Marston Mitigation Project
Jones County, North Carolina

Year 5 Monitoring Report

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October 2008

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1.0 SUMMARY

This Annual Report details the monitoring activities during the 2008 growing season on the Marston Mitigation Site. Construction of the site, including planting of trees, was completed in March 2004. The 2008 data represent results from Year 5 of hydrologic monitoring for both wetlands and streams.

The design for the Marston property involved the restoration of a Coastal Plain small stream swamp as described by Schafale and Weakley (1990). After construction, it was determined that 6,416 feet of stream and 37.7 acres of wetland hydrology were restored. An additional 8.6 acres of wetlands were enhanced on the northern end of the project. The As-Built survey is included as **Appendix A**. This Annual Report presents the data from stream monitoring, six hydrologic monitoring stations, and eight vegetative monitoring plots, as required by the approved Mitigation Plan for the site.

Three of the hydrologic stations at the site are equipped with manual groundwater gauges, and three stations are equipped with automated gauges and a manual calibration gauge. Additionally, the gauges are used as points from which photographs are taken over time. Based on field observations in 2008, all six hydrology monitoring gauges met the hydrologic success criteria of a hydroperiod of at least 7 percent of the growing season. The site reference wetland hydrology monitoring gauge documented a 5 percent hydroperiod.

Data from the Trenton Weather Station and from a manual rain gauge located on the site were used to document daily and monthly precipitation levels. The manual gauge is used to validate observations made at the automated station. For the 2008 growing season, rainfall was above normal limits early on, but dropped below normal for most of the latter part of the growing season. Most of North Carolina experienced drought conditions during the summer of 2008.

Based on the results of ground water monitoring over years one through five, it was concluded that the site has achieved the hydrologic success criteria specified in the Mitigation Plan.

The restored stream channel has remained stable, and is providing the intended habitat and hydrologic functions. Two bankfull events were recorded during the 2008 monitoring year. The longitudinal profile and all monitored cross-sections show very little adjustment of stream dimension.

Based on the results of stream monitoring over years one through five, it was concluded that the site has achieved the stream success criteria specified in the Mitigation Plan.

Monitoring of the vegetation plots in 2008 recorded an average of 428 surviving planted stems per acre at the site. Seven of the eight plots recorded well above the first success criteria level of 260 stems per acre, with one plot recording 220 surviving planted stems per acre and 490 total stems per acre, counting both planted and volunteer stems.

Based on the results of the vegetative monitoring over years one through five, it was concluded that the site has achieved the vegetative success criteria specified in the Mitigation Plan.

2.0 INTRODUCTION

2.1 PROJECT DESCRIPTION

Located in Jones County, the Marston Mitigation Site encompasses approximately 176 acres. It is located approximately twelve miles west of the town of Trenton, North Carolina (**Figure 1** and **Figure 2**). This project provides compensatory mitigation for stream and wetland impacts within the resident hydrologic unit. The Marston Site was designed to restore a Coastal Plain small stream swamp as described by Schafale and Weakley (1990). The Coastal Plain small stream swamp communities exist as the floodplains of small blackwater streams in which separate fluvial features and associated vegetation are too small or poorly developed to distinguish. Construction at the site was completed in February 2004, with 58 acres of vegetation planted by March 2004. Groundwater, surface water, and rain gauges were functional beginning March 15, 2004. The 2008 monitoring season represents Year 5 of monitoring for the site.

2.2 PROJECT PURPOSE

Monitoring of the Marston Site is required to demonstrate successful mitigation based on the criteria found in the Mitigation Plan for the site, the Neu-Con Umbrella Stream and Wetland Mitigation Bank Instrument, 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. This Annual Monitoring Report details the results of the monitoring efforts for 2008 (Year 5) at the Marston Mitigation Site.

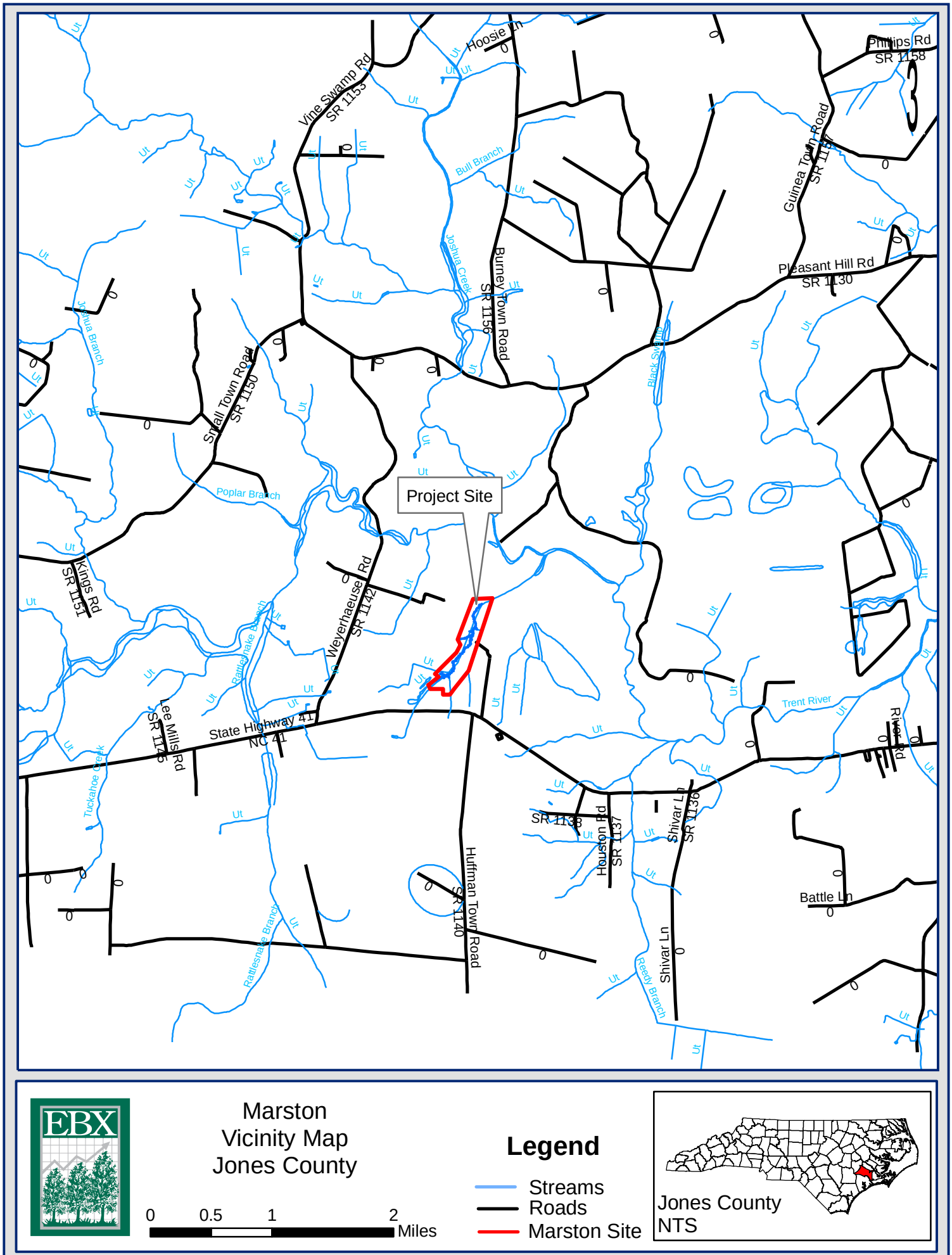
Table 1. Project Mitigation Structure and Objectives

Reach Name	As-Built Length (feet)	Restoration Approach
R1	5,608	Restoration
R2	772	Restoration
Total	**6,380**	
Wetland	37 Acres	Restoration

2.3 PROJECT HISTORY & SCHEDULE

Table 2. Project Activity and Reporting History

Month	Activity
December 2003	Approved Mitigation Plan
March 2004	Construction Completed
March 2004	Post-restoration Monitoring Begins
November 2004	1st Annual Monitoring Report
November 2005	2nd Annual Monitoring Report
November 2006	3rd Annual Monitoring Report
November 2007	4th Annual Monitoring Report
November 2008	5th Annual Monitoring Report



EBX

Marston
Vicinity Map
Jones County

0 0.5 1 2 Miles

Legend

- Streams
- Roads
- Marston Site

Jones County
NTS

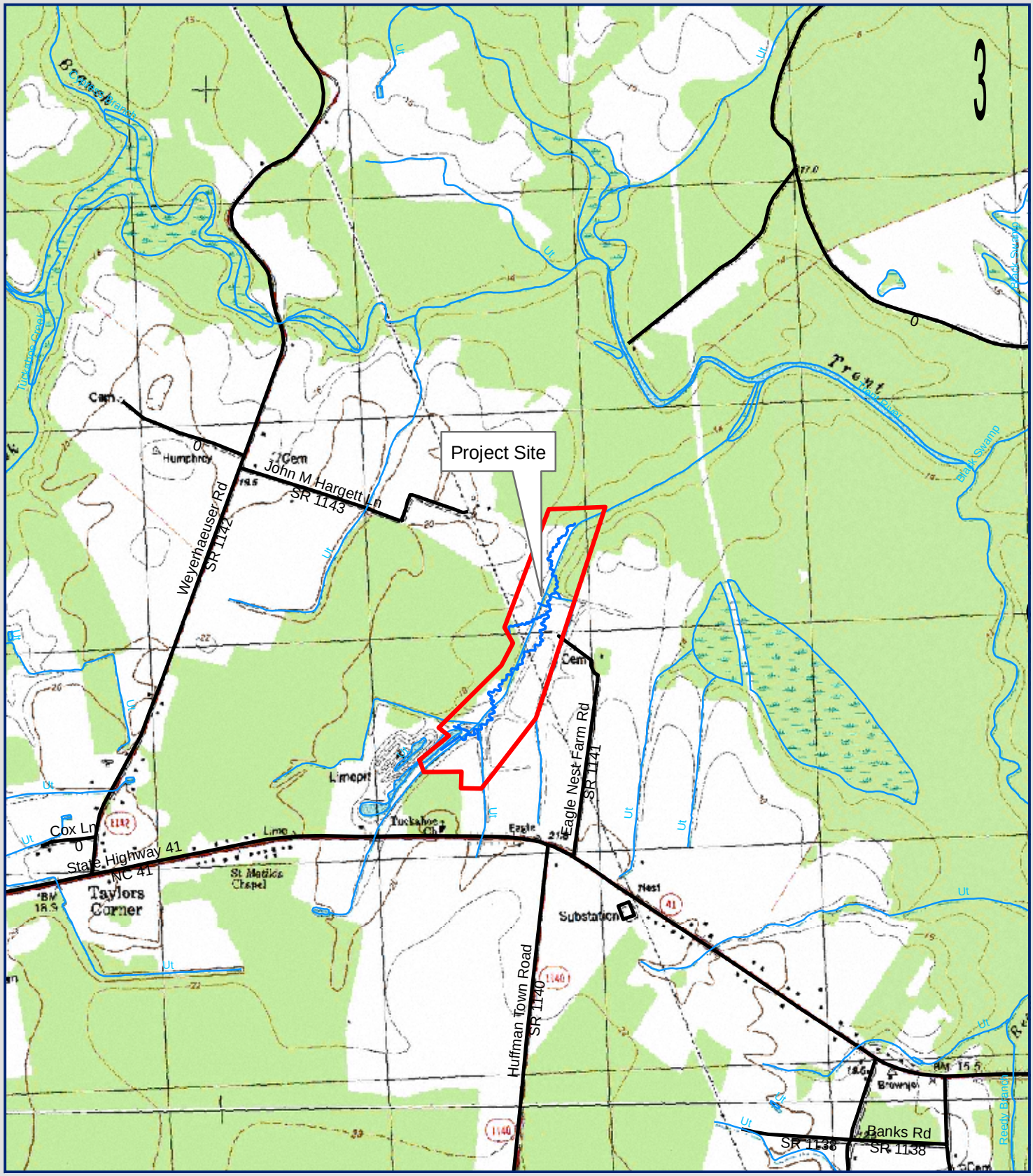
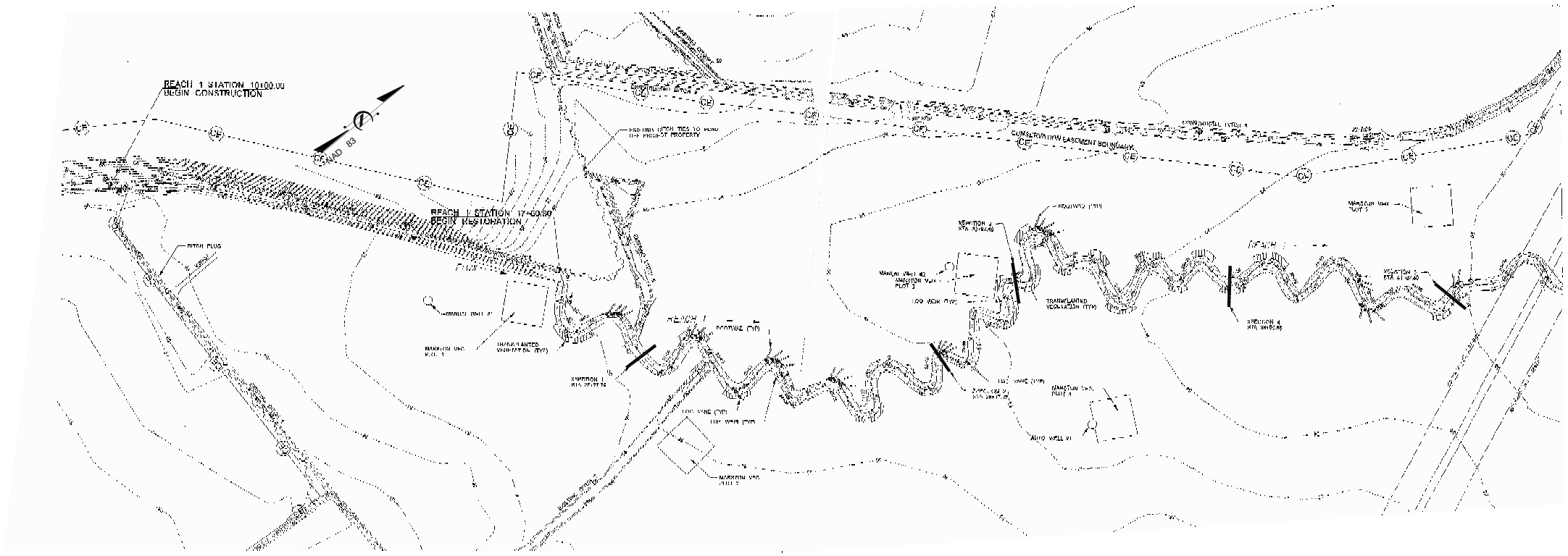


Figure 2
Marston
Jones County
USGS Map

0 500 1,000 2,000 3,000 4,000
Feet

Legend

- Streams
- Roads
- Marston Project Site



Marston
Monitoring Overview

Figure 3

100 50 0 100 200
SCALE (FT)

Table 3. Project Contacts

Contact	Firm Information
Project Manager Norton Webster	EBX-Neuse 1, LLC (919) 608-9688
Designer Kevin Tweedy, PE	Buck Engineering PC (919) 463-5488
Monitoring Contractor Daniel Ingram	WK Dickson and Co., Inc (919) 782-0495

3.0 HYDROLOGY

3.1 HYDROLOGIC SUCCESS CRITERIA

As stated in the approved Mitigation Plan, the hydrologic success criterion for the site is to restore the water table at the site so that it will remain within 12 inches of the soil surface for at least 7 percent of the growing season continuously (approximately 16 days). The day counts are based on the growing season for Jones County, which is 232 days long, beginning on March 20 and ending November 7, as calculated from National Weather Service Wetlands Determination Tables (WETS) for Jones County. As specified in the approved Mitigation Plan, data are collected from three automated and three manual groundwater gauges.

The Mitigation Plan further specified that, in order for the hydrologic data to be considered successful, it must demonstrate wetland conditions are present in normal or dryer than normal conditions.

3.2 DESCRIPTION OF HYDROLOGY MONITORING EFFORTS

Three manual groundwater gauges, three automated groundwater gauges, and one rain gauge were installed prior to the beginning of the first growing season to monitor groundwater (**Figure 3**). Groundwater gauges, both manual and automated, were installed to a minimum depth of at least 40 inches below the ground surface. 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 and rainfall totals are collected from the on-site rain gauge. During the 2008 growing season, all of the automated loggers performed well, and no periods of missing data were encountered.

Automated Gauges
Automated groundwater gauges record water table elevations twice daily at 08:00 and 20:00. These automatic gauges employ pressure sensors that record water elevation 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 the daily readings. The corrected daily readings are then used to determine wetland hydroperiods.

Manual Gauges
Water table depths are recorded monthly in manual groundwater gauges. 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.

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

3.3 RESULTS OF HYDROLOGY MONITORING

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 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 (**Table 4**). Depth of groundwater for each of the monitoring gauges is shown in a graph with precipitation (**Figure 4**). This hydrograph demonstrates the reaction at each monitoring location of the groundwater level to specific rainfall events. Raw hydrograph data collected from the monitoring gauges is provided in **Appendix C**.

The site was designed to function as a riparian wetland system with associated wet flats. Hydrology in the riparian areas is driven primarily by groundwater discharge and over bank flooding, while precipitation is the primary hydrologic influence in wet flat areas. Model simulations performed during the design phase of the project indicate that the entire site would range from slightly higher than the minimum wetland criteria of 5 percent to more saturated areas that would exceed 12.5 percent. The data collected for the 2008 growing season for this site indicate it is performing as described in the Mitigation Plan, with varying degrees of wetness documented.

3.3.1 Site Data

The results of hydrology monitoring in 2008 are presented in **Table 4** and **Figures 4a and 4b**.

Data collected from all the groundwater monitoring gauges on the Marston Mitigation Site document that hydrologic success criteria have been met during the 2008 growing season. All gauges show consecutive saturated conditions within the 12 inches below soil surface for at least seven percent of the growing season (17 consecutive days), and cumulative soil saturation within 12 inches of the ground surface for over 12.5 percent of the growing season (35 days of the entire season). The groundwater gauge data is found in **Appendix C**.

This data, together with the corresponding climatic data for the area, demonstrate that the site meets the hydrologic success criteria for the 2008 growing season. Rainfall is considered within the normal long-term yearly range for rainfall totals.

Table 4. Hydrologic Monitoring Results (Data collected through July)

2008 Max Hydroperiod (Growing Season 20-Mar through 7-Nov, 232 days)					
Gauge	Consecutive		Cumulative		Occurrences
	Days	Percent of growing Season	Days	Percent of growing Season	
AW1	17	7.3%	32	13.8%	5
AW2	42	18.1%	59	25.4%	5
AW3	27	11.6%	43	18.5%	7
MW1	18	7.8%	41	17.7%	8
MW2	35	15.1%	37	15.9%	3
MW3	35	15.1%	35	15.1%	1
Webb Reference	12	5.2%	26	11.2%	4

Figure 4a. Groundwater Hydrographs

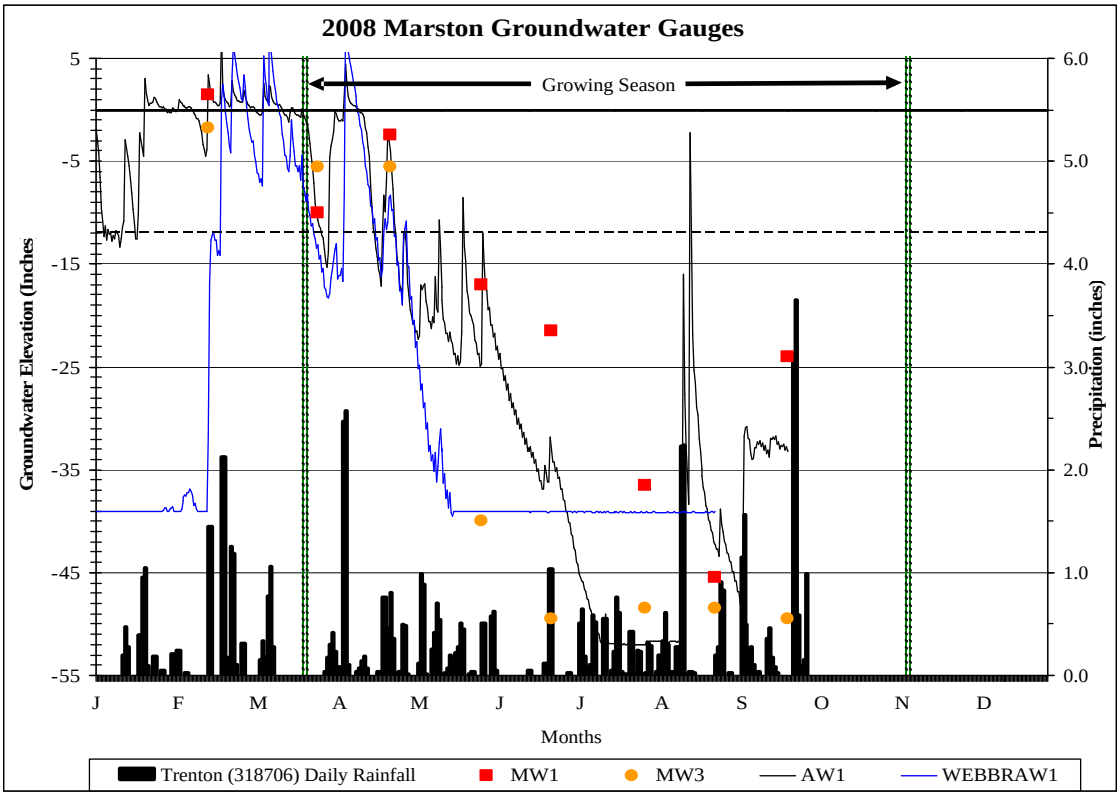
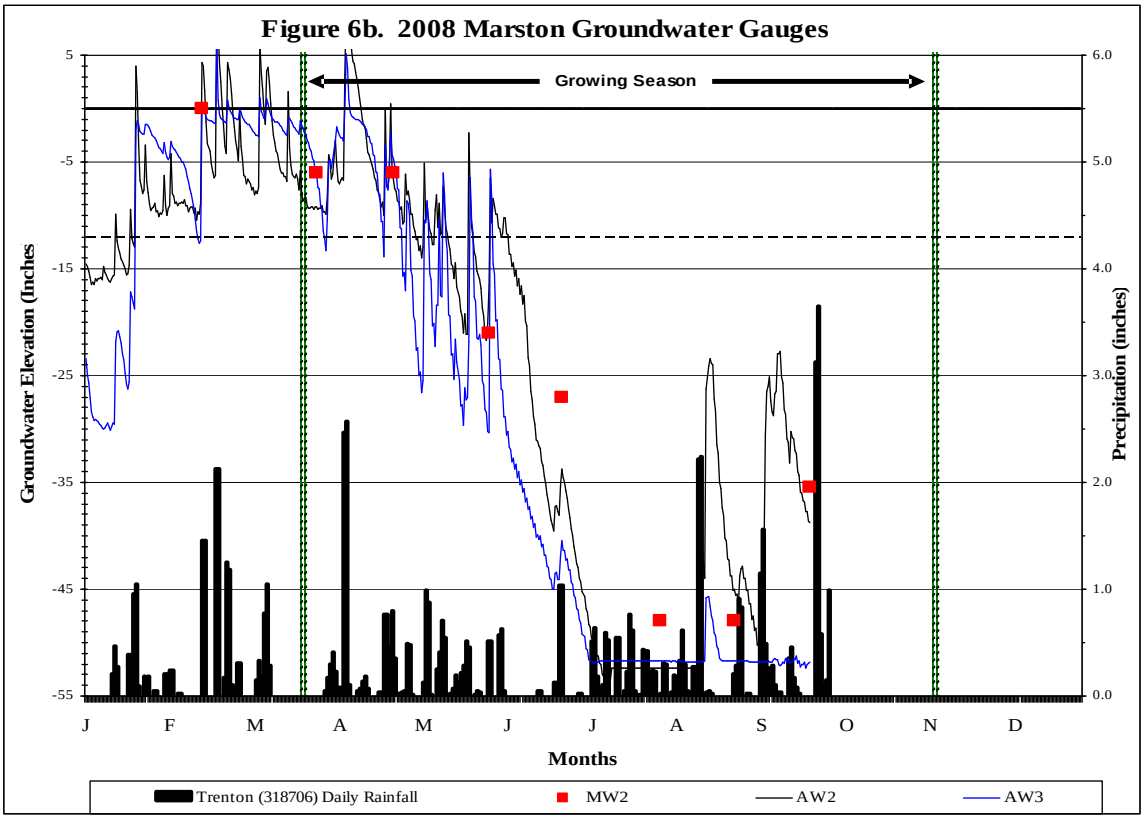
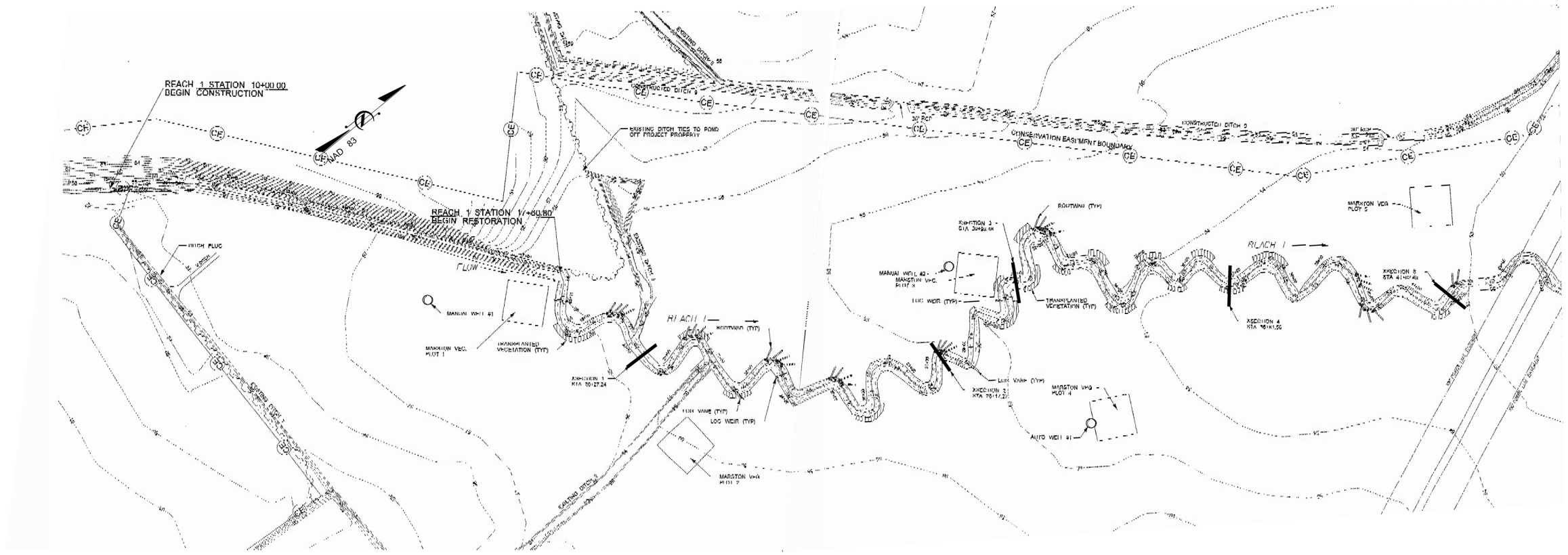


Figure 4b. Groundwater Hydrographs





WETLAND HYDROPERIOD

○ > 7 %
● 5–7 %
● < 5 %

Marston
Hydrologic Success

Figure 5

3.3.2 Reference Data

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

The data from the Webb reference wetland groundwater gauge recorded a hydroperiod of 5 percent of the 2008 growing season (**Figure 5**). The groundwater gauge data is found in **Appendix C**.

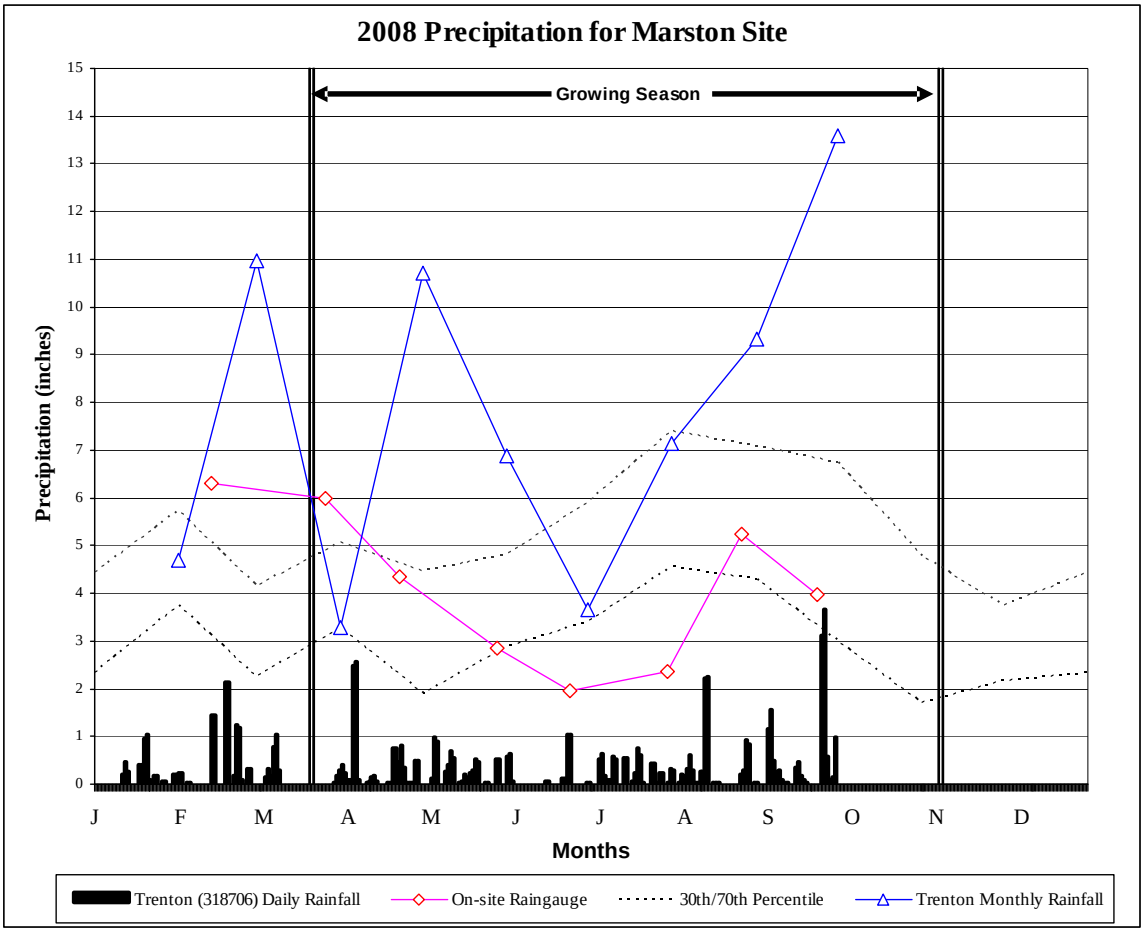
3.3.3 Climate Data

Comparisons of the 2008 monthly rainfall totals to historical precipitation for Jones County are shown in **Table 5** and **Figure 6**. Observed precipitation data were collected from an automated weather station in Trenton and an on-site manual rain gauge. For the 2008 growing season, on-site rainfall measurements correlate well with the Trenton gauge data, but were generally below the weather station data. The Trenton monthly rainfall amounts were above normal for the months of February, April, May, July, and August, but within normal limits for January, March, and June. Monthly rainfall data for September through December 2008 were not available at the time this report was compiled.

Table 5. Comparison of Normal Rainfall to Observed Rainfall

Month	Average	Normal Limits		Trenton Precipitation	On-Site Precipitation
		30 Percent	70 Percent		
January	4.77	3.74	5.72	4.68	---
February	3.57	2.24	4.14	10.98	6.30
March	4.41	3.27	5.06	3.27	5.98
April	3.47	1.91	4.45	10.70	4.36
May	4.12	2.87	4.82	6.88	2.85
June	4.89	3.4	5.9	3.66	1.96
July	6.22	4.55	7.41	7.13	2.35
August	6.12	4.28	7.08	9.33	5.25
September	5.51	2.99	6.74	13.58	3.96
October	3.34	1.69	4.79	---	---
November	2.93	2.17	3.74	---	---
December	3.64	2.34	4.43	---	---
Total	52.99	35.45	64.28	70.21	33.01

Figure 6. 2008 Precipitation for Marston



3.4 HYDROLOGIC CONCLUSIONS

Data collected from the groundwater monitoring gauges on the Marston Mitigation Site in 2008 indicate that all of the hydrology monitoring stations recorded hydroperiods of at least 7 percent of the growing season. The site reference wetland hydrology monitoring gauge recorded a hydroperiod of 5 percent.

Trenton weather station rainfall data indicates that the 2008 growing season rainfall amounts were normal to above normal for the first part of the growing season, while the on-site rainfall was below normal to normal except for the months of February through April.

4.0 VEGETATION

4.1 VEGETATION SUCCESS CRITERIA

The interim measure of vegetative success for the Marston Mitigation Plan was survival of at least 320 planted trees per acre at the end of Year 3 of the monitoring period. The mitigation site was successful in meeting the interim success criteria, and 475 stems per acre were recorded at the end of the Year 3 monitoring period.

The final vegetative success criteria is the survival of 260 planted trees per acre at the end of Year 5 of the monitoring period. Up to 20 percent of the site species composition may be comprised of

volunteers. Remedial action may be required should these (i.e. loblolly pine (*Pinus taeda*), red maple (*Acer rubrum*), sweet gum (*Liquidambar styraciflua*), etc.) present a problem and exceed 20 percent composition.

4.2 DESCRIPTION OF SPECIES AND VEGETATION MONITORING

Eight plots were established on the Marston Mitigation Site to monitor approximately 2 percent of the site. The vegetation monitoring plots were designed to be $1/10^{th}$ of an acre in size. The plots were randomly located and randomly oriented within the wetland restoration area.
Six tree species were planted in the Wetland Restoration Area (**Table 6**).

Table 6. Planted Tree Species

ID	Common Name	Scientific Name	FAC Status
1	Swamp Tupelo	*Nyssa biflora*	OBL
2	Blackgum	*Nyssa sylvatica*	FAC
3	Overcup Oak	*Quercus lyrata*	OBL
4	Swamp Chestnut Oak	*Quercus michauxii*	FACW-
5	Coastal Willow Oak	*Quercus phellos*	FACW-
6	Bald Cypress	*Taxodium distichum*	OBL

All of the planted stems inside the plot were flagged with orange flagging and marked with a three-foot tall piece of half inch PVC to mark them as the planted stems and to help in locating them in the future. Each stem is tagged with a numbered aluminum tag, though some tags have been damaged by meadow voles.

4.3 RESULTS OF VEGETATION MONITORING

Table 8 presents stem counts for each of the monitoring stations. Each planted tree species is identified across the top row, and each plot is identified down the left column. The numbers on the top row correlate to the ID column of **Table 6**, and the letters correlate with the volunteer ID column in **Table 7**. Trees are flagged in the field on a quarterly basis before the flags degrade. Flags are utilized because they will not interfere with the growth of the tree. Volunteers are also flagged during this process. The tallies shown on **Table 8** include the volunteer stems within each plot. Annual variation in stem count data can be attributed to mortality and regeneration from the root stock of stems that were previously assessed to be dead.

Table 7. Volunteer Tree Species

ID	Scientific Name	Common Name	FAC Status
A	*Diospyros virginiana*	Persimmon	FAC
B	*Platanus occidentalis*	Sycamore	FACW-
C	*Fraxinus pennsylvanica*	Green Ash	FACW
D	*Ulmus rubra*	Slippery Elm	FAC

Table 8. 2008 Vegetation Monitoring Plot Species Composition

Plot	1	2	3	4	5	6	Total	Planted stems per acre	A	B	C	D	Total with volunteers	Stems per acre with volunteers
M1	0	4	3	12	12	32	63	630	1	0	0	0	64	640
M2	0	44	6	1	2	4	57	570	1	0	0	0	58	580
M3	0	10	6	0	4	2	22	220	3	23	1	0	49	490
M4	25	0	1	1	3	24	54	540	0	0	0	0	54	540
M5	0	9	10	7	1	1	28	280	35	0	0	1	64	640
M6	0	2	3	11	14	4	34	340	0	0	0	3	37	370
M7	0	2	9	25	5	0	41	410	0	0	0	1	42	420
M8	14	0	0	5	2	22	43	430	0	0	0	0	43	430

Average Stems Per Acre: 428
Range of Stems Per Acre: 220-630

Volunteer species were monitored throughout the five year monitoring period. Volunteer woody species were observed in most of the vegetation plots. The following tree species were identified as volunteers within in the Wetland Restoration Area and were tallied in the plot stem counts: Sweetgum (*Liquidambar styraciflua*), red maple (*Acer rubrum*), sycamore (*Platanus occidentalis*) and persimmon (*Diospyros virginiana*).

4.4 VEGETATION OBSERVATIONS & CONCLUSIONS

Hydrophytic herbaceous vegetation is abundant onsite. Rush (*Juncus effusus*), spike-rush (*Eleocharis obtusa*), climbing hempweed (*Mikania scandens*), tearthumb (*Polygonum sagittatum*), boxseed (*Ludwigia spp*.), cat-tails (*Typha spp*.), woolgrass (*Scirpus cyperinus*) and sedge (*Carex spp*.), all hydrophytic herbaceous plants, are observed across the site, particularly in areas of periodic inundation. The presence of these herbaceous wetland plants helps to confirm the presence of wetland hydrology on the site.

There are weedy species occurring on the site, though few seem to be posing any wide spread problems for the woody or herbaceous hydrophytic vegetation. Commonly seen weedy vegetation includes ragweed (*Ambrosia artemisiifolia*), wild dill (*Foeniculum vulgare*), Chinese lespedeza (*Lespedeza cuneata*), goldenrod (*Solidago spp.*), dogfennel (*Eupatorium capillifolium*) and morning glory (*Ipomoea spp*.).

The site was planted in nonriverine hardwoods and coastal plain swamp species in March 2004. There were eight 1/10th acre vegetation-monitoring plots established throughout the planting areas. The site met the minimum interim success criterion of 320 trees per acre by the end of year three, and meets the final success criteria of 260 trees per acre by the end of year five, with the exception of Plot 3.

For the 2008 monitoring year, the average number of stems per acre on site is 428. The site met the minimum success interim criteria of 320 trees per acre by the end of year three, and meets the final success criteria of 260 trees per acre by the end of year five, with the exception of Plot 3. The treatment of the lespedeza in the area of concern around Plot 3 was successful, and the total stems per acre in the affected area, including volunteers, is well within an acceptable range.

5.0 STREAM MONITORING

5.1 STREAM SUCCESS CRITERIA

As stated in the approved Mitigation Plan, the stream restoration success criteria for the site includes 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.
- *Benthic Macroinvertebrates*: Sampling of benthic macroinvertebrates within the restored stream channel shall be conducted for the first three years of post-restoration monitoring.

5.2 STREAM MORPHOLOGY MONITORING PLAN

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

5.2.1 Cross Sections

Two permanent cross sections were installed per 1,000 linear feet of stream restoration work, with one (1) of the locations being a riffle cross section and one (1) location being a pool cross section. A total of 13 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.

5.2.2 Longitudinal Profile

A longitudinal profile will be completed in Years 1, 3, and 5. The profile will be conducted for a length of restored channel at least 3,000 feet in length. Measurements will include thalweg, water surface, inner berm, bankfull, and top of low bank. Each of these measurements will be 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.

5.2.3 Hydrology

A crest gauge was installed on the site to document bankfull events. The gauge is checked each month, and records the highest out-of-bank flow event that occurred during the past month. The gauge is located near stream station 60+50 (**Figure 3**).

5.2.4 Photo Reference Stations

Photographs are used to visually document restoration success. Nine reference photo stations have been established across the Marston Site. Reference stations are marked with wooden stakes, and GPS coordinates have been determined for each location. Reference photos are taken at least once per year. Reference photos are taken at each permanent cross section from both stream banks. 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. Structure photos of each grade control structure are also taken. A photo log of the Marston site is included as **Appendix D**.

5.3 STREAM MORPHOLOGY MONITORING RESULTS

5.3.1 Cross Sections

Year 5 cross section monitoring data for stream stability were collected during July 2008 and compared to data collected in prior years (**Table 9; Appendix B**). All monitored cross sections were stable and showed little change in channel dimensions.

5.3.2 Longitudinal Profile

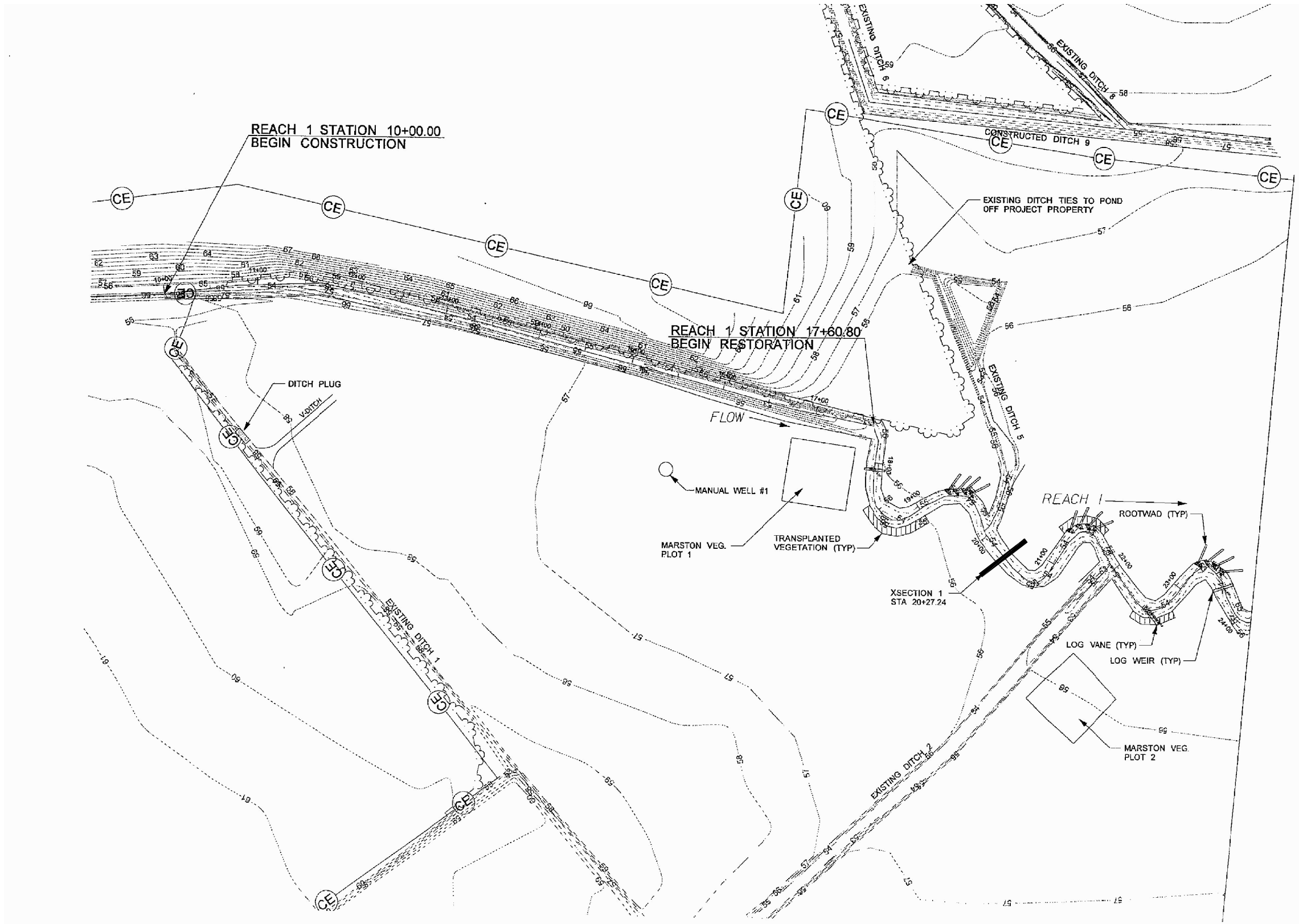
A longitudinal profile survey was conducted in Year 5. The profile survey indicated little change to channel dimensions (**Table 9; Appendix B**). Streams in the Coastal Plain are dynamic in nature and some channel adjustment is expected. Stream areas requiring observation are described in **Table 10**, and their locations are shown in **Figures 7a-7d**.

Table 9. Summary of Morphologic Monitoring Parameters

Parameter	Year 5 Reach 1	Year 5 Reach 2
Bankfull Cross Section Area, Abkf (sq ft)	13.1	8.0
Avg. Bankfull Width, Wbkf (ft)	14.9	12.5
Bankfull W/D	17.5	19.7
Bankfull Mean Depth, Dbkf (ft)	0.9	0.6
Bankfull Max Depth, Dmax (ft)	1.5	1.2

Table 10. Stream Areas Requiring Observation

ID	Station	Feature	Problem	Severity	Recommended Action
SPA1	Reach 1-24+50	Old beaver dam-breached	Has resolved itself.	Negligible	None
SPA2	Reach 1-29+00	Log Vane	Washed under vane	Moderate	None
SPA3	Reach 1-32+90	Channel	Sand entering channel, deposition	Moderate	None
SPA4	Reach 1-40+00	Channel - right bank	Kudzu becoming established	Minor	Herbicide Treatment
SPA4	Reach 1-41+82	Channel - right bank	Kudzu becoming established	Minor	Herbicide Treatment



Marston
Stream Problem Areas

Figure 7a

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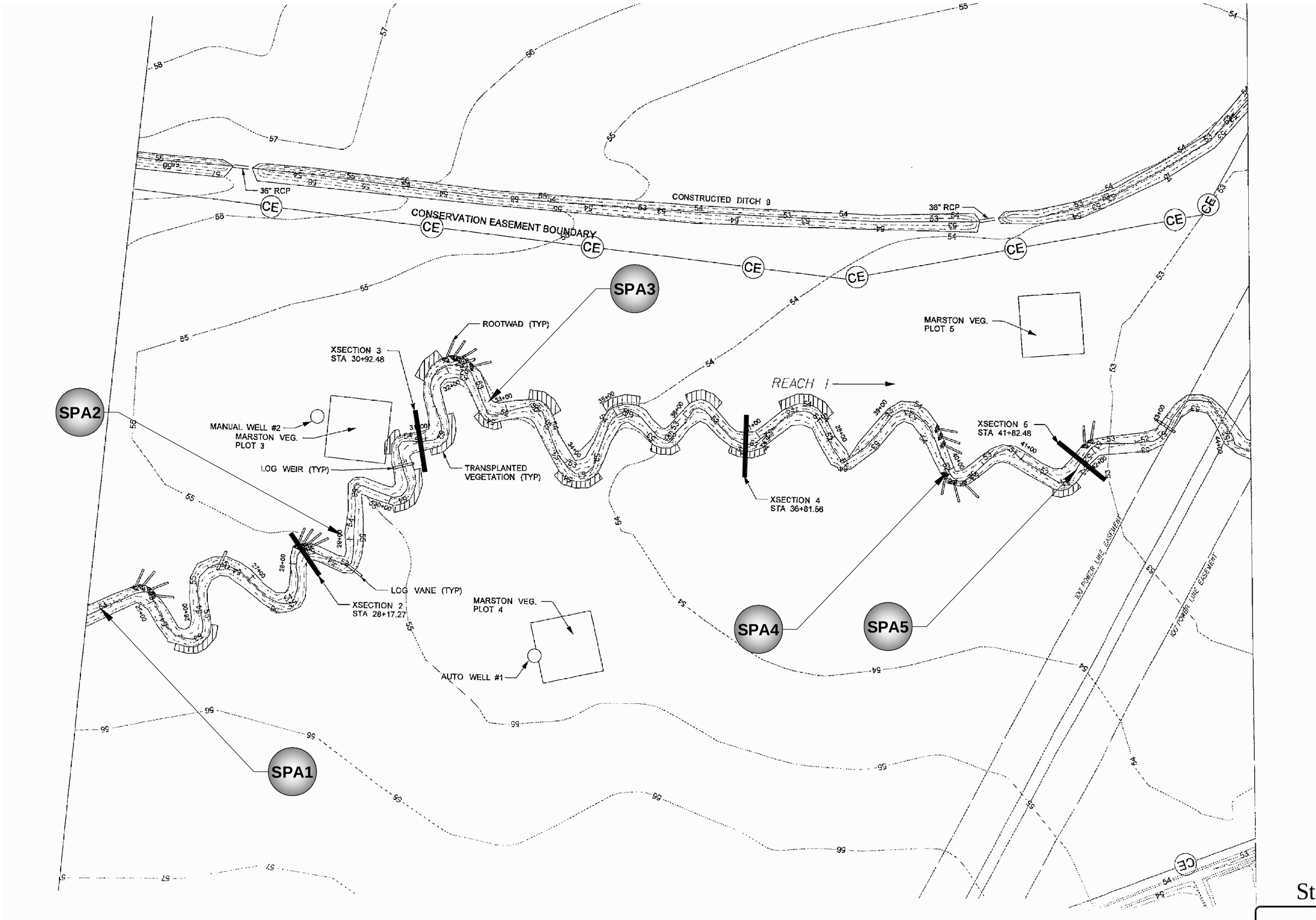
SCALE (FT)



Marston
Stream Problem Areas

Figure 7b

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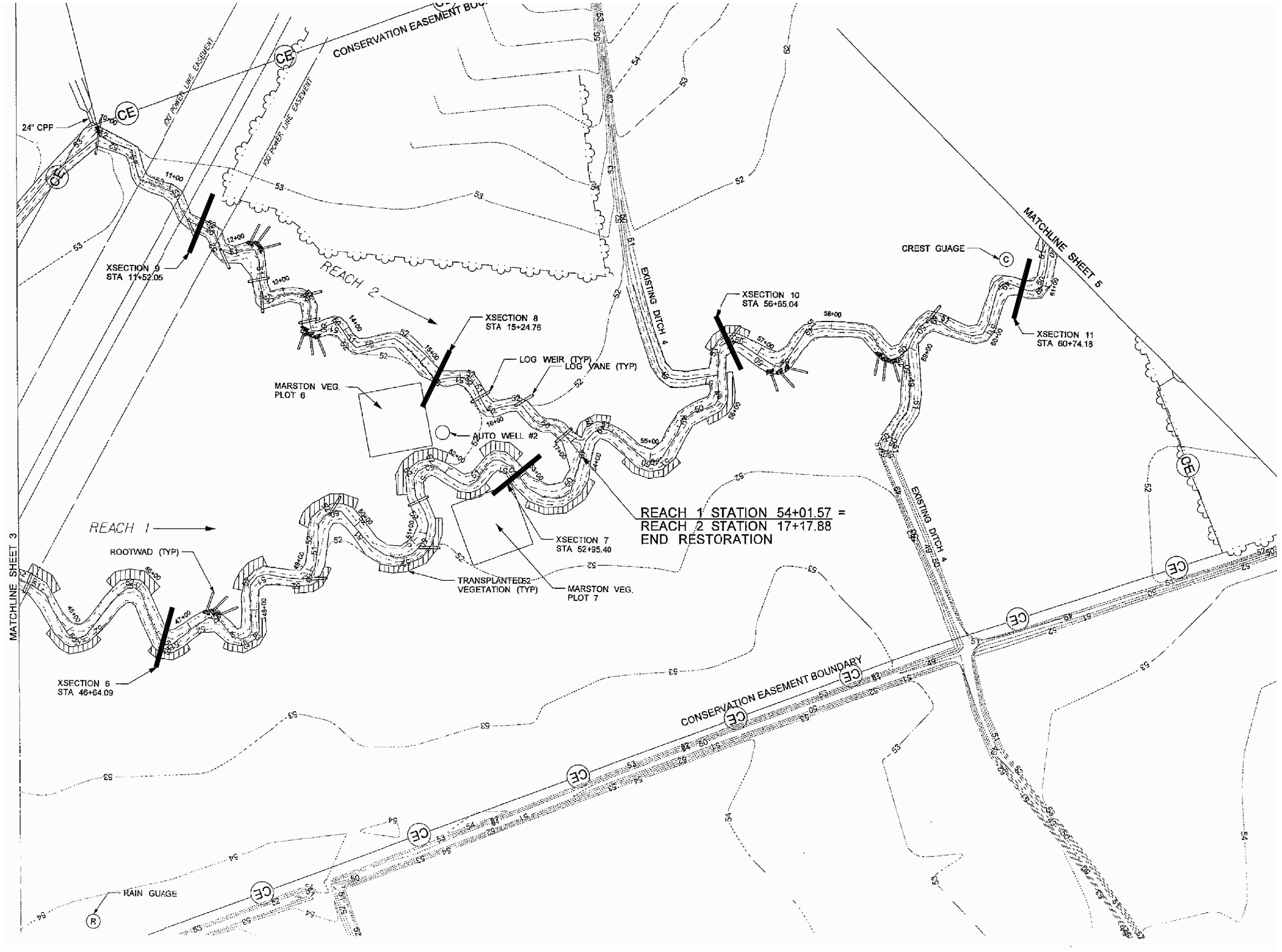

Marston
Stream Problem Areas

Figure 7c

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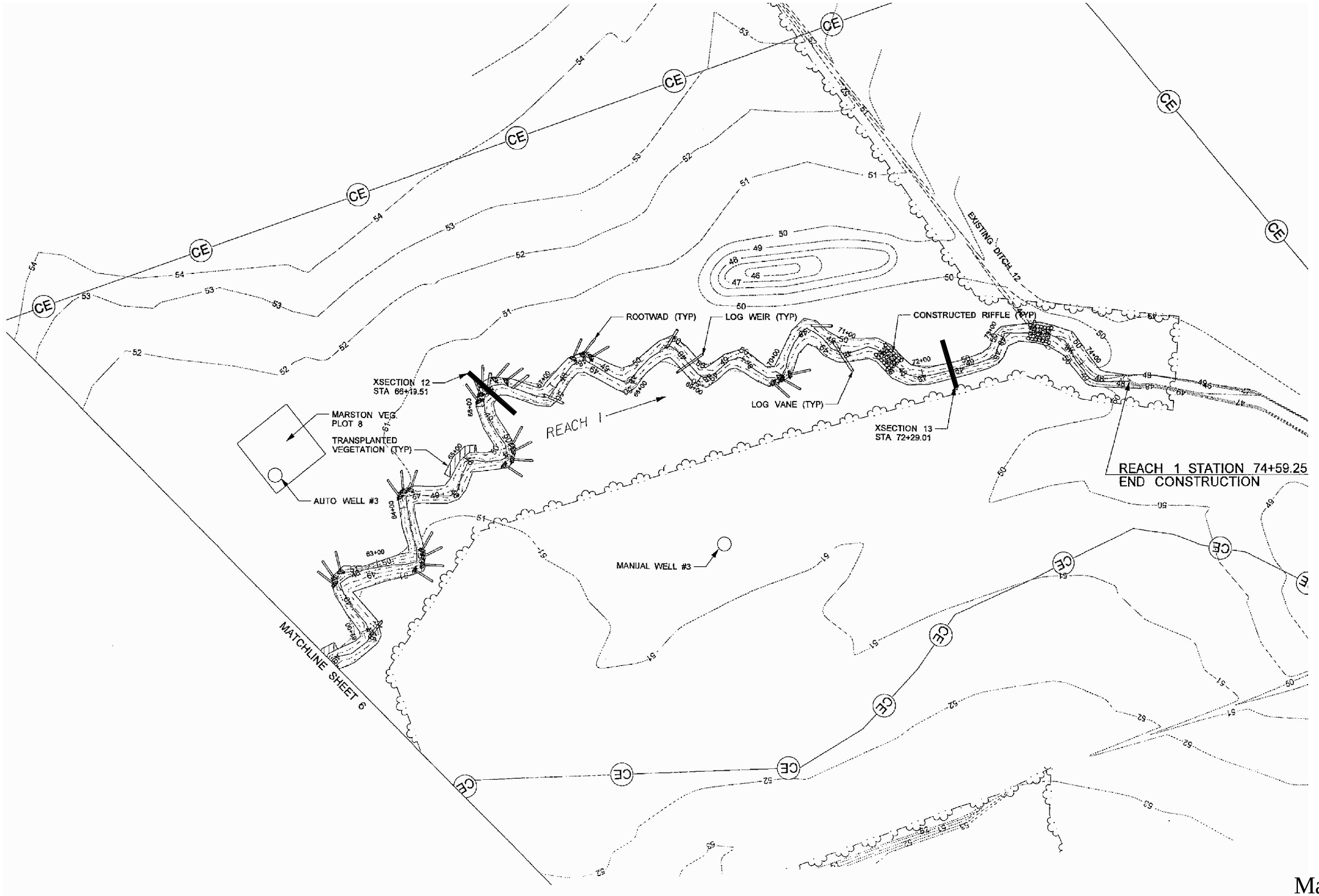
SCALE (FT)



Marston
Stream Problem Areas

Figure 7d

50 25 0 50 100
SCALE (FT)

5.3.3 Hydrology

During the 2008 monitoring year, two bankfull events on the site were documented during site visits through the use of the onsite crest gauge (**Table 11**). The largest stream flow recorded on the gauge (CG1) was 1.10 feet above bankfull elevation in April 2008.

Table 11. Crest Gauge Data

Month Recorded	Crest Gauge
January	---
February	0.00
March	1.05
April	1.10
May	0.00
June	0.00
July	0.00
August	---
September	0.00
October	---
November	---
December	---

5.4 STREAM CONCLUSIONS

The channel was dry during the latter part of the 2008 growing season, making it difficult to take photographs of the stream channel itself. All potential problem areas are minor and localized, and no corrective actions are recommended at this time. All monitored cross sections fell within the quantitative parameters defined for "E" or "C" type channels. Two bankfull events were documented during site visits through the use of the on site crest gauge and visual evidence of out-of-bank flow.

The Marston site has recorded many bankfull events over the five year monitoring period. The restored stream channel has remained stable and is providing the intended habitat and hydrologic functions. In-stream structures are stable and functioning as designed. Monitored cross-sections have exhibited little adjustment in stream dimension. There are no stream problem areas requiring repair. All erosion areas are moving toward stability or are normal in a dynamic coastal plain channel. Therefore, it can reasonably be concluded that the site has achieved the success criteria for streams as specified in the Mitigation Plan for the site.

6.0 CONCLUSIONS AND RECOMMENDATIONS

The stream, hydrologic, and vegetation monitoring data for all five monitoring years at the site are summarized in **Table 9** and **Tables 12-15**. Based on this data, it can be concluded that the site has achieved the stream, hydrologic, and vegetative success criteria specified in the Mitigation Plan.

Table 12. Summary of Stream Monitoring Data 2004-2008

	2004	2005	2006	2007	2008
Minimum Number of Bankfull Events	1	2	7	4	2
Maximum Height Above Bankfull (feet)	2.0	2.0	1.7	2.5	1.1

Table 13. Summary of Hydrologic Monitoring Data 2004-2008

Well	Most Consecutive Days Meeting Criteria (% Growing Season)					Cumulative Days Meeting Criteria (% Growing Season)				
	Monitoring Year					Monitoring Year				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
AW1	11	18	14	4	17	52	53	57	13	32
AW2	11	39	29	7	42	55	63	78	15	59
AW3	12	15	15	6	27	63	56	82	16	43
MW1	12	18	13	8	18	63	53	*	19	41
MW2	12	18	30	7	35	63	53	*	15	37
MW3	11	15	13	5	35	52	56	*	12	35
Ref - Webb	3	8	*	2	12	11	22	*	3	26

*No data available

Table 14. Summary of Rainfall Data 2004-2008

	Total for January - April					Total for January - November				
	Monitoring Year					Monitoring Year				
	2004	2005	2006	2007	2008	2004	2005	2006	2007	2008
Actual	12.2	11.9	9.29	17.4	29.6	46.5	38	51.5	32.7	72.5*
Average	16.2	16.2	16.2	16.2	16.2	49.4	49.4	49.4	49.4	49.4
30% Average	11.2	11.2	11.2	11.2	11.2	33.1	33.1	33.1	33.1	33.1

*Total for January 1 through October 14

Table 15. Summary of Vegetative Monitoring Data 2004-2008

Plot	Planted Stems Per Acre							
	Base	2004	2005	2006	2007	2008	Survival	Total Stems Per Acre 2008
M1	680	70	610	660	650	630	93%	640
M2	610	150	590	560	560	570	93%	580
M3	690	310	260	520	290	220	32%	490
M4	550	470	540	540	540	540	98%	540
M5	600	410	350	360	320	280	46%	640
M6	590	310	350	320	320	340	58%	970
M7	670	490	420	410	420	410	61%	420
M8	530	470	430	430	450	430	81%	430
Average	**628**	**335**	**444**	**475**	**444**	**428**	**68%**	**589**

APPENDIX A

As-Built Survey

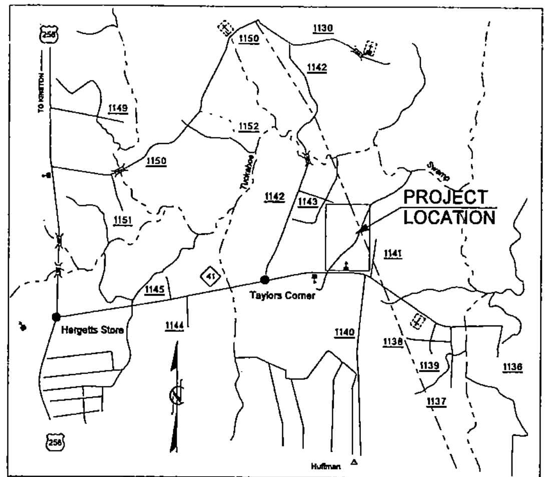
PROJECT: 070 MARSTON

WETLAND AND STREAM RESTORATION PROJECT
ENVIRONMENTAL BANC AND EXCHANGE, LLC
MARSTON SITE

JONES COUNTY

STATE	BUCK PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	070	1	6

NO.	DATE	CHECKED BY	APPROVED BY
1	5-4-04		KEVIN TWEEDY

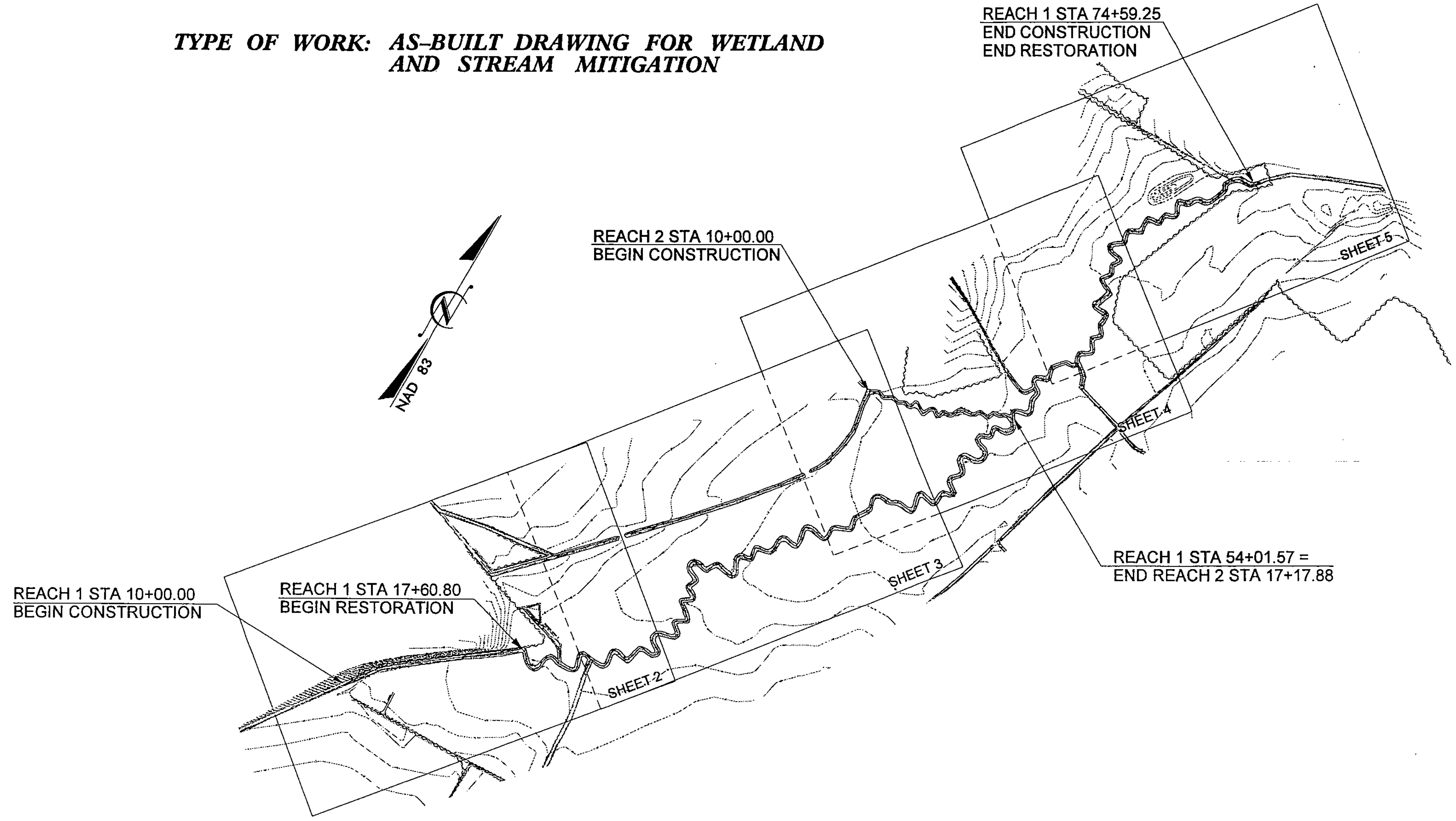


VICINITY MAP

LOCATION: OFF NCSR 41 NEAR TAYLORS CORNER

TYPE OF WORK: AS-BUILT DRAWING FOR WETLAND AND STREAM MITIGATION

INDEX OF SHEETS:



GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

5 0 5 10
PROFILE (VERTICAL)

PROJECT SUMMARY

AS-BUILT DESIGN REACH 1 LENGTH	=	5698 FEET
AS-BUILT DESIGN REACH 2 LENGTH	=	718 FEET
AS-BUILT DESIGN STREAM LENGTH	=	6416 FEET

PROPOSED WETLAND RESTORATION AREA	=	37.7 ACRES
PROPOSED WETLAND ENHANCEMENT AREA	=	8.7 ACRES

PREPARED FOR THE OFFICE OF:

ENVIRONMENTAL BANC AND EXCHANGE, LLC

10055 RED RUN BOULEVARD, SUITE 130
OWING MILLS, MD 21117

EBX

EBX CONTACT:

GEORGE KELLY
PROJECT MANAGER

PREPARED IN THE OFFICE OF:

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

MARCH 2004
CONSTRUCTION COMPLETED:

KEVIN L. TWEEDY, PE
PROJECT ENGINEER

PROJECT ENGINEER

Figure 2a

As-Built Drawing for the Marston Mitigation Site.

SIGNATURE: P.E.

PROJECT REFERENCE NO.	SHEET NO.
070	3

EBX MARSTON - ASBUILT

PLAN VIEW

PROJECT ENGINEER

Figure 2c

As-Built Drawing for the Marston Mitigation Site.

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

NAD 83

36" RCP

CONSERVATION EASEMENT BOUNDARY

CONSTRUCTED DITCH 9

36" RCP

ROOTWAD (TYP)

XSECTION 3
STA 30+92.48

MARSTON VEG.
PLOT 5

REACH 1

MANUAL WELL #2

MARSTON VEG.
PLOT 3

LOG WEIR (TYP)

TRANSPLANTED
VEGETATION (TYP)

XSECTION 4
STA 36+81.56

XSECTION 5
STA 41+82.48

MATCHLINE SHEET 2

LOG VANE (TYP)

XSECTION 2
STA 28+17.27

MARSTON VEG.
PLOT 4

AUTO WELL #1

100' POWER LINE EASEMENT

100' POWER LINE EASEMENT

MATCHLINE SHEET 4

NOTE:
AS-BUILT CONTOURS ARE BASED ON GRADED ELEVATIONS DURING CONSTRUCTION. ACTUAL ELEVATIONS MAY VARY BY +/- 0.5 FT DUE TO SCARIFICATION OF SOIL.

AS-BUILT DRAWING

50 25 0 50 100
SCALE (FT)

PROJECT REFERENCE NO.	SHEET NO.
070	2

EBX MARSTON - ASBUILT

PLAN VIEW

PROJECT ENGINEER

Figure 2b

As-Built Drawing for the Marston Mitigation Site.

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

NAD 83

REACH 1 STATION 10+00.00
BEGIN CONSTRUCTION

REACH 1 STATION 17+60.80
BEGIN RESTORATION

EXISTING DITCH 6

EXISTING DITCH 8

CONSTRUCTED DITCH 9

EXISTING DITCH TIES TO POND
OFF PROJECT PROPERTY

EXISTING DITCH 5

DITCH PLUG

V-DITCH

FLOW

EXISTING DITCH 1

EXISTING DITCH 2

MANUAL WELL #1

MARSTON VEG.
PLOT 1

TRANSPLANTED
VEGETATION (TYP)

XSECTION 1
STA 20+27.24

REACH 1

ROOTWAD (TYP)

LOG VANE (TYP)

LOG WEIR (TYP)

MARSTON VEG.
PLOT 2

MATCHLINE SHEET 3

NOTE:
AS-BUILT CONTOURS ARE BASED ON GRADED ELEVATIONS DURING CONSTRUCTION. ACTUAL ELEVATIONS MAY VARY BY +/- 0.5 FT DUE TO SCARIFICATION OF SOIL.

AS-BUILT DRAWING

50 25 0 50 100
SCALE (FT)

PROJECT REFERENCE NO.	SHEET NO.
070	4
EBX MARSTON - ASBUILT	
PLAN VIEW	
PROJECT ENGINEER	

Figure 2d

As-Built Drawing for the Marston Mitigation Site.

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

REACH 2 STATION 10+00.00
BEGIN RESTORATION

NAD 83

24" CPP

CONSERVATION EASEMENT BOUNDARY

100' POWER LINE EASEMENT

XSECTION 9
STA 11+52.05

REACH 2

XSECTION 8
STA 15+24.76

LOG WEIR (TYP)

LOG VANE (TYP)

MARSTON VEG. PLOT 6

AUTO WELL #2

EXISTING DITCH 4

XSECTION 10
STA 56+65.04

CREST GUAGE

XSECTION 11
STA 60+74.18

MATCHLINE SHEET 5

REACH 1

ROOTWAD (TYP)

XSECTION 7
STA 52+95.40

TRANSPLANTED VEGETATION (TYP)

MARSTON VEG. PLOT 7

REACH 1 STATION 54+01.57 =
REACH 2 STATION 17+17.88
END RESTORATION

MATCHLINE SHEET 3

XSECTION 6
STA 46+64.09

RAIN GUAGE

NOTE:
AS-BUILT CONTOURS ARE BASED ON GRADED ELEVATIONS DURING CONSTRUCTION. ACTUAL ELEVATIONS MAY VARY BY +/- 0.5 FT DUE TO SCARIFICATION OF SOIL.

AS-BUILT DRAWING

50 25 0 50 100
SCALE (FT)

PROJECT REFERENCE NO.	SHEET NO.
070	5
EBX MARSTON - ASBUILT	
PLAN VIEW	

PROJECT ENGINEER

Figure 2e

As-Built Drawing for the Marston Mitigation Site.

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

NAD 83

ROOTWAD (TYP)

LOG WEIR (TYP)

CONSTRUCTED RIFFLE (TYP)

EXISTING DITCH 12

XSECTION 12
STA 66+19.51

LOG VANE (TYP)

XSECTION 13
STA 72+29.01

REACH 1

MARSTON VEG. PLOT 8

TRANSPLANTED VEGETATION (TYP)

AUTO WELL #3

MANUAL WELL #3

REACH 1 STATION 74+59.25
END CONSTRUCTION

MATCHLINE SHEET 6

NOTE:
AS-BUILT CONTOURS ARE BASED ON GRADED ELEVATIONS DURING CONSTRUCTION. ACTUAL ELEVATIONS MAY VARY BY +/- 0.5 FT DUE TO SCARIFICATION OF SOIL.

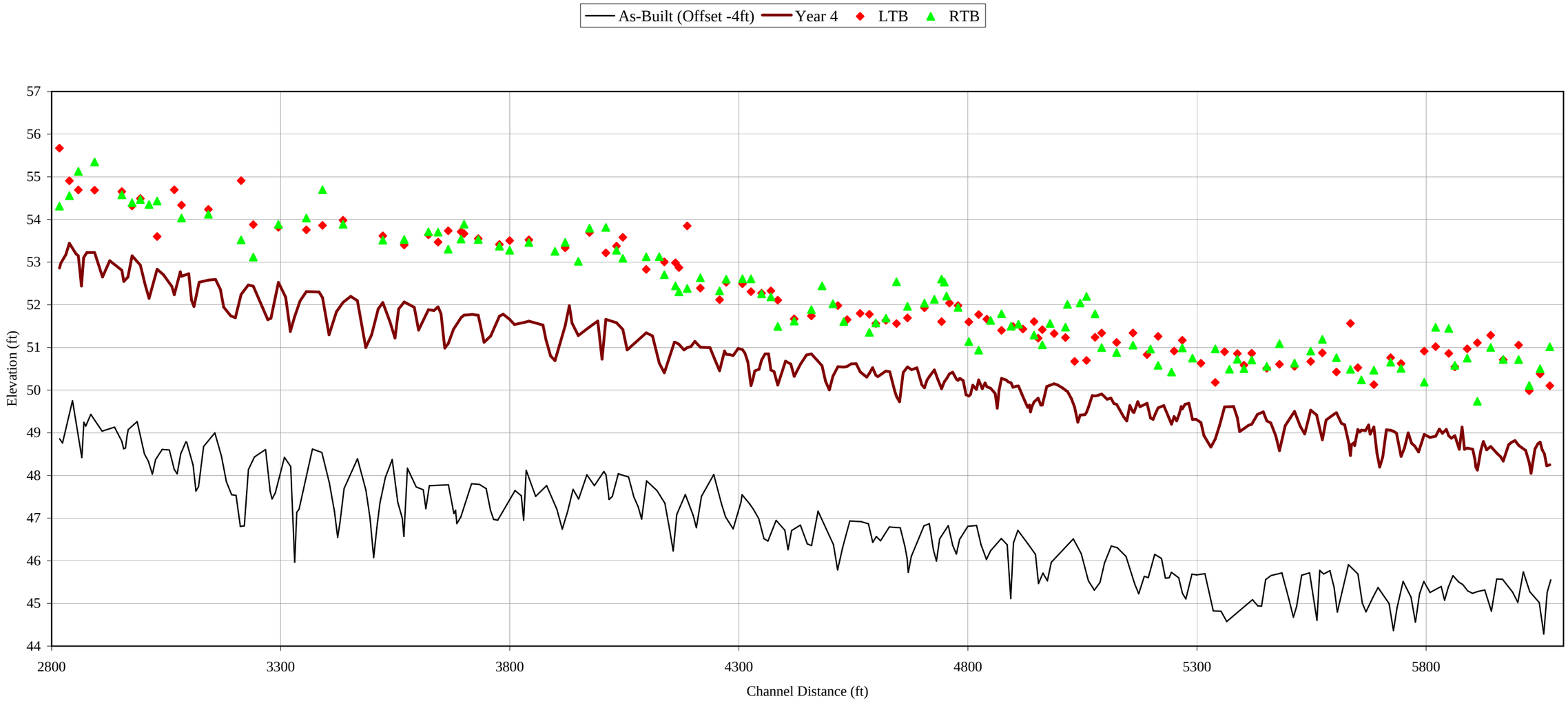
PLAN VIEW

50 25 0 50 100
SCALE (FT)

APPENDIX B

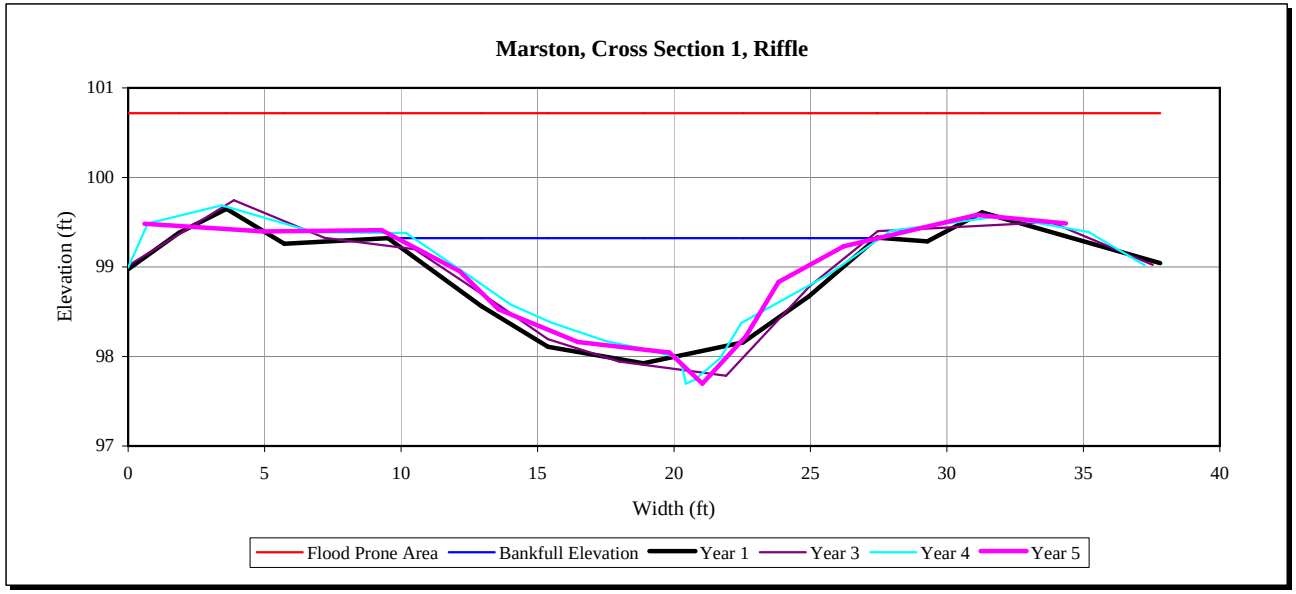
2008 Profile and Cross Section Data

Marston
UT-1 Station 28+17 - 60+74



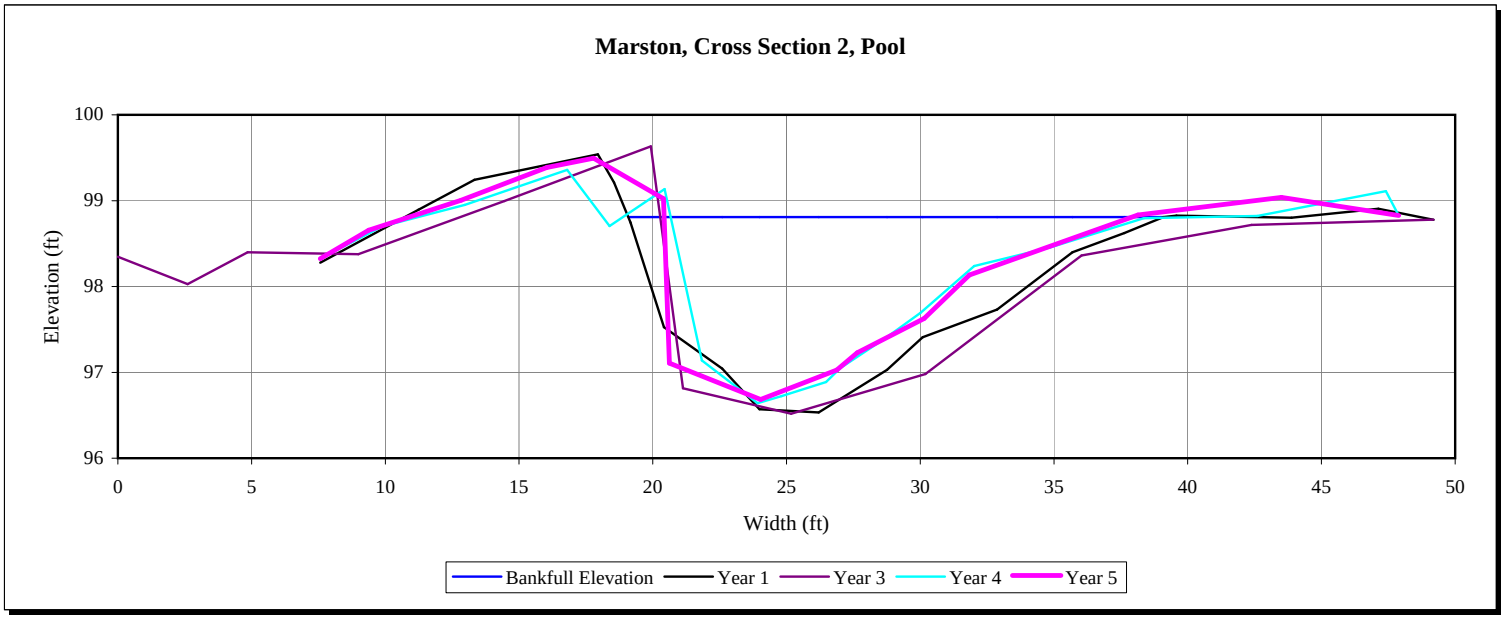
Looking at Left Bank.

Looking at Right Bank.



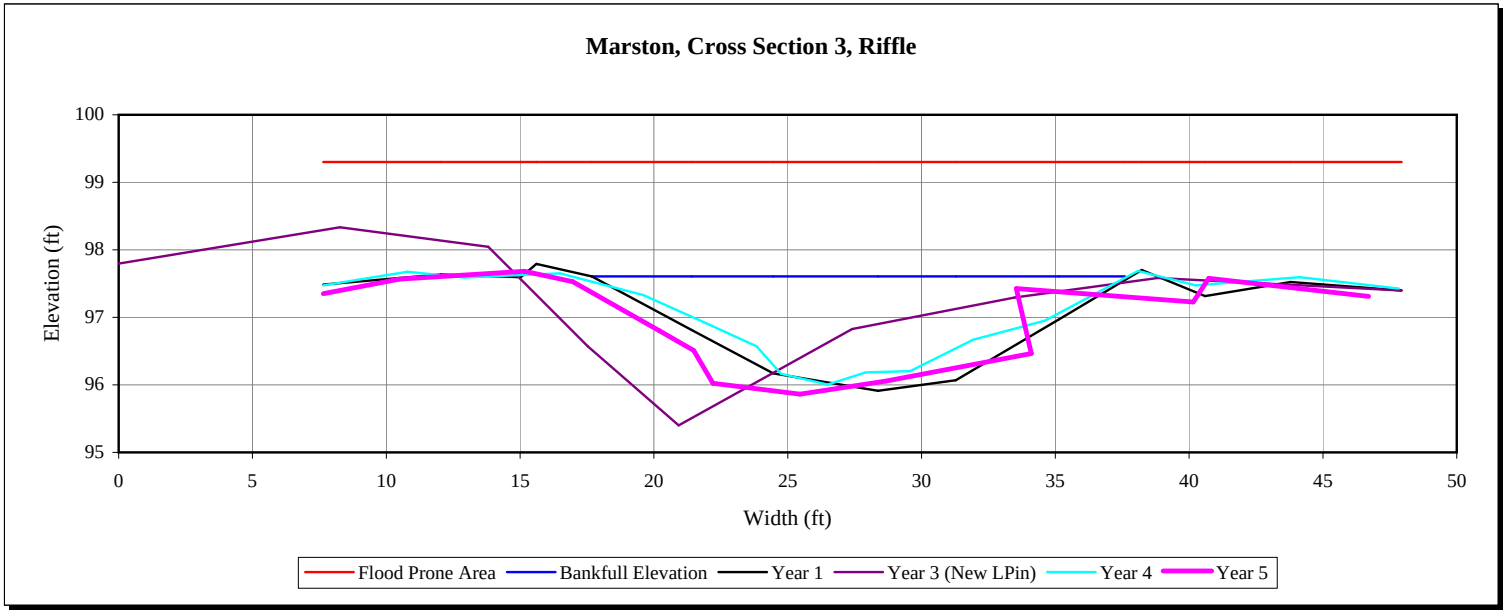
Looking at Left Bank.

Looking at Right Bank.



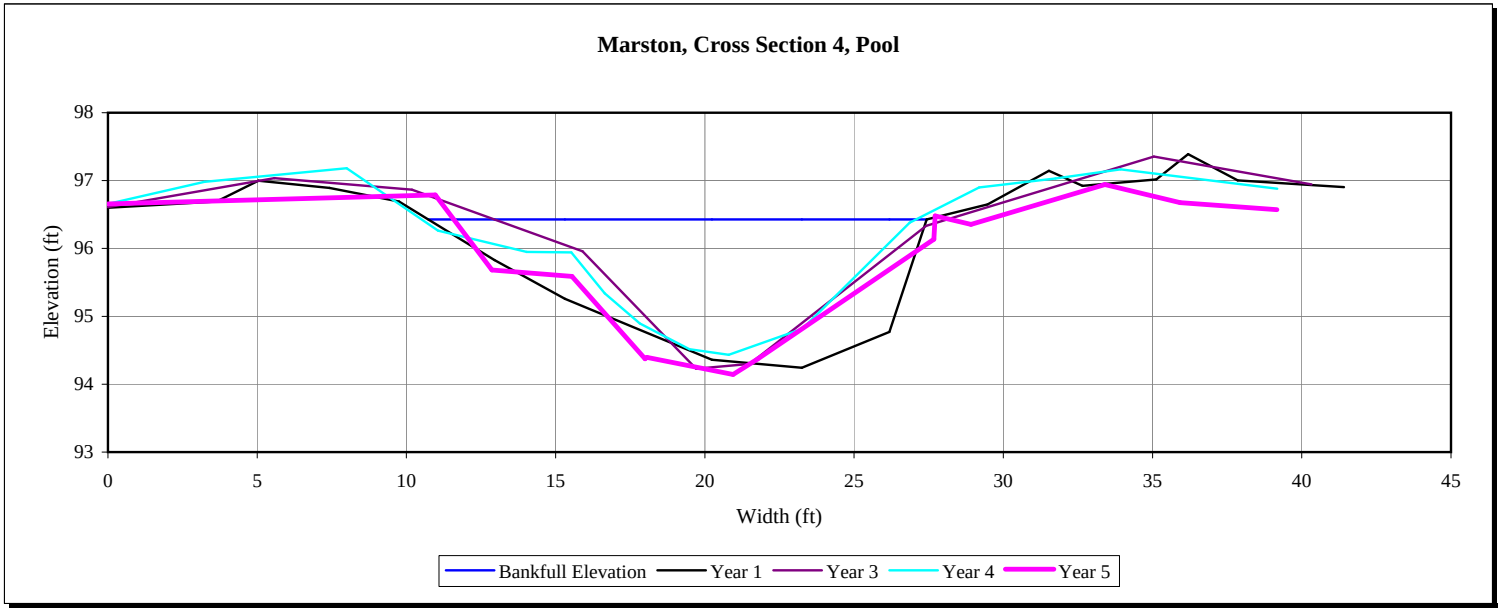
Looking at Left Bank.

Looking at Right Bank.



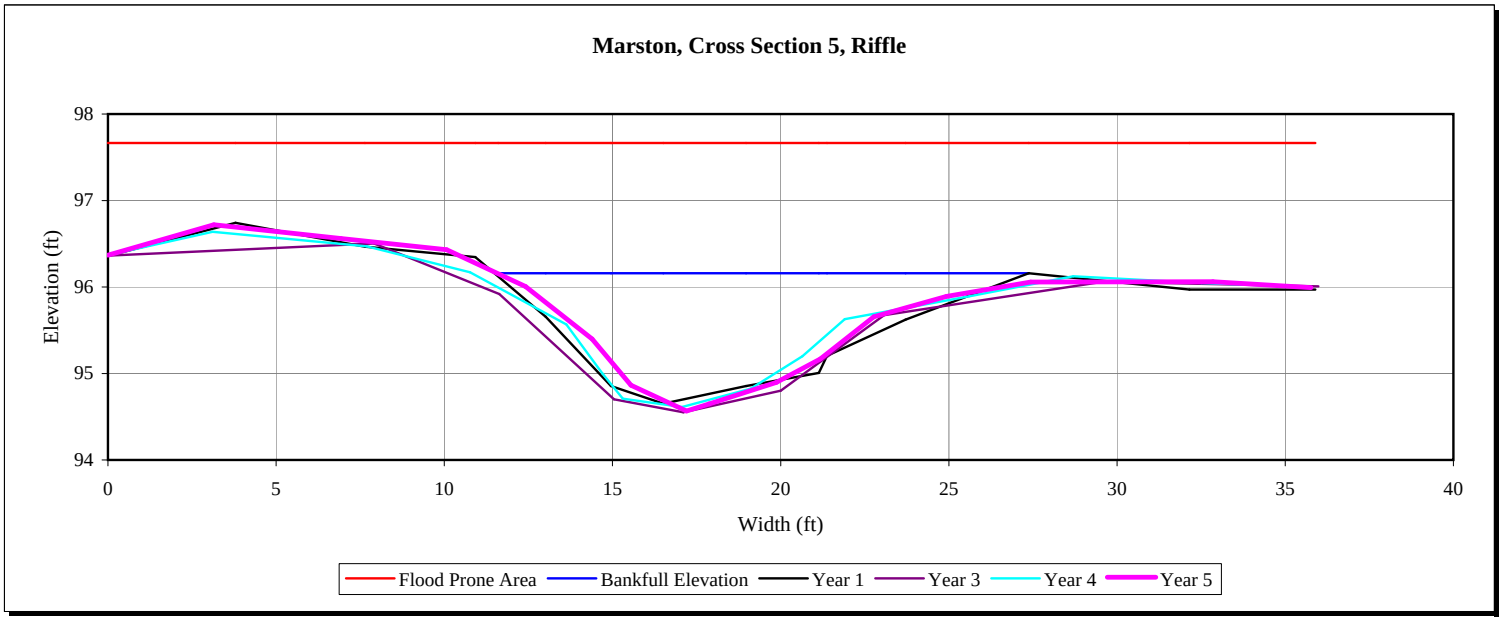
Looking at Left Bank.

Looking at Right Bank.



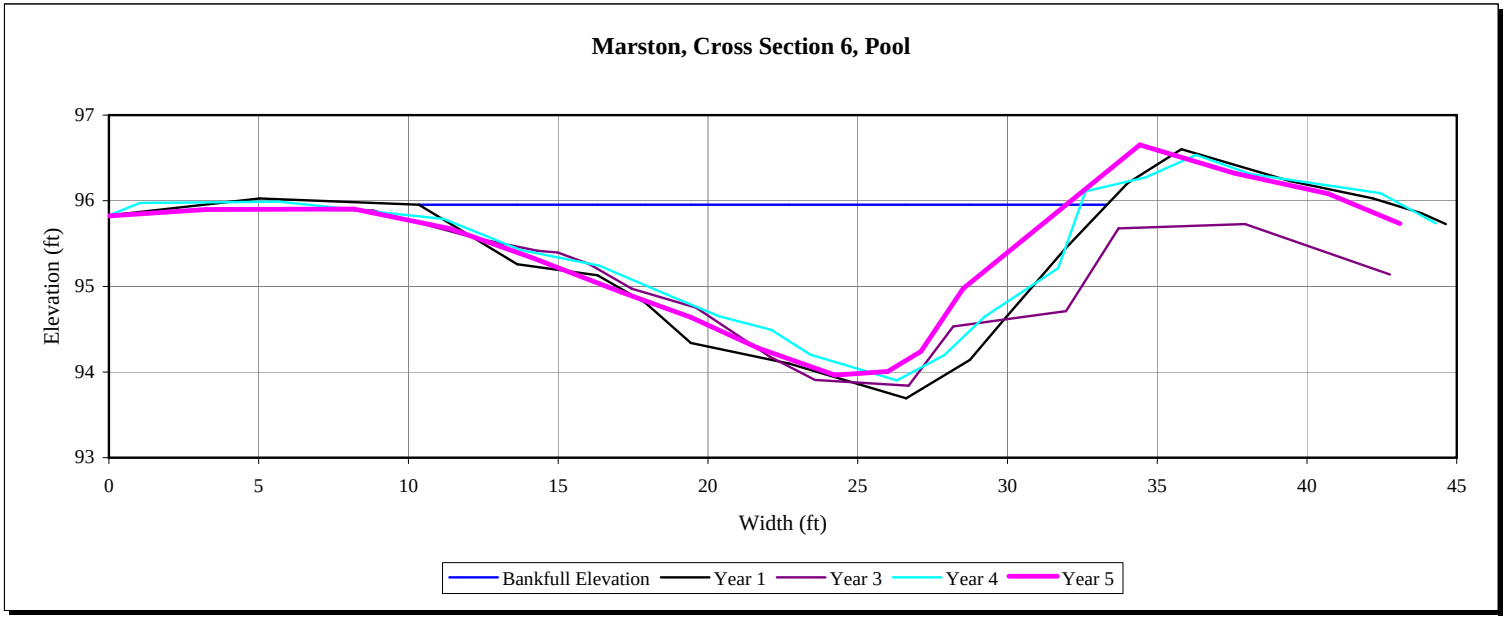
Looking at Left Bank.

Looking at Right Bank.



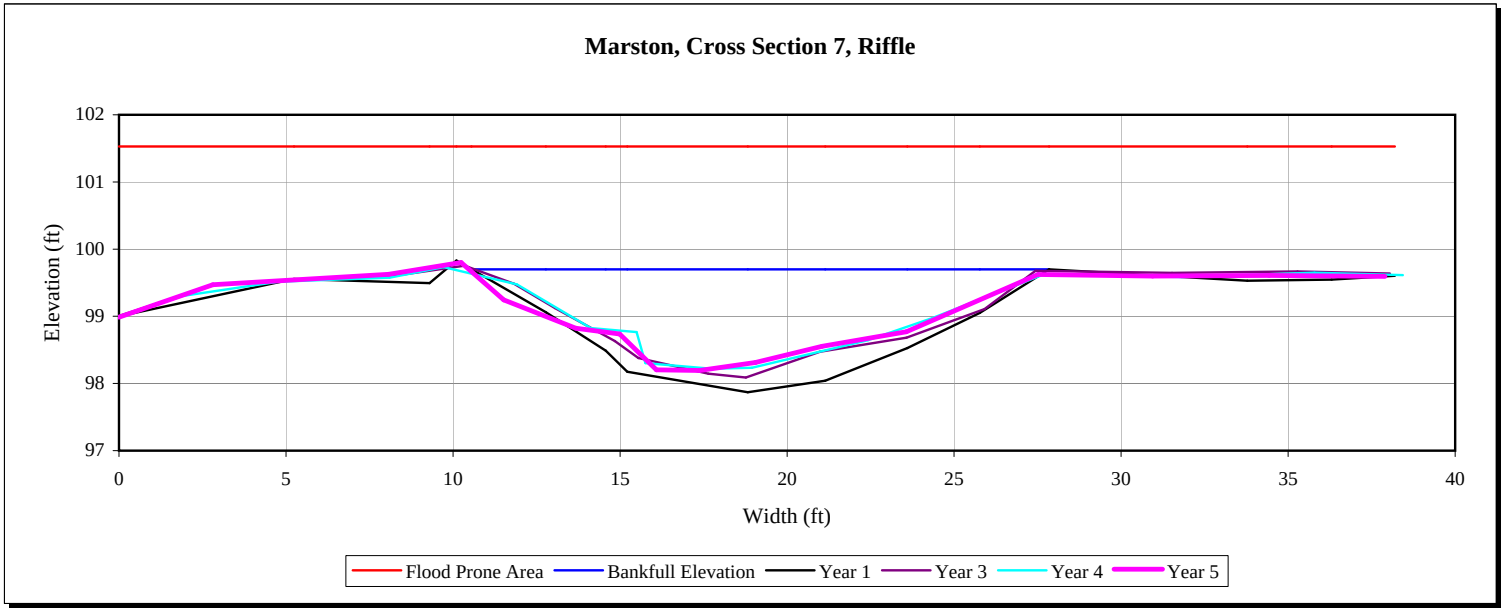
Looking at Left Bank.

Looking at Right Bank.



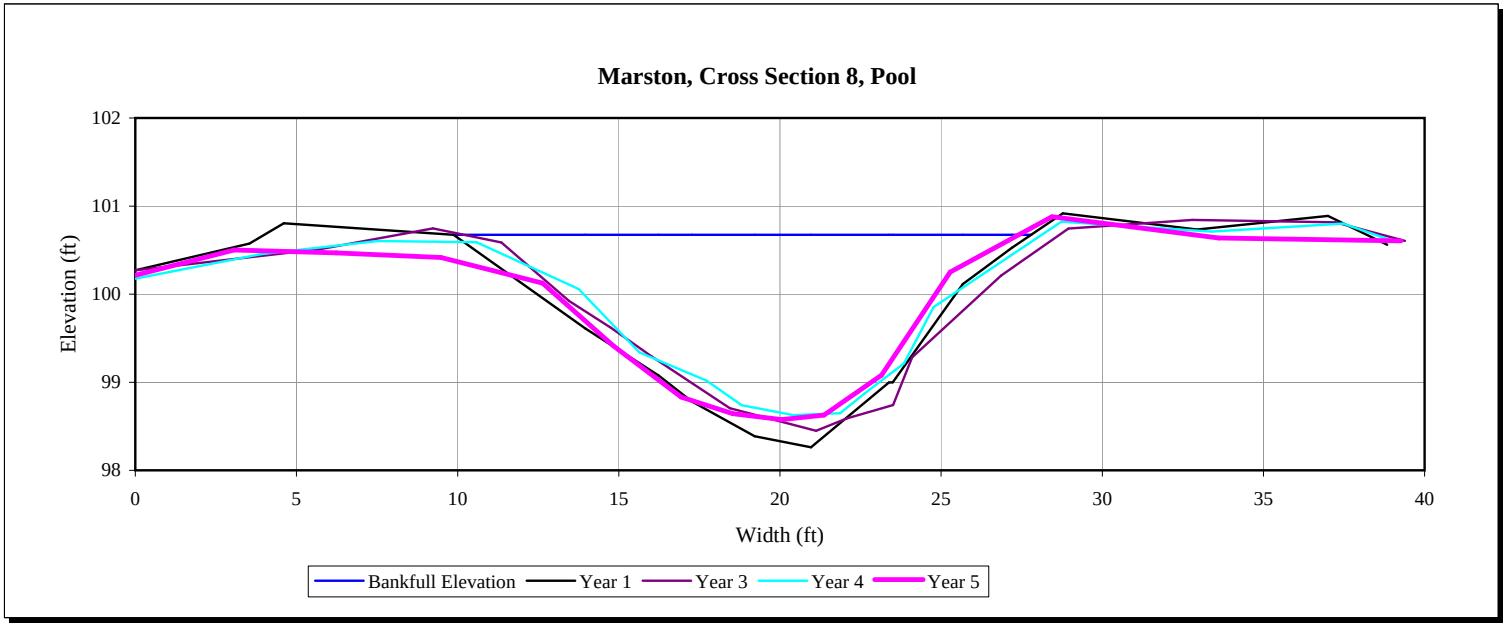
Looking at Left Bank.

Looking at Right Bank.



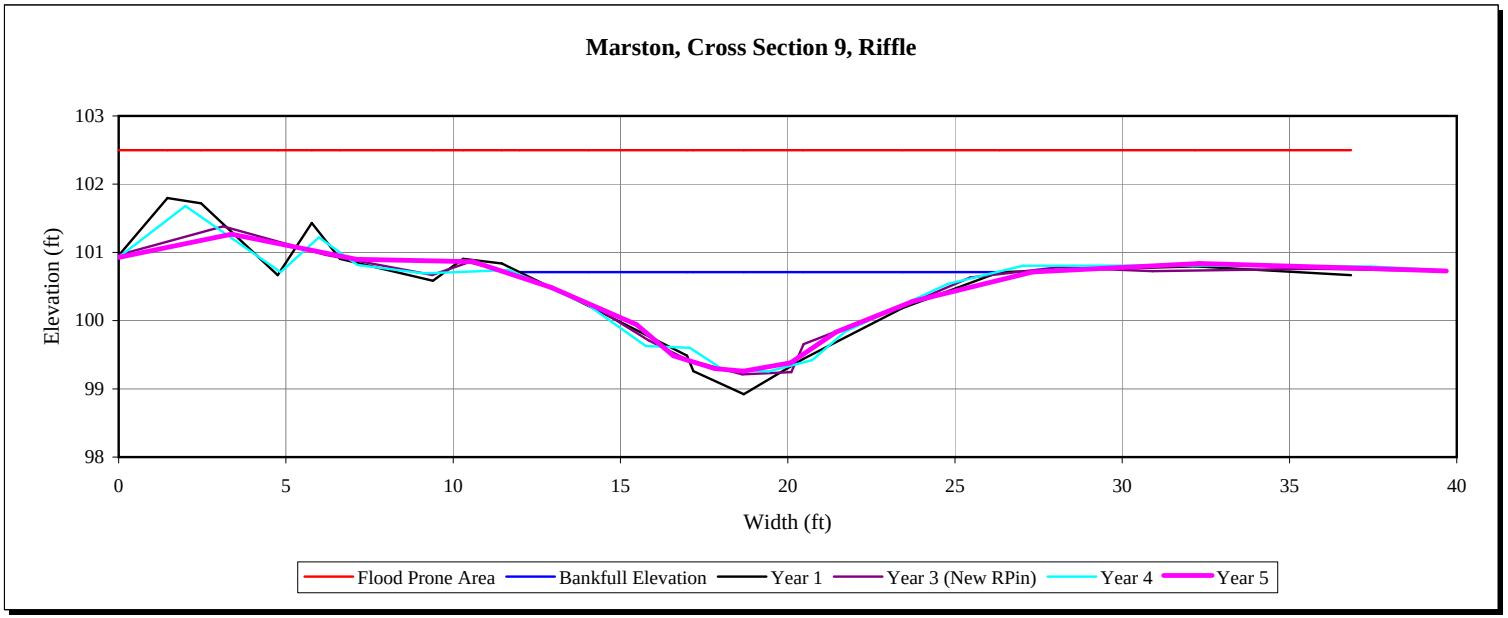
Looking at Left Bank.

Looking at Right Bank.



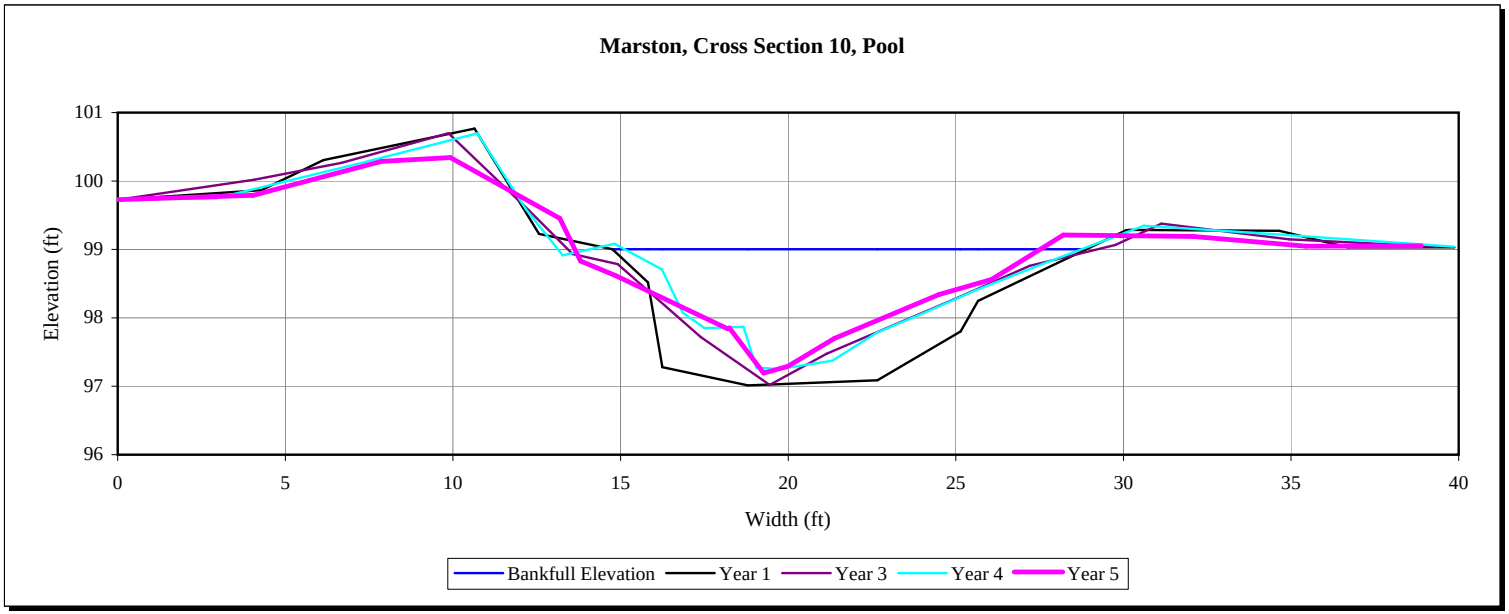
Looking at Left Bank.

Looking at Right Bank.



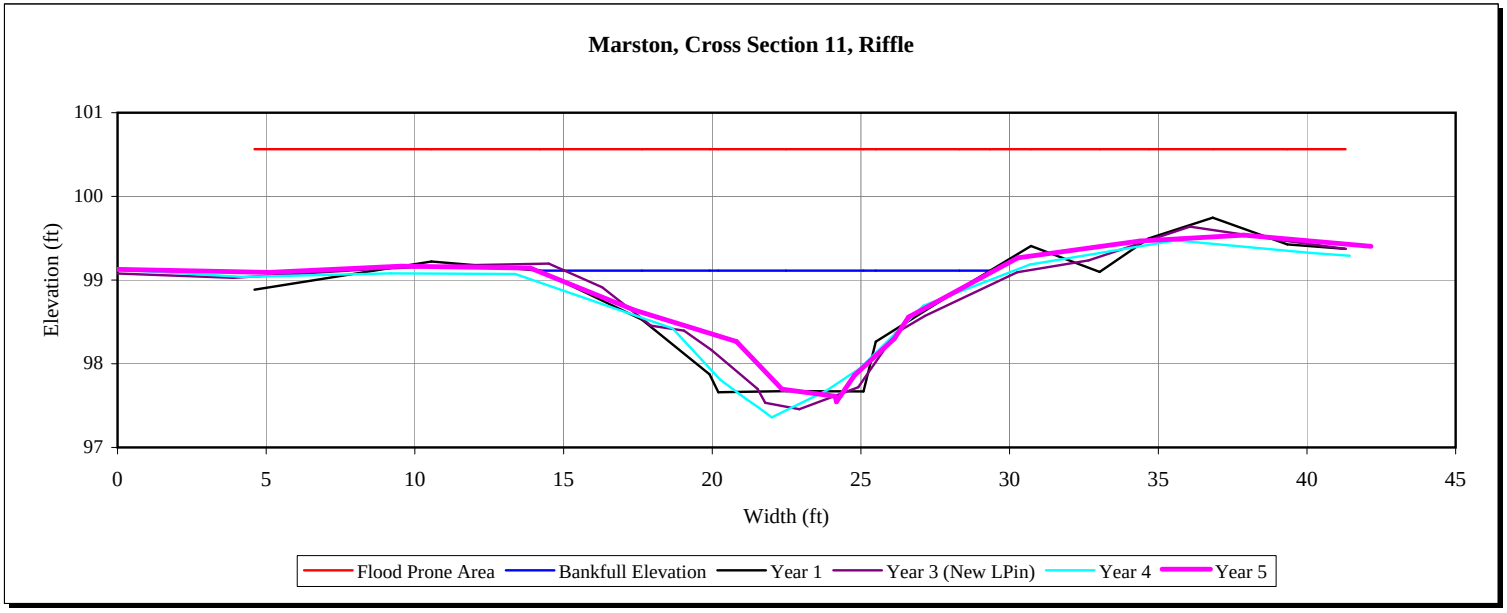
Looking at Left Bank.

Looking at Right Bank.



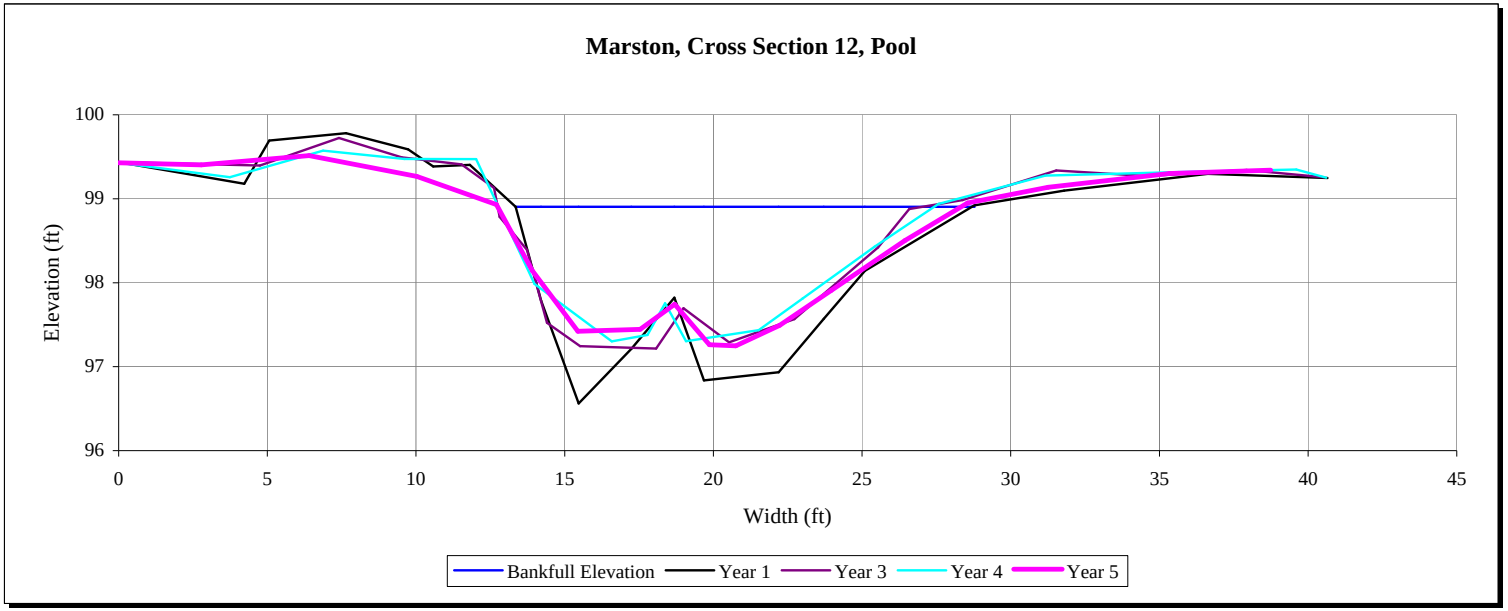
Looking at Left Bank.

Looking at Right Bank.



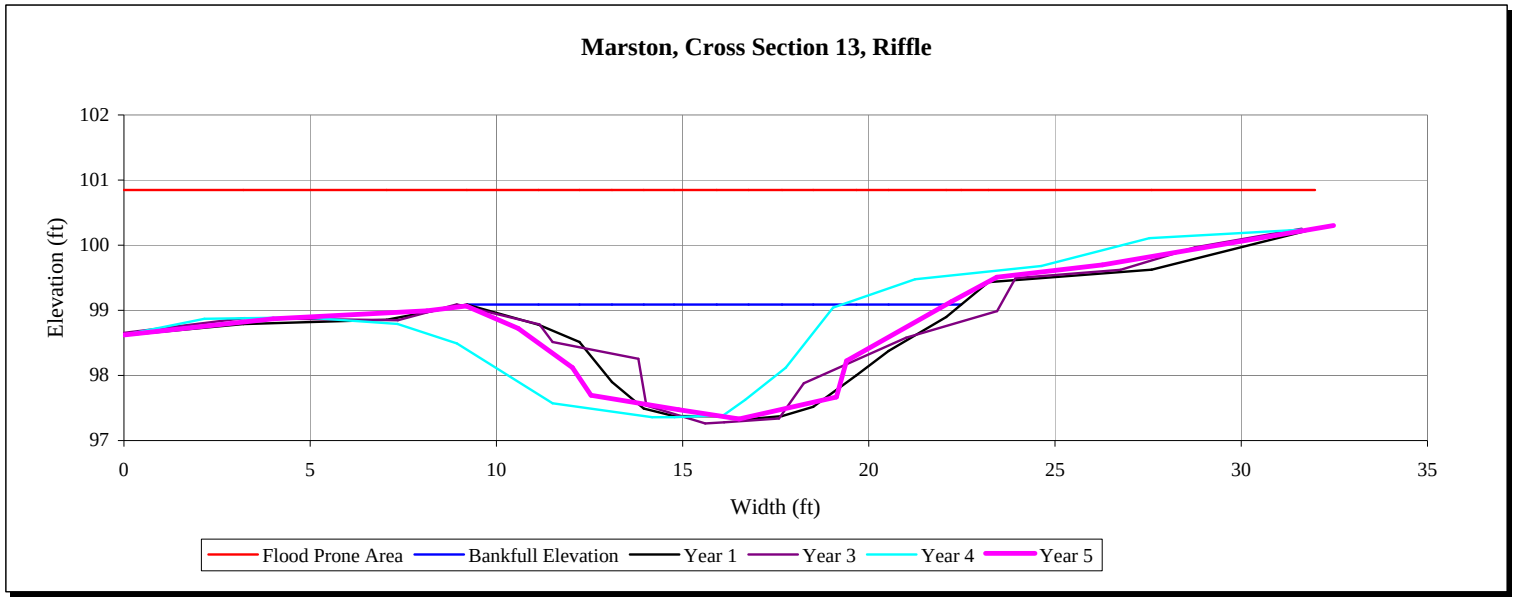
Looking at Left Bank.

Looking at Right Bank.



Looking at Left Bank.

Looking at Right Bank.



APPENDIX C

2008 Gauge Data

										Weatherstation Rainfall Data	
Date	Water Level (inches)										
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG	On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
01-Jan-2008	-1.92667	-14.50	-23.41	-39.05						0	
01-Jan-2008	-2.87667	-14.73	-24.87	-39.07							
02-Jan-2008	-4.21667	-15.24	-25.74	-39.06						0	
02-Jan-2008	-6.54667	-15.78	-27.05	-39.06							
03-Jan-2008	-9.56667	-16.42	-28.39	-39.07						0	
03-Jan-2008	-10.8467	-16.30	-28.91	-39.06							
04-Jan-2008	-12.3767	-16.48	-29.20	-39.06						0	
04-Jan-2008	-11.2567	-15.95	-29.15	-39.05							
05-Jan-2008	-12.6667	-16.08	-29.20	-39.05						0	
05-Jan-2008	-11.6867	-15.87	-29.36	-39.05							
06-Jan-2008	-12.0767	-15.91	-29.51	-39.05						0	
06-Jan-2008	-11.9367	-15.82	-29.69	-39.05							
07-Jan-2008	-12.8367	-15.99	-29.92	-39.03						0	
07-Jan-2008	-12.1567	-14.81	-30.06	-39.03							
08-Jan-2008	-12.5467	-15.36	-29.94	-39.04						0	
08-Jan-2008	-11.7567	-15.57	-29.71	-39.05							
09-Jan-2008	-11.9567	-15.86	-29.41	-39.04						0	
09-Jan-2008	-12.2467	-16.08	-29.75	-39.05							
10-Jan-2008	-13.3667	-16.22	-30.11	-39.05						0	
10-Jan-2008	-12.5867	-15.96	-29.76	-39.05							
11-Jan-2008	-11.4467	-15.72	-29.44	-39.05						0.2	
11-Jan-2008	-10.8767	-15.59	-29.56	-39.05							
12-Jan-2008	-2.93667	-9.88	-21.84	-39.05						0.47	
12-Jan-2008	-3.69667	-12.33	-20.93	-39.05							
13-Jan-2008	-4.49667	-13.07	-20.82	-39.05						0.27	
13-Jan-2008	-5.39667	-13.50	-21.36	-39.06							
14-Jan-2008	-6.71667	-14.06	-21.95	-39.06						0	
14-Jan-2008	-8.06667	-14.35	-22.94	-39.05							
15-Jan-2008	-9.65667	-14.66	-23.58	-39.05						0	
15-Jan-2008	-10.9367	-15.04	-24.73	-39.05							
16-Jan-2008	-12.5467	-15.52	-25.79	-39.04						0	
16-Jan-2008	-12.5267	-15.43	-26.24	-39.06							
17-Jan-2008	-10.1767	-14.63	-25.57	-39.04						0.39	
17-Jan-2008	-2.19667	-9.39	-17.13	-39.05							
18-Jan-2008	-3.06667	-12.17	-17.59	-39.05						0.39	

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
18-Jan-2008	-3.73667	-12.65	-18.18	-39.05							
19-Jan-2008	-4.54667	-12.96	-18.74	-39.05						0.95	
19-Jan-2008	3.08333	4.01	-1.91	-39.04							
20-Jan-2008	1.65333	1.47	-1.11	-39.05						1.04	
20-Jan-2008	0.94333	-3.27	-1.45	-39.03							
21-Jan-2008	0.36333	-6.69	-2.19	-39.04						0.09	
21-Jan-2008	0.65333	-7.22	-2.23	-39.02							
22-Jan-2008	0.61333	-7.90	-2.40	-39.03						0	
22-Jan-2008	0.70333	-7.66	-2.36	-39.04							
23-Jan-2008	1.22333	-3.44	-1.43	-39.04						0.18	
23-Jan-2008	1.04333	-6.80	-1.45	-39.03							
24-Jan-2008	0.80333	-7.87	-1.62	-39.04						0.18	
24-Jan-2008	0.56333	-8.85	-1.87	-39.03							
25-Jan-2008	0.31333	-9.60	-2.21	-39.03						0	
25-Jan-2008	0.27333	-9.26	-2.46	-39.04							
26-Jan-2008	0.22333	-9.20	-2.67	-39.02						0.05	
26-Jan-2008	0.27333	-8.91	-2.75	-38.91							
27-Jan-2008	0.12333	-9.68	-3.00	-38.65						0.05	
27-Jan-2008	0.01333	-9.59	-3.27	-38.73							
28-Jan-2008	-0.27667	-10.13	-3.64	-39.00						0	
28-Jan-2008	-0.21667	-9.79	-3.79	-39.05							
29-Jan-2008	-0.27667	-9.87	-3.98	-38.81						0	
29-Jan-2008	-0.31667	-9.58	-4.26	-38.71							
30-Jan-2008	0.17333	-6.27	-3.21	-38.57						0.21	
30-Jan-2008	0.05333	-9.05	-4.09	-39.04							
31-Jan-2008	-0.19667	-10.04	-4.51	-39.06						0.21	
31-Jan-2008	-0.21667	-9.29	-4.76	-39.06							4.68
01-Feb-2008	-0.02667	-9.05	-4.58	-39.02						0.24	
01-Feb-2008	1.00333	-4.21	-3.04	-39.03							
02-Feb-2008	0.71333	-7.97	-3.54	-39.05						0.24	
02-Feb-2008	0.61333	-8.16	-3.70	-38.84							
03-Feb-2008	0.44333	-8.88	-3.85	-38.00						0	
03-Feb-2008	0.37333	-8.72	-4.07	-37.70							
04-Feb-2008	0.27333	-9.12	-4.28	-37.42						0.02	
04-Feb-2008	0.22333	-8.85	-4.54	-37.58							

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
05-Feb-2008	0.23333	-8.82	-4.68	-37.17						0.02	
05-Feb-2008	0.29333	-8.78	-4.96	-37.19							
06-Feb-2008	0.25333	-8.83	-5.06	-36.89						0	
06-Feb-2008	0.22333	-8.49	-5.40	-37.13							
07-Feb-2008	-0.01667	-9.13	-5.69	-37.48						0	
07-Feb-2008	-0.22667	-9.04	-6.37	-38.53							
08-Feb-2008	-0.54667	-9.64	-6.83	-38.21						0	
08-Feb-2008	-0.81667	-9.29	-7.55	-38.81							
09-Feb-2008	-0.88667	-9.24	-7.94	-39.02						0	
09-Feb-2008	-1.07667	-9.17	-8.61	-39.01							
10-Feb-2008	-1.63667	-9.82	-9.33	-39.05						0	
10-Feb-2008	-2.19667	-9.37	-10.36	-39.03							
11-Feb-2008	-3.36667	-10.42	-11.43	-39.03						0	
11-Feb-2008	-3.84667	-9.65	-12.13	-39.02							
12-Feb-2008	-4.57667	-9.86	-12.57	-39.03						0	
12-Feb-2008	-3.78667	-8.89	-12.35	-39.02							
13-Feb-2008	3.37333	4.33	0.28	-31.55	1.50	0.00	-1.75	0.00	6.3	1.45	
13-Feb-2008	2.51333	3.97	0.49	-16.83							
14-Feb-2008	1.43333	1.75	-0.36	-12.68						1.45	
14-Feb-2008	1.06333	-1.28	-0.83	-12.23							
15-Feb-2008	0.80333	-3.25	-1.01	-11.81						0	
15-Feb-2008	0.77333	-3.94	-1.12	-12.67							
16-Feb-2008	0.59333	-5.25	-1.18	-12.70						0	
16-Feb-2008	0.43333	-5.88	-1.30	-14.20							
17-Feb-2008	0.45333	-6.45	-1.40	-13.69						0	
17-Feb-2008	0.59333	-6.24	-1.42	-14.18							
18-Feb-2008	7.45333	9.93	6.41	1.04						2.12	
18-Feb-2008	2.19333	7.31	0.79	2.50							
19-Feb-2008	1.36333	4.16	-0.52	1.33						2.12	
19-Feb-2008	1.00333	2.55	-0.86	-0.26							
20-Feb-08	0.71333	0.14	-1.05	-1.26						0	
20-Feb-08	0.65333	-1.61	-1.18	-2.25							
21-Feb-08	0.31333	-3.52	-1.31	-3.50						0.17	
21-Feb-08	0.37333	-4.15	-1.41	-4.12							
22-Feb-08	2.86333	4.33	0.81	3.28						1.25	

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
22-Feb-08	1.83333	3.68	0.13	6.41							
23-Feb-08	1.44333	2.81	-0.19	5.38						1.18	
23-Feb-08	1.16333	1.31	-0.45	4.46							
24-Feb-08	0.91333	-0.59	-0.73	3.42						0.1	
24-Feb-08	0.92333	-1.65	-0.88	2.68							
25-Feb-08	0.76333	-3.06	-0.95	2.12						0	
25-Feb-08	0.71333	-3.72	-1.03	1.09							
26-Feb-08	0.78333	-4.89	-1.07	0.84						0.31	
26-Feb-08	1.92333	-0.36	-0.05	3.38							
27-Feb-08	1.32333	-3.48	-0.36	2.20						0.31	
27-Feb-08	0.86333	-4.68	-0.79	0.40							
28-Feb-08	0.50333	-6.22	-1.04	-0.82						0	
28-Feb-08	0.42333	-6.32	-1.22	-1.83							
29-Feb-08	0.23333	-7.00	-1.39	-2.62						0	
29-Feb-08	0.31333	-6.64	-1.51	-3.16							10.98
1-Mar-08	0.33333	-6.77	-1.52	-3.07						0	
1-Mar-08	0.15333	-7.06	-1.74	-4.36							
2-Mar-08	-0.19667	-7.64	-1.92	-5.04						0	
2-Mar-08	-0.26667	-7.39	-2.15	-6.13							
3-Mar-08	-0.40667	-8.07	-2.28	-6.20						0	
3-Mar-08	-0.45667	-7.69	-2.45	-7.08							
4-Mar-08	-0.46667	-7.97	-2.52	-6.67						0.15	
4-Mar-08	-0.26667	-7.40	-2.60	-7.33							
5-Mar-08	2.55333	5.86	1.01	5.26						0.33	
5-Mar-08	1.38333	3.42	-0.28	3.25							
6-Mar-08	1.01333	1.86	-0.60	2.30						0.18	
6-Mar-08	0.79333	-0.25	-0.87	0.80							
7-Mar-08	0.79333	-1.43	-0.96	0.37						0.77	
7-Mar-08	2.40333	3.50	0.89	6.49							
8-Mar-08	2.19333	3.83	0.46	6.36						1.05	
8-Mar-08	1.26333	2.48	-0.12	5.08							
9-Mar-08	0.84333	0.46	-0.58	3.78						0.28	
9-Mar-08	0.67333	-1.17	-0.90	2.54							
10-Mar-08	0.49333	-2.52	-1.06	1.76						0	
10-Mar-08	0.53333	-3.13	-1.21	0.70							

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
11-Mar-08	0.41333	-4.00	-1.22	0.28						0	
11-Mar-08	0.49333	-4.25	-1.29	-0.43							
12-Mar-08	0.27333	-4.96	-1.32	-0.76						0	
12-Mar-08	0.02333	-5.72	-1.60	-2.35							
13-Mar-08	-0.25667	-6.02	-1.75	-2.98						0	
13-Mar-08	-0.45667	-6.00	-2.07	-4.39							
14-Mar-08	-0.53667	-6.35	-2.13	-4.52						0	
14-Mar-08	-0.77667	-6.38	-2.44	-5.61							
15-Mar-08	-1.21667	-6.87	-2.52	-6.02						0	
15-Mar-08	-0.32667	1.60	-0.86	-4.47							
16-Mar-08	0.22333	-3.75	-0.90	-0.91						0	
16-Mar-08	0.13333	-5.33	-1.15	-2.85							
17-Mar-08	-0.17667	-6.16	-1.38	-4.06						0	
17-Mar-08	-0.35667	-6.33	-1.70	-5.46							
18-Mar-08	-0.49667	-6.46	-1.85	-5.42						0	
18-Mar-08	-0.51667	-6.14	-2.05	-6.02							
19-Mar-08	-0.56667	-6.60	-2.11	-5.49						0	
19-Mar-08	-0.68667	-7.65	-2.35	-6.78							
20-Mar-08	0.06333	-5.78	-1.10	-4.45						0	
20-Mar-08	-0.36667	-8.00	-1.54	-7.48							
21-Mar-08	-0.72667	-8.65	-1.80	-7.92						0	
21-Mar-08	-1.04667	-8.36	-2.29	-8.93							
22-Mar-08	-1.33667	-8.34	-2.41	-8.17						0	
22-Mar-08	-2.16667	-9.06	-2.98	-9.77							
23-Mar-08	-3.24667	-9.37	-3.17	-10.21						0	
23-Mar-08	-4.56667	-9.29	-3.77	-11.32							
24-Mar-08	-5.52667	-9.15	-3.93	-11.09						0	
24-Mar-08	-7.17667	-9.21	-4.62	-12.14							
25-Mar-08	-9.14667	-9.40	-4.93	-12.52						0	
25-Mar-08	-10.1567	-9.25	-5.83	-13.42							
26-Mar-08	-10.7467	-9.21	-6.05	-13.15	-10.00	-6.00	-5.50	1.05	5.98	0	
26-Mar-08	-11.3267	-9.44	-7.36	-14.48							
27-Mar-08	-11.5467	-9.29	-7.55	-14.14						0	
27-Mar-08	-12.2367	-9.26	-9.15	-15.71							
28-Mar-08	-12.4767	-9.06	-9.40	-15.37						0	

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
28-Mar-08	-13.5567	-9.67	-11.52	-17.23							
29-Mar-08	-14.7067	-9.70	-12.17	-17.52						0.04	
29-Mar-08	-15.3467	-9.92	-13.28	-18.16							
30-Mar-08	-13.7967	-8.14	-10.36	-18.30						0.17	
30-Mar-08	-4.59667	-4.35	-4.86	-17.80							
31-Mar-08	-3.43667	-4.93	-4.78	-16.37						0.3	
31-Mar-08	-2.96667	-6.57	-5.60	-15.48							3.27
1-Apr-08	-2.14667	-6.19	-4.78	-14.50						0.41	
1-Apr-08	-0.20667	-2.95	-3.01	-13.59							
2-Apr-08	-0.36667	-5.31	-1.67	-13.06						0.23	
2-Apr-08	-0.80667	-6.85	-2.17	-16.44							
3-Apr-08	-1.07667	-7.08	-2.46	-16.16						0.08	
3-Apr-08	-1.03667	-6.70	-2.70	-16.14							
4-Apr-08	-0.94667	-6.43	-2.76	-15.43						0.08	
4-Apr-08	-1.03667	-6.75	-3.02	-16.63							
5-Apr-08	1.36333	3.24	-0.02	-8.36						2.47	
5-Apr-08	4.45333	9.77	5.15	8.68							
6-Apr-08	2.59333	9.57	3.88	6.69						2.57	
6-Apr-08	1.31333	9.29	0.82	5.65							
7-Apr-08	0.81333	7.45	-0.31	4.87						0.1	
7-Apr-08	0.67333	5.47	-0.63	4.21							
8-Apr-08	0.50333	4.49	-0.79	3.52						0	
8-Apr-08	0.39333	4.18	-0.95	2.72							
9-Apr-08	0.38333	3.46	-0.98	2.18						0	
9-Apr-08	0.26333	2.74	-1.05	1.38							
10-Apr-08	0.26333	1.93	-1.07	0.90						0.04	
10-Apr-08	0.12333	0.86	-1.18	-0.18							
11-Apr-08	0.06333	0.00	-1.20	-0.48						0.07	
11-Apr-08	-0.23667	-1.07	-1.47	-1.59							
12-Apr-08	-0.26667	-1.55	-1.53	-1.91						0.14	
12-Apr-08	-0.44667	-1.68	-1.80	-3.13							
13-Apr-08	-0.78667	-2.82	-1.97	-3.74						0.18	
13-Apr-08	-1.76667	-4.06	-2.62	-5.49							
14-Apr-08	-2.20667	-4.28	-2.66	-5.99						0.07	
14-Apr-08	-3.56667	-4.76	-3.17	-7.24							

										Weatherstation Rainfall Data	
Date	Water Level (inches)									Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG	On-site Raingauge		
15-Apr-08	-4.57667	-5.17	-3.35	-7.54						0	
15-Apr-08	-7.36667	-5.72	-4.34	-9.31							
16-Apr-08	-9.44667	-6.44	-4.42	-9.43						0	
16-Apr-08	-11.4667	-6.67	-5.90	-11.05							
17-Apr-08	-12.2167	-7.66	-5.99	-10.65						0	
17-Apr-08	-13.5067	-7.83	-7.93	-12.64							
18-Apr-08	-14.3167	-8.54	-8.02	-12.40						0.03	
18-Apr-08	-15.5167	-9.24	-10.57	-14.65							
19-Apr-08	-16.0367	-8.76	-10.55	-14.38						0.03	
19-Apr-08	-17.0967	-9.96	-13.89	-16.26							
20-Apr-08	-11.9067	0.02	-3.46	-15.53						0.76	
20-Apr-08	-8.31667	-7.19	-7.27	-11.85							
21-Apr-08	-9.95667	-7.44	-7.59	-10.62						0.76	
21-Apr-08	-6.80667	-6.18	-5.08	-11.64							
22-Apr-08	-2.12667	0.40	-2.27	-10.97				1.10	4.36	0.46	
22-Apr-08	-3.00667	-5.51	-4.36	-8.51							
23-Apr-08	-3.99667	-6.59	-4.64	-8.34	-2.50	-6.00	-5.50			0.8	
23-Apr-08	-5.97667	-7.52	-5.31	-9.84							
24-Apr-08	-7.77667	-7.71	-5.52	-9.72						0.35	
24-Apr-08	-10.9967	-8.63	-7.53	-12.36							
25-Apr-08	-12.0167	-8.70	-7.66	-12.16						0.02	
25-Apr-08	-14.3367	-9.48	-11.16	-15.12							
26-Apr-08	-15.0667	-9.18	-11.30	-14.85						0.03	
26-Apr-08	-16.9867	-10.83	-15.69	-17.64							
27-Apr-08	-17.3767	-10.58	-15.30	-17.44						0.04	
27-Apr-08	-18.0567	-6.18	-17.08	-19.03							
28-Apr-08	-11.9867	-8.05	-8.61	-12.83						0.49	
28-Apr-08	-11.8467	-7.75	-8.91	-11.50							
29-Apr-08	-13.0967	-8.56	-9.96	-10.84						0.48	
29-Apr-08	-16.7867	-9.85	-15.09	-15.02							
30-Apr-08	-18.0567	-9.93	-15.71	-15.27						0.01	
30-Apr-08	-19.4067	-11.01	-19.48	-18.35							10.7
1-May-08	-19.9567	-11.45	-19.84	-18.22						0	
1-May-08	-20.7567	-12.31	-22.62	-20.81							
2-May-08	-20.8367	-12.17	-22.43	-20.46						0	

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
2-May-08	-21.6667	-13.27	-25.02	-23.15							
3-May-08	-21.5267	-12.79	-24.70	-22.54						0	
3-May-08	-22.2467	-13.92	-26.61	-25.15							
4-May-08	-21.9367	-12.97	-25.51	-24.84						0.12	
4-May-08	-17.0167	-5.14	-10.51	-27.23							
5-May-08	-17.4867	-10.47	-10.71	-26.71						0.99	
5-May-08	-17.0967	-9.03	-8.64	-29.01							
6-May-08	-16.9667	-10.18	-10.80	-28.51						0.88	
6-May-08	-18.6467	-11.35	-15.41	-30.98							
7-May-08	-19.1967	-11.69	-15.98	-30.49						0.01	
7-May-08	-20.5867	-12.77	-20.36	-33.24							
8-May-08	-20.6367	-12.77	-20.15	-32.66						0	
8-May-08	-21.2767	-9.53	-22.26	-34.17							
9-May-08	-20.1467	-8.08	-18.44	-33.53						0.25	
9-May-08	-20.7267	-11.09	-18.42	-35.17							
10-May-08	-16.1667	-8.81	-10.29	-33.37						0.41	
10-May-08	-19.3767	-11.86	-17.55	-36.17							
11-May-08	-19.6267	-11.64	-17.61	-34.65						0.7	
11-May-08	-10.6667	-7.24	-6.05	-32.39							
12-May-08	-13.5667	-9.37	-8.23	-30.99						0.54	
12-May-08	-17.2767	-11.17	-12.08	-33.16							
13-May-08	-18.5467	-11.73	-13.39	-33.02						0.01	
13-May-08	-20.3167	-12.66	-19.30	-36.35							
14-May-08	-20.6467	-13.20	-19.44	-35.42						0.02	
14-May-08	-21.7167	-14.50	-23.10	-37.76							
15-May-08	-21.7767	-14.73	-22.93	-36.98						0.07	
15-May-08	-22.5567	-15.92	-25.31	-38.74							
16-May-08	-21.6467	-14.48	-21.54	-37.17						0.19	
16-May-08	-22.3867	-16.68	-23.80	-39.14							
17-May-08	-22.7767	-17.56	-25.30	-39.49						0.13	
17-May-08	-23.8167	-19.01	-27.87	-39.08							
18-May-08	-23.6467	-19.39	-27.78	-39.07						0.22	
18-May-08	-24.7067	-21.02	-29.64	-39.06							
19-May-08	-23.8767	-19.25	-26.17	-39.06						0.28	
19-May-08	-24.8467	-21.17	-27.26	-39.07							

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
20-May-08	-24.4667	-21.08	-27.09	-39.07						0.51	
20-May-08	-21.6067	-2.24	-21.78	-39.07							
21-May-08	-8.51667	-7.82	-6.53	-39.07						0.45	
21-May-08	-13.1967	-11.02	-10.31	-39.07							
22-May-08	-14.7867	-11.94	-11.55	-39.07						0	
22-May-08	-17.5767	-13.38	-17.65	-39.08							
23-May-08	-18.2467	-13.89	-18.12	-39.06						0.01	
23-May-08	-19.7467	-15.19	-21.49	-39.07							
24-May-08	-19.9767	-15.61	-21.58	-39.07						0.04	
24-May-08	-20.4567	-16.07	-21.15	-39.06							
25-May-08	-20.9667	-16.85	-22.15	-39.07						0.03	
25-May-08	-22.4667	-18.58	-25.48	-39.08							
26-May-08	-22.6167	-19.44	-25.92	-39.07						0	
26-May-08	-23.7767	-21.29	-28.17	-39.08							
27-May-08	-23.7367	-21.68	-28.47	-39.07						0	
27-May-08	-24.9267	-20.06	-30.24	-39.06							
28-May-08	-24.7167	-16.60	-30.40	-39.07	-17.00	-21.00	-40.00	0.00	2.85	0.51	
28-May-08	-11.9267	-6.48	-5.68	-39.06							
29-May-08	-15.1167	-10.71	-8.53	-39.06						0.51	
29-May-08	-17.1567	-8.42	-14.57	-39.07							
30-May-08	-17.5567	-9.08	-15.44	-39.07						0	
30-May-08	-19.4467	-9.94	-19.85	-39.08							
31-May-08	-19.2267	-9.88	-19.74	-39.06						0	
31-May-08	-20.9167	-11.15	-23.38	-39.07							6.88
1-Jun-08	-20.8767	-11.23	-23.58	-39.08						0.57	
1-Jun-08	-22.0567	-12.04	-26.27	-39.07							
2-Jun-08	-21.7267	-11.75	-26.39	-39.08						0.62	
2-Jun-08	-23.3567	-10.26	-28.87	-39.08							
3-Jun-08	-22.9467	-10.25	-28.92	-39.08						0.05	
3-Jun-08	-24.2367	-11.75	-30.56	-39.07							
4-Jun-08	-23.6967	-11.77	-30.26	-39.09						0	
4-Jun-08	-25.2267	-13.61	-31.76	-39.08							
5-Jun-08	-25.0167	-13.66	-31.92	-39.08						0	
5-Jun-08	-26.3467	-14.82	-33.03	-39.07							
6-Jun-08	-25.8767	-14.41	-32.72	-39.08						0	

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
6-Jun-08	-27.2667	-15.72	-33.81	-39.08							
7-Jun-08	-26.7067	-15.12	-33.33	-39.08						0	
7-Jun-08	-28.2367	-16.60	-34.58	-39.07							
8-Jun-08	-27.5667	-15.89	-34.00	-39.08						0	
8-Jun-08	-28.9767	-17.36	-35.23	-39.07							
9-Jun-08	-28.4567	-16.63	-34.80	-39.08						0	
9-Jun-08	-29.6867	-18.34	-35.95	-39.09							
10-Jun-08	-29.1767	-17.53	-35.62	-39.10						0	
10-Jun-08	-30.5667	-19.83	-36.83	-39.10							
11-Jun-08	-29.9967	-20.29	-36.52	-39.10						0	
11-Jun-08	-31.0167	-23.30	-37.53	-39.10							
12-Jun-08	-30.5267	-24.14	-37.25	-39.09						0	
12-Jun-08	-31.7867	-26.48	-38.38	-39.09							
13-Jun-08	-31.3267	-27.25	-38.13	-39.09						0	
13-Jun-08	-32.4867	-28.84	-39.22	-39.09							
14-Jun-08	-31.9967	-29.50	-38.90	-39.09						0	
14-Jun-08	-33.2267	-31.05	-40.09	-39.09							
15-Jun-08	-32.8267	-31.18	-39.91	-39.10						0.05	
15-Jun-08	-33.2267	-31.55	-40.31	-39.10							
16-Jun-08	-32.7867	-31.87	-40.06	-39.11						0.05	
16-Jun-08	-33.7767	-33.02	-41.00	-39.10							
17-Jun-08	-33.2967	-33.40	-40.80	-39.10						0	
17-Jun-08	-34.3167	-34.40	-41.82	-39.08							
18-Jun-08	-34.0467	-35.13	-41.87	-39.08						0	
18-Jun-08	-35.1467	-36.11	-42.88	-39.09							
19-Jun-08	-34.9667	-36.83	-42.97	-39.09						0	
19-Jun-08	-36.0967	-37.72	-43.98	-39.09							
20-Jun-08	-36.0367	-38.49	-44.14	-39.10						0	
20-Jun-08	-36.9167	-39.02	-44.99	-39.10							
21-Jun-08	-36.9067	-39.51	-45.01	-39.10						0.12	
21-Jun-08	-34.6067	-37.30	-43.57	-39.10							
22-Jun-08	-35.2867	-37.20	-43.39	-39.10						0.12	
22-Jun-08	-36.1367	-37.78	-44.07	-39.11							
23-Jun-08	-36.2167	-38.05	-44.07	-39.11						1.03	
23-Jun-08	-31.7967	-35.29	-41.96	-39.09							

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
24-Jun-08	-32.9467	-33.79	-40.48	-39.09	-21.50	-27.00	-49.50	0.00	1.96	1.03	
24-Jun-08	-34.2567	-34.50	-41.33	-39.08							
25-Jun-08	-34.2567	-35.02	-41.39	-39.09						0	
25-Jun-08	-35.1567	-35.84	-42.25	-39.10							
26-Jun-08	-34.8267	-36.43	-42.15	-39.09						0	
26-Jun-08	-35.8767	-37.53	-43.14	-39.09							
27-Jun-08	-35.6867	-38.26	-43.22	-39.10						0	
27-Jun-08	-36.8867	-39.30	-44.36	-39.09							
28-Jun-08	-36.8467	-39.95	-44.52	-39.09						0	
28-Jun-08	-37.9467	-41.04	-45.58	-39.09							
29-Jun-08	-38.0267	-41.67	-45.79	-39.09						0	
29-Jun-08	-39.0367	-42.63	-46.80	-39.09							
30-Jun-08	-39.1367	-42.99	-46.94	-39.10						0.02	
30-Jun-08	-40.0467	-43.94	-47.87	-39.09							3.66
1-Jul-08	-40.2467	-44.34	-48.14	-39.10						0.02	
1-Jul-08	-41.2867	-45.26	-49.21	-39.10							
2-Jul-08	-41.4967	-45.73	-49.43	-39.11						0	
2-Jul-08	-42.5967	-46.78	-50.52	-39.09							
3-Jul-08	-42.8467	-47.14	-50.73	-39.09						0	
3-Jul-08	-43.9367	-48.26	-51.64	-39.11							
4-Jul-08	-44.1867	-48.48	-51.69	-39.10						0	
4-Jul-08	-45.1867	-49.56	-51.76	-39.10							
5-Jul-08	-45.4367	-49.81	-51.88	-39.09						0.51	
5-Jul-08	-45.8467	-50.51	-51.99	-39.10							
6-Jul-08	-45.9467	-50.35	-51.80	-39.10						0.64	
6-Jul-08	-46.6667	-51.27	-51.79	-39.11							
7-Jul-08	-46.8567	-51.30	-51.79	-39.10						0.18	
7-Jul-08	-47.4967	-51.90	-51.69	-39.09							
8-Jul-08	-47.6467	-51.99	-51.70	-39.10						0.08	
8-Jul-08	-48.4867	-52.95	-51.71	-39.10							
9-Jul-08	-48.7067	-53.15	-51.70	-39.10						0.1	
9-Jul-08	-49.3567	-53.27	-51.71	-39.11							
10-Jul-08	-49.5267	-53.31	-51.72	-39.11						0.59	
10-Jul-08	-50.1867	-53.43	-51.69	-39.11							
11-Jul-08	-50.3167	-53.39	-51.71	-39.10						0.52	

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
11-Jul-08	-50.8167	-53.48	-51.72	-39.10							
12-Jul-08	-50.9567	-52.35	-51.71	-39.11						0	
12-Jul-08	-51.7167	-52.36	-51.72	-39.10							
13-Jul-08	-51.8467	-52.35	-51.72	-39.11						0	
13-Jul-08	-52.0667	-52.37	-51.72	-39.11							
14-Jul-08	-52.3367	-52.36	-51.73	-39.10						0.55	
14-Jul-08	-49.0667	-52.37	-51.71	-39.12							
15-Jul-08	-51.2267	-52.36	-51.72	-39.10						0.55	
15-Jul-08	-51.7667	-52.37	-51.72	-39.10							
16-Jul-08	-51.9367	-52.36	-51.71	-39.11						0	
16-Jul-08	-51.9567	-52.36	-51.72	-39.11							
17-Jul-08	-51.9567	-52.37	-51.72	-39.11						0.05	
17-Jul-08	-51.9467	-52.39	-51.71	-39.11							
18-Jul-08	-51.9567	-52.38	-51.72	-39.10						0.23	
18-Jul-08	-51.9667	-52.38	-51.72	-39.11							
19-Jul-08	-51.9667	-52.36	-51.72	-39.10						0.76	
19-Jul-08	-51.9667	-52.37	-51.72	-39.11							
20-Jul-08	-51.9667	-52.37	-51.73	-39.12						0.61	
20-Jul-08	-51.9567	-52.38	-51.74	-39.10							
21-Jul-08	-51.9567	-52.37	-51.73	-39.10						0.04	
21-Jul-08	-51.9667	-52.37	-51.73	-39.11							
22-Jul-08	-51.9567	-52.37	-51.73	-39.10						0.01	
22-Jul-08	-51.9667	-52.38	-51.74	-39.11							
23-Jul-08	-51.9767	-52.36	-51.74	-39.11						0.01	
23-Jul-08	-51.9567	-52.36	-51.74	-39.11							
24-Jul-08	-51.9667	-52.38	-51.74	-39.11						0.43	
24-Jul-08	-51.9667	-52.37	-51.74	-39.10							
25-Jul-08	-51.9667	-52.39	-51.73	-39.11						0.42	
25-Jul-08	-51.9767	-52.38	-51.74	-39.11							
26-Jul-08	-51.9667	-52.38	-51.73	-39.10						0.02	
26-Jul-08	-51.9667	-52.39	-51.75	-39.11							
27-Jul-08	-51.9667	-52.38	-51.74	-39.11						0.24	
27-Jul-08	-51.9767	-52.38	-51.75	-39.11							
28-Jul-08	-51.9867	-52.37	-51.74	-39.12						0.23	
28-Jul-08	-51.9667	-52.38	-51.75	-39.10							

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
29-Jul-08	-51.9667	-52.38	-51.75	-39.11						0.01	
29-Jul-08	-51.9767	-52.39	-51.75	-39.11							
30-Jul-08	-51.9667	-52.38	-51.74	-39.11	-36.50	-48.00	-48.50	0.00	2.35	0.02	
30-Jul-08	-51.7083	-52.38	-51.74	-39.10							
31-Jul-08	-51.7283	-52.39	-51.76	-39.11						0.31	
31-Jul-08	-51.7083	-52.39	-51.75	-39.11							7.13
1-Aug-08	-51.7083	-52.39	-51.76	-39.11						0.29	
1-Aug-08	-51.7183	-52.38	-51.75	-39.12							
2-Aug-08	-51.7083	-52.40	-51.76	-39.10						0	
2-Aug-08	-51.7183	-52.39	-51.76	-39.10							
3-Aug-08	-51.7183	-52.38	-51.79	-39.11						0.03	
3-Aug-08	-51.7183	-52.40	-51.75	-39.12							
4-Aug-08	-51.7183	-52.39	-51.76	-39.11						0.19	
4-Aug-08	-51.7283	-52.39	-51.75	-39.11							
5-Aug-08	-51.7183	-52.40	-51.77	-39.11						0.17	
5-Aug-08	-51.7383	-52.39	-51.75	-39.11							
6-Aug-08	-51.7283	-52.40	-51.76	-39.12						0.33	
6-Aug-08	-51.7283	-52.40	-51.76	-39.12							
7-Aug-08	-51.7383	-52.39	-51.81	-39.12						0.61	
7-Aug-08	-51.7383	-52.40	-51.76	-39.10							
8-Aug-08	-51.7383	-52.42	-51.78	-39.12						0.3	
8-Aug-08	-51.7283	-52.40	-51.78	-39.11							
9-Aug-08	-51.7283	-52.41	-51.77	-39.11						0.04	
9-Aug-08	-51.7283	-52.41	-51.77	-39.11							
10-Aug-08	-51.7283	-52.40	-51.77	-39.10						0.03	
10-Aug-08	-51.7183	-52.39	-51.81	-39.11							
11-Aug-08	-51.7383	-52.40	-51.78	-39.12						0.27	
11-Aug-08	-51.7283	-52.41	-51.78	-39.11							
12-Aug-08	-51.7383	-52.40	-51.78	-39.11						0.27	
12-Aug-08	-51.7383	-52.40	-51.78	-39.11							
13-Aug-08	-41.0883	-46.47	-51.76	-39.10						2.22	
13-Aug-08	-15.9383	-43.91	-51.78	-39.10							
14-Aug-08	-27.6783	-39.42	-51.77	-39.11						2.24	
14-Aug-08	-32.7283	-41.11	-51.76	-39.10							
15-Aug-08	-35.4083	-42.14	-51.85	-39.11						0.01	

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
15-Aug-08	-38.3983	-43.99	-51.76	-39.11							
16-Aug-08	-2.27833	-26.30	-45.77	-39.11						0.03	
16-Aug-08	-11.7983	-24.06	-45.66	-39.11							
17-Aug-08	-21.9483	-23.40	-46.54	-39.10						0.04	
17-Aug-08	-25.3383	-23.82	-47.47	-39.10							
18-Aug-08	-26.5383	-23.98	-48.00	-39.11						0.02	
18-Aug-08	-28.9783	-27.14	-49.10	-39.11							
19-Aug-08	-29.6283	-28.25	-49.35	-39.12						0	
19-Aug-08	-32.0483	-31.50	-50.35	-39.11							
20-Aug-08	-33.1783	-32.29	-50.52	-39.11						0	
20-Aug-08	-34.9783	-35.05	-51.50	-39.11							
21-Aug-08	-35.5883	-35.57	-51.60	-39.11						0	
21-Aug-08	-36.7483	-37.39	-51.75	-39.11							
22-Aug-08	-37.1783	-38.05	-51.76	-39.11						0	
22-Aug-08	-38.4383	-40.19	-51.75	-39.10							
23-Aug-08	-38.7683	-40.42	-51.76	-39.11						0	
23-Aug-08	-39.8183	-42.18	-51.75	-39.12							
24-Aug-08	-40.0683	-42.28	-51.76	-39.11						0	
24-Aug-08	-40.9283	-43.72	-51.76	-39.10							
25-Aug-08	-41.1683	-43.72	-51.75	-39.10						0	
25-Aug-08	-42.0383	-45.10	-51.75	-39.11							
26-Aug-08	-42.2583	-45.05	-51.76	-39.10	-45.50	-48.00	-48.50		5.25	0.2	
26-Aug-08	-42.7183	-45.62	-51.75								
27-Aug-08	-42.7783	-45.47	-51.75							0.28	
27-Aug-08	-43.3683	-46.44	-51.77								
28-Aug-08	-38.8383	-43.75	-51.75							0.91	
28-Aug-08	-40.2683	-43.12	-51.75								
29-Aug-08	-40.9683	-42.81	-51.75							0.83	
29-Aug-08	-41.9683	-43.92	-51.76								
30-Aug-08	-42.2783	-43.93	-51.76							0	
30-Aug-08	-43.0283	-45.15	-51.75								
31-Aug-08	-43.1383	-45.12	-51.76							0.02	
31-Aug-08	-43.8983	-46.40	-51.77								9.33
1-Sep-08	-43.9783	-46.32	-51.77							0.02	
1-Sep-08	-44.9283	-47.84	-51.78								

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
2-Sep-08	-44.8883	-47.50	-51.77							0	
2-Sep-08	-45.7783	-48.89	-51.78								
3-Sep-08	-45.7783	-48.62	-51.77							0	
3-Sep-08	-46.7983	-50.18	-51.77								
4-Sep-08	-46.9083	-50.03	-51.77							0	
4-Sep-08	-48.0083	-51.69	-51.77								
5-Sep-08	-47.9783	-51.24	-51.77							1.15	
5-Sep-08	-42.8283	-49.34	-51.77								
6-Sep-08	-31.7083	-41.45	-51.78							1.56	
6-Sep-08	-30.9283	-30.58	-51.76								
7-Sep-08	-30.7883	-26.49	-51.78							0.49	
7-Sep-08	-31.9583	-25.97	-51.76								
8-Sep-08	-31.9983	-25.06	-51.77							0.26	
8-Sep-08	-33.4283	-27.35	-51.78								
9-Sep-08	-34.0083	-28.37	-51.78							0.28	
9-Sep-08	-33.9383	-28.77	-51.64								
10-Sep-08	-32.8583	-26.68	-51.43							0.1	
10-Sep-08	-32.8383	-26.52	-51.55								
11-Sep-08	-32.2683	-22.98	-51.57							0.03	
11-Sep-08	-32.5283	-22.93	-52.10								
12-Sep-08	-32.1883	-22.75	-52.11							0.03	
12-Sep-08	-32.7383	-25.11	-52.02								
13-Sep-08	-32.3583	-25.70	-51.87							0	
13-Sep-08	-33.0383	-28.20	-51.91								
14-Sep-08	-32.6683	-28.61	-51.53							0	
14-Sep-08	-33.3983	-30.88	-51.81								
15-Sep-08	-33.0783	-31.30	-51.48							0.35	
15-Sep-08	-33.7283	-33.16	-51.96								
16-Sep-08	-31.9783	-30.18	-51.82							0.46	
16-Sep-08	-32.0983	-30.83	-51.77								
17-Sep-08	-31.8183	-30.86	-51.50							0.17	
17-Sep-08	-32.0983	-32.04	-51.60								
18-Sep-08	-31.7183	-32.28	-51.31							0.08	
18-Sep-08	-32.5583	-34.02	-51.91								
19-Sep-08	-32.2483	-34.30	-51.73							0.02	

										Weatherstation Rainfall Data	
Date	Water Level (inches)								On-site Raingauge	Trenton (318706) Daily	Trenton Monthly Rainfall
dd-mmm-yyyy	AW1	AW2	AW3	WEBBRAW1	MW1	MW2	MW3	CG			
19-Sep-08	-32.9583	-35.86	-52.27								
20-Sep-08	-32.5783	-35.98	-52.00							0	
20-Sep-08	-32.7083	-36.68	-52.01								
21-Sep-08	-32.4683	-36.78	-51.84							0	
21-Sep-08	-33.0583	-37.78	-52.36								
22-Sep-08	-32.7383	-37.77	-52.07							0	
22-Sep-08	-33.2383	-38.66	-51.98								
23-Sep-08	-33.0383	-38.71	-51.82		-24.00	-35.50	-49.50	0.00	3.96	0	
23-Sep-08											
24-Sep-08										0	
24-Sep-08											
25-Sep-08										3.12	
25-Sep-08											
26-Sep-08										3.65	
26-Sep-08											
27-Sep-08										0.58	
27-Sep-08											
28-Sep-08										0.09	
28-Sep-08											
29-Sep-08										0.15	
29-Sep-08											
30-Sep-08										0.99	
30-Sep-08											13.58

APPENDIX D

2008 Site Photos

Old beaver dam breached @ station 24+50 (Reach 1).

Log vane @ station 29+00 (Reach 1), channel is washing under the structure.

Sediment/sand entering channel @ station 32+90 (Reach 1) causing potential aggradation in channel.

Vegetation Plot #1

Vegetation Plot #2

Vegetation Plot #3

Vegetation Plot #4

Vegetation Plot #5

Vegetation Plot #6

Vegetation Plot #7

Vegetation Plot #8