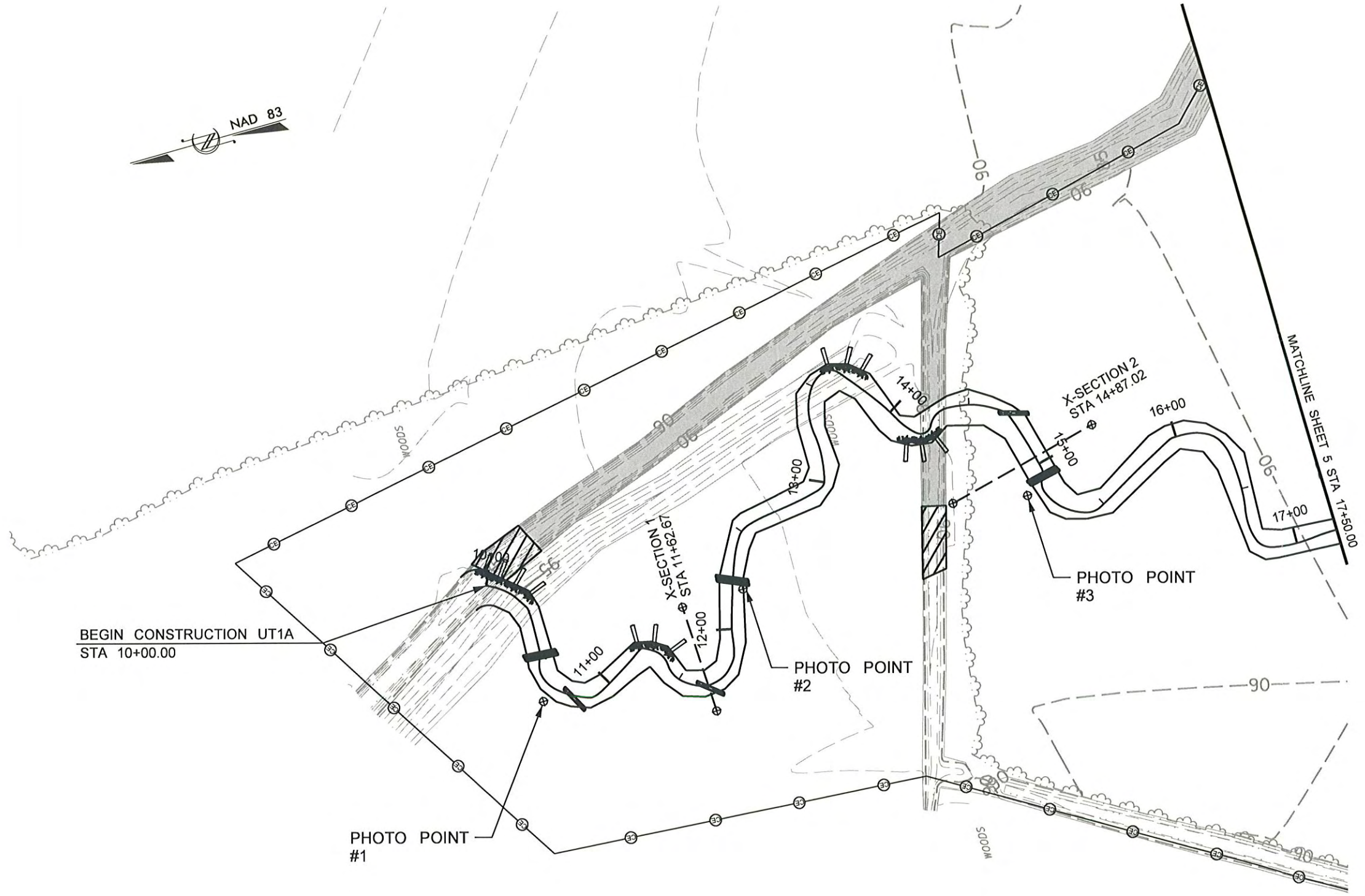
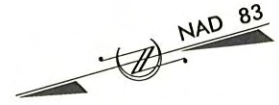
### General Construction Sequence

The following construction sequence shall be used during implementation of the mitigation plan.

1. Onsite meeting with personnel from State Land Quality Section.
2. The Contractor will prepare construction accesses and stockpile areas as shown in the plans. If necessary, erect any safety fences, silt fences, or barriers. Stockpile materials that will be needed during the initial stages of construction.
3. The Contractor shall maintain and use existing culverted stream crossings during the initial stages of construction. The Contractor shall prepare stream crossings at locations shown on the construction plans in accordance with the NC Erosion and Sediment Control Planning and Design Manual. Ditches and stream reaches on site will be left open during the initial stages of construction to allow for drainage and to keep site accessible.
4. Construction traffic shall be restricted to the area denoted as "Limits of Disturbance" on the construction plans.
5. The Contractor will begin by excavating floodplain areas to design grades in all areas except within 10 feet of the top of existing stream banks. The Contractor may fill ditches which do not contain any water during the grading operations. Along ditches with water or stream reaches, excavated material should be stockpiled in areas shown on the plans. In any areas where excavation depths will exceed 1.0 foot, topsoil shall be stockpiled and placed back over these areas to a depth of eight inches to achieve design grades and create a soil base for vegetation.
6. Contractor shall begin construction on each stream reach and complete that stream reach before moving to the next stream. Excavation of new stream channels shall begin on the downstream end and work upstream to allow for drainage. The new channel sections shall be left open on the downstream end to allow for drainage during rain events. A temporary sediment trap shall be installed at the downstream end.
7. The most southern end of Reach UT1 shall be constructed first. This section requires the use of a temporary pump-around operation as noted on the plans. The Contractor shall install temporary coffer dams and pump around operations for these sections. The portion of the channel isolated shall be dewatered and the removed water shall flow through a special stilling basin according to project special provisions.
8. Once UT1 is completed, construction of UT2 will begin.
9. Contractor shall excavate new channel sections in the dry. When new channel sections cross existing ditches and streams, the Contractor may excavate to within 10 feet of the existing channels, but Contractor shall not disturb existing channels until all other sections of the new channel have been constructed and stabilized.
10. Once an excavated section of channel has been constructed to design grades and approved by the Engineer, in-stream structures, matting and transplants shall be placed in that section per the direction of the Engineer and the channel made ready to accept water from the old channel.
11. Upon completion of UT1 and UT2, Contractor shall begin construction of UT3
12. Contractor shall begin Reach UT3 by excavating floodplain bench areas to design grades. Excavated material will be used to construct the access road along Reach UT2.
13. Once the new floodplain of UT3 has been excavated, Contractor shall begin excavating the new stream channel. When new channel section crosses the existing stream, the Contractor may excavate to within 10 feet of the existing channels, but Contractor shall not disturb the existing channel until all other sections of the new channel have been constructed and stabilized.
14. Disking and roughing of field areas adjacent to the stream channel shall be completed prior to turning water into the new stream channel segments. Disking shall not be performed within 10 feet of the new stream channel banks. The Contractor shall NOT disk or rough any areas where excavation activities have not been completed.
15. Once the new channels have been accepted by the Engineer, the temporary sediment trap at the downstream end shall be removed. Water from the old channel stream channel may then be turned into the new stream channel. Apply stabilization practices to the area where the water was turned, and immediately begin filling the old abandoned stream channels.
16. Excavate any new ditches shown on the plans to design elevations, per the direction of the Engineer.
17. Once a section of new channel has been completed, the Contractor will apply temporary seeding, permanent seeding, and mulch to that area as designated in the plans and specifications. Permanent seeding mixtures shall be applied as shown on the vegetation plan. Temporary seeding shall be applied in all areas susceptible to erosion (i.e. disturbed ditch banks, steep slopes, and spoil areas) such that ground cover is established within 15 working days or 30 calendar days, whichever is shorter, following completion of any phase of grading. Permanent ground cover shall be established for all disturbed areas within 15 working days or 90 calendar days (whichever is shorter) following completion of construction.
18. The Contractor shall insure that the site is free of trash and leftover materials prior to demobilization of equipment from the site.
19. Plant woody vegetation according to planting details and specifications. Planting of woody vegetation should only occur during winter or early spring.

## CONSTRUCTION QUANTITIES

Item #	Description	Quantity	Unit
A			
B			
C	Mobilization / Demobilization	1	LS
D	Temporary Silt Fence	4,056	LF
E	Sand Bags	N/A	EA
F.1	Temporary Seeding	1,077	POUNDS
F.2	Straw Mulch	194	BALE
F.3	Excelsior Matting	N/A	SY
F.4	Lime	N/A	TON
F.5	Fertilizer	N/A	TON
G.1	Permanent Seeding (wetlands)	830	POUNDS
G.2	Permanent Seeding (access road)	N/A	POUNDS
H.1	Excavation, Fill and Grading	20,000	CY
H.2	Backfill	N/A	CY
H.3	Off-Site Soil Disposal	N/A	CY
H.4	Roughing of Soil Surface	48	ACRES
H.5	Clearing	2	ACRES
H.6	Grubbing	0.5	ACRES
I.1	Washed No. 57 Stone	40	TON
I.2	Stone, Class A	66	TON
I.3	Stone, Class B	117	TON
I.4	Class A/B Stone	N/A	TON
I.5	ABC Stone (crusher run)	N/A	TON
I.6	Boulders	N/A	TON
I.7	Class II	2	TON
J.1	Root Wads (on-site)	190	EA
J.2	Root Wads (off-site)	N/A	EA
J.3	Logs (15-30 ft)	N/A	EA
J.4	Logs (8-15 ft)	111	EA
K	Non woven Filter Fabric, Type II	720	SY
L.1	Temporary Culvert - 36" CSP	60	LF
L.2	Permanent Culvert - 48" CSP	30	LF
L.3	Permanent Culvert - _____"	N/A	LF
L.4	Corrugated Pipe	N/A	LF
M	Coconut Fiber (COIR) Matting	16,690	SY
N.1	Shrub and Tree Transplants	1,000	SY
N.2	Sod Mats	N/A	SY
O.1	Live Stakes	8,925	STEMS
O.2	Cutting Bundles	N/A	EA
P	Pump Around Operations	1	LS
Q	Special Stilling Basins	3	EA
R	Impervious Dikes	48	LF
S.1	Fencing	N/A	LF
S.2	Large Gates	N/A	EA
S.3	Walk Gates	N/A	EA
T.1	Tree Purchase	N/A	STEMS
T.2	Tree Planting	32,460	STEMS
U	Waste Disposal	N/A	LS



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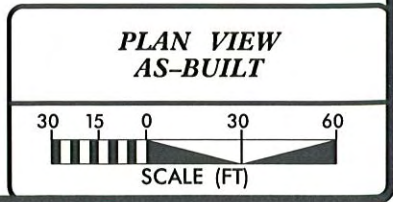
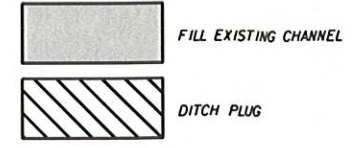
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PHOTO POINT  
#2

PHOTO POINT  
#3

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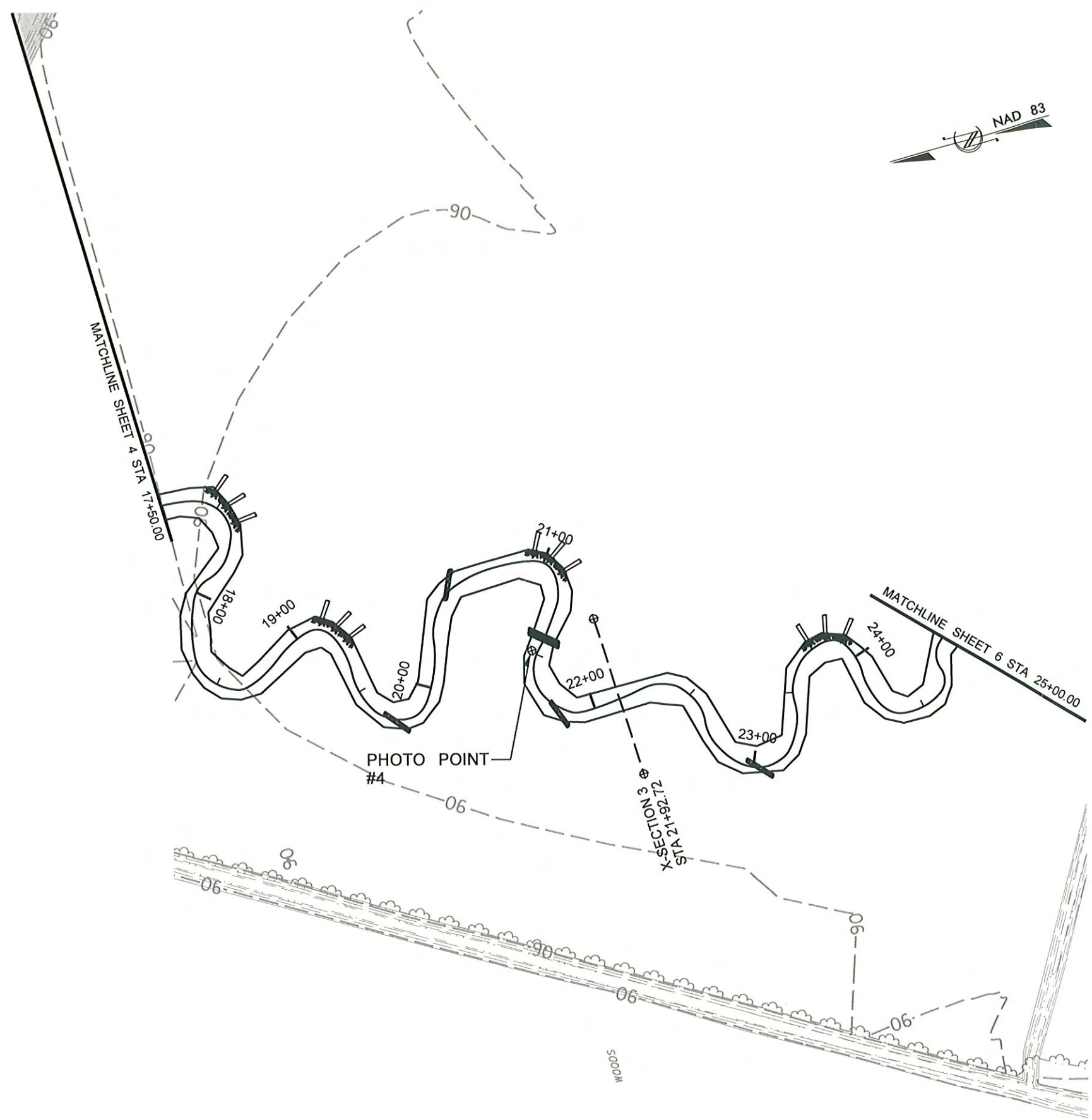
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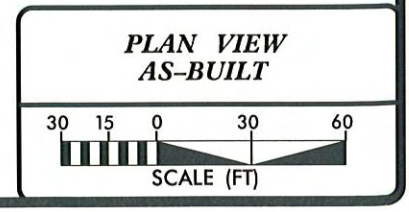
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2/26/03



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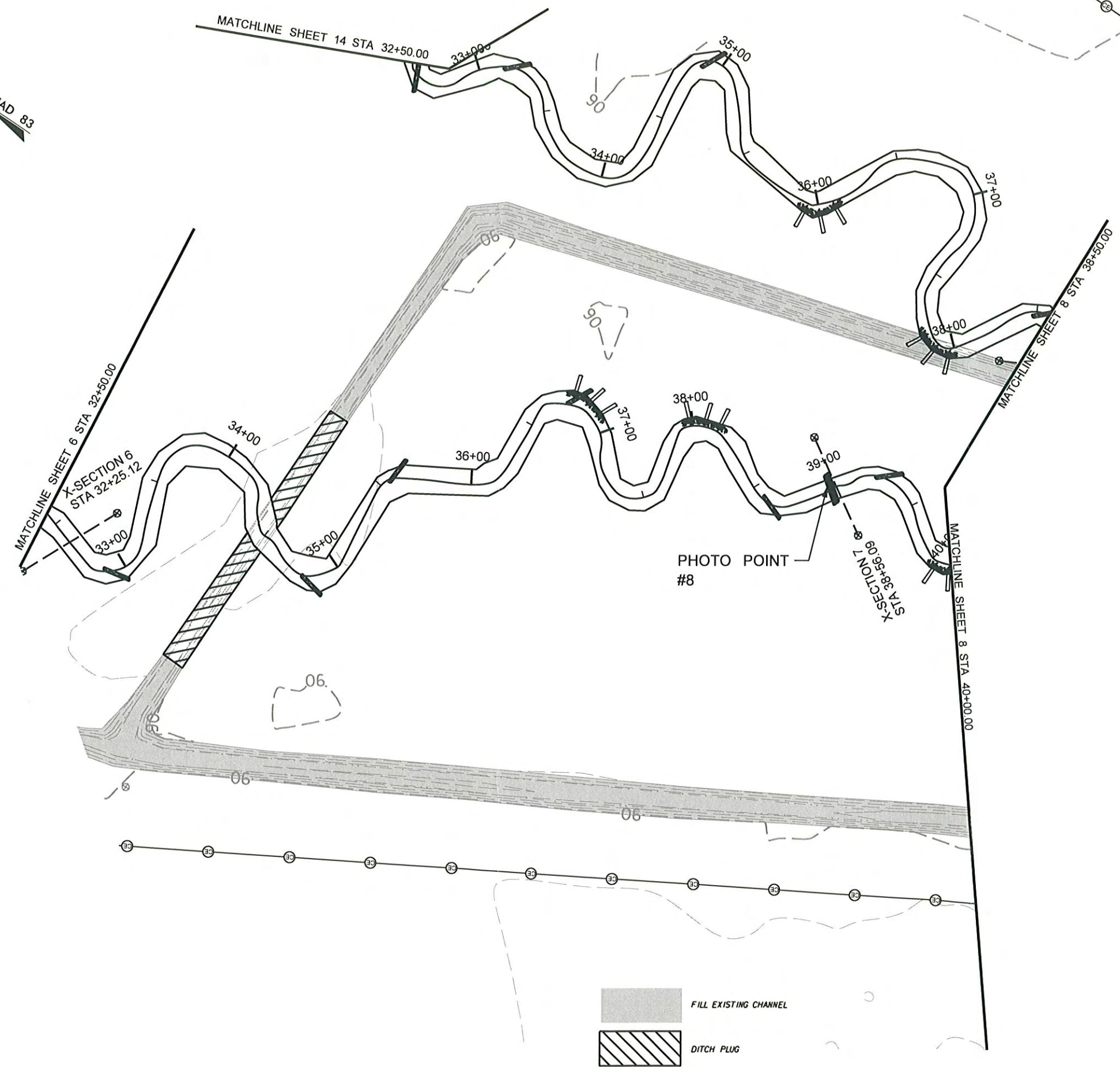




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**BUCK**  
ENGINEERING  
8000 Regency Parkway Suite 200  
Cary, North Carolina 27511  
Phone: 919-463-5488  
Fax: 919-463-5490



 FILL EXISTING CHANNEL  
 DITCH PLUG

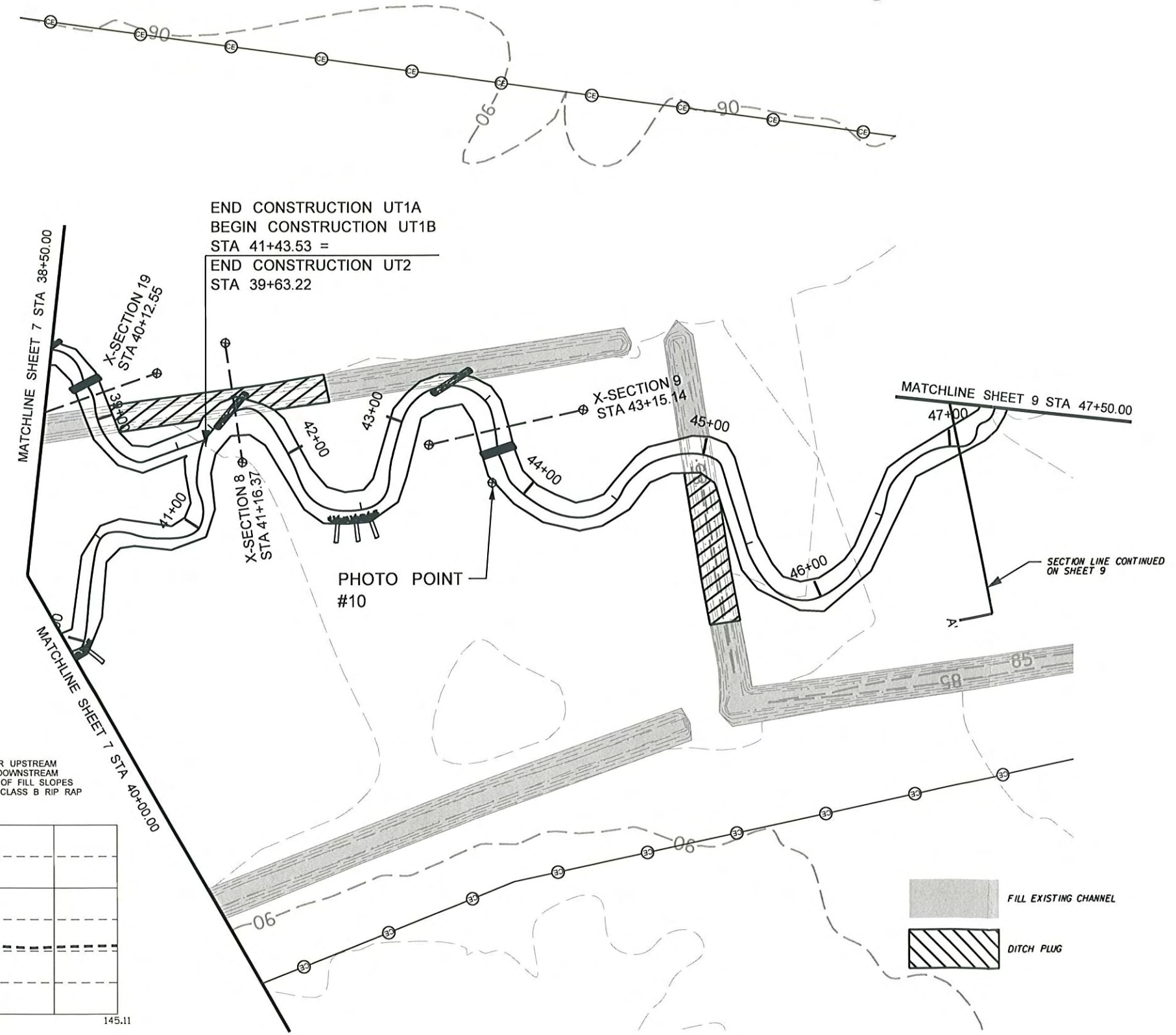
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AS-BUILT**  
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SCALE (FT)

2/26/03

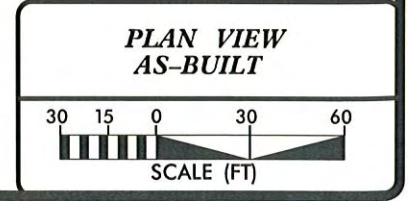
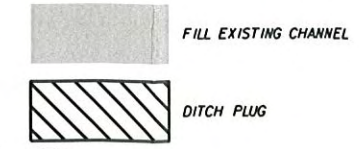
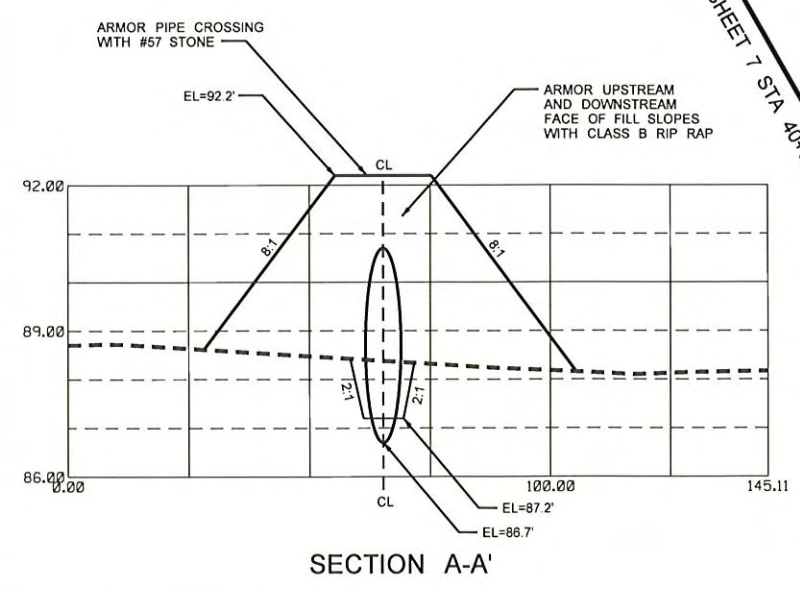
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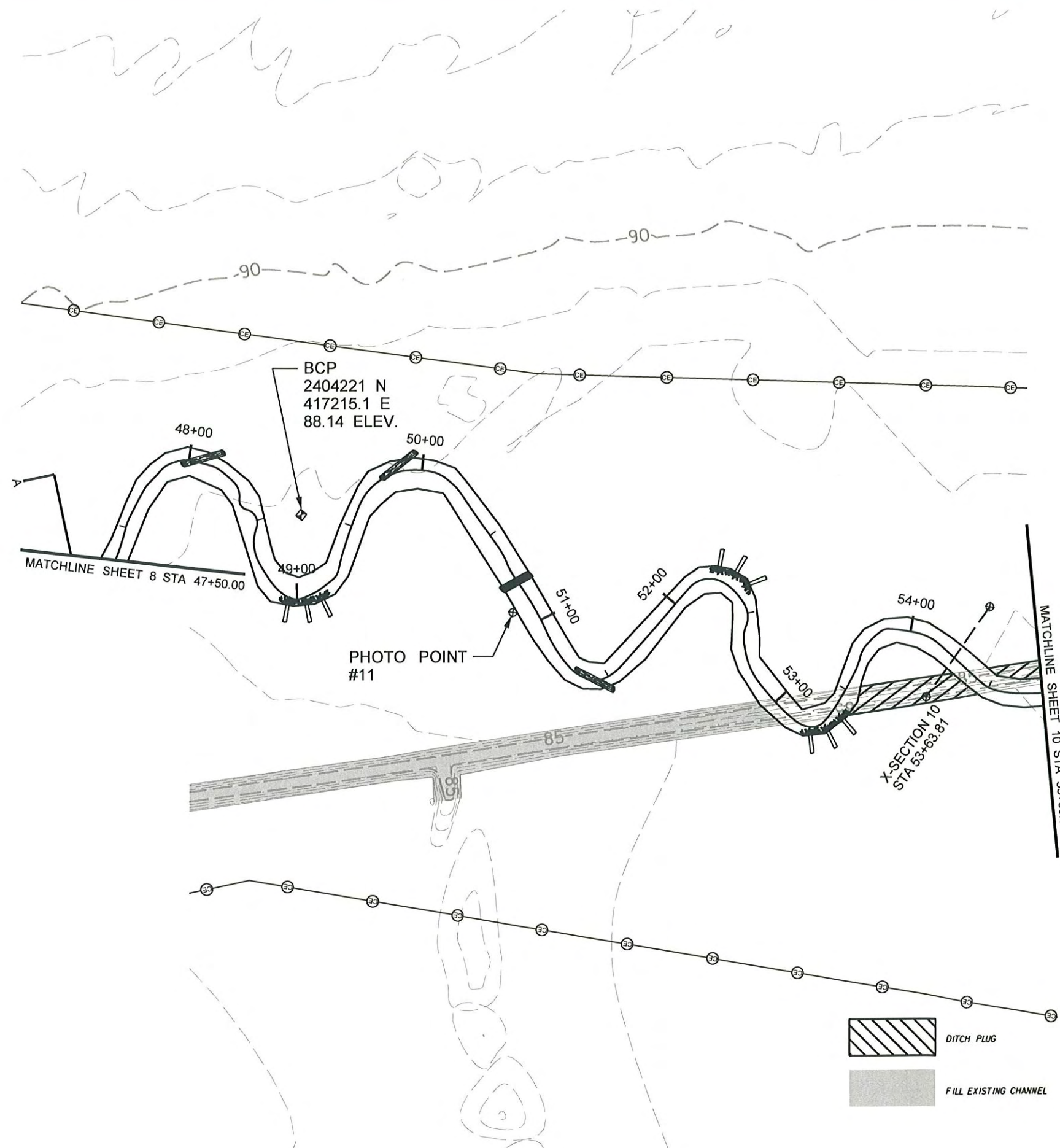
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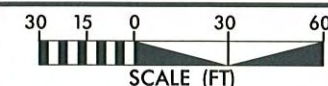


DITCH PLUG



FILL EXISTING CHANNEL

PLAN VIEW  
AS-BUILT



SCALE (FT)

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4/12/2006  
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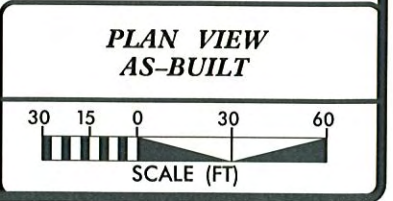
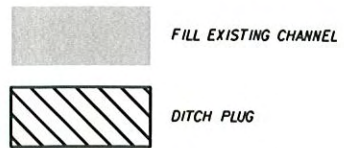
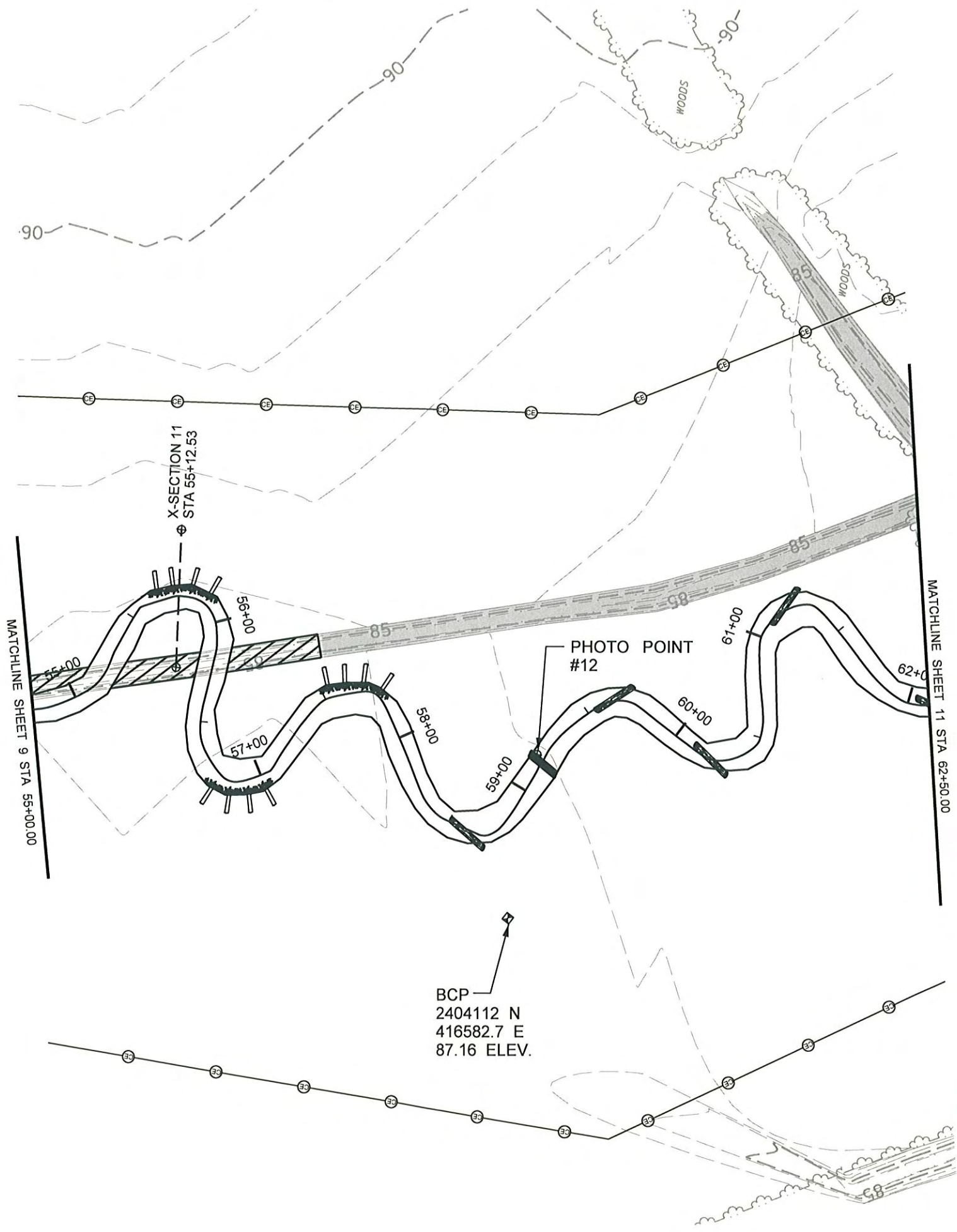
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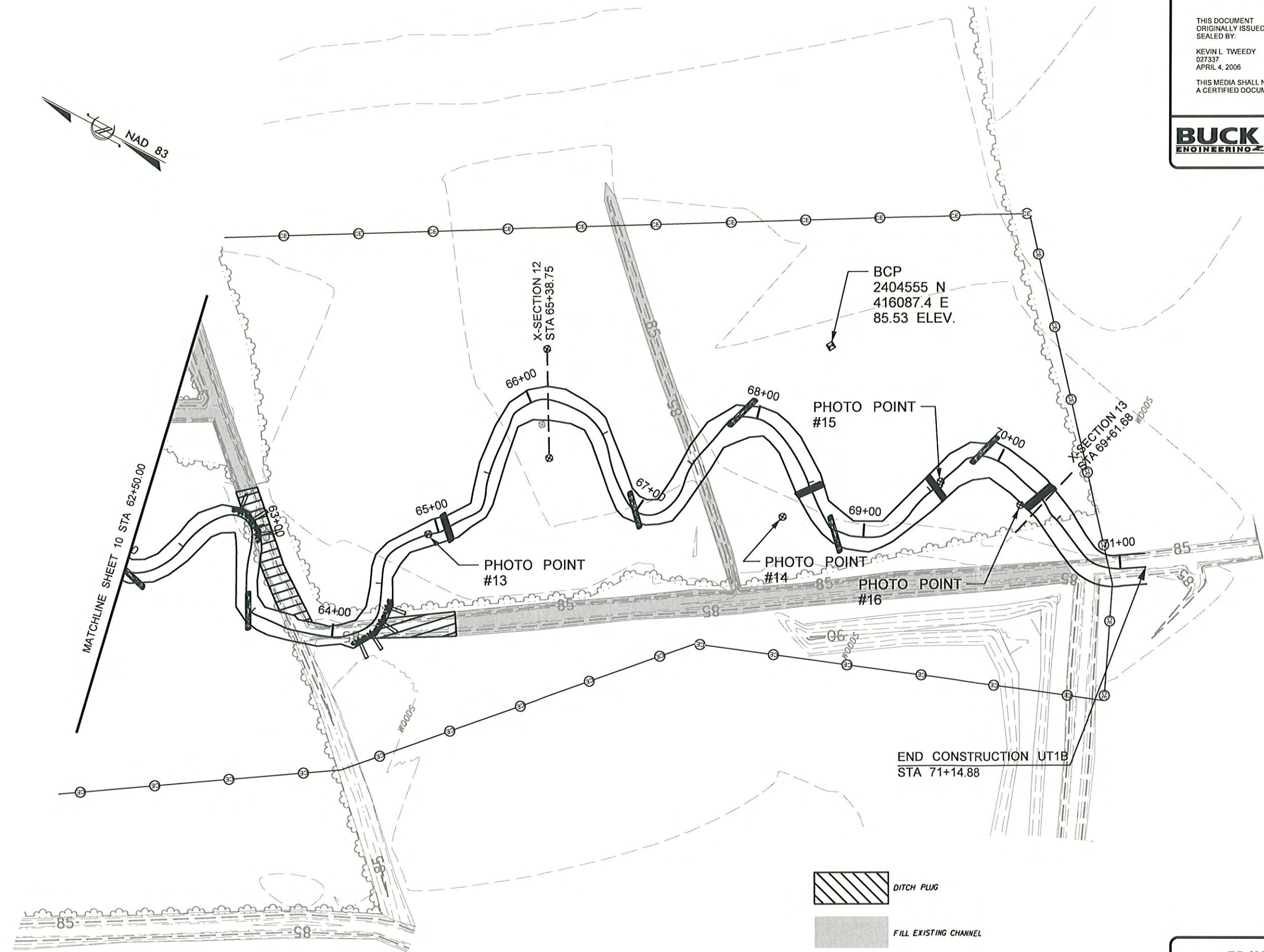


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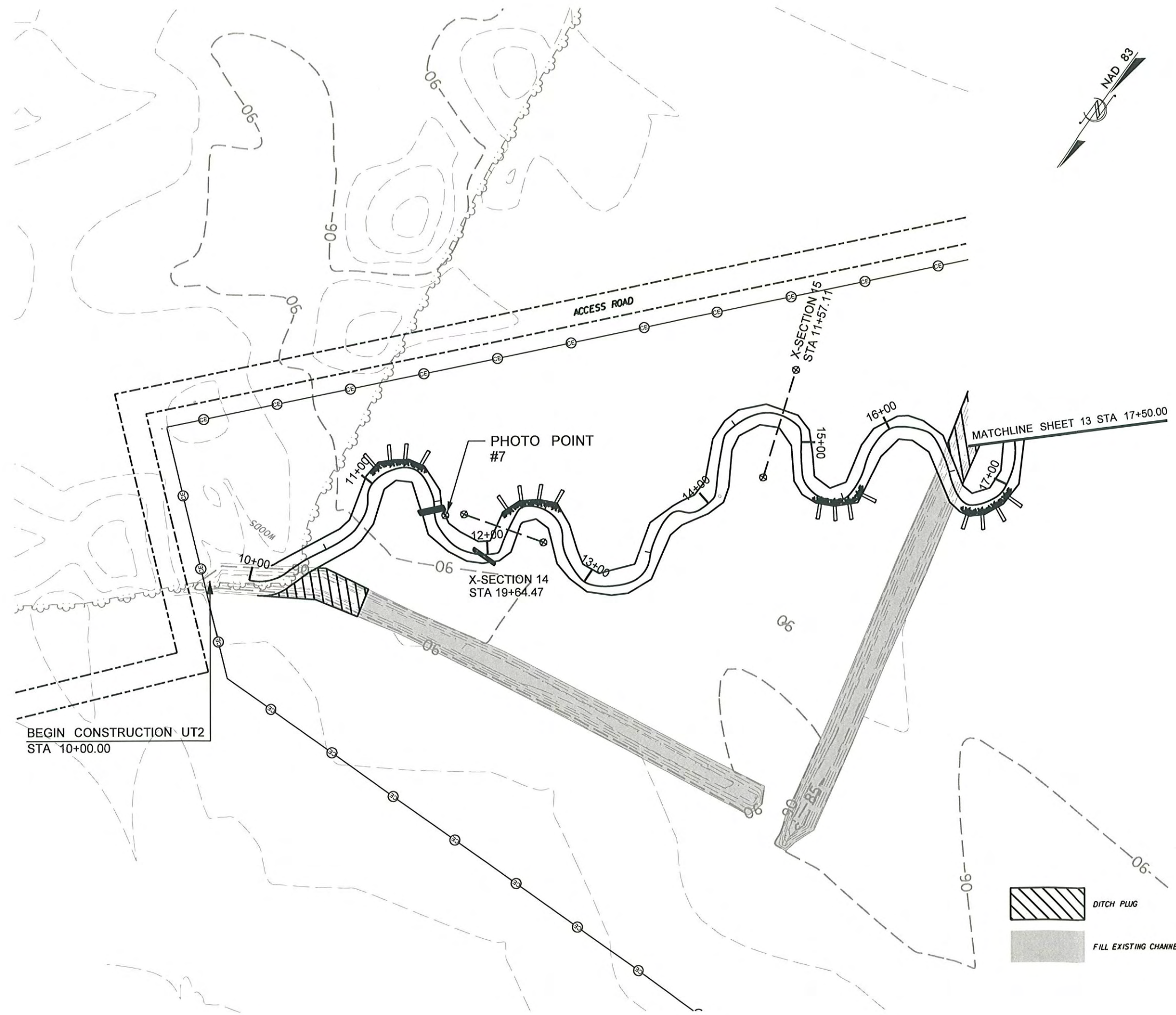
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AS-BUILT**

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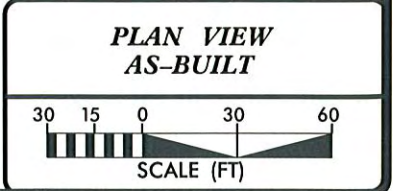
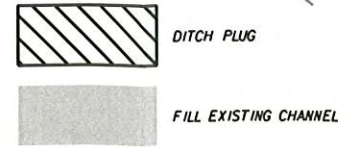
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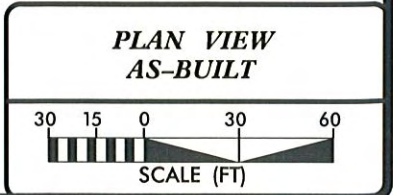
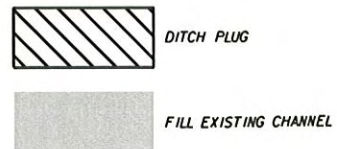
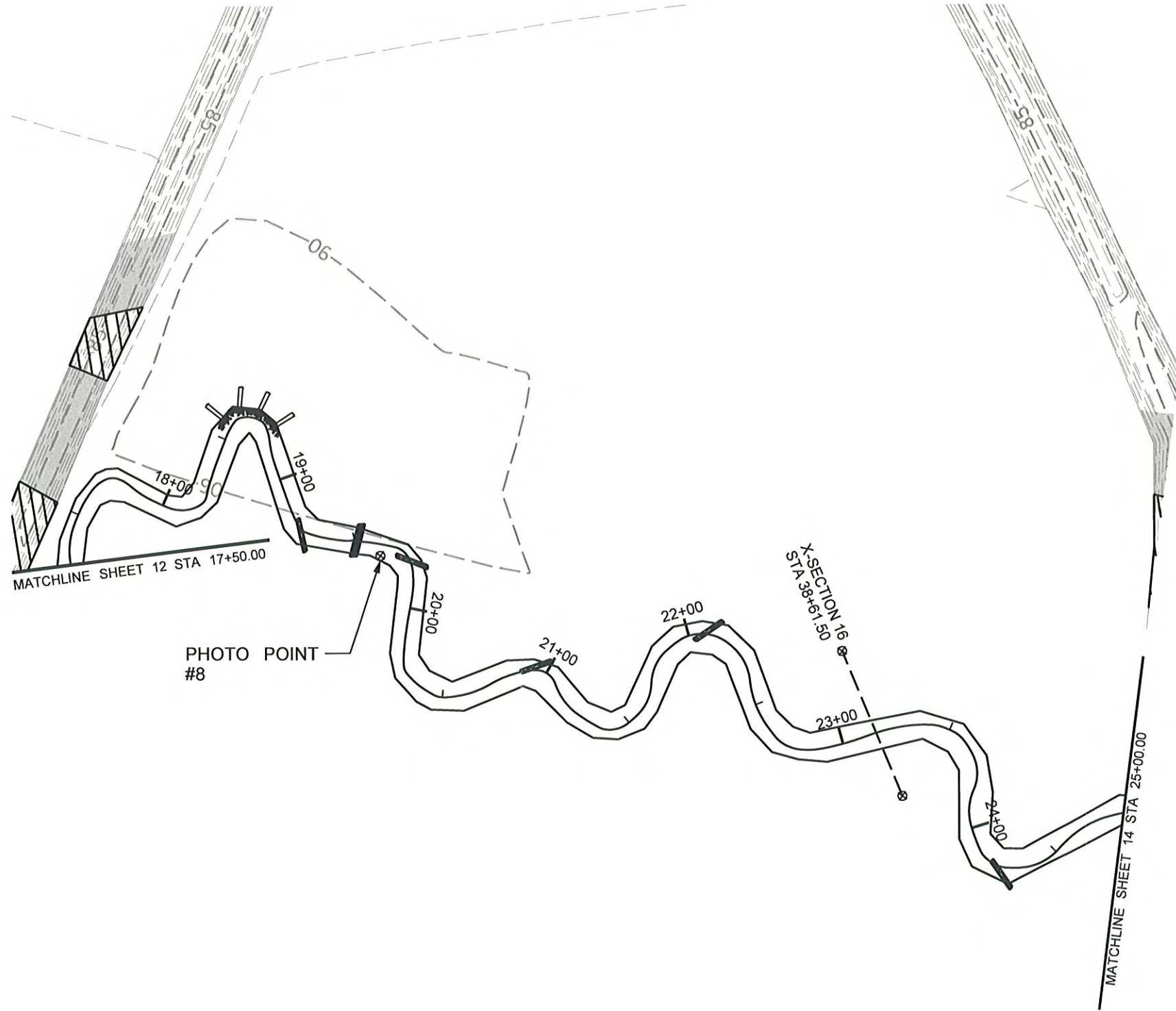
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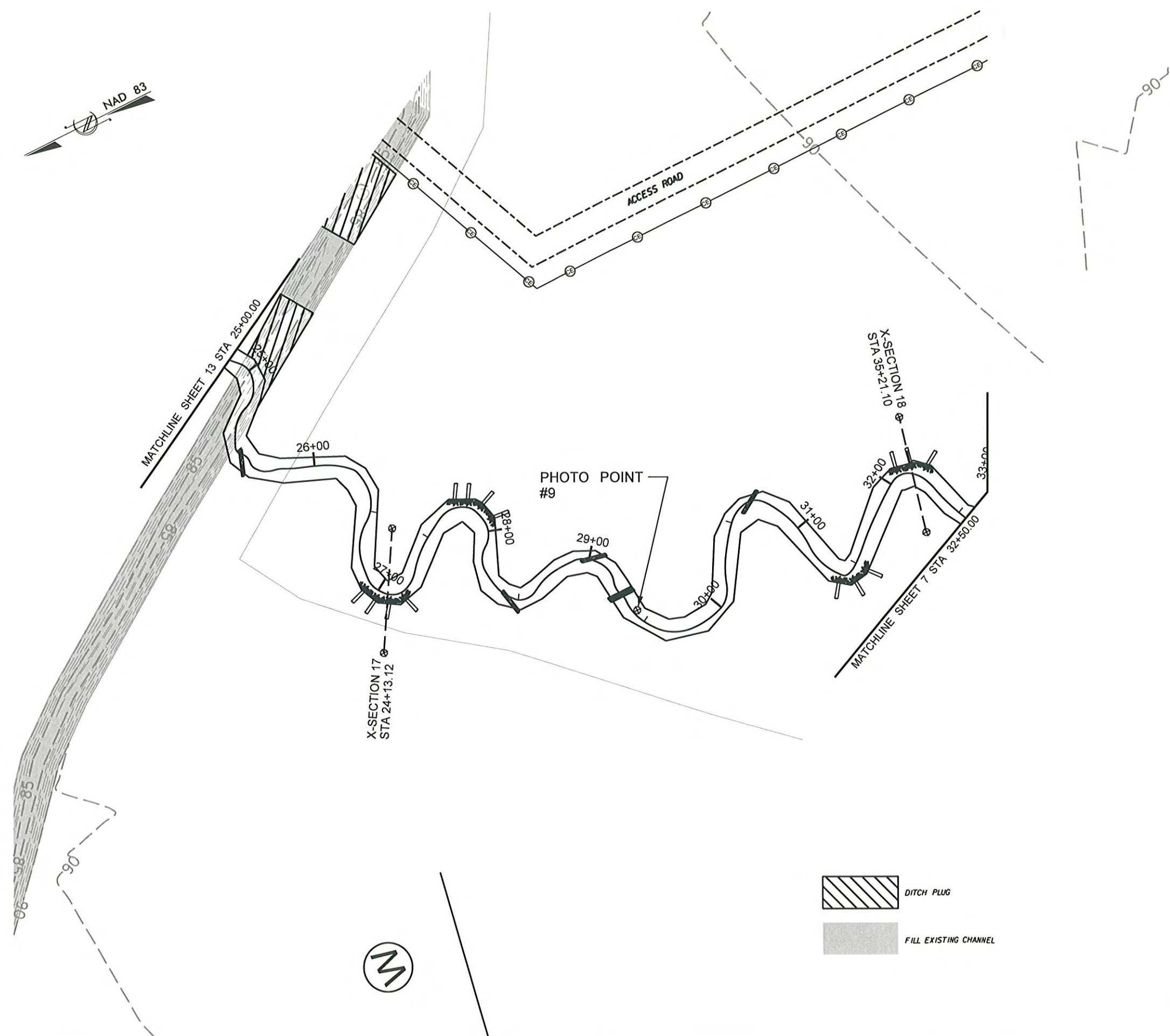
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0211R	13
PROJECT ENGINEER	
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 DITCH PLUG  
 FILL EXISTING CHANNEL

**PLAN VIEW  
AS-BUILT**  
  
 SCALE (FT)

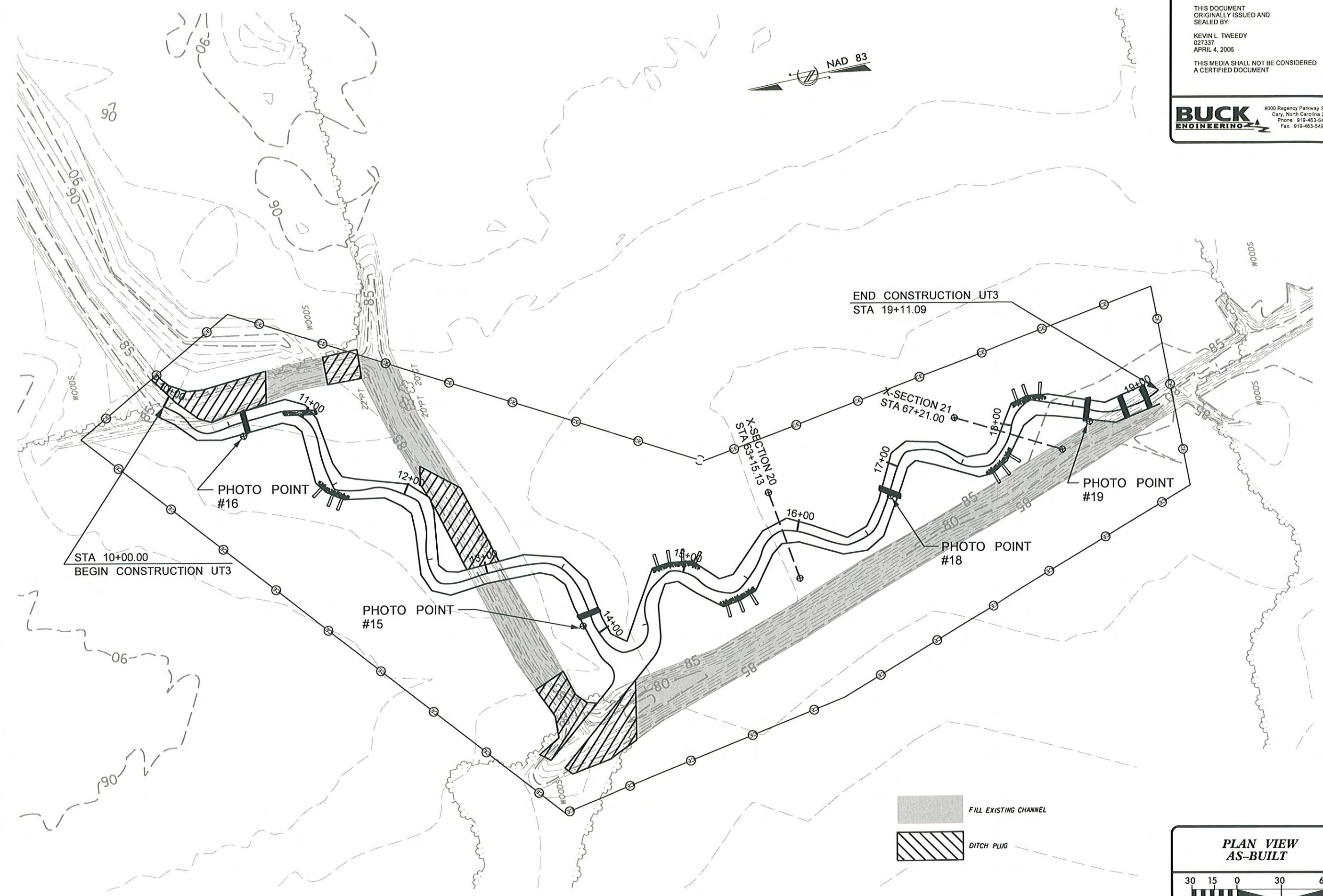
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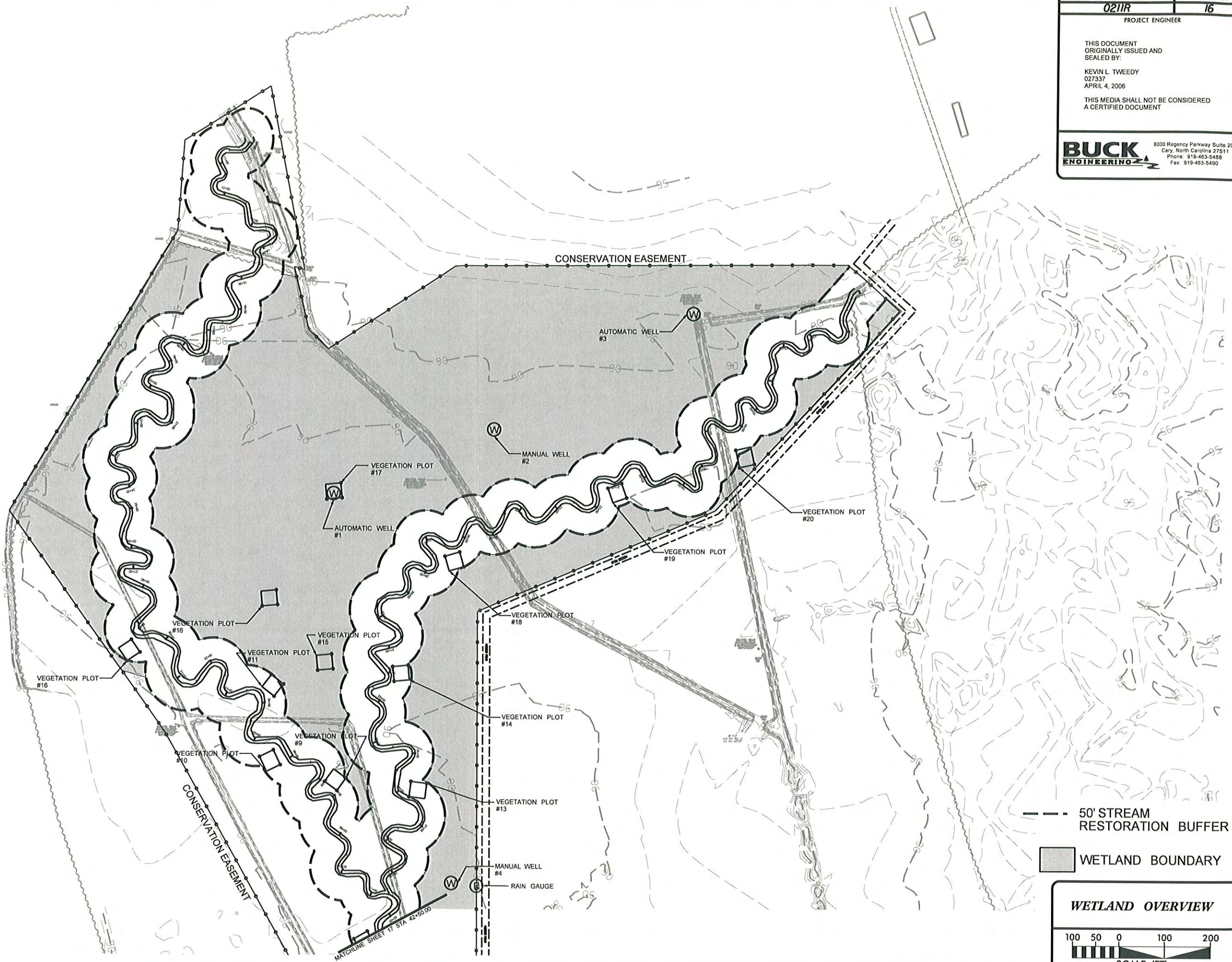
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**PLAN VIEW  
AS-BUILT**

SCALE (FT)

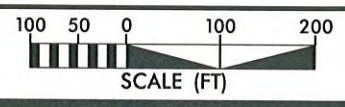




--- 50' STREAM RESTORATION BUFFER

■ WETLAND BOUNDARY

**WETLAND OVERVIEW**



PROJECT ENGINEER

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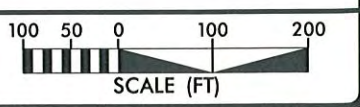
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--- 50' STREAM RESTORATION BUFFER  
 [Shaded Area] WETLAND BOUNDARY

**WETLAND OVERVIEW**



2/26/03

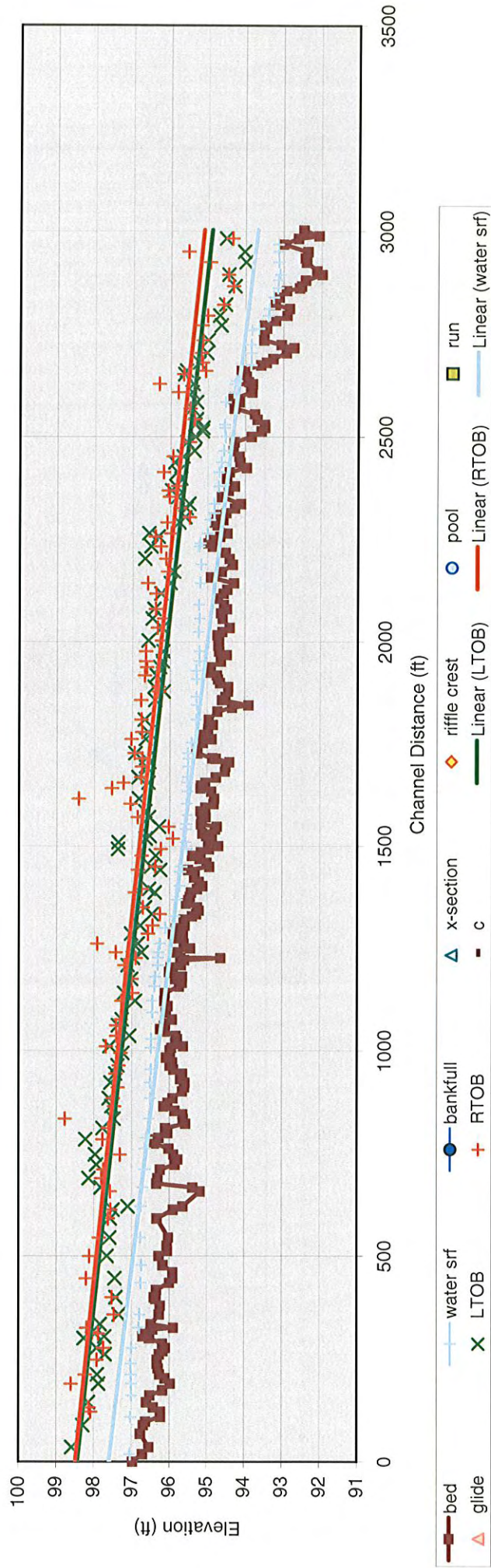
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**APPENDIX B**

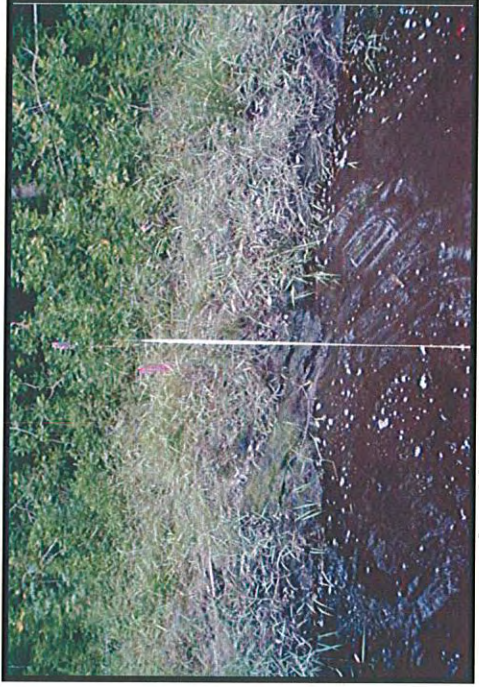
**2006 Profile and  
Cross Section Data**

# 2006 Haw Branch Profile

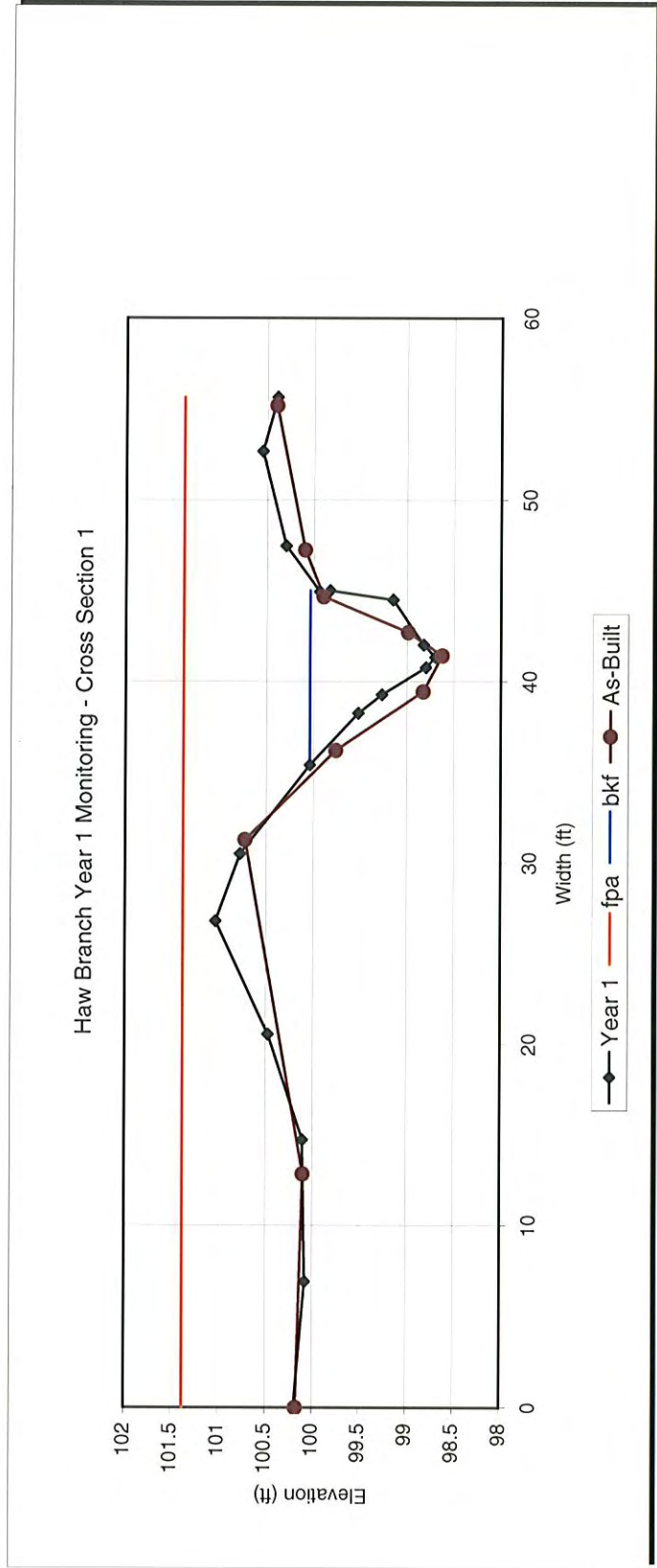




Looking at left bank.



Looking at right bank.

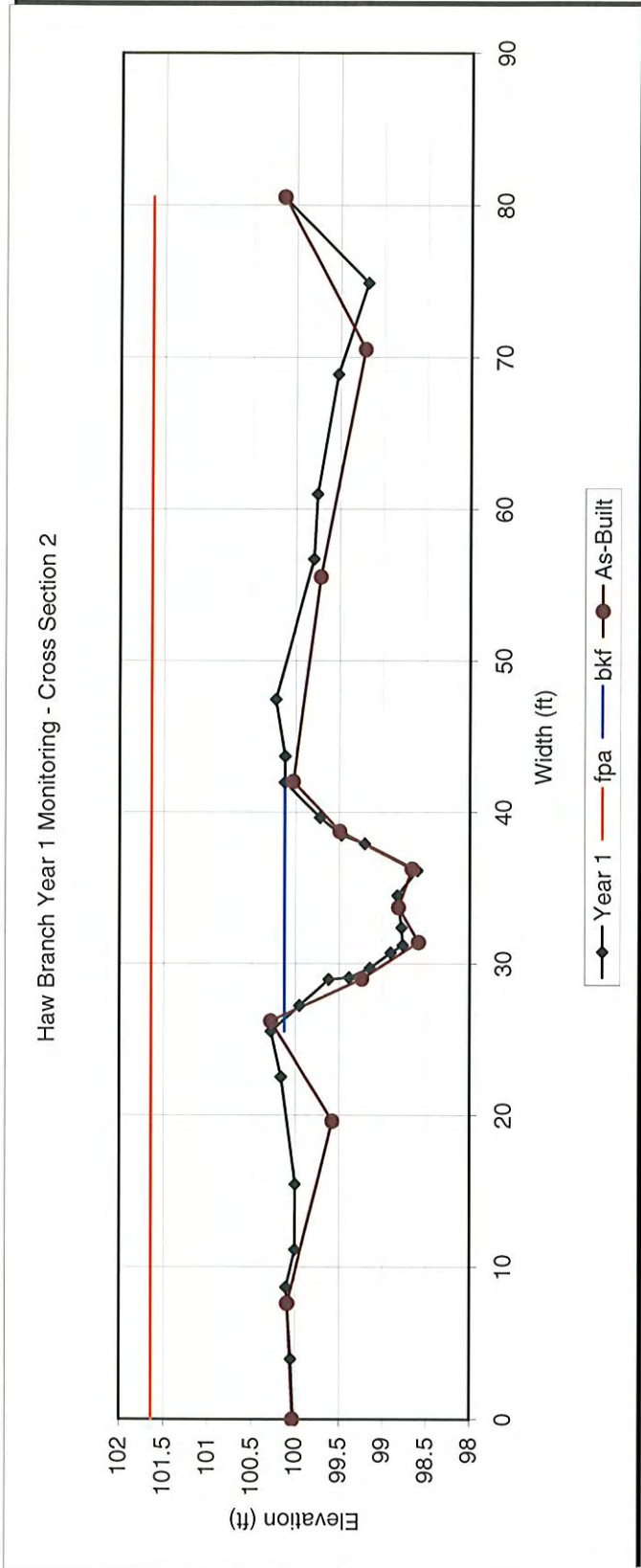




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Looking at right bank.

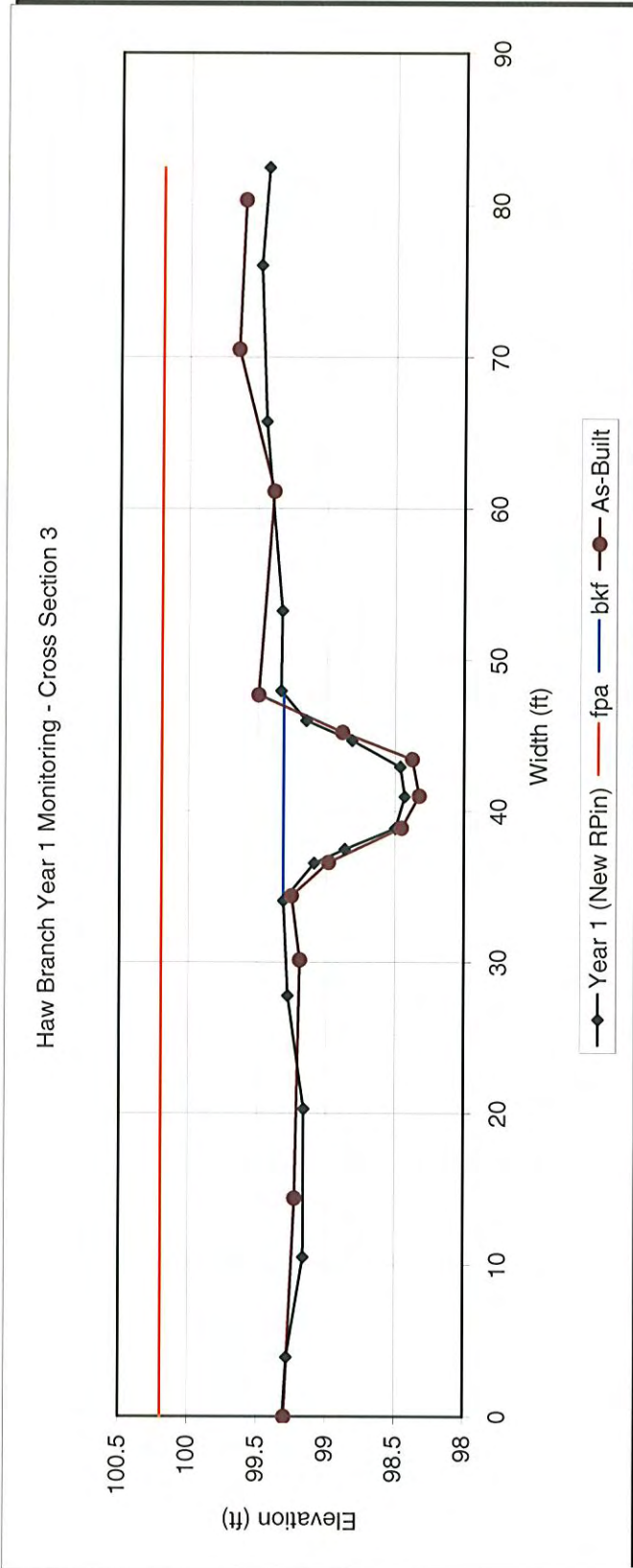


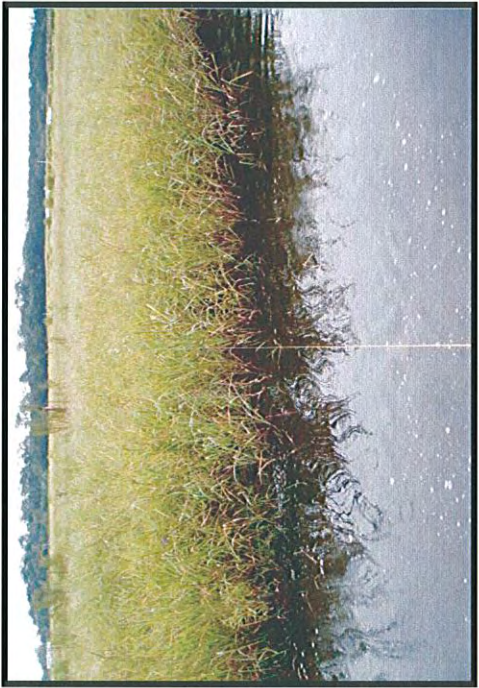


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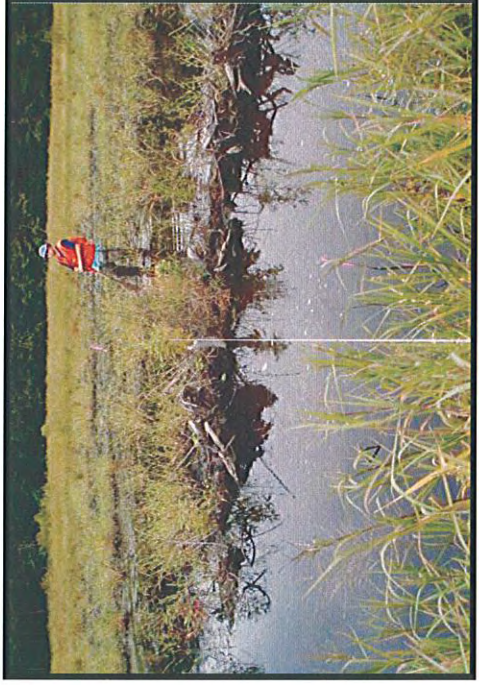


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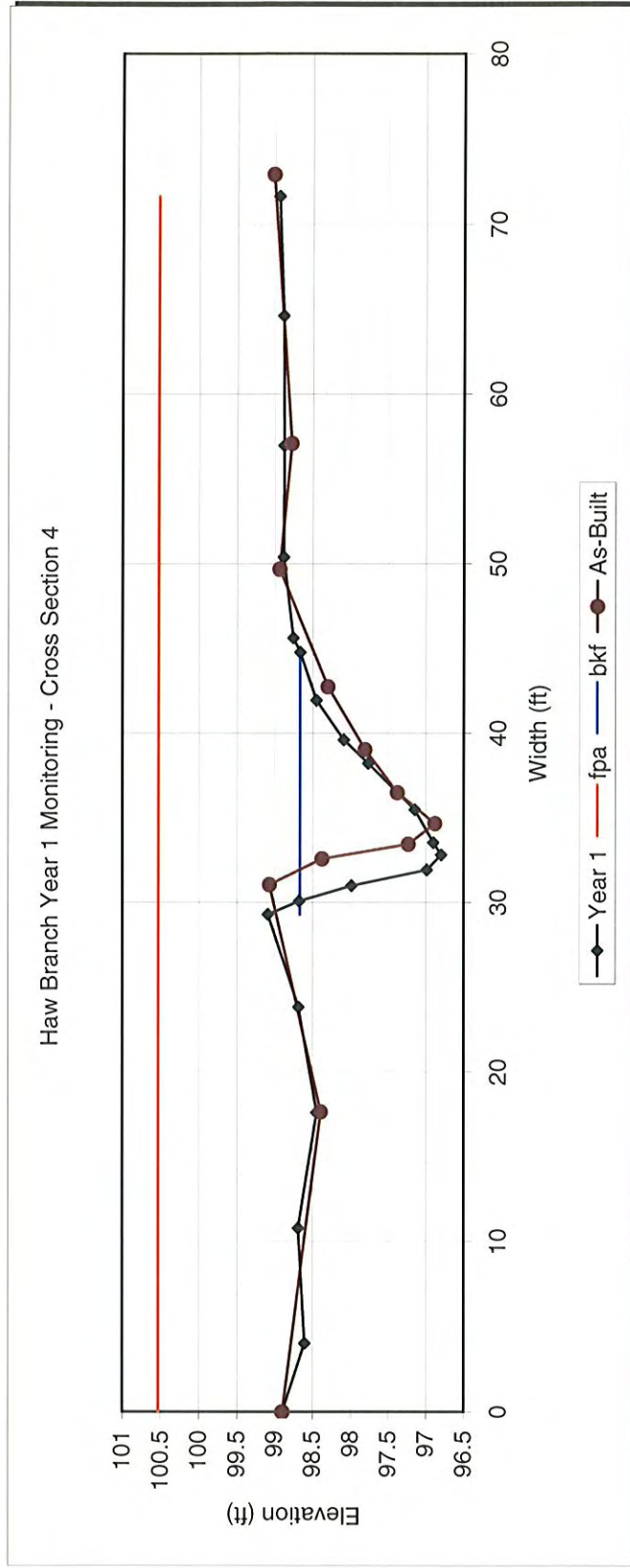




Looking at left bank.



Looking at right bank.



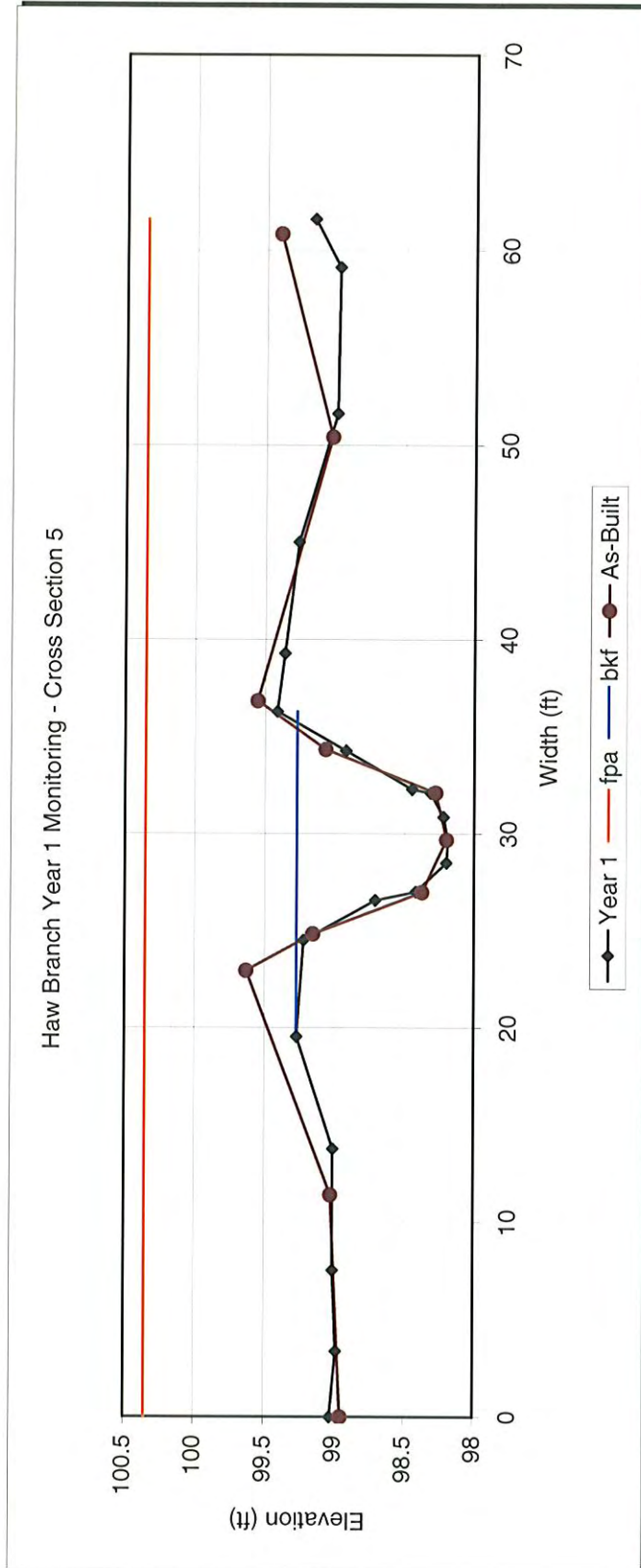




Looking at left bank.



Looking at right bank.

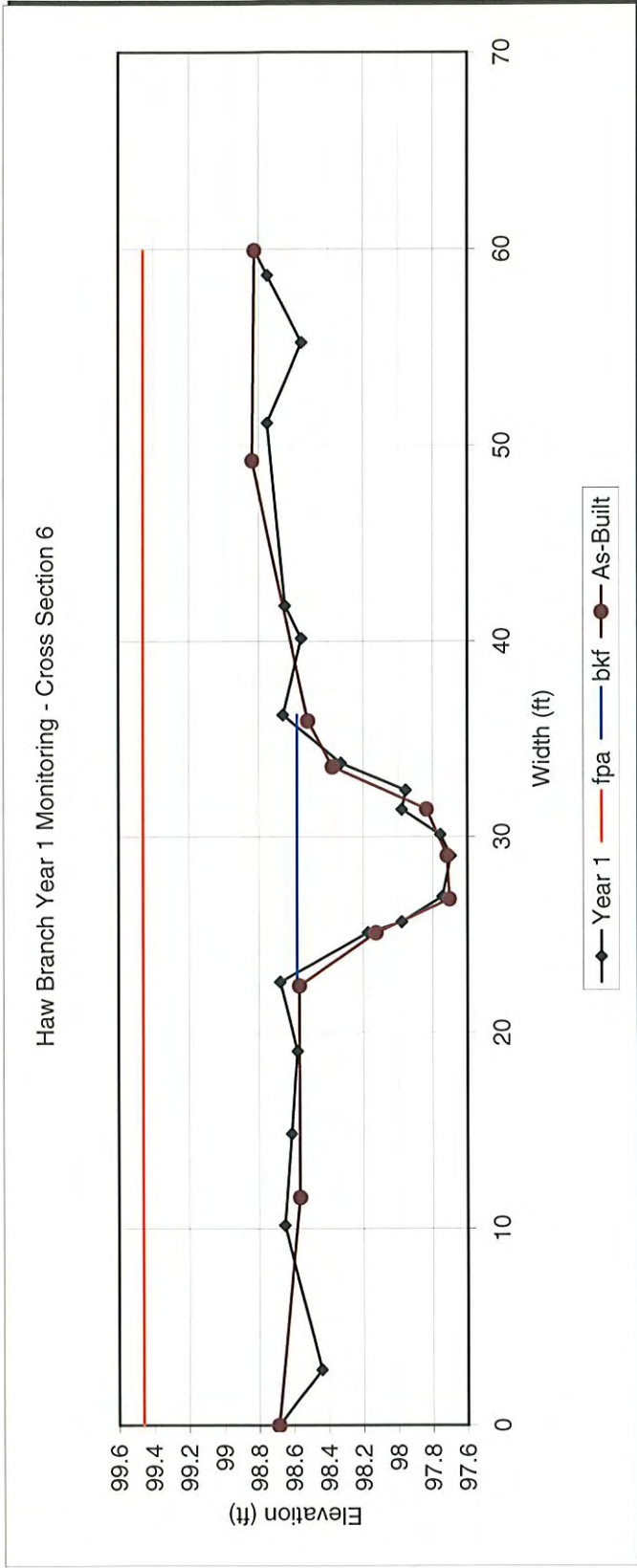


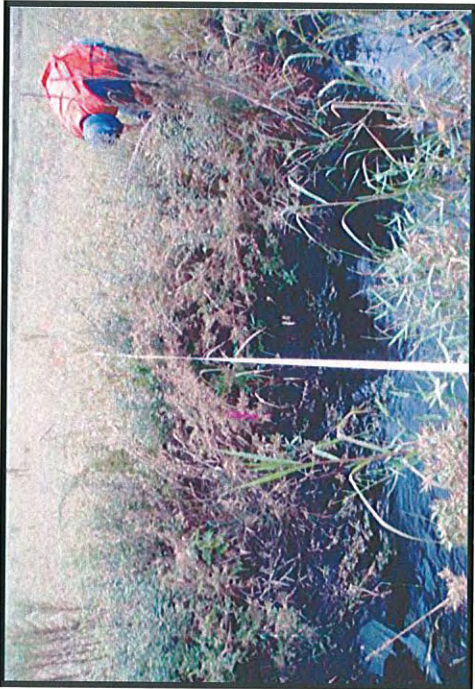


Looking at left bank.

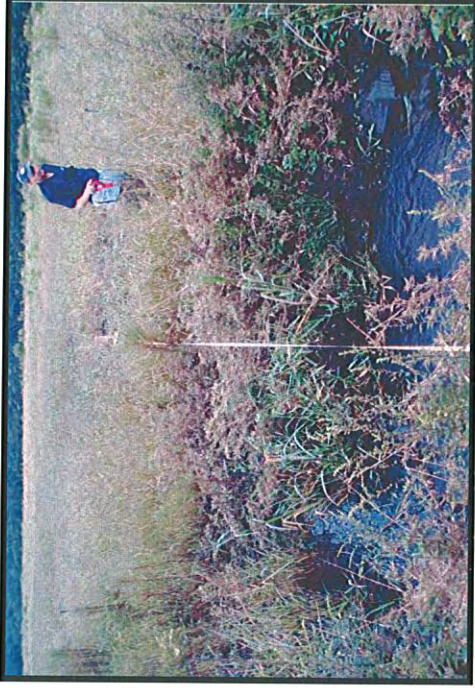


Looking at right bank.

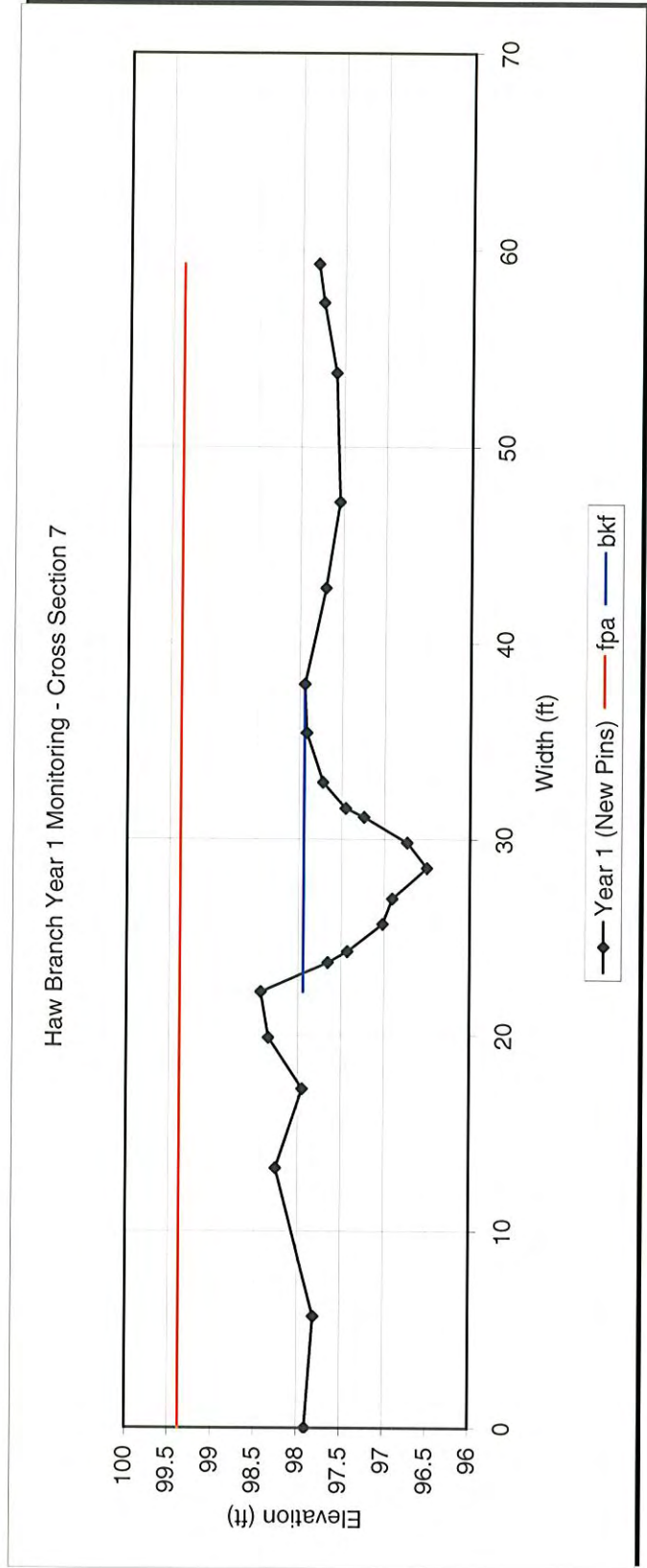




Looking at left bank.

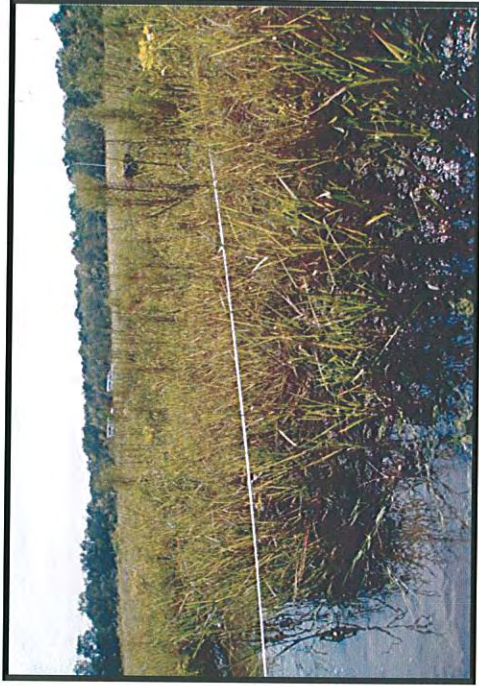


Looking at right bank.

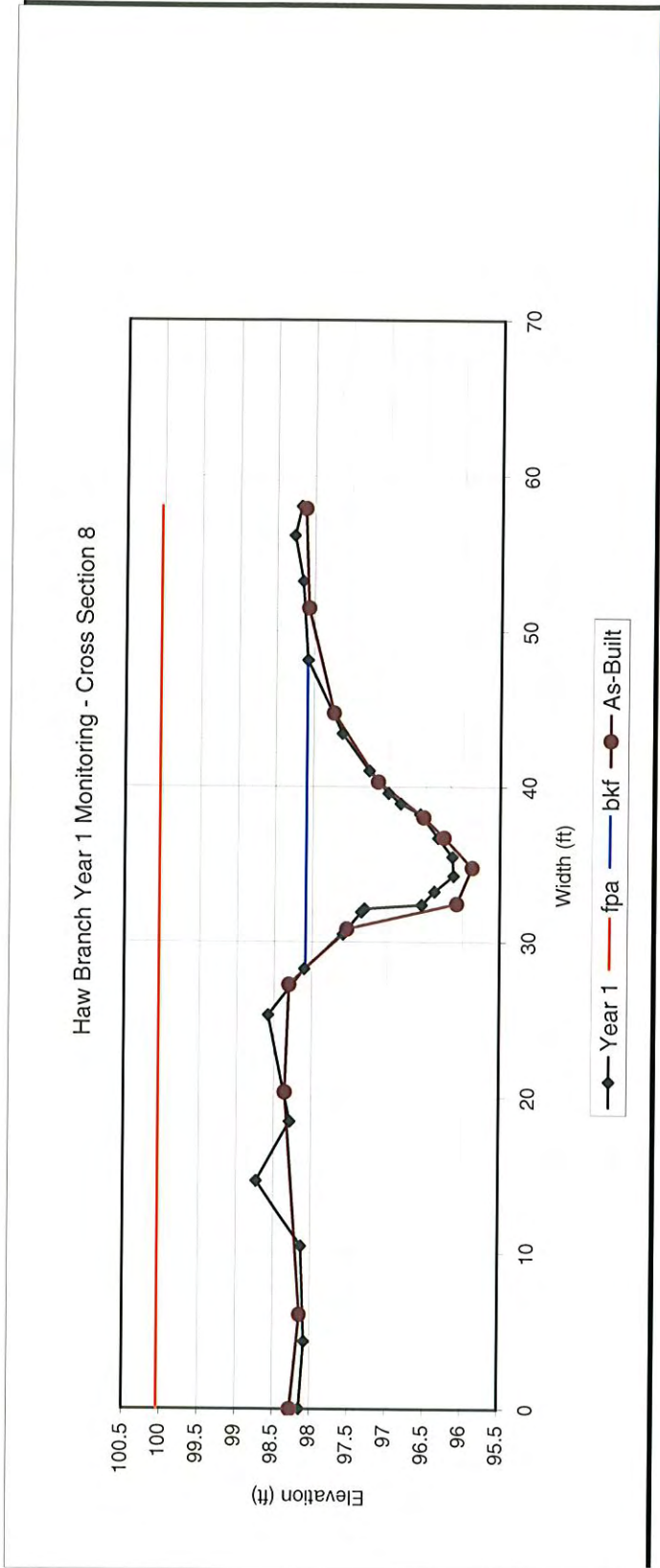


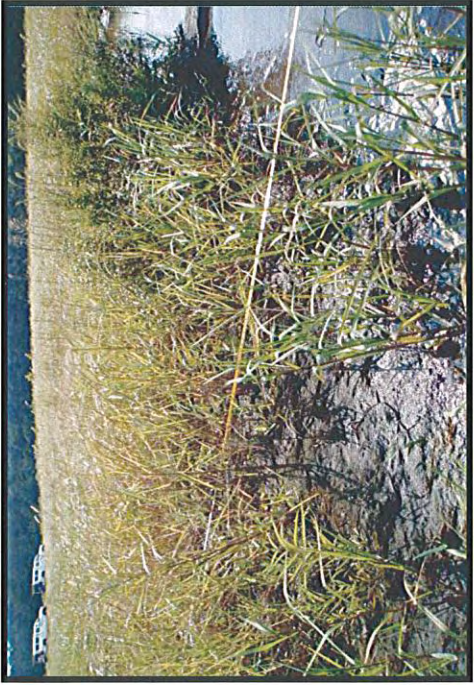


Looking at left bank.



Looking at right bank.

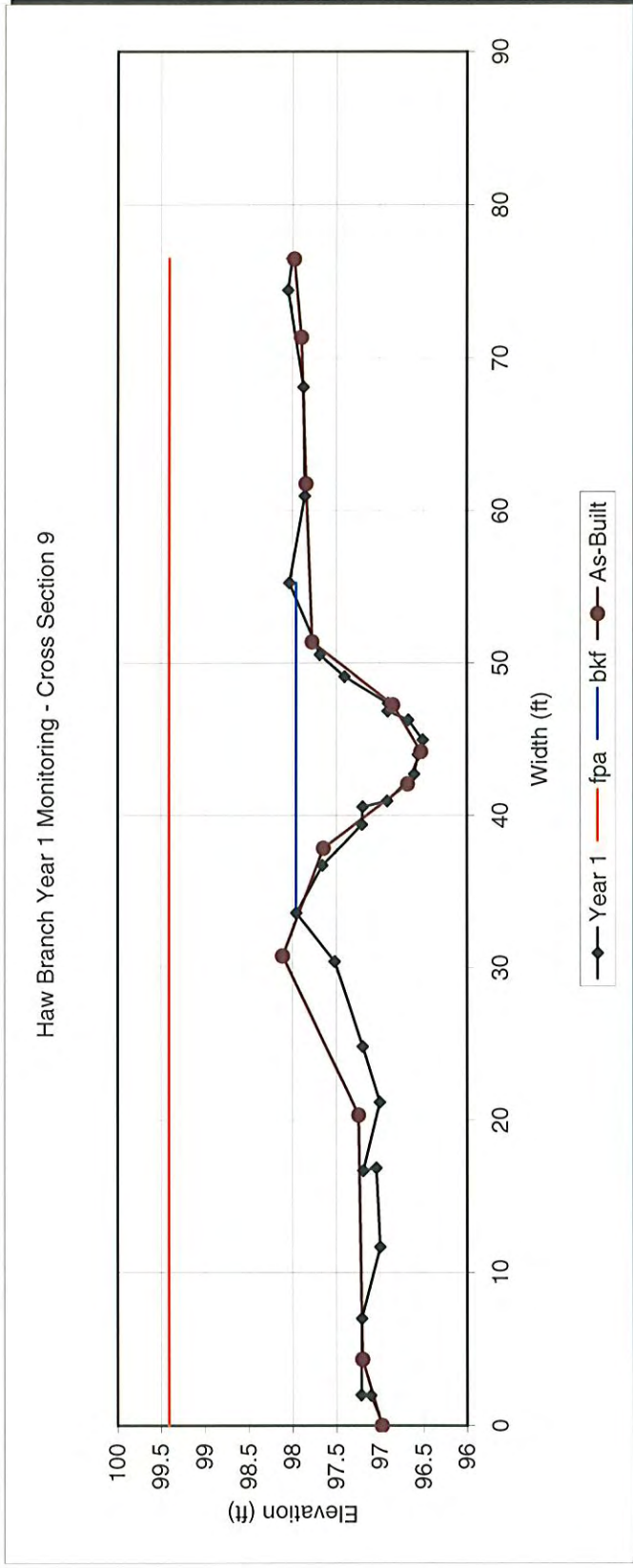




Looking at left bank.

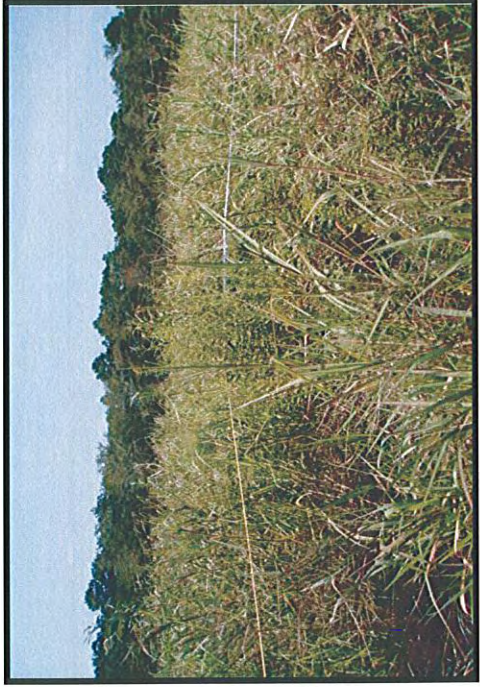


Looking at right bank.

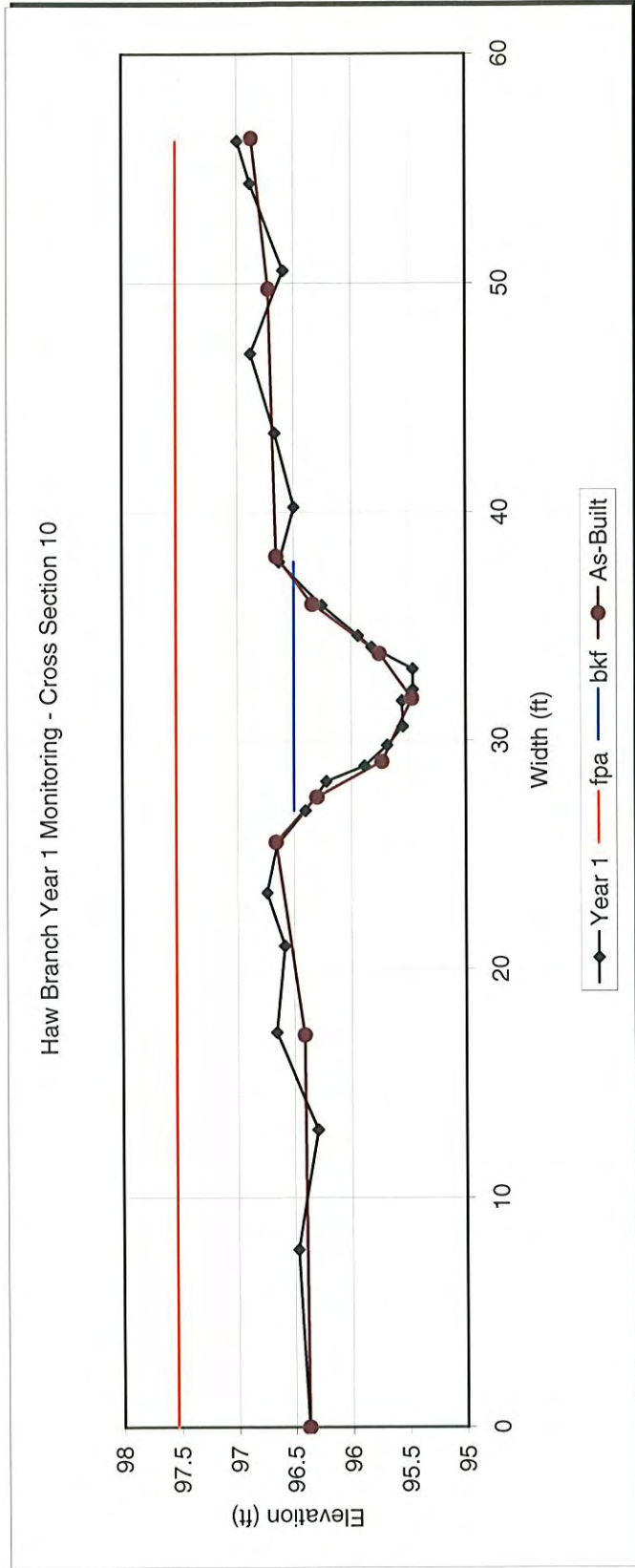




Looking at left bank.

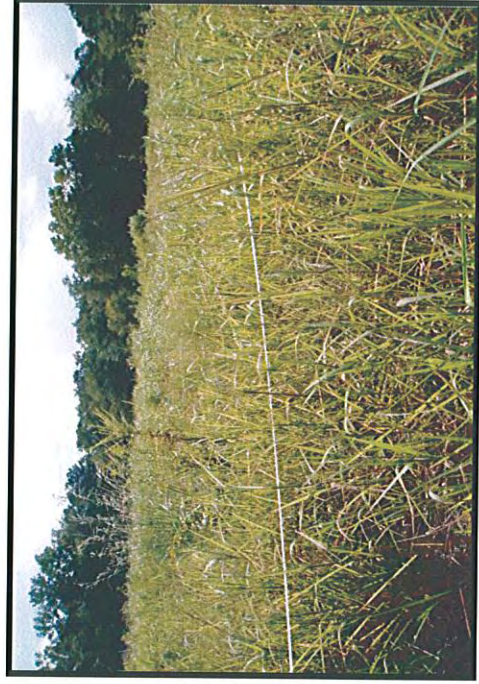


Looking at right bank.

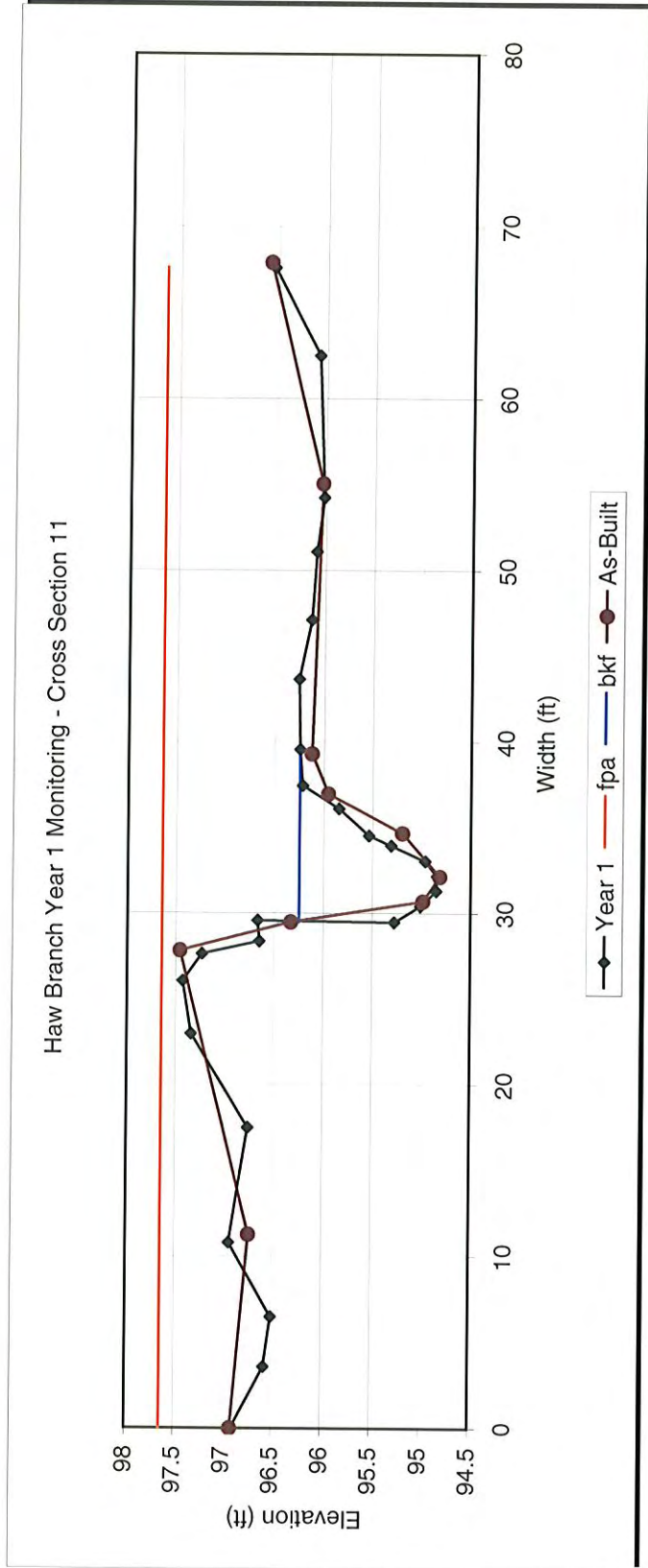




Looking at left bank.



Looking at right bank.

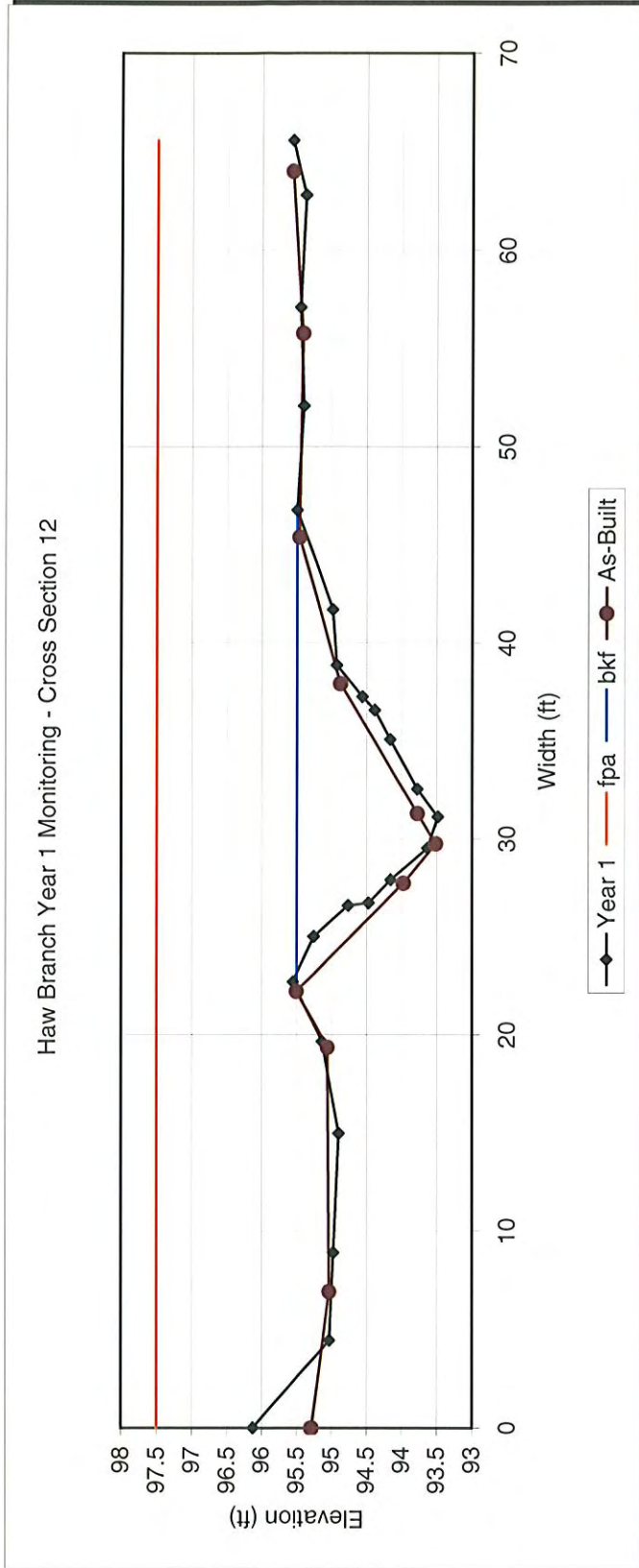




Looking at left bank.



Looking at right bank.



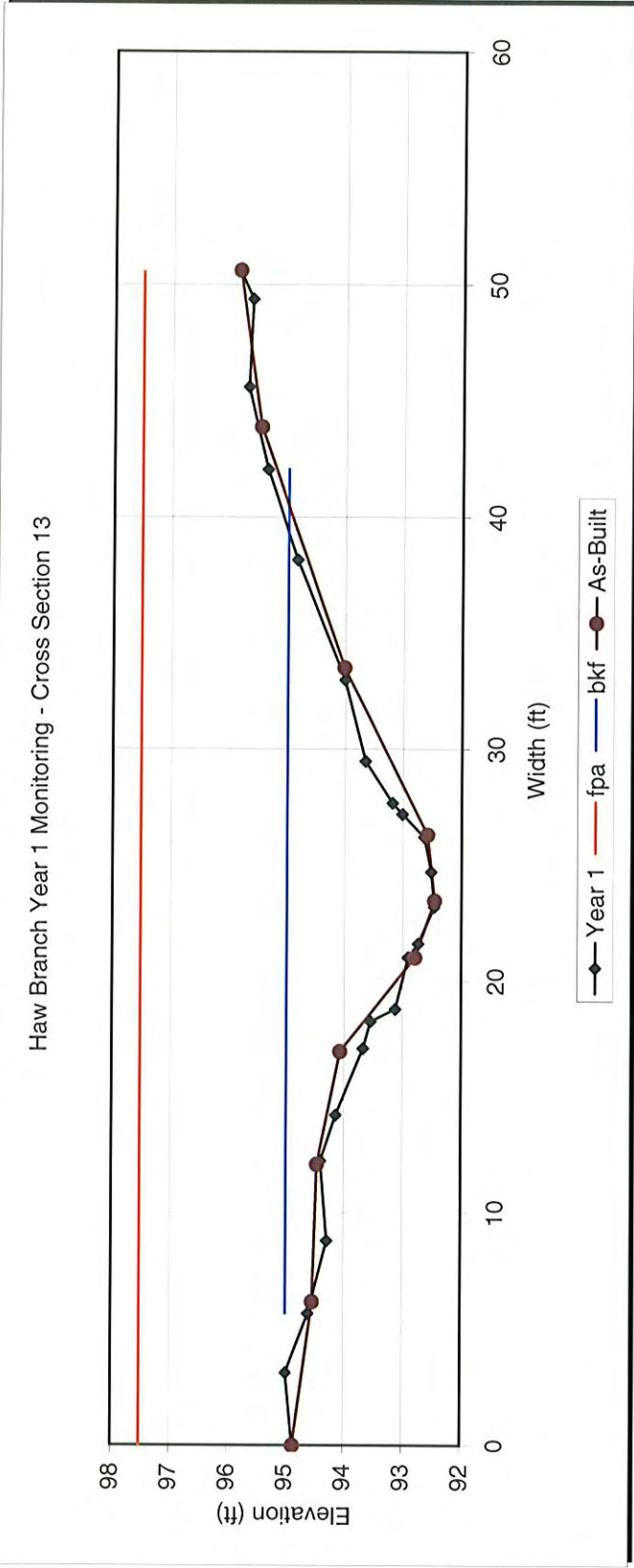


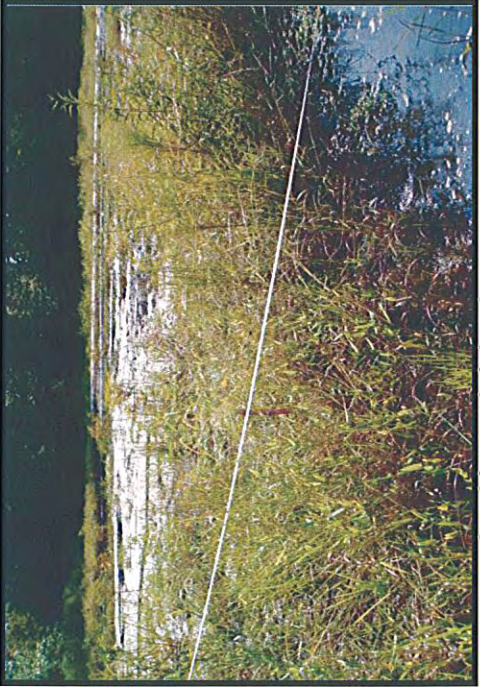


Looking at left bank.



Looking at right bank.

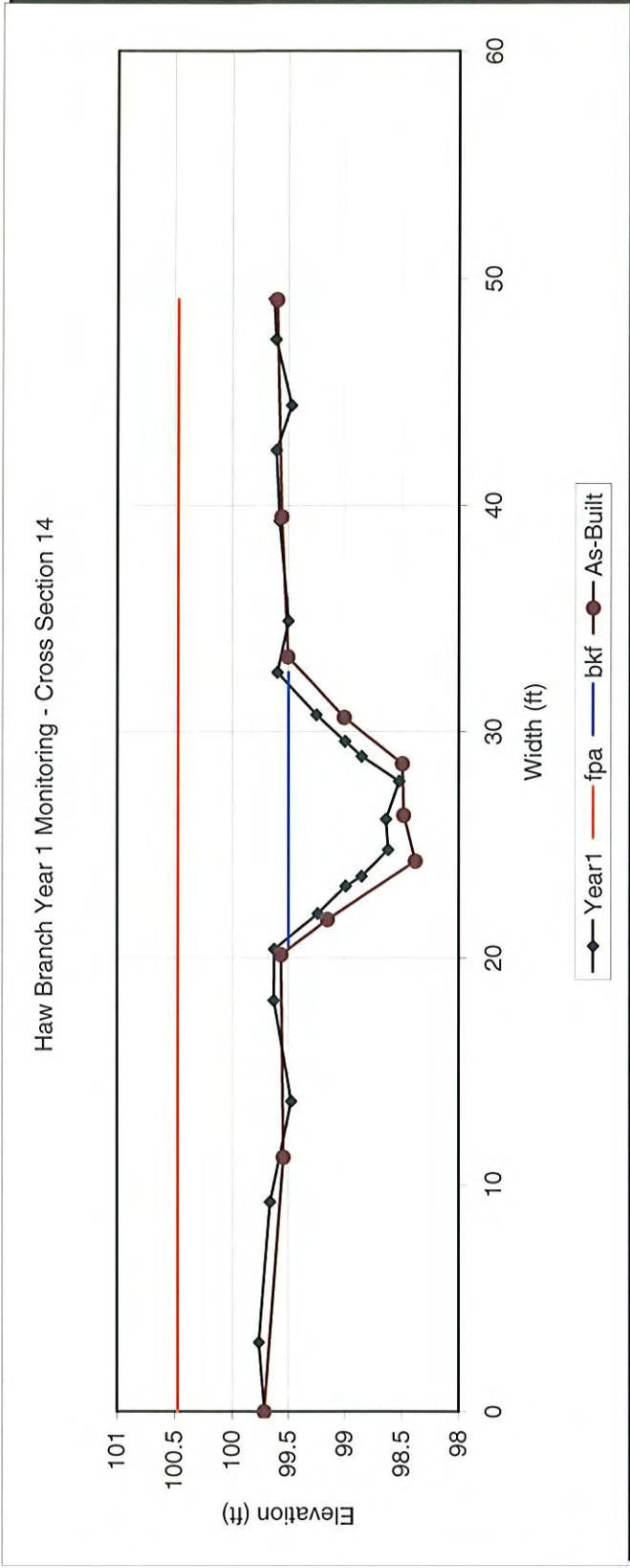


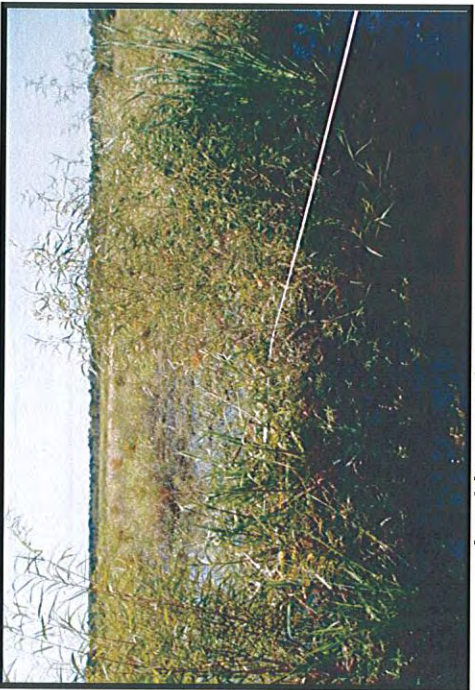


Looking at left bank.

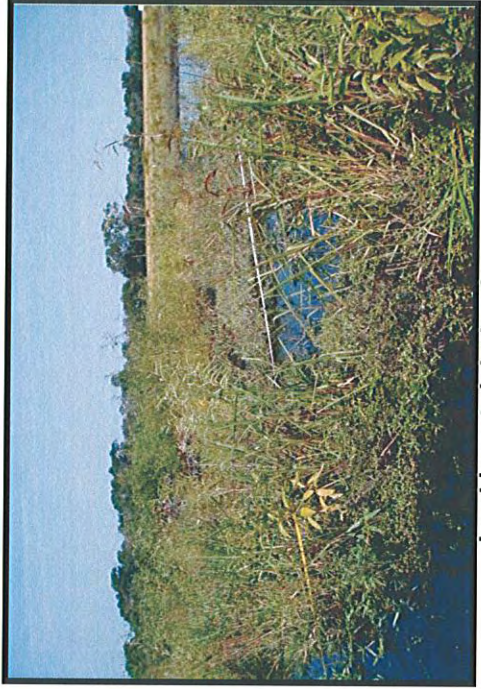


Looking at right bank.

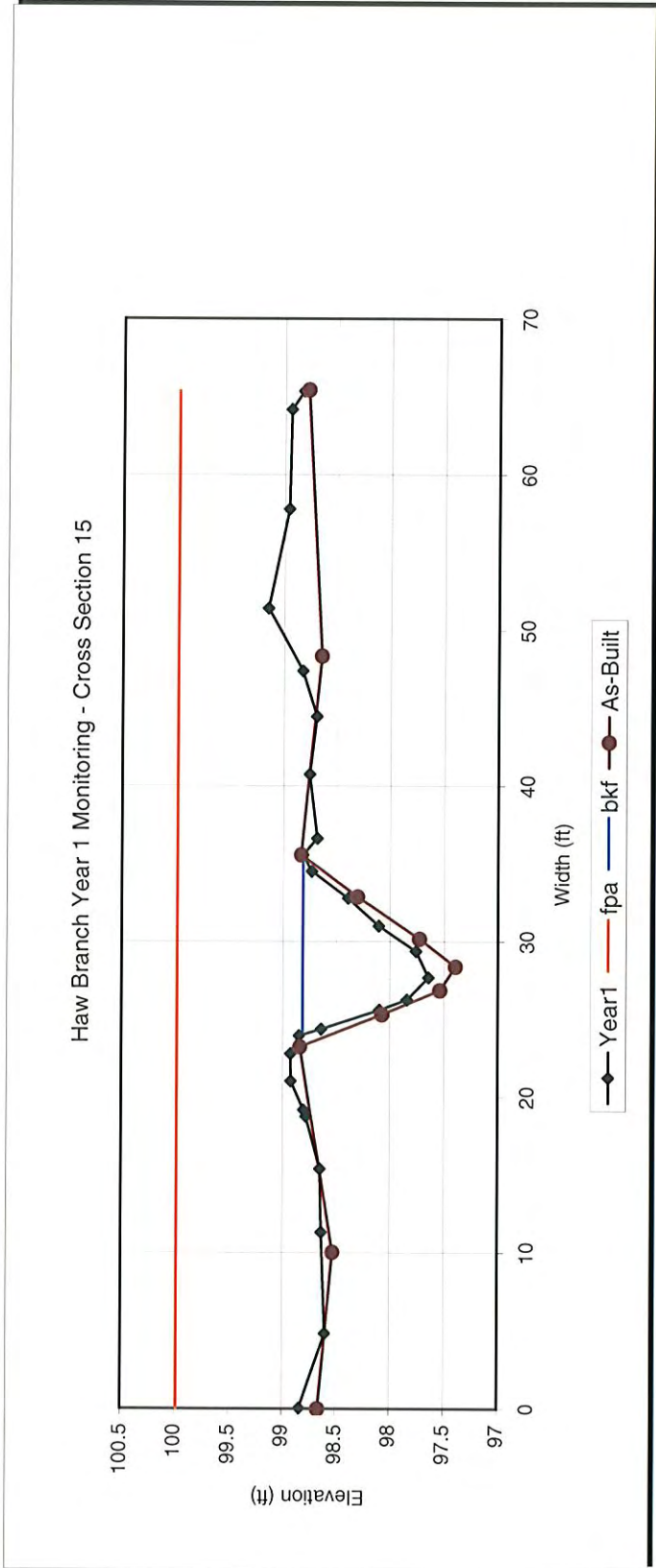




Looking at left bank.

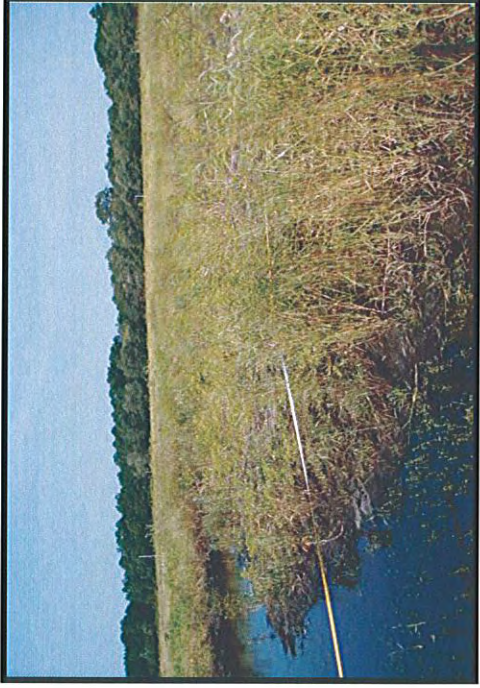


Looking at right bank.

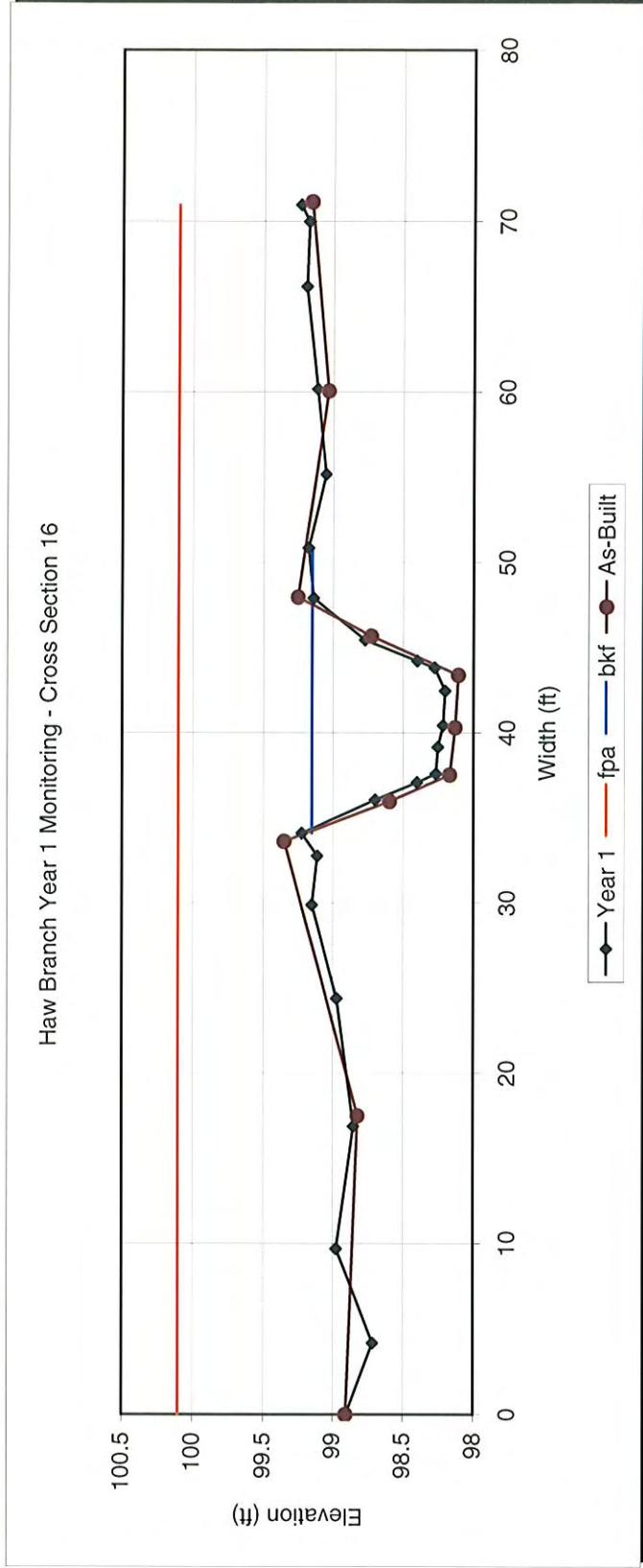




Looking at left bank.



Looking at right bank.

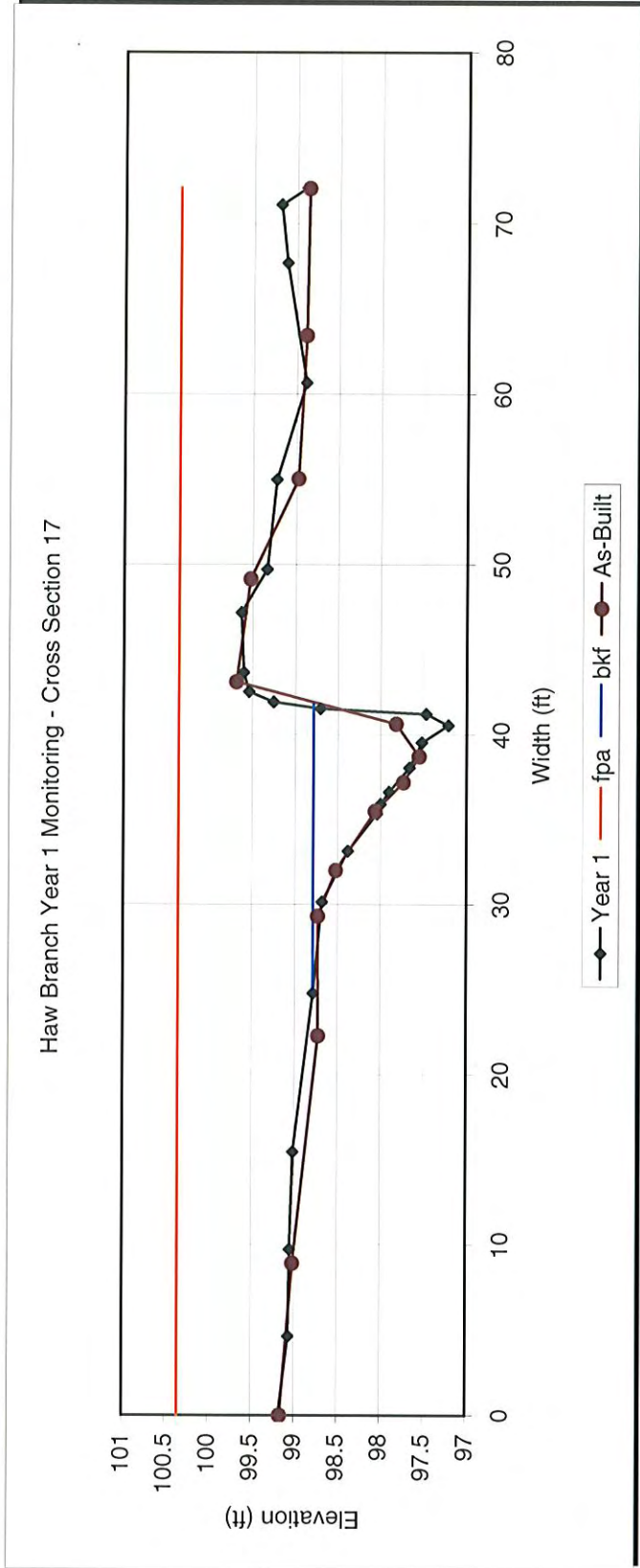


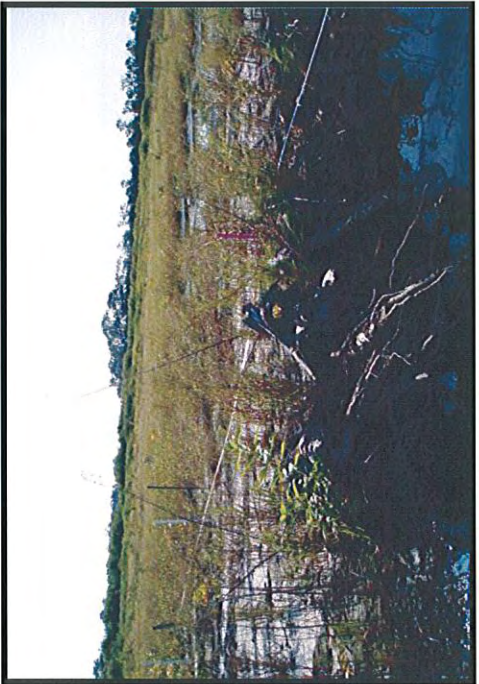


Looking at left bank.

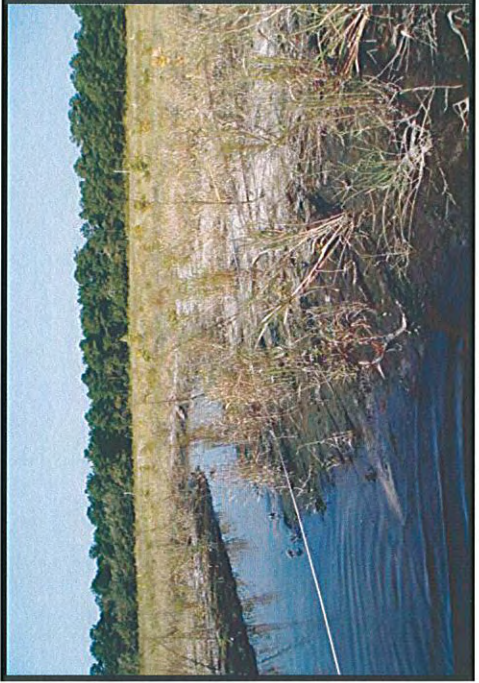


Looking at right bank.

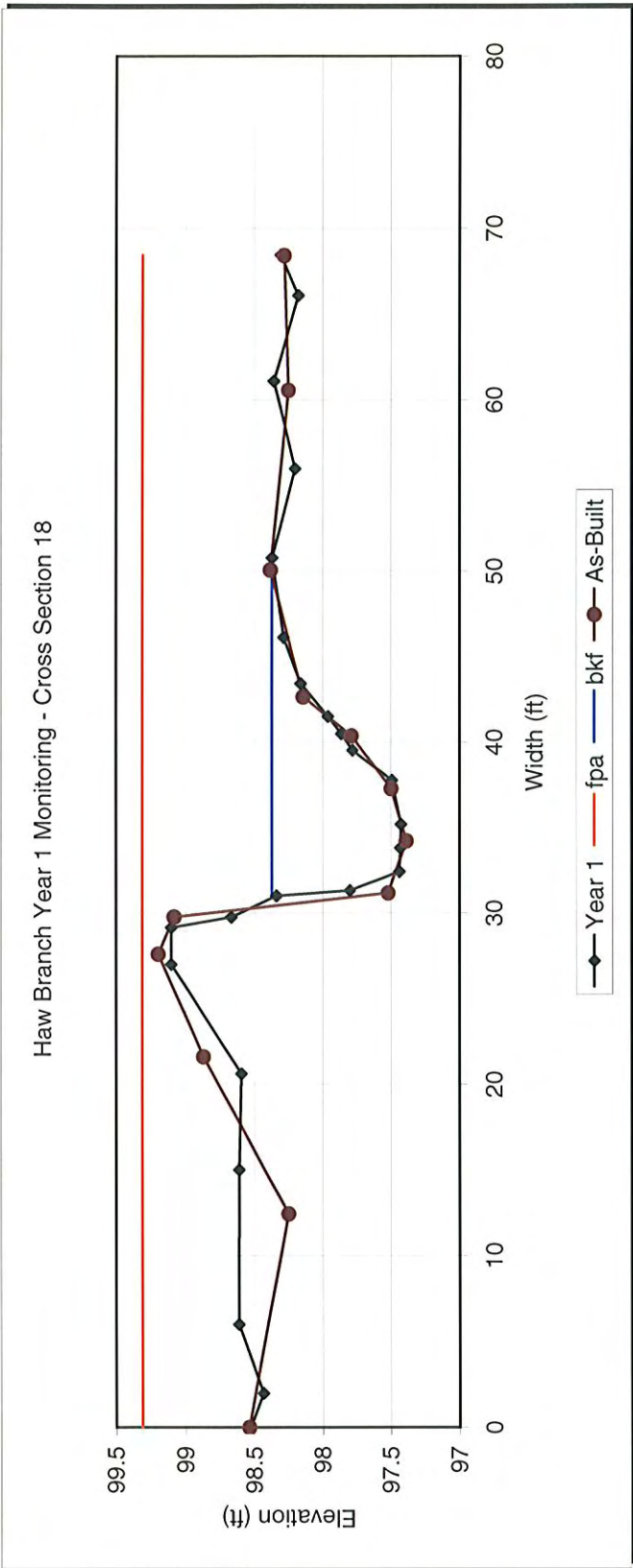




Looking at left bank.



Looking at right bank.

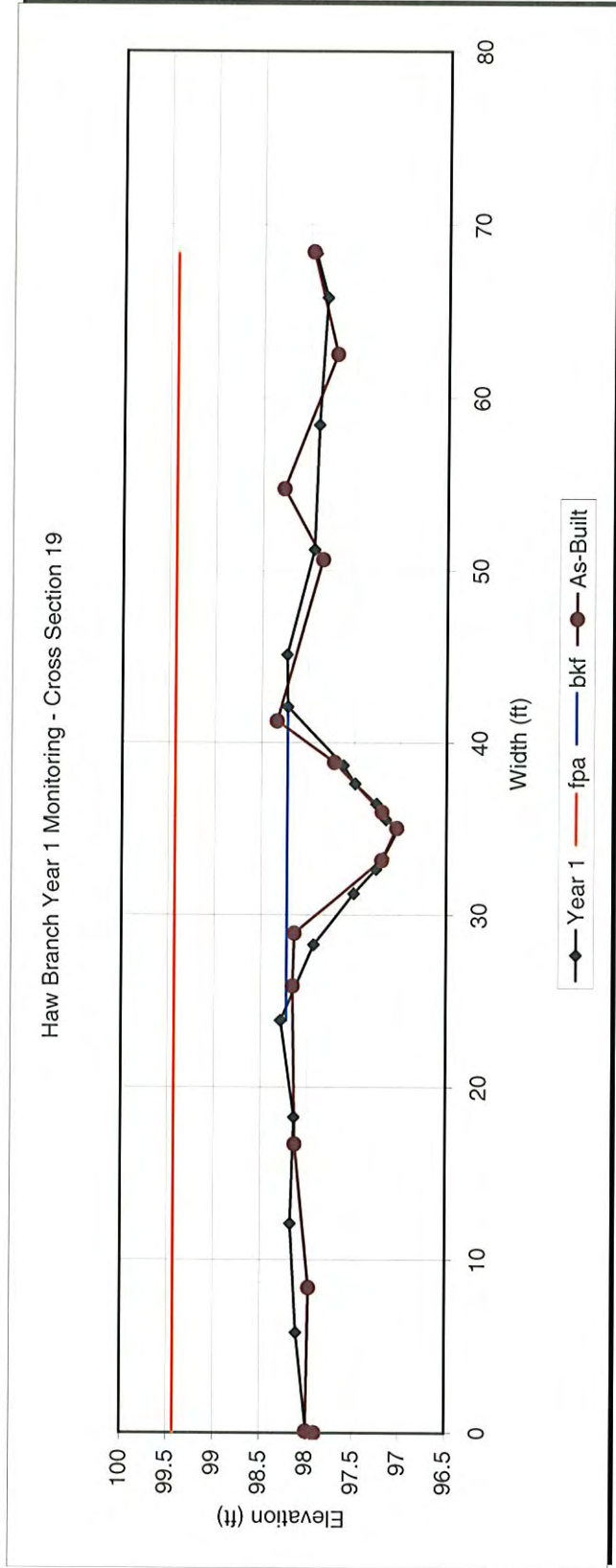


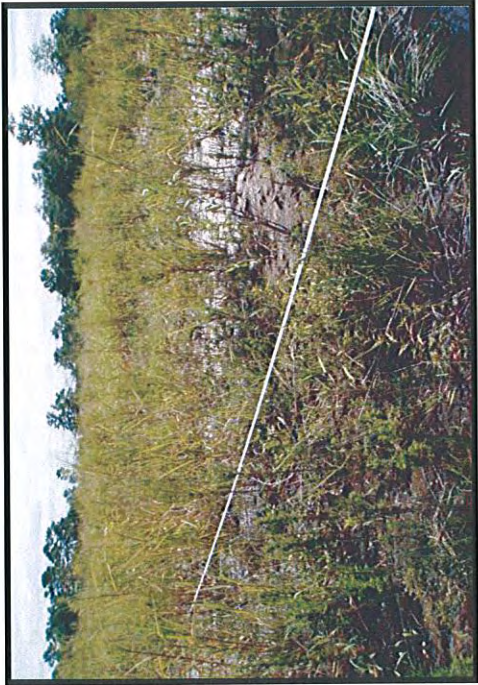


Looking at left bank.

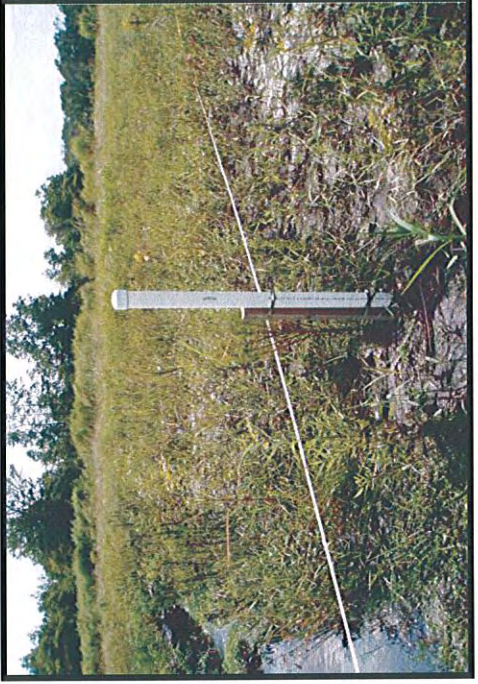


Looking at right bank.

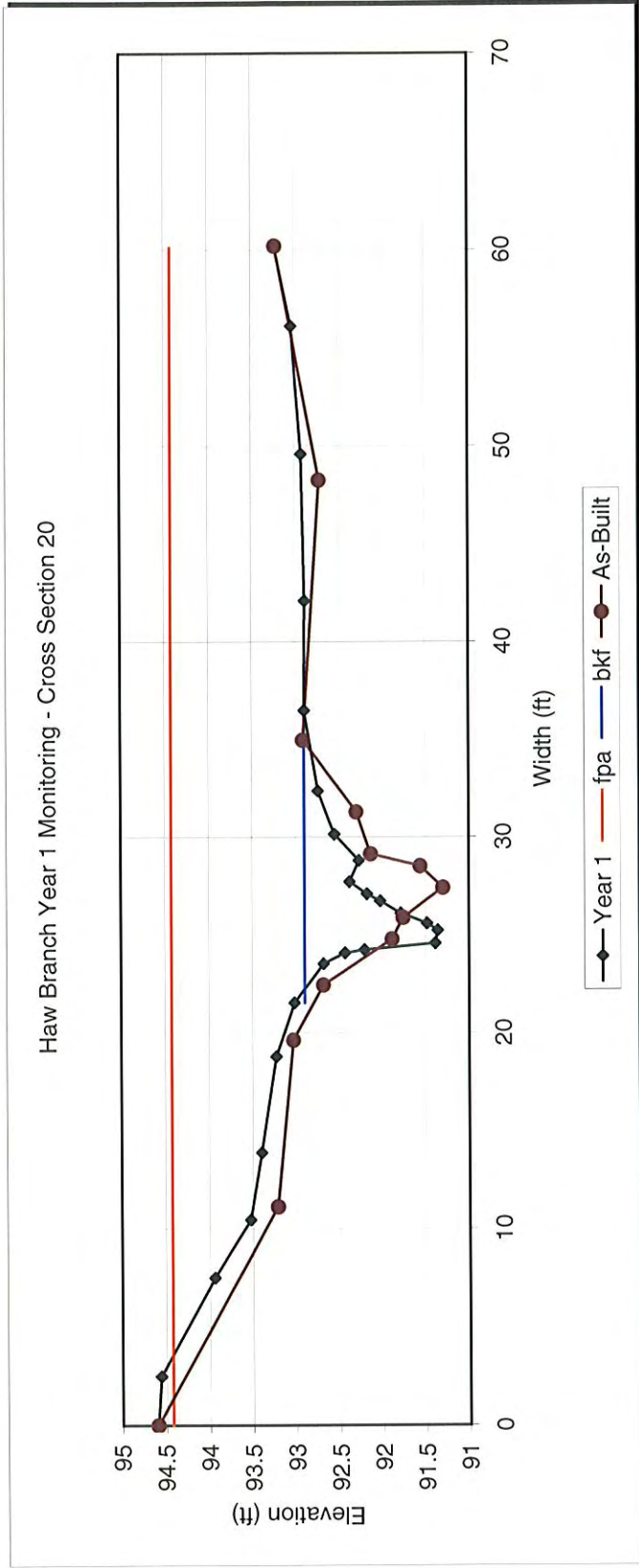




Looking at left bank.



Looking at right bank.



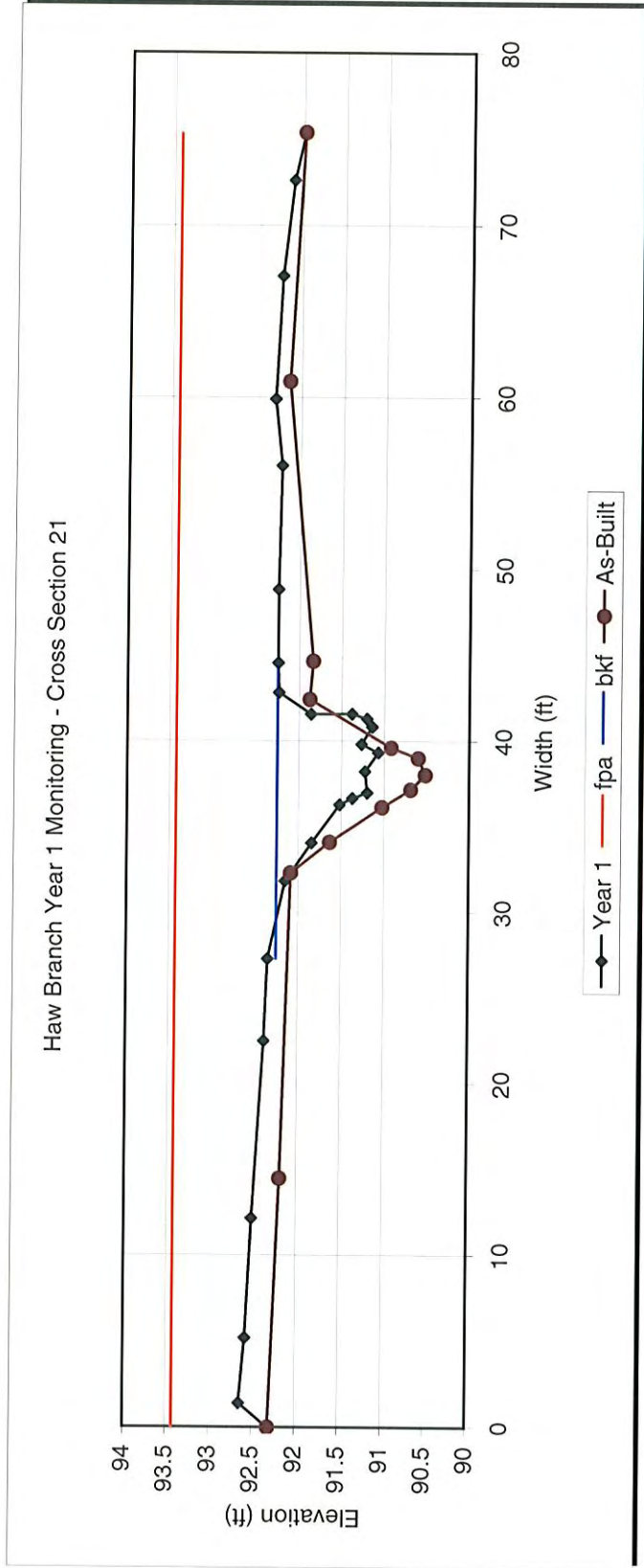




Looking at left bank.



Looking at right bank.



**APPENDIX C**

**2006 Gauge Data**

Haw Branch 2006 Monitoring Data

Date	Time	Water Level (inches)					
		AW1	MW2	AW3	MW4	AW5	MW6
01-Jan-2006	08:00:00	4.23		2.4		-12.76	
01-Jan-2006	20:00:00	4.02		2.29		-14.07	
02-Jan-2006	08:00:00	4.04		2.35		-14.81	
02-Jan-2006	20:00:00	5.12		4.81		-6.48	
03-Jan-2006	08:00:00	5.45		4.9		-0.99	
03-Jan-2006	20:00:00	5.24		4.37		-3.35	
04-Jan-2006	08:00:00	4.98		3.88		-6.09	
04-Jan-2006	20:00:00	4.87		3.94		-8.67	
05-Jan-2006	08:00:00	4.71		3.67		-10.4	
05-Jan-2006	20:00:00	4.59		3.7		-11.67	
06-Jan-2006	08:00:00	4.19		2.88		-13.21	
06-Jan-2006	20:00:00	3.95		2.22		-14.75	
07-Jan-2006	08:00:00	3.53		1.64		-15.97	
07-Jan-2006	20:00:00	3.44		1.61		-16.51	
08-Jan-2006	08:00:00	3.3		1.25		-17.38	
08-Jan-2006	20:00:00	2.9		1.15		-17.6	
09-Jan-2006	08:00:00	3.16		1.27		-17.79	
09-Jan-2006	20:00:00	2.79		1.02		-18.23	
10-Jan-2006	08:00:00	2.84		1.06		-18.34	
10-Jan-2006	20:00:00	2.75		1.27		-18.55	
11-Jan-2006	08:00:00	2.89		1.47		-18.45	
11-Jan-2006	20:00:00	2.8		1.51		-18.6	
12-Jan-2006	08:00:00	2.71		1.28		-18.65	
12-Jan-2006	20:00:00	2.54		1.25		-18.93	
13-Jan-2006	08:00:00	2.73		1.38		-18.86	
13-Jan-2006	20:00:00	2.88		2.07		-18.65	
14-Jan-2006	08:00:00	4.17		3.8		-6.48	
14-Jan-2006	20:00:00	3.7		2.75		-10.01	
15-Jan-2006	08:00:00	2.52		1.1		-13.17	
15-Jan-2006	20:00:00	2.47		0.88		-14.83	
16-Jan-2006	08:00:00	2.58		0.91		-15.79	
16-Jan-2006	20:00:00	2.38		0.83		-16.66	
17-Jan-2006	08:00:00	3.09		1.59		-16.4	
17-Jan-2006	20:00:00	2.77		1.7		-17.03	
18-Jan-2006	08:00:00	4.33		3.24		-14.49	
18-Jan-2006	20:00:00	2.79		1.73		-13.81	
19-Jan-2006	08:00:00	2.62		1.19		-15.32	
19-Jan-2006	20:00:00	2.16		1		-16.41	
20-Jan-2006	08:00:00	2.26		0.69		-17.19	
20-Jan-2006	20:00:00	2.27		0.92		-17.74	
21-Jan-2006	08:00:00	2.3		0.78		-18.06	
21-Jan-2006	20:00:00	4.68		2.94		-14.02	
22-Jan-2006	08:00:00	3.92		3.1		-8.8	
22-Jan-2006	20:00:00	3.88		2.81		-11.46	
23-Jan-2006	08:00:00	4.21		2.96		-12.2	
23-Jan-2006	20:00:00	5.3		4.24		-10.53	
24-Jan-2006	08:00:00	5.1		4.9		-1.76	
24-Jan-2006	20:00:00	5.02		4.56		-3.17	
25-Jan-2006	08:00:00	4.61		3.81		-6.28	
25-Jan-2006	20:00:00	3.88		2.52		-10.39	
26-Jan-2006	08:00:00	3.39		1.75		-12.95	
26-Jan-2006	20:00:00	3.09		1.13		-14.41	
27-Jan-2006	08:00:00	1.91		0.21		-16.34	
27-Jan-2006	20:00:00	3.01		1.3		-16.25	
28-Jan-2006	08:00:00	2.27		0.69		-17.57	
28-Jan-2006	20:00:00	2.75		1.28		-17.47	
29-Jan-2006	08:00:00	3.27		1.67		-17.61	
29-Jan-2006	20:00:00	3.23		2.28		-17.24	
30-Jan-2006	08:00:00	3.15		2.05		-17.43	
30-Jan-2006	20:00:00	4.2		3.04		-16.99	
31-Jan-2006	08:00:00	4.62		4.17		-11.32	

Haw Branch 2006 Monitoring Data

Date	Time	Water Level (inches)					
		AW1	MW2	AW3	MW4	AW5	MW6
31-Jan-2006	20:00:00	4		3.35		-9.54	
01-Feb-2006	08:00:00	3.81		2.69		-11.66	
01-Feb-2006	20:00:00	3.58		2.5		-13.18	
02-Feb-2006	08:00:00	3.42		2.14		-14.31	
02-Feb-2006	20:00:00	3.6		2.6		-15.13	
03-Feb-2006	08:00:00	3.83		3.01		-14.52	
03-Feb-2006	20:00:00	3.39		2.49		-15.67	
04-Feb-2006	08:00:00	4.2		3.15		-15.55	
04-Feb-2006	20:00:00	3.18		2.75		-15.48	
05-Feb-2006	08:00:00	2.18		1.15		-16.88	
05-Feb-2006	20:00:00	1.4		0.05		-18.27	
06-Feb-2006	08:00:00	1.61		-0.07		-18.95	
06-Feb-2006	20:00:00	1.45		-0.1		-19.34	
07-Feb-2006	08:00:00	3.77		2.78		-16.9	
07-Feb-2006	20:00:00	2.74		1.77		-16.02	
08-Feb-2006	08:00:00	2.03		0.83		-17.36	
08-Feb-2006	20:00:00	2.07		1		-17.81	
09-Feb-2006	08:00:00	1.9		0.48		-18.67	
09-Feb-2006	20:00:00	1.24		-0.1		-19.26	
10-Feb-2006	08:00:00	-0.53		-1.27		-20.21	
10-Feb-2006	20:00:00	0.71		-0.19		-19.75	
11-Feb-2006	08:00:00	2.34		0.94		-19.42	
11-Feb-2006	20:00:00	3.67		3.06		-16.44	
12-Feb-2006	08:00:00	2.9		1.84		-15.79	
12-Feb-2006	20:00:00	2.03		0.69		-17.06	
13-Feb-2006	08:00:00	1.07		-0.37		-18.51	
13-Feb-2006	20:00:00	1.36		-0.14		-18.84	
14-Feb-2006	08:00:00	0.37		-1.08		-19.82	
14-Feb-2006	20:00:00	0.63		-0.61		-19.84	
15-Feb-2006	08:00:00	0.65		-0.8		-20.03	
15-Feb-2006	20:00:00	-0.32		-1.31		-20.47	
16-Feb-2006	08:00:00	0.26		-1.15		-20.67	
16-Feb-2006	20:00:00	-0.26		-1.28		-20.83	
17-Feb-2006	08:00:00	0.45		-0.78		-20.81	
17-Feb-2006	20:00:00	-0.98		-1.78		-21.11	
18-Feb-2006	08:00:00	-1.53		-2.22		-21.41	
18-Feb-2006	20:00:00	-1.93		-2.68		-21.67	
19-Feb-2006	08:00:00	-4.16		-4.19		-21.82	
19-Feb-2006	20:00:00	-4.12		-3.95		-22.1	
20-Feb-2006	08:00:00	-1.77		-2.64		-22.18	
20-Feb-2006	20:00:00	-3.46		-2.61		-21.86	
21-Feb-2006	08:00:00	-2.27		-2.12		-21.68	
21-Feb-2006	20:00:00	-3.78		-2.79		-21.57	
22-Feb-2006	08:00:00	-3.43		-2.75		-21.6	
22-Feb-2006	20:00:00	1.05		0.34		-20.09	
23-Feb-2006	08:00:00	4.33		3.85		-6.24	
23-Feb-2006	20:00:00	4.14		3.08		-7.16	
24-Feb-2006	08:00:00	3.72		2.24		-10.11	
24-Feb-2006	20:00:00	3.07		1.44		-12.65	
25-Feb-2006	08:00:00	3.01		1.16		-13.98	
25-Feb-2006	20:00:00	4.19		2.21		-14.26	
26-Feb-2006	08:00:00	3.78		2.86		-11.13	
26-Feb-2006	20:00:00	2.94		1.46		-13.73	
27-Feb-2006	08:00:00	2.14		0.25		-15.84	
27-Feb-2006	20:00:00	2.29		0.75		-16.01	
28-Feb-2006	08:00:00	2.49		0.54		-16.63	
28-Feb-2006	20:00:00	1.83		0.06		-17.4	
01-Mar-2006	08:00:00	2.12		-0.05		-18.02	
01-Mar-2006	20:00:00	1.57		-0.5		-18.66	
02-Mar-2006	08:00:00	1.86		-0.07		-18.97	
02-Mar-2006	20:00:00	0.31		-1.67		-19.59	

Haw Branch 2006 Monitoring Data

Date	Time	Water Level (inches)					
		AW1	MW2	AW3	MW4	AW5	MW6
03-Mar-2006	08:00:00	-0.39		-2.68		-20.47	
03-Mar-2006	20:00:00	-0.95		-3.19		-21.03	
04-Mar-2006	08:00:00	-1.44		-4.11		-21.62	
04-Mar-2006	20:00:00	-2.38		-4.82		-21.97	
05-Mar-2006	08:00:00	-2.35		-5.11		-22.44	
05-Mar-2006	20:00:00	-3.65		-5.48		-22.51	
06-Mar-2006	08:00:00	-2.88		-4.25		-22.48	
06-Mar-2006	20:00:00	-1.13		-2.02		-21.73	
07-Mar-2006	08:00:00	-1.42		-2.29		-21.36	
07-Mar-2006	20:00:00	-4.68		-5.42		-21.69	
08-Mar-2006	08:00:00	-4.73		-5.92		-22.41	
08-Mar-2006	20:00:00	-6.93		-6.59		-22.71	
09-Mar-2006	08:00:00	-6.35		-5.96		-22.94	
09-Mar-2006	20:00:00	-8.83		-7.37		-23.14	
10-Mar-2006	08:00:00	-8.08		-6.03		-23.35	
10-Mar-2006	20:00:00	-9.5		-7.03		-23.6	
11-Mar-2006	08:00:00	-9.42		-6.91		-23.91	
11-Mar-2006	20:00:00	-10.73		-8.02		-24.06	
12-Mar-2006	08:00:00	-9.81		-6.89		-24.29	
12-Mar-2006	20:00:00	-12.14		-8.88		-24.41	
13-Mar-2006	08:00:00	-11.27		-7.62		-24.73	
13-Mar-2006	20:00:00	-13.81		-9.78		-24.76	
14-Mar-2006	08:00:00	-13.57		-9		-24.96	
14-Mar-2006	20:00:00	-9.1		-5.67		-23.72	
15-Mar-2006	08:00:00	-11.29		-8.54		-23.46	
15-Mar-2006	20:00:00	-14.62		-11.16		-23.54	
16-Mar-2006	08:00:00	-14.95		-11.17		-24.1	
16-Mar-2006	20:00:00	-16.03		-11.74		-24.38	
17-Mar-2006	08:00:00	-15.99		-11.1		-24.84	
17-Mar-2006	20:00:00	-17.5		-13.06		-25.29	
18-Mar-2006	08:00:00	-17.86		-13.36		-25.76	
18-Mar-2006	20:00:00	-19.08		-14.02		-26.09	
19-Mar-2006	08:00:00	-19.46		-14.55		-26.56	
19-Mar-2006	20:00:00	-20.37		-14.63		-26.86	
20-Mar-2006	08:00:00	-20.6		-14.65		-27.25	
20-Mar-2006	20:00:00	-20.77		-13.97		-27.51	
21-Mar-2006	08:00:00	-9.82		-1.64		-25.82	
21-Mar-2006	20:00:00	-6.07		-1.22		-23.02	
22-Mar-2006	08:00:00	-6.72		-2.42		-21.37	
22-Mar-2006	20:00:00	-9.53		-3.84		-20.76	
23-Mar-2006	08:00:00	-9.95		-5.07		-20.92	
23-Mar-2006	20:00:00	-10.9		-5.46		-20.93	
24-Mar-2006	08:00:00	-2.79		-0.43		-20.42	
24-Mar-2006	20:00:00	-3.55		-1.5		-19.15	
25-Mar-2006	08:00:00	-4.15		-2.28		-19.07	
25-Mar-2006	20:00:00	-4.93		-2.38		-19.16	
26-Mar-2006	08:00:00	-5.7		-3.46		-19.58	
26-Mar-2006	20:00:00	-8.5		-5.04		-20	
27-Mar-2006	08:00:00	-9.12		-6.11		-20.63	
27-Mar-2006	20:00:00	-11.42		-7.26		-20.99	
28-Mar-2006	08:00:00	-11.63		-8.2		-21.52	
28-Mar-2006	20:00:00	-13.02		-8.98		-21.75	
29-Mar-2006	08:00:00	-12.97		-9.36		-22.21	
29-Mar-2006	20:00:00	-14.75		-10.89		-22.6	
30-Mar-2006	08:00:00	-14.92		-11.41		-23.15	
30-Mar-2006	20:00:00	-16.37		-12.06		-23.5	
31-Mar-2006	08:00:00	-16.49		-12.33		-24.03	
31-Mar-2006	20:00:00	-17.74		-12.89		-24.35	
01-Apr-2006	08:00:00	-17.37		-12.06		-24.81	
01-Apr-2006	20:00:00	-18.25		-12.89		-25.08	
02-Apr-2006	08:00:00	-18.44		-13.45		-25.62	

Haw Branch 2006 Monitoring Data

Date	Time	Water Level (inches)					
		AW1	MW2	AW3	MW4	AW5	MW6
02-Apr-2006	20:00:00	-19.9		-14.3		-25.99	
03-Apr-2006	08:00:00	-19.92		-14.04		-26.46	
03-Apr-2006	20:00:00	-20.83		-14.73		-26.79	
04-Apr-2006	08:00:00	-21.7		-16.38		-27.37	
04-Apr-2006	20:00:00	-22.82		-16.95		-27.74	
05-Apr-2006	08:00:00	-23.27		-17.14		-28.13	
05-Apr-2006	20:00:00	-24.04		-17.86		-28.49	
06-Apr-2006	08:00:00	-24.66		-18.35		-28.92	
06-Apr-2006	20:00:00	-25.18		-18.51		-29.23	
07-Apr-2006	08:00:00	-25.72		-18.49		-29.5	
07-Apr-2006	20:00:00	-26.17		-19.07		-29.79	
08-Apr-2006	08:00:00	-26.69		-19.2		-30.07	
08-Apr-2006	20:00:00	-10.3		-0.21		-8.9	
09-Apr-2006	08:00:00	-2.83		0.36		-9.84	
09-Apr-2006	20:00:00	-2.63		-1.06		-13.08	
10-Apr-2006	08:00:00	-1.93		-1.57		-14.81	
10-Apr-2006	20:00:00	-3.04		-2.29		-16.31	
11-Apr-2006	08:00:00	-2.61		-2.9		-17.61	
11-Apr-2006	20:00:00	-4.78		-4.47		-18.56	
12-Apr-2006	08:00:00	-4.4		-4.39		-19.54	
12-Apr-2006	20:00:00	-6.99		-5.63		-20.12	
13-Apr-2006	08:00:00	-6.61		-5.16		-20.74	
13-Apr-2006	20:00:00	-9.8		-6.87		-21.05	
14-Apr-2006	08:00:00	-9.94		-6.55		-21.49	
14-Apr-2006	20:00:00	-12.53		-8.16		-21.78	
15-Apr-2006	08:00:00	-13.22		-8.31		-22.31	
15-Apr-2006	20:00:00	-15.55		-10.61		-22.85	
16-Apr-2006	08:00:00	-16.17		-10.92		-23.54	
16-Apr-2006	20:00:00	-17.7		-12.23		-24.02	
17-Apr-2006	08:00:00	-18.19		-12.23		-24.6	
17-Apr-2006	20:00:00	-15		-7.45		-25.18	
18-Apr-2006	08:00:00	-15.45		-8.93		-25.35	
18-Apr-2006	20:00:00	-17.08		-11.22		-25.44	
19-Apr-2006	08:00:00	-17.72		-12.04		-25.75	
19-Apr-2006	20:00:00	-19.19		-13.38		-26.06	
20-Apr-2006	08:00:00	-19.74		-14.01		-26.55	
20-Apr-2006	20:00:00	-20.85		-14.92		-27.01	
21-Apr-2006	08:00:00	-21.51	-20.5	-15.49	-14	-27.51	-18.5
21-Apr-2006	20:00:00	-22.57		-16.39		-27.93	
22-Apr-2006	08:00:00	-23.13		-16.38		-28.35	
22-Apr-2006	20:00:00	-19.39		-8.99		-28.25	
23-Apr-2006	08:00:00	-15.31		-5.56		-26.48	
23-Apr-2006	20:00:00	-16.27		-8.49		-25.65	
24-Apr-2006	08:00:00	-16.93		-10.09		-25.56	
24-Apr-2006	20:00:00	-17.91		-11.26		-25.64	
25-Apr-2006	08:00:00	-18.53		-12.23		-26.02	
25-Apr-2006	20:00:00	-19.66		-13.11		-26.24	
26-Apr-2006	08:00:00	-20.61		-14.82		-26.97	
26-Apr-2006	20:00:00	-21.4		-15.1		-27.37	
27-Apr-2006	08:00:00	-6.42		-0.14		-16.72	
27-Apr-2006	20:00:00	1.33		2.41		-6.77	
28-Apr-2006	08:00:00	1.09		1.91		-9.57	
28-Apr-2006	20:00:00	-1.28		1.11		-13.08	
29-Apr-2006	08:00:00	-1.22		0.2		-15.05	
29-Apr-2006	20:00:00	-3.65		-1.33		-16.87	
30-Apr-2006	08:00:00	-3.31		-1.55		-18.27	
30-Apr-2006	20:00:00	-6.97		-3.77		-19.36	
01-May-2006	08:00:00	-7.34		-4.19		-20.39	
01-May-2006	20:00:00	-9.95		-5.17		-21.07	
02-May-2006	08:00:00	-10.4		-4.97		-21.67	
02-May-2006	20:00:00	-12.54		-6.03		-22.09	

Haw Branch 2006 Monitoring Data

Date	Time	Water Level (inches)					
		AW1	MW2	AW3	MW4	AW5	MW6
03-May-2006	08:00:00	-12.8		-5.89		-22.65	
03-May-2006	20:00:00	-15.08		-8.58		-23.16	
04-May-2006	08:00:00	-15.52		-8.36		-23.8	
04-May-2006	20:00:00	-16.99		-9.66		-24.3	
05-May-2006	08:00:00	-17.45		-9.73		-24.87	
05-May-2006	20:00:00	-16.82		-7.82		-25.31	
06-May-2006	08:00:00	-11.47		-3.08		-24.88	
06-May-2006	20:00:00	-13.64		-5.74		-24.52	
07-May-2006	08:00:00	-14.38		-7.05		-24.89	
07-May-2006	20:00:00	-12.89		-3.96		-25.17	
08-May-2006	08:00:00	2.25		2.39		-5.11	
08-May-2006	20:00:00	2.08		2.3		-9.58	
09-May-2006	08:00:00	1.92		1.91		-11.65	
09-May-2006	20:00:00	1.1		1.6		-13.59	
10-May-2006	08:00:00	1.39		1.18		-15	
10-May-2006	20:00:00	-0.02		0.7		-16.27	
11-May-2006	08:00:00	0.97		0.86		-17.23	
11-May-2006	20:00:00	-0.97		-0.6		-18.13	
12-May-2006	08:00:00	-0.9		-1.04		-19.16	
12-May-2006	20:00:00	-3.51		-3.28		-19.94	
13-May-2006	08:00:00	-3.07		-3.39		-20.88	
13-May-2006	20:00:00	-6.06		-4.99		-21.47	
14-May-2006	08:00:00	-6.08		-4.8		-22.13	
14-May-2006	20:00:00	-6.94		-4.65		-22.6	
15-May-2006	08:00:00	-8		-4.97		-23.06	
15-May-2006	20:00:00	-8.41		-4.89		-23.32	
16-May-2006	08:00:00	-4.93		-2.78		-23.11	
16-May-2006	20:00:00	-9.61		-5.18		-22.75	
17-May-2006	08:00:00	-9.94		-5.66		-23.1	
17-May-2006	20:00:00	-12.93		-7.84		-23.43	
18-May-2006	08:00:00	-13.53	-12	-8.35	-7.5	-23.95	-13.5
18-May-2006	20:00:00	-16.33		-11.14		-24.32	
19-May-2006	08:00:00	-10.42		-4.85		-23.84	
19-May-2006	20:00:00	-14.76		-8.99		-24.1	
20-May-2006	08:00:00	-14.84		-9.37		-24.74	
20-May-2006	20:00:00	-17.16		-11.54		-25.1	
21-May-2006	08:00:00	-17.26		-11.08		-25.59	
21-May-2006	20:00:00	-19.14		-13.4		-26	
22-May-2006	08:00:00	-19.89		-14.59		-26.65	
22-May-2006	20:00:00	-21.21		-15.61		-27.19	
23-May-2006	08:00:00	-21.8		-16.25		-27.79	
23-May-2006	20:00:00	-22.99		-17.23		-28.28	
24-May-2006	08:00:00	-23.74		-18.01		-28.78	
24-May-2006	20:00:00	-24.49		-18.45		-29.17	
25-May-2006	08:00:00	-25.25		-18.94		-29.6	
25-May-2006	20:00:00	-25.9		-19.47		-30	
26-May-2006	08:00:00	-26.57		-19.86		-30.36	
26-May-2006	20:00:00	-25.3		-17.9		-29.57	
27-May-2006	08:00:00	-15.48		-2.18		-20.68	
27-May-2006	20:00:00	-16.21		-4.47		-21.45	
28-May-2006	08:00:00	-17.01		-6.96		-22.18	
28-May-2006	20:00:00	-18.66		-11.26		-22.88	
29-May-2006	08:00:00	-19.61		-12.83		-23.72	
29-May-2006	20:00:00	-21.08		-14.83		-24.39	
30-May-2006	08:00:00	-22.08		-15.83		-25.21	
30-May-2006	20:00:00	-23.3		-16.99		-25.95	
31-May-2006	08:00:00	-24.35		-18.21		-26.77	
31-May-2006	20:00:00	-24.94		-18.52		-27.45	
01-Jun-2006	08:00:00	-25.73		-19.39		-28.08	
01-Jun-2006	20:00:00	-26.5		-20.04		-28.56	
02-Jun-2006	08:00:00	-27.37		-20.94		-29.13	

Haw Branch 2006 Monitoring Data

Date	Time	Water Level (inches)					
		AW1	MW2	AW3	MW4	AW5	MW6
02-Jun-2006	20:00:00	-27.94		-21.53		-29.55	
03-Jun-2006	08:00:00	-28.67		-22.14		-30.09	
03-Jun-2006	20:00:00	-25.43		-17.37		-28.47	
04-Jun-2006	08:00:00	-24.65		-16.84		-28.73	
04-Jun-2006	20:00:00	-24.92		-17.94		-28.78	
05-Jun-2006	08:00:00	-25.44		-18.04		-29.27	
05-Jun-2006	20:00:00	-25.38		-18.64		-29.57	
06-Jun-2006	08:00:00	-22.16		-14.3		-25.91	
06-Jun-2006	20:00:00	-22.34		-15.28		-25.95	
07-Jun-2006	08:00:00	-22.27		-15.29		-26.2	
07-Jun-2006	20:00:00	-23		-16.8		-26.42	
08-Jun-2006	08:00:00	-24.09		-18.58		-27.01	
08-Jun-2006	20:00:00	-24.96		-19.27		-27.6	
09-Jun-2006	08:00:00	-24.72		-18.55		-28.11	
09-Jun-2006	20:00:00	-25.16		-19.57		-28.45	
10-Jun-2006	08:00:00	-26.06		-20.9		-28.93	
10-Jun-2006	20:00:00	-26.83		-21.69		-29.43	
11-Jun-2006	08:00:00	-27.85		-22.74		-30.03	
11-Jun-2006	20:00:00	-28.63		-23.43		-30.61	
12-Jun-2006	08:00:00	-27.2		-19.7		-30.76	
12-Jun-2006	20:00:00	-25.17		-16.62		-29.96	
13-Jun-2006	08:00:00	-23.34		-15.5		-28.79	
13-Jun-2006	20:00:00	-22.69		-15.38		-27.98	
14-Jun-2006	08:00:00	-21.31		-12.06		-27.06	
14-Jun-2006	20:00:00	-13		-3		-17.68	
15-Jun-2006	08:00:00	-12.82		-4.72		-17.92	
15-Jun-2006	20:00:00	-14.43		-7.96		-19.03	
16-Jun-2006	08:00:00	-15.2		-9		-20.27	
16-Jun-2006	20:00:00	-16.78		-11.8		-21.2	
17-Jun-2006	08:00:00	-17.69		-12.96		-22.25	
17-Jun-2006	20:00:00	-18.96		-14.42		-23.05	
18-Jun-2006	08:00:00	-19.91		-15.31		-23.96	
18-Jun-2006	20:00:00	-20.98		-16.5		-24.7	
19-Jun-2006	08:00:00	-21.85		-17.44		-25.46	
19-Jun-2006	20:00:00	-22.93		-18.64		-26.15	
20-Jun-2006	08:00:00	-23.95		-19.67		-26.89	
20-Jun-2006	20:00:00	-24.99		-20.86		-27.58	
21-Jun-2006	08:00:00	-26.02		-22.05		-28.31	
21-Jun-2006	20:00:00	-25.04		-19.71		-28.97	
22-Jun-2006	08:00:00	-25.21		-19.56		-29.5	
22-Jun-2006	20:00:00	-25.82		-20.09		-29.91	
23-Jun-2006	08:00:00	-26.87	-24.5	-21.72		-30.4	-23.5
23-Jun-2006	20:00:00	-27.68		-22.77		-30.9	
24-Jun-2006	08:00:00	-28.7		-23.87		-31.37	
24-Jun-2006	20:00:00	-29.34		-24.44		-31.84	
25-Jun-2006	08:00:00	-30.08		-25.02		-32.31	
25-Jun-2006	20:00:00	-9.49		-0.67		-7.92	
26-Jun-2006	08:00:00	-4.16		-0.82		-9.23	
26-Jun-2006	20:00:00	-2.41		-0.34		-10.28	
27-Jun-2006	08:00:00	0.86		1.08		-5.17	
27-Jun-2006	20:00:00	1.99		1.95		-5.32	
28-Jun-2006	08:00:00	1.7		1.43		-10.17	
28-Jun-2006	20:00:00	2.28		2.44		-8.32	
29-Jun-2006	08:00:00	2		1.95		-12.17	
29-Jun-2006	20:00:00	0.13		0.36		-14.98	
30-Jun-2006	08:00:00	0.43		0.01		-16.44	
30-Jun-2006	20:00:00	4.47		2.78		-14.05	
01-Jul-2006	08:00:00	4.1		3.38		-6.27	
01-Jul-2006	20:00:00	3.04		2.44		-11.83	
02-Jul-2006	08:00:00	2.77		2.06		-13.82	
02-Jul-2006	20:00:00	0.64		0.15		-16.68	



Haw Branch 2006 Monitoring Data

		Water Level (inches)					
Date	Time	AW1	MW2	AW3	MW4	AW5	MW6
03-Jul-2006	08:00:00	0.93		0.09		-17.94	
03-Jul-2006	20:00:00	-0.36		-2.18		-19.4	
04-Jul-2006	08:00:00	4.74		4.82		0.61	
04-Jul-2006	20:00:00	4.68		3.94		-2.14	
05-Jul-2006	08:00:00	4.48		3.44		-6.23	
05-Jul-2006	20:00:00	3.46		1.45		-12.05	
06-Jul-2006	08:00:00	3.22		1.71		-13.68	
06-Jul-2006	20:00:00	5.8		5.99		0.94	
07-Jul-2006	08:00:00	5.4		4.63		0.21	
07-Jul-2006	20:00:00	5.03		4.02		-3.2	
08-Jul-2006	08:00:00	4.71		3.45		-6.88	
08-Jul-2006	20:00:00	3.31		2.17		-12.5	
09-Jul-2006	08:00:00	3.22		1.87		-14.34	
09-Jul-2006	20:00:00	1.72		0.84		-16.74	
10-Jul-2006	08:00:00	2		0.76		-17.79	
10-Jul-2006	20:00:00	-0.22		-1.02		-19.63	
11-Jul-2006	08:00:00	0.5		-0.94		-20.51	
11-Jul-2006	20:00:00	-2.04		-3.35		-21.51	
12-Jul-2006	08:00:00	-1.15		-3.04		-22.29	
12-Jul-2006	20:00:00	-4.08		-5.44		-22.87	
13-Jul-2006	08:00:00	-3.34		-4.98		-23.51	
13-Jul-2006	20:00:00	-6.84		-7.35		-23.95	
14-Jul-2006	08:00:00	-6.99		-7		-24.62	
14-Jul-2006	20:00:00	-10.69		-9.1		-25.11	
15-Jul-2006	08:00:00	-11.72		-8.72		-25.73	
15-Jul-2006	20:00:00	-13.73		-10.26		-26.25	
16-Jul-2006	08:00:00	-14.48		-10.01		-26.86	
16-Jul-2006	20:00:00	-16.58		-12.36		-27.44	
17-Jul-2006	08:00:00	-17.21		-12.46		-28.1	
17-Jul-2006	20:00:00	-18.96		-14.12		-28.68	
18-Jul-2006	08:00:00	-19.57	-21	-14.47	-13	-29.3	-24
18-Jul-2006	20:00:00	-20.94		-16.01		-29.93	
19-Jul-2006	08:00:00	-21.7		-16.64		-30.58	
19-Jul-2006	20:00:00	-22.89		-17.95		-31.29	
20-Jul-2006	08:00:00	-23.73		-18.69		-31.96	
20-Jul-2006	20:00:00	-4.39		-0.05		-5.03	
21-Jul-2006	08:00:00	-1.38		-0.11		-11.59	
21-Jul-2006	20:00:00	-2.46		-1.72		-15.32	
22-Jul-2006	08:00:00	-2.18		-2.2		-17.18	
22-Jul-2006	20:00:00	-4.88		-5.19		-19.29	
23-Jul-2006	08:00:00	-4.59		-4.96		-20.45	
23-Jul-2006	20:00:00	3.36		1.32		-10.04	
24-Jul-2006	08:00:00	2.06		1.4		-8.68	
24-Jul-2006	20:00:00	0.78		0.58		-13.38	
25-Jul-2006	08:00:00	1.13		0.55		-14.95	
25-Jul-2006	20:00:00	1		0.62		-16.9	
26-Jul-2006	08:00:00	2.37		1.58		-14.48	
26-Jul-2006	20:00:00	0.31		0.27		-17.42	
27-Jul-2006	08:00:00	0.53		-0.23		-18.47	
27-Jul-2006	20:00:00	2.74		-0.14		-19.77	
28-Jul-2006	08:00:00	1.36		0.62		-18	
28-Jul-2006	20:00:00	-1.32		-1.31		-20.11	
29-Jul-2006	08:00:00	-0.95		-1.58		-20.92	
29-Jul-2006	20:00:00	0.24		-1.96		-21.96	
30-Jul-2006	08:00:00	0.13		-0.94		-21.72	
30-Jul-2006	20:00:00	-1.68		-2.02		-22.07	
31-Jul-2006	08:00:00	-1.81		-2.78		-22.31	
31-Jul-2006	20:00:00	-4.94		-5.51		-23.18	
01-Aug-2006	08:00:00	-4.64		-5.71		-23.7	
01-Aug-2006	20:00:00	-7.95		-7.58		-24.5	
02-Aug-2006	08:00:00	-8.68		-8.04		-25.01	

Haw Branch 2006 Monitoring Data

Date	Time	Water Level (inches)					
		AW1	MW2	AW3	MW4	AW5	MW6
02-Aug-2006	20:00:00	-11.77		-9.71		-25.78	
03-Aug-2006	08:00:00	-12.58		-9.87		-26.31	
03-Aug-2006	20:00:00	-14.88		-11.71		-27.11	
04-Aug-2006	08:00:00	-15.65		-12.18		-27.65	
04-Aug-2006	20:00:00	-17.65		-14.27		-28.51	
05-Aug-2006	08:00:00	-18.51		-15.07		-29.1	
05-Aug-2006	20:00:00	-17.47		-13.34		-29.82	
06-Aug-2006	08:00:00	-17.77		-13.61		-30.27	
06-Aug-2006	20:00:00	-19.62		-16.21		-30.94	
07-Aug-2006	08:00:00	-20.36		-17.31		-31.37	
07-Aug-2006	20:00:00	-21.51		-18.23		-32.11	
08-Aug-2006	08:00:00	-22.17		-18.91		-32.56	
08-Aug-2006	20:00:00	-20.95		-6.36		-30.91	
09-Aug-2006	08:00:00	-4.99		-1.4		-23.13	
09-Aug-2006	20:00:00	-7.12		-3.25		-23.92	
10-Aug-2006	08:00:00	-7.46		-3.97		-23.99	
10-Aug-2006	20:00:00	-7.17		-3.86		-24.6	
11-Aug-2006	08:00:00	-8.49		-5.25		-24.68	
11-Aug-2006	20:00:00	2.48		2.35		-11.28	
12-Aug-2006	08:00:00	1.69		1.75		-14.19	
12-Aug-2006	20:00:00	1.13		1.17		-16.29	
13-Aug-2006	08:00:00	0.86		0.65		-17.55	
13-Aug-2006	20:00:00	-0.41		-0.25		-19.32	
14-Aug-2006	08:00:00	-0.26		-0.69		-20.12	
14-Aug-2006	20:00:00	-2.09		-2.04		-21.37	
15-Aug-2006	08:00:00	-1.79		-2.33		-21.9	
15-Aug-2006	20:00:00	-4.08		-4.56		-22.94	
16-Aug-2006	08:00:00	-4		-4.62		-23.36	
16-Aug-2006	20:00:00	-6.77		-6.45		-24.38	
17-Aug-2006	08:00:00	-7.49		-6.67		-24.8	
17-Aug-2006	20:00:00	-9.59		-7.78		-25.56	
18-Aug-2006	08:00:00	-10.32		-7.55		-25.99	
18-Aug-2006	20:00:00	-0.19		-0.07		-10.07	
19-Aug-2006	08:00:00	-0.9		-0.69		-13.64	
19-Aug-2006	20:00:00	-2.83		-1.93		-16.45	
20-Aug-2006	08:00:00	-2.82		-2.67		-17.87	
20-Aug-2006	20:00:00	-5.66		-4.86		-19.65	
21-Aug-2006	08:00:00	-6.15		-5.61		-20.56	
21-Aug-2006	20:00:00	3.78		3.42		-5.83	
22-Aug-2006	08:00:00	3.88		3.74		-6.66	
22-Aug-2006	20:00:00	6.82		7.06		2.44	
23-Aug-2006	08:00:00	6.04	6.5	5.2	3	1.17	-1.5
23-Aug-2006	20:00:00	5.67		4.96		0.7	
24-Aug-2006	08:00:00	5.32		4.12		-0.49	
24-Aug-2006	20:00:00	4.91		3.7		-4.77	
25-Aug-2006	08:00:00	4.5		2.86		-8.54	
25-Aug-2006	20:00:00	3.57		2.24		-12.53	
26-Aug-2006	08:00:00	3.04		1.75		-14.02	
26-Aug-2006	20:00:00	1.75		0.96		-16.4	
27-Aug-2006	08:00:00	1.8		0.83		-17.32	
27-Aug-2006	20:00:00	0.81		0.04		-18.83	
28-Aug-2006	08:00:00	1.04		0.09		-19.38	
28-Aug-2006	20:00:00	-0.39		-1.45		-20.66	
29-Aug-2006	08:00:00	-0.03		-1.23		-21.02	
29-Aug-2006	20:00:00	-1.94		-4.12		-22.07	
30-Aug-2006	08:00:00	-1.7		-3.53		-22.39	
30-Aug-2006	20:00:00	3.45		3.18		-8.52	
31-Aug-2006	08:00:00	3.58		3.45		-11.08	
31-Aug-2006	20:00:00	7.66		7.75		3.58	
01-Sep-2006	08:00:00	13.14		9.13		9.04	
01-Sep-2006	20:00:00	11.45		8.06		8.73	

### Haw Branch 2006 Monitoring Data

		Water Level (inches)					
Date	Time	AW1	MW2	AW3	MW4	AW5	MW6
02-Sep-2006	08:00:00	8.54		5.43		6.63	
02-Sep-2006	20:00:00	8.3		5		4.36	
03-Sep-2006	08:00:00	4.35		4.4		-1.03	
03-Sep-2006	20:00:00	7.54		4.19		1.94	
04-Sep-2006	08:00:00	4.35		3.75		-3.29	
04-Sep-2006	20:00:00	6.34		3.4		-4.11	
05-Sep-2006	08:00:00	3.4		4.83		-3.28	
05-Sep-2006	20:00:00	7.77		6.21		2.6	
06-Sep-2006	08:00:00	6.54		5.71		1.31	
06-Sep-2006	20:00:00	7.15		5.49		0.75	
07-Sep-2006	08:00:00	4.12		4.6		-0.11	
07-Sep-2006	20:00:00	6.89		4.82		-2.88	
08-Sep-2006	08:00:00	5.19		4.4		-5.62	
08-Sep-2006	20:00:00	6.6		3.69		-10.18	
09-Sep-2006	08:00:00	3.02		2.88		-12.01	
09-Sep-2006	20:00:00	6.04		2.79		-14.16	
10-Sep-2006	08:00:00	2.11		2.39		-15.08	
10-Sep-2006	20:00:00	5.35		1.73		-16.63	
11-Sep-2006	08:00:00	2.23		1.52		-17.22	
11-Sep-2006	20:00:00	3.91		0.3		-18.4	
12-Sep-2006	08:00:00	0.19		0.06		-18.96	
12-Sep-2006	20:00:00	3.01		-0.48		-19.77	
13-Sep-2006	08:00:00	1.23		-0.22		-20.09	
13-Sep-2006	20:00:00	4.14		3.1		-18.22	
14-Sep-2006	08:00:00	4.34		4.37		-11.31	
14-Sep-2006	20:00:00	4.91		4.22		-9.94	
15-Sep-2006	08:00:00	4.54		3.75		-12.22	
15-Sep-2006	20:00:00	5.74		3.03		-14.59	
16-Sep-2006	08:00:00	1.42		2.22		-15.7	
16-Sep-2006	20:00:00	4.3		1.97		-17	
17-Sep-2006	08:00:00	0.68		1.72		-17.66	
17-Sep-2006	20:00:00	3.36		1.25		-18.78	
18-Sep-2006	08:00:00	-0.29		0.85		-19.35	
18-Sep-2006	20:00:00	2.7		0.28		-20.2	
19-Sep-2006	08:00:00	-1.06		0.69		-20.51	
19-Sep-2006	20:00:00	1.87		0.04		-20.92	
20-Sep-2006	08:00:00	4.32		4.41		-2.83	
20-Sep-2006	20:00:00	6.47		3.77		-8.33	
21-Sep-2006	08:00:00	2.46	1.5	2.3	1.5	-11.01	1
21-Sep-2006	20:00:00			2.27		-13.42	
22-Sep-2006	08:00:00			1.83		-14.71	
22-Sep-2006	20:00:00			1.84		-16.07	
23-Sep-2006	08:00:00			1.94		-16.83	
23-Sep-2006	20:00:00			3.11		-15.17	
24-Sep-2006	08:00:00			2.77		-16.3	
24-Sep-2006	20:00:00			1.62		-17.74	
25-Sep-2006	08:00:00			2.58		-17.13	
25-Sep-2006	20:00:00			1.95		-18	
26-Sep-2006	08:00:00			1.06		-18.64	
26-Sep-2006	20:00:00			0.46		-19.45	
27-Sep-2006	08:00:00			-0.05		-20	
27-Sep-2006	20:00:00			-0.56		-20.65	
28-Sep-2006	08:00:00			-0.71		-21.07	
28-Sep-2006	20:00:00			-0.78		-21.37	
29-Sep-2006	08:00:00			-0.51		-21.03	
29-Sep-2006	20:00:00			-2.43		-21.68	
30-Sep-2006	08:00:00			-3.24		-22.14	
30-Sep-2006	20:00:00			-3.63		-22.52	
01-Oct-2006	08:00:00			-4.5		-22.88	
01-Oct-2006	20:00:00			-5.26		-23.25	
02-Oct-2006	08:00:00			-6.16		-23.64	

### Haw Branch 2006 Monitoring Data

Date	Time	Water Level (inches)					
		AW1	MW2	AW3	MW4	AW5	MW6
02-Oct-2006	20:00:00			-7.02		-24.02	
03-Oct-2006	08:00:00			-7.34		-24.41	
03-Oct-2006	20:00:00			-7.69		-24.77	
04-Oct-2006	08:00:00			-7.71		-25.09	
04-Oct-2006	20:00:00			-8.31		-25.42	
05-Oct-2006	08:00:00			-7.85		-25.77	
05-Oct-2006	20:00:00			-8.57		-26.09	
06-Oct-2006	08:00:00			-8.14		-26.39	
06-Oct-2006	20:00:00			-7.42		-26.64	
07-Oct-2006	08:00:00			-8.83		-26.75	
07-Oct-2006	20:00:00			-9.45		-26.95	
08-Oct-2006	08:00:00			-2.17		-24.7	
08-Oct-2006	20:00:00			-1.92		-22.24	
09-Oct-2006	08:00:00			0.6		-20.65	
09-Oct-2006	20:00:00			2.4		-10.82	
10-Oct-2006	08:00:00			1.83		-12.38	
10-Oct-2006	20:00:00			1.31		-14.62	
11-Oct-2006	08:00:00			0.65		-16.03	
11-Oct-2006	20:00:00			0.59		-16.99	
12-Oct-2006	08:00:00			0.14		-17.77	
12-Oct-2006	20:00:00			-0.93		-18.59	
13-Oct-2006	08:00:00			-1.9		-19.33	
13-Oct-2006	20:00:00			-2.33		-19.97	
14-Oct-2006	08:00:00			-3.42		-20.57	
14-Oct-2006	20:00:00			-4.69		-21.04	
15-Oct-2006	08:00:00			-5.67		-21.57	
15-Oct-2006	20:00:00			-6.26		-21.96	
16-Oct-2006	08:00:00			-7.03		-22.4	
16-Oct-2006	20:00:00			-6.73		-22.72	
17-Oct-2006	08:00:00			-5.71		-22.91	
17-Oct-2006	20:00:00			0.32		-21.21	
18-Oct-2006	08:00:00			1.76		-15.63	
18-Oct-06	20:00:00			1.36		-15.14	
19-Oct-06	08:00:00		0.5	0.77	1.5	-16.27	1
19-Oct-2006	20:00:00	0.81		0.64		-17.17	
20-Oct-2006	08:00:00	0.69		0.39		-17.83	
20-Oct-2006	20:00:00	-1.01		-1.51		-18.78	
21-Oct-2006	08:00:00	-1.79		-2.66		-19.68	
21-Oct-2006	20:00:00	-2.35		-3.51		-20.47	
22-Oct-2006	08:00:00	-2.47		-3.83		-21	
22-Oct-2006	20:00:00	2.95		1.06		-18.43	
23-Oct-2006	08:00:00	0.74		-0.13		-17.64	
23-Oct-2006	20:00:00	-0.82		-1.55		-18.62	
24-Oct-2006	08:00:00	-2.17		-2.81		-19.64	
24-Oct-2006	20:00:00	-2.93		-4.23		-20.42	
25-Oct-2006	08:00:00	-3.75		-5.22		-21.12	
25-Oct-2006	20:00:00	-4.17		-5.77		-21.52	
26-Oct-2006	08:00:00	-5.25		-6.86		-21.97	
26-Oct-2006	20:00:00	-5.45		-6.96		-22.26	
27-Oct-2006	08:00:00	-5.98		-6.86		-22.54	
27-Oct-2006	20:00:00	4.63		1.34		-14.29	
28-Oct-2006	08:00:00	4.57		3.95		1.07	
28-Oct-2006	20:00:00	4.71		3.1		-0.74	
29-Oct-2006	08:00:00	3.98		2.39		-4.58	
29-Oct-2006	20:00:00	3.7		1.95		-8.84	
30-Oct-2006	08:00:00	2.93		1.45		-11.46	
30-Oct-2006	20:00:00	2.84		1.63		-13.22	
31-Oct-2006	08:00:00	2.47		1.28		-14.64	
31-Oct-2006	20:00:00	2.42		1.54		-15.61	
01-Nov-2006	08:00:00	2.11		1.3		-16.47	
01-Nov-2006	20:00:00	1.98		1.42		-17.16	

Haw Branch 2006 Monitoring Data

Date	Time	Water Level (inches)					
		AW1	MW2	AW3	MW4	AW5	MW6
02-Nov-2006	08:00:00	1.76		1.14		-17.81	
02-Nov-2006	20:00:00	1.13		0.27		-18.43	
03-Nov-2006	08:00:00	0.4		-0.74		-19.14	
03-Nov-2006	20:00:00	-0.11		-1.3		-19.72	
04-Nov-2006	08:00:00	-0.48		-1.92		-20.27	
04-Nov-2006	20:00:00	-0.52		-2.09		-20.59	
05-Nov-2006	08:00:00	-0.95		-2.53		-20.88	
05-Nov-2006	20:00:00	-0.69		-2.53		-21	
06-Nov-2006	08:00:00	-1.18		-2.8		-21.2	
06-Nov-2006	20:00:00	-0.83		-2.35		-21.23	
07-Nov-2006	08:00:00	-0.7		-1.66		-21.24	
07-Nov-2006	20:00:00	4.36		4.28		0.86	
08-Nov-2006	08:00:00	5.3		4.44		0.24	
08-Nov-2006	20:00:00	5.24		4.07		-2.15	
09-Nov-2006	08:00:00	4.8		3.42		-5.98	
09-Nov-2006	20:00:00	4.75		3.06		-9.69	
10-Nov-2006	08:00:00	4.1		2.43		-12.09	
10-Nov-2006	20:00:00	4.02		2.54		-13.6	
11-Nov-2006	08:00:00	3.64		2.12		-14.84	
11-Nov-2006	20:00:00	3.36		2.23		-15.65	
12-Nov-2006	08:00:00	4.42		3.48		-12.99	
12-Nov-2006	20:00:00	5		3.83		-7.47	
13-Nov-2006	08:00:00	5.19		3		-10.67	
13-Nov-2006	20:00:00	5.06		3.3		-12.44	
14-Nov-2006	08:00:00	4.78		2.74		-13.88	
14-Nov-2006	20:00:00	4.47		2.76		-14.93	
15-Nov-2006	08:00:00	4.09		2.32		-15.94	
15-Nov-2006	20:00:00	3.89		2.43		-16.55	
16-Nov-2006	08:00:00	4.47		3.71		-15.38	
16-Nov-2006	20:00:00	5.32		4.06		-4.98	
17-Nov-2006	08:00:00	5.45		3.18		-8.98	
17-Nov-2006	20:00:00	5.33		3.15		-11.42	
18-Nov-2006	08:00:00	5.11		2.59		-13.12	
18-Nov-2006	20:00:00	4.89		2.4		-14.27	
19-Nov-2006	08:00:00	4.39		1.86		-15.34	
19-Nov-2006	20:00:00	4.37		1.84		-16.17	
20-Nov-2006	08:00:00	3.86		1.44		-16.93	
20-Nov-2006	20:00:00	4.72		1.54		-17.31	
21-Nov-2006	08:00:00	5.66	2	3.9	2.5	-1.86	2.25

Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
01-Jan-2006	08:00:00				
01-Jan-2006	20:00:00				
02-Jan-2006	08:00:00				
02-Jan-2006	20:00:00				0.23
03-Jan-2006	08:00:00				
03-Jan-2006	20:00:00				0.53
04-Jan-2006	08:00:00				
04-Jan-2006	20:00:00				
05-Jan-2006	08:00:00				
05-Jan-2006	20:00:00				
06-Jan-2006	08:00:00				
06-Jan-2006	20:00:00				
07-Jan-2006	08:00:00				
07-Jan-2006	20:00:00				
08-Jan-2006	08:00:00				
08-Jan-2006	20:00:00				
09-Jan-2006	08:00:00				
09-Jan-2006	20:00:00				
10-Jan-2006	08:00:00				
10-Jan-2006	20:00:00				
11-Jan-2006	08:00:00				
11-Jan-2006	20:00:00				
12-Jan-2006	08:00:00				
12-Jan-2006	20:00:00				
13-Jan-2006	08:00:00				
13-Jan-2006	20:00:00				
14-Jan-2006	08:00:00				
14-Jan-2006	20:00:00				0.46
15-Jan-2006	08:00:00				
15-Jan-2006	20:00:00				
16-Jan-2006	08:00:00				
16-Jan-2006	20:00:00				
17-Jan-2006	08:00:00				
17-Jan-2006	20:00:00				0.04
18-Jan-2006	08:00:00				
18-Jan-2006	20:00:00				0.1
19-Jan-2006	08:00:00				
19-Jan-2006	20:00:00				
20-Jan-2006	08:00:00				
20-Jan-2006	20:00:00				
21-Jan-2006	08:00:00				
21-Jan-2006	20:00:00				
22-Jan-2006	08:00:00				
22-Jan-2006	20:00:00				0.37
23-Jan-2006	08:00:00				
23-Jan-2006	20:00:00				0.17
24-Jan-2006	08:00:00				
24-Jan-2006	20:00:00				0.4
25-Jan-2006	08:00:00				
25-Jan-2006	20:00:00				
26-Jan-2006	08:00:00				
26-Jan-2006	20:00:00				
27-Jan-2006	08:00:00				
27-Jan-2006	20:00:00				
28-Jan-2006	08:00:00				
28-Jan-2006	20:00:00				
29-Jan-2006	08:00:00				
29-Jan-2006	20:00:00				0.01
30-Jan-2006	08:00:00				
30-Jan-2006	20:00:00				
31-Jan-2006	08:00:00				

Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
31-Jan-2006	20:00:00				0.74
01-Feb-2006	08:00:00				
01-Feb-2006	20:00:00				
02-Feb-2006	08:00:00				
02-Feb-2006	20:00:00				
03-Feb-2006	08:00:00				
03-Feb-2006	20:00:00				0.07
04-Feb-2006	08:00:00				
04-Feb-2006	20:00:00				
05-Feb-2006	08:00:00				
05-Feb-2006	20:00:00				
06-Feb-2006	08:00:00				
06-Feb-2006	20:00:00				
07-Feb-2006	08:00:00				
07-Feb-2006	20:00:00				0.15
08-Feb-2006	08:00:00				
08-Feb-2006	20:00:00				
09-Feb-2006	08:00:00				
09-Feb-2006	20:00:00				
10-Feb-2006	08:00:00				
10-Feb-2006	20:00:00				
11-Feb-2006	08:00:00				
11-Feb-2006	20:00:00				0.26
12-Feb-2006	08:00:00				
12-Feb-2006	20:00:00				
13-Feb-2006	08:00:00				
13-Feb-2006	20:00:00				
14-Feb-2006	08:00:00				
14-Feb-2006	20:00:00				
15-Feb-2006	08:00:00				
15-Feb-2006	20:00:00				
16-Feb-2006	08:00:00				
16-Feb-2006	20:00:00				
17-Feb-2006	08:00:00				
17-Feb-2006	20:00:00				
18-Feb-2006	08:00:00				
18-Feb-2006	20:00:00				0.01
19-Feb-2006	08:00:00				
19-Feb-2006	20:00:00				
20-Feb-2006	08:00:00				
20-Feb-2006	20:00:00				0.02
21-Feb-2006	08:00:00				
21-Feb-2006	20:00:00				0.03
22-Feb-2006	08:00:00				
22-Feb-2006	20:00:00				0.07
23-Feb-2006	08:00:00				
23-Feb-2006	20:00:00				0.42
24-Feb-2006	08:00:00				
24-Feb-2006	20:00:00				
25-Feb-2006	08:00:00				
25-Feb-2006	20:00:00				0.01
26-Feb-2006	08:00:00				
26-Feb-2006	20:00:00				0.48
27-Feb-2006	08:00:00				
27-Feb-2006	20:00:00				
28-Feb-2006	08:00:00				
28-Feb-2006	20:00:00				
01-Mar-2006	08:00:00				
01-Mar-2006	20:00:00				
02-Mar-2006	08:00:00				
02-Mar-2006	20:00:00				

Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
03-Mar-2006	08:00:00				
03-Mar-2006	20:00:00				
04-Mar-2006	08:00:00				
04-Mar-2006	20:00:00				
05-Mar-2006	08:00:00				
05-Mar-2006	20:00:00				
06-Mar-2006	08:00:00				
06-Mar-2006	20:00:00				0.07
07-Mar-2006	08:00:00				
07-Mar-2006	20:00:00				0.06
08-Mar-2006	08:00:00				
08-Mar-2006	20:00:00				
09-Mar-2006	08:00:00				
09-Mar-2006	20:00:00				
10-Mar-2006	08:00:00				
10-Mar-2006	20:00:00				
11-Mar-2006	08:00:00				
11-Mar-2006	20:00:00				
12-Mar-2006	08:00:00				
12-Mar-2006	20:00:00				
13-Mar-2006	08:00:00				
13-Mar-2006	20:00:00				
14-Mar-2006	08:00:00				
14-Mar-2006	20:00:00				0.2
15-Mar-2006	08:00:00				
15-Mar-2006	20:00:00				
16-Mar-2006	08:00:00				
16-Mar-2006	20:00:00				
17-Mar-2006	08:00:00				
17-Mar-2006	20:00:00				
18-Mar-2006	08:00:00				
18-Mar-2006	20:00:00				
19-Mar-2006	08:00:00				
19-Mar-2006	20:00:00				
20-Mar-2006	08:00:00				
20-Mar-2006	20:00:00				0.01
21-Mar-2006	08:00:00				
21-Mar-2006	20:00:00				0.55
22-Mar-2006	08:00:00				
22-Mar-2006	20:00:00				
23-Mar-2006	08:00:00				
23-Mar-2006	20:00:00				
24-Mar-2006	08:00:00				
24-Mar-2006	20:00:00				0.47
25-Mar-2006	08:00:00				
25-Mar-2006	20:00:00				0.07
26-Mar-2006	08:00:00				
26-Mar-2006	20:00:00				
27-Mar-2006	08:00:00				
27-Mar-2006	20:00:00				
28-Mar-2006	08:00:00				
28-Mar-2006	20:00:00				
29-Mar-2006	08:00:00				
29-Mar-2006	20:00:00				
30-Mar-2006	08:00:00				
30-Mar-2006	20:00:00				
31-Mar-2006	08:00:00				
31-Mar-2006	20:00:00				0.19
01-Apr-2006	08:00:00				
01-Apr-2006	20:00:00				0.01
02-Apr-2006	08:00:00				



### Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
02-Apr-2006	20:00:00				
03-Apr-2006	08:00:00				
03-Apr-2006	20:00:00				
04-Apr-2006	08:00:00				
04-Apr-2006	20:00:00				0.64
05-Apr-2006	08:00:00				
05-Apr-2006	20:00:00				
06-Apr-2006	08:00:00				
06-Apr-2006	20:00:00				
07-Apr-2006	08:00:00				
07-Apr-2006	20:00:00				
08-Apr-2006	08:00:00				
08-Apr-2006	20:00:00				0.33
09-Apr-2006	08:00:00				
09-Apr-2006	20:00:00				0.25
10-Apr-2006	08:00:00				
10-Apr-2006	20:00:00				
11-Apr-2006	08:00:00				
11-Apr-2006	20:00:00				
12-Apr-2006	08:00:00				
12-Apr-2006	20:00:00				
13-Apr-2006	08:00:00				
13-Apr-2006	20:00:00				
14-Apr-2006	08:00:00				
14-Apr-2006	20:00:00				
15-Apr-2006	08:00:00				
15-Apr-2006	20:00:00				
16-Apr-2006	08:00:00				
16-Apr-2006	20:00:00				
17-Apr-2006	08:00:00				
17-Apr-2006	20:00:00				0.47
18-Apr-2006	08:00:00				
18-Apr-2006	20:00:00				
19-Apr-2006	08:00:00				
19-Apr-2006	20:00:00				
20-Apr-2006	08:00:00				
20-Apr-2006	20:00:00				
21-Apr-2006	08:00:00	0.27	0.15		
21-Apr-2006	20:00:00				
22-Apr-2006	08:00:00				
22-Apr-2006	20:00:00				
23-Apr-2006	08:00:00				
23-Apr-2006	20:00:00				0.16
24-Apr-2006	08:00:00				
24-Apr-2006	20:00:00				
25-Apr-2006	08:00:00				
25-Apr-2006	20:00:00				
26-Apr-2006	08:00:00				
26-Apr-2006	20:00:00				
27-Apr-2006	08:00:00				
27-Apr-2006	20:00:00				1.29
28-Apr-2006	08:00:00				
28-Apr-2006	20:00:00				0.04
29-Apr-2006	08:00:00				
29-Apr-2006	20:00:00				
30-Apr-2006	08:00:00				
30-Apr-2006	20:00:00				
01-May-2006	08:00:00				
01-May-2006	20:00:00				
02-May-2006	08:00:00				
02-May-2006	20:00:00				

Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
03-May-2006	08:00:00				
03-May-2006	20:00:00				0.02
04-May-2006	08:00:00				
04-May-2006	20:00:00				
05-May-2006	08:00:00				
05-May-2006	20:00:00				0.04
06-May-2006	08:00:00				
06-May-2006	20:00:00				0.23
07-May-2006	08:00:00				
07-May-2006	20:00:00				0.08
08-May-2006	08:00:00				
08-May-2006	20:00:00				0.04
09-May-2006	08:00:00				
09-May-2006	20:00:00				
10-May-2006	08:00:00				
10-May-2006	20:00:00				
11-May-2006	08:00:00				
11-May-2006	20:00:00				
12-May-2006	08:00:00				
12-May-2006	20:00:00				
13-May-2006	08:00:00				
13-May-2006	20:00:00				0.08
14-May-2006	08:00:00				
14-May-2006	20:00:00				0.02
15-May-2006	08:00:00				
15-May-2006	20:00:00				0.01
16-May-2006	08:00:00				
16-May-2006	20:00:00				0.02
17-May-2006	08:00:00				
17-May-2006	20:00:00				
18-May-2006	08:00:00	0.14	0	4.92	
18-May-2006	20:00:00				
19-May-2006	08:00:00				
19-May-2006	20:00:00				0.17
20-May-2006	08:00:00				
20-May-2006	20:00:00				0.03
21-May-2006	08:00:00				
21-May-2006	20:00:00				0.02
22-May-2006	08:00:00				
22-May-2006	20:00:00				0.01
23-May-2006	08:00:00				
23-May-2006	20:00:00				
24-May-2006	08:00:00				
24-May-2006	20:00:00				
25-May-2006	08:00:00				
25-May-2006	20:00:00				
26-May-2006	08:00:00				
26-May-2006	20:00:00				
27-May-2006	08:00:00				
27-May-2006	20:00:00				
28-May-2006	08:00:00				
28-May-2006	20:00:00				
29-May-2006	08:00:00				
29-May-2006	20:00:00				
30-May-2006	08:00:00				
30-May-2006	20:00:00				
31-May-2006	08:00:00				
31-May-2006	20:00:00				0.28
01-Jun-2006	08:00:00				
01-Jun-2006	20:00:00				0.03
02-Jun-2006	08:00:00				

Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
02-Jun-2006	20:00:00				
03-Jun-2006	08:00:00				
03-Jun-2006	20:00:00				0.55
04-Jun-2006	08:00:00				
04-Jun-2006	20:00:00				0.04
05-Jun-2006	08:00:00				
05-Jun-2006	20:00:00				0.05
06-Jun-2006	08:00:00				
06-Jun-2006	20:00:00				0.27
07-Jun-2006	08:00:00				
07-Jun-2006	20:00:00				
08-Jun-2006	08:00:00				
08-Jun-2006	20:00:00				0.12
09-Jun-2006	08:00:00				
09-Jun-2006	20:00:00				0.1
10-Jun-2006	08:00:00				
10-Jun-2006	20:00:00				
11-Jun-2006	08:00:00				
11-Jun-2006	20:00:00				0.07
12-Jun-2006	08:00:00				
12-Jun-2006	20:00:00				0.54
13-Jun-2006	08:00:00				
13-Jun-2006	20:00:00				0.33
14-Jun-2006	08:00:00				
14-Jun-2006	20:00:00				0.96
15-Jun-2006	08:00:00				
15-Jun-2006	20:00:00				
16-Jun-2006	08:00:00				
16-Jun-2006	20:00:00				
17-Jun-2006	08:00:00				
17-Jun-2006	20:00:00				
18-Jun-2006	08:00:00				
18-Jun-2006	20:00:00				
19-Jun-2006	08:00:00				
19-Jun-2006	20:00:00				
20-Jun-2006	08:00:00				
20-Jun-2006	20:00:00				0.03
21-Jun-2006	08:00:00				
21-Jun-2006	20:00:00				0.28
22-Jun-2006	08:00:00				
22-Jun-2006	20:00:00				
23-Jun-2006	08:00:00	0	0	4.94	
23-Jun-2006	20:00:00				
24-Jun-2006	08:00:00				
24-Jun-2006	20:00:00				
25-Jun-2006	08:00:00				
25-Jun-2006	20:00:00				2.28
26-Jun-2006	08:00:00				
26-Jun-2006	20:00:00				0.25
27-Jun-2006	08:00:00				
27-Jun-2006	20:00:00				1.02
28-Jun-2006	08:00:00				
28-Jun-2006	20:00:00				1.3
29-Jun-2006	08:00:00				
29-Jun-2006	20:00:00				
30-Jun-2006	08:00:00				
30-Jun-2006	20:00:00				
01-Jul-2006	08:00:00				
01-Jul-2006	20:00:00				
02-Jul-2006	08:00:00				
02-Jul-2006	20:00:00				

Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
03-Jul-2006	08:00:00				
03-Jul-2006	20:00:00				
04-Jul-2006	08:00:00				
04-Jul-2006	20:00:00				0.29
05-Jul-2006	08:00:00				
05-Jul-2006	20:00:00				
06-Jul-2006	08:00:00				
06-Jul-2006	20:00:00				0.28
07-Jul-2006	08:00:00				
07-Jul-2006	20:00:00				
08-Jul-2006	08:00:00				
08-Jul-2006	20:00:00				
09-Jul-2006	08:00:00				
09-Jul-2006	20:00:00				
10-Jul-2006	08:00:00				
10-Jul-2006	20:00:00				
11-Jul-2006	08:00:00				
11-Jul-2006	20:00:00				
12-Jul-2006	08:00:00				
12-Jul-2006	20:00:00				0.03
13-Jul-2006	08:00:00				
13-Jul-2006	20:00:00				
14-Jul-2006	08:00:00				
14-Jul-2006	20:00:00				
15-Jul-2006	08:00:00				
15-Jul-2006	20:00:00				0.29
16-Jul-2006	08:00:00				
16-Jul-2006	20:00:00				0.15
17-Jul-2006	08:00:00				
17-Jul-2006	20:00:00				
18-Jul-2006	08:00:00	0.25	0.6	8.36	
18-Jul-2006	20:00:00				
19-Jul-2006	08:00:00				
19-Jul-2006	20:00:00				0.06
20-Jul-2006	08:00:00				
20-Jul-2006	20:00:00				0.83
21-Jul-2006	08:00:00				
21-Jul-2006	20:00:00				0.1
22-Jul-2006	08:00:00				
22-Jul-2006	20:00:00				0.04
23-Jul-2006	08:00:00				
23-Jul-2006	20:00:00				0.2
24-Jul-2006	08:00:00				
24-Jul-2006	20:00:00				0.36
25-Jul-2006	08:00:00				
25-Jul-2006	20:00:00				0.58
26-Jul-2006	08:00:00				
26-Jul-2006	20:00:00				0.01
27-Jul-2006	08:00:00				
27-Jul-2006	20:00:00				
28-Jul-2006	08:00:00				
28-Jul-2006	20:00:00				
29-Jul-2006	08:00:00				
29-Jul-2006	20:00:00				
30-Jul-2006	08:00:00				
30-Jul-2006	20:00:00				0.03
31-Jul-2006	08:00:00				
31-Jul-2006	20:00:00				
01-Aug-2006	08:00:00				
01-Aug-2006	20:00:00				
02-Aug-2006	08:00:00				

Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
02-Aug-2006	20:00:00				0.01
03-Aug-2006	08:00:00				
03-Aug-2006	20:00:00				
04-Aug-2006	08:00:00				
04-Aug-2006	20:00:00				
05-Aug-2006	08:00:00				
05-Aug-2006	20:00:00				0.35
06-Aug-2006	08:00:00				
06-Aug-2006	20:00:00				
07-Aug-2006	08:00:00				
07-Aug-2006	20:00:00				
08-Aug-2006	08:00:00				
08-Aug-2006	20:00:00				
09-Aug-2006	08:00:00				
09-Aug-2006	20:00:00				0.49
10-Aug-2006	08:00:00				
10-Aug-2006	20:00:00				0.02
11-Aug-2006	08:00:00				
11-Aug-2006	20:00:00				0.22
12-Aug-2006	08:00:00				
12-Aug-2006	20:00:00				
13-Aug-2006	08:00:00				
13-Aug-2006	20:00:00				
14-Aug-2006	08:00:00				
14-Aug-2006	20:00:00				
15-Aug-2006	08:00:00				
15-Aug-2006	20:00:00				
16-Aug-2006	08:00:00				
16-Aug-2006	20:00:00				
17-Aug-2006	08:00:00				
17-Aug-2006	20:00:00				0.07
18-Aug-2006	08:00:00				
18-Aug-2006	20:00:00				0.14
19-Aug-2006	08:00:00				
19-Aug-2006	20:00:00				
20-Aug-2006	08:00:00				
20-Aug-2006	20:00:00				
21-Aug-2006	08:00:00				
21-Aug-2006	20:00:00				
22-Aug-2006	08:00:00				
22-Aug-2006	20:00:00				0.56
23-Aug-2006	08:00:00	1	1.5	12.27	
23-Aug-2006	20:00:00				0.14
24-Aug-2006	08:00:00				
24-Aug-2006	20:00:00				0.05
25-Aug-2006	08:00:00				
25-Aug-2006	20:00:00				
26-Aug-2006	08:00:00				
26-Aug-2006	20:00:00				
27-Aug-2006	08:00:00				
27-Aug-2006	20:00:00				0.04
28-Aug-2006	08:00:00				
28-Aug-2006	20:00:00				
29-Aug-2006	08:00:00				
29-Aug-2006	20:00:00				
30-Aug-2006	08:00:00				
30-Aug-2006	20:00:00				
31-Aug-2006	08:00:00				
31-Aug-2006	20:00:00				0.64
01-Sep-2006	08:00:00				
01-Sep-2006	20:00:00				3.82

Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
02-Sep-2006	08:00:00				
02-Sep-2006	20:00:00				
03-Sep-2006	08:00:00				
03-Sep-2006	20:00:00				
04-Sep-2006	08:00:00				
04-Sep-2006	20:00:00				
05-Sep-2006	08:00:00				
05-Sep-2006	20:00:00				
06-Sep-2006	08:00:00				
06-Sep-2006	20:00:00				
07-Sep-2006	08:00:00				
07-Sep-2006	20:00:00				0.04
08-Sep-2006	08:00:00				
08-Sep-2006	20:00:00				0.05
09-Sep-2006	08:00:00				
09-Sep-2006	20:00:00				0.04
10-Sep-2006	08:00:00				
10-Sep-2006	20:00:00				0.04
11-Sep-2006	08:00:00				
11-Sep-2006	20:00:00				0.03
12-Sep-2006	08:00:00				
12-Sep-2006	20:00:00				0.02
13-Sep-2006	08:00:00				
13-Sep-2006	20:00:00				0.12
14-Sep-2006	08:00:00				
14-Sep-2006	20:00:00				0.28
15-Sep-2006	08:00:00				
15-Sep-2006	20:00:00				0.01
16-Sep-2006	08:00:00				
16-Sep-2006	20:00:00				0.09
17-Sep-2006	08:00:00				
17-Sep-2006	20:00:00				0.01
18-Sep-2006	08:00:00				
18-Sep-2006	20:00:00				0.07
19-Sep-2006	08:00:00				
19-Sep-2006	20:00:00				
20-Sep-2006	08:00:00				
20-Sep-2006	20:00:00				0.43
21-Sep-2006	08:00:00	1.75	3.5	13.52	
21-Sep-2006	20:00:00				0.12
22-Sep-2006	08:00:00				
22-Sep-2006	20:00:00				0.03
23-Sep-2006	08:00:00				
23-Sep-2006	20:00:00				
24-Sep-2006	08:00:00				
24-Sep-2006	20:00:00				
25-Sep-2006	08:00:00				
25-Sep-2006	20:00:00				0.06
26-Sep-2006	08:00:00				
26-Sep-2006	20:00:00				
27-Sep-2006	08:00:00				
27-Sep-2006	20:00:00				0.02
28-Sep-2006	08:00:00				
28-Sep-2006	20:00:00				0.05
29-Sep-2006	08:00:00				
29-Sep-2006	20:00:00				0.12
30-Sep-2006	08:00:00				
30-Sep-2006	20:00:00				0.05
01-Oct-2006	08:00:00				
01-Oct-2006	20:00:00				
02-Oct-2006	08:00:00				

### Haw Branch 2006 Monitoring Data

Date	Time	CG1	CG2	On-Site RG	Hoffman RG
02-Oct-2006	20:00:00				0.04
03-Oct-2006	08:00:00				
03-Oct-2006	20:00:00				0.07
04-Oct-2006	08:00:00				
04-Oct-2006	20:00:00				
05-Oct-2006	08:00:00				
05-Oct-2006	20:00:00				
06-Oct-2006	08:00:00				
06-Oct-2006	20:00:00				0.07
07-Oct-2006	08:00:00				
07-Oct-2006	20:00:00				
08-Oct-2006	08:00:00				
08-Oct-2006	20:00:00				
09-Oct-2006	08:00:00				
09-Oct-2006	20:00:00				
10-Oct-2006	08:00:00				
10-Oct-2006	20:00:00				
11-Oct-2006	08:00:00				
11-Oct-2006	20:00:00				
12-Oct-2006	08:00:00				
12-Oct-2006	20:00:00				
13-Oct-2006	08:00:00				
13-Oct-2006	20:00:00				
14-Oct-2006	08:00:00				
14-Oct-2006	20:00:00				
15-Oct-2006	08:00:00				
15-Oct-2006	20:00:00				
16-Oct-2006	08:00:00				
16-Oct-2006	20:00:00				0.02
17-Oct-2006	08:00:00				
17-Oct-2006	20:00:00				0.23
18-Oct-2006	08:00:00				
18-Oct-06	20:00:00				
19-Oct-06	08:00:00	2.75	2.95	2.4	
19-Oct-2006	20:00:00				
20-Oct-2006	08:00:00				
20-Oct-2006	20:00:00				0.03
21-Oct-2006	08:00:00				
21-Oct-2006	20:00:00				
22-Oct-2006	08:00:00				
22-Oct-2006	20:00:00				0.07
23-Oct-2006	08:00:00				
23-Oct-2006	20:00:00				
24-Oct-2006	08:00:00				
24-Oct-2006	20:00:00				
25-Oct-2006	08:00:00				
25-Oct-2006	20:00:00				
26-Oct-2006	08:00:00				
26-Oct-2006	20:00:00				
27-Oct-2006	08:00:00				
27-Oct-2006	20:00:00				0.14
28-Oct-2006	08:00:00				
28-Oct-2006	20:00:00				1.21
29-Oct-2006	08:00:00				
29-Oct-2006	20:00:00				
30-Oct-2006	08:00:00				
30-Oct-2006	20:00:00				
31-Oct-2006	08:00:00				
31-Oct-2006	20:00:00				0.14
01-Nov-2006	08:00:00				0.06
01-Nov-2006	20:00:00				

## Stream Problem Area Pictures



SPA 1. Right bank is washed out behind root wad at UT1A STA 38+00.



SPA 3. Right bank erosion at UT2 STA 14+50.



Photo Point Pictures



PP1 US



PP2 US



PP3



PP4 US

Photo Point Pictures



PP5 US



PP6 US



PP7 US



PP8 US

Photo Point Pictures



PP9 US



PP10 US

0  
1  
2  
3  
4  
5  
6  
7  
8  
9  
A  
B  
C  
D  
E  
F  
G  
H  
I  
J  
K  
L  
M  
N  
O  
P  
Q  
R  
S  
T  
U  
V  
W  
X  
Y  
Z



PP11 US



PP12 US

Photo Point Pictures



PP13 US



PP14 US



PP15 US



PP16 US



Photo Point Pictures



PP18 US



PP19 US



UT3 PP15 US



UT3 PP16 US

## Vegetation Pictures



Bare Spot at Haw Branch



Haw Branch Veg Plot #2



Haw Branch Veg Plot #4



Haw Branch Veg Plot #6

Vegetation Pictures



Haw Branch Veg Plot #8



Haw Branch Veg Plot #10



Haw Branch Veg Plot #12



Haw Branch Veg Plot #14

## Vegetation Pictures



Haw Branch Veg Plot #16



Haw Branch Veg Plot #18



Haw Branch Veg Plot #20





SPA 2. Root wad erosion at UT2 STA 12+50.



PP1 DS



PP2 DS



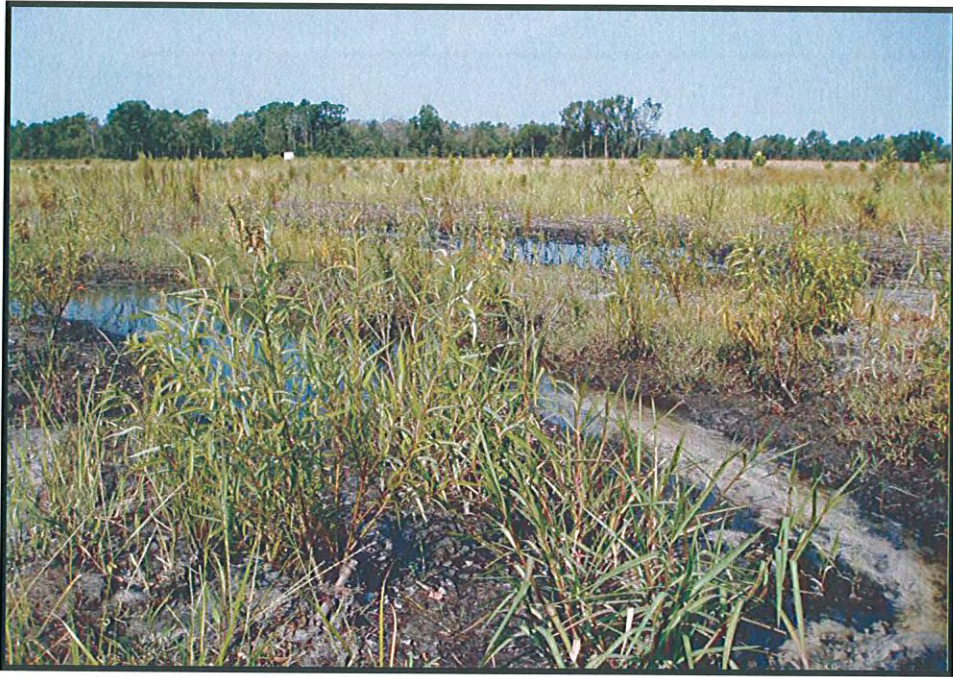
PP4 DS



PP5 DS



PP6 DS



PP7 DS



PP8 DS



PP9 DS



PP10 DS



PP11 DS



PP12 DS



PP13 DS



PP14 DS





PP15 DS



PP16 DS



PP18 DS



PP19 DS



UT3 PP15 DS



UT3 PP16 DS



Haw Branch Veg Plot #1



Haw Branch Veg Plot #3



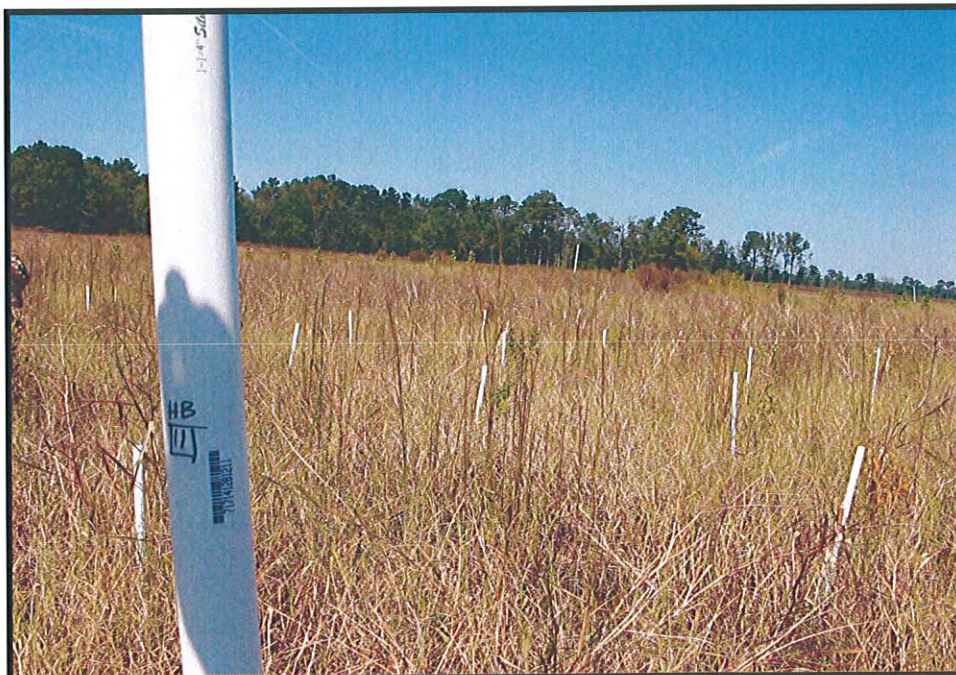
Haw Branch Veg Plot #5



Haw Branch Veg Plot #7



Haw Branch Veg Plot #9



Haw Branch Veg Plot #11



Haw Branch Veg Plot #13



Haw Branch Veg Plot #15



Haw Branch Veg Plot #17



Haw Branch Veg Plot #19